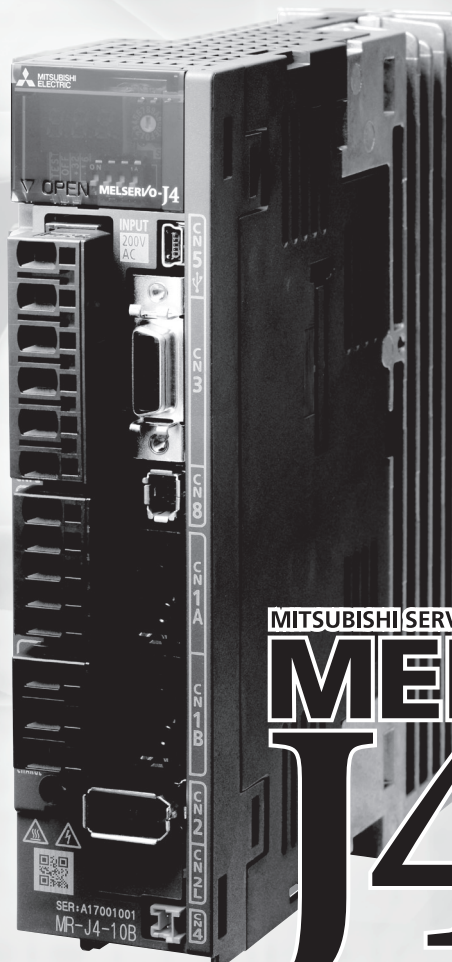


Transition from MELSERVO-J2-Super/ J2M Series to J4 Series Handbook

Complete Support for Upgrading Your
MELSERVO-J2S to MELSERVO-J4



J2S



MITSUBISHI SERVO AMPLIFIERS & MOTORS

MELSERVO

J4

● SAFETY INSTRUCTIONS ●

Please read the instructions carefully before using the equipment.

To ensure correct usage of the equipment, make sure to read through this Replacement Manual, the Instruction Manual, the Installation Guide, and the Appended Documents carefully before attempting to install, operate, maintain, or inspect the equipment. Do not use the equipment until you have a full knowledge of the equipment, safety information and instructions.

In this Replacement Manual, the safety instruction levels are classified under "WARNING" and "CAUTION".




WARNING

Indicates that incorrect handling may cause hazardous conditions, resulting in death or severe injury.



CAUTION


Indicates that incorrect handling may cause hazardous conditions, resulting in medium or slight injury to personnel or may cause physical damage.

Note that the  CAUTION level may lead to a serious consequence according to conditions.

Please follow the instructions of both levels because they are important to personnel safety.

What must not be done and what must be done are indicated by the following diagrammatic symbols.



Indicates prohibition (what must not be done). For example, "No Fire" is indicated by .



Indicates obligation (what must be done). For example, grounding is indicated by .

In this Replacement Manual, instructions of a lower level than the above, such as those that do not cause physical damage or instructions for other functions, are classified under "POINT".

After reading this Instruction Manual, keep it accessible to the operator.

1. To prevent electric shock, note the following



WARNING

- Before wiring or inspection, turn off the power and wait for 15 minutes or more until the charge lamp turns off. Then, confirm that the voltage between P+ and N- is safe with a voltage tester and others. Otherwise, an electric shock may occur. In addition, when confirming whether the charge lamp is off or not, always confirm it from the front of the servo amplifier.
- Ground the servo amplifier and servo motor securely.
- Any person who is involved in wiring and inspection should be fully competent to do the work.
- Do not attempt to wire the servo amplifier and servo motor until they have been installed. Doing so may cause an electric shock.
- Do not operate switches with wet hands. Otherwise, it may cause an electric shock.
- The cables should not be damaged, stressed, loaded, or pinched. Otherwise, it may cause an electric shock.
- During power-on or operation, do not open the front cover of the servo amplifier. Otherwise, it may cause an electric shock.
- Do not operate the servo amplifier with the front cover removed. High-voltage terminals and charging area are exposed and you may get an electric shock.
- Except for wiring and periodic inspection, do not remove the front cover of the servo amplifier even if the power is off. The servo amplifier is charged and you may get an electric shock.
- To prevent electric shock, always connect the protective earth (PE) terminal (⊕ marked) of the servo amplifier to the protective earth (PE) of the cabinet.
- When using a residual current device (RCD), select the type B.
- To avoid an electric shock, insulate the connections of the power supply terminals.


2. To prevent fire, note the following



CAUTION

- Install the servo amplifier, servo motor, and regenerative resistor on incombustible material. Installing them directly or close to combustibles will lead to a fire.
- Always connect a magnetic contactor between the main circuit power supply and the converter unit and L1/L2/L3 of the servo amplifier in order to configure a power supply shut-off on the side of the servo amplifier's power supply. If a magnetic contactor is not connected, continuous flow of a large current may cause smoke and fire when the converter unit or the servo amplifier (drive unit) malfunctions.
- When using the regenerative resistor, switch power off with the alarm signal. Not doing so may cause smoke and fire when a regenerative transistor malfunctions or the like may overheat the regenerative resistor.
- Provide adequate protection to prevent screws and other conductive matter, oil and other combustible matter from entering the servo amplifier and servo motor.
- Always connect one no-fuse breaker or one fuse for each servo amplifier between the power supply and the main circuit power supply (L1/L2/L3) of the servo amplifier (including the converter unit) in order to configure a power supply shut-off on the side of the servo amplifier's power supply. If a no-fuse breaker or fuse is not connected, continuous flow of a large current may cause smoke and fire when the servo amplifier malfunctions.


3. Injury prevention

 CAUTION
<ul style="list-style-type: none"> ● Only the voltage specified in the Instruction Manual should be applied to each terminal. Otherwise, a burst, damage, etc. may occur. ● The cables must be connected to the correct terminals. Otherwise, a burst, damage, etc. may occur. ● Ensure that the polarity (+/-) is correct. Otherwise, a burst, damage, etc. may occur. ● The servo amplifier heat sink, regenerative resistor, servo motor, etc. may be hot while power is on or for some time after power-off. Take safety measures, e.g. provide covers, to avoid accidentally touching the parts (cables, etc.) by hand.

4. Additional instructions

The following instructions should also be fully noted. Incorrect handling may cause a malfunction, injury, electric shock, fire, etc.

(1) Transportation/installation

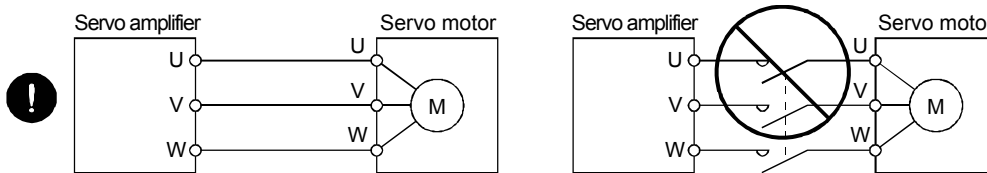
 CAUTION					
<ul style="list-style-type: none"> ● Transport the products correctly according to their mass. ● Stacking in excess of the specified number of product packages is not allowed. ● Do not hold the front cover when transporting the servo amplifier. Otherwise, it may drop. ● Install the servo amplifier and the servo motor in a load-bearing place in accordance with the Instruction Manual. ● Do not get on or put heavy load on the equipment. ● The equipment must be installed in the specified direction. ● Secure the prescribed distance between the servo amplifier and the inner surface of the cabinet or other devices. ● Do not install or operate the servo amplifier and servo motor which have been damaged or have any parts missing. ● Do not block the intake and exhaust areas of the servo amplifier. Otherwise, it may cause a malfunction. ● Do not drop or strike the servo amplifier and servo motor. Isolate them from all impact loads. ● When you keep or use the equipment, please fulfill the following environment. 					
Item	Environment				
Ambient temperature	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Operation</td> <td style="padding: 2px;">0 °C to 55 °C (non-freezing)</td> </tr> <tr> <td style="padding: 2px;">Storage</td> <td style="padding: 2px;">-20 °C to 65 °C (non-freezing)</td> </tr> </table>	Operation	0 °C to 55 °C (non-freezing)	Storage	-20 °C to 65 °C (non-freezing)
Operation	0 °C to 55 °C (non-freezing)				
Storage	-20 °C to 65 °C (non-freezing)				
Ambient humidity	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Operation</td> <td rowspan="2" style="padding: 2px;">90 %RH or less (non-condensing)</td> </tr> <tr> <td style="padding: 2px;">Storage</td> </tr> </table>	Operation	90 %RH or less (non-condensing)	Storage	
Operation	90 %RH or less (non-condensing)				
Storage					
Ambience	Indoors (no direct sunlight) and free from corrosive gas, flammable gas, oil mist, dust, and dirt				
Altitude	1000 m or less above sea level				
Vibration resistance	5.9 m/s ² or less at 10 to 55 Hz (directions of X, Y, Z axes)				

<ul style="list-style-type: none"> ● Contact your local sales if the product has been stored for an extended period of time. ● When handling the servo amplifier, be careful about the edged parts such as corners of the servo amplifier. ● The servo amplifier must be installed in a metal cabinet. ● Take sterilization and insecticide measures other than fumigation for the wood packing material. If a servo amplifier is packed with wood packing material that has been smoked or fumigated, halogenated material contained in the fumigant (such as fluorine, chlorine, bromine, and iodine) may cause the servo amplifier to malfunction. ● Therefore, because a malfunction may occur, avoid using the servo amplifier in an environment where the servo amplifier coexists with parts containing halogenated flame retardants (such as bromine). 	
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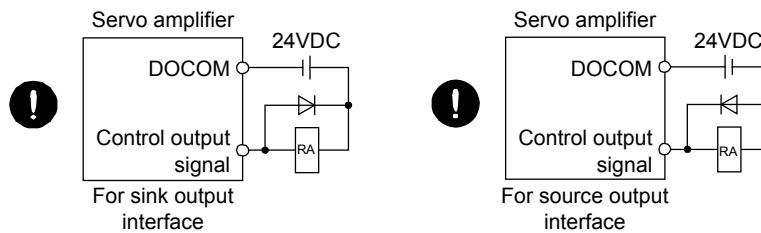
(2) Wiring

⚠ CAUTION

- Wire the equipment correctly and securely. Otherwise, the servo motor may operate unexpectedly.
- Do not install a power capacitor, surge killer, or radio noise filter (optional FR-BIF) on the output side of the servo amplifier.
- Because installation of these items may cause the servo motor to malfunction, connect the wires to the correct phase terminals (U/V/W) of the servo amplifier and servo motor power supply.
- Directly connect the servo amplifier power output (U/V/W) to the servo motor power input (U/V/W). Do not let a magnetic contactor, etc. intervene. Otherwise, it may cause a malfunction.



- The surge absorbing diode installed to the DC relay for control output should be fitted in the specified direction. Otherwise, the emergency stop and other protective circuits may not operate.



- When the cable is not tightened enough to the terminal block, the cable or terminal block may generate heat because of the poor contact. Be sure to tighten the cable with specified torque.
- To avoid a malfunction, do not connect the U, V, W, and CN2 phase terminals of the servo amplifier to the servo motor of an incorrect axis.

(3) Trial run/adjustment

⚠ CAUTION

- Before operation, check the parameter settings. Improper settings may cause some machines to operate unexpectedly.
- Never perform extreme adjustment or changes to the parameters; otherwise, the operation may become unstable.
- Keep away from moving parts in a servo-on state.

(4) Usage

⚠ CAUTION

- Provide an external emergency stop circuit to ensure that operation can be stopped and power switched off immediately.
- Do not disassemble, repair, or modify the equipment.

⚠ CAUTION

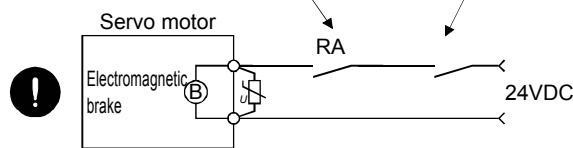
- Before resetting an alarm, make sure that the run signal of the servo amplifier is off in order to prevent a sudden restart. Otherwise, it may cause an accident.
- The effect of electromagnetic interference must be reduced by using a noise filter or by other means. Electromagnetic interference may be given to the electronic equipment used near the servo amplifier.
- Burning or disassembling a servo amplifier may generate toxic gases. Do not burn or break it.
- Use the servo amplifier with the specified servo motor.
- The electromagnetic brake on the servo motor is designed to hold the motor shaft and should not be used for ordinary braking.
- For such reasons as service life and mechanical structure (e.g. where a ball screw and the servo motor are coupled via a timing belt), the electromagnetic brake may not hold the motor shaft. To ensure safety, install a stopper on the machine side.

(5) Corrective actions

⚠ CAUTION

- When it is assumed that a hazardous condition may occur due to a power failure or product malfunction, use a servo motor with an electromagnetic brake or external brake to prevent the condition.
- Configure an electromagnetic brake circuit so that it is activated by an external EMG stop switch.

Contacts must be opened with the ALM (malfunction) off or the MBR (electromagnetic brake interlock) off. Contacts must be opened with the EMG stop switch.



- When any alarm has occurred, eliminate its cause, ensure safety, and deactivate the alarm before restarting operation.
- Provide an adequate protection to prevent unexpected restart after an instantaneous power failure.

(6) Maintenance, inspection and parts replacement

⚠ CAUTION

- With age, the electrolytic capacitor of the servo amplifier will deteriorate. To prevent a secondary accident due to a malfunction, it is recommended that the electrolytic capacitor be replaced at least every 10 years when it is used in general environment. Please contact your local sales office.

(7) General precautions

- To illustrate details, the equipment in the diagrams of this Replacement Manual may have been drawn without covers and safety guards. When the equipment is operated, the covers and safety guards must be installed as specified. Operation must be performed in accordance with Instruction Manual.

● Disposal of Waste ●

When disposing of this product, the following two laws are applicable, and it is necessary to consider each law. In addition, because the following laws are effective only in Japan, local laws have priority outside Japan (overseas). We ask that the local laws be displayed on the final products or that a notice be issued as necessary.

1. Requirements of the Act on the Promotion of Effective Utilization of Resources (Commonly known as: the Law for Promotion of Effective Utilization of Resources Promotion Law)

- (1) Please recycle this product whenever possible when it becomes unnecessary.
- (2) It is recommended that this product be divided as necessary and sold to appropriate purchasers, as recycled resources are usually divided into iron, electrical parts, and so on, which are then sold to scrap processors.

2. Requirements of the Act on Waste Disposal & Cleaning (Commonly known as: The Waste Disposal Treatment Cleaning Act)

- (1) It is recommended to decrease waste through the sale of recyclables or through any other means as shown in the preceding Paragraph 1.
- (2) In case the unnecessary products cannot be sold and require disposal, such item falls under Industrial waste in the above act.
- (3) It is required that industrial waste be properly dealt with, including manifest management, by commissioning the disposal to an industrial waste disposal contractor licensed under the act.
- (4) Please dispose of batteries (primary batteries) used in servo amplifiers according to local regulations.

Measures against servo amplifier harmonics

This servo amplifier applies to "Harmonics control guidelines for customers receiving high voltage or special high voltage power" (published by current Ministry of Economy, Trade and Industry). Consumers subject to this guideline must check if a harmonic suppression measure is necessary, and measures must be enforced when the limit level is exceeded.



EEP-ROM life

The number of write times to the EEP-ROM, which stores parameter settings, etc., is limited to 100,000. If the total number of the following operations exceeds 100,000, the servo amplifier may malfunction when the EEP-ROM reaches the end of its useful life.

- Write to the EEP-ROM due to parameter setting changes
- Write to the EEP-ROM due to device changes

STO function of the servo amplifier

See the applicable "Servo Amplifier Instruction Manual" when using the STO function of the servo amplifier.

Dealing with overseas standards

See the following relevant manuals concerning dealing with overseas standards.

«About the manual»

This Replacement Manual and the following Instruction Manuals are necessary when using this servo for the first time. Ensure to prepare them to use the servo safely.

Relevant manuals

Manual name	Manual number
MELSERVO-J4 Series Instructions and Cautions for Safe Use of AC Servos (Packed with the servo amplifier)	IB(NA)0300175
MELSERVO-J4 Servo Amplifier Instruction Manual (Troubleshooting Edition)	SH(NA)030108
MELSERVO Servo Motor Instruction Manual (Vol. 3) (Note 1)	SH(NA)030099
MELSERVO Linear Servo Motor Instruction Manual (Note 2)	SH(NA)030095
MELSERVO Direct Drive Motor Instruction Manual (Note 3)	SH(NA)030097
MELSERVO Linear Encoder Instruction Manual (Note 2, 4)	SH(NA)030096
EMC Installation Guidelines	IB(NA)67303

- Note 1. It is necessary for using a rotary servo motor.
2. It is necessary for using a linear servo motor.
3. It is necessary for using a direct drive motor.
4. It is necessary for using a fully closed loop system.

«Cables used for wiring»

The wiring cables mentioned in this Replacement Manual are selected based on an ambient temperature of 40°C.

CONTENTS

Part 1: Summary of MR-J2S/MR-J2M Replacement	1-1 to 1-14
--	-------------

1	SUMMARY OF MR-J2S/MR-J2M REPLACEMENT	1-2
2	MAJOR REPLACEMENT TARGET MODEL.....	1-2
2.1	Servo Amplifier Replacement Target Model.....	1-2
2.2	Servo Motor Replacement Target Model	1-2
3	FLOW OF REPLACEMENT	1-3
3.1	Summary	1-3
3.2	Flow of Review on Replacement.....	1-3
3.3	Review on Replacement.....	1-7
3.3.1	Checking the system prior to replacement	1-7
3.3.2	Determination of base replacement model.....	1-8
3.3.3	Attachment compatibility check	1-12
3.3.4	Detailed review on replacement model	1-12
3.3.5	Peripheral equipment check	1-12
3.3.6	Startup procedure check.....	1-12
4	RELATED MATERIALS	1-12
4.1	Catalog	1-12
4.2	Instruction Manual	1-12
4.3	Replacement Manual.....	1-12
4.4	Renewal Tool.....	1-12
4.5	Replacement Tool for Replacing MR-J2S with MR-J4.....	1-13
4.6	MITSUBISHI ELECTRIC FA Global Website	1-13

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_	2-1 to 2-46
--	-------------

1	SUMMARY.....	2-2
2	CASE STUDY ON REPLACEMENT OF MR-J2S- _A_	2-2
2.1	Review on Replacement Method.....	2-2
2.2	Replacement Method	2-2
3	DIFFERENCES BETWEEN MR-J2S- _A_ AND MR-J4- _A_.....	2-4
3.1	Function Comparison Table	2-4
3.2	Function List	2-5
3.3	Comparison of Standard Connection Diagrams.....	2-6
3.4	List of Corresponding Connectors and Terminal Blocks	2-8
3.5	Comparison of Peripheral Equipment	2-13
3.6	Comparison of Parameters.....	2-14
3.6.1	Setting required parameters upon replacement.....	2-14
3.6.2	Parameter comparison list.....	2-16
3.6.3	Comparison of parameter details	2-19
3.7	Important Points for Replacement (Command Pulse Logic Settings).....	2-45

Part 3: Review on Replacement of MR-J2S- _B_ with MR-J4- _B_	3-1 to 3-30
--	-------------

1	SUMMARY.....	3-2
2	CASE STUDY ON REPLACEMENT OF MR-J2S- _B_	3-3
2.1	Review on Replacement Method.....	3-3
2.2	Replacement Method	3-4

3	DIFFERENCES BETWEEN MR-J2S-_B_ AND MR-J4-_B_.....	3-7
3.1	Function Comparison Table	3-7
3.2	Function List	3-7
3.3	Comparison of Networks	3-8
3.3.1	Comparison of servo system network specifications.....	3-8
3.4	Comparison of Standard Connection Diagrams.....	3-10
3.5	List of Corresponding Connectors and Terminal Blocks.....	3-11
3.6	Comparison of Peripheral Equipment	3-14
3.7	Comparison of Parameters.....	3-15
3.7.1	Setting required parameters upon replacement.....	3-16
3.7.2	Parameter comparison list.....	3-17
3.7.3	Comparison of parameter details	3-19
3.8	Important Points for Replacement.....	3-30

Part 4: Review on Replacement of MR-J2S-_CP/CL_ with MR-J4-_A_-RJ	4-1 to 4-48
---	-------------

1	SUMMARY.....	4-2
2	CASE STUDY ON REPLACEMENT OF MR-J2S-_CP/CL_	4-2
2.1	Review on Replacement Method.....	4-2
2.2	Replacement Method	4-2
3	DIFFERENCES	4-4
3.1	Function Comparison Table	4-4
3.2	Function List	4-7
3.3	Comparison of Standard Connection Diagrams.....	4-9
3.4	List of Corresponding Connectors and Terminal Blocks.....	4-11
3.5	Comparison of Peripheral Equipment	4-14
3.6	Comparison of Parameters.....	4-15
3.6.1	Setting required parameters upon replacement.....	4-15
3.6.2	Parameter comparison list.....	4-17
3.6.3	Comparison of parameter details	4-20
3.7	Comparison of Communication Commands.....	4-40

Part 5: Review on Replacement of MR-J2S-30kW or Higher Capacity Models with MR-J4-_DU_5-1 to 5-56	
---	--

1.	FUNCTIONS AND CONFIGURATION.....	5-2
1.1	Difference Between MR-J2S-30kW or Models with Higher Capacity and MR-J4-_DU_	5-2
1.2	Combination of Converter Unit, Drive Unit and Servo Motor	5-3
1.3	Configuration with Peripheral Equipment.....	5-4
1.4	Installation.....	5-6
1.5	Magnetic Contactor Control Connector (CNP1) [Exclusively for MR-J4-_DU_].....	5-8
2	SIGNALS AND WIRING	5-10
2.1	Comparison of Standard Connection Diagrams.....	5-10
2.2	Power-on Sequence	5-15
2.3	List of Corresponding Connectors and Terminal Blocks.....	5-20
3	PARAMETERS.....	5-25
3.1	Comparison of Parameters.....	5-25
4	CHARACTERISTICS.....	5-30
4.1	Capacity of Power Source Facility and Generation Loss.....	5-30
4.2	Inrush Current When Turning On the Main Circuit/Control Circuit Power Supply	5-31
5	OPTIONS AND PERIPHERAL EQUIPMENT.....	5-32
5.1	Comparison Table of Cable Option Combinations.....	5-32
5.1.1	MR-J3CDL05M (0.5 m) Protection Coordination Cable	5-32

5.2	Wire Selection Example	5-33
5.2.1	MR-J2S series power supply wire size.....	5-33
5.2.2	MR-J4 series power supply wire size	5-34
5.3	Selection of No-Fuse Breakers, Fuses, and Magnetic Contactors (example)	5-35
5.3.1	MR-J2S-series, no-fuse breakers and magnetic contactors (recommended)	5-35
5.3.2	MR-J4-series, no-fuse breakers, fuses, and magnetic contactors (recommended)	5-35
5.4	FR-BU2-(H) Brake Unit.....	5-37
5.4.1	Selection	5-37
5.4.2	Parameter setting of brake unit	5-38
5.4.3	Connection example	5-38
5.4.4	Dimensions	5-54
5.5	Comparison of Peripheral Equipment	5-55

Part 6: Review on Replacement of MR-J2M with MR-J4

6-1 to 6-20

1	SUMMARY.....	6-2
2	CASE STUDY ON REPLACEMENT OF MR-J2M	6-2
2.1	Replacement Method	6-2
2.2	Equipment Configuration	6-2
3	DIFFERENCES BETWEEN MR-J2M-A AND MR-J4- _A_	6-3
3.1	Function Comparison Table	6-3
3.1.1	General	6-3
3.2	Comparison of Standard Connection Diagrams.....	6-4
3.3	List of Corresponding Connectors and Terminal Blocks	6-5
3.4	Comparison of Peripheral Equipment	6-8
3.5	Comparison of Parameters.....	6-8
3.5.1	Parameter comparison list.....	6-8
4	DIFFERENCES BETWEEN MR-J2M-B AND MR-J4- _B_	6-11
4.1	Review on Replacement Method.....	6-11
4.2	Replacement Method	6-12
4.3	Function Comparison Table	6-13
4.4	Comparison of Standard Connection Diagrams.....	6-14
4.5	List of Corresponding Connectors and Terminal Blocks	6-15
4.6	Comparison of Peripheral Equipment	6-16
4.7	Comparison of Parameters.....	6-17
4.7.1	Parameter comparison list.....	6-17

Part 7: Common Reference Material
--

7-1 to 7-78

1	SPECIFICATION DIFFERENCES.....	7-2
1.1	Detailed Specification/Function Differences.....	7-2
1.2	Servo Amplifier	7-6
1.2.1	Main circuit terminal block	7-6
1.2.2	Comparison of encoder signals (CN2)	7-9
1.2.3	Dynamic brake: coasting distance.....	7-10
1.2.4	Forced stop deceleration function selection	7-16
1.2.5	24VDC power supply for interface: built-in ⇒outside supply requirement.....	7-17
1.2.6	Servo setup software: MR Configurator ⇒MR Configurator2.....	7-18
1.2.7	Communication I/F: RS232C ⇒USB.....	7-18
1.2.8	Servo amplifier initializing time	7-19
1.2.9	The pulse width of the encoder Z-Phase pulse	7-21

2	SERVO AMPLIFIER DIMENSIONS/ATTACHMENT DIFFERENCES	7-22
2.1	MR-J2S ⇒MR-J4 Comparison Table of Servo Amplifier Dimensions/Installation Differences ..	7-22
2.1.1	200V class (22 kW or less A/B-Type).....	7-22
2.1.2	100V class (0.4 kW or less A/B-Type).....	7-22
2.1.3	200V class (7 kW or less CP/CL-Type).....	7-23
2.1.4	100V class (0.4 kW or less CP/CL-Type).....	7-23
2.1.5	200V class (30 kW or less A/B-Type).....	7-27
2.1.6	400V class (22 kW or less A/B-Type).....	7-29
2.1.7	400V class (30 kW or less A/B-Type).....	7-32
2.2	MR-J2M- ⇒MR-J4- Comparison Table of Servo Amplifier Dimensions/Installation Differences ...	7-35
2.3	Parameter Conversion	7-39
2.3.1	Operation procedure of parameter conversion.....	7-39
2.3.2	MR-J2S- _A/CP/CL parameter diversion procedure	7-40
2.3.3	Parameter reading from the servo amplifier MR- J2S- _A/CP/CL_.....	7-41
2.3.4	Converting the parameters of MR- J2S- _A/CP/CL_ and writing them to the MR-J4- _A_ servo amplifier	7-43
2.3.5	Conversion rules	7-47
2.3.6	Parameters that need to be checked after parameter conversion	7-59
2.4	MR-J2S- _B_ Parameter Diversion Procedure	7-60
2.4.1	Changing QD75M to QD77MS/LD77MS	7-61
2.4.2	Changing A/QN motion to QDS motion/stand alone motion	7-63
2.4.3	Conversion rules (MR-J2S- _B_ => MR-J4- _B_).....	7-65
2.4.4	Parameters that need to be checked after parameter conversion	7-69
3.	COMMON POINTS TO NOTE.....	7-70
3.1	Points to Note When Replacing a Battery	7-70
3.1.1	Servo amplifier battery mounting method.....	7-71
3.1.2	Disassembly method	7-72
3.1.3	Replacement procedure of MR-BAT6V1SET built-in battery	7-72
4	HC/HA MOTOR DRIVE	7-73
4.1	Parameter Setting.....	7-73
4.2	Corresponding Software Version	7-74
4.2.1	Method for checking the software version	7-77
4.3	Overload Characteristics (Important Points for Combining the drive unit MR-J4-DU55K_4 and HA-LFS motor) ..	7-78

Part 8: Review on Replacement of Motor
--

8-1 to 8-68

1	SERVO MOTOR REPLACEMENT	8-2
1.1	Servo Motor Substitute Model and Compatibility	8-2
2	COMPARISON OF SERVO MOTOR SPECIFICATIONS	8-12
2.1	Comparison of Servo Motor Mounting Dimensions.....	8-12
2.2	Detailed Comparison of Servo Motor Mounting Dimensions	8-16
2.3	Comparison of Mounting Dimensions for Geared Servo Motors	8-18
2.4	Comparison of Actual Reduction Ratios for Geared Servo Motors.....	8-24
2.5	Comparison of Moment of Inertia	8-25
2.6	Comparison of Servo Motor Connector Specifications	8-36
2.7	Comparison of Servo Motor Torque Characteristics	8-53

1	COMPARISON TABLE OF REGENERATIVE OPTION COMBINATIONS	9-2
1.1	Regenerative Options (200V/100V)	9-3
1.1.1	Combination and regenerative power for the MR-J2S series	9-3
1.1.2	Combination and regenerative power for the MR-J2M series	9-3
1.1.3	Combination and regenerative power for the MR-J4 series (replacement model).....	9-4
1.2	External Form Comparison.....	9-5
1.3	Regenerative Options (400 V class).....	9-6
1.3.1	Combination and regenerative power for the MR-J2S series	9-6
1.3.2	Combination and regenerative power for the MR-J4 series (replacement model).....	9-7
1.4	External Form Comparison.....	9-8
2	COMPARISON TABLE OF DYNAMIC BRAKE OPTION COMBINATIONS.....	9-10
2.1	External Form Comparison.....	9-11
3	COMPARISON TABLE OF CABLE OPTION COMBINATIONS	9-12
4	POWER SUPPLY WIRE SIZE.....	9-13
4.1	Selection of Power Supply Wire Size (Example).....	9-13
4.1.1	MR-J2S series power supply wire size.....	9-13
4.1.2	MR-J4 series power supply wire size	9-14
4.2	Selection Example of Crimp Terminals	9-16
4.2.1	MR-J2S-series crimp terminal	9-16
4.2.2	MR-J4-series crimp terminal.....	9-17
4.3	Selection of Molded-Case Circuit Breaker, Fuse, and Magnetic Contactor (Example)	9-18
4.3.1	MR-J2S series, molded-case circuit breakers, fuses, and magnetic contactors	9-18
4.3.2	MR-J4 series, molded-case circuit breakers, fuses, and magnetic contactors (recommended).....	9-19
5	BATTERY	9-21
5.1	MR-J2S-Series Battery	9-21
5.1.1	Battery Replacement Procedure	9-21
5.2	MR-J2M-Series Battery Unit.....	9-21
5.3	MR-J4-Series Battery	9-22
5.3.1	Battery replacement procedure	9-22
5.3.2	When using the MR-BAT6V1SET battery	9-23
5.3.3	When using MR-BAT6V1BJ battery for junction battery cable.....	9-24
5.3.4	When using MR-BT6VCASE battery case	9-25
6	EMC FILTER.....	9-26
6.1	MR-J2S-Series EMC Filter (200 V/100 V class).....	9-26
6.1.1	Dimensions	9-26
6.2	MR-J2S-Series EMC Filter (400 V class).....	9-28
6.2.1	Dimensions	9-28
6.3	MR-J4-Series EMC Filter (Recommended) (200 V class)	9-30
6.3.1	Connection example	9-30
6.3.2	Dimensions	9-31
6.4	MR-J4-Series EMC Filter (Recommended) (400 V class)	9-33
6.4.1	Combination with the servo amplifier.....	9-33
6.4.2	Connection example	9-33
6.4.3	Dimensions	9-33

7	POWER FACTOR IMPROVING AC REACTOR/POWER FACTOR IMPROVING DC REACTOR ..	9-35
7.1	MR-J2S-Series Power Factor Improving AC Reactor (200 V/100 V class)	9-35
7.2	MR-J2S-Series Power Factor Improving DC Reactor (200 V class).....	9-36
7.3	MR-J2S-Series Power Factor Improving AC Reactor (400 V class).....	9-37
7.4	MR-J2S-Series Power Factor Improving DC Reactor (400V class).....	9-38
7.5	MR-J4-Series Power Factor Improving DC Reactor (200 V class).....	9-39
7.6	MR-J4-Series Power Factor Improving AC Reactor (200 V/100 V class).....	9-41
7.7	MR-J4-Series Power Factor Improving DC Reactor (400 V class).....	9-43
7.8	MR-J4-Series Power Factor Improving AC Reactor (400 V class)	9-45
8	MR CONFIGURATOR	9-47
8.1	MR-J2S-Series MR Configurator (Setup Software)	9-47
8.1.1	Specifications.....	9-47
8.2	MR-J4-Series MR Configurator2	9-47
8.2.1	Specifications.....	9-47
8.3	System Requirements	9-48
8.3.1	Components.....	9-48
8.3.2	Connection with servo amplifier.....	9-49
8.3.3	Points to note for use of the USB communication function	9-49

Part 10: Startup Procedure Manual	10-1 to 10-2
-----------------------------------	--------------

1	STARTUP	10-2
1.1	Switching power on for the first time.....	10-2
1.1.1	Startup procedure	10-2

Appendix 1 Summary of MR-J4_B_-RJ020 + MR-J4-T20	Appendix 1-1 to Appendix 1-62
--	-------------------------------

1	SUMMARY	Appendix 1-2
1.1	Features.....	Appendix 1-2
1.1.1	Servo amplifier connectable to SSCNET-supportable controller	Appendix 1-2
1.1.2	SSCNET conversion unit "MR-J4-T20"	Appendix 1-2
2	DIFFERENCES BETWEEN MR-J2S-_B_ AND MR-J4-_B_-RJ020	Appendix 1-3
2.1	Function Comparison Table	Appendix 1-3
3	SYSTEM CONFIGURATION.....	Appendix 1-4
4	I/O SIGNAL CONNECTION EXAMPLE	Appendix 1-5
5	PARAMETERS	Appendix 1-7
6	RS-232C COMMUNICATION CABLE.....	Appendix 1-8
7	LIST OF SERVO MOTOR COMBINATIONS AND S/W VERSIONS FOR HC SERIES AND HA SERIES ...	Appendix 1-9
8	SAFETY PRECAUTIONS.....	Appendix 1-12
8.1	Replacing MR-J2S-_B_ Servo Amplifier with MR-J4-_B_-RJ020 Servo Amplifier	Appendix 1-12
8.2	Differences from MR-J2S Series	Appendix 1-14
9	ALARM.....	Appendix 1-17
9.1	Alarm/Warning List	Appendix 1-17
10	DIMENSIONS.....	Appendix 1-18
10.1	Comparison of Dimensions.....	Appendix 1-18
10.2	Dimensions	Appendix 1-19
10.2.1	Servo amplifier	Appendix 1-19
10.2.2	Dimensions (MR-J4-T20).....	Appendix 1-20
10.2.3	Dimensions (MR-J4-_B_-RJ020 + MR-J4-T20)	Appendix 1-21

11	MODE SWITCHING METHOD	Appendix 1-29
11.1	Mode Switching Method from J2S Compatibility Mode to J4 Mode	Appendix 1-29
11.2	Mode Switching Method from J4 Mode to J2S Compatibility Mode	Appendix 1-30
12	OPTIONS AND PERIPHERA; EQUIPMENT	Appendix 1-31
12.1	Encoder Cable Combination	Appendix 1-31
12.2	Encoder Cable List.....	Appendix 1-32
12.3	Details on Encoder Cable	Appendix 1-33
12.4	Large Capacity Servo Cable Connector Set.....	Appendix 1-41
12.4.1	Cable connector set combination	Appendix 1-41
12.4.2	MR-J3CDL05M (0.5 m) protection coordination cable	Appendix 1-42
12.5	Regenerative Options	Appendix 1-43
12.5.1	Regenerative option combinations	Appendix 1-43
12.5.2	Regenerative option selection.....	Appendix 1-47
12.5.3	Parameter setting.....	Appendix 1-49
12.5.4	Connecting regenerative options	Appendix 1-50
12.6	External Dynamic Brake	Appendix 1-55
13	SETTING PARAMETERS ADDED ON MR-J4-_B_-RJ020 SERVO AMPLIFIER.....	Appendix 1-56
13.1	Combination of Motion Controller and Peripheral Software	Appendix 1-56
13.2	Parameter Setting Procedure	Appendix 1-56
13.2.1	For MELSOFT MT Works2	Appendix 1-56
13.2.2	For MT Developer (software version 00W or later)	Appendix 1-59
13.2.3	For MT Developer (software version 00V or earlier) or SW3RNC-GSV.....	Appendix 1-61

Appendix 2 Introduction to Renewal Tool

Appendix 2-1 to Appendix 2-110

1	SUMMARY.....	Appendix 2-2
1.1	Compatible Models.....	Appendix 2-2
1.2	Features.....	Appendix 2-2
1.2.1	MR-J2S-_A_ renewal tool/MR-J2S-_CP_ renewal tool.....	Appendix 2-3
1.2.2	MR-J2S-_B_ renewal tool.....	Appendix 2-4
1.3	Renewal Tool Product Names.....	Appendix 2-12
1.4	Renewal Tool Configuration	Appendix 2-14
2	RENEWAL TOOL PRODUCT LIST.....	Appendix 2-16
3	BASIC CONFIGURATION.....	Appendix 2-18
3.1	Important Points to Note When Replacing	Appendix 2-18
3.2	Selection of Products.....	Appendix 2-19
3.2.1	Replacement selection flow	Appendix 2-19
4	REPLACEMENT COMBINATION LIST	Appendix 2-21
4.1	A Type Replacement Combination List (200 V Class).....	Appendix 2-21
4.2	B Type Replacement Combination List (200 V Class).....	Appendix 2-33
4.3	CP Type Replacement Combination List (200 V Class)	Appendix 2-45
4.4	A Type Replacement Combination List (400 V Class).....	Appendix 2-57
4.5	B Type Replacement Combination List (400 V Class).....	Appendix 2-61
5	RENEWAL TOOL CONNECTION DIAGRAM.....	Appendix 2-66
5.1	SC-J2SJ4(CP)KT02K to 3K.....	Appendix 2-66
5.2	SC-J2S(CP)J4KT5K	Appendix 2-68
5.3	SC-J2S(CP)J4KT7K	Appendix 2-70
5.4	SC-J2SJ4KT15K, 22K	Appendix 2-72
5.5	SC-J2SBJ4KT02K to 3K.....	Appendix 2-74
5.6	SC-J2SBJ4KT5K	Appendix 2-76
5.7	SC-J2SBJ4KT7K	Appendix 2-78
5.8	SC-J2SBJ4KT15K, 22K.....	Appendix 2-80

6	SPECIFICATIONS	Appendix 2-82
6.1	Standard Specifications	Appendix 2-82
6.2	Terminal Block Specifications.....	Appendix 2-82
6.3	Recommended 24 V DC Power Supply Specifications for Interface	Appendix 2-83
7	PARAMETER SETTING.....	Appendix 2-84
7.1	List of A Type Setting Requisite Parameters.....	Appendix 2-84
7.2	List of B Type Setting Requisite Parameters.....	Appendix 2-87
7.3	List of CP type Setting Requisite Parameters	Appendix 2-87
8	DIMENSIONS	Appendix 2-89
8.1	Renewal Kit.....	Appendix 2-89
8.2	Conversion Cable	Appendix 2-106
8.2.1	Conversion cable on the amplifier side.....	Appendix 2-106
8.2.2	Power supply conversion cable on the motor side	Appendix 2-108
8.2.3	Encoder conversion cable on the motor side	Appendix 2-109
8.2.4	Conversion cable for the cooling fan on the motor side	Appendix 2-109

Part 1
Summary of
MR-J2S/MR-J2M Replacement

Part 1: Summary of MR-J2S/MR-J2M Replacement

This document describes the review items for replacing MR-J2S with MR-J4 and MR-J2M with MR-J4. Some equipment may require review on items not described in this document. Please review those items after viewing the Instruction Manual and the catalogs.

Part 1: Summary of MR-J2S/MR-J2M Replacement

1 SUMMARY OF MR-J2S/MR-J2M REPLACEMENT

In this document, the flow when replacing a system using the MELSERVO "MR-J2S/MR-J2M" with the "MR-J4 series" is explained.

After deciding the replacement strategy, please proceed with replacement by referring to the corresponding parts of this manual and the manual for each model.

2 MAJOR REPLACEMENT TARGET MODEL

2.1 Servo Amplifier Replacement Target Model

Series	Servo amplifier model		Series	Servo amplifier Model
MR-J2S Series	MR-J2S-_A_	→	MR-J4 Series	MR-J4-_A_
	MR-J2S-_B_			MR-J4-_B_
	MR-J2S-_CP_			MR-J4-_A_-RJ
	MR-J2S-_CL_			
MR-J2M Series	MR-J2M-P8A+ MR-J2M-_DU			MR-J4-_A_
	MR-J2M-P8B+ MR-J2M-_DU			MR-J4-_B_

2.2 Servo Motor Replacement Target Model

		Series	Servo motor model		Series	Servo motor model		
Small capacity	Low inertia	HC Series	HC-KFS_	→	HG Series	HG-KR_		
	Ultra-low inertia		HC-MFS_			HG-MR_		
	Flat		HC-UFS_			HG-KR_		
Medium capacity	medium inertia		HC-SFS_			HG-SR_		
	Low inertia		HC-LFS_			HG-JR_		
	Ultra-low inertia		HC-RFS_			HG-RR_		
	Flat		HC-UFS_			HG-UR_		
Large capacity	Low inertia		HA Series			HA-LFS_		HG-JR_

Note. For details, see "Part 8: Review on Replacement of Motor".

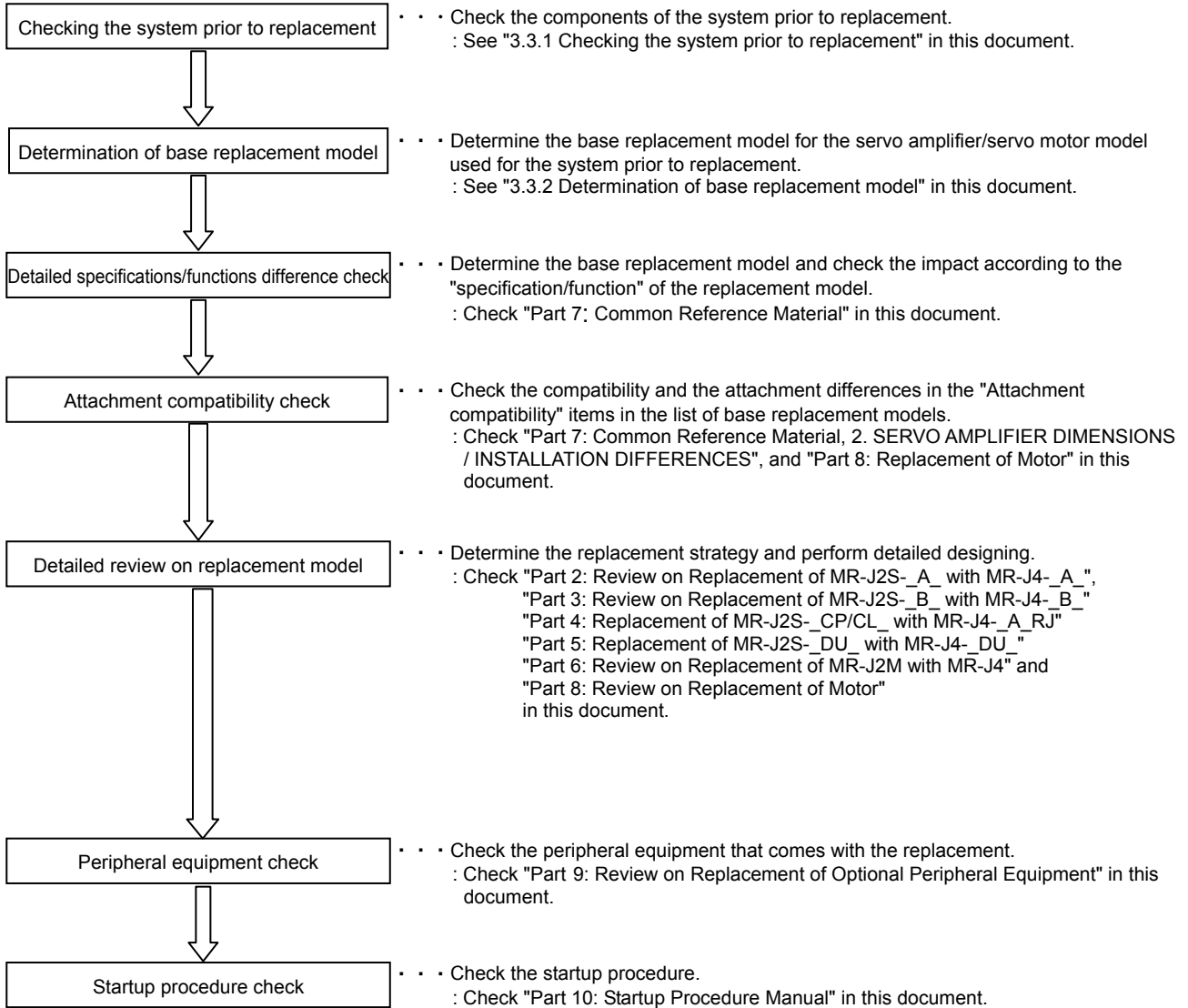
Part 1: Summary of MR-J2S/MR-J2M Replacement

3 FLOW OF REPLACEMENT

3.1 Summary

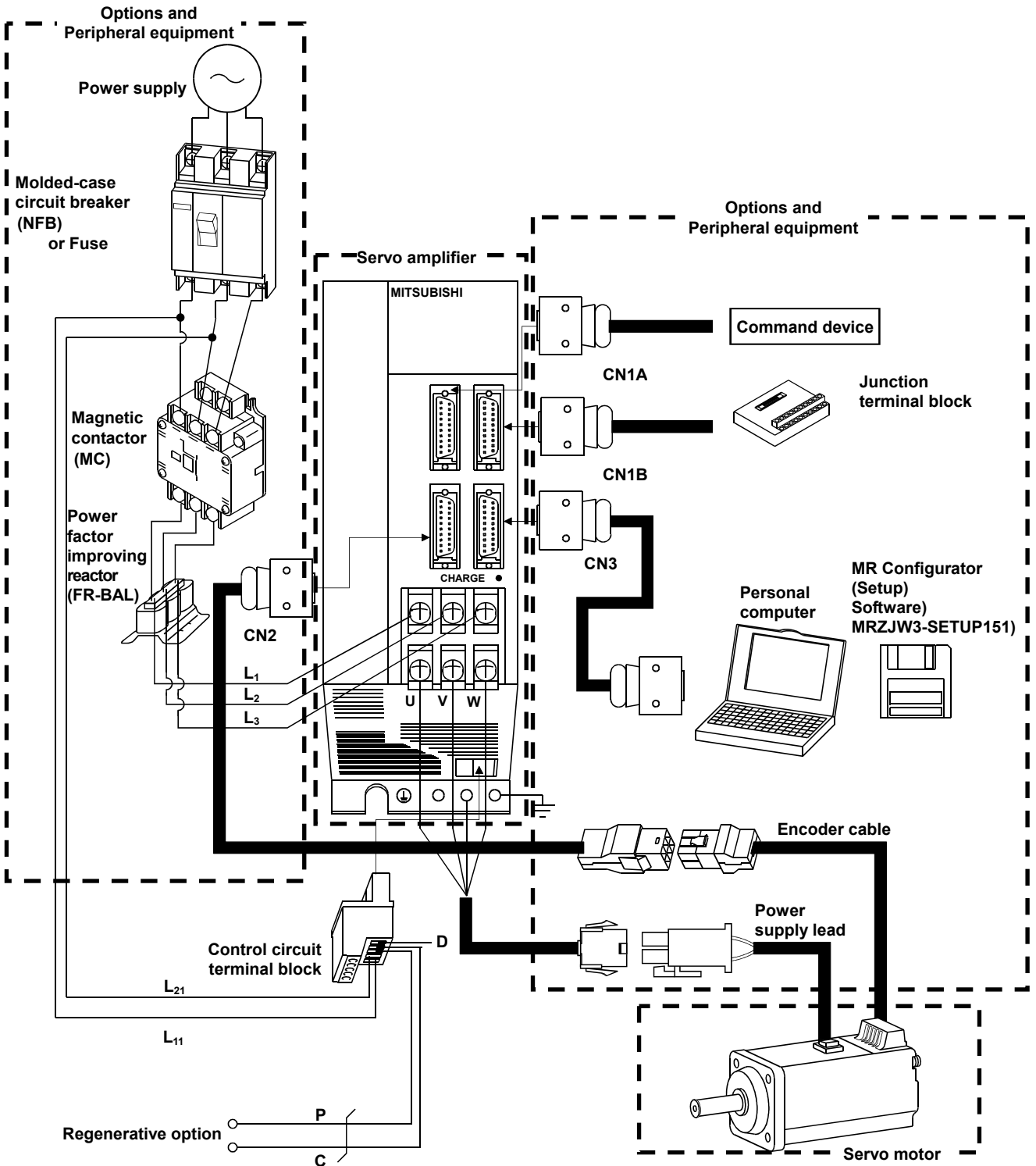
This section describes the flow of replacement when replacing a system using the MR-J2S/MR-J2M series with a system using the MR-J4 series.

3.2 Flow of Review on Replacement



Part 1: Summary of MR-J2S/MR-J2M Replacement

The following displays the review items when replacing MR-J2S with MR-J4 using MR-J2S-60A as an example case.



Part 1: Summary of MR-J2S/MR-J2M Replacement

Changes	Check items	Impact	Reference document/items
Servo amplifier	Connector	Connector shape, pin arrangement, signal abbreviation, and location are different.	Part 2, Section 3.4 Part 3, Section 3.5 Part 6, Section 3.3 Part 7, Section 1.2.2
	Terminal block	Terminal block shape, location, and method of drawing out wires are different.	Part 7, Section 1.2.1
	P3, P4 terminals	MR-J4 servo amplifier has P3 and P4 in the upstream of the inrush current suppression circuit. Note that the locations of the P1 and P terminals of MR-J2S-11K_ to MR-J2S-22K_ are different.	Part 7, Section 1.2.1
	Z-phase	Pulse width and start-up timing of the encoder Z phase pulse signal (OP) output from the servo amplifier are different.	Part 7, Section 1.2.9
	Parameter	Parameter numbers and contents are different. In addition, using the parameter converter function of MR Configurator2, GX Works2, and MT Developer2, it is possible to transfer the setup contents of the MR-J2S parameters to MR-J4.	Part 2, Section 3.6 Part 3, Section 3.7 Part 6, Section 3.5 Part 7, Chapter 3
	Dimensions	The height and width of the MR-J4 is equal to or less than that of the MR-J2S series. Check regarding room for wiring. (Note that the depth is larger for 400/600 W.)	Part 7, Chapter 2
	Interface 24VDC power supply	For MR-J4, an external 24VDC power supply is required for the interface.	Part 7, Section 1.2.5
	Dynamic brake coasting distance	The servo motor has a different dynamic brake coasting distance.	Part 7, Section 1.2.3
	Communication function	MR-J4 has no RS-232C. MR-J4 has the following communication functions. MR-J4-_A_: USB, RS-422 MR-J4-_B_: USB	Part 7, Section 1.2.7
	Forced stop deceleration	When MR-J4 is forcibly stopped in a factory setting and when an alarm occurs, the servo motor decelerates and stops. The way the servo motor stops is different from when the MR-J2S emergency stop or forced stop is effective.	MR-J4-_A_ Servo Amplifier Instruction Manual Chapter 5 Section 1.2.4 MR-J4-_B_ Servo Amplifier Instruction Manual
	Initializing time	The time it takes to reach servo-on from power-on is different.	Part 7, Section 1.2.8
	LED display	MR-J2S-_B_ has a 7-segment 2-digit LED display and MR-J4-_B_ has a 7-segment 3-digit display.	MR-J4-_B_ Servo Amplifier Instruction Manual
	Built-in regenerative resistor	Note that replacing MR-J2S-60_4 and MR-J2S-100_4 with MR-J4-60_4 and MR-J4-100_4 respectively changes the regenerative ability.	Part 9, Section 1.1
Options and peripheral equipment	Molded-case circuit breaker Fuse	Those for MR-J2S may not be usable. Select those for MR-J4.	Part 9, Section 4.3
	Magnetic contactor	Those for MR-J2S may not be usable. Select those for MR-J4.	Part 9, Section 4.3
	Power factor improving AC reactor	Those for MR-J2S may not be usable. FR-HAL is recommended.	Part 9, Section 7.1 Part 9, Section 7.3 Part 9, Section 7.6 Part 9, Section 7.8
	Power factor improving DC reactor	Those for MR-J2S may not be usable. FR-HEL is recommended.	Part 9, Section 7.2 Part 9, Section 7.4 Part 9, Section 7.5 Part 9, Section 7.7
	Regenerative option	Some regenerative options cannot be used for MR-J4.	Part 9, Chapter 1
	MR Configurator	MR Configurator cannot be used for MR-J4. Use MR Configurator2.	Part 9, Chapter 8
	Battery	Use MR-BAT6V1SET for MR-J4.	Part 7, Chapter 4 Part 9, Chapter 5
	Encoder cable	Replace the encoder cable because the shape of the CN2 connector is different. (Note 1)	Part 7, Section 1.2.2 Part 9, Chapter 3
	Wire	An HIV wire is recommended for MR-J4. Therefore, when HIV wires are not used for those already laid, use the renewal tool.	Part 9, Chapter 4
	Dynamic brakes	Some dynamic brakes cannot be used for MR-J4.	Part 9, Chapter 2
	EMC filter	The recommended EMC filter is different.	Part 9, Chapter 6
	Heatsink protrusion attachment	It will not be available with MR-J4.	Part 7, Chapter 2

Part 1: Summary of MR-J2S/MR-J2M Replacement

Changes	Check items	Impact	Reference document/items
Servo motor	Mounting compatibility	Some models have no mounting compatibility.	Part 8, Section 1.1
	Oil seal	Although HC-SFS, HC-UFS and HA-LFS series have an oil seal, substitute models do not come with an oil seal. Use models having an oil seal when necessary.	Part 8, Section 1.1
	Dimensions	The total length may differ depending on models.	Part 8, Section 2.1 Part 8, Section 2.2 Part 8, Section 2.3
	Reducer	The HG motor has no G2-type reducer for high precision applications. In addition, the actual reduction ratio of HC-KFS and HC-MFS series G1 types may differ from that of HG-KR series G1 types depending on models.	Part 8, Section 2.3 Part 8, Section 2.4
	Moment of inertia	The moment of inertia of the HC/HA motor may differ from that of the HG motor depending on models. (Note 2)	Part 8, Section 2.5
	Load to motor inertia ratio	The range of the load to motor inertia ratio for the servo motor may differ between the HC/HA motor and the HG motor depending on models.	Part 8, Section 2.5
	Connector	The power connector, encoder connector, and electromagnetic brake connector may differ from one another in shape.	Part 8, Section 2.6
	Torque characteristics	The torque characteristics of the HC/HA motor may differ from those of the HG motor.	Part 8, Section 2.7
	Rated speed/maximum speed	The Rated speed/maximum speed of the HC/HA motor may differ from those of the HG motor.	Servo Motor Instruction Manual (Vol. 3)
	Thermal sensor	For HG-JR 1000 r/min series of 15 kW or more and HG-JR 1500 r/min series of 22 kW or more, the thermal sensor is replaced with a thermistor. For HG-JR 1000 r/min series of 12 kW or less and HG-JR 1500 r/min series of 15 kW or less, the thermal sensor is removed.	Servo Motor Instruction Manual (Vol. 3)
	Encoder resolution	The encoder resolution differs as follows. HC/HA motor: 131,072 pulses/rev HG motor: 4,194,304 pulses/rev	Servo Motor Instruction Manual (Vol. 3)
Controller (B type only)	The SSCNET positioning module and motion controller need to be replaced with the SSCNET III/H positioning module and motion controller. When using an existing controller, see "[Appendix 1] MR-J4- _B_ -RJ020+MR-J4-T20".	Replacement Manual for replacing the A17nSHCPUN/A173UHCP U series with the Q series	

Note 1. Use the renewal tool if using an existing encoder cable (including options).

(See "[Appendix 2] Introduction to Renewal Tool".)

For HA-LFS 1000 r/min series of 15 kW or more, HA-LFS 1500 r/min series of 22 kW or more, and HA-LFS 2000 r/min series of 30 kW or more, their substitute models have different thermal wiring from them. A new encoder cable is required when using the substitutes.

2. This may change the motor inertia, making it necessary to adjust the servo gain.

Part 1: Summary of MR-J2S/MR-J2M Replacement

3.3 Review on Replacement

3.3.1 Checking the system prior to replacement

Check the components of the system prior to replacement.

Category	Controller model	Amplifier model	"Reference items" in this document	Remarks
Positioning module	QD75P(D)	MR-J2S-_A_	⇒ (1) MR-J2S series "Part 2: Review on Replacement of MR-J2S-_A_ with MR-J4-_A_"	Positioning control
	A1SD75P(D)	MR-J2M-_A_		
Controller from another company	Controller from another company	MR-J2S-_A_ MR-J2M-_A_	⇒ (2) MR-J2M series "Part 6: Review on Replacement of MR-J2M with MR-J4"	Speed, torque limit
No controller connected	No controller	MR-J2S-_A_ MR-J2M-_A_	⇒	
SSCNET Positioning module	QD75M	MR-J2S-_B_	⇒ (1) MR-J2S series "Part 3: Review on Replacement of MR-J2S-_B_ with MR-J4-_B_"	Positioning control
	A1SD75M	MR-J2M-_B_		
SSCNET Motion controller	Q17_CPUN	MR-J2S-_B_	⇒ (2) MR-J2M series "Part 6: Review on Replacement of MR-J2M with MR-J4"	Positioning control
	A17_SHCPU	MR-J2M-_B_		
	A273UHCPU			
Built-in positioning function		MR-J2S-_CP_	⇒ (1) MR-J2S series "Part 4: Replacement of MR-J2S-_CP/CL_ with MR-J4-_A_"	Built-in positioning function
Built-in program operation function		MR-J2S-_CL_	⇒	Built-in program operation function

Part 1: Summary of MR-J2S/MR-J2M Replacement

3.3.2 Determination of base replacement model

(1) Models for replacement between MR-J2S and MR-J4

Shown below are the base replacement models with the assumption that both the amplifier and motor will be replaced as a set.

Series	model	Replacement model (example)	Attachment compatibility (○: Compatible)	Note
200VAC General-purpose interface	MR-J2S-10A	MR-J4-10A	○	See "Part 7: Common Reference Material".
	MR-J2S-20A	MR-J4-20A	○	
	MR-J2S-40A	MR-J4-40A	○	
	MR-J2S-60A	MR-J4-60A	○	
	MR-J2S-70A	MR-J4-70A	○	
	MR-J2S-100A	MR-J4-100A	○	
	MR-J2S-200A	MR-J4-200A	(Note 1)	
	MR-J2S-350A	MR-J4-350A	(Note 1)	
	MR-J2S-500A	MR-J4-500A	(Note 1)	
	MR-J2S-700A	MR-J4-700A	(Note 1)	
	MR-J2S-11KA	MR-J4-11KA	(Note 1)	
	MR-J2S-15KA	MR-J4-15KA	(Note 1)	
	MR-J2S-22KA	MR-J4-22KA	(Note 1)	
	MR-J2S-30KA +MR-HP30KA	MR-J4-DU30KA +MR-CR55K	(Note 2)	
MR-J2S-37KA +MR-HP30KA	MR-J4-DU37KA +MR-CR55K	(Note 2)		
200VAC SSCNET Interface	MR-J2S-10B	MR-J4-10B	○	
	MR-J2S-20B	MR-J4-20B	○	
	MR-J2S-40B	MR-J4-40B	○	
	MR-J2S-60B	MR-J4-60B	○	
	MR-J2S-70B	MR-J4-70B	○	
	MR-J2S-100B	MR-J4-100B	○	
	MR-J2S-200B	MR-J4-200B	(Note 1)	
	MR-J2S-350B	MR-J4-350B	(Note 1)	
	MR-J2S-500B	MR-J4-500B	(Note 1)	
	MR-J2S-700B	MR-J4-700B	(Note 1)	
	MR-J2S-11KB	MR-J4-11KB	(Note 1)	
	MR-J2S-15KB	MR-J4-15KB	(Note 1)	
	MR-J2S-22KB	MR-J4-22KB	(Note 1)	
	MR-J2S-30KB +MR-HP30KA	MR-J4-DU30KB +MR-CR55K	(Note 2)	
MR-J2S-37KB +MR-HP30KA	MR-J4-DU37KB +MR-CR55K	(Note 2)		

Note 1. These replacement models do not have compatibility in mounting. Use the mounting plate holes of Renewal Tool.

The amplifier capacity may differ depending on which motor is combined with the amplifier.

2. These replacement models do not have compatibility in mounting. The mounting plate will be available in the future to have the compatibility.

(Contact Mitsubishi Electric System & Service Co., Ltd. regarding the release date of the renewal tool.)

Part 1: Summary of MR-J2S/MR-J2M Replacement

Series	model	Replacement model (example)	Attachment compatibility (○: Compatible)	Note
400VAC General-purpose interface	MR-J2S-60A4	MR-J4-60A4	(Note)	See "Part 7: Common Reference Material".
	MR-J2S-100A4	MR-J4-100A4	(Note)	
	MR-J2S-200A4	MR-J4-200A4	(Note)	
	MR-J2S-350A4	MR-J4-350A4	(Note)	
	MR-J2S-500A4	MR-J4-500A4	○	
	MR-J2S-700A4	MR-J4-700A4	(Note)	
	MR-J2S-11KA4	MR-J4-11KA4	(Note)	
	MR-J2S-15KA4	MR-J4-15KA4	(Note)	
	MR-J2S-22KA4	MR-J4-22KA4	(Note)	
	MR-J2S-30KA4 +MR-HP55KA4	MR-J4-DU30KA4 +MR-CR55K4	(Note)	
	MR-J2S-37KA4 +MR-HP55KA4	MR-J4-DU37KA4 +MR-CR55K4	(Note)	
	MR-J2S-45KA4 +MR-HP55KA4	MR-J4-DU45KA4 +MR-CR55K4	(Note)	
	MR-J2S-55KA4 +MR-HP55KA4	MR-J4-DU55KA4 +MR-CR55K4	(Note)	
400VAC SSCNET Interface	MR-J2S-60B4	MR-J4-60B4	(Note)	
	MR-J2S-100B4	MR-J4-100B4	(Note)	
	MR-J2S-200B4	MR-J4-200B4	(Note)	
	MR-J2S-350B4	MR-J4-350B4	(Note)	
	MR-J2S-500B4	MR-J4-500B4	○	
	MR-J2S-700B4	MR-J4-700B4	(Note)	
	MR-J2S-11KB4	MR-J4-11KB4	(Note)	
	MR-J2S-15KB4	MR-J4-15KB4	(Note)	
	MR-J2S-22KB4	MR-J4-22KB4	(Note)	
	MR-J2S-30KB4 +MR-HP55KA4	MR-J4-DU30KB4 +MR-CR55K4	(Note)	
	MR-J2S-37KB4 +MR-HP55KA4	MR-J4-DU37KB4 +MR-CR55K4	(Note)	
	MR-J2S-45KB4 +MR-HP55KA4	MR-J4-DU45KB4 +MR-CR55K4	(Note)	
	MR-J2S-55KB4 +MR-HP55KA4	MR-J4-DU55KB4 +MR-CR55K4	(Note)	
100VAC General-purpose interface	MR-J2S-10A1	MR-J4-10A1	○	
	MR-J2S-20A1	MR-J4-20A1	○	
	MR-J2S-40A1	MR-J4-40A1	○	
100VAC SSCNET Interface	MR-J2S-10B1	MR-J4-10B1	○	
	MR-J2S-20B1	MR-J4-20B1	○	
	MR-J2S-40B1	MR-J4-40B1	○	

Note. These replacement models do not have compatibility in mounting. The mounting plate will be available in the future to have the compatibility.

(Contact Mitsubishi Electric System & Service regarding the release date of the renewal tool.)

Part 1: Summary of MR-J2S/MR-J2M Replacement

Series	model	Replacement model (example)	Attachment compatibility (○: Compatible)	Note
200VAC Built-in positioning function	MR-J2S-10CP	MR-J4-10A-RJ (Note 2)	○	See "Part 7: Common Reference Material".
	MR-J2S-20CP	MR-J4-20A-RJ (Note2)	○	
	MR-J2S-40CP	MR-J4-40A-RJ (Note2)	○	
	MR-J2S-60CP	MR-J4-60A-RJ (Note2)	○	
	MR-J2S-70CP	MR-J4-70A-RJ (Note2)	○	
	MR-J2S-100CP	MR-J4-100A-RJ (Note2)	○	
	MR-J2S-200CP	MR-J4-200A-RJ (Note2)	(Note 1)	
	MR-J2S-350CP	MR-J4-350A-RJ (Note2)	(Note 1)	
	MR-J2S-500CP	MR-J4-500A-RJ (Note2)	(Note 1)	
	MR-J2S-700CP	MR-J4-700A-RJ (Note2)	(Note 1)	
100VAC Built-in positioning function	MR-J2S-10CP1	MR-J4-10A1-RJ (Note2)	○	
	MR-J2S-20CP1	MR-J4-20A1-RJ (Note2)	○	
	MR-J2S-40CP1	MR-J4-40A1-RJ (Note2)	○	
200VAC Built-in program operation function	MR-J2S-10CL	MR-J4-10A-RJ (Note2)	○	
	MR-J2S-20CL	MR-J4-20A-RJ (Note2)	○	
	MR-J2S-40CL	MR-J4-40A-RJ (Note2)	○	
	MR-J2S-60CL	MR-J4-60A-RJ (Note2)	○	
	MR-J2S-70CL	MR-J4-70A-RJ (Note2)	○	
	MR-J2S-100CL	MR-J4-100A-RJ (Note2)	○	
	MR-J2S-200CL	MR-J4-200A-RJ (Note2)	(Note 1)	
	MR-J2S-350CL	MR-J4-350A-RJ (Note2)	(Note 1)	
	MR-J2S-500CL	MR-J4-500A-RJ (Note2)	(Note 1)	
	MR-J2S-700CL	MR-J4-700A-RJ (Note2)	(Note 1)	
100VAC Built-in program operation function	MR-J2S-10CL1	MR-J4-10A1-RJ (Note2)	○	
	MR-J2S-20CL1	MR-J4-20A1-RJ (Note2)	○	
	MR-J2S-40CL1	MR-J4-40A1-RJ (Note2)	○	

Note 1. These replacement models do not have compatibility in mounting. The mounting plate will be available in the future to have the compatibility.

(Contact Mitsubishi Electric System & Service Co., Ltd. regarding the release date of the renewal tool.)

2. Software version B3 or later.

(2) Models for replacement between MR-J2M and MR-J4

Shown below are existing models and new models with which to basically replace the former models. It is assumed that each of both types of models consists of an amplifier and a motor.

Series	model			Replacement model (example)	Attachment compatibility (○: Interchangeable)	Note
	Base unit	Interface unit	Drive Unit			
200VAC Universal Interface	MR-J2M-BU_	MR-J2M-P8A	MR-J2M-10DU	MR-J4-10A	(Note)	See "Part 7: Common Reference Material".
			MR-J2M-20DU	MR-J4-20A	(Note)	
			MR-J2M-40DU	MR-J4-40A	(Note)	
			MR-J2M-70DU	MR-J4-70A	(Note)	
200VAC SSCNET Interface	MR-J2M-BU_	MR-J2M-P8B	MR-J2M-10DU	MR-J4-10B	(Note)	
			MR-J2M-20DU	MR-J4-20B	(Note)	
			MR-J2M-40DU	MR-J4-40B	(Note)	
			MR-J2M-70DU	MR-J4-70B	(Note)	

Note. See "Part 7: Common Reference Material" for the mounting hole dimensions.

Part 1: Summary of MR-J2S/MR-J2M Replacement

(3) Servo amplifier and servo motor combination for the MR-J4 series

For a review on the replacement of an existing motor with a new one, see "Part 8: Review on Replacement of Motor".

(See "[Appendix 2] Introduction to Renewal Tool" if using an existing cable and motor.)

(a) 100 V / 200 V class

Servo amplifier	Rotary servo motor					
	HG-KR	HG-MR	HG-SR	HG-UR	HG-RR	HG-JR
MR-J4-10_	053 13	053 13				
MR-J4-20_	23	23				
MR-J4-40_	43	43				
MR-J4-60_			51 52			53
MR-J4-70_	73	73		72		73
MR-J4-100_			81 102			103
MR-J4-200_			121, 201 152, 202	152	103 153	153 203
MR-J4-350_			301 352	202	203	353
MR-J4-500_			421 502	352 502	353 503	503
MR-J4-700_			702			703
MR-J4-11K_						903 11K1M
MR-J4-15K_						15K1M
MR-J4-22K_						22K1M
MR-J4-DU30K_						30K1 30K1M
MR-J4-DU37K_						37K1 37K1M

(b) 400 V class

Servo amplifier	Rotary servo motor	
	HG-SR	HG-JR
MR-J4-60_4	524	534
MR-J4-100_4	1024	734, 1034
MR-J4-200_4	1524, 2024	1534, 2034
MR-J4-350_4	3524	3534
MR-J4-500_4	5024	5034
MR-J4-700_4	7024	7034
MR-J4-11K_4		9034, 11K1M4
MR-J4-15K_4		15K1M4
MR-J4-22K_4		22K1M4
MR-J4-DU30K_4		30K14 30K1M4
MR-J4-DU37K_4		37K14 37K1M4
MR-J4-DU45K_4		45K1M4
MR-J4-DU55K_4		55K1M4

Part 1: Summary of MR-J2S/MR-J2M Replacement

3.3.3 Attachment compatibility check

Check "Part 7: Common Reference Material" and "Part 8: Review on Replacement of Motor".

3.3.4 Detailed review on replacement model

Check "Part 2: Review on Replacement of MR-J2S-_A_ with MR-J4-_A_", "Part 3: Review on Replacement of MR-J2S-_B_ with MR-J4-_B_", "Part 4: Replacement of MR-J2S-_CP/CL_ with MR-J4-_A_RJ020", "Part 5: Replacement of MR-J2S-_DU_ with MR-J4-_DU_", and "Part 6: Review on Replacement of MR-J2M with MR-J4".

3.3.5 Peripheral equipment check

See "Part 9: Review on Replacement of Optional Peripheral Equipment" in this document.

3.3.6 Startup procedure check

See "Part 10: Startup Procedure Manual" in this document.

4 RELATED MATERIALS

4.1 Catalog

- (1) Mitsubishi General-Purpose AC Servo MELSERVO-J4
- (2) Motion Controller Q17nDSCPU/Q170MSCPU
Simple Motion Module QD77MS/QD77GF

4.2 Instruction Manual

- (1) MELSERVO-J4 Series MR-J4-_A(-RJ)/MR-J4-_A4(-RJ)/MR-J4-_A1(-RJ) Servo Amplifier Instruction Manual
- (2) MELSERVO-J4 Series MR-J4-_B(-RJ)/MR-J4-_B4(-RJ)/MR-J4-_B1(-RJ) Servo Amplifier Instruction Manual
- (3) HG-MR/HG-KR/HG-SR/HG-JR/HG-RR/HG-UR Servo Motor Instruction Manual (Vol.3)
- (4) Conversion Unit for SSCNET of MR-J2S-B Compatible AC Servo MR-J4-_B-RJ020/MR-J4-_B4-RJ020/MR-J4-_B1-RJ020/MR-J4-T20 Servo Amplifier Instruction Manual
- (5) MELSERVO-J4 Series MR-J4-_A(-RJ)/MR-J4-_A4(-RJ)/MR-J4-_A1(-RJ) Servo Amplifier Instruction Manual (POSITIONING MODE)
- (6) MR-J4-DU-_-(-RJ)/MR-J4-DU-_4(-RJ) Drive Unit MR-CR55K(4) Converter Unit Instruction Manual
- (7) MELSERVO-J4 Servo Amplifier Instruction Manual (Troubleshooting Edition)
- (8) Instructions and Cautions for Drive of HC/HA Series Servo Motor with MR-J4-_B_-RJ020 Servo Amplifier

4.3 Replacement Manual

- (1) Replacement Manual for replacing the A17nSHCPUN/A173UHCPU series with the Q series

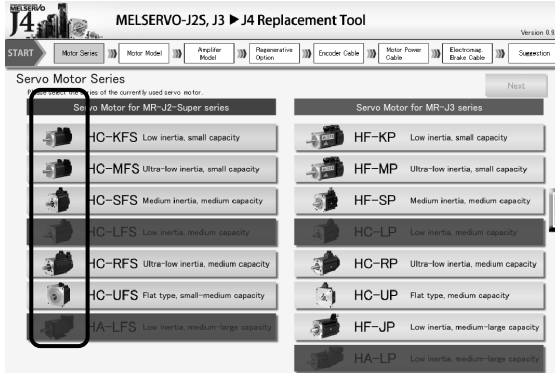
4.4 Renewal Tool

- (1) MR-J2S-_A_ renewal tool
- (2) MR-J2S-_B_ renewal tool

Part 1: Summary of MR-J2S/MR-J2M Replacement

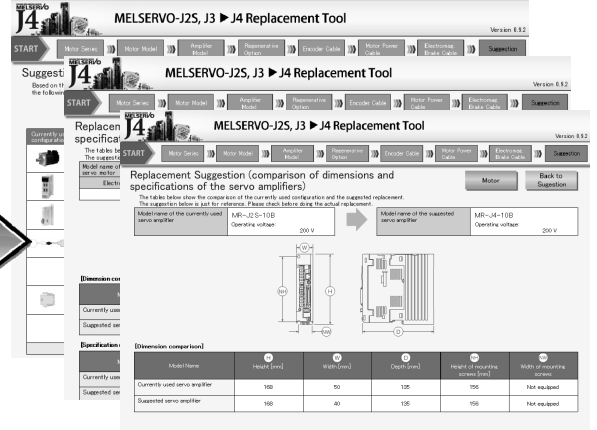
4.5 Replacement Tool for Replacing MR-J2S with MR-J4

This is the tool for replacing an in-use MR-J2S series with the MR-J4 series.



Servo motor series model, servo amplifier model, regenerative option, encoder motor power supply, and electromagnetic brake selection

Displayed on the Mitsubishi Electric FA site



Selection result configuration, servo motor dimensions/specification comparison, servo amplifier dimensions/specification comparison

4.6 MITSUBISHI ELECTRIC FA Global Website

<http://www.mitsubishielectric.com/fa/>

Part 2
Review on Replacement

of MR-J2S- A with

MR-J4- A

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

1 SUMMARY

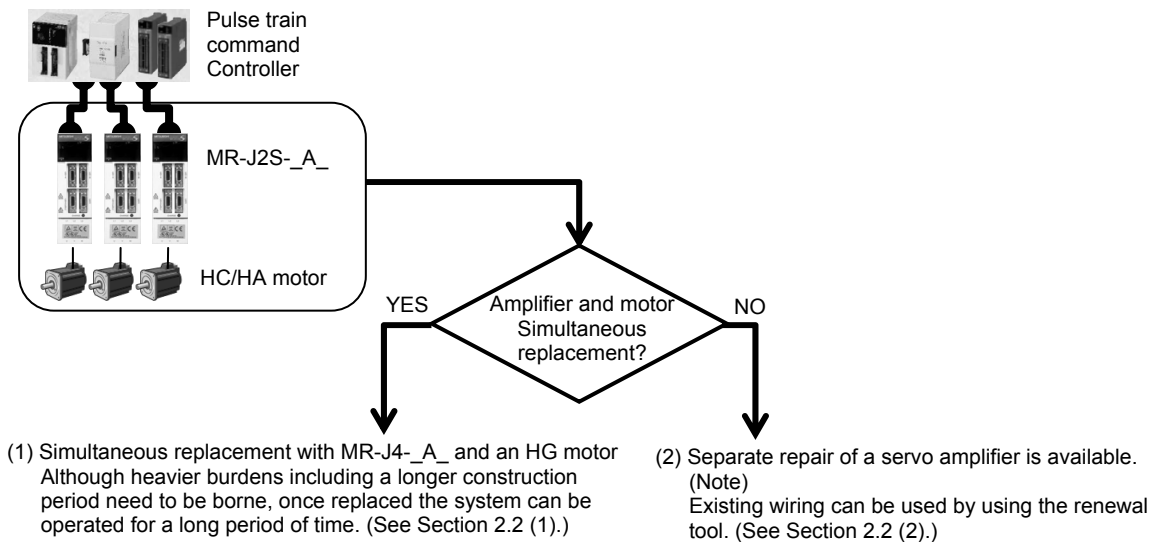
This section describes the changes to be made when a system using MR-J2S- _A_ is replaced with a system using MR-J4- _A_.

2 CASE STUDY ON REPLACEMENT OF MR-J2S- _A_

2.1 Review on Replacement Method

POINT

- An HG motor cannot be driven by MR-J2S- _A_. When a servo motor is replaced with an HG motor, servo amplifier also needs to be replaced with MR-J4- _A_ simultaneously.

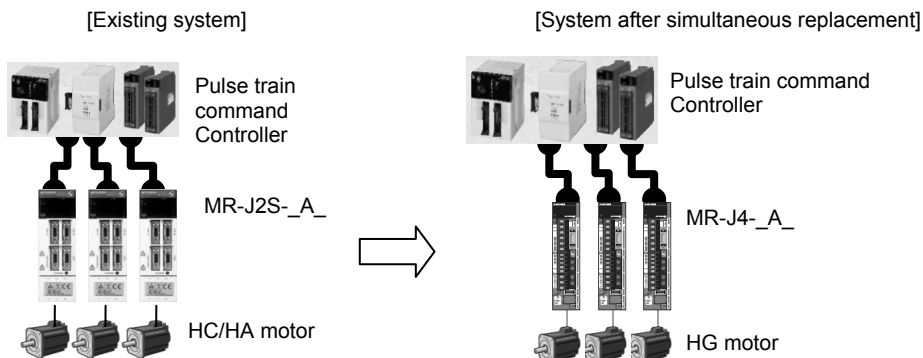


Note. Separate repair means replacement.

2.2 Replacement Method

(1) Simultaneous replacement with MR-J4- _A_ and an HG motor

The currently used connectors or cables need to be replaced. The parameters of the existing system can be transferred with the parameter converter function of MR Configurator2. (See "Part 7: Common Reference Material".)



Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

(2) Separate repair of servo amplifier

POINT			
<ul style="list-style-type: none"> An HG motor cannot be driven by MR-J2S- _A_ . When a servo motor is replaced with an HG motor, servo amplifier also needs to be replaced with MR-J4- _A_ simultaneously. When an "HC/HA motor" shown below is used, "simultaneous replacement with MR-J4- _A_ and an HG motor" is recommended. When an HG motor is adopted, the capacity of the servo amplifier needs to be changed. (Consider replacement, referring to "torque characteristics" described in "Part 8: Replacement of Motor".) 			
Existing device models		Replacement models for simultaneous replacement (example)	
Servo motor	Servo amplifier	Servo motor	Servo amplifier
HC-LFS52	MR-J2S-60A	HG-JR73	MR-J4-70A
HC-LFS102	MR-J2S-100A	HG-JR153	MR-J4-200A
HC-LFS152	MR-J2S-200A	HG-JR353	MR-J4-350A
HA-LFS15K2(4)(B)	MR-J2S-15KA(4)	HG-JR11K1M(4)(B)	MR-J4-11KA(4)
HA-LFS22K2(4)(B)	MR-J2S-22KA(4)	HG-JR15K1M(4)(B)	MR-J4-15KA(4)
HA-LFS30K2(4)	MR-J2S-30KA(4)	HG-JR22K1M(4)	MR-J4-22KA(4)
HA-LFS37K2(4)	MR-J2S-37KA(4)	HG-JR30K1M(4)	MR-J4-DU30KA(4)
HA-LFS45K24	MR-J2S-45KA4	HG-JR37K1M4	MR-J4-DU37KA4
HA-LFS55K24	MR-J2S-55KA4	HG-JR45K1M4	MR-J4-DU45KA4
HC-KFS46	MR-J2S-70A	HG-KR43	MR-J4-40A
HC-KFS410	MR-J2S-70A	HG-KR43	MR-J4-40A
HC-RFS103(B)G2 1/_	MR-J2S-200A	HG-SR102(B)G7 1/_	MR-J4-100A
HC-RFS203(B)G2 1/_	MR-J2S-350A	HG-SR202(B)G7 1/_	MR-J4-200A
HC-RFS353(B)G2 1/_	MR-J2S-500A	HG-SR352(B)G7 1/_	MR-J4-350A
HC-RFS103(B)G5 1/_	MR-J2S-200A	HG-SR102(B)G5 1/_	MR-J4-100A
HC-RFS203(B)G5 1/_	MR-J2S-350A	HG-SR202(B)G5 1/_	MR-J4-200A
HC-RFS353(B)G5 1/_	MR-J2S-500A	HG-SR352(B)G5 1/_	MR-J4-350A
HC-RFS103(B)G7 1/_	MR-J2S-200A	HG-SR102(B)G7 1/_	MR-J4-100A
HC-RFS203(B)G7 1/_	MR-J2S-350A	HG-SR202(B)G7 1/_	MR-J4-200A
HC-RFS353(B)G7 1/_	MR-J2S-500A	HG-SR352(B)G7 1/_	MR-J4-350A

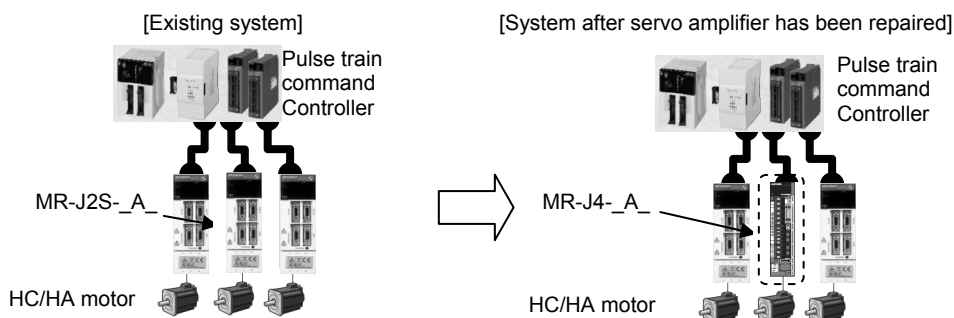
After replacement, an HC/HA motor can be driven by MR-J4- _A_ . Verify the motors that can be driven with "Part 7: Common Reference Material".

When an HC/HA motor is driven by MR-J4- _A_ , it is necessary to set [Pr.PC22].

See Part 7 Section 4.1.

Use the renewal tool when replacing a servo amplifier with MR-J4- _A_ without replacing the currently used servo motor and existing cables. (See "[Appendix 2] Introduction to Renewal Tool".)

The parameters of the existing system can be transferred with the parameter converter function of MR Configurator2. (See "Part 7: Common Reference Material".)



Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

3 DIFFERENCES BETWEEN MR-J2S- _A_ AND MR-J4- _A_

3.1 Function Comparison Table

Item	MR-J2S- _A_ series	MR-J4- _A_	Compatibility	Reference material/items
Control mode	Position control mode (pulse command) Speed control mode (analog command) Torque control mode (analog command)	←	○	-
Maximum input pulses	Open-collector pulse: 200 kpps Differential pulse 500 kpps Command pulse: Sink	Open-collector pulse: 200 kpps Differential pulse 4 Mpps Command pulse: Sink	Note 1	MR-J4- _A_ Servo Amplifier Instruction Manual, Section 3.6.1 (1)
The number of DIO points (excluding EM1)	DI: 8 points, DO: 6 points	DI: 9 points, DO: 6 points	○	MR-J4- _A_ Servo Amplifier Instruction Manual, Section 5.2.4 [Pr. PD03] to [Pr. PD28]
Encoder pulse output	ABZ-phase (differential) Z-phase (open collector)	←	Note 2	MR-J4- _A_ Servo Amplifier Instruction Manual, Section 5.2.1 [Pr.PA15]
DIO interface	Input: Sink/source Output: Sink	Input: Sink/source Output: Sink/source	○	MR-J4- _A_ Servo Amplifier Instruction Manual, Section 3.9
Analog input/output	(Input) 2ch 10-bit torque, 14-bit speed or equivalent (Output) 10-bit or equivalent × 2 ch	←	○	MR-J4- _A_ Servo Amplifier Instruction Manual, Section 3.6
Number of internal speed commands	7	←	○	MR-J4- _A_ Servo Amplifier Instruction Manual, Section 3.6.2 (1) (b)
Parameter setting method	Push button SETUP Software	←	○	MR-J4- _A_ Servo Amplifier Instruction Manual, Chapter 4
Button	4 buttons	←	○	MR-J4- _A_ Servo Amplifier Instruction Manual, Chapter 4
LED display	7-segment 5-digit	←	○	MR-J4- _A_ Servo Amplifier Instruction Manual, Chapter 4
Communication function	RS-422/RS-232C	RS-422/USB	○	MR-J4- _A_ Servo Amplifier Instruction Manual, Chapter 14
Command pulse logic setting	Forward/reverse rotation pulse train Signed pulse train A-phase/B-phase pulse train	←	○	Part 2, Section 3.7
Interface 24VDC power supply	Installed.	Not installed.	×	Part 7, Section 1.2.4
Initializing time	1 to 2 s	2.5 to 3.5 s	×	Part 7, Section 1.2.7
Z-phase pulse width	At low speed: About 6 ms (Note 3) At high speed: About 900 μs	At low speed: About 6 ms (Note 3) At high speed: About 400 μs	×	Part 7, Section 1.2.8

Note 1. Depending on the motor being used, "Electronic gear" needs to be set.

2. The parameters need to be set due to output pulse settings.

3. This is the pulse width when the motor rotates at 10 r/min. The pulse width changes depending on rotational frequency.

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

3.2 Function List

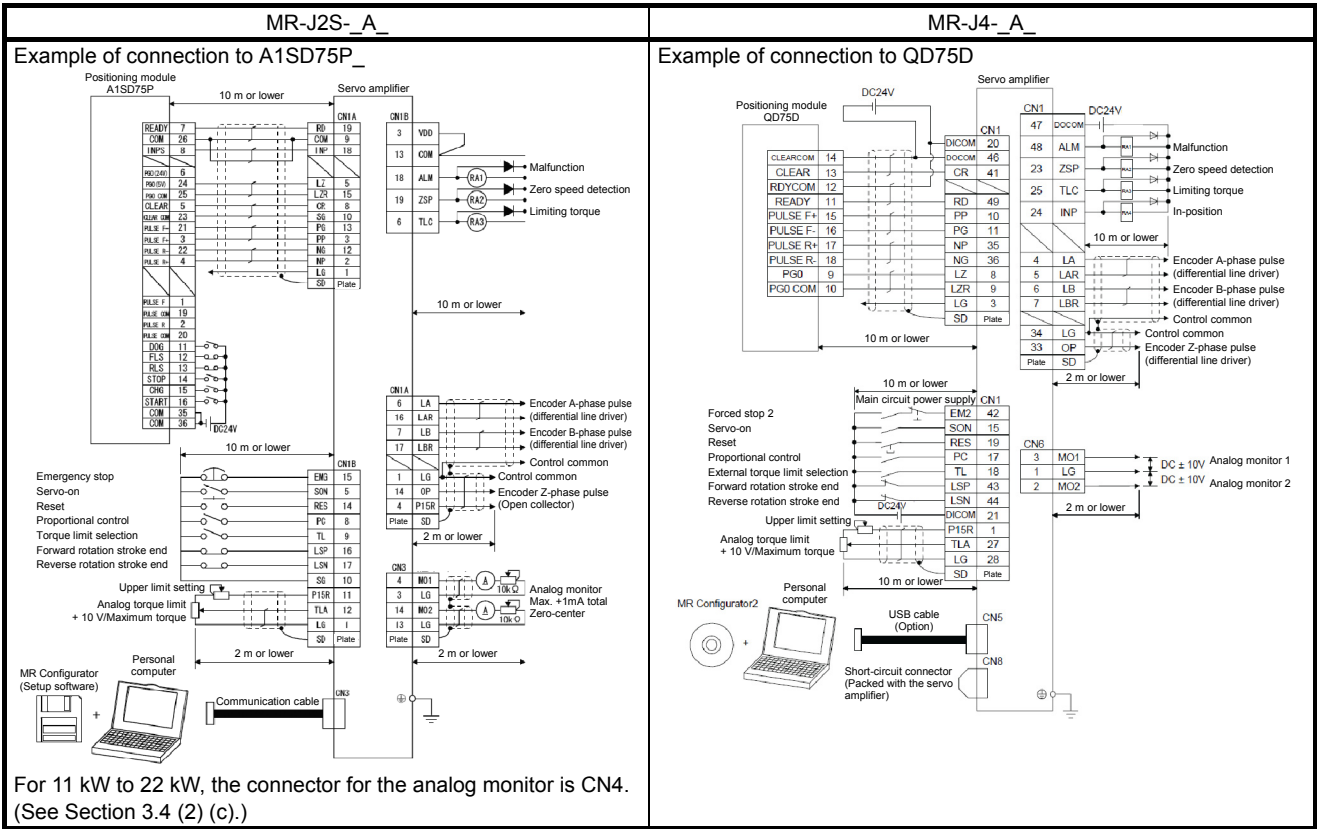
function		MR-J2S- _A_	MR-J4- _A_	Reference document/items
Encoder resolution		131072 pulses/rev	4194304 pulses/rev	MR-J4- _A_ Servo Amplifier Instruction Manual, Section 1.3
Absolute position detection system		<input type="radio"/> [Parameter No. 1]	<input type="radio"/> [Pr. PA03]	MR-J4- _A_ Servo Amplifier Instruction Manual, Chapter 12
Gain switching function		<input type="radio"/> [Parameter No. 65]	<input type="radio"/> [Pr. PB26]	MR-J4- _A_ Servo Amplifier Instruction Manual, Section 7.2
Advanced vibration suppression control II		×	<input type="radio"/>	MR-J4- _A_ Servo Amplifier Instruction Manual, Section 7.1.5
Adaptive vibration suppression control		<input type="radio"/> [Parameter No. 60]	× (Note)	-
Adaptive filter II		×	<input type="radio"/> [Pr. PB01]	MR-J4- _A_ Servo Amplifier Instruction Manual, Section 7.1.2
Low-pass filter		<input type="radio"/> [Parameter No. 60]	<input type="radio"/> [Pr. PB23]	MR-J4- _A_ Servo Amplifier Instruction Manual, Section 7.1.4
Machine analyzer function		<input type="radio"/>	<input type="radio"/>	-
Machine simulation		<input type="radio"/>	×	-
Gain search function		<input type="radio"/>	<input type="radio"/> (One-touch tuning)	MR-J4- _A_ Servo Amplifier Instruction Manual, Section 6.2
Robust filter		×	<input type="radio"/> [Pr. PE41]	-
Slight vibration suppression control		<input type="radio"/> [Parameter No. 20]	<input type="radio"/> [Pr. PB24]	-
Auto tuning		<input type="radio"/> [Parameter No. 2]	<input type="radio"/> [Pr. PB08]	MR-J4- _A_ Servo Amplifier Instruction Manual, Section 6.3
Brake unit		<input type="radio"/>	<input type="radio"/>	MR-J4- _A_ Servo Amplifier Instruction Manual, Section 11.3
Power regenerative converter		<input type="radio"/>	<input type="radio"/>	MR-J4- _A_ Servo Amplifier Instruction Manual, Section 11.4
Regenerative option		<input type="radio"/> [Parameter No. 0]	<input type="radio"/> [Pr. PA02]	MR-J4- _A_ Servo Amplifier Instruction Manual, Section 11.2
Torque limit		<input type="radio"/> [Parameter No. 28, 76]	<input type="radio"/> [Pr. PA11], [Pr. PA12], [Pr. PC35]	MR-J4- _A_ Servo Amplifier Instruction Manual, Section 3.6.1 (5)
Alarm history clear		<input type="radio"/> [Parameter No. 16]	<input type="radio"/> [Pr. PC18]	-
Output signal selection (device settings)		<input type="radio"/> [Parameter No. 49] (WNG, BWNG, and alarm code output only)	<input type="radio"/> [Pr. PD23] to [Pr. PD28]	-
Output signal (DO) forced output		<input type="radio"/>	<input type="radio"/>	MR-J4- _A_ Servo Amplifier Instruction Manual, Section 4.5.8
Test operation mode	JOG operation	<input type="radio"/>	<input type="radio"/>	MR-J4- _A_ Servo Amplifier Instruction Manual, Section 4.5.9
	Positioning operation	<input type="radio"/> Requires the MR Configurator (SETUP161).	<input type="radio"/> Requires the MR Configurator2.	
	Motor-less operation	<input type="radio"/>	<input type="radio"/> [Pr. PC60]	
	Machine analyzer operation	<input type="radio"/> Requires the MR Configurator SETUP161).	<input type="radio"/> Requires the MR Configurator2.	
Analog monitor output		<input type="radio"/> [Parameter No. 17]	<input type="radio"/> [Pr. PC14], [Pr. PC15]	MR-J4- _A_ Servo Amplifier Instruction Manual Appendix 8
Setup software		MR Configurator MRZJW3-SETUP161 is available for free.	MR Configurator2	MR-J4- _A_ Servo Amplifier Instruction Manual, Section 11.7
Linear servo system		×	<input type="radio"/>	MR-J4- _A_ Servo Amplifier Instruction Manual, Chapter 15
Direct drive servo system		×	<input type="radio"/>	MR-J4- _A_ Servo Amplifier Instruction Manual, Chapter 16
Fully closed loop system		×	<input type="radio"/>	MR-J4- _A_ Servo Amplifier Instruction Manual, Chapter 17
STO function		×	<input type="radio"/>	MR-J4- _A_ Servo Amplifier Instruction Manual, Chapter 13

Note. This function is provided by advanced vibration suppression control II.

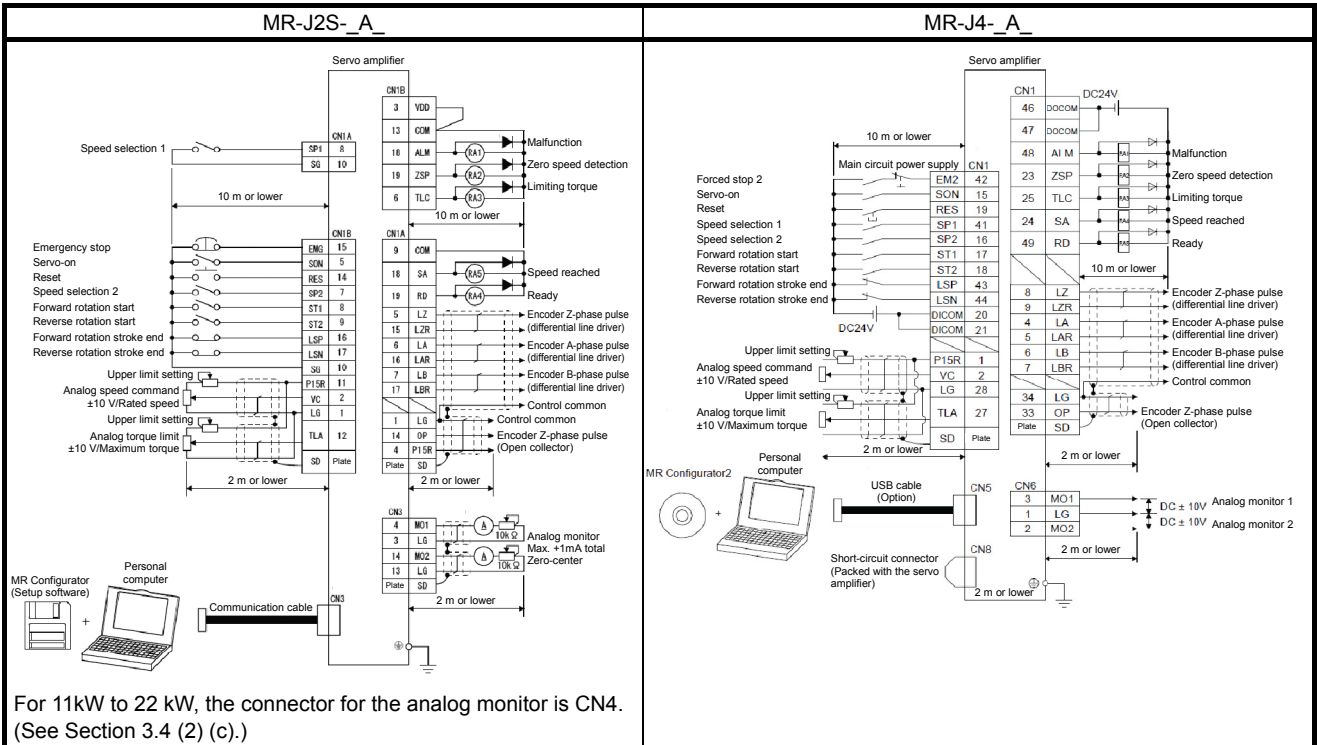
Part 2: Review on Replacement of MR-J2S- A_ with MR-J4- A_

3.3 Comparison of Standard Connection Diagrams

(1) Position control mode

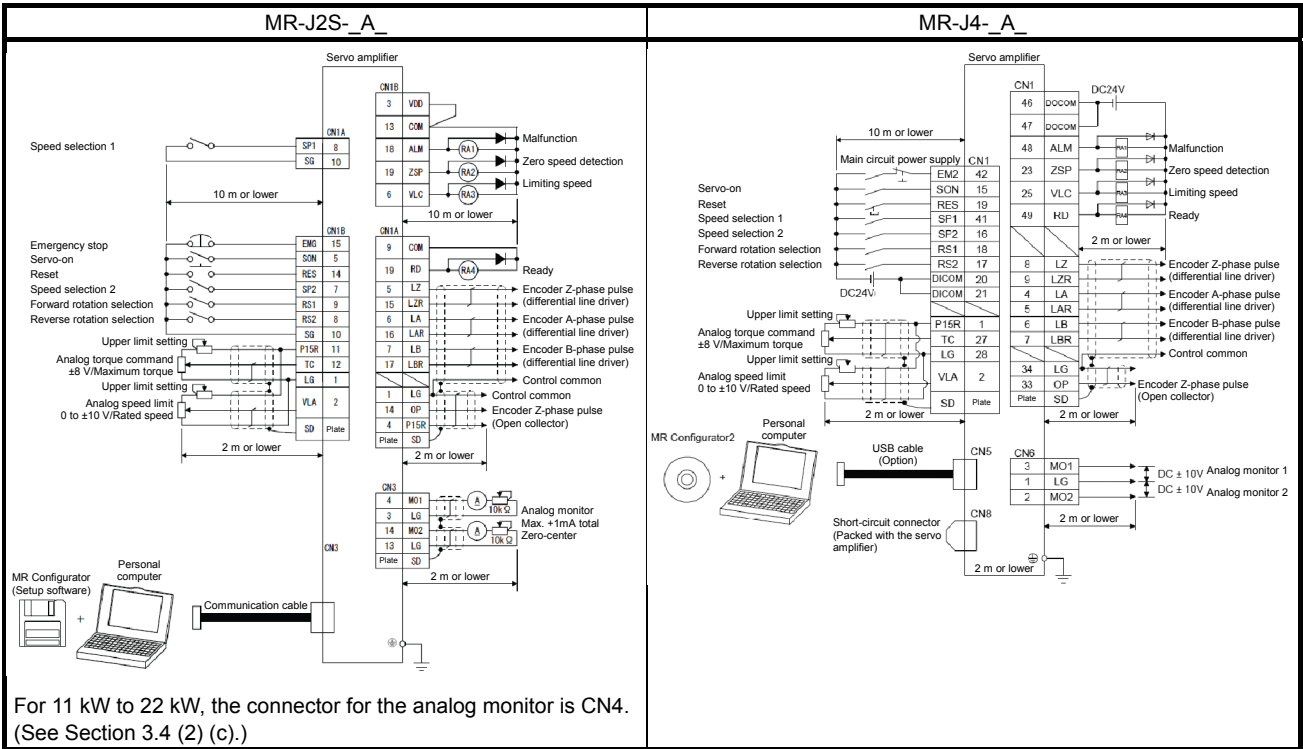


(2) Speed control mode



Part 2: Review on Replacement of MR-J2S- A_ with MR-J4- A_

(3) Torque control mode

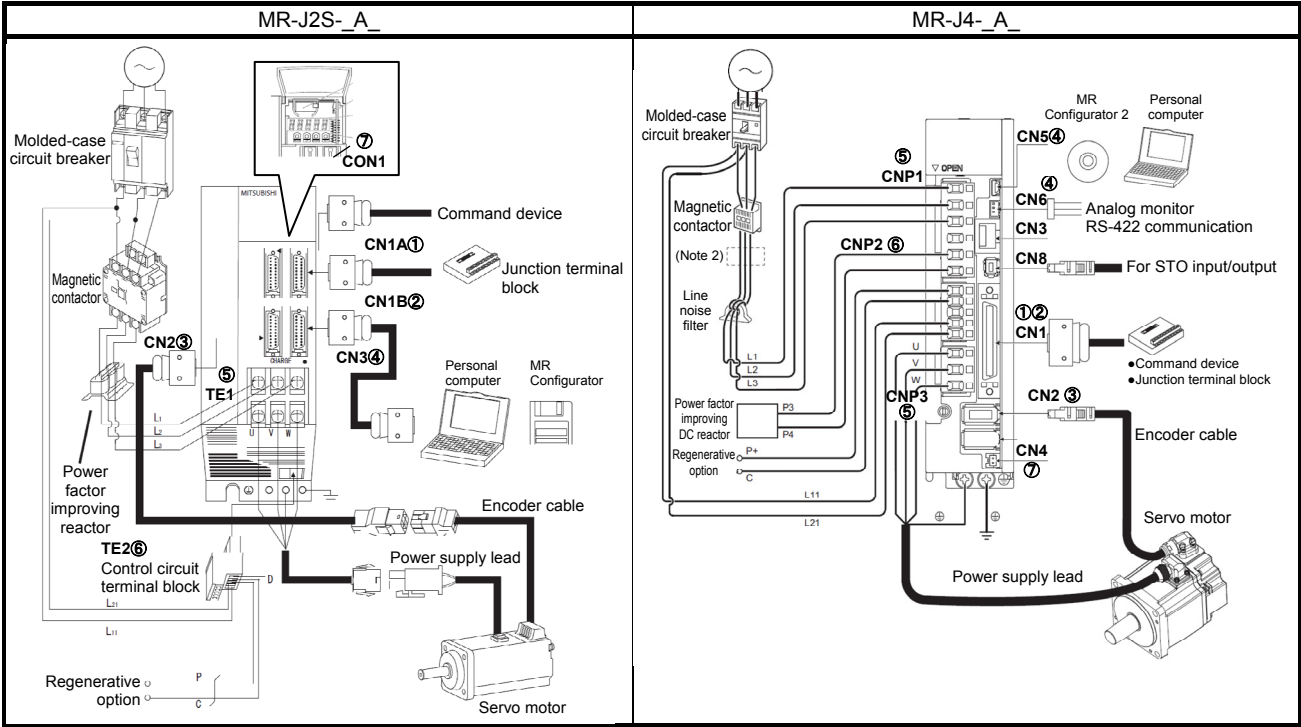


Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

3.4 List of Corresponding Connectors and Terminal Blocks

(1) Connector comparison table

An example of connections with the peripheral equipment is shown below. For details on signals, see each servo amplifier instruction manual.



Note 1. The above configuration example is applied to MR-J2S- 100A or a system with less capacity.

Note 1. The above configuration example is applied to MR-J4-200A or a system with less capacity.

2. The power factor improving AC reactor can also be used. In this case, the power factor improving DC reactor cannot be used.

• List of connector and terminal block correspondence

MR-J2S- _A_		MR-J4- _A_	Note
(1)	I/O signal connector CN1A	I/O signal connector CN1	Prepare a new cable.
(2)	I/O signal connector CN1B	Encoder connector CN2	Must switch to encoder cable (option) or prepare a new cable.
(4)	Communication connector CN3	USB communication connector CN5	Switch to USB cable (option).
		Analog monitor connector CN6	Switch to monitor cable (option).
(5)	Main circuit terminal block TE1	Main circuit power connector CNP1	Switch to the power connector (enclosed with the amplifier).
		Servo motor power supply	
(6)	Control circuit terminal block TE2	Control circuit power connector CNP2	
(7)	Battery connector CON1	Battery connector CN4	Prepare a new battery.

When not using the STO function in MR-J4- _A_ , attach the short-circuit connector supplied with the servo amplifier to CN8 (STO input signal connector).

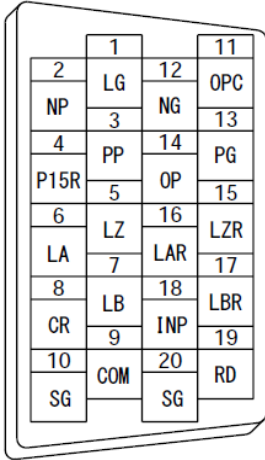
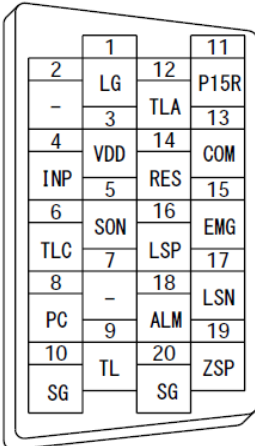
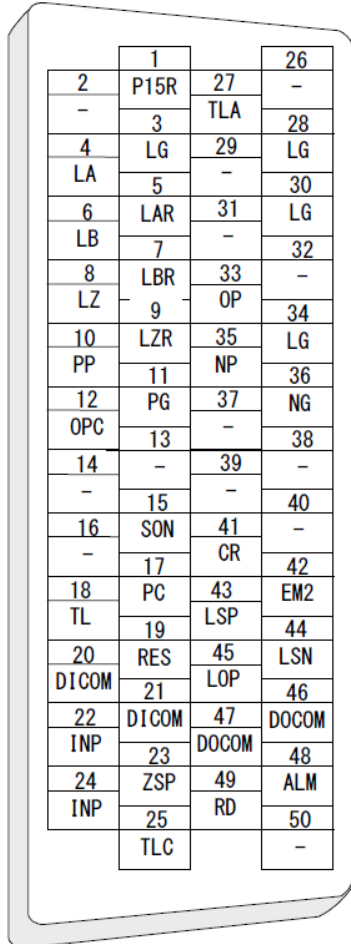
The configuration of the main circuit terminal block differs depending on the capacity. See "Part 7: Common Reference Material".

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

(2) Comparison of signals

(a) CN1A/CN1B

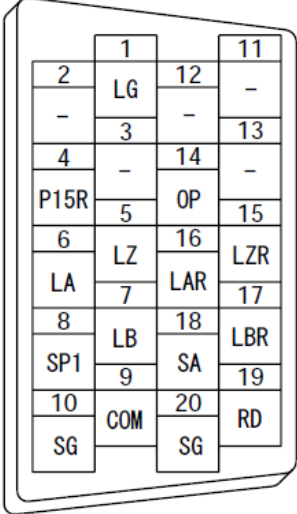
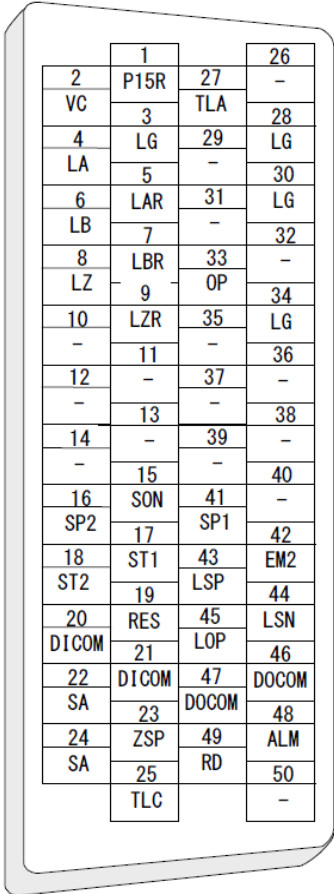
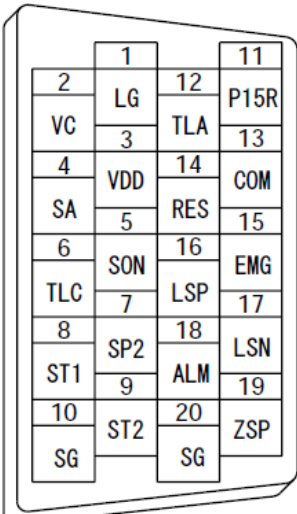
1) Position control mode

MR-J2S- _A_		Signal abbreviation (Note)	MR-J4- _A_																																																																																																																																																							
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Note. Signal abbreviations in parentheses are for MR-J4- _A_.

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

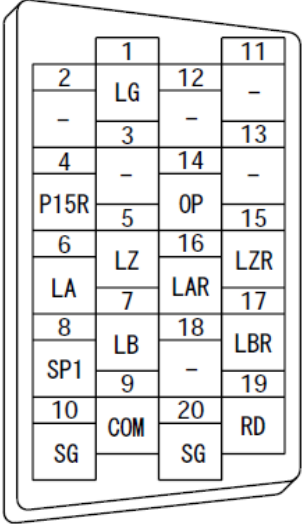
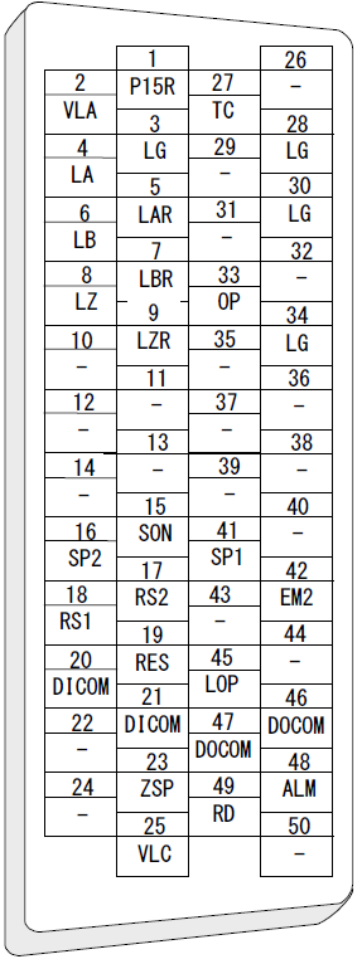
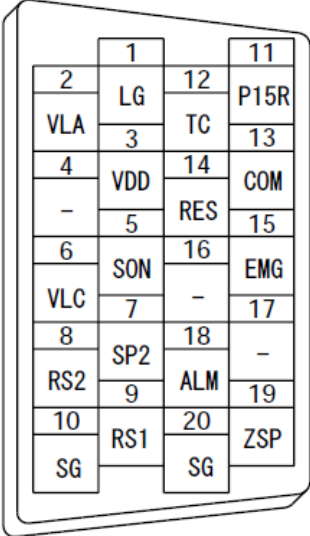
2) Speed control mode

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Note. Signal abbreviations in parentheses are for MR-J4- _A_.

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

3) Torque control mode

MR-J2S- _A_		Signal abbreviation (Note)	MR-J4- _A_																																																																																																																																																	
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	CN1B-14	RES	CN1-19																																																																																																																																																	
	CN1B-15	EMG (EM2)	CN1-42																																																																																																																																																	
	CN1B-16	-	-																																																																																																																																																	
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	CN1B-20	SG (DOCOM)	CN1-47																																																																																																																																																	

Note. Signal abbreviations in parentheses are for MR-J4- _A_.

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

(b) CN3

1) For 7 kW or less

MR-J2S- _A_		Signal abbreviation (Note)	MR-J4- _A_	
Connector pin assignment	Connector pin No.		Connector pin No.	Connector pin assignment
	CN3-3	LG	CN6-1	
	CN3-4	MO1	CN6-2	
	CN3-14	MO2	CN6-3	
	CN3-13	LG	-	
	CN3-1	LG	CN3-1	
	CN3-5	RDP	CN3-3	
	CN3-9	SDP	CN3-5	
	CN3-11	LG	CN3-7	
	CN3-15	RDN	CN3-6	
	CN3-19	SDN	CN3-4	
	CN3-20	P5(P5D)	CN3-2	
	CN3-2	RXD	-	
	CN3-10	TRE	-	
	CN3-12	TXD	-	

Note. Signal abbreviations in parentheses are for MR-J4- _A_.

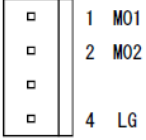

2) For 11kW to 22 kW

MR-J2S- _A_		Signal abbreviation (Note)	MR-J4- _A_	
Connector pin assignment	Connector pin No.		Connector pin No.	Connector pin assignment
	CN3-1	LG	CN3-1	
	CN3-5	RDP	CN3-3	
	CN3-9	SDP	CN3-5	
	CN3-11	LG	CN3-7	
	CN3-15	RDN	CN3-6	
	CN3-19	SDN	CN3-4	
	CN3-20	P5(P5D)	CN3-2	
	CN3-2	RXD	-	
	CN3-10	TRE	-	
	CN3-12	TXD	-	

Note. Signal abbreviations in parentheses are for MR-J4- _A_.

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

(c) CN4 (11kW to 22 kW only)


MR-J2S- _A_		Signal symbol	MR-J4- _A_	
Connector pin assignment	Connector pin No.		Connector pin No.	Connector pin assignment
	CN4-1	MO1	CN6-3	
	CN4-2	MO2	CN6-2	
	CN4-4	LG	CN6-1	

3.5 Comparison of Peripheral Equipment

POINT
<ul style="list-style-type: none"> See "Part 9: Replacement of Optional Peripheral Equipment".

Part 2: Review on Replacement of MR-J2S-__A__ with MR-J4-__A__

3.6 Comparison of Parameters

	<p>CAUTION</p> <ul style="list-style-type: none"> • Never perform extreme adjustments and changes to the parameters, otherwise the operation may become unstable. • If fixed values are written in the digits of a parameter, do not change these values. • Do not change parameters for manufacturer setting. • Do not enter any setting value other than those specified for each parameter.
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<p>POINT</p>	<ul style="list-style-type: none"> • For the parameter converter function, see "Part 7: Common Reference Material". • To enable a parameter whose abbreviation is preceded by *, turn the power OFF and then ON after setting the parameter. • For details about parameter settings for replacement, see the MR-J4-__A__ Servo Amplifier Instruction Manual. • With MR-J4-__A__, the deceleration to a stop function is enabled by factory settings. To disable the deceleration to a stop function, set PA04 to "0 __ __".
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3.6.1 Setting requisite parameters upon replacement

The parameters shown in this section are a minimum number of parameters that need to be set for simultaneous replacement. Depending on the settings of the currently used amplifier, parameters other than these may need to be set.

(1) Parameters common to position control mode, speed control mode, and torque control mode

Parameter number	Name	Initial value	Setting value	Description
PA04	Function selection A-1	2 0 0 0h	0 0 0 0h	Forced stop deceleration function selection To configure the same settings as for MR-J2S-__A__, select "Forced stop deceleration function disabled (EM1)".
PA09	Auto tuning response	16	8	Auto tuning response setting Enter this setting value for replacement, referring to "3.6.3 Comparison of parameter details". It is necessary to make gain adjustment again when replacing. For details about gain adjustment, see "MR-J2S-__A__ [Pr. 2] (MR-J4-__A__ [Pr. PA09])" in Section 3.6.3.
PA15	Encoder output pulse	4000	128 (Note)	Used to set the encoder pulses (A-phase and B-phase) output by the servo amplifier.
PC19	Encoder output pulse selection	0 0 0 0h	0 _ 1_h (Note)	Encoder output pulse selection Used to set the encoder pulses output by the servo amplifier. The setting value at left is according to the dividing ratio setting.

Note. The example value shown is for when the output pulse setting of an existing HC-KFS motor (encoder resolution: 131072 pulses/rev) is "Dividing ratio: 1/4".

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

(2) Position control mode

Parameter number	Name	Initial value	Setting value	Description
PA01	Operation mode	1 0 0 0h	__ __ 0h	Select the servo amplifier control mode. Select the position control mode.
PA06	Electronic gear numerator (Commanded pulse multiplication numerator)	1	256 (Note)	When using an electronic gear, it is necessary to change the setting value. For simultaneous replacement, set a value by calculating as follows: Replacement servo motor $\text{CMX} \frac{\text{Encoder resolution}}{\text{XDV}} = \text{Former CMX} \frac{4194304}{131072} \cdot \frac{8}{1} \frac{256}{1}$ The actual gear ratio of a motor with a reducer may differ before and after replacement. When the gear ratio differs, set the value taking into account the actual ratio.
PA07	Electronic gear denominator (Commanded pulse multiplication denominator)	1	1 (Note)	
PA13	Command pulse input form	0 1 0 0h	_ x _ _h	Command input pulse train filter selection Selecting the proper filter enables noise immunity enhancement. Make sure to select a filter so as not to cause a position mismatch. For details, see "MR-J4- _A_ [Pr. PA13]" in Section 3.6.3. In addition, it is necessary to adjust the command pulse logic to the positioning module. An incorrect logic setting causes the motor to not rotate. Make sure to configure the settings. See "3.7 Important Points for Replacement (Command Pulse Logic Settings)".

Note. The example value shown is for when the electronic gear ratio of an existing servo amplifier is set as "8/1".

(3) Speed control mode

Parameter number	Name	Initial value	Setting value	Description
PA01	Operation mode	1 0 0 0h	__ __ 2h	Select the servo amplifier control mode. Select the speed control mode.
PC12	Analog speed command - Maximum speed	0	3000	Analog speed command - Maximum speed The setting value at left is for when the HC-SFS53 motor is replaced with the HG-SR52 motor.

(4) Torque control mode

Parameter number	Name	Initial value	Setting value	Description
PA01	Operation mode	1 0 0 0h	__ __ 4h	Select the servo amplifier control mode. Select the torque control mode.
PC12	Analog speed limit - Maximum speed	0	3000	Analog speed limit - Maximum speed The setting value at left is for when the HC-SFS53 motor is replaced with the HG-SR52 motor.
PC13	Analog torque command - Maximum output	100.0	100.0	Analog torque command - Maximum output Set the same value as for the MR-J2S- _A_ servo amplifier.

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

3.6.2 Parameter comparison list

POINT
<ul style="list-style-type: none"> Manufacturer setting parameters are not described here.

MR-J2S- _A_ parameters					MR-J4- _A_ parameters										
No.	Abbreviation	Parameter name		Initial value	Customer setting value	No.	Abbreviation	Parameter name		Initial value	Customer setting value				
0	*STY	Control mode, Regenerative option selection	Control mode	0000h		PA01	*STY	Operation mode		1000h					
			Regenerative option			PA02	*REG	Regenerative option		0000h					
1	*OP1	Function selection 1	Input filter	0002h		PD29	*DIF	Input filter setting		0004h					
			Electromagnetic brake interlock selection			PD24	*DO2	Output device selection 2 (electromagnetic brake interlock)		000Ch					
			Dynamic brake interlock selection (11 kW or more)			PD23	*DO1	Output device selection 1		0004h					
						PD25	*DO3	Output device selection 3		0004h					
			Absolute position detection system selection			PD26	*DO4	Output device selection 4		0007h					
PA03	*ABS	Absolute position detection system selection		0000h											
2	ATU	Auto tuning	Mode setting Response level setting	7 kW or less: 0105 h 11 kW or more: 0102 h		PA08	ATU	Auto tuning mode (Note)		0001h					
						PA09	RSP	Auto tuning response (Note)		16					
3	CMX	Electronic gear numerator (command pulse multiplication numerator)		1		PA06	CMX	Electronic gear numerator (command pulse multiplication numerator)		1					
						PA21	*AOP3	Electronic gear selection		0001h					
4	CDV	Electronic gear denominator (command pulse multiplication denominator)		1		PA07	CDV	Electronic gear denominator (command pulse multiplication denominator)		1					
						PA21	*AOP3	Electronic gear selection		0001h					
5	INP	In-position range		100		PA10	INP	In-position range		100					
6	PG1	Position loop gain 1		7 kW or less: 35 11 kW or more: 19		PB07	PG1	Model loop gain (Note)		15.0					
7	PST	Position command acceleration/deceleration time constant (position smoothing)		3		PB03	PST	Position command acceleration/deceleration time constant (position smoothing)		0					
8	SC1	Internal speed command 1		100		PC05	SC1	Internal speed command 1		100					
		Internal speed limit 1						Internal speed limit 1							
9	SC2	Internal speed command 2		500		PC06	SC2	Internal speed command 2		500					
		Internal speed limit 2						Internal speed limit 2							
10	SC3	Internal speed command 3		1000		PC07	SC3	Internal speed command 3		1000					
		Internal speed limit 3						Internal speed limit 3							
11	STA	Acceleration time constant		0		PC01	STA	Acceleration time constant		0					
12	STB	Deceleration time constant		0		PC02	STB	Deceleration time constant		0					
13	STC	S-pattern acceleration/deceleration time constant		0		PC03	STC	S-pattern acceleration/deceleration time constant		0					
14	TQC	Torque command time constant		0		PC04	TQC	Torque command time constant		0					
15	*SNO	Station number setting		0		PC20	*SNO	Station number setting		0					
16	*BPS	Serial communication function selection - Alarm history clear		0000h		PC21	*SOP	RS-422 communication function selection (RS-232C is not supported.)		0000h					
17	MOD	Analog monitor output		0100h		PC14	MOD1	Analog monitor 1 output		0000h					
						PC15	MOD2	Analog monitor 2 output		0001h					
18	*DMD	Status display selection		0000h		PC36	*DMD	Status display selection		0000h					
19	*BLK	Parameter writing inhibit		0000h		PA19	*BLK	Parameter writing inhibit		00AAh					
20	*OP2	Function selection 2	Restart after instantaneous power failure selection	0000h				No corresponding parameter							
			Servo-lock upon stop selection					PC23	*COP2			Servo-lock selection at speed control stop		0000h	
			Slight vibration suppression control					PB24	*MVS			Slight vibration suppression control selection		0000h	
21	*OP3	Function selection 3 (command pulse selection)		0000h		PA13	*PLSS	Command pulse input form		0100h					
22	*OP4	Function selection 4	LSP, LSN stop selection	0000h			PD30	*DOP1	Function selection D-1 (LSP, LSN stop selection)		0000h				
			VC, VLA voltage averaging					PC23	*COP2	Function selection C-2 (VC, VLA voltage averaging)		0000h			
23	FFC	Feed forward gain		0		PB04	FFC	Feed forward gain (Note)		0					

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_ parameters					MR-J4- _A_ parameters				
No.	Abbreviation	Parameter name	Initial value	Customer setting value	No.	Abbreviation	Parameter name	Initial value	Customer setting value
24	ZSP	Zero speed	50		PC17	ZSP	Zero speed	50	
25	VCM	Analog speed command - Maximum speed	0		PC12	VCM	Analog speed command - Maximum speed	0	
		Analog speed limit maximum speed					Analog speed limit - Maximum speed		
26	TLC	Analog torque command maximum output	100		PC13	TLC	Analog torque command maximum output	100.0	
27	*ENR	Encoder output pulses	4000		PA15	*ENR	Encoder output pulses	4000	
					PC19	*ENRS	Encoder output pulse selection	0000h	
28	TL1	Internal torque limit 1	100		PA11	TLP	Forward rotation torque limit	100.0	
					PA12	TLN	Reverse rotation torque limit	100.0	
29	VCO	Analog speed command offset	Differs depending on servo amplifier		PC37	VCO	Analog speed command offset	Differs depending on servo amplifier	
		Analog speed limit offset							
30	TLO	Analog torque command offset	0		PC38	TPO	Analog torque command offset	0	
		Analog torque limit offset					Analog torque limit offset		
31	MO1	Analog monitor 1 offset	0		PC39	MO1	Analog monitor 1 offset	0	
32	MO2	Analog monitor 2 offset	0		PC40	MO2	Analog monitor 2 offset	0	
33	MBR	Electromagnetic brake sequence output	100		PC16	MBR	Electromagnetic brake sequence output	0	
34	GD2	Load to motor inertia ratio	70		PB06	GD2	Load to motor inertia ratio	7.00	
35	PG2	Position loop gain 2	7 kW or less: 35 11 kW or more: 19		PB08	PG2	Position loop gain (Note)	37.0	
36	VG1	Speed loop gain 1	7 kW or less: 177 11 kW or more: 96				No corresponding parameter		
37	VG2	Speed loop gain 2	7 kW or less: 817 11 kW or more: 455		PB09	VG2	Speed loop gain (Note)	823	
38	VIC	Speed integral compensation	48		PB10	VIC	Speed integral compensation (Note)	33.7	
39	VDC	Speed differential compensation	980		PB11	VDC	Speed differential compensation (Note)	980	
41	*DIA	Input signal automatic ON selection	0000h		PD01	*DIA1	Input signal automatic on selection 1	0000h	
42	*DI1	Input signal selection 1 (LOP assignment)	0003h		PD03	*DI1L	Input device selection 1L	0202h	
					PD04	*DI1H	Input device selection 1H	0002h	
					PD11	*DI5L	Input device selection 5L	0303h	
					PD12	*DI5H	Input device selection 5H	0003h	
					PD13	*DI6L	Input device selection 6L	2006h	
					PD14	*DI6H	Input device selection 6H	0020h	
					PD05	*DI2L	Input device selection 2L	2100h	
		PD06			*DI2H	Input device selection 2H	0021h		
		PD07			*DI3L	Input device selection 3L	0704h		
		PD08			*DI3H	Input device selection 3H	0007h		
PD09	*DI4L	Input device selection 4L	0805h						
PD10	*DI4H	Input device selection 4H	0008h						
		CR selection			PD32	*DOP3	CR selection	0000h	
43	*DI2	Input signal selection 2 (CN1B-5)	0111h		PD03	*DI1L	Input device selection 1L	0202h	
					PD04	*DI1H	Input device selection 1H	0002h	
44	*DI3	Input signal selection 3 (CN1B-14)	0222h		PD11	*DI5L	Input device selection 5L	0303h	
					PD12	*DI5H	Input device selection 5H	0003h	
45	*DI4	Input signal selection 4 (CN1A-8)	0665h		PD13	*DI6L	Input device selection 6L	2006h	
					PD14	*DI6H	Input device selection 6H	0020h	
46	*DI5	Input signal selection 5 (CN1B-7)	0770h		PD05	*DI2L	Input device selection 2L	2100h	
					PD06	*DI2H	Input device selection 2H	0021h	
47	*DI6	Input signal selection 6 (CN1B-8)	0883h		PD07	*DI3L	Input device selection 3L	0704h	
					PD08	*DI3H	Input device selection 3H	0007h	

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_ parameters					MR-J4- _A_ parameters										
No.	Abbreviation	Parameter name		Initial value	Customer setting value	No.	Abbreviation	Parameter name		Initial value	Customer setting value				
48	*DI7	Input signal selection 7 (CN1B-9)		0994h		PD09	*DI4L	Input device selection 4L		0805h					
						PD10	*DI4H	Input device selection 4H		0008h					
49	*DO1	Output signal selection 1	Alarm code	0000h		PD34	DOP5	Function selection D-5		0000h					
		WNG (warning) output setting	Pin CN1A-19				PD28	*DO6	Output device selection 6		0002h				
			Pin CN1B-18						No corresponding parameter						
			Pin CN1A-18				PD25	*DO3	Output device selection 3		0004h				
			Pin CN1B-19				PD24	*DO2	Output device selection 2		000Ch				
			Pin CN1B-6				PD26	*DO4	Output device selection 4		0007h				
			BWNNG (battery warning) output setting			Pin CN1A-19		PD28	*DO6	Output device selection 6		0002h			
		Pin CN1B-18							No corresponding parameter						
		Pin CN1A-18					PD25	*DO3	Output device selection 3		0004h				
		Pin CN1B-19					PD24	*DO2	Output device selection 2		000Ch				
		Pin CN1B-6					PD26	*DO4	Output device selection 4		0007h				
		51				*OP6	Function selection 6	Operation selection at Reset ON	0000h		PD30	*DOP1	Function selection D-1		0000h
		53	*OP8			Function selection 8		0000h				No corresponding parameter			
		54	*OP9			Function selection 9	Servo motor rotation direction selection	0000h		PA14	*POL	Servo motor rotation direction selection		0	
Encoder pulse phase, setting selection	PC19			*ENRS	Encoder output pulse selection		0000h								
55	*OPA	Function selection A	Position command acceleration/ deceleration time constant control selection	0000h		PB25	*BOP1	Function selection B-1		0000h					
56	SIC	Serial communication time-out selection		0				No corresponding parameter							
58	NH1	Machine resonance suppression filter 1	Notch frequency selection	0000h		PB01	FILT	Adaptive tuning mode (adaptive filter II)		0000h					
			Notch depth selection			PB13	NH1	Machine resonance suppression filter 1		4500					
						PB14	NHQ1	Notch shape selection 1		0000h					
59	NH2	Machine resonance suppression filter 2	Notch frequency selection	0000h		PB15	NH2	Machine resonance suppression filter 2		4500					
			Notch depth			PB16	NHQ2	Notch shape selection 2		0000h					
60	LPF	Low-pass filter/ Adaptive vibration suppression control	Low-pass filter selection	0000h		PB18	LPF	Low-pass filter setting		3141					
			Adaptive vibration suppression control level selection			PB23	VFBF	Low-pass filter selection		0000h					
							PB01	FILT	Adaptive tuning mode (adaptive filter II)		0000h				
61	GD2B	Load to motor inertia ratio 2		70		PB29	GD2B	Gain switching load to motor inertia ratio (Note)		7.00					
62	PG2B	Position loop gain 2 changing ratio		100		PB30	PG2B	Position loop gain after gain switching (Note)		0.0					
63	VG2B	Speed loop gain 2 changing ratio		100		PB31	VG2B	Speed loop gain after gain switching (Note)		0					
64	VICB	Speed integral compensation changing ratio		100		PB32	VICB	Speed integral compensation after gain switching (Note)		0.0					
65	*CDP	Gain switching selection		0000h		PB26	*CDP	Gain switching function		0000h					
66	CDS	Gain switching condition		10		PB27	CDL	Gain switching condition		10					
67	CDT	Gain switching time constant		1		PB28	CDT	Gain switching time constant		1					
69	CMX2	Command pulse multiplication numerator 2		1		PC32	CMX2	Command input pulse multiplication numerator 2		1					
70	CMX3	Command pulse multiplication numerator 3		1		PC33	CMX3	Command input pulse multiplication numerator 3		1					
71	CMX4	Command pulse multiplication numerator 4		1		PC34	CMX4	Command input pulse multiplication numerator 4		1					
72	SC4	Internal speed command 4		200		PC08	SC4	Internal speed command 4		200					
		Internal speed limit 4						Internal speed limit 4							
73	SC5	Internal speed command 5		300		PC09	SC5	Internal speed command 5		300					
		Internal speed limit 5						Internal speed limit 5							
74	SC6	Internal speed command 6		500		PC10	SC6	Internal speed command 6		500					
		Internal speed limit 6						Internal speed limit 6							
75	SC7	Internal speed command 7		800		PC11	SC7	Internal speed command 7		800					
		Internal speed limit 7						Internal speed limit 7							
76	TL2	Internal torque limit 2		100		PC35	TL2	Internal torque limit 2		100.0					

Note. Parameters related to gain adjustment are different from those for the MR-J2S- _A_ servo amplifier. For gain adjustment, see MR-J4- _A_ Servo Amplifier Instruction Manual.

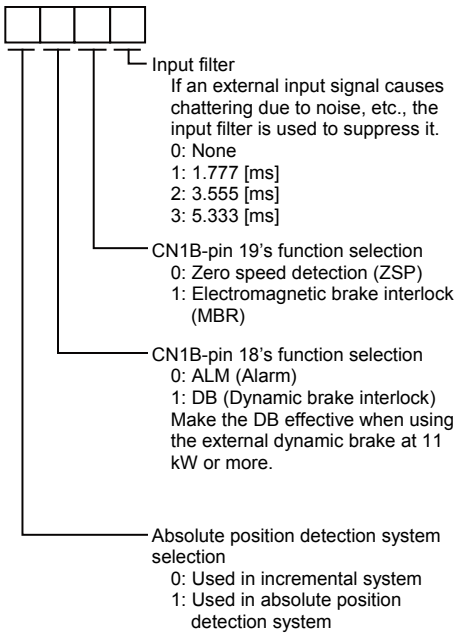
Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

3.6.3 Comparison of parameter details

POINT
<ul style="list-style-type: none"> The symbols in the control mode column mean the following control modes: P: Position control mode S: Speed control mode T: Torque control mode

MR-J2S- _A_			MR-J4- _A_																											
No.	Name and function	Initial value	No.	Name and function	Initial value	Control mode																								
0	<p>Control mode and regenerative option selection Used to select a control mode and a regenerative option.</p> <table border="1" style="margin-left: 20px;"> <tr> <td style="width: 20px; text-align: center;">0</td> <td style="width: 20px; text-align: center;">0</td> <td style="width: 20px; text-align: center;">0</td> </tr> </table> <p>Selection of control mode 0: Position 1: Position and speed 2: Speed 3: Speed and torque 4: Torque 5: Torque and position</p> <p>Selection of regenerative option 00: • The regenerative option is not used by the servo amplifier at 7 kW or less (built-in regenerative resistor is used). • The supplied regenerative resistor or regenerative option is used in the servo amplifier at 11 kW or more.</p> <p>01: FR-RC, FR-BU2, FR-CV 02: MR-RB032 03: MR-RB12 04: MR-RB32 05: MR-RB30 06: MR-RB50 (Cooling fan is required.) 08: MR-RB31 09: MR-RB51 (Cooling fan is required.) 0E: When increasing the capabilities by using a cooling fan to cool the supplied regeneration resistor with the servo amplifier of 11 kW to 22 kW</p> <p>MR-RB65, 66, and 67 are regenerative options with GRZG400-2Ω, GRZG400-1Ω, and GRZG400-0.8Ω in the case, respectively. When using any of these regenerative options, configure the same parameter setting as when using GRZG400-2Ω, GRZG400-1Ω, and GRZG400-0.8Ω. (Use a supplied regenerative resistor or regenerative option on a servo amplifier of 11 kW or more.) .</p>	0	0	0	0000h	PA01	<p>Operation mode Select a control mode. See the comparison table below for the setting method.</p> <p style="text-align: center;">Control mode setting comparison table</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>MR-J2S- _A_</th> <th>MR-J4- _A_</th> </tr> <tr> <th>No.0</th> <th>PA01</th> </tr> </thead> <tbody> <tr><td>__ 00</td><td>1 0 0 0</td></tr> <tr><td>__ 01</td><td>1 0 0 1</td></tr> <tr><td>__ 02</td><td>1 0 0 2</td></tr> <tr><td>__ 03</td><td>1 0 0 3</td></tr> <tr><td>__ 04</td><td>1 0 0 4</td></tr> <tr><td>__ 05</td><td>1 0 0 5</td></tr> </tbody> </table>	MR-J2S- _A_	MR-J4- _A_	No.0	PA01	__ 00	1 0 0 0	__ 01	1 0 0 1	__ 02	1 0 0 2	__ 03	1 0 0 3	__ 04	1 0 0 4	__ 05	1 0 0 5	1000h	P S T					
0	0	0																												
MR-J2S- _A_	MR-J4- _A_																													
No.0	PA01																													
__ 00	1 0 0 0																													
__ 01	1 0 0 1																													
__ 02	1 0 0 2																													
__ 03	1 0 0 3																													
__ 04	1 0 0 4																													
__ 05	1 0 0 5																													
			PA02	<p>Regenerative options Used to select the regenerative option. See the comparison table below for the setting method.</p> <p style="text-align: center;">Regenerative option setting comparison table</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>MR-J2S- _A_</th> <th>MR-J4- _A_</th> </tr> <tr> <th>No.0</th> <th>PA02</th> </tr> </thead> <tbody> <tr><td>0 0 __</td><td>0 0 0 0</td></tr> <tr><td>0 1 __</td><td>0 0 0 1</td></tr> <tr><td>0 2 __</td><td>0 0 0 2</td></tr> <tr><td>0 3 __</td><td>0 0 0 3</td></tr> <tr><td>0 4 __</td><td>0 0 0 4</td></tr> <tr><td>0 5 __</td><td>0 0 0 5</td></tr> <tr><td>0 6 __</td><td>0 0 0 6</td></tr> <tr><td>0 8 __</td><td>0 0 0 8</td></tr> <tr><td>0 9 __</td><td>0 0 0 9</td></tr> <tr><td>0 E __</td><td>0 0 F A</td></tr> </tbody> </table>	MR-J2S- _A_	MR-J4- _A_	No.0	PA02	0 0 __	0 0 0 0	0 1 __	0 0 0 1	0 2 __	0 0 0 2	0 3 __	0 0 0 3	0 4 __	0 0 0 4	0 5 __	0 0 0 5	0 6 __	0 0 0 6	0 8 __	0 0 0 8	0 9 __	0 0 0 9	0 E __	0 0 F A	0000h	
MR-J2S- _A_	MR-J4- _A_																													
No.0	PA02																													
0 0 __	0 0 0 0																													
0 1 __	0 0 0 1																													
0 2 __	0 0 0 2																													
0 3 __	0 0 0 3																													
0 4 __	0 0 0 4																													
0 5 __	0 0 0 5																													
0 6 __	0 0 0 6																													
0 8 __	0 0 0 8																													
0 9 __	0 0 0 9																													
0 E __	0 0 F A																													
	<p style="text-align: center;">POINT</p> <ul style="list-style-type: none"> An incorrect setting may cause the regenerative option to burn out. When a regenerative option that is not available to use on a servo amplifier is selected, a parameter error (AL. 37) occurs. 																													

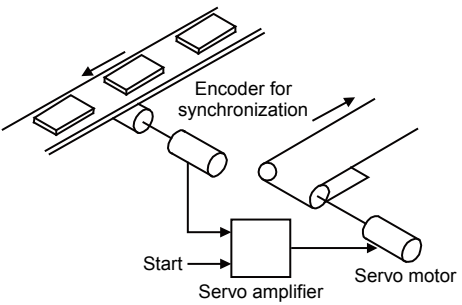
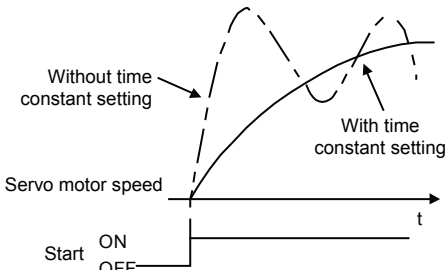
Part 2: Review on Replacement of MR-J2S-__A__ with MR-J4-__A__

MR-J2S-__A__			MR-J4-__A__															
No.	Name and function	Initial value	No.	Name and function	Initial value	Control mode												
1	<p>Function selection 1</p> <p>Select a value for the input filter, pin CN1B-19 function, and absolute position detection system.</p>  <p>Input filter If an external input signal causes chattering due to noise, etc., the input filter is used to suppress it. 0: None 1: 1.777 [ms] 2: 3.555 [ms] 3: 5.333 [ms]</p> <p>CN1B-pin 19's function selection 0: Zero speed detection (ZSP) 1: Electromagnetic brake interlock (MBR)</p> <p>CN1B-pin 18's function selection 0: ALM (Alarm) 1: DB (Dynamic brake interlock) Make the DB effective when using the external dynamic brake at 11 kW or more.</p> <p>Absolute position detection system selection 0: Used in incremental system 1: Used in absolute position detection system</p>	0002h	PD29	<p>Input filter setting</p> <p>If an external input signal causes chattering due to noise, etc., the input filter is used to suppress it. See the comparison table below for the setting method.</p> <p style="text-align: center;">Input filter setting comparison table</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><th>MR-J2S-__A__</th></tr> <tr><th>No.1</th></tr> <tr><td>__ 0</td></tr> <tr><td>__ 1</td></tr> <tr><td>__ 2</td></tr> <tr><td>__ 3</td></tr> </table> <p style="text-align: center;">→</p> <table border="1" style="display: inline-table;"> <tr><th>MR-J4-__A__</th></tr> <tr><th>PD29</th></tr> <tr><td>0 0 0 0</td></tr> <tr><td>0 0 0 2</td></tr> <tr><td>0 0 0 4</td></tr> <tr><td>0 0 0 4</td></tr> </table>	MR-J2S-__A__	No.1	__ 0	__ 1	__ 2	__ 3	MR-J4-__A__	PD29	0 0 0 0	0 0 0 2	0 0 0 4	0 0 0 4	0004h	P S T
			MR-J2S-__A__															
			No.1															
			__ 0															
			__ 1															
__ 2																		
__ 3																		
MR-J4-__A__																		
PD29																		
0 0 0 0																		
0 0 0 2																		
0 0 0 4																		
0 0 0 4																		
PD24	<p>Output device selection 2 (electromagnetic brake interlock selection)</p> <p>Any output device can be assigned to the CN1-23 pin. See the comparison table below for the setting method.</p> <p style="text-align: center;">Output device setting comparison table</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><th>MR-J2S-__A__</th></tr> <tr><th>No.1</th></tr> <tr><td>__ 0</td></tr> <tr><td>__ 1</td></tr> </table> <p style="text-align: center;">→</p> <table border="1" style="display: inline-table;"> <tr><th>MR-J4-__A__</th></tr> <tr><th>PD24</th></tr> <tr><td>0 0 0 C</td></tr> <tr><td>0 0 0 5</td></tr> </table>	MR-J2S-__A__	No.1	__ 0	__ 1	MR-J4-__A__	PD24	0 0 0 C	0 0 0 5	000Ch								
MR-J2S-__A__																		
No.1																		
__ 0																		
__ 1																		
MR-J4-__A__																		
PD24																		
0 0 0 C																		
0 0 0 5																		
PD23 PD25 PD26 PD28	<p>Device selection</p> <p>Set "__ 0 6" as necessary and assign DB (dynamic brake interlock) to a specific pin on the CN1 connector. The settings differ when the renewal tool is used. For the settings, see "[Appendix 2] Introduction to Renewal Tool".</p>	0004h 0004h 0007h 0002h																
PA03	<p>Absolute position detection system selection</p> <p>When using the absolute position detection system, set "__ 1".</p>	0000h																

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_																																																																																																											
No.	Name and function	Initial value	No.	Name and function	Initial value	Control mode																																																																																																								
2	<p>Auto Tuning</p> <p>Select a response level, etc. when performing auto tuning.</p> <div style="display: flex; align-items: center; margin-bottom: 10px;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="margin-left: 10px;">Response level setting</div> </div> <table border="1" style="border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Setting value</th> <th>Response</th> <th>Guideline for machine resonance frequency</th> </tr> </thead> <tbody> <tr><td>1</td><td rowspan="4">Low response</td><td>15Hz</td></tr> <tr><td>2</td><td>20Hz</td></tr> <tr><td>3</td><td>25Hz</td></tr> <tr><td>4</td><td>30Hz</td></tr> <tr><td>5</td><td rowspan="4">Middle response</td><td>35Hz</td></tr> <tr><td>6</td><td>45Hz</td></tr> <tr><td>7</td><td>55Hz</td></tr> <tr><td>8</td><td>70Hz</td></tr> <tr><td>9</td><td rowspan="4">High response</td><td>85Hz</td></tr> <tr><td>A</td><td>105Hz</td></tr> <tr><td>B</td><td>130Hz</td></tr> <tr><td>C</td><td>160Hz</td></tr> <tr><td>D</td><td>200Hz</td></tr> <tr><td>E</td><td>240Hz</td></tr> <tr><td>F</td><td>300Hz</td></tr> </tbody> </table> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="margin-right: 10px;">Gain adjustment mode setting</div> <table border="1" style="border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Setting value</th> <th>Gain adjustment mode</th> <th>Adjustment</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Interpolation mode</td> <td>Fixes to position loop gain 1 (parameter No. 6).</td> </tr> <tr> <td>1</td> <td>Auto tuning mode 1</td> <td>This is ordinary auto tuning.</td> </tr> <tr> <td>2</td> <td>Auto tuning mode 2</td> <td>Fixes to the load to motor inertia ratio setting with parameter No. 34. Responsive setting is changeable.</td> </tr> <tr> <td>3</td> <td>Manual mode 1</td> <td>Adjusted manually simply.</td> </tr> <tr> <td>4</td> <td>Manual mode 2</td> <td>Adjusted all gains manually.</td> </tr> </tbody> </table> </div>	Setting value	Response	Guideline for machine resonance frequency	1	Low response	15Hz	2	20Hz	3	25Hz	4	30Hz	5	Middle response	35Hz	6	45Hz	7	55Hz	8	70Hz	9	High response	85Hz	A	105Hz	B	130Hz	C	160Hz	D	200Hz	E	240Hz	F	300Hz	Setting value	Gain adjustment mode	Adjustment	0	Interpolation mode	Fixes to position loop gain 1 (parameter No. 6).	1	Auto tuning mode 1	This is ordinary auto tuning.	2	Auto tuning mode 2	Fixes to the load to motor inertia ratio setting with parameter No. 34. Responsive setting is changeable.	3	Manual mode 1	Adjusted manually simply.	4	Manual mode 2	Adjusted all gains manually.	7 kW or less: 0105h 11 kW or more: 0102h	<p>Auto tuning response</p> <p>Set a response of the auto tuning. See the comparison table below for the setting method.</p> <p style="text-align: center;">Response level comparison table</p> <table border="1" style="border-collapse: collapse; text-align: center; width: 100%;"> <thead> <tr> <th style="width: 50%;">MR-J2S- _A_</th> <th style="width: 10%;"></th> <th style="width: 40%;">MR-J4- _A_</th> </tr> <tr> <th>No.2</th> <th></th> <th>PA09</th> </tr> </thead> <tbody> <tr><td>__ 0 1</td><td></td><td>8 or 9</td></tr> <tr><td>__ 0 2</td><td></td><td>1 1</td></tr> <tr><td>__ 0 3</td><td></td><td>1 3</td></tr> <tr><td>__ 0 4</td><td></td><td>1 4</td></tr> <tr><td>__ 0 5</td><td></td><td>15 or 16</td></tr> <tr><td>__ 0 6</td><td></td><td>17 or 18</td></tr> <tr><td>__ 0 7</td><td></td><td>19 or 20</td></tr> <tr><td>__ 0 8</td><td>→</td><td>21 or 22</td></tr> <tr><td>__ 0 9</td><td></td><td>2 3</td></tr> <tr><td>__ 0 A</td><td></td><td>2 5</td></tr> <tr><td>__ 0 B</td><td></td><td>26 or 27</td></tr> <tr><td>__ 0 C</td><td></td><td>28 or 29</td></tr> <tr><td>__ 0 D</td><td></td><td>30 or 31</td></tr> <tr><td>__ 0 E</td><td></td><td>3 2</td></tr> <tr><td>__ 0 F</td><td></td><td>33 or 34</td></tr> </tbody> </table>	MR-J2S- _A_		MR-J4- _A_	No.2		PA09	__ 0 1		8 or 9	__ 0 2		1 1	__ 0 3		1 3	__ 0 4		1 4	__ 0 5		15 or 16	__ 0 6		17 or 18	__ 0 7		19 or 20	__ 0 8	→	21 or 22	__ 0 9		2 3	__ 0 A		2 5	__ 0 B		26 or 27	__ 0 C		28 or 29	__ 0 D		30 or 31	__ 0 E		3 2	__ 0 F		33 or 34	16	P S
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<p>PA08</p> <p>Auto tuning mode</p> <p>Select the gain adjustment mode. It is necessary to make gain adjustment again when replacing.</p> <p>Select auto tuning mode 1 (initial value) and make gain adjustment. For details on how to make gain adjustment, see MR-J4- _A_ Servo Amplifier Instruction Manual, Chapter 6.</p>	0001h																																																																																																													
3	<p>Electronic gear numerator (command pulse multiplication numerator)</p> <p>Used to set a value for the electronic gear numerator. When "0" is set as the setting value, the resolution of the connected servo motor is set automatically. For example, the HC-MFS series is set to 131072 pulses.</p>	1	<p>PA21</p> <p>Electronic gear selection</p> <p>Use the initial value when replacing.</p>	0001h	P																																																																																																									
			<p>PA06</p> <p>Electronic gear numerator (command pulse multiplication numerator)</p> <p>Used to set a multiplier for the command pulse.</p>	1																																																																																																										
4	<p>Electronic gear denominator (command pulse multiplication denominator)</p> <p>Used to set a value for the electronic gear denominator.</p>	1	<p>PA21</p> <p>Electronic gear selection</p> <p>Use the initial value when replacing.</p>	0001h	P																																																																																																									
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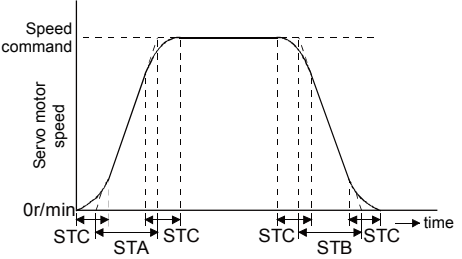
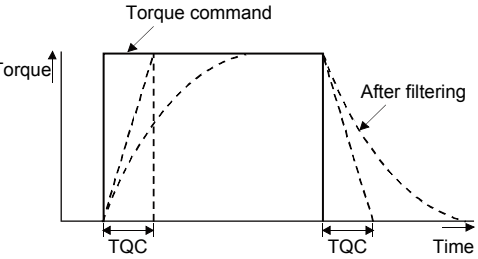
Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_			
No.	Name and function	Initial value	No.	Name and function	Initial value	Control mode
5	<p>In-position range</p> <p>Used to set the range where INP (positioning completion) is output by the command pulse unit before an electronic gear is calculated.</p> <p>For example, when wanting to set 100 μm in a state of direct connection to the ball screw, a lead wire length of 10 mm, a feedback pulse number of 131072 pulses/rev, and electronic gear numerator (CMX) / electronic gear denominator (CDV) = 16384/125 (unit setting of 10 μm per pulse), set "10", as shown in the equation below.</p> $\frac{100[\mu\text{m}] \times 10^{-6}}{10[\text{mm}] \times 10^{-3}} \times 131072[\text{pulse/rev}] \times \frac{125}{16384} \doteq 10$	100	PA10	<p>In-position range</p> <p>Used to set an in-position range per command pulse unit.</p> <p>Set the same value as for MR-J2S- _A_.</p>	100	P
6	<p>Position loop gain 1</p> <p>Used to set the gain of the position loop.</p> <p>Increase the gain to improve track ability in response to the position command.</p> <p>When auto tuning mode 1 or 2 is selected, the auto tuning result is automatically used.</p>	<p>7 kW or less: 35</p> <p>11 kW or more: 19</p>	PB07	<p>Model loop gain</p> <p>Used to set the response gain till the set position.</p> <p>If the setting value is increased, traceability for position command is improved. However, if the setting value is too large, it tends to vibrate or oscillate.</p> <p>This parameter can be set either automatically or manually depending on the [Pr. PA08] setting.</p>	15.0	P
7	<p>Position command acceleration/deceleration time constant (Position smoothing)</p> <p>This is used to set the constant of a primary delay to the position command.</p> <p>The control method can be selected from Primary delay and Linear acceleration/deceleration in parameter No. 55.</p> <p>The setting range of Linear acceleration/deceleration is 0 to 10 ms. When setting a value of 10 ms or more, the setting value is recognized as 10 ms.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>POINT</p> <ul style="list-style-type: none"> When Linear acceleration/deceleration is selected, do not select Control switching (parameter No. 0) and Restart after instantaneous power failure (parameter No. 20). Selecting them will cause the servo motor to make a sudden stop at the time of position control switching or at restart. </div> <p>(Example) When a command is given from a synchronizing encoder, synchronous operation will start smoothly even if it starts during line operation.</p>  	3	PB03	<p>Position command acceleration/deceleration time constant (Position smoothing)</p> <p>This is used to set the constant of a primary delay to the position command.</p> <p>Set the same value as for MR-J2S- _A_.</p>	0	P

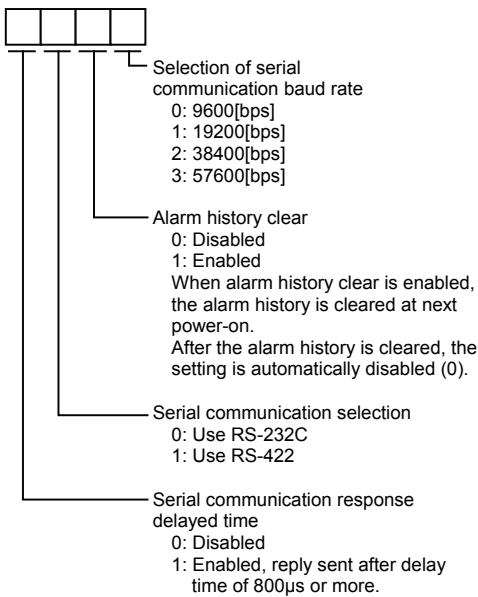
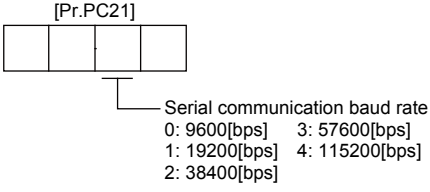
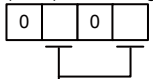
Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_			
No.	Name and function	Initial value	No.	Name and function	Initial value	Control mode
8	Internal speed command 1 This is used to set speed 1 of internal speed commands.	100	PC05	Internal speed command 1 This is used to set speed 1 of internal speed commands. Set the same value as for MR-J2S- _A_.	100	S
	Internal speed limit 1 This is used to set speed 1 of internal speed limits.			Internal speed limit 1 This is used to set speed 1 of internal speed limits. Set the same value as for MR-J2S- _A_.		T
9	Internal speed command 2 This is used to set speed 2 of internal speed commands.	500	PC06	Internal speed command 2 This is used to set speed 2 of internal speed commands. Set the same value as for MR-J2S- _A_.	500	S
	Internal speed limit 2 This is used to set speed 2 of internal speed limits.			Internal speed limit 2 This is used to set speed 2 of internal speed limits. Set the same value as for MR-J2S- _A_.		T
10	Internal speed command 3 This is used to set speed 3 of internal speed commands.	1000	PC07	Internal speed command 3 This is used to set speed 3 of internal speed commands. Set the same value as for MR-J2S- _A_.	1000	S
	Internal speed limit 3 This is used to set speed 3 of internal speed limits.			Internal speed limit 3 This is used to set speed 3 of internal speed limits. Set the same value as for MR-J2S- _A_.		T
11	<p>Speed acceleration time constant Used to set the acceleration time required to reach the rated speed from 0 r/min in response to an analog speed command and internal speed commands 1 to 7.</p> <p>For example, for a servo motor with a rated speed of 3000 r/min, set 3000 (3 s) to increase the speed from 0 to 1000 r/min in 1 s.</p>	0	PC01	<p>Speed acceleration time constant Used to set the acceleration time required to reach the rated speed from 0 r/min in response to VC (analog speed command) and internal speed commands 1 to 7 (Pr. PC.05 to PC11). Set the same value as for MR-J2S- _A_.</p>	0	S T
12	<p>Speed deceleration time constant Used to set the deceleration time required to reach 0 r/min from the rated speed in response to an analog speed command and internal speed commands 1 to 7.</p>	0	PC02	<p>Speed deceleration time constant Used to set the deceleration time required to reach 0 r/min from the rated speed in response to VC (analog speed command) and internal speed commands 1 to 7 (Pr. PC.05 to PC11). Set the same value as for MR-J2S- _A_.</p>	0	S T

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_			
No.	Name and function	Initial value	No.	Name and function	Initial value	Control mode
13	<p>S-pattern acceleration/deceleration time constant</p> <p>This is used to smooth start/stop of the servo motor.</p> <p>Set the time of the arc part for S-pattern acceleration/deceleration.</p>  <p>STA: Acceleration time constant (parameter No. 11) STB: Deceleration time constant (parameter No. 12) STC: S-pattern acceleration/deceleration time constant (parameter No. 13)</p> <p>If STA (acceleration time constant) or STB (deceleration time constant) is set to be longer, an error may occur in the time of the arc part for the S-pattern acceleration/deceleration time constant setting.</p> <p>The upper limit value of the actual arc part time is limited by $\frac{2000000}{STA}$ for acceleration or by $\frac{2000000}{STB}$ for deceleration.</p> <p>(Example) When STA, STB, and STC are set to 20000, 5000, and 200, respectively, the actual arc part time is as follows.</p> <p>At time of acceleration: 100 [ms] $\left[\begin{array}{l} \text{Because of } \frac{2000000}{20000} = 100[\text{ms}] < \\ 200[\text{ms}], \text{ it is limited to } 100 [\text{ms}]. \end{array} \right]$</p> <p>At time of deceleration: 200 [ms] $\left[\begin{array}{l} \text{Because of } \frac{2000000}{5000} = 400[\text{ms}] > \\ 200[\text{ms}], \text{ it becomes } 200 [\text{ms}] \text{ as} \\ \text{designed.} \end{array} \right]$</p>	0	PC03	<p>S-pattern acceleration/deceleration time constant</p> <p>This is used to smooth start/stop of the servo motor.</p> <p>Set the time of the arc part for S-pattern acceleration/deceleration.</p> <p>Set the same value as for MR-J2S- _A_.</p>	0	S T
14	<p>Torque command time constant</p> <p>This is used to set the constant of a primary delay to the torque command.</p>  <p>TQC: Torque command time constant</p>	0	PC04	<p>Torque command time constant</p> <p>This is used to set the constant of a primary delay to the torque command.</p> <p>Set the same value as for MR-J2S- _A_.</p>	0	T
15	<p>Station number setting</p> <p>Specifies the station No. of serial communication.</p> <p>Always set one station to one axis of the servo amplifier.</p> <p>Setting one station number to two or more stations will disable a normal communication.</p>	0	PC20	<p>Station number setting</p> <p>Used to set the station No. of the servo amplifier.</p> <p>Setting range: 0 to 31</p>	0	P S T

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_			
No.	Name and function	Initial value	No.	Name and function	Initial value	Control mode
16	<p>Serial communication function selection - Alarm history clear</p> <p>Used to select the serial communication baud rate and various conditions for communication, and to clear the alarm history.</p> 	0000h	PC21	<p>RS-422 communication function selection</p> <p>Used to select the communication speed. Adjust the speed to that of the transmitting side (master station).</p> <p>RS-232C is not supported.</p> 	0000h	P S T
17	<p>Analog monitor output</p> <p>Used to select the signals output to analog monitor 1 (MO1) and analog monitor 2 (MO2).</p> 	0100h	PC14	<p>Output to analog monitor 1</p> <p>See the comparison table below for the setting method.</p>	0000h	P S T
			PC15	<p>Output to analog monitor 2</p> <p>See the comparison table below for the setting method.</p>	0001h	

MR-J2S- _A_	
No.17 (Target digit number)	Display definition
0	Servo motor speed (± 8 V/max. speed) (Note 1)
1	Torque (± 8 V/max. torque) (Note 1)
2	Servo motor speed (+8 V/max. speed) (Note 1)
3	Torque (+8 V/max. torque) (Note 1)
4	Current command (± 8 V/max. current command)
5	Command pulse frequency (± 10 V/500 kpps)
6	Droop pulses (± 10 V/128 pulses)
7	Droop pulses (± 10 V/2048 pulses)
8	Droop pulses (± 10 V/8192 pulses)
9	Droop pulses (± 10 V/32768 pulses)
A	Droop pulses (± 10 V/131072 pulses)
B	Bus voltage (+8 V/400 V)

MR-J4- _A_	
PC14/PC15	Display definition
0000	Servo motor speed (± 8 V/max. speed) (Note 1)
0001	Torque (± 8 V/max. torque) (Note 1)
0002	Servo motor speed (+8 V/max. speed) (Note 1)
0003	Torque (+8 V/max. torque) (Note 1)
0004	Current command (± 8 V/max. current command)
0005	Command pulse frequency (± 10 V/4 Mpps) (Note 2)
0006	Servo motor-side droop pulses (± 10 V/100 pulses) (Note 2)
0007	Servo motor-side droop pulses (± 10 V/1000 pulses) (Note 2)
0008	Servo motor-side droop pulses (± 10 V/10000 pulses) (Note 2)
0008 or 0009	(Note 2, 3)
0009	Servo motor-side droop pulses (± 10 V/100000 pulses) (Note 2)
000D	Bus voltage (+8 V/400 V)

- Note 1. "Maximum speed" and "Maximum torque" differ depending on the servo motor. Therefore, after the existing motor has been replaced with an HG motor, the output voltage for "Maximum speed" or "Maximum torque" may differ.
2. Units used for MR-J2S- _A_ are different from those for MR-J4- _A_. Note that the input range of existing equipment needs to be adjusted.
3. Set "0008" or "0009". When setting the value, note that the input range of existing equipment needs to be adjusted.

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_																																																																																							
No.	Name and function	Initial value	No.	Name and function	Initial value	Control mode																																																																																				
18	<p>Status display selection</p> <p>This is used to select a status display shown at power-on.</p> <table border="1" style="margin-left: 20px;"> <tr> <td>0</td> <td>0</td> <td></td> <td></td> </tr> </table> <p> Status display selection at power-on 0: Cumulative feedback pulse 1: Servo motor speed 2: Droop pulse 3: Cumulative command pulse 4: Command pulse frequency 5: Analog speed command voltage (Note 1) 6: Analog torque command voltage (Note 2) 7: Regenerative load ratio 8: Effective load ratio 9: Peak load ratio A: Instantaneous torque B: Within one-revolution position at low C: Within one-revolution position at high D: ABS counter E: Load to motor inertia ratio F: Bus voltage Note 1: It is for speed control mode. It will be the analog speed limit voltage in the torque control mode. 2: It is for the torque control mode. It will be the analog torque limit voltage in the speed control mode and position control mode. </p> <p>Status display at power-on in corresponding control mode 0: Depends on the control mode</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Control mode</th> <th>Status display at power-on</th> </tr> </thead> <tbody> <tr> <td>Position</td> <td>Cumulative feedback pulses</td> </tr> <tr> <td>Position/speed</td> <td>Cumulative feedback pulses/ servo motor speed</td> </tr> <tr> <td>Speed</td> <td>Servo motor speed</td> </tr> <tr> <td>Speed/torque</td> <td>Servo motor speed/ analog torque command voltage</td> </tr> <tr> <td>Torque</td> <td>Analog torque command voltage</td> </tr> <tr> <td>Torque/position</td> <td>Analog torque command voltage/ cumulative feedback pulses</td> </tr> </tbody> </table> <p>1: Depends on the first digit setting of the parameter</p>	0	0			Control mode	Status display at power-on	Position	Cumulative feedback pulses	Position/speed	Cumulative feedback pulses/ servo motor speed	Speed	Servo motor speed	Speed/torque	Servo motor speed/ analog torque command voltage	Torque	Analog torque command voltage	Torque/position	Analog torque command voltage/ cumulative feedback pulses	0000h	PC36	<p>Status display selection</p> <p>Status display selection at power-on</p> <p>See the comparison table below for the setting method.</p> <p>Status display selection comparison table</p> <p>(1) Status display selection at power-on</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>MR-J2S- _A_</th> <th>MR-J4- _A_</th> <th>Display definition</th> </tr> <tr> <th>No.18</th> <th>PC36</th> <th></th> </tr> </thead> <tbody> <tr> <td>0 0 _ 0</td> <td>0 _ 0 0</td> <td>Cumulative feedback pulses</td> </tr> <tr> <td>0 0 _ 1</td> <td>0 _ 0 1</td> <td>Servo motor speed</td> </tr> <tr> <td>0 0 _ 2</td> <td>0 _ 0 2</td> <td>Droop pulses</td> </tr> <tr> <td>0 0 _ 3</td> <td>0 _ 0 3</td> <td>Cumulative command pulses</td> </tr> <tr> <td>0 0 _ 4</td> <td>0 _ 0 4</td> <td>Command pulse frequency</td> </tr> <tr> <td>0 0 _ 5</td> <td>0 _ 0 5</td> <td>Analog speed command voltage (Note 1)</td> </tr> <tr> <td>0 0 _ 6</td> <td>0 _ 0 6</td> <td>Analog torque command voltage (Note 2)</td> </tr> <tr> <td>0 0 _ 7</td> <td>0 _ 0 7</td> <td>Regenerative load ratio</td> </tr> <tr> <td>0 0 _ 8</td> <td>0 _ 0 8</td> <td>Effective load ratio</td> </tr> <tr> <td>0 0 _ 9</td> <td>0 _ 0 9</td> <td>Peak load ratio</td> </tr> <tr> <td>0 0 _ A</td> <td>0 _ 0 A</td> <td>Instantaneous torque</td> </tr> <tr> <td>0 0 _ B</td> <td>0 _ 0 B</td> <td>Within one-revolution position (1-pulse unit)</td> </tr> <tr> <td>0 0 _ C</td> <td>0 _ 0 C</td> <td>Within one-revolution position (100-pulse unit)</td> </tr> <tr> <td>0 0 _ D</td> <td>0 _ 0 D</td> <td>ABS counter</td> </tr> <tr> <td>0 0 _ E</td> <td>0 _ 0 E</td> <td>Load to motor inertia ratio</td> </tr> <tr> <td>0 0 _ F</td> <td>0 _ 0 F</td> <td>Bus voltage</td> </tr> </tbody> </table> <p>Note 1. It is for the speed control mode. It will be the analog speed limit voltage in the torque control mode.</p> <p>2. It is for the torque control mode. It will be the analog torque limit voltage in the speed control mode and position control mode.</p> <p>(2) Status display at power-on in each control mode</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>MR-J2S- _A_</th> <th>MR-J4- _A_</th> <th>Display definition</th> </tr> <tr> <th>No.18</th> <th>PC36</th> <th></th> </tr> </thead> <tbody> <tr> <td>0 0 0 _</td> <td>0 0 _ _</td> <td>Depends on each control mode</td> </tr> <tr> <td>0 0 1 _</td> <td>0 1 _ _</td> <td>Depends on the second digit of PC36.</td> </tr> </tbody> </table>	MR-J2S- _A_	MR-J4- _A_	Display definition	No.18	PC36		0 0 _ 0	0 _ 0 0	Cumulative feedback pulses	0 0 _ 1	0 _ 0 1	Servo motor speed	0 0 _ 2	0 _ 0 2	Droop pulses	0 0 _ 3	0 _ 0 3	Cumulative command pulses	0 0 _ 4	0 _ 0 4	Command pulse frequency	0 0 _ 5	0 _ 0 5	Analog speed command voltage (Note 1)	0 0 _ 6	0 _ 0 6	Analog torque command voltage (Note 2)	0 0 _ 7	0 _ 0 7	Regenerative load ratio	0 0 _ 8	0 _ 0 8	Effective load ratio	0 0 _ 9	0 _ 0 9	Peak load ratio	0 0 _ A	0 _ 0 A	Instantaneous torque	0 0 _ B	0 _ 0 B	Within one-revolution position (1-pulse unit)	0 0 _ C	0 _ 0 C	Within one-revolution position (100-pulse unit)	0 0 _ D	0 _ 0 D	ABS counter	0 0 _ E	0 _ 0 E	Load to motor inertia ratio	0 0 _ F	0 _ 0 F	Bus voltage	MR-J2S- _A_	MR-J4- _A_	Display definition	No.18	PC36		0 0 0 _	0 0 _ _	Depends on each control mode	0 0 1 _	0 1 _ _	Depends on the second digit of PC36.	0000h	P S T
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Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_			
No.	Name and function	Initial value	No.	Name and function	Initial value	Control mode
19	Parameter writing inhibit Used to select the reference range and writing range of parameters.	0000h	PA19	Parameter writing inhibit Used to select the reference range and writing range of parameters by changing a setting value. Use with the initial value as is. (Refer to the table "The setting values of [Pr. PA19] and their accessible parameters".)	00AAh	P S T
20	Function selection 2 Used to select whether to execute a restart after instantaneous power failure, servo-lock when the speed control mode stops, and slight vibration suppression control. <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; width: 15px; height: 15px; margin-right: 5px;"></div> <div style="border: 1px solid black; width: 15px; height: 15px; margin-right: 5px;"></div> <div style="border: 1px solid black; width: 15px; height: 15px; margin-right: 5px;"></div> <div style="border: 1px solid black; width: 15px; height: 15px;"></div> </div> <p>Restart after instantaneous power failure selection If the power supply voltage has returned to normal after an undervoltage status caused by the reduction of the input power supply voltage in the speed control mode, the servo motor can be restarted by merely turning on the start signal without resetting the alarm. 0: Disabled (Undervoltage alarm (AL. 10) occurs.) 1: Enabled</p> <p>Servo-lock selection at speed control stop In the speed control mode, the servo motor shaft can be locked to prevent the shaft from being moved by an external force. 0: Enabled (servo-lock) The operation to maintain the stop position is performed. 1: Disabled (no servo-lock) The stop position is not maintained. The control to make the speed 0 r/min is performed.</p> <p>Slight vibration suppression control It will become effective if the auto tuning selection is set as "0400" by parameter No.2. Used to curb vibration at the time of stop. 0: Disabled 1: Enabled</p>	0000h		Restart after instantaneous power failure selection No corresponding parameter		
			PC23	Servo-lock selection at speed control stop Select the servo-lock selection at speed control stop. <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; width: 15px; height: 15px;"></div> </div> <p>Servo-lock selection at speed control stop 0: Enabled (servo-lock) The operation to maintain the stop position is performed. 1: Disabled (no servo-lock) The stop position is not maintained. The control to make the speed 0 r/min is performed.</p> <p>Set the same value as for MR-J2S- _A_.</p>	0000h	S
			PB24	Slight vibration suppression control selection Used to select the slight vibration suppression control. 0: Disabled 1: Enabled To enable the slight vibration suppression control, select "Manual mode (_ _ 3)" under "Gain adjustment mode selection" in [Pr. PA08]. Slight vibration suppression control cannot be used in the speed control mode. Set the same value as for MR-J2S- _A_.	0000h	P

Table: The setting values of [Pr. PA19] and the accessible parameters

PA19	Permissions	PA	PB	PC	PD	PE	PF	PL
Other than the below	Read	○	△	△	△	△	△	△
	Write	○	△	△	△	△	△	△
000Ah	Read	Only 19	△	△	△	△	△	△
	Write	Only 19	△	△	△	△	△	△
000Bh	Read	○	○	○	△	△	△	△
	Write	○	○	○	△	△	△	△
000Ch	Read	○	○	○	○	△	△	△
	Write	○	○	○	○	△	△	△
00AAh (initial value)	Read	○	○	○	○	○	○	△
	Write	○	○	○	○	○	○	△
00ABh	Read	○	○	○	○	○	○	○
	Write	○	○	○	○	○	○	○
100Bh	Read	○	△	△	△	△	△	△
	Write	Only 19	△	△	△	△	△	△
100Ch	Read	○	○	○	○	△	△	△
	Write	Only 19	△	△	△	△	△	△
10AAh	Read	○	○	○	○	○	○	△
	Write	Only 19	△	△	△	△	△	△
10ABh	Read	○	○	○	○	○	○	○
	Write	Only 19	△	△	△	△	△	△

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_																														
No.	Name and function	Initial value	No.	Name and function	Initial value	Control mode																											
21	Function selection 3 (command pulse selection) Used to select the input form of pulse train input signals. <div style="margin-top: 10px;"> <p>Command pulse input form 0: Forward/reverse rotation pulse train 1: Signed pulse train 2: A/B-phase pulse train</p> <p>Pulse train logic selection 0: Positive logic 1: Negative logic</p> </div>	0000h	PA13	Command pulse input form <div style="margin-top: 10px;"> <p>Command pulse input form 0: Forward/reverse rotation pulse train 1: Signed pulse train 2: A/B-phase pulse train</p> <p>Pulse train logic selection 0: Positive logic 1: Negative logic</p> <p>Command input pulse train filter Selecting a proper filter suited to the selection command pulse frequency enables enhancement of noise immunity. 0: Command input pulse train is 4 Mpps or less. 1: Command input pulse train is 1 Mpps or less. 2: Command input pulse train is 500 kpps or less. 3: Command input pulse train is 200 kpps or less. (Corresponds to software version A5 or later)</p> </div> <p>See the comparison table below for the setting method.</p>	0100h	P																											
<p>Command pulse setting comparison table</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">MR-J2S- _A_</th> <th colspan="2">MR-J4- _A_</th> </tr> <tr> <th>No.21</th> <th colspan="2">PA13 (Note 1)</th> </tr> <tr> <th></th> <th>Differential input</th> <th>Open-collector input</th> </tr> </thead> <tbody> <tr> <td>0 0 0 0</td> <td>0 _ _ 0</td> <td>0 _ _ 0 (Note 2)</td> </tr> <tr> <td>0 0 0 1</td> <td>0 _ 0 1</td> <td>0 _ 0 1</td> </tr> <tr> <td>0 0 0 2</td> <td>0 _ 0 2</td> <td>0 _ 0 2</td> </tr> <tr> <td>0 0 1 0</td> <td>0 _ _ 0</td> <td>0 _ _ 0 (Note 2)</td> </tr> <tr> <td>0 0 1 1</td> <td>0 _ 1 1</td> <td>0 _ 1 1</td> </tr> <tr> <td>0 0 1 2</td> <td>0 _ 1 2</td> <td>0 _ 1 2</td> </tr> </tbody> </table> <p>Note 1. Make sure to set a pulse train input filter. If it is not set, position mismatch will occur.</p> <p>2. It is necessary to adjust the command pulse logic to the positioning module. An incorrect logic setting causes the motor to not rotate. Make sure to configure the settings.</p> <p>See "3.7 Important Points for Replacement (Command Pulse Logic Settings)".</p>							MR-J2S- _A_	MR-J4- _A_		No.21	PA13 (Note 1)			Differential input	Open-collector input	0 0 0 0	0 _ _ 0	0 _ _ 0 (Note 2)	0 0 0 1	0 _ 0 1	0 _ 0 1	0 0 0 2	0 _ 0 2	0 _ 0 2	0 0 1 0	0 _ _ 0	0 _ _ 0 (Note 2)	0 0 1 1	0 _ 1 1	0 _ 1 1	0 0 1 2	0 _ 1 2	0 _ 1 2
MR-J2S- _A_	MR-J4- _A_																																
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0 0 1 1	0 _ 1 1	0 _ 1 1																															
0 0 1 2	0 _ 1 2	0 _ 1 2																															

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_															
No.	Name and function	Initial value	No.	Name and function	Initial value	Control mode												
22	<p>Function selection 4</p> <p>Used to select a stop method when LSP (Forward rotation stroke end) and LSN (Reverse rotation stroke end) are turned off, and to select VC/VLA voltage averaging.</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> </div> <p>Stop method when LSP (forward rotation stroke end) and LSN (reverse rotation stroke end) are effective 0: Quick stop 1: Slow stop</p> <p>VC/VLA voltage averaging This is used to set the filtering time when VC (Analog speed command) or VLA (Analog speed limit) is imported. Set 0 to vary the speed to voltage fluctuation in real time. Increase the set value to vary the speed slower to voltage fluctuation.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Setting value</th> <th>Filtering time [ms]</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>0.444</td></tr> <tr><td>2</td><td>0.888</td></tr> <tr><td>3</td><td>1.777</td></tr> <tr><td>4</td><td>3.555</td></tr> </tbody> </table>	Setting value	Filtering time [ms]	0	0	1	0.444	2	0.888	3	1.777	4	3.555	0000h	PD30	<p>Function selection D-1</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> </div> <p>Stop method when LSP (forward rotation stroke end) and LSN (reverse rotation stroke end) are turned OFF 0: Quick stop 1: Slow stop</p> <p>Set the same value as for MR-J2S- _A_.</p>	0000h	P S
		Setting value	Filtering time [ms]															
0	0																	
1	0.444																	
2	0.888																	
3	1.777																	
4	3.555																	
PC23	<p>Function selection C-2</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> </div> <p>VC/VLA voltage averaging selection</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Setting value</th> <th>Filtering time [ms]</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>0.444</td></tr> <tr><td>2</td><td>0.888</td></tr> <tr><td>3</td><td>1.777</td></tr> <tr><td>4</td><td>3.555</td></tr> </tbody> </table> <p>Set the same value as for MR-J2S- _A_.</p>	Setting value	Filtering time [ms]	0	0	1	0.444	2	0.888	3	1.777	4	3.555	0000h	S T			
Setting value	Filtering time [ms]																	
0	0																	
1	0.444																	
2	0.888																	
3	1.777																	
4	3.555																	
23	<p>Feed forward gain</p> <p>Set the feed forward gain.</p> <p>When the setting is 100%, the droop pulses during operation at constant speed are nearly zero. However, sudden acceleration/deceleration will increase the overshoot. As a standard, when setting the feed forward gain as 100%, set 1 s or more as the acceleration/deceleration time constant up to the rated speed.</p>	0	PB04	<p>Feed forward gain</p> <p>Set the feed forward gain.</p> <p>Set the same value as for MR-J2S- _A_.</p>	0	P												
24	<p>Zero speed</p> <p>Used to set the output range of ZSP (Zero speed detection).</p>	50	PC17	<p>Zero speed</p> <p>Used to set the output range of ZSP (Zero speed detection).</p> <p>Set the same value as for MR-J2S- _A_.</p>	50	P S T												
25	<p>Analog speed command maximum speed</p> <p>Used to set the speed at the maximum input voltage (10 V) of VC (Analog speed command).</p> <p>When "0" is set, the speed will reach the rated speed of the connected servo motor.</p>	0	PC12	<p>Analog speed command - Maximum speed</p> <p>Set the value according to the following method.</p> <p>(1) When the setting value of MR-J2S- _A_ No. 25 is "0", set the rated speed of the existing motor. Example: HC-KFS053 motor → PC12: "3000"</p> <p>(2) When the setting value of MR-J2S- _A_ No. 25 is a value other than "0", set the same value as for MR-J2S- _A_.</p>	0	S												
	<p>Analog speed limit - Maximum speed</p> <p>Used to set the speed at the maximum input voltage (10 V) of VLA (Analog speed limit).</p> <p>When "0" is set, the speed will reach the rated speed of the connected servo motor.</p>	0		<p>Analog speed limit maximum speed</p> <p>Set the value in the same way as above.</p>			T											

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_			Contr ol mode																																
No.	Name and function	Initial value	No.	Name and function	Initial value																																	
26	<p>Analog torque command maximum output Used to set the output torque at an analog torque command voltage (TC = ±8 V) of +8 V assuming that the maximum torque is 100[%]. For example, when the setting value is 50 and TC = +8 V, Maximum torque × $\frac{50}{100}$ is output.</p>	100	PC13	<p>Analog torque command maximum output Set the same value as for MR-J2S- _A_.</p>	100.0	T																																
27	<p>Encoder output pulses Used to set the encoder pulses (A-phase and B-phase) output by the servo amplifier. Set the value 4 times greater than the A-phase and B-phase pulses. Parameter No. 54 can be used to choose the output pulse setting or output dividing ratio setting. The number of A-phase and B-phase pulses actually output is 1/4 times greater than the preset number of pulses. The maximum output frequency is 1.3 Mpps (after multiplication by 4). Use this parameter within this range.</p> <ul style="list-style-type: none"> For output pulse designation Set parameter No. 54 to "0 _ _ _" (initial value). Set the number of pulses per servo motor revolution. Output pulse = setting value [pulse/rev]. For instance, when "5600" is set, the actual output A- and B-phase pulses are as follows. A-phase/B-phase output pulse = $\frac{5600}{4} = 1400$ [pulse] For output division ratio setting Set parameter No. 54 to "1 _ _ _". The number of pulses per servo motor revolution is divided by the set value. Output pulse = $\frac{\text{resolving power of one rotation of servo motor}}{\text{setting value}}$ [pulse/rev] <p>For instance, when "8" is set, the actual output A- and B-phase pulses are as follows. A-phase/B-phase output pulse = $\frac{131072}{8} \times \frac{1}{4} = 4096$ [pulse]</p>	4000	PA15	<p>Encoder output pulse Used to set the encoder pulses (A-phase and B-phase) output by the servo amplifier. See the comparison table below for the setting method.</p> <p>Encoder output pulse setting comparison table</p> <p>(1) For primary replacement (Note 1)</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr> <th colspan="2">MR-J2S- _A_</th> <th colspan="2">MR-J4- _A_</th> </tr> <tr> <th>No.54</th> <th>No.27 (Note 2)</th> <th>PC19</th> <th>PA15 (Note 3)</th> </tr> </thead> <tbody> <tr> <td>1 _ _ _</td> <td>N</td> <td>0 _ 1 _</td> <td>N</td> </tr> <tr> <td>0 _ _ _</td> <td>N</td> <td>0 _ 0 _</td> <td>N</td> </tr> </tbody> </table> <p>Note 1. N = J2S setting value. 2. Set the same value as for J2S in MR-J4- _A_ PA15.</p> <p>(2) For secondary/simultaneous replacement (Note 1)</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr> <th colspan="2">MR-J2S- _A_</th> <th colspan="2">MR-J4- _A_</th> </tr> <tr> <th>No.54</th> <th>No.27 (Note 2)</th> <th>PC19</th> <th>PA15</th> </tr> </thead> <tbody> <tr> <td>1 _ _ _</td> <td>N</td> <td>0 _ 1 _</td> <td>N × 32 (Note 3)</td> </tr> <tr> <td>0 _ _ _</td> <td>N</td> <td>0 _ 0 _</td> <td>N</td> </tr> </tbody> </table> <p>Note 1. For the primary, secondary and simultaneous replacement, see "[Appendix 2] Introduction to Renewal Tool". 2. N = J2S setting value. 3. For dividing ratio settings, set a value 32 x the MR-J2S- _A_ setting value for MR-J4- _A_ PA15.</p>	MR-J2S- _A_		MR-J4- _A_		No.54	No.27 (Note 2)	PC19	PA15 (Note 3)	1 _ _ _	N	0 _ 1 _	N	0 _ _ _	N	0 _ 0 _	N	MR-J2S- _A_		MR-J4- _A_		No.54	No.27 (Note 2)	PC19	PA15	1 _ _ _	N	0 _ 1 _	N × 32 (Note 3)	0 _ _ _	N	0 _ 0 _	N	4000	P S T
MR-J2S- _A_		MR-J4- _A_																																				
No.54	No.27 (Note 2)	PC19	PA15 (Note 3)																																			
1 _ _ _	N	0 _ 1 _	N																																			
0 _ _ _	N	0 _ 0 _	N																																			
MR-J2S- _A_		MR-J4- _A_																																				
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1 _ _ _	N	0 _ 1 _	N × 32 (Note 3)																																			
0 _ _ _	N	0 _ 0 _	N																																			
			PC19	Encoder output pulse selection See the comparison table above for the setting method.	0000h																																	
28	<p>Internal torque limit 1 Set the parameter assuming that the maximum torque is 100 [%]. The parameter is for limiting the torque of the servo motor. When "0" is set, no torque is generated.</p> <table border="1" style="width: 100%;"> <thead> <tr> <th>(Note) TL</th> <th>Torque limit</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Internal torque limit 1 (Parameter No.28)</td> </tr> <tr> <td rowspan="2">1</td> <td>Analog torque limit < Internal torque limit 1 : Analog torque limit</td> </tr> <tr> <td>Analog torque limit > Internal torque limit 1 : Internal torque limit 1</td> </tr> </tbody> </table> <p>Note. 0: OFF 1: ON</p> <p>When torque is output in analog monitor output, this setting value will be the maximum output voltage (+8 V).</p>	(Note) TL	Torque limit	0	Internal torque limit 1 (Parameter No.28)	1	Analog torque limit < Internal torque limit 1 : Analog torque limit	Analog torque limit > Internal torque limit 1 : Internal torque limit 1	100	PA11	<p>Forward rotation torque limit You can limit the torque generated by the servo motor. Set the same value as for MR-J2S- _A_.</p>	100.0	P S T																									
(Note) TL	Torque limit																																					
0	Internal torque limit 1 (Parameter No.28)																																					
1	Analog torque limit < Internal torque limit 1 : Analog torque limit																																					
	Analog torque limit > Internal torque limit 1 : Internal torque limit 1																																					
			PA12	<p>Reverse rotation torque limit You can limit the torque generated by the servo motor. Set the same value as for MR-J2S- _A_.</p>	100.0																																	

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_			
No.	Name and function	Initial value	No.	Name and function	Initial value	Control mode
29	<p>Analog speed command offset Used to set the offset voltage of VC (Analog speed command). For example, if switching on ST1 (forward rotation start) with 0 V applied to VC causes CCW rotation, set a negative value. When VC automatic offset is used, the automatically offset value is set to this parameter. The initial value is provided before shipment by the VC automatic offset function on condition that the voltage between VC and LG is 0 V. Setting range: -999 to 999 mV</p>	Differs depending on the servo amplifier	PC37	<p>Analog speed command offset Used to set the offset voltage of VC (Analog speed command). The initial value is provided before shipment by the VC automatic offset function on condition that the voltage between VC and LG is 0 V. For example, when the motor rotates by switching on ST1 (forward rotation start) with 0 V applied to VC, set an offset voltage. Setting range: -9999 to 9999mV</p>	Differs depending on the servo amplifier	S
	<p>Analog speed limit offset Used to set the offset voltage of VLA (Analog speed limit). For example, if switching on RS1 (forward rotation selection) with 0 V applied to VLA causes CCW rotation, set a negative value. When VC automatic offset is used, the automatically offset value is set to this parameter. The initial value is provided before shipment by the VC automatic offset function on condition that the voltage between VLA and LG is 0 V. Setting range: -999 to 999 mV</p>			<p>Analog speed limit offset Used to set the offset voltage of VLA (Analog speed limit). The initial value is provided before shipment by the VC automatic offset function on condition that the voltage between VC and LG is 0 V. When the motor rotates by switching on RS1 (Forward rotation selection) with 0 V applied to VLA, set an offset voltage. Setting range: -9999 to 9999mV</p>		
30	<p>Analog torque command offset Used to set the offset voltage of TC (Analog torque command). Setting range: -999 to 999 mV</p>	0	PC38	<p>Analog torque command offset Used to set the offset voltage of TC (Analog torque command). Setting range: -9999 to 9999mV</p>	0	T
	<p>Analog torque limit offset Used to set the offset voltage of TLA (Analog torque limit). Setting range: -999 to 999 mV</p>			<p>Analog torque limit offset Used to set the offset voltage of TLA (Analog torque limit). Setting range: -9999 to 9999mV</p>		
31	<p>Analog monitor 1 offset Used to set the offset voltage of Analog monitor 1 (MO1). Setting range: -999 to 999 mV</p>	0	PC39	<p>Analog monitor 1 offset Used to set the offset voltage of MO1 (Analog monitor 1). Setting range: -9999 to 9999mV</p>	0	P S T
32	<p>Analog monitor 2 offset Used to set the offset voltage of Analog monitor 2 (MO2). Setting range: -999 to 999 mV</p>	0	PC40	<p>Analog monitor 2 offset Used to set the offset voltage of MO2 (Analog monitor 2). Setting range: -9999 to 9999mV</p>	0	P S T
33	<p>Electromagnetic brake sequence output Used to set the delay time (Tb) between MBR (Electromagnetic brake interlock) OFF and base circuit shut-off. Setting range: 0 to 1000 ms</p>	100	PC16	<p>Electromagnetic brake sequence output Used to set the delay time (Tb) between MBR (Electromagnetic brake interlock) OFF and base circuit shut-off. Setting range: 0 to 1000 ms Set the same value as for MR-J2S- _A_.</p>	0	P S T
34	<p>Load to motor inertia ratio Used to set the motor inertia ratio to the servo motor shaft inertia moment. When auto tuning mode 1 or interpolation mode is selected, the result of auto tuning is automatically used. In this case, the value varies between 0 and 1000. Setting range: 0 to 3000; Unit: x0.1</p>	70	PB06	<p>Load to motor inertia ratio When auto tuning mode 1 is selected, the auto tuning result is automatically used. Setting range: 0.00 to 300.00; Unit: x1.0 Note that the setting unit is different from that for MR-J2S- _A_ . When setting a value manually, set a value 0.1 x the MR-J2S- _A_ setting value.</p>	7.00	P S

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_			
No.	Name and function	Initial value	No.	Name and function	Initial value	Control mode
35	<p>Position loop gain 2</p> <p>Used to set the gain of the position loop.</p> <p>Set this parameter to increase the position response to level load disturbance.</p> <p>Higher setting increases the response level but is liable to generate vibration and/or noise.</p> <p>When auto tuning mode 1 or 2, manual mode 1, and interpolation mode are selected, the auto tuning result is automatically used.</p>	<p>7 kW or less: 35</p> <p>11 kW or more: 19</p>	PB08	<p>Position loop gain</p> <p>Used to set the gain of the position loop.</p> <p>When auto tuning mode 1 is selected, the auto tuning result is automatically used.</p>	37.0	P
36	<p>Speed loop gain 1</p> <p>Normally, it is unnecessary to change this parameter.</p> <p>Higher setting increases the response level but is liable to generate vibration and/or noise.</p> <p>When auto tuning mode 1 or 2 and manual mode 1 are selected, the auto tuning result is automatically used.</p>	<p>7 kW or less: 177</p> <p>11 kW or more: 96</p>		<p>No corresponding parameter</p> <p>This parameter is automatically set by the servo amplifier.</p>		P S
37	<p>Speed loop gain 2</p> <p>Set this parameter when vibration occurs on machines of low rigidity or large backlash.</p> <p>Higher setting increases the response level but is liable to generate vibration and/or noise.</p> <p>When auto tuning mode 1 or 2 and interpolation mode are selected, the auto tuning result is automatically used.</p>	<p>7 kW or less: 817</p> <p>11 kW or more: 455</p>	PB09	<p>Speed loop gain</p> <p>Used to set the gain of the speed loop.</p> <p>When auto tuning mode 1 is selected, the auto tuning result is automatically used.</p>	823	P S
38	<p>Speed integral compensation.</p> <p>Used to set the integral time constant of the speed loop.</p> <p>Decreasing the setting value will increase the response level, but vibration and noise are generated more easily.</p> <p>When auto tuning mode 1 or 2 and interpolation mode are selected, the auto tuning result is automatically used.</p>	48	PB10	<p>Speed integral compensation</p> <p>Used to set the integral time constant of the speed loop.</p> <p>When auto tuning mode 1 is selected, the auto tuning result is automatically used.</p>	33.7	P S
39	<p>Speed differential compensation</p> <p>Used to set the differential compensation.</p> <p>To enable the setting value, turn on PC (proportional control).</p> <p>Setting range: 0 to 1000</p>	980	PB11	<p>Speed differential compensation</p> <p>Used to set the differential compensation.</p> <p>To enable the setting value, turn on PC (proportional control).</p> <p>Setting range: 0 to 1000</p> <p>Set the same value as for MR-J2S- _A_.</p>	980	P S

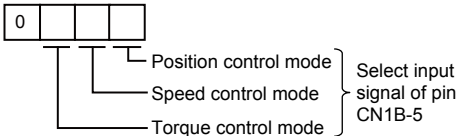
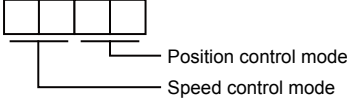
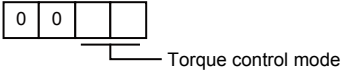
Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_																					
No.	Name and function	Initial value	No.	Name and function	Initial value	Control mode																		
41	<p>Input signal automatic ON selection</p> <p>Used to set SON (servo-on), LSP (forward rotation stroke end), and LSN (reverse rotation stroke end) automatic ON.</p> <p>SON (Servo-on) input 0: ON/OFF by external input 1: Automatic ON in servo amplifier (External wiring is unnecessary)</p> <p>LSP input selection (forward rotation stroke end) 0: ON/OFF by external input 1: Automatic ON in servo amplifier (External wiring is unnecessary)</p> <p>LSN input selection (reverse rotation stroke end) 0: ON/OFF by external input 1: Automatic ON in servo amplifier (External wiring is unnecessary)</p>	0000h	PD01	<p>Input signal automatic on selection 1</p> <p>Used to set input devices to be turned on automatically.</p> <p>See the comparison table below for the setting method.</p> <p>Input signal automatic ON setting comparison table</p> <table border="1"> <thead> <tr> <th>MR-J2S- _A_ No.41</th> <th>MR-J4- _A_ PD01</th> </tr> </thead> <tbody> <tr><td>0 0 0 0</td><td>0 0 0 0</td></tr> <tr><td>0 0 0 1</td><td>0 0 0 4</td></tr> <tr><td>0 0 1 0</td><td>0 4 0 0</td></tr> <tr><td>0 0 1 1</td><td>0 4 0 4</td></tr> <tr><td>0 1 0 0</td><td>0 8 0 0</td></tr> <tr><td>0 1 0 1</td><td>0 8 0 4</td></tr> <tr><td>0 1 1 0</td><td>0 C 0 0</td></tr> <tr><td>0 1 1 1</td><td>0 C 0 4</td></tr> </tbody> </table>	MR-J2S- _A_ No.41	MR-J4- _A_ PD01	0 0 0 0	0 0 0 0	0 0 0 1	0 0 0 4	0 0 1 0	0 4 0 0	0 0 1 1	0 4 0 4	0 1 0 0	0 8 0 0	0 1 0 1	0 8 0 4	0 1 1 0	0 C 0 0	0 1 1 1	0 C 0 4	0000h	P S T
MR-J2S- _A_ No.41	MR-J4- _A_ PD01																							
0 0 0 0	0 0 0 0																							
0 0 0 1	0 0 0 4																							
0 0 1 0	0 4 0 0																							
0 0 1 1	0 4 0 4																							
0 1 0 0	0 8 0 0																							
0 1 0 1	0 8 0 4																							
0 1 1 0	0 C 0 0																							
0 1 1 1	0 C 0 4																							
42	<p>Input signal selection 1</p> <p>Assign the input pins for the control mode switching signals and set CR (clear).</p> <p>Input pin allocation of LOP (control change) Set the input connector pin for the control method change signal. However, it is effective if selection of Position/Speed, Speed/Torque, and Torque/Position is made in parameter No.0.</p> <table border="1"> <thead> <tr> <th>Setting value</th> <th>Connector pin No.</th> </tr> </thead> <tbody> <tr><td>0</td><td>CN1B-5</td></tr> <tr><td>1</td><td>CN1B-14</td></tr> <tr><td>2</td><td>CN1A-8</td></tr> <tr><td>3</td><td>CN1B-7</td></tr> <tr><td>4</td><td>CN1B-8</td></tr> <tr><td>5</td><td>CN1B-9</td></tr> </tbody> </table> <p>CR (Clear) selection 0: Deleting droop pulses by turning on the device 1: Always deleting droop pulses during turning ON of the device</p>	Setting value	Connector pin No.	0	CN1B-5	1	CN1B-14	2	CN1A-8	3	CN1B-7	4	CN1B-8	5	CN1B-9	0003h	<p>Input signal selection 1</p> <p>Assign the input pins for the control mode switching signals and set CR (clear).</p> <p>See the comparison table below for the setting method.</p>		P S					
Setting value	Connector pin No.																							
0	CN1B-5																							
1	CN1B-14																							
2	CN1A-8																							
3	CN1B-7																							
4	CN1B-8																							
5	CN1B-9																							

Input signal selection 1 setting comparison table

MR-J2S- _A_		MR-J4- _A_					
No.42	Target pin	CR selection		LOP assignment			
		PD32	Target pin	Target parameter		Target parameter	
				No.	Setting value	No.	Setting value
0 0 0 0	CN1B-5	0 0 0 0	CN1-15	PD03	2 3 2 3	PD04	0 0 2 3
0 0 0 1	CN1B-14			PD11			
0 0 0 2	CN1A-8			PD13			
0 0 0 3	CN1B-7			PD05			
0 0 0 4	CN1B-8			PD07			
0 0 0 5	CN1B-9			PD09			
0 0 1 0	CN1B-5			PD03			
0 0 1 1	CN1B-14	PD11					
0 0 1 2	CN1A-8	PD13					
0 0 1 3	CN1B-7	PD05					
0 0 1 4	CN1B-8	PD07					
0 0 1 5	CN1B-9	PD09					

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_																																																																					
No.	Name and function	Initial value	No.	Name and function	Initial value	Control mode																																																																		
43	<p>Input signal selection 2 (CN1B-5)</p> <p>When LOP (control switching) is assigned to pin CN1B-5 by parameter No. 42, this parameter cannot be used.</p> <p>Any input signal can be assigned to pin CN1B-5.</p> <p>Note that the number of digits of a setting value and the signals that can be assigned differ depending on the control mode.</p>  <p>Signals that can be assigned in each control mode are shown in the table below with abbreviations. Even if other signals are set, they are ineffective.</p> <table border="1"> <thead> <tr> <th rowspan="2">Setting value</th> <th colspan="3">(Note) Control mode</th> </tr> <tr> <th>P</th> <th>S</th> <th>T</th> </tr> </thead> <tbody> <tr><td>0</td><td>/</td><td>/</td><td>/</td></tr> <tr><td>1</td><td>SO</td><td>SO</td><td>SO</td></tr> <tr><td>2</td><td>RES</td><td>RES</td><td>RES</td></tr> <tr><td>3</td><td>PC</td><td>PC</td><td>/</td></tr> <tr><td>4</td><td>TL</td><td>TL</td><td>/</td></tr> <tr><td>5</td><td>CR</td><td>CR</td><td>CR</td></tr> <tr><td>6</td><td>/</td><td>SP</td><td>SP</td></tr> <tr><td>7</td><td>/</td><td>SP</td><td>SP</td></tr> <tr><td>8</td><td>/</td><td>ST1</td><td>RS2</td></tr> <tr><td>9</td><td>/</td><td>ST2</td><td>RS1</td></tr> <tr><td>A</td><td>/</td><td>SP</td><td>SP</td></tr> <tr><td>B</td><td>CM</td><td>/</td><td>/</td></tr> <tr><td>C</td><td>CM</td><td>/</td><td>/</td></tr> <tr><td>D</td><td>TL</td><td>TL</td><td>TL</td></tr> <tr><td>E</td><td>CDP</td><td>CDP</td><td>CDP</td></tr> </tbody> </table> <p>Note. P: Position control mode S: Speed control mode T: Torque control mode</p>	Setting value	(Note) Control mode			P	S	T	0	/	/	/	1	SO	SO	SO	2	RES	RES	RES	3	PC	PC	/	4	TL	TL	/	5	CR	CR	CR	6	/	SP	SP	7	/	SP	SP	8	/	ST1	RS2	9	/	ST2	RS1	A	/	SP	SP	B	CM	/	/	C	CM	/	/	D	TL	TL	TL	E	CDP	CDP	CDP	0111h	<p>Input device selection 1L</p> <p>Any input device can be assigned to pin CN1-15. (Position control mode and speed control mode)</p>  <p>Set an input device compatible with the MR-J2S- _A_ settings.</p> <p>For details on input devices, see the comparison table below.</p>	0202h	P S T
			Setting value	(Note) Control mode																																																																				
P	S	T																																																																						
0	/	/	/																																																																					
1	SO	SO	SO																																																																					
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4	TL	TL	/																																																																					
5	CR	CR	CR																																																																					
6	/	SP	SP																																																																					
7	/	SP	SP																																																																					
8	/	ST1	RS2																																																																					
9	/	ST2	RS1																																																																					
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B	CM	/	/																																																																					
C	CM	/	/																																																																					
D	TL	TL	TL																																																																					
E	CDP	CDP	CDP																																																																					
<p>Input device selection 1H</p> <p>Any input device can be assigned to pin CN1-15. (Torque control mode)</p>  <p>Set an input device compatible with the MR-J2S- _A_ settings.</p> <p>For details on input devices, see the comparison table below.</p> <p style="text-align: center;">Input device comparison table</p> <table border="1"> <thead> <tr> <th colspan="2">MR-J2S- _A_</th> <th colspan="2">MR-J4- _A_</th> </tr> <tr> <th>Setting value</th> <th>Signal name</th> <th>Setting value</th> <th>Signal name</th> </tr> </thead> <tbody> <tr><td>1</td><td>SON</td><td>0 2</td><td>SON</td></tr> <tr><td>2</td><td>RES</td><td>0 3</td><td>RES</td></tr> <tr><td>3</td><td>PC</td><td>0 4</td><td>PC</td></tr> <tr><td>4</td><td>TL</td><td>0 5</td><td>TL</td></tr> <tr><td>5</td><td>CR</td><td>0 6</td><td>CR</td></tr> <tr><td>6</td><td>SP1</td><td>2 0</td><td>SP1</td></tr> <tr><td>7</td><td>SP2</td><td>2 1</td><td>SP2</td></tr> <tr><td>8</td><td>ST1 /RS2</td><td>0 7</td><td>ST1 /RS2</td></tr> <tr><td>9</td><td>ST2 /RS1</td><td>0 8</td><td>ST2 /RS1</td></tr> <tr><td>A</td><td>SP3</td><td>2 2</td><td>SP3</td></tr> <tr><td>B</td><td>CM1</td><td>2 4</td><td>CM1</td></tr> <tr><td>C</td><td>CM2</td><td>2 5</td><td>CM2</td></tr> <tr><td>D</td><td>TL1</td><td>0 9</td><td>TL1</td></tr> <tr><td>E</td><td>CDP</td><td>0 D</td><td>CDP</td></tr> </tbody> </table>	MR-J2S- _A_		MR-J4- _A_		Setting value	Signal name	Setting value	Signal name	1	SON	0 2	SON	2	RES	0 3	RES	3	PC	0 4	PC	4	TL	0 5	TL	5	CR	0 6	CR	6	SP1	2 0	SP1	7	SP2	2 1	SP2	8	ST1 /RS2	0 7	ST1 /RS2	9	ST2 /RS1	0 8	ST2 /RS1	A	SP3	2 2	SP3	B	CM1	2 4	CM1	C	CM2	2 5	CM2	D	TL1	0 9	TL1	E	CDP	0 D	CDP	0002h							
MR-J2S- _A_		MR-J4- _A_																																																																						
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6	SP1	2 0	SP1																																																																					
7	SP2	2 1	SP2																																																																					
8	ST1 /RS2	0 7	ST1 /RS2																																																																					
9	ST2 /RS1	0 8	ST2 /RS1																																																																					
A	SP3	2 2	SP3																																																																					
B	CM1	2 4	CM1																																																																					
C	CM2	2 5	CM2																																																																					
D	TL1	0 9	TL1																																																																					
E	CDP	0 D	CDP																																																																					
44	<p>Input signal selection 3 (CN1B-14)</p> <p>Any input signal can be assigned to pin CN1B-14.</p> <p>Signals that can be assigned and the method of assigning them are the same as for input signal selection 2 (parameter No. 43).</p> <p>When LOP (control switching) is assigned to pin CN1B-14 by parameter No. 42, this parameter cannot be used.</p>	0222h	<p>Input device selection 5L</p> <p>Any input device can be assigned to pin CN1-19. (Position control mode and speed control mode)</p> <p>Devices that can be assigned and the method of assigning them are the same as shown in PD03 and PD04 above.</p>	0303h	P S T																																																																			
			<p>Input device selection 5H</p> <p>Any input device can be assigned to pin CN1-19. (Torque control mode)</p> <p>Devices that can be assigned and the method of assigning them are the same as shown in PD03 and PD04 above.</p>	0003h																																																																				

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_			Control mode
No.	Name and function	Initial value	No.	Name and function	Initial value	
45	<p>Input signal selection 4 (CN1A-8)</p> <p>Any input signal can be assigned to pin CN1A-8.</p> <p>Signals that can be assigned and the method of assigning them are the same as for input signal selection 2 (parameter No. 43).</p> <p>When LOP (control switching) is assigned to pin CN1A-8 by parameter No. 42, this parameter cannot be used.</p>	0665h	PD13	<p>Input device selection 6L</p> <p>Any input device can be assigned to pin CN1-41. (Position control mode and speed control mode)</p> <p>Devices that can be assigned and the method of assigning them are the same as shown in PD03 and PD04.</p>	2006h	P S T
			PD14	<p>Input device selection 6H</p> <p>Any input device can be assigned to pin CN1-41. (Torque control mode)</p> <p>Devices that can be assigned and the method of assigning them are the same as shown in PD03 and PD04.</p>	0020h	
46	<p>Input signal selection 5 (CN1B-7)</p> <p>Any input signal can be assigned to pin CN1B-7.</p> <p>Signals that can be assigned and the method of assigning them are the same as for input signal selection 2 (parameter No. 43).</p> <p>When LOP (control switching) is assigned to pin CN1B-7 by parameter No. 42, this parameter cannot be used.</p>	0770h	PD05	<p>Input device selection 2L</p> <p>Any input device can be assigned to pin CN1-16. (Position control mode and speed control mode)</p> <p>Devices that can be assigned and the method of assigning them are the same as shown in PD03 and PD04.</p>	2100h	P S T
			PD06	<p>Input device selection 2H</p> <p>Any input device can be assigned to pin CN1-16. (Torque control mode)</p> <p>Devices that can be assigned and the method of assigning them are the same as shown in PD03 and PD04.</p>	0021h	
47	<p>Input signal selection 6 (CN1B-8)</p> <p>Any input signal can be assigned to pin CN1B-8.</p> <p>Signals that can be assigned and the method of assigning them are the same as for input signal selection 2 (parameter No. 43).</p> <p>When LOP (control switching) is assigned to pin CN1B-8 by parameter No. 42, this parameter cannot be used.</p> <p>When "Use absolute position detection system" is selected in parameter No. 1, pin CN1B-8 becomes ABSM (ABS transfer mode).</p>	0883h	PD07	<p>Input device selection 3L</p> <p>Any input device can be assigned to pin CN1-17. (Position control mode and speed control mode)</p> <p>Devices that can be assigned and the method of assigning them are the same as shown in PD03 and PD04.</p>	0704h	P S T
			PD08	<p>Input device selection 3H</p> <p>Any input device can be assigned to pin CN1-17. (Torque control mode)</p> <p>Devices that can be assigned and the method of assigning them are the same as shown in PD03 and PD04.</p>	0007h	
48	<p>Input signal selection 7 (CN1B-9)</p> <p>Any input signal can be assigned to pin CN1B-9.</p> <p>Signals that can be assigned and the method of assigning them are the same as for input signal selection 2 (parameter No. 43).</p> <p>When LOP (control switching) is assigned to pin CN1B-9 by parameter No. 42, this parameter cannot be used.</p> <p>When "Use absolute position detection system" is selected in parameter No. 1, pin CN1B-9 becomes ABSR (ABS request).</p>	0994h	PD09	<p>Input device selection 4L</p> <p>Any input device can be assigned to pin CN1-18. (Position control mode and speed control mode)</p> <p>Devices that can be assigned and the method of assigning them are the same as shown in PD03 and PD04.</p>	0805h	P S T
			PD10	<p>Input device selection 4H</p> <p>Any input device can be assigned to pin CN1-18. (Torque control mode)</p> <p>Devices that can be assigned and the method of assigning them are the same as shown in PD03 and PD04.</p>	0008h	

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_			Control mode																																																																																																										
No.	Name and function	Initial value	No.	Name and function	Initial value																																																																																																											
49	<p>Output signal selection 1</p> <p>Used to select the connector pins for outputting an alarm code, WNG (warning), and BWNG (battery warning).</p> <p>0</p> <p>Alarm code output setting The alarm code output setting and the following function cannot be used at the same time. If set, a parameter error alarm (AL.37) is generated.</p> <ul style="list-style-type: none"> Absolute position detection system Signal allotment function of MBR (electromagnetic brake interlock) to pin CN1B-19 <table border="1"> <thead> <tr> <th>Setting value</th> <th colspan="3">Connector pin details</th> </tr> <tr> <th></th> <th>CN1B-19</th> <th>CN1A-18</th> <th>CN1A-19</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>ZSP</td> <td>INP or SA</td> <td>RD</td> </tr> <tr> <td>1</td> <td colspan="3">Outputs the alarm code when an alarm code is generated</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th rowspan="2">(Note) Alarm code</th> <th colspan="2">Alarm code</th> <th rowspan="2">Alarm display</th> <th rowspan="2">Name</th> </tr> <tr> <th>CN1B 19 pin</th> <th>CN1A 18 pin</th> <th>CN1A 19 pin</th> </tr> </thead> <tbody> <tr><td rowspan="10">0</td><td rowspan="10">0</td><td rowspan="10">0</td><td>88888</td><td>Watchdog</td></tr> <tr><td>AL.12</td><td>Memory error 1</td></tr> <tr><td>AL.13</td><td>Clock error</td></tr> <tr><td>AL.15</td><td>Memory error 2</td></tr> <tr><td>AL.17</td><td>Board error</td></tr> <tr><td>AL.19</td><td>Memory error 3</td></tr> <tr><td>AL.37</td><td>Parameter error</td></tr> <tr><td>AL.8A</td><td>Serial communication time-out fault</td></tr> <tr><td>AL.8E</td><td>Serial communication fault</td></tr> <tr><td>AL.30</td><td>Regenerative error</td></tr> <tr><td rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">1</td><td>AL.33</td><td>Overvoltage</td></tr> <tr><td>AL.10</td><td>Undervoltage</td></tr> <tr><td rowspan="5">0</td><td rowspan="5">1</td><td rowspan="5">1</td><td>AL.45</td><td>Main circuit device overheat</td></tr> <tr><td>AL.46</td><td>Servo motor overheat</td></tr> <tr><td>AL.50</td><td>Overload 1</td></tr> <tr><td>AL.51</td><td>Overload 2</td></tr> <tr><td>AL.24</td><td>Main circuit error</td></tr> <tr><td rowspan="3">1</td><td rowspan="3">0</td><td rowspan="3">0</td><td>AL.32</td><td>Overcurrent</td></tr> <tr><td>AL.31</td><td>Overspeed</td></tr> <tr><td>AL.35</td><td>Command pulse frequency error</td></tr> <tr><td rowspan="3">1</td><td rowspan="3">0</td><td rowspan="3">1</td><td>AL.52</td><td>Error excessive</td></tr> <tr><td>AL.16</td><td>Encoder error 1</td></tr> <tr><td>AL.1A</td><td>Motor combination error</td></tr> <tr><td rowspan="2">1</td><td rowspan="2">1</td><td rowspan="2">0</td><td>AL.20</td><td>Encoder error 2</td></tr> <tr><td>AL.25</td><td>Absolute position erased</td></tr> </tbody> </table> <p>Note. 0: OFF 1: ON</p> <p>Setting of WNG (warning) output Select a connector pin to output the warning. The signal before selection becomes unusable. If the same connector pin as in the third digit is selected, a parameter error (AL.37) will be generated.</p> <table border="1"> <thead> <tr> <th>Setting value</th> <th>Connector pin No.</th> </tr> </thead> <tbody> <tr><td>0</td><td>Not output</td></tr> <tr><td>1</td><td>CN1A-19</td></tr> <tr><td>2</td><td>CN1B-18</td></tr> <tr><td>3</td><td>CN1A-18</td></tr> <tr><td>4</td><td>CN1B-19</td></tr> <tr><td>5</td><td>CN1B-6</td></tr> </tbody> </table> <p>BWNG (battery warning) output setting Select a connector pin to output the battery warning. The signal before selection becomes unusable. The setup contents are the same as in the second digit of this parameter. If the same connector pin as the second digit is selected, a parameter error (AL.37) will be generated.</p>	Setting value	Connector pin details				CN1B-19	CN1A-18	CN1A-19	0	ZSP	INP or SA	RD	1	Outputs the alarm code when an alarm code is generated			(Note) Alarm code	Alarm code		Alarm display	Name	CN1B 19 pin	CN1A 18 pin	CN1A 19 pin	0	0	0	88888	Watchdog	AL.12	Memory error 1	AL.13	Clock error	AL.15	Memory error 2	AL.17	Board error	AL.19	Memory error 3	AL.37	Parameter error	AL.8A	Serial communication time-out fault	AL.8E	Serial communication fault	AL.30	Regenerative error	0	0	1	AL.33	Overvoltage	AL.10	Undervoltage	0	1	1	AL.45	Main circuit device overheat	AL.46	Servo motor overheat	AL.50	Overload 1	AL.51	Overload 2	AL.24	Main circuit error	1	0	0	AL.32	Overcurrent	AL.31	Overspeed	AL.35	Command pulse frequency error	1	0	1	AL.52	Error excessive	AL.16	Encoder error 1	AL.1A	Motor combination error	1	1	0	AL.20	Encoder error 2	AL.25	Absolute position erased	Setting value	Connector pin No.	0	Not output	1	CN1A-19	2	CN1B-18	3	CN1A-18	4	CN1B-19	5	CN1B-6	0000h	PD34	<p>Alarm code output</p> <p>This is used to select if output alarm codes. Alarm codes are outputted to pins CN1-22, CN1-23, and CN1-24.</p> <p>0: Disabled 1: Enabled</p> <p>[AL. 37 parameter error] occurs when "___1" is set in [Pr. PA03] and absolute position detection system by DIO is selected while MBR (electromagnetic brake interlock) or ALM (malfunction) is selected for pins CN1-22, CN1-23, or CN1-24 with alarm code output selected.</p> <p>For details about alarm code combinations, see "MR-J4- _A(-R.J) Servo Amplifier Instruction Manual, Chapter 8: Troubleshooting".</p> <p>WNG (warning) / BWNG (battery warning) output device setting.</p> <p>Used to select the connector pin for outputting WNG (warning) and BWNG (battery warning). See the comparison table below for the setting method.</p>		P S T
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			<p>Output device selection setting comparison table</p> <p>(1) WNG (warning) output</p> <table border="1"> <thead> <tr> <th colspan="2">MR-J2S- _A_</th> <th colspan="3">MR-J4- _A_</th> </tr> <tr> <th>No.49</th> <th>Target pin</th> <th>Target pin</th> <th>Target parameter</th> <th>Setting value</th> </tr> </thead> <tbody> <tr><td>0_0_</td><td>Not output</td><td></td><td></td><td></td></tr> <tr><td>0_1_</td><td>CN1A-19</td><td>CN1-49</td><td>PD28</td><td>0 0 0 8h</td></tr> <tr><td>0_2_</td><td>CN1B-18</td><td colspan="3">No corresponding parameter</td></tr> <tr><td>0_3_</td><td>CN1A-18</td><td>CN1-24</td><td>PD25</td><td>0 0 0 8h</td></tr> <tr><td>0_4_</td><td>CN1B-19</td><td>CN1-23</td><td>PD24</td><td>0 0 0 8h</td></tr> <tr><td>0_5_</td><td>CN1B-6</td><td>CN1-25</td><td>PD26</td><td>0 0 0 8h</td></tr> </tbody> </table> <p>(2) BWNG (Battery warning)</p> <table border="1"> <thead> <tr> <th colspan="2">MR-J2S- _A_</th> <th colspan="3">MR-J4- _A_</th> </tr> <tr> <th>No.49</th> <th>Target pin</th> <th>Target pin</th> <th>Target parameter</th> <th>Setting value</th> </tr> </thead> <tbody> <tr><td>0 0 __</td><td>Not output</td><td></td><td></td><td></td></tr> <tr><td>0 1 __</td><td>CN1A-19</td><td>CN1-49</td><td>PD28</td><td>0 0 0 9h</td></tr> <tr><td>0 2 __</td><td>CN1B-18</td><td colspan="3">No corresponding parameter</td></tr> <tr><td>0 3 __</td><td>CN1A-18</td><td>CN1-24</td><td>PD25</td><td>0 0 0 9h</td></tr> <tr><td>0 4 __</td><td>CN1B-19</td><td>CN1-23</td><td>PD24</td><td>0 0 0 9h</td></tr> <tr><td>0 5 __</td><td>CN1B-6</td><td>CN1-25</td><td>PD26</td><td>0 0 0 9h</td></tr> </tbody> </table>			MR-J2S- _A_		MR-J4- _A_			No.49	Target pin	Target pin	Target parameter	Setting value	0_0_	Not output				0_1_	CN1A-19	CN1-49	PD28	0 0 0 8h	0_2_	CN1B-18	No corresponding parameter			0_3_	CN1A-18	CN1-24	PD25	0 0 0 8h	0_4_	CN1B-19	CN1-23	PD24	0 0 0 8h	0_5_	CN1B-6	CN1-25	PD26	0 0 0 8h	MR-J2S- _A_		MR-J4- _A_			No.49	Target pin	Target pin	Target parameter	Setting value	0 0 __	Not output				0 1 __	CN1A-19	CN1-49	PD28	0 0 0 9h	0 2 __	CN1B-18	No corresponding parameter			0 3 __	CN1A-18	CN1-24	PD25	0 0 0 9h	0 4 __	CN1B-19	CN1-23	PD24	0 0 0 9h	0 5 __	CN1B-6	CN1-25	PD26	0 0 0 9h																											
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Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_			
No.	Name and function	Initial value	No.	Name and function	Initial value	Control mode
50	For manufacturer setting Do not change this value by any means.	0000h				
51	Function selection 6 Used to select the operation method when RES (Reset) is ON. This parameter is disabled (base circuit shut-off) by the absolute position detection system. <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px;">0</div> </div> <p style="margin-left: 40px;">Action when RES (reset) is turned ON 0: Base circuit shut-off 1: No base circuit shut-off</p>	0000h	PD30	Function selection D-1 Used to select the base circuit status when RES (Reset) is ON. <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px;">0</div> </div> <p style="margin-left: 40px;">Action when RES (reset) is turned ON 0: Base circuit shut-off 1: No base circuit shut-off</p> <p>Set the same value as for MR-J2S- _A_.</p>	0000h	P S T
53	Function selection 8 Used to select the serial communication protocol. <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px;">0</div> </div> <p style="margin-left: 40px;">Protocol checksum selection 0: Yes (Add checksum) 1: No (Do not add checksum)</p> <p style="margin-left: 40px;">Protocol station number selection 0: With station numbers 1: No station numbers</p>	0000h		No corresponding parameter Note: MR-J4- _A_ Protocol station No. selection: Supported Protocol check selection: Supported		

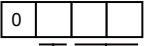

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_																																								
No.	Name and function	Initial value	No.	Name and function	Initial value	Control mode																																					
54	<p>Function selection 9</p> <p>Used to select the command pulse rotation direction, encoder output pulse direction, and encoder pulse output setting.</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0</p> <p>Changes in servo motor rotation direction Changes the servo motor rotation direction relative to the input pulse</p> <table border="1"> <thead> <tr> <th rowspan="2">Setting value</th> <th colspan="2">Servo motor rotation direction</th> </tr> <tr> <th>When forward rotation pulse is input</th> <th>When reverse rotation pulse is input</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>CCW</td> <td>CW</td> </tr> <tr> <td>1</td> <td>CW</td> <td>CCW</td> </tr> </tbody> </table> <p>Changes in encoder pulse output phase Change the positions of the pulse output A-phase and B-phase of the encoder.</p> <table border="1"> <thead> <tr> <th rowspan="2">Setting value</th> <th colspan="2">Servo motor rotation direction</th> </tr> <tr> <th>CCW</th> <th>CW</th> </tr> </thead> <tbody> <tr> <td rowspan="2">0</td> <td>A phase </td> <td>A phase </td> </tr> <tr> <td>B phase </td> <td>B phase </td> </tr> <tr> <td rowspan="2">1</td> <td>A phase </td> <td>A phase </td> </tr> <tr> <td>B phase </td> <td>B phase </td> </tr> </tbody> </table> <p>Encoder output pulse setting selection (See parameter No. 27) 0: Output pulse specification 1: Division ratio setting</p>	Setting value	Servo motor rotation direction		When forward rotation pulse is input	When reverse rotation pulse is input	0	CCW	CW	1	CW	CCW	Setting value	Servo motor rotation direction		CCW	CW	0	A phase	A phase	B phase	B phase	1	A phase	A phase	B phase	B phase	0000h	PA14	<p>Select servo motor rotation direction relative to the input pulse train.</p> <table border="1"> <thead> <tr> <th rowspan="2">Setting value</th> <th colspan="2">Servo motor rotation direction</th> </tr> <tr> <th>When forward rotation pulse is input</th> <th>When reverse rotation pulse is input</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>CCW</td> <td>CW</td> </tr> <tr> <td>1</td> <td>CW</td> <td>CCW</td> </tr> </tbody> </table> <p>Set the same value as for MR-J2S- _A_.</p>	Setting value	Servo motor rotation direction		When forward rotation pulse is input	When reverse rotation pulse is input	0	CCW	CW	1	CW	CCW	0	P
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			PC19	<p>Encoder output pulse selection</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0</p> <p>Changes in encoder pulse output phase Change the positions of the pulse output A-phase and B-phase of the encoder.</p> <table border="1"> <thead> <tr> <th rowspan="2">Setting value</th> <th colspan="2">Servo motor rotation direction</th> </tr> <tr> <th>CCW</th> <th>CW</th> </tr> </thead> <tbody> <tr> <td rowspan="2">0</td> <td>A phase </td> <td>A phase </td> </tr> <tr> <td>B phase </td> <td>B phase </td> </tr> <tr> <td rowspan="2">1</td> <td>A phase </td> <td>A phase </td> </tr> <tr> <td>B phase </td> <td>B phase </td> </tr> </tbody> </table> <p>Encoder output pulse setting selection</p> <p>Set the same value as for MR-J2S- _A_.</p>	Setting value	Servo motor rotation direction		CCW	CW	0	A phase	A phase	B phase	B phase	1	A phase	A phase	B phase	B phase	0000h	P S T																						
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55	<p>Function selection A</p> <p>Used to select the control method of the position command acceleration/deceleration time constant (parameter No. 7).</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0</p> <p>Position command acceleration/deceleration time constant control 0: Primary delay 1: Linear acceleration/deceleration</p>	0000h	PB25	<p>Function selection B-1</p> <p>Used to select the position command acceleration/deceleration filter type.</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0</p> <p>Position command acceleration/deceleration filter type 0: Primary delay 1: Linear acceleration/deceleration</p> <p>When you select "Linear acceleration/deceleration", do not switch the control mode. When the control mode is switched, the servo motor stops suddenly. Set the same value as for MR-J2S- _A_.</p>	0000h	P																																					
56	<p>Serial communication time-out selection</p> <p>Used to set the time-out time of the communication protocol in units of [s]. When "0" is set, Time-out check is not carried out.</p>	0		<p>No corresponding parameter</p> <p>Note: MR-J4- _A_ Time-out check is carried out.</p>																																							

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_			Control mode																																																																																																																			
No.	Name and function	Initial value	No.	Name and function	Initial value																																																																																																																				
58	<p>Machine resonance suppression filter 1 Select the machine resonance suppression filter.</p> <p>0</p> <p>Notch frequency selection Set "00" when the active vibration suppression control is set as "effective" or "maintain" (parameter No. 60: _ 1 __ or _ 2 __).</p> <table border="1"> <thead> <tr> <th>Setting value</th> <th>Frequency</th> <th>Setting value</th> <th>Frequency</th> <th>Setting value</th> <th>Frequency</th> <th>Setting value</th> <th>Frequency</th> </tr> </thead> <tbody> <tr><td>00</td><td>Disabled</td><td>08</td><td>562.5</td><td>10</td><td>281.3</td><td>18</td><td>187.5</td></tr> <tr><td>01</td><td>4500</td><td>09</td><td>500</td><td>11</td><td>264.7</td><td>19</td><td>180</td></tr> <tr><td>02</td><td>2250</td><td>0A</td><td>450</td><td>12</td><td>250</td><td>1A</td><td>173.1</td></tr> <tr><td>03</td><td>1500</td><td>0B</td><td>409.1</td><td>13</td><td>236.8</td><td>1B</td><td>166.7</td></tr> <tr><td>04</td><td>1125</td><td>0C</td><td>375</td><td>14</td><td>225</td><td>1C</td><td>160.1</td></tr> <tr><td>05</td><td>900</td><td>0D</td><td>346.2</td><td>15</td><td>214.3</td><td>1D</td><td>155.2</td></tr> <tr><td>06</td><td>750</td><td>0E</td><td>321.4</td><td>16</td><td>204.5</td><td>1E</td><td>150</td></tr> <tr><td>07</td><td>642.9</td><td>0F</td><td>300</td><td>17</td><td>195.7</td><td>1F</td><td>145.2</td></tr> </tbody> </table> <p>Notch depth selection</p> <table border="1"> <thead> <tr> <th>Setting value</th> <th>Response</th> <th>Gain</th> </tr> </thead> <tbody> <tr> <td>0</td> <td rowspan="2">Deep</td> <td>-40dB</td> </tr> <tr> <td>1</td> <td>-14dB</td> </tr> <tr> <td>2</td> <td rowspan="2">Shallow</td> <td>-8dB</td> </tr> <tr> <td>3</td> <td>-4dB</td> </tr> </tbody> </table>	Setting value	Frequency	Setting value	Frequency	Setting value	Frequency	Setting value	Frequency	00	Disabled	08	562.5	10	281.3	18	187.5	01	4500	09	500	11	264.7	19	180	02	2250	0A	450	12	250	1A	173.1	03	1500	0B	409.1	13	236.8	1B	166.7	04	1125	0C	375	14	225	1C	160.1	05	900	0D	346.2	15	214.3	1D	155.2	06	750	0E	321.4	16	204.5	1E	150	07	642.9	0F	300	17	195.7	1F	145.2	Setting value	Response	Gain	0	Deep	-40dB	1	-14dB	2	Shallow	-8dB	3	-4dB	0000h	PB01	<p>Adaptive tuning mode (adaptive filter II) Used to set the adaptive filter tuning. Select the adjustment mode of machine resonance suppression filter 1.</p> <p>0 0 0</p> <p>Filter tuning mode selection 0: Disabled 1: Automatic setting (Do not automatically set the torque control.) 2: Manual setting</p> <p>See the comparison table below for the setting method.</p> <p>Setting comparison table for machine resonance suppression filter 1</p> <table border="1"> <thead> <tr> <th colspan="2">MR-J2S- _A_</th> <th colspan="3">MR-J4- _A_</th> </tr> <tr> <th>No.58</th> <th>No.60</th> <th>PB01</th> <th>PB13</th> <th>PB14</th> </tr> </thead> <tbody> <tr> <td>0 _ 0 0</td> <td>_ 0 _ _</td> <td>0 0 0 0</td> <td colspan="2">Setting not required</td> </tr> <tr> <td>0 _ 0 1 to 0 _ 1 F</td> <td>_ 0 _ _</td> <td>0 0 0 2</td> <td>Set a value according to MR-J2S. (Note)</td> <td>0 0 _ 0 (Note)</td> </tr> <tr> <td>0 _ _ _</td> <td>0 0 1 _</td> <td>0 0 0 1</td> <td colspan="2">Automatic setting</td> </tr> <tr> <td>0 _ _ _</td> <td>0 0 2 _</td> <td>0 0 0 1</td> <td colspan="2">Automatic setting</td> </tr> </tbody> </table>	MR-J2S- _A_		MR-J4- _A_			No.58	No.60	PB01	PB13	PB14	0 _ 0 0	_ 0 _ _	0 0 0 0	Setting not required		0 _ 0 1 to 0 _ 1 F	_ 0 _ _	0 0 0 2	Set a value according to MR-J2S. (Note)	0 0 _ 0 (Note)	0 _ _ _	0 0 1 _	0 0 0 1	Automatic setting		0 _ _ _	0 0 2 _	0 0 0 1	Automatic setting		0000h	P S T
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			PB13	<p>Machine resonance suppression filter 1 Used to set the notch frequency of machine resonance suppression filter 1. When "Automatic setting (_ _ _ 1)" is selected in "Filter tuning mode selection" of [Pr.PB01], the adjustment result is reflected. When "Manual setting (_ _ _ 2)" is selected in "Filter tuning mode selection" of [Pr. PB01], this setting value is enabled. Setting range: 10 to 4500 Set a value according to the setting frequency of MR-J2S- _A_.</p>	4500																																																																																																																				
			PB14	<p>Used to set the shape of the machine resonance suppression filter 1. When "Automatic setting (_ _ _ 1)" is selected in "Filter tuning mode selection" of [Pr. PB01], the adjustment result is reflected. Set manually for the manual setting.</p> <p>0</p> <p>Notch depth selection 0: -40dB 1: -14dB 2: -8dB 3: -4dB</p> <p>Notch width selection 0: $\alpha=2$ 1: $\alpha=3$ 2: $\alpha=4$ 3: $\alpha=5$</p> <p>Set the notch depth according to the setting of MR-J2S- _A_. Set the notch width to "0: $\alpha = 2$".</p>	0000h																																																																																																																				

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_																			
No.	Name and function	Initial value	No.	Name and function	Initial value	Control mode																
59	Machine resonance suppression filter 2 Used to set the machine resonance suppression filter.  <p>Notch frequency Same setting as parameter No. 58 However, it is not required to set "00" when the active vibration suppression control is set as "effective" or "maintain".</p> <p>Notch depth Same setting as parameter No. 58</p>	0000h	PB16	Used to set the shape of the machine resonance suppression filter 2.  <p>Machine resonance suppression filter 2 selection 0: Disabled 1: Available</p> <p>Notch depth selection 0: -40dB 1: -14dB 2: -8dB 3: -4dB</p> <p>Notch width selection 0: $\alpha=2$ 1: $\alpha=3$ 2: $\alpha=4$ 3: $\alpha=5$</p> <p>See the comparison table below for the setting method.</p> <p>Setting comparison table for machine resonance suppression filter 2</p> <table border="1"> <thead> <tr> <th colspan="2">MR-J2S- _A_</th> <th colspan="2">MR-J4- _A_</th> </tr> <tr> <th colspan="2">No. 59</th> <th>PB16</th> <th>PB15</th> </tr> </thead> <tbody> <tr> <td>0 _ 0 0</td> <td></td> <td>0 0 0 0</td> <td>Setting not required</td> </tr> <tr> <td>0 _ 0 1 to 0 _ 1 F</td> <td>→</td> <td>0 0 _ 1 (Note 1)</td> <td>Set a value according to J2S. (Note 2)</td> </tr> </tbody> </table> <p>Note 1. Set the notch depth according to MR-J2S- _A_. Set the notch width to "0: $\alpha = 2$". 2. Set a value while referring to PB15.</p>	MR-J2S- _A_		MR-J4- _A_		No. 59		PB16	PB15	0 _ 0 0		0 0 0 0	Setting not required	0 _ 0 1 to 0 _ 1 F	→	0 0 _ 1 (Note 1)	Set a value according to J2S. (Note 2)	0000h	P S T
MR-J2S- _A_		MR-J4- _A_																				
No. 59		PB16	PB15																			
0 _ 0 0		0 0 0 0	Setting not required																			
0 _ 0 1 to 0 _ 1 F	→	0 0 _ 1 (Note 1)	Set a value according to J2S. (Note 2)																			
			PB15	Machine resonance suppression filter 1 Used to set the notch frequency of machine resonance suppression filter 1. When "Enabled (_ _ _ 1)" in "Machine resonance suppression filter 2 selection" of [Pr.PB16] is selected, this parameter is enabled. Setting range: 10 to 4500 Set a value according to the setting of MR-J2S- _A_.	4500																	

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_											
No.	Name and function	Initial value	No.	Name and function	Initial value	Control mode								
60	<p>Low-pass filter/adaptive vibration suppression control Select the low-pass filter/adaptive vibration suppression control.</p> <div style="display: flex; align-items: center; margin-bottom: 10px;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;"> </div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;"> </div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;"> </div> <div style="border: 1px solid black; padding: 2px;">0</div> </div> <p>Low-pass filter selection 0: Available (Automatic adjustment) 1: Disabled When available is selected, the filter in the zone expressed by the following formula is automatically set.</p> <p>For 1 kW or less $\frac{VG2 \text{ setting value} \times 10}{2\pi \times (1 + GD2 \text{ setting value} \times 0.1)} \text{ [Hz]}$</p> <p>For 2 kW or less $\frac{VG2 \text{ setting value} \times 5}{2\pi \times (1 + GD2 \text{ setting value} \times 0.1)} \text{ [Hz]}$</p> <p>Adaptive vibration suppression control selection If "available" or "maintained" is selected in the adaptive vibration suppression control selection, machine resonance control filter 1 (parameter No. 58) will become ineffective. 0: Disabled 1: Enabled Usually, machine resonance frequency is detected, and a filter corresponding to the resonance is generated to control the machine vibration.</p> <p>3: Maintenance Until then, detection of machine resonance is stopped by keeping the characteristics of the filter generated until that moment.</p> <p>Adaptive vibration suppression control selection Select Adaptive vibration suppression control. 0: Normal 1: High sensitive</p>	0000h	PB23	<p>Low-pass filter selection</p> <div style="display: flex; align-items: center; margin-bottom: 10px;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;"> </div> <div style="border: 1px solid black; padding: 2px;">0</div> </div> <p>Low-pass filter 0: Automatic setting 1: Manual setting 2: Disabled</p> <p>Set "0000 (automatic setting)".</p>	0000h	P S								
			PB18	<p>Low-pass filter setting One of the following statuses is applied, depending on how PB23 is set.</p> <table border="1" style="margin: 10px auto;"> <thead> <tr> <th>PB23</th> <th>PB18</th> </tr> </thead> <tbody> <tr> <td>__ 0 __ (Initial value)</td> <td>Automatic setting</td> </tr> <tr> <td>__ 1 __</td> <td>Setting value enabled</td> </tr> <tr> <td>__ 2 __</td> <td>Setting value disabled</td> </tr> </tbody> </table> <p>Nothing needs to be set due to automatic setting.</p>	PB23	PB18	__ 0 __ (Initial value)	Automatic setting	__ 1 __	Setting value enabled	__ 2 __	Setting value disabled	3141	P S
			PB23	PB18										
__ 0 __ (Initial value)	Automatic setting													
__ 1 __	Setting value enabled													
__ 2 __	Setting value disabled													
PB01	<p>Adaptive tuning mode (adaptive filter II)</p>	0000h	P S T											
61	<p>Load to motor inertia ratio 2 Used to set the load to motor inertia ratio when gain switching is enabled. Setting range: 0 to 3000; Unit: x 0.1</p>	70	PB29	<p>Gain switching load to motor inertia ratio Used to set the load to motor inertia ratio when gain switching is enabled. This parameter is enabled only when "Manual mode (___ 3)" is selected in "Gain adjustment mode selection" of [Pr. PA08]. Setting range: 0.00 to 300.00; Unit: x 1.0 Note that the setting unit is different from that for MR-J2S- _A_. When setting a value, set a value 0.1 x the MR-J2S- _A_ setting value.</p>	7.00	P S								

Part 2: Review on Replacement of MR-J2S-__A__ with MR-J4-__A__

MR-J2S-__A__			MR-J4-__A__																								
No.	Name and function	Initial value	No.	Name and function	Initial value	Control mode																					
62	<p>Position loop gain 2 changing ratio</p> <p>Used to set the changing ratio for position loop gain 2 when the gain switching is enabled.</p> <p>This parameter is enabled when auto tuning is disabled.</p> <p>Setting range: 10 to 200</p>	100	PB30	<p>Gain switching position loop gain</p> <p>When a value smaller than 1.0 rad/s is set, the value will be the same as the setting value of [Pr. PB08].</p> <p>This parameter is enabled only when "Manual mode (___ 3)" is selected in "Gain adjustment mode selection" of [Pr. PA08].</p> <p>Setting range: 0.0 to 2000.0</p> <p>Because the setting unit is different from that for MR-J2S-__A__, calculate the setting value using the equation below and set it.</p> <p>PB30 setting value = PB08 setting value x MR-J2S-__A__ No. 62 setting value / 100.</p>	0.0	P																					
63	<p>Speed loop gain 2 changing ratio</p> <p>Used to set the changing ratio for speed loop gain 2 when the gain switching is enabled.</p> <p>This parameter is enabled when auto tuning is disabled.</p> <p>Setting range: 10 to 200</p>	100	PB31	<p>Gain switching speed loop gain</p> <p>When a value smaller than 20 rad/s is set, the value will be the same as the setting value of [Pr. PB09].</p> <p>This parameter is enabled only when "Manual mode (___ 3)" is selected in "Gain adjustment mode selection" of [Pr. PA08].</p> <p>Setting range: 0 to 65535</p> <p>Because the setting unit is different from that for MR-J2S-__A__, calculate the setting value using the equation below and set it.</p> <p>PB31 setting value = PB09 setting value x MR-J2S-__A__ No. 63 setting value / 100.</p>	0	P S																					
64	<p>Speed integral compensation changing ratio</p> <p>Used to set the changing ratio for speed integral compensation when the gain switching is enabled.</p> <p>This parameter is enabled when auto tuning is disabled.</p> <p>Setting range: 50 to 1000</p>	100	PB32	<p>Gain switching speed integral compensation</p> <p>When a value smaller than 0.1 ms set, the value will be the same as the setting value of [Pr. PB10].</p> <p>This parameter is enabled only when "Manual mode (___ 3)" is selected in "Gain adjustment mode selection" of [Pr. PA08].</p> <p>Setting range: 0.0 to 5000.0</p> <p>Because the setting unit is different from that for MR-J2S-__A__, calculate the setting value using the equation below and set it.</p> <p>PB32 setting value = PB10 setting value x MR-J2S-__A__ No. 64 setting value / 100.</p>	0.0	P S																					
65	<p>Gain switching selection</p> <p>Select the gain switching condition.</p> <div style="border: 1px solid black; display: inline-block; padding: 2px; margin: 5px 0;">0 0 0 </div> <p>Gain switching selection</p> <p>Gain will be changed under the following conditions based on the setting value of parameters No.61 to No.64.</p> <p>0: Disabled</p> <p>1: Gain switching (CDP) is ON</p> <p>2: The appointed frequency is equal to or more than the setting value of parameter No. 66.</p> <p>3: The droop pulse is equal to or more than the setting value of parameter No. 66.</p> <p>4: The servo motor speed is equal to or more than the setting value of parameter No. 66.</p>	0000h	PB26	<p>Gain switching function</p> <p>Select the gain switching condition.</p> <p>See the comparison table below for the setting method.</p> <p style="text-align: center;">Gain switching selection comparison table</p> <table style="margin: auto;"> <tr> <td style="border: 1px solid black; padding: 2px;">MR-J2S-__A__</td> <td></td> <td style="border: 1px solid black; padding: 2px;">MR-J4-__A__</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">No.65</td> <td></td> <td style="border: 1px solid black; padding: 2px;">PB26</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">0 0 0 0</td> <td></td> <td style="border: 1px solid black; padding: 2px;">0 0 0 0</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">0 0 0 1</td> <td></td> <td style="border: 1px solid black; padding: 2px;">0 0 0 1</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">0 0 0 2</td> <td style="text-align: center;">→</td> <td style="border: 1px solid black; padding: 2px;">0 0 0 2</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">0 0 0 3</td> <td></td> <td style="border: 1px solid black; padding: 2px;">0 0 0 3</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">0 0 0 4</td> <td></td> <td style="border: 1px solid black; padding: 2px;">0 0 0 4</td> </tr> </table>	MR-J2S-__A__		MR-J4-__A__	No.65		PB26	0 0 0 0		0 0 0 0	0 0 0 1		0 0 0 1	0 0 0 2	→	0 0 0 2	0 0 0 3		0 0 0 3	0 0 0 4		0 0 0 4	0000h	P S
MR-J2S-__A__		MR-J4-__A__																									
No.65		PB26																									
0 0 0 0		0 0 0 0																									
0 0 0 1		0 0 0 1																									
0 0 0 2	→	0 0 0 2																									
0 0 0 3		0 0 0 3																									
0 0 0 4		0 0 0 4																									

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_			Control mode
No.	Name and function	Initial value	No.	Name and function	Initial value	
66	Gain switching condition Used to set the values for the gain switching conditions (command frequency, droop pulses, and servo motor speed) selected in parameter No. 65. The set value unit differs depending on the switching condition item. Setting range: 0 to 9999	10	PB27	Gain switching condition Used to set the values for the gain switching conditions (command frequency, droop pulses, and servo motor speed) selected in PB26. The set value unit differs depending on the switching condition item. Setting range: 0 to 9999 Set the same value as for MR-J2S- _A_.	10	P S
67	Gain switching time constant Used to set the time constant at which the gains will switch in response to the conditions set in parameters No. 65 and No. 66. Setting range: 0 to 100	1	PB28	Gain switching time constant Used to set the time constant at which the gains will switch in response to the conditions set in PB26 and PB27. Setting range: 0 to 100 Set the same value as for MR-J2S- _A_.	1	P S
69	Command pulse multiplication numerator 2 Used to set a multiplier for the command pulse. When "0" is set as the setting value, the resolution of the connected motor is set automatically. Setting range: 0 to 65535 When using this parameter, enable the CM1 and CM2 signals in No. 43 to No. 48.	1	PC32	Commanded pulse multiplication numerators 2 to 4 To enable the parameter, select "Electronic gear (0 ___)" or "J3A electronic gear setting value compatibility mode (2 ___)" in "Electronic gear selection" in [Pr. PA21]. Setting range: 0 to 16777215 When using this parameter, enable the CM1 and CM2 signals in PD03 to PD22.	1	P
70	Command pulse multiplication numerator 3 Used to set a multiplier for the command pulse. When "0" is set as the setting value, the resolution of the connected motor is set automatically. Setting range: 0 to 65535 When using this parameter, enable the CM1 and CM2 signals in No. 43 to No. 48.	1	PC33	Set as follows. (1) For primary replacement Set the same value as the setting value for MR-J2S- _A_. (2) For secondary/simultaneous replacement Set a value 32 x the MR-J2S- _A_ setting value.	1	P
71	Command pulse multiplication numerator 4 Used to set a multiplier for the command pulse. When "0" is set as the setting value, the resolution of the connected motor is set automatically. Setting range: 0 to 65535 When using this parameter, enable the CM1 and CM2 signals in No. 43 to No. 48.	1	PC34		1	P
72	Internal speed command 4 Used to set speed 4 of internal speed commands. When using this parameter, enable the SP3 signal in No. 43 to No. 48.	200	PC08	Internal speed command 4 This is used to set speed 4 of internal speed commands. When using this parameter, enable the SP3 signal in PD03 to PD22. Set the same value as for MR-J2S- _A_.	200	S
	Internal speed limit 4 Used to set speed 4 of internal speed limits. When using this parameter, enable the SP3 signal in No. 43 to No. 48.			Internal speed limit 4 This is used to set speed 4 of internal speed limits. When using this parameter, enable the SP3 signal in PD03 to PD22. Set the same value as for MR-J2S- _A_.		T


Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

MR-J2S- _A_			MR-J4- _A_			Control mode
No.	Name and function	Initial value	No.	Name and function	Initial value	
73	Internal speed command 5 Used to set speed 5 of internal speed commands. When using this parameter, enable the SP3 signal in No. 43 to No. 48.	300	PC09	Internal speed command 5 This is used to set speed 5 of internal speed commands. When using this parameter, enable the SP3 signal in PD03 to PD22. Set the same value as for MR-J2S- _A_.	300	S
	Internal speed limit 5 Used to set speed 5 of internal speed limits. When using this parameter, enable the SP3 signal in No. 43 to No. 48.			Internal speed limit 5 This is used to set speed 5 of internal speed limits. When using this parameter, enable the SP3 signal in PD03 to PD22. Set the same value as for MR-J2S- _A_.		T
74	Internal speed command 6 Used to set speed 6 of internal speed commands. When using this parameter, enable the SP3 signal in No. 43 to No. 48.	500	PC10	Internal speed command 6 This is used to set speed 6 of internal speed commands. When using this parameter, enable the SP3 signal in PD03 to PD22. Set the same value as for MR-J2S- _A_.	500	S
	Internal speed limit 6 Used to set speed 6 of internal speed limits. When using this parameter, enable the SP3 signal in No. 43 to No. 48.			Internal speed limit 6 This is used to set speed 6 of internal speed limits. When using this parameter, enable the SP3 signal in PD03 to PD22. Set the same value as for MR-J2S- _A_.		T
75	Internal speed command 7 Used to set speed 7 of internal speed commands. When using this parameter, enable the SP3 signal in No. 43 to No. 48.	800	PC11	Internal speed command 7 This is used to set speed 7 of internal speed commands. When using this parameter, enable the SP3 signal in PD03 to PD22. Set the same value as for MR-J2S- _A_.	800	S
	Internal speed limit 7 Used to set speed 7 of internal speed limits. When using this parameter, enable the SP3 signal in No. 43 to No. 48.			Internal speed limit 7 This is used to set speed 7 of internal speed limits. When using this parameter, enable the SP3 signal in PD03 to PD22. Set the same value as for MR-J2S- _A_.		T
76	Internal torque limit 2 Set the parameter assuming that the maximum torque is 100 [%]. The parameter is for limiting the torque of the servo motor. When "0" is set, no torque is generated. When using this parameter, enable the TL1 signal in No. 43 to No. 48.	100	PC35	Internal torque limit 2 Used to set the parameter assuming that the maximum torque is 100.0%. The parameter is for limiting the torque of the servo motor. However, when "0.0" is set, no torque is generated. Setting range: 0.0 to 100.0 When using this parameter, enable the TL1 signal in PD03 to PD22. Set the same value as for MR-J2S- _A_.	100.0	P S T

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

3.7 Important Points for Replacement (Command Pulse Logic Settings)

When carrying out positioning in the forward and reserve rotation pulse train setting for the MR-J4- _A_ servo amplifier, it is necessary to adjust the command pulse logic of the positioning module to that of the servo amplifier. Set as follows. This adjustment is unnecessary for a pulse train + symbol and an A-phase/B-phase pulse train.

 CAUTION	<ul style="list-style-type: none"> • Even though the command pulse logic of the existing MR-J2S- _A_ servo amplifier is not the same as its positioning module, the motor will rotate, but in the MR-J4- _A_ servo amplifier, when the logics are not set correctly, the motor will not rotate normally. Make sure to check the information below to set the logics. Even when another company's controller is used, check the logic setting.
--	--

(1) For A-series positioning modules

Signal type	Command pulse logic setting (Note 1)	
	A-series positioning module Basic parameter 1 setting	MR-J4- _A_ servo amplifier [Pr. PA13] setting
Open-collector type	Positive logic	Positive logic (_ _ 0 _ h)
Differential line driver type	Positive logic (Note 2)	Negative logic (_ _ 1 _ h)

- Note 1. When a pulse train + symbol and an A-phase/B-phase pulse train are used, it is unnecessary to adjust the logics.
 2. For A-series and Q-series positioning modules, this logic points to the N-side waveform. Therefore, reverse the command pulse logic of the servo amplifier.

(2) For Q-series positioning modules

Signal type	Command pulse logic setting (Note 1)	
	Q-series positioning module Pr. 23 setting	MR-J4- _A_ servo amplifier [Pr. PA13] setting
Open-collector type	Positive logic	Positive logic (_ _ 0 _ h)
	Negative logic	Negative logic (_ _ 1 _ h)
Differential line driver type	Positive logic (Note 2)	Negative logic (_ _ 1 _ h)
	Negative logic (Note 2)	Positive logic (_ _ 0 _ h)

- Note 1. When a pulse train + symbol and an A-phase/B-phase pulse train are used, it is unnecessary to adjust the logics.
 2. For A-series and Q-series positioning modules, this logic points to the N-side waveform. Therefore, reverse the command pulse logic of the servo amplifier.

(3) For F-series positioning modules

Signal type	Command pulse logic setting	
	F-series positioning module (fixed)	MR-J4- _A_ servo amplifier [Pr. PA13] setting
Open-collector type	Negative logic	Negative logic (_ _ 1 _ h)

Part 2: Review on Replacement of MR-J2S- _A_ with MR-J4- _A_

[Reference] Pr. PA13, Command input pulse train form

Setting value		Pulse train type	Upon forward rotation command	Upon reverse rotation command
-- 1 0h	Negative logic	Forward rotation pulse train Reverse rotation pulse train		
-- 1 1h		Pulse train + code		
-- 1 2h		Phase A pulse train Phase B pulse train		
-- 0 0h	Positive logic	Forward rotation pulse train Reverse rotation pulse train		
-- 0 1h		Pulse train + code		
-- 0 2h		Phase A pulse train Phase B pulse train		

Part 3
Review on Replacement of
MR-J2S- _B_ with MR-J4- _B_

Part 3: Review on Replacement of MR-J2S- _B_ with MR-J4- _B_

"Part 3: Review on Replacement of MR-J2S- _B_ with MR-J4- _B_"

1. SUMMARY

This document describes the changes that are applied to when replacing a system using the MR-J2S- _B_ with a system using the MR-J4- _B_.

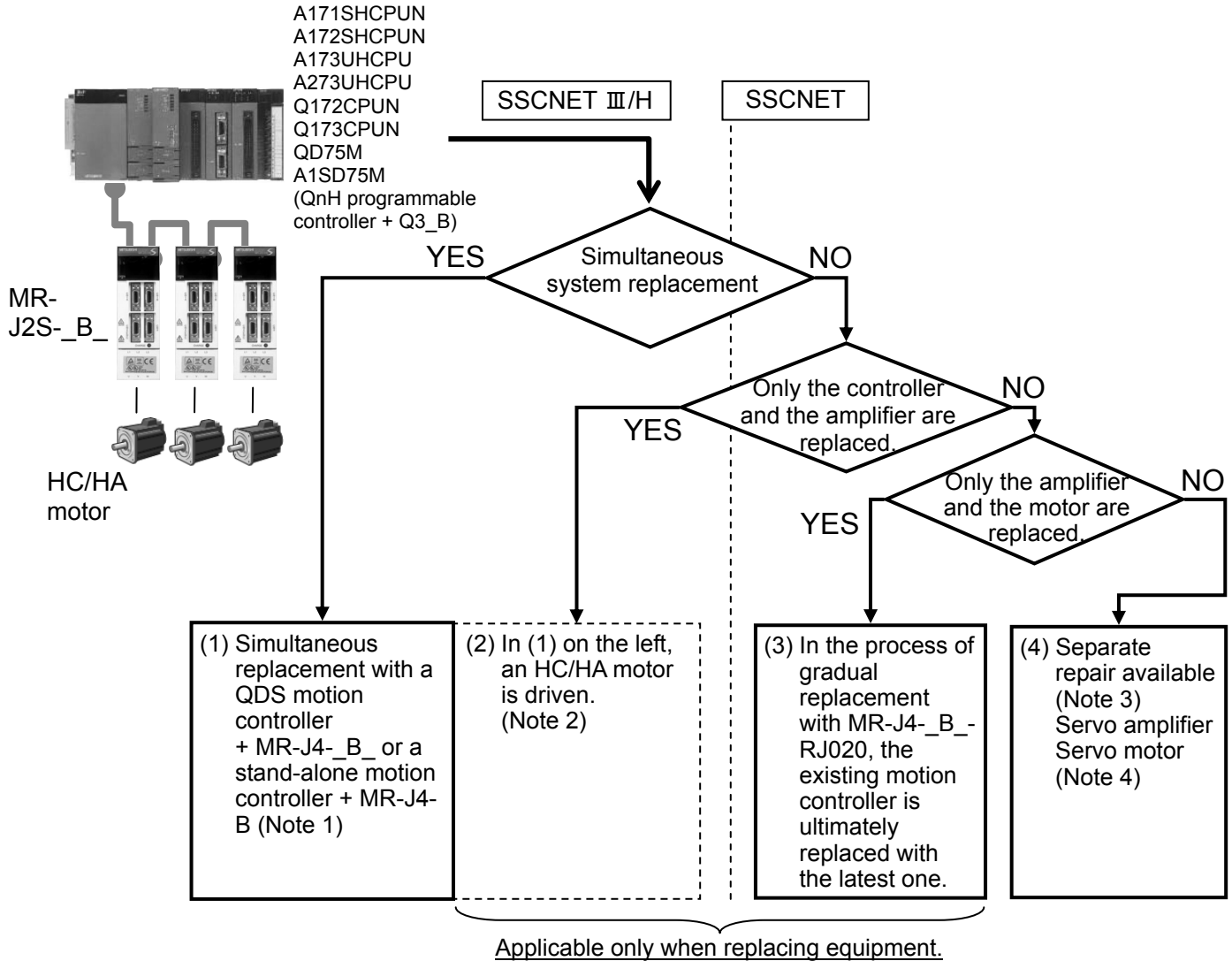
Versions of A-series motion controller OS that support MR-J2S- _B_

Controller setting	OS model	OS version	Support period
A171SHCPU(N)	SW0SRX-SV13G	AF and later versions	2001 and later
	SW0SRX-SV22F		
	SW0SRX-SV43F	T and later versions	
A172SHCPU(N)	SW3RN-SV13D	G and later versions	
	SW3RN-SV22C		
	SW0SRX-SV13D	AF and later versions	
	SW0SRX-SV22C	T and later versions	
	SW0SRX-SV43C		
A173UHCPU	SW3RN-SV13B	G and later versions	
	SW3RN-SV22A		
	SW2SRX-SV13B	AF and later versions	
	SW2SRX-SV22A		
	SW2SRX-SV43A	T and later versions	
A273UHCPU	SW3RN-SV13X	G and later versions	
	SW3RN-SV22W		
	SW2SRX-SV13V	AF and later versions	
	SW2SRX-SV22U		
	SW2SRX-SV43U	T and later versions	

Part 3: Review on Replacement of MR-J2S-_B_ with MR-J4-_B_

2. CASE STUDY ON REPLACEMENT OF MR-J2S-_B_

2.1 Review on Replacement Method



For details about (3) and (4), see "[Appendix 1] Summary of MR-J4-_B_-RJ020 + MR-J4-T20".

- Note 1. Although heavier burdens including a longer construction period need to be borne, once replaced the system can be operated for a long period of time.
- Note 2. When designing a new system, apply simultaneous replacement at (1).
- Note 3. Separate repair means replacement.
- Note 4. When the servo motor is replaced with an HG motor, simultaneous replacement with MR-J4-_B_ and an HG motor is necessary.

Part 3: Review on Replacement of MR-J2S-_B_ with MR-J4-_B_

2.2 Replacement Method

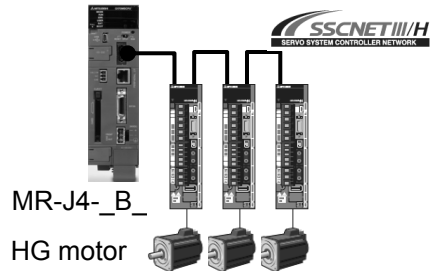
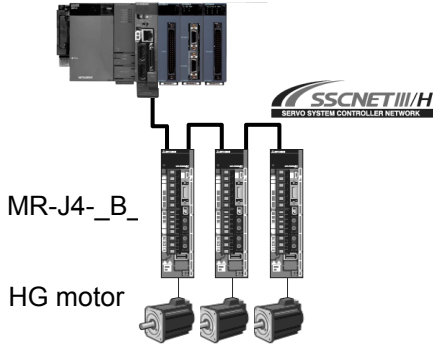
(1) For simultaneous replacement

QDS motion controller
+ MR-J4-_B_
+ HG motor

Stand-alone motion controller
+ MR-J4-_B_
+ HG motor

QnUD programmable controller
+ QDS motion controller + Q3_DB

SSCNET III/H-compatible stand-alone motion controller:
Q170MSCPU (-S1)



High-speed motion control and excellent extensibility can reduce cycle time.

High performance equivalent to that of a QDS motion controller can be achieved at a lower cost.

"QDS motion controller" refers to the following model.
Q172DSCPU/Q173DSCPU

"Stand-alone motion controller" refers to the following model.
Q170MSCPU (-S1)

Part 3: Review on Replacement of MR-J2S- _B_ with MR-J4- _B_

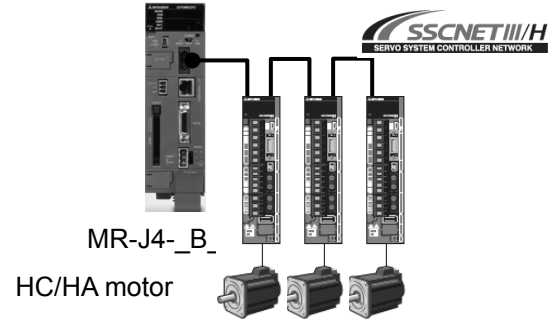
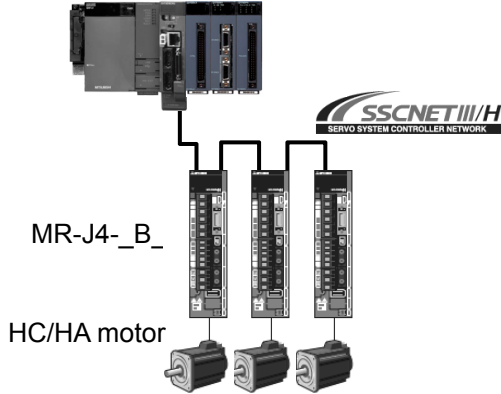
(2) For replacement of only a controller and an amplifier

QDS motion controller
+ MR-J4- _B_
+ HC/HA motor

Stand-alone motion controller
+ MR-J4- _B_
+ HC/HA motor

QnUD programmable controller
+ QDS motion controller + Q3_DB

SSCNET III/H-compatible stand-alone motion controller:
Q170MSCPU (-S1)



Although the HC/HA motor can continue to be used without any changes made (Note 1 and 2), the encoder resolution of the servo motor will be 17 bits.

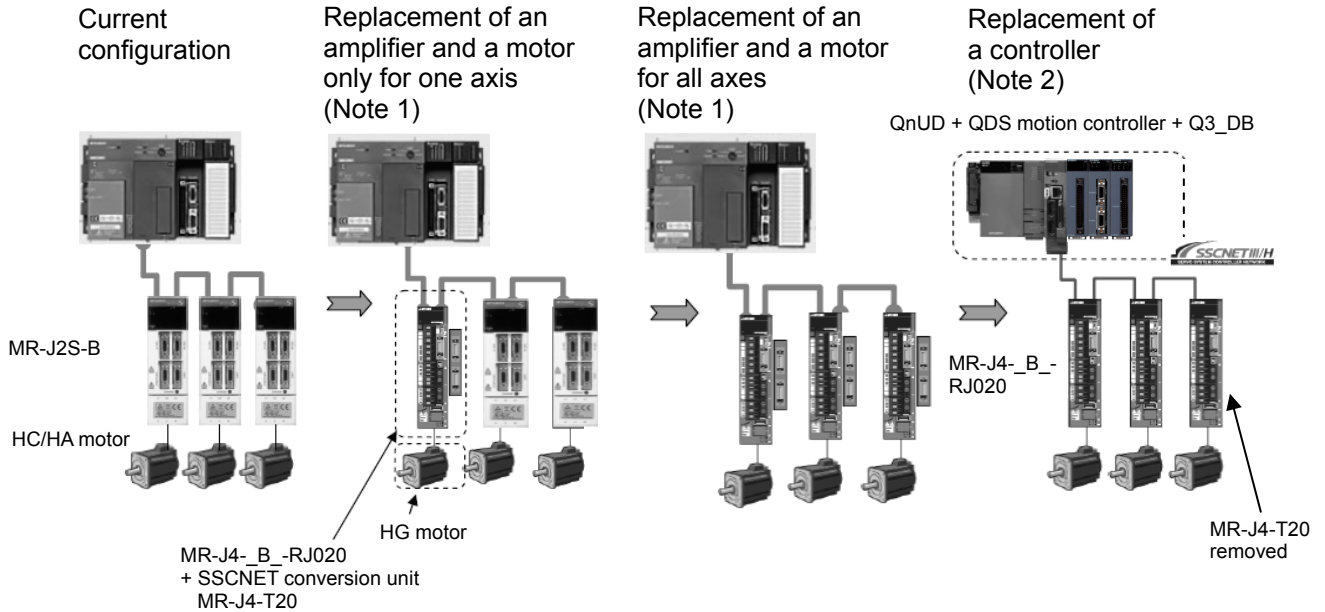
- Note 1. Consider simultaneous replacement of devices when designing a new system.
- 2. Please contact your local sales office for the target motor and servo amplifier.

POINT			
<ul style="list-style-type: none"> • When an "HC/HA motor" shown below is used, "simultaneous replacement with MR-J4- _B_ and an HG motor" is recommended. (When an HG motor is adopted, the capacity of the servo amplifier needs to be changed.) (Consider replacement, referring to "torque characteristics" described in "Part 8: Replacement of Motor".) 			
Existing device models		Replacement models for simultaneous replacement (example)	
Servo motor	Servo amplifier	Servo motor	Servo amplifier
HC-LFS52	MR-J2S-60B	HG-JR73	MR-J4-70B
HC-LFS102	MR-J2S-100B	HG-JR153	MR-J4-200B
HC-LFS152	MR-J2S-200B	HG-JR353	MR-J4-350B
HA-LFS15K2(4)(B)	MR-J2S-15KB(4)	HG-JR11K1M(4)(B)	MR-J4-11KB(4)
HA-LFS22K2(4)(B)	MR-J2S-22KB(4)	HG-JR15K1M(4)(B)	MR-J4-15KB(4)
HA-LFS30K2(4)	MR-J2S-30KB(4)	HG-JR22K1M(4)	MR-J4-22KB(4)
HA-LFS37K2(4)	MR-J2S-37KB(4)	HG-JR30K1M(4)	MR-J4-DU30KB(4)
HA-LFS45K24	MR-J2S-45KB4	HG-JR37K1M4	MR-J4-DU37KB4
HA-LFS55K24	MR-J2S-55KB4	HG-JR45K1M4	MR-J4-DU45KB4
HC-KFS46	MR-J2S-70B	HG-KR43	MR-J4-40B
HC-KFS410	MR-J2S-70B	HG-KR43	MR-J4-40B
HC-RFS103 (B) G2 1/_	MR-J2S-200B	HG-SR102 (B) G7 1/_	MR-J4-100B
HC-RFS203 (B) G2 1/_	MR-J2S-350B	HG-SR202 (B) G7 1/_	MR-J4-200B
HC-RFS353 (B) G2 1/_	MR-J2S-500B	HG-SR352 (B) G7 1/_	MR-J4-350B
HC-RFS103 (B) G5 1/_	MR-J2S-200B	HG-SR102 (B) G5 1/_	MR-J4-100B
HC-RFS203 (B) G5 1/_	MR-J2S-350B	HG-SR202 (B) G5 1/_	MR-J4-200B
HC-RFS353 (B) G5 1/_	MR-J2S-500B	HG-SR352 (B) G5 1/_	MR-J4-350B
HC-RFS103 (B) G7 1/_	MR-J2S-200B	HG-SR102 (B) G7 1/_	MR-J4-100B
HC-RFS203 (B) G7 1/_	MR-J2S-350B	HG-SR202 (B) G7 1/_	MR-J4-200B
HC-RFS353 (B) G7 1/_	MR-J2S-500B	HG-SR352 (B) G7 1/_	MR-J4-350B

Part 3: Review on Replacement of MR-J2S-_B_ with MR-J4-_B_

(3) Gradual replacement of MR-J2S-_B_ with MR-J4-_B_

See "[Appendix 1] Summary of MR-J4-_B_-RJ020 + MR-J4-T20".



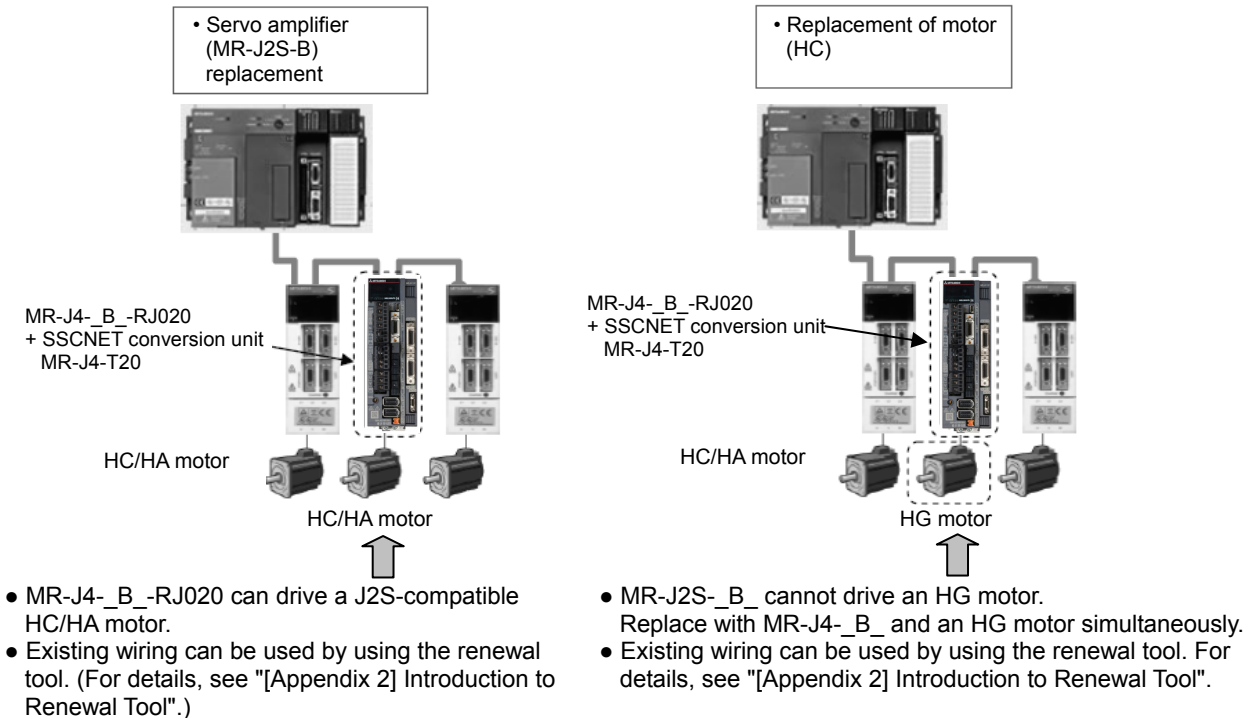
Note 1. MR-J4-_B_-RJ020 equipped with the SSCNET conversion unit operates as MR-J2S-_B_.

2. It is necessary to change MR-J4-_B_-RJ020 from J2S mode to J4 mode. Remove MR-J4-T20.

See "[Appendix 1] Summary of MR-J4-_B_-RJ020 + MR-J4-T20".

(4) For separate repair

See "[Appendix 1] Summary of MR-J4-_B_-RJ020 + MR-J4-T20".



Note. Separate repair means replacement.

POINT

- MR-J2S-_B_ cannot drive an HG motor. When the servo motor is replaced with an HG motor, simultaneous replacement with MR-J4-_B_ and an HG motor is necessary.

Part 3: Review on Replacement of MR-J2S-_B_ with MR-J4-_B_

3. DIFFERENCES BETWEEN MR-J2S-_B_ AND MR-J4-_B_

3.1 Function Comparison Table

Item	MR-J2S-_B_	MR-J4-_B_	Compatibility	Reference material/items
Control mode	<ul style="list-style-type: none"> • Position control mode • Speed control mode 	<ul style="list-style-type: none"> • Position control mode • Speed control mode • Torque control mode 	○	MR-J4-_B_ servo amplifier Instruction Manual
Network	SSCNET compatible	SSCNET III/H compatible	○	MR-J4-_B_ servo amplifier Instruction Manual
Servo motor (Encoder resolution)	HC series (17-bit ABS) HA series (17-bit ABS)	HG series (22-bit ABS)	○	MR-J4-_B_ servo amplifier Instruction Manual
The number of DIO points (excluding EM1)	DI: 0 points, DO: 2 points	DI: 3 points, DO: 3 points	○	MR-J4-_B_ servo amplifier Instruction Manual, Section 5.2.4
Encoder pulse output	ABZ-phase (differential)	←	○	MR-J4-_B_ servo amplifier Instruction Manual, Section 5.2.1
DIO interface	Input: Sink/source Output: Sink	Input: Sink/source Output: Sink/source	○	MR-J4-_B_ servo amplifier Instruction Manual, Section 4.3
Analog input/output	(Output) 10-bit or equivalent × 2ch	←	○	MR-J4-_B_ servo amplifier Instruction Manual Appendix
LED display	7-segment 2-digit	7-segment 3-digit	○	MR-J4-_B_ servo amplifier Instruction Manual, Section 4.3
Interface 24VDC power supply	Installed.	Not installed.	×	Part 7 Section 1.2.5
Network terminal connector	MR-A-TM is needed.	No terminal connector is needed.	×	—

3.2 Function List

function	MR-J2S-_B_	MR-J4-_B_	Reference material/items
Absolute position detection system	○ [Parameter No. 1]	○ [Pr. PA03]	MR-J4-_B_ Servo Amplifier Instruction Manual, Chapter 12
Gain switching function	○ [Parameter No. 49]	○ [Pr. PB26]	MR-J4-_B_ Servo Amplifier Instruction Manual, Section 7.2
Advanced vibration suppression control II	×	○ [Pr. PB02]	MR-J4-_B_ Servo Amplifier Instruction Manual, Section 7.1.5
Adaptive filter	○ (Adaptive vibration suppression control) [Parameter No. 25]	○ (Adaptive filter II) [Pr. PB01]	MR-J4-_B_ Servo Amplifier Instruction Manual, Section 7.1.2
Low-pass filter	○ [Parameter No. 25]	○ [Pr. PB23]	MR-J4-_B_ Servo Amplifier Instruction Manual, Section 7.1.4
Machine analyzer function	○ (Note 1)	○ (Note 2)	—
Gain search function	○ (Note 1)	○ (One-touch tuning)	MR-J4-_B_ Servo Amplifier Instruction Manual, Section 6.2
Robust filter	×	○ [Pr. PE41]	—
Slight vibration suppression control	○ [Parameter No. 24]	○ [Pr. PB24]	—
Auto tuning	○ [Parameter No. 8]	○ [Pr. PA08]	MR-J4-_B_ Servo Amplifier Instruction Manual, Section 6.3
Regenerative option	○ [Parameter No. 2]	○ [Pr. PA02]	MR-J4-_B_ Servo Amplifier Instruction Manual, Section 11.2
Torque limit	○ [Parameter No. 10, 11]	○	—
Forced stop (EM1) automatic ON	○ [Parameter No. 23]	○ [Pr. PA04]	—
Alarm history clear	○	○ [Pr. PC21]	—
Output signal selection (device settings)	×	○ [Pr. PD07] to [Pr. PD09]	—
Output signal (DO) forced output	○ (Note 1)	○ (Note 2)	MR-J4-_B_ Servo Amplifier Instruction Manual, Section 4.5.1 (1)
Test operation mode	Motor-less operation	○ [Parameter No. 24]	○ [Pr. PC05]
	Other than the above	○ (Note 1)	○ (Note 2)
Analog monitor output	○ [Parameter No. 22]	○ [Pr. PC09], [Pr. PC10]	MR-J4-_B_ Servo Amplifier Instruction Manual Appendix

Part 3: Review on Replacement of MR-J2S-B with MR-J4-B

function	MR-J2S- <u>B</u>	MR-J4- <u>B</u>	Reference material/items
Setup software	MR Configurator (SETUP161)	MR Configurator2	MR-J4- <u>B</u> Servo Amplifier Instruction Manual, Section 11.7
Linear servo system	×	○	MR-J4- <u>B</u> Servo Amplifier Instruction Manual, Chapter 14
Direct drive servo system	×	○	MR-J4- <u>B</u> Servo Amplifier Instruction Manual, Chapter 15
Fully closed loop system	×	○	MR-J4- <u>B</u> Servo Amplifier Instruction Manual, Chapter 16
STO function	×	○	MR-J4- <u>B</u> Servo Amplifier Instruction Manual, Chapter 13

- Note 1. MR Configurator (SETUP161) is necessary for this function.
 2. MR Configurator2 is necessary for this function.

3.3 Comparison of Networks

MR-J4-B servo amplifier is connected to controllers, including a servo system controller, on the high-speed synchronous network SSCNET III/H. The servo amplifier directly receives a command from a controller to drive a servo motor.

SSCNET III/H allows higher-speed communication of 150 Mbps for both upstream and downstream traffic to be achieved with high noise resistance enabled by adoption of the SSCNET III optical cables. Large amounts of data are exchanged in real-time between the controller and the servo amplifier. Servo monitor information is stored in the upper information system and is used for control.

3.3.1 Comparison of servo system network specifications

Item	MR-J2S series	MR-J4 series (Note 1)	
	SSCNET	SSCNET III	SSCNET III/H
Communication media	Metal cable	Optical fiber cable	
Communication speed	5.6Mbps	50Mbps	150Mbps
Transmission distance	Overall length: 30 m	[Standard cord inside cabinet/standard cable outside cabinet] Maximum distance between stations: 20 m Maximum overall distance: 320 m (20 m x 16 axes)	
		[Long distance cable] Maximum distance between stations: 50 m Maximum overall distance: 800 m (50 m x 16 axes)	[Long distance cable] Maximum distance between stations: 100 m Maximum overall distance: 1600 m (100m x 16 axes)

- Note 1. When SSCNET III/H communication is used to receive a command sent for the first time from the controller in the factory setting, the operation mode is fixed to "J4 mode". To return to the factory setting or to select an arbitrary mode, change the setting with the application "MR-J4 (W)-B mode selection".
 The application "MR-J4 (W)-B mode selection" is available with MR Configurator2 Version 1.12N and later. When a version older than 1.12N is used, download an update version from the MITSUBISHI ELECTRIC FA Global Website.

(1) Explanation of SSCNET III/H cable models

The numbers in the cable length field of the table indicate the symbol filling the underline "_" in the cable model. The cables of the lengths with the symbols are available.

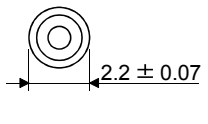
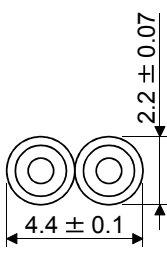
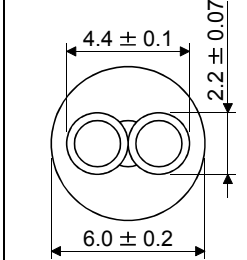
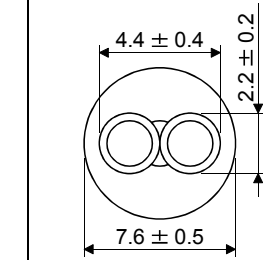
Cable model	Cable length (m)											Flex life	Application/remark
	0.15	0.3	0.5	1	3	5	10	20	30	40	50		
MR-J3BUS_M	015	03	05	1	3	/	/	/	/	/	/	Standard	Using standard cord inside cabinet
MR-J3BUS_M-A	/	/	/	/	/	5	10	20	/	/	/	Standard	Using standard cable outside cabinet
MR-J3BUS_M-B (Note)	/	/	/	/	/	/	/	/	30	40	50	High flex life	Using long distance cable

Note. For cable of 30 m or shorter, contact your local sales office.

Contact Mitsubishi Electric System & Service about ultra-high flex-life cables and long distance cables longer than 50 m.

Part 3: Review on Replacement of MR-J2S- _B_ with MR-J4- _B_

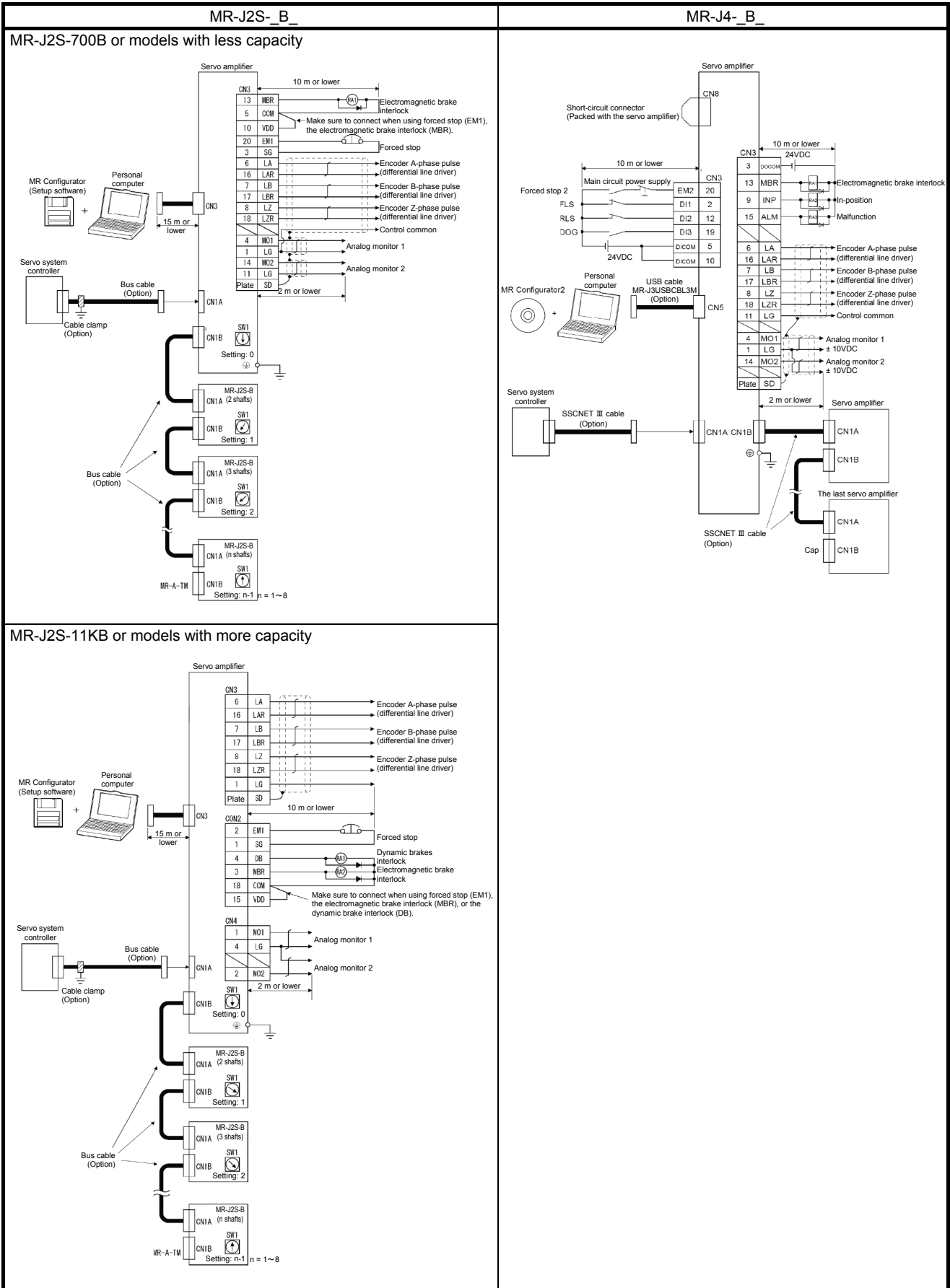
(2) SSCNET III/H cable specifications

		Description			
SSCNET III/H cable model		MR-J3BUS_M		MR-J3BUS_M-A	MR-J3BUS_M-B
SSCNET III/H cable length		0.15 m	0.3 m to 3 m	5 m to 20 m	30 m to 50 m
Optical cable (cord)	Minimum bend radius	25 mm		Enforced covering cable 50 mm Cord: 25 mm	Enforced covering cable 50 mm Cord: 30 mm
	Tension strength	70 N	140 N	420 N (Enforced covering cable)	980 N (Enforced covering cable)
	Temperature range for use (Note)	-40 °C to 85 °C			-20 °C to 70 °C
	Atmosphere	Indoors (not exposed to direct sunlight), no solvent or oil.			
Appearance [mm]					

Note. This temperature range for use is the value for optical cable (cord) only. Temperature condition for the connector is the same as that for servo amplifier.

Part 3: Review on Replacement of MR-J2S-_B_ with MR-J4-_B_

3.4 Comparison of Standard Connection Diagrams

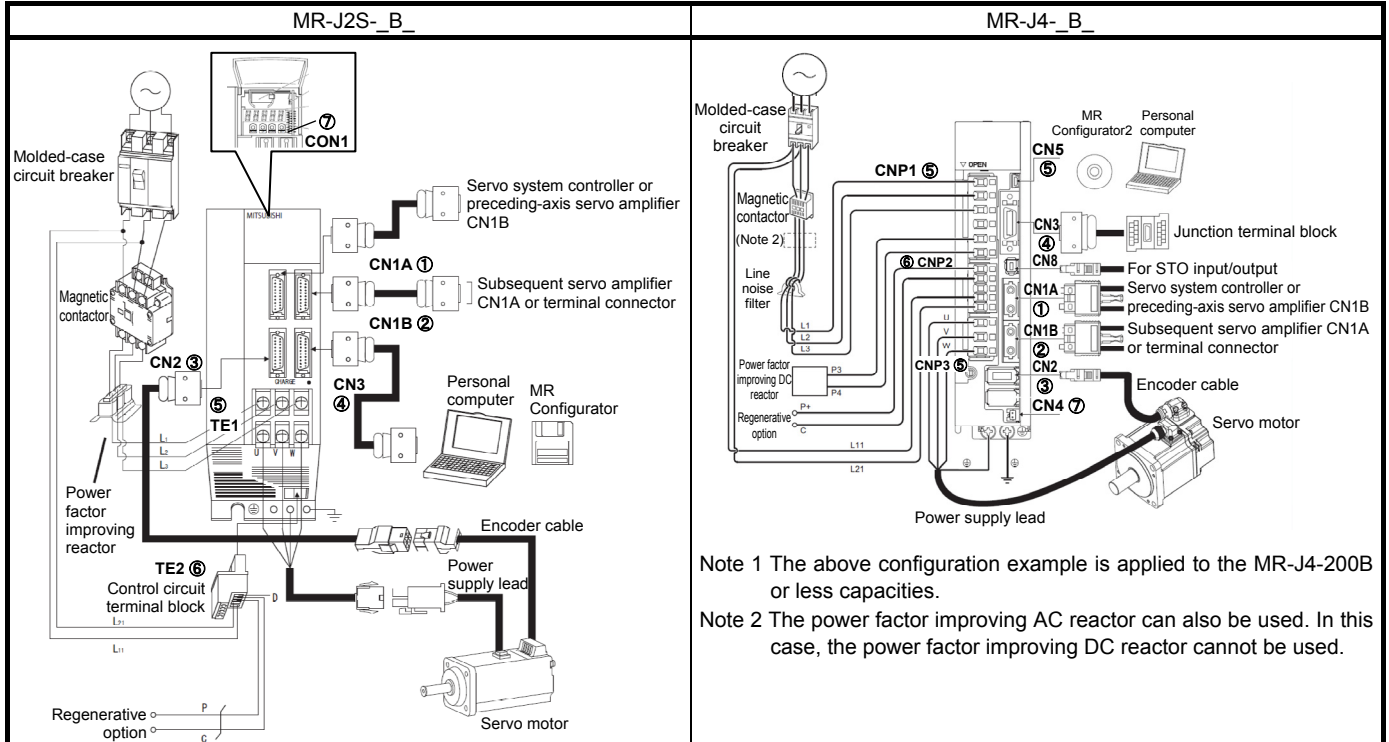


Part 3: Review on Replacement of MR-J2S-_B_ with MR-J4-_B_

3.5 List of Corresponding Connectors and Terminal Blocks

(1) Comparison of connectors

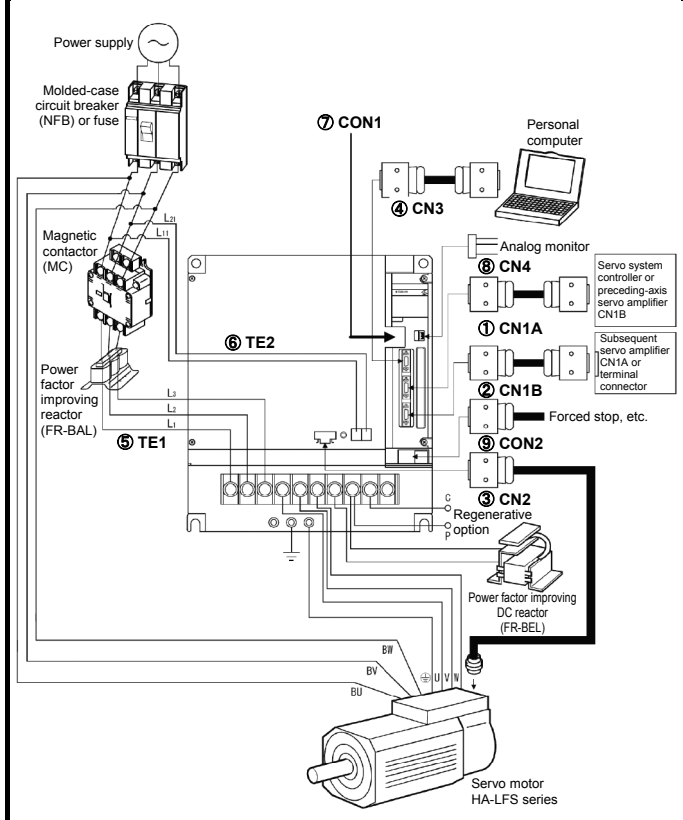
An example of connections with the peripheral equipment is shown below. Refer to the respective Instruction Manuals for details on the signals.



Note 1 The above configuration example is applied to the MR-J4-200B or less capacities.

Note 2 The power factor improving AC reactor can also be used. In this case, the power factor improving DC reactor cannot be used.

The above configuration example is applied to the MR-J2S-100B or less capacities.



The above configuration example is for MR-J2S-11KB or models with more capacity.

Part 3: Review on Replacement of MR-J2S- _B_ with MR-J4- _B_

(2) List of connector and terminal block correspondence

MR-J2S- _B_		MR-J4- _B_	Precautions	
(1)	Bus cable connector CN1A	SSCNET III/H cable connector CN1A	Must switch to SSCNET III/H cable (option).	
(2)	Bus cable-connecting connector CN1B	SSCNET III/H cable connector CN1B	Must switch to SSCNET III/H cable (option).	
(3)	Encoder connector CN2	Encoder connector CN2	Must switch to encoder cable (option) or prepare a new cable.	
(4)	Communication connector CN3	I/O signal connector CN3	Prepare a new cable.	
				PC connection
				Analog monitor Encoder output pulses
(8)	Analog output connector CN4 (Note 2)			
(9)	I/O signal connector CON2 (Note 2)			
(5)	Main circuit terminal block TE1	Main circuit power connector CNP1	Must switch to the power connector (enclosed with the amplifier).	
		Servo motor power connector CNP3		
(6)	Control circuit terminal block TE2	Control circuit power connector CNP2		
(7)	Battery connector CON1	Battery connector CN4	Prepare a new battery.	

- Note 1. When not using the STO function in MR-J4- _B_ , attach a short-circuit connector supplied with a servo amplifier onto CN8 (STO input signal connector).
2. These connectors are only for MR-J2S-11KB or models with more capacity.
3. The configuration of the main circuit terminal block differs depending on capacity.
See "Part 7: Common Reference Material".

(3) Comparison of signals

MR-J2S- _B_ <7 kW or less>		Abbreviation (Note 1)	MR-J4- _B_	
Connector pin assignment	Connector pin No.		Connector pin No.	Connector pin assignment
	CN3-20	EM1 (EM2)	CN3-20 (Note 2)	
	CN3-13	MBR	CN3-13	
	CN3-6	LA	CN3-6	
	CN3-16	LAR	CN3-16	
	CN3-7	LB	CN3-7	
	CN3-17	LBR	CN3-17	
	CN3-8	LZ	CN3-8	
	CN3-18	LZR	CN3-18	
	CN3-4	MO1	CN3-4	
	CN3-14	MO2	CN3-14	
	CN3-10	VDD		
	CN3-5	COM (DICOM)	CN3-5 CN3-10	
	CN3-3	SG (DOCOM)	CN3-3	
	CN3-1	LG	CN3-1	
	CN3-11		CN3-11	
	Plate	SD	Plate	

- Note 1. Signals unique to MR-J4- _B_ are in parentheses.
2. The factory setting for MR-J4- _B_ is EM2.
3. Set with [Pr. PD07] to [PD09] for use.

Part 3: Review on Replacement of MR-J2S- B_ with MR-J4- B_

MR-J2S- B_ <11 kW or more>		Abbreviation (Note 1)	MR-J4- B_				
Connector pin assignment	Connector pin No.		Connector pin No.	Connector pin assignment			
	CON2-1	SG (DOCOM)	CN3-3				
	CON2-2	EM1 (EM2)	CN3-20 (Note 2)				
	CON2-3	MBR	CN3-13				
	CON2-4	DB	(Note 3)				
	CON2-15	VDD					
	CON2-18	COM (DICOM)	CN3-5 CN3-10				
	CN3-6	LA	CN3-6				
	CN3-16	LAR	CN3-16				
	CN3-7	LB	CN3-7				
	CN3-17	LBR	CN3-17				
	CN3-8	LZ	CN3-8				
	CN3-18	LZR	CN3-18				
	CN4-1	MO1	CN3-4				
	CN4-2	MO2	CN3-14				
	CN4-4	LG	CN3-1 CN3-11				
Plate	SD	Plate					
				CN4			
				□	1	MO1	
				□	2	MO2	
				□			
				□	4	LG	

- Note 1. Signals unique to MR-J4- B_ are in parentheses.
 2. The factory setting for MR-J4- B_ is EM2.
 3. Set with [Pr. PD07] to [PD09] for use.

Part 3: Review on Replacement of MR-J2S- _B_ with MR-J4- _B_

3.6 Comparison of Peripheral Equipment

POINT

- See "Part 9: Review on Replacement of Optional Peripheral Equipment".

Part 3: Review on Replacement of MR-J2S- _B_ with MR-J4- _B_

3.7 Comparison of Parameters

Note

- Never perform extreme adjustments and changes to the parameters, otherwise the operation may become unstable.
- If fixed values are written in the digits of a parameter, do not change these values.
- Do not change parameters for manufacturer setting.
- Do not enter any setting value other than those specified for each parameter.

POINT

- For the parameter converter function, see "Part 7: Common Reference Material".
- The parameter whose symbol is preceded by * is enabled with the following conditions:
 - *: After setting the parameter, cycle the power or reset the controller.
 - ** : After setting the parameter, cycle the power.
- For details about parameter settings for replacement, see the MR-J4- _B_(-RJ) Servo Amplifier Instruction Manual to set parameters.
- Do not enter any setting value other than those specified for each parameter.

POINT

- With MR-J4-B, the deceleration to a stop function is enabled in the factory setting. To disable the deceleration to a stop function, set PA04 to "0 _ _ _".
- In cases of 11 kW or more, the dynamic brake (DB) needs to be assigned to a device in Pr.PD07 to PD09.

Part 3: Review on Replacement of MR-J2S- _B_ with MR-J4- _B_

3.7.1 Setting requisite parameters upon replacement

The parameters shown in this section are a minimum number of parameters that need to be set for simultaneous replacement. Depending on the settings of the currently used amplifier, parameters other than these may need to be set.

Parameter number	Name	Precautions
PA02	Regenerative option selection	The setting must be changed according to option model.
PA04	Function selection A-1 Servo forced stop selection	Forced stop deceleration function selection To configure the same settings as for MR-J2S- _B_ , select "Forced stop deceleration function disabled (with EM1 used)".
PA08	Gain adjustment mode selection	The setting value needs to be changed according to the auto tuning mode.
PA09	Auto tuning response	Auto tuning response setting Enter this setting value for replacement, referring to "3.7.3 Comparison of parameter details". It is necessary to make gain adjustment again when replacing. For details on how to make gain adjustments, refer to Chapter 6 of the MR-J4- _B_ Servo Amplifier Instruction Manual. The setting value needs be changed based on the standard machine resonance frequency.
PA10	In-position range	The setting needs to be changed depending on the motor.
PA15	Encoder output pulse	Used to set the encoder pulses (A-phase and B-phase) output by the servo amplifier.
PA19	Parameter writing inhibit	Change the setting value as necessary.
PB06	Load to motor inertia ratio	The unit system is different. (0.1-fold→0.01-fold) Pay attention to setting value.
PB07	Model loop gain	The unit system is different. (rad/s→0.1 rad/s)
PB08	Position loop gain	The unit system is different. (rad/s→0.1 rad/s)
PB10	Speed integral compensation	The unit system is different. (ms→0.1 ms)
PB13	Machine resonance suppression filter 1	Change the setting value according to the frequency and depth.
PB14	Notch shape selection 1	
PB15	Machine resonance suppression filter 2	Change the setting value according to the frequency and depth.
PB16	Notch shape selection 2	
PB29	Load to motor inertia ratio after gain switching	The unit system is different. (0.1-fold→0.01-fold) Pay attention to setting value.
PB30	Position loop gain after gain switching	It is necessary to convert the ratio to a value to change the setting value.
PB31	Speed loop gain after gain switching	It is necessary to convert the ratio to a value to change the setting value.
PB32	Speed integral compensation after gain switching	It is necessary to convert the ratio to a value to change the setting value.
PC01	Error excessive alarm level	The unit system is different. MR-J2S- _B_ : 0.025 rev. unit; MR-J4- _B_ : 1/0.1/0.01/0.001 rev. unit selectable
PC06	Function selection C-3 Error excessive alarm level unit selection	
PC09	Analog monitor 1 output	The setting value must be changed according to monitor output data. "Maximum speed" and "Maximum torque" differ depending on the motor. Set according to the motor.
PC10	Analog monitor 2 output	
PC11	Analog monitor 1 offset	Depends on H/W. It is necessary to change the setting value.
PC12	Analog monitor 2 offset	Depends on H/W. It is necessary to change the setting value.

Part 3: Review on Replacement of MR-J2S-_B_ with MR-J4-_B_

3.7.2 Parameter comparison list

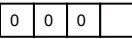
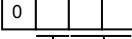
MR-J2S-_B_					MR-J4-_B_					
No.	Abbreviation	Parameter name		Initial value	Customer setting value	No.	Abbreviation	Parameter name	Initial value	Customer setting value
1	*AMS	Amplifier setting Absolute position detection system selection		0000		PA03	*ABS	Absolute position detection system selection	0000h	
2	*REG	Regenerative resistor	Regenerative option selection	0000		PA02	**REG	Regenerative options selection	0000h	
			External dynamic brake selection					Substituted with PD07 to PD09		
3		Automatically set from the servo system controller		0080				No corresponding parameter (no need to set)		
4		Automatically set from the servo system controller		0000				No corresponding parameter (no need to set)		
5		Automatically set from the servo system controller		1				No corresponding parameter (no need to set)		
6	*FBP	: Number of feedback pulses		0				No corresponding parameter		
7	*POL	Rotation Direction Selection		0		PA14	*POL	Rotation Direction Selection	0	
8	ATU	Auto tuning gain adjustment mode selection		0001		PA08	ATU	Gain adjustment mode selection	0001h	
9	RSP	Servo response		7 kW or less: 0005 11 kW or more: 0002		PA09	RSP	Auto Tuning Response	16	
10	TLP	Forward rotation torque limit		300				No corresponding parameter		
11	TLN	Reverse rotation torque limit		300				No corresponding parameter		
12	GD2	Load to motor inertia ratio		7.0		PB06	GD2	Load to motor inertia ratio	7.00	
13	PG1	Position loop gain 1		7 kW or less: 35 11 kW or more: 19		PB07	PG1	Model loop gain	15.0	
14	VG1	Speed loop gain 1		7 kW or less: 177 11 kW or more: 96				No corresponding parameter (no need to set)		
15	PG2	Position loop gain 2		7 kW or less: 35 11 kW or more: 19		PB08	PG2	Position loop gain	37.0	
16	VG2	Speed loop gain 2		7 kW or less: 817 11 kW or more: 455		PB09	VG2	Speed loop gain	823	
17	VIC	Speed integral compensation		7 kW or less: 48 11 kW or more: 91		PB10	VIC	Speed integral compensation	33.7	
18	NCH	Machine resonance suppression filter 1	Notch frequency selection	0000		PB13	NH1	Machine resonance suppression filter 1	4500	
			Notch depth selection			PB14	NHQ1	Notch shape selection 1	0000h	
19	FFC	Feed Forward Gain		0		PB04	FFC	Feed Forward Gain	0	
20	INP	In-position Range		100		PA10	INP	In-position Range	1600	

Part 3: Review on Replacement of MR-J2S- _B_ with MR-J4- _B_

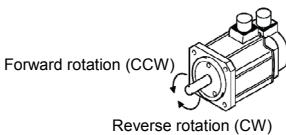
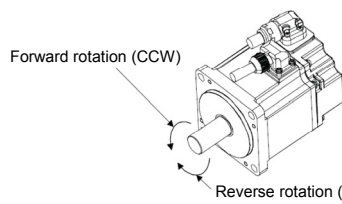
MR-J2S- _B_					MR-J4- _B_						
No.	Abbreviation	Parameter name		Initial value	Customer setting value	No.	Abbreviation	Parameter name		Initial value	Customer setting value
21	MBR	Electromagnetic Brake Sequence Output		0		PC02	MBR	Electromagnetic Brake Sequence Output		0	
22	MOD	Analog monitor output	Analog monitor 1 output selection	0001		PC09	MOD1	Analog monitor 1 output		0000h	
			Analog monitor 2 output selection			PC10	MOD2	Analog monitor 2 output		0000h	
23	*OP1	Option function 1 Servo forced stop selection		0000		PA04	*AOP1	Function selection A-1 Servo forced stop selection		2000h	
24	*OP2	Option function 2	Slight vibration suppression control selection	0000		PB24	*MVS	Slight vibration suppression control selection		0000h	
			Motor-less operation selection			PC05	**COP2	Function selection C-2 Motor-less operation selection		0000h	
25	LPF	Low-pass filter/adaptive vibration suppression control	Low-pass filter selection	0000		PB23	VFBF	Low-pass Filter Selection		0000h	
			Adaptive vibration suppression control selection			No corresponding parameter (The machine resonance filter can be automatically set with PB01.)					
			Adaptive vibration suppression control level selection								
26		For manufacturer setting		0							
27	MO1	Analog monitor 1 offset		0		PC11	MO1	Analog monitor 1 offset		0	
28	MO2	Analog monitor 2 offset		0		PC12	MO2	Analog monitor 2 offset		0	
29		For manufacturer setting		0001							
30	ZSP	Zero Speed		50		PC07	ZSP	Zero Speed		50	
31	ERZ	Error excessive alarm level		80		PC01	ERZ	Error excessive alarm level		0	
						PC06	*COP3	Function selection C-3 Error excessive alarm level unit selection		0000h	
32	OP5	Option function 5 PI-PID control switching selection		0000		PB24	*MVS	PI-PID switching control selection		0000h	
33	*OP6	Option function 6	Serial communication baud rate selection	0000				No corresponding parameter			
			Serial communication response delay time					No corresponding parameter			
			Encoder output pulse setting selection			PC03	*ENRS	Encoder output pulse setting selection		0000h	
34	VPI	PI-PID switching position droop		0							
35		For manufacturer setting									
36	VDC	Speed Differential Compensation		980		PB11	VDC	Speed Differential Compensation		980	
37		For manufacturer setting									
38	*ENR	Encoder output pulse		4000		PA15	*ENR	Encoder output pulse		4000	
39		For manufacturer setting									
40	*BLK	Parameter Writing Inhibit		0000		PA19	*BLK	Parameter Writing Inhibit		00ABh	
41 to 48		For manufacturer setting									
49	*CDP	Gain Changing Selection		0000		PB26	*CDP	Gain Changing Selection		0000h	
50	CDS	Gain Switching Condition		10		PB27	CDL	Gain Switching Condition		10	
51	CDT	Gain Switching Time Constant		1		PB28	CDT	Gain Switching Time Constant		1	
52	GD2B	Load to motor inertia ratio 2		7.0		PB29	GD2B	Load to motor inertia ratio after gain switching		7.00	
53	PG2B	Position loop gain 2 changing ratio		100		PB30	PG2B	Position loop gain after gain switching		0.0	
54	VG2B	Speed loop gain 2 changing ratio		100		PB31	VG2B	Speed loop gain after gain switching		0	
55	VICB	Speed integral compensation changing ratio		100		PB32	VICB	Speed integral compensation after gain switching		0.0	
56 to 59		For manufacturer setting									
60	*OPC	Option function C Encoder pulse output phase changing		0000		PC03	*ENRS	Encoder output pulse phase selection		0000h	
61	NH2	Machine resonance suppression filter 2	Notch frequency selection	0000		PB15	NH2	Machine resonance suppression filter 2		4500	
			Notch depth selection			PB16	NHQ2	Notch shape selection 2		0000h	
62 to 75		For manufacturer setting									

Part 3: Review on Replacement of MR-J2S- _B_ with MR-J4- _B_

3.7.3 Comparison of parameter details

MR-J2S- _B_			MR-J4- _B_																																														
No.	Name and function	Initial value	No.	Name and function	Initial value																																												
1	Amplifier setting Used to select absolute position detection system.  Absolute position detection system selection 0: Disabled (used in incremental system) 1: Enabled (Used in absolute position detection system)	0000	PA03	Absolute position detection system This parameter is set when using the absolute position detection system. This parameter cannot be used in the speed control mode and torque control mode. <table border="1"> <thead> <tr> <th>Setting digit</th> <th>Explanation</th> <th>Initial value</th> </tr> </thead> <tbody> <tr> <td>___X</td> <td>Absolute position detection system selection 0: Disabled (Use incremental system.) 1: Enabled (Use absolute position detection system.)</td> <td>0h</td> </tr> <tr> <td>__X_</td> <td>For manufacturer setting</td> <td>0h</td> </tr> <tr> <td>_X__</td> <td></td> <td>0h</td> </tr> <tr> <td>X___</td> <td></td> <td>0h</td> </tr> </tbody> </table>	Setting digit	Explanation	Initial value	___X	Absolute position detection system selection 0: Disabled (Use incremental system.) 1: Enabled (Use absolute position detection system.)	0h	__X_	For manufacturer setting	0h	_X__		0h	X___		0h	0000h																													
Setting digit	Explanation	Initial value																																															
___X	Absolute position detection system selection 0: Disabled (Use incremental system.) 1: Enabled (Use absolute position detection system.)	0h																																															
__X_	For manufacturer setting	0h																																															
_X__		0h																																															
X___		0h																																															
2	Regenerative resistor Used to select the regenerative option to be used.  Regenerative option selection 00: • The regenerative option is not used by the servo amplifier at 7 kW or less (built-in regenerative resistor is used). MR-J2S-10B cannot be used as it does not have a built-in regenerative resistor. • The supplied regenerative resistor or regenerative option is used in the servo amplifier at 11 kW or more. 01: FR-RC, FR-BU2, FR-CV 05: MR-RB32 08: MR-RB30 09: MR-RB50 (Cooling fan is required.) 0B: MR-RB31 0C: MR-RB51 (Cooling fan is required.) 0E: When increasing the capabilities by using a cooling fan to cool the supplied regeneration resistor with the servo amplifier of 11 kW to 22 kW 10 : MR-RB032 11 : MR-RB12 External dynamic break selection 0: Disabled 1: Enabled Select "1" when using the external dynamic brake with MR-J2S-11KB or models with more capacity.	0000	PA02	Regenerative options Used to select the regenerative option. An incorrect setting may cause the regenerative option to burn out. When a regenerative option that is not compatible with a servo amplifier is selected, a parameter error (AL. 37) occurs. <table border="1"> <thead> <tr> <th>Setting digit</th> <th>Explanation</th> <th>Initial value</th> </tr> </thead> <tbody> <tr> <td>___XX</td> <td>Regenerative options selection 00: Do not use regenerative options • In case of servo amplifier of 100W, do not use regenerative options. • In case of servo amplifier of 0.2kW to 7kW, use a built-in regenerative resistor. • Use a supplied regenerative resistor or regenerative options on a servo amplifier of 11 kW to 22 kW. 01: FR-RC/FR-CV/FR-BU2 When using FR-RC, FR-CV, and FR-BU2, select "Method 2 (___1)" from "undervoltage alarm detection method selections" for [Pr. PC20]. 02: MR-RB032 03: MR-RB12 04: MR-RB32 05: MR-RB30 06: MR-RB50 (cooling fan is needed) 08: MR-RB31 09: MR-RB51 (cooling fan is needed) 0B: MR-RB3N 0C: MR-RB5N (cooling fan is needed) FA: When cooling a supplied regenerative resistor or regenerative option on a servo amplifier of 11 kW to 22 kW, and improving the function</td> <td>00h</td> </tr> <tr> <td>_X__</td> <td>For manufacturer setting</td> <td>0h</td> </tr> <tr> <td>X___</td> <td></td> <td>0h</td> </tr> </tbody> </table>	Setting digit	Explanation	Initial value	___XX	Regenerative options selection 00: Do not use regenerative options • In case of servo amplifier of 100W, do not use regenerative options. • In case of servo amplifier of 0.2kW to 7kW, use a built-in regenerative resistor. • Use a supplied regenerative resistor or regenerative options on a servo amplifier of 11 kW to 22 kW. 01: FR-RC/FR-CV/FR-BU2 When using FR-RC, FR-CV, and FR-BU2, select "Method 2 (___1)" from "undervoltage alarm detection method selections" for [Pr. PC20]. 02: MR-RB032 03: MR-RB12 04: MR-RB32 05: MR-RB30 06: MR-RB50 (cooling fan is needed) 08: MR-RB31 09: MR-RB51 (cooling fan is needed) 0B: MR-RB3N 0C: MR-RB5N (cooling fan is needed) FA: When cooling a supplied regenerative resistor or regenerative option on a servo amplifier of 11 kW to 22 kW, and improving the function	00h	_X__	For manufacturer setting	0h	X___		0h	0000h																																
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14	29.2	34	315.3																																																																																																																																																																		
15	32.9	35	355.1																																																																																																																																																																		
16	37.0	36	400.0																																																																																																																																																																		
17	41.7	37	446.6																																																																																																																																																																		
18	47.0	38	501.2																																																																																																																																																																		
19	52.9	39	571.5																																																																																																																																																																		
20	59.6	40	642.7																																																																																																																																																																		
10	<p>Forward rotation torque limit Set the parameter assuming that the rated torque is 100 %. Limit the torque during CCW rotations or CW rotations. The torque limit on a servo system controller side is enabled except in the test operation mode by the MR Configurator (setup software).</p>	300		No corresponding parameter																																																																																																																																																																	
11	<p>Reverse rotation torque limit Set the parameter assuming that the rated torque is 100 %. Limit the torque during CW rotations or CCW rotations. The torque limit on a servo system controller side is enabled except in the test operation mode by the MR Configurator (setup software).</p>	300		No corresponding parameter																																																																																																																																																																	

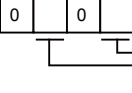
Part 3: Review on Replacement of MR-J2S- _B_ with MR-J4- _B_

MR-J2S- _B_			MR-J4- _B_												
No.	Name and function	Initial value	No.	Name and function	Initial value										
12	<p>Load to motor inertia ratio (Load inertia ratio)</p> <p>Used to set the load inertia (moment of inertia) ratio to the servo motor shaft inertia moment. When auto tuning mode 1 or interpolation mode is selected, the result of auto tuning is automatically used.</p>	7.0	PB06	<p>Load to motor inertia ratio/load to motor mass ratio</p> <p>Used to set load to motor inertia ratio or load to motor mass ratio.</p> <p>This parameter can be set either automatically or manually depending on the [Pr.PA08] setting. See the following table for details. When this parameter is set automatically, the value varies between 0.00 and 100.00.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Pr. PA08</th> <th style="width: 40%;">State of this parameter</th> </tr> </thead> <tbody> <tr> <td>___ 0 (2 gain adjustment mode 1 (Interpolation mode))</td> <td>Automatic setting</td> </tr> <tr> <td>___ 1: Auto tuning mode 1</td> <td rowspan="3">Manual setting</td> </tr> <tr> <td>___ 2: Auto tuning mode 2</td> </tr> <tr> <td>___ 3 (Manual mode)</td> </tr> <tr> <td>___ 4 (2 gain adjustment mode 2)</td> <td></td> </tr> </tbody> </table>	Pr. PA08	State of this parameter	___ 0 (2 gain adjustment mode 1 (Interpolation mode))	Automatic setting	___ 1: Auto tuning mode 1	Manual setting	___ 2: Auto tuning mode 2	___ 3 (Manual mode)	___ 4 (2 gain adjustment mode 2)		7.00
Pr. PA08	State of this parameter														
___ 0 (2 gain adjustment mode 1 (Interpolation mode))	Automatic setting														
___ 1: Auto tuning mode 1	Manual setting														
___ 2: Auto tuning mode 2															
___ 3 (Manual mode)															
___ 4 (2 gain adjustment mode 2)															
13	<p>Position loop gain 1.</p> <p>Used to set the gain of the position loop.</p> <p>Increase the gain to improve track ability in response to the position command.</p> <p>When auto tuning mode 1 or 2 is selected, the auto tuning result is automatically used.</p>	7 kW or less: 35 11 kW or more: 19	PB07	<p>Model loop gain</p> <p>Used to set the response gain till the set position.</p> <p>If the setting value is increased, traceability for position command is improved. However, if the setting value is too large, it tends to vibrate or oscillate.</p> <p>This parameter can be set either automatically or manually depending on the [Pr.PA08] setting. See the following table for details.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Pr. PA08</th> <th style="width: 40%;">State of this parameter</th> </tr> </thead> <tbody> <tr> <td>___ 0 (2 gain adjustment mode 1 (Interpolation mode))</td> <td>Manual setting</td> </tr> <tr> <td>___ 1: Auto tuning mode 1</td> <td>Automatic setting</td> </tr> <tr> <td>___ 2: Auto tuning mode 2</td> <td rowspan="3">Manual setting</td> </tr> <tr> <td>___ 3 (Manual mode)</td> </tr> <tr> <td>___ 4 (2 gain adjustment mode 2)</td> </tr> </tbody> </table>	Pr. PA08	State of this parameter	___ 0 (2 gain adjustment mode 1 (Interpolation mode))	Manual setting	___ 1: Auto tuning mode 1	Automatic setting	___ 2: Auto tuning mode 2	Manual setting	___ 3 (Manual mode)	___ 4 (2 gain adjustment mode 2)	15.0
Pr. PA08	State of this parameter														
___ 0 (2 gain adjustment mode 1 (Interpolation mode))	Manual setting														
___ 1: Auto tuning mode 1	Automatic setting														
___ 2: Auto tuning mode 2	Manual setting														
___ 3 (Manual mode)															
___ 4 (2 gain adjustment mode 2)															
14	<p>Speed Loop Gain</p> <p>Normally, it is unnecessary to change this parameter. Higher setting increases the response level but is liable to generate vibration and/or noise.</p> <p>When auto tuning mode 1 or 2 and manual mode 1 are selected, the auto tuning result is automatically used.</p>	7 kW or less: 177 11 kW or more: 96		No corresponding parameter											
15	<p>Position loop gain 2.</p> <p>Used to set the gain of the position loop.</p> <p>Set this parameter to increase the position response to level load disturbance. Higher setting increases the response level but is liable to generate vibration and/or noise.</p> <p>When auto tuning mode 1 or 2, manual mode 1, and interpolation mode are selected, the auto tuning result is automatically used.</p>	7 kW or less: 35 11 kW or more: 19	PB08	<p>Position loop gain</p> <p>Used to set the gain of the position loop.</p> <p>Set this parameter to increase the position response to level load disturbance.</p> <p>Higher setting increases the response for load disturbance, but if the setting value is too large, vibration and noise are more likely to occur.</p> <p>This parameter can be set either automatically or manually depending on the [Pr.PA08] setting. See the following table for details.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Pr. PA08</th> <th style="width: 40%;">State of this parameter</th> </tr> </thead> <tbody> <tr> <td>___ 0 (2 gain adjustment mode 1 (Interpolation mode))</td> <td>Automatic setting</td> </tr> <tr> <td>___ 1: Auto tuning mode 1</td> <td rowspan="3">Manual setting</td> </tr> <tr> <td>___ 2: Auto tuning mode 2</td> </tr> <tr> <td>___ 3 (Manual mode)</td> </tr> <tr> <td>___ 4 (2 gain adjustment mode 2)</td> <td>Automatic setting</td> </tr> </tbody> </table>	Pr. PA08	State of this parameter	___ 0 (2 gain adjustment mode 1 (Interpolation mode))	Automatic setting	___ 1: Auto tuning mode 1	Manual setting	___ 2: Auto tuning mode 2	___ 3 (Manual mode)	___ 4 (2 gain adjustment mode 2)	Automatic setting	37.0
Pr. PA08	State of this parameter														
___ 0 (2 gain adjustment mode 1 (Interpolation mode))	Automatic setting														
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___ 2: Auto tuning mode 2															
___ 3 (Manual mode)															
___ 4 (2 gain adjustment mode 2)	Automatic setting														
16	<p>Speed loop gain 2.</p> <p>Set this parameter when vibration occurs on machines of low rigidity or large backlash. Higher setting increases the response level but is liable to generate vibration and/or noise.</p> <p>When auto tuning mode 1 or 2 and interpolation mode are selected, the auto tuning result is automatically used.</p>	7 kW or less: 817 11 kW or more: 455	PB09	<p>Speed loop gain</p> <p>Used to set the gain of the speed loop.</p> <p>Set this parameter when vibration occurs on machines of low rigidity or large backlash. Higher setting increases the response level, but if the setting value is too large, vibration and noise are more likely to occur.</p> <p>This parameter can be set either automatically or manually depending on the [Pr.PA08] setting. See [Pr. PB08] table for details.</p>	823										
17	<p>Speed integral compensation</p> <p>Set the time constant for integral compensation.</p> <p>When auto tuning mode 1 or 2 and interpolation mode are selected, the auto tuning result is automatically used.</p>	7 kW or less: 48 11 kW or more: 91	PB10	<p>Speed integral compensation</p> <p>Used to set the integral time constant of the speed loop.</p> <p>Decreasing the setting value will increase the response level, but vibration and noise are more likely to occur.</p> <p>This parameter can be set either automatically or manually depending on the [Pr.PA08] setting. See [Pr. PB08] table for details.</p>	33.7										

Part 3: Review on Replacement of MR-J2S-__B__ with MR-J4-__B__

MR-J2S-__B__				MR-J4-__B__																																																																																							
No.	Name and function	Initial value	No.	Name and function	Initial value																																																																																						
18	Machine resonance suppression filter 1 (notch filter) Used to select the machine resonance suppression filter. <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="margin-left: 10px;"> <p>Notch frequency selection</p> <table border="1" style="font-size: 8px;"> <thead> <tr> <th>Initial value</th><th>Frequency</th><th>Initial value</th><th>Frequency</th><th>Initial value</th><th>Frequency</th><th>Initial value</th><th>Frequency</th></tr> </thead> <tbody> <tr><td>00</td><td>Disabled</td><td>08</td><td>562.5</td><td>10</td><td>281.3</td><td>18</td><td>187.5</td></tr> <tr><td>01</td><td>4500</td><td>09</td><td>500</td><td>11</td><td>264.7</td><td>19</td><td>180</td></tr> <tr><td>02</td><td>2250</td><td>0A</td><td>450</td><td>12</td><td>250</td><td>1A</td><td>173.1</td></tr> <tr><td>03</td><td>1500</td><td>0B</td><td>409.1</td><td>13</td><td>236.8</td><td>1B</td><td>166.7</td></tr> <tr><td>04</td><td>1125</td><td>0C</td><td>375</td><td>14</td><td>225</td><td>1C</td><td>160.1</td></tr> <tr><td>05</td><td>900</td><td>0D</td><td>346.2</td><td>15</td><td>214.3</td><td>1D</td><td>155.2</td></tr> <tr><td>06</td><td>750</td><td>0E</td><td>321.4</td><td>16</td><td>204.5</td><td>1E</td><td>150</td></tr> <tr><td>07</td><td>642.9</td><td>0F</td><td>300</td><td>17</td><td>195.7</td><td>1F</td><td>145.2</td></tr> </tbody> </table> <p>Notch depth selection</p> <table border="1" style="font-size: 8px;"> <thead> <tr> <th>Initial value</th><th>Response level</th><th>Gain</th></tr> </thead> <tbody> <tr><td>0</td><td>Deep</td><td>-40dB</td></tr> <tr><td>1</td><td rowspan="2">to</td><td>-14dB</td></tr> <tr><td>2</td><td>-8dB</td></tr> <tr><td>3</td><td>shallow</td><td>-4dB</td></tr> </tbody> </table> </div> </div>	Initial value	Frequency	Initial value	Frequency	Initial value	Frequency	Initial value	Frequency	00	Disabled	08	562.5	10	281.3	18	187.5	01	4500	09	500	11	264.7	19	180	02	2250	0A	450	12	250	1A	173.1	03	1500	0B	409.1	13	236.8	1B	166.7	04	1125	0C	375	14	225	1C	160.1	05	900	0D	346.2	15	214.3	1D	155.2	06	750	0E	321.4	16	204.5	1E	150	07	642.9	0F	300	17	195.7	1F	145.2	Initial value	Response level	Gain	0	Deep	-40dB	1	to	-14dB	2	-8dB	3	shallow	-4dB	0000h	PB13	Machine resonance suppression filter 1 Used to set the notch frequency of machine resonance suppression filter 1. When "Automatic setting (__ __ 1)" is selected in "Filter tuning mode selection" of [Pr. PB01], the adjustment result is reflected. When "Manual setting (__ __ 2)" is selected in "Filter tuning mode selection" of [Pr. PB01], this setting value is enabled.	4500
		Initial value	Frequency	Initial value	Frequency	Initial value	Frequency	Initial value	Frequency																																																																																		
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3	shallow	-4dB																																																																																									
PB14	Notch shape selection 1 Set the shape of the machine resonance suppression filter 1. When "Automatic setting (__ __ 1)" is selected in "Filter tuning mode selection" of [Pr. PB01], the adjustment result is reflected. Set manually for the manual setting.	0000h																																																																																									
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X _ _ _	For manufacturer setting	0h																																																																																									
19	Feed forward gain Set the feed forward gain. When the setting is 100%, the droop pulses during operation at constant speed are nearly zero. However, sudden acceleration/deceleration will increase the overshoot. As a standard, when setting the feed forward gain as 100%, set 1 s or more as the acceleration/deceleration time constant up to the rated speed.	0	PB04	Feed forward gain Set the feed forward gain. If 100% is set and constant-speed operation is implemented, pulse droop will be almost zero. However, sudden acceleration/deceleration will increase the overshoot. As a standard, when setting the feed forward gain as 100%, set 1 s or more as the acceleration time constant up to the rated speed.	0																																																																																						
20	In-position range Set the range of droop pulses occurred when outputting INP (positioning completion) to a controller. Set by the feedback pulse unit (Parameter No.6). For example, when wanting to set ±10 μm in a state of direct connection to the ball screw, a lead wire length of 10 mm, and a feedback pulse 8192 pulses/rev (Parameter No.6 : 1), set "8", as shown in the equation below. $\frac{10 \times 10^{-6}}{10 \times 10^{-3}} \times 8192 = 8.192 \approx 8$	100	PA10	In-position range Used to set an in-position range per command pulse unit.	1600																																																																																						
21	Electromagnetic brake sequence output Used to set the delay time (Tb) between MBR (Electromagnetic brake interlock) OFF and base circuit shut-off.	0	PC02	Electromagnetic brake sequence output Used to set the delay time between MBR (Electromagnetic brake interlock) OFF and base circuit shut-off.	0																																																																																						

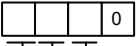
Part 3: Review on Replacement of MR-J2S- _B_ with MR-J4- _B_

MR-J2S- _B_			MR-J4- _B_																																																																																																																																																																
No.	Name and function	Initial value	No.	Name and function	Initial value																																																																																																																																																														
22	Analog monitor output Used to select the signals output to analog monitor 1 (MO1) and analog monitor 2 (MO2).  <table border="1"> <thead> <tr> <th>Setting value</th> <th>Analog monitor 1 (MO1)</th> <th>Analog monitor 2 (MO2)</th> </tr> </thead> <tbody> <tr><td>0</td><td>Servo motor speed (±8 V/max. speed)</td><td></td></tr> <tr><td>1</td><td>Torque (±8 V/max. torque) (Note)</td><td></td></tr> <tr><td>2</td><td>Servo motor speed (+8V/max. speed)</td><td></td></tr> <tr><td>3</td><td>Torque (+8V/max. torque) (Note)</td><td></td></tr> <tr><td>4</td><td>Current command (±8 V/max. current command)</td><td></td></tr> <tr><td>5</td><td>Speed command (±8 V/max. speed)</td><td></td></tr> <tr><td>6</td><td>Droop pulses (±10 V/128 pulses)</td><td></td></tr> <tr><td>7</td><td>Droop pulses (±10 V/2048 pulses)</td><td></td></tr> <tr><td>8</td><td>Droop pulses (±10 V/8192 pulses)</td><td></td></tr> <tr><td>9</td><td>Droop pulses (±10 V/32768 pulses)</td><td></td></tr> <tr><td>A</td><td>Droop pulses (±10 V/131072 pulses)</td><td></td></tr> <tr><td>B</td><td>Bus voltage (+8V/400 V)</td><td></td></tr> </tbody> </table>	Setting value	Analog monitor 1 (MO1)	Analog monitor 2 (MO2)	0	Servo motor speed (±8 V/max. speed)		1	Torque (±8 V/max. torque) (Note)		2	Servo motor speed (+8V/max. speed)		3	Torque (+8V/max. torque) (Note)		4	Current command (±8 V/max. current command)		5	Speed command (±8 V/max. speed)		6	Droop pulses (±10 V/128 pulses)		7	Droop pulses (±10 V/2048 pulses)		8	Droop pulses (±10 V/8192 pulses)		9	Droop pulses (±10 V/32768 pulses)		A	Droop pulses (±10 V/131072 pulses)		B	Bus voltage (+8V/400 V)		0001	PC09	Analog monitor 1 output Used to select the signal to be output to the Analog monitor 1 (MO1). <table border="1"> <thead> <tr> <th>Setting digit</th> <th>Explanation</th> <th>Initial value</th> </tr> </thead> <tbody> <tr> <td>__ X X</td> <td>Analog monitor 1 output selection See the following table for details.</td> <td>00h</td> </tr> <tr> <td>_ X _ _</td> <td>For manufacturer setting</td> <td>0h</td> </tr> <tr> <td>X _ _ _</td> <td>For manufacturer setting</td> <td>0h</td> </tr> </tbody> </table>	Setting digit	Explanation	Initial value	__ X X	Analog monitor 1 output selection See the following table for details.	00h	_ X _ _	For manufacturer setting	0h	X _ _ _	For manufacturer setting	0h	0000h																																																																																																											
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Item with ○ are included in each operation mode. Standard: When using rotary servo motor by standard (semi closed loop system). Fully closed loop system: When using rotary servo motor in fully closed loop system. Linear: When using a linear servo motor. DD: When using a direct drive motor (DD motor)</p> <p>2. Encoder pulse unit</p>	Setting value	Item	Operation Mode (Note 1)				Standard fully closed linear	Fully closed loop system	Linear	DD	00	Servo motor speed or linear servo motor speed (±8V/max. rotational speed or max. speed)	○	○	○	○	01	Torque or thrust (±8V/max. torque or max. thrust)	○	○	○	○	02	Servo motor speed or linear servo motor speed (+8V/max. rotational speed or max. speed)	○	○	○	○	03	Torque or thrust (+8V/max. torque or max. thrust)	○	○	○	○	04	Current command (±8 V/max. current command)	○	○	○	○	05	Speed command (±8V/max. rotational speed or max. speed)	○	○	○	○	06	Pulse droop (±10V/100 pulses) (Note 2)	○	○	○	○	07	Servo motor-side droop pulses (±10V/1000 pulses) (Note 2)	○	○	○	○	08	Servo motor-side droop pulses (±10V/10000 pulses) (Note 2)	○	○	○	○	09	Servo motor-side droop pulses (±10V/100000 pulses) (Note 2)	○	○	○	○	0A	Feedback position (±10 V/1 Mpulses) (Note 2)	○	△	△	△	0B	Feedback position (±10 V/10 Mpulses) (Note 2)	○	△	△	△	0C	Feedback position (±10 V/100 Mpulses) (Note 2)	○	△	△	△	0D	Bus voltage (+8V/400V, 200V amplifier)	○	○	○	○	0E	Speed command 2 (±8V/max. rotational speed or max. speed)	○	○	○	○	10	Load side droop pulses (±10V/100 pulses) (Note 2)	△	○	△	△	11	Load side droop pulses (±10V/1000 pulses) (Note 2)	△	○	△	△	12	Load side droop pulses (±10V/10000 pulses) (Note 2)	△	○	△	△	13	Load side droop pulses (±10V/100000 pulses) (Note 2)	△	○	△	△	14	Load side droop pulses (±10 V/1 Mpulses) (Note 2)	△	○	△	△	15	Servo motor-side load side position deviation (±10V/100000pulses)	△	○	△	△	16	Servo motor-side load side position deviation (±8V/max. rotational speed or max. speed)	△	○	△	△	17	Encoder inside temperature (±10 V/±128 °C)	○	○	△	○	PC10	Analog monitor 2 output Used to select the signal to be output to the Analog monitor 2 (MO2). <table border="1"> <thead> <tr> <th>Setting digit</th> <th>Explanation</th> <th>Initial value</th> </tr> </thead> <tbody> <tr> <td>__ X X</td> <td>Analog monitor 2 output selection See [Pr. PC09] table for details.</td> <td>01h</td> </tr> <tr> <td>_ X _ _</td> <td>For manufacturer setting</td> <td>0h</td> </tr> <tr> <td>X _ _ _</td> <td>For manufacturer setting</td> <td>0h</td> </tr> </tbody> </table>	Setting digit	Explanation	Initial value	__ X X	Analog monitor 2 output selection See [Pr. PC09] table for details.	01h	_ X _ _	For manufacturer setting	0h	X _ _ _	For manufacturer setting	0h	0001h
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Part 3: Review on Replacement of MR-J2S- _B_ with MR-J4- _B_

MR-J2S- _B_			MR-J4- _B_																																										
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23	<p>Optional function 1 Servo forced stop function can be disabled.</p> <table border="1" style="margin-left: 20px;"> <tr> <td style="width: 20px; text-align: center;">0</td> <td style="width: 20px; text-align: center;">0</td> <td style="width: 20px; text-align: center;">0</td> <td style="width: 20px; text-align: center;">0</td> </tr> </table> <p style="margin-left: 40px;">└─ Servo forced stop selection 0: Enabled (The forced stop input EM1 is used.) 1: Disabled (The forced stop input EM1 is not used.) Automatic ON inside</p>	0	0	0	0	0000h	PA04	<p>Function selection A-1 This is used to select the forced stop input and forced stop deceleration function.</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Setting digit</th> <th>Explanation</th> <th>Initial value</th> </tr> </thead> <tbody> <tr> <td>___ X</td> <td>For manufacturer setting</td> <td>0h</td> </tr> <tr> <td>_ X _</td> <td></td> <td>0h</td> </tr> <tr> <td>_ X _</td> <td>Servo forced stop selection 0: Enabled (The forced stop input EM2 or EM1 is used.) 1: Disabled (The forced stop input EM2 or EM1 is not used.) See the following table for details.</td> <td>0h</td> </tr> <tr> <td>X ___</td> <td>Forced stop deceleration function selection 0: Forced stop deceleration function disabled (EM1) 2: Forced stop deceleration function enabled (EM2) See the following table for details.</td> <td>2h</td> </tr> </tbody> </table> <p style="margin-left: 20px;">Deceleration method</p> <table border="1" style="margin-left: 40px;"> <thead> <tr> <th rowspan="2">Setting value</th> <th rowspan="2">EM2/EM1 selection</th> <th colspan="2">Deceleration method</th> </tr> <tr> <th>EM2 or EM1 is off</th> <th>Alarm occurrence</th> </tr> </thead> <tbody> <tr> <td>0 0 __</td> <td>EM1</td> <td>MBR (electromagnetic brake interlock) turns off without the forced stop deceleration.</td> <td>MBR (electromagnetic brake interlock) turns off without the forced stop deceleration.</td> </tr> <tr> <td>2 0 __</td> <td>EM2</td> <td>MBR (electromagnetic brake interlock) turns off after the forced stop deceleration.</td> <td>MBR (electromagnetic brake interlock) turns off after the forced stop deceleration.</td> </tr> <tr> <td>0 1 __</td> <td>Not using EM2 or EM1</td> <td rowspan="2" style="text-align: center;">/</td> <td>MBR (electromagnetic brake interlock) turns off without the forced stop deceleration.</td> </tr> <tr> <td>2 1 __</td> <td>Not using EM2 or EM1</td> <td>MBR (electromagnetic brake interlock) turns off after the forced stop deceleration.</td> </tr> </tbody> </table>	Setting digit	Explanation	Initial value	___ X	For manufacturer setting	0h	_ X _		0h	_ X _	Servo forced stop selection 0: Enabled (The forced stop input EM2 or EM1 is used.) 1: Disabled (The forced stop input EM2 or EM1 is not used.) See the following table for details.	0h	X ___	Forced stop deceleration function selection 0: Forced stop deceleration function disabled (EM1) 2: Forced stop deceleration function enabled (EM2) See the following table for details.	2h	Setting value	EM2/EM1 selection	Deceleration method		EM2 or EM1 is off	Alarm occurrence	0 0 __	EM1	MBR (electromagnetic brake interlock) turns off without the forced stop deceleration.	MBR (electromagnetic brake interlock) turns off without the forced stop deceleration.	2 0 __	EM2	MBR (electromagnetic brake interlock) turns off after the forced stop deceleration.	MBR (electromagnetic brake interlock) turns off after the forced stop deceleration.	0 1 __	Not using EM2 or EM1	/	MBR (electromagnetic brake interlock) turns off without the forced stop deceleration.	2 1 __	Not using EM2 or EM1	MBR (electromagnetic brake interlock) turns off after the forced stop deceleration.	2000h
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24	<p>Optional function 2 Used to select the slight vibration suppression control and motor-less operation.</p> <table border="1" style="margin-left: 20px;"> <tr> <td style="width: 20px; text-align: center;">0</td> <td style="width: 20px; text-align: center;">0</td> <td style="width: 20px; text-align: center;">0</td> <td style="width: 20px; text-align: center;">0</td> </tr> </table> <p style="margin-left: 40px;">└─ Slight vibration suppression control selection It will become effective if the auto tuning selection is set as "0002" by parameter No. 8. Used to curb vibration at the time of stop. 0: Disabled 1: Enabled</p> <p style="margin-left: 40px;">└─ Motor-less operation selection 0: Disabled 1: Used to enable motor-less operation. When motor-less operation is enabled, signal output or status display can be provided in response to the servo system controller command as if the servo motor is actually running without the servo motor being connected. Motor-less operation is performed as in motor-less operation using MR Configurator (setup software).</p>	0	0	0	0	0000h	<p>PB24</p> <p>Slight vibration suppression control Used to select the slight vibration suppression control.</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Setting digit</th> <th>Explanation</th> <th>Initial value</th> </tr> </thead> <tbody> <tr> <td>___ X</td> <td>Slight vibration suppression control selection 0: Disabled 1: Enabled To enable the slight vibration suppression control, select "Manual mode (___ 3)" under "Gain adjustment mode selection" in [Pr. PA08]. Slight vibration suppression control cannot be used in the speed control mode.</td> <td>0h</td> </tr> </tbody> </table>	Setting digit	Explanation	Initial value	___ X	Slight vibration suppression control selection 0: Disabled 1: Enabled To enable the slight vibration suppression control, select "Manual mode (___ 3)" under "Gain adjustment mode selection" in [Pr. PA08]. Slight vibration suppression control cannot be used in the speed control mode.	0h	0000h																															
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Part 3: Review on Replacement of MR-J2S- _B_ with MR-J4- _B_

MR-J2S- _B_			MR-J4- _B_															
No.	Name and function	Initial value	No.	Name and function	Initial value													
25	<p>Low-pass filter/adaptive vibration suppression control Used to select the low-pass filter/adaptive vibration suppression control.</p>  <p>Low-pass filter selection 0: Available (Automatic adjustment) 1: Disabled When available is selected, the filter in the zone expressed by the following formula is automatically set.</p> <p>For 1 kW or less $\frac{VG2 \text{ setting value} \times 10}{2\pi \times (1 + GD2 \text{ setting value} \times 0.1)} \text{ [Hz]}$</p> <p>For 2 kW or more $\frac{VG2 \text{ setting value} \times 5}{2\pi \times (1 + GD2 \text{ setting value} \times 0.1)} \text{ [Hz]}$</p> <p>Adaptive vibration suppression control selection 0: Disabled 1: Enabled Usually, machine resonance frequency is detected, and a filter corresponding to the resonance is generated to control the machine vibration. 2: Maintenance Until then, detection of machine resonance is stopped by keeping the characteristics of the filter generated until that moment.</p> <p>Adaptive vibration suppression control selection Set the sensitiveness to detect the machine resonance. 0: Normal 1: High sensitive</p>	0000h	PB23	<p>Low-pass filter selection Used to select the shaft resonance suppression filter.</p> <table border="1"> <thead> <tr> <th>Setting digit</th> <th>Explanation</th> <th>Initial value</th> </tr> </thead> <tbody> <tr> <td>___ X</td> <td>Shaft resonance suppression filter selection 0: Automatic 1: Manual setting 2: Disabled When "Enabled (___ 1)" in "Machine resonance suppression filter 4 selection" of [Pr. PB49] is selected, shaft resonance suppression filter cannot be used.</td> <td>0h</td> </tr> </tbody> </table> <p>No corresponding parameter (Machine resonance filters can be automatically adjusted with PB01.)</p>	Setting digit	Explanation	Initial value	___ X	Shaft resonance suppression filter selection 0: Automatic 1: Manual setting 2: Disabled When "Enabled (___ 1)" in "Machine resonance suppression filter 4 selection" of [Pr. PB49] is selected, shaft resonance suppression filter cannot be used.	0h	0000h							
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27	<p>Analog monitor 1 offset Used to set the offset voltage of Analog monitor 1 (MO1) output.</p>	0	PC11	<p>Analog monitor 1 offset Used to set the offset voltage of MO1 (Analog monitor 1).</p>	0													
28	<p>Analog monitor 2 offset Used to set the offset voltage of Analog monitor 2 (MO2).</p>	0	PC12	<p>Analog monitor 2 offset Used to set the offset voltage of MO2 (Analog monitor 2).</p>	0													
30	<p>Zero speed Used to set the output range of zero speed signal (ZSP).</p>	50	PC07	<p>Zero speed Used to set the output range of ZSP (Zero speed detection). ZSP (Zero speed detection) has the hysteresis of 20 [r/min] or 20 [mm/s]</p>	50													
31	<p>Error excessive alarm level Used to set the range where the excess droop pulse alarm is generated. Note: The setting unit for servo amplifier of software version B1 or later is 0.025rev. Note: The setting unit for servo amplifier before software version B1 is 0.1rev.</p>	80	PC01	<p>Error excessive alarm level Set error excessive alarm level. The setting unit for rotary servo motor and direct drive motor is "rev". If "0" is set, it becomes 3rev. The setting value exceeding 200rev will be clamped at 200rev. The setting unit for linear servo motor is "mm". If "0" is set, it becomes 100mm.</p>	0													
			PC06	<p>Function selection C-3 Used to select the setting unit for error excessive alarm level to be set in [Pr. PC01]. This parameter cannot be used in the speed control mode and torque control mode.</p> <table border="1"> <thead> <tr> <th>Setting digit</th> <th>Explanation</th> <th>Initial value</th> </tr> </thead> <tbody> <tr> <td>___ X</td> <td rowspan="3">For manufacturer setting</td> <td>0h</td> </tr> <tr> <td>__ X _</td> <td>0h</td> </tr> <tr> <td>_ X _ _</td> <td>0h</td> </tr> <tr> <td>X _ _ _</td> <td>Error excessive alarm level unit selection 0 : 1rev or 1mm (unit) 1 : 0.1rev or 0.1mm (unit) 2 : 0.01rev or 0.01mm (unit) 3 : 0.001rev or 0.001mm (unit)</td> <td>0h</td> </tr> </tbody> </table>	Setting digit	Explanation	Initial value	___ X	For manufacturer setting	0h	__ X _	0h	_ X _ _	0h	X _ _ _	Error excessive alarm level unit selection 0 : 1rev or 1mm (unit) 1 : 0.1rev or 0.1mm (unit) 2 : 0.01rev or 0.01mm (unit) 3 : 0.001rev or 0.001mm (unit)	0h	0000h
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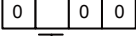
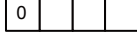
Part 3: Review on Replacement of MR-J2S-__B__ with MR-J4-__B__

MR-J2S-__B__			MR-J4-__B__												
No.	Name and function	Initial value	No.	Name and function	Initial value										
32	<p>Optional function 5 Used to select the PI-PID control switching.</p> <table border="1" style="margin-left: 20px;"> <tr> <td style="width: 20px; height: 20px; text-align: center;">0</td> <td style="width: 20px; height: 20px; text-align: center;">0</td> <td style="width: 20px; height: 20px; text-align: center;">0</td> <td style="width: 20px; height: 20px; text-align: center;">0</td> </tr> </table> <p style="margin-left: 40px;">└ PI-PID switching position droop 0: Continuous PI control enabled 1: Droop-based switching is enabled in position control mode (refer to parameter No. 34). 2: Continuous PID control enabled</p>	0	0	0	0	0000	PB24	<p>Slight vibration suppression control Used to select the PI-PID switching.</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th style="width: 100px;">Setting digit</th> <th style="width: 700px;">Explanation</th> <th style="width: 100px;">Initial value</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">__ __ X</td> <td>PI-PID switching control selection 0: PI control enabled (can be switched to PID control using the controller side command.) 3: Continuous PID control enabled</td> <td style="text-align: center;">0h</td> </tr> </tbody> </table> <p>Switching with PI-PID switching position droop is not possible.</p>	Setting digit	Explanation	Initial value	__ __ X	PI-PID switching control selection 0: PI control enabled (can be switched to PID control using the controller side command.) 3: Continuous PID control enabled	0h	0000h
0	0	0	0												
Setting digit	Explanation	Initial value													
__ __ X	PI-PID switching control selection 0: PI control enabled (can be switched to PID control using the controller side command.) 3: Continuous PID control enabled	0h													
33	<p>Optional function 6 Used to select serial communication baud rate, serial communication response delay time, and encoder output pulse setting.</p> <table border="1" style="margin-left: 20px;"> <tr> <td style="width: 20px; height: 20px; text-align: center;">0</td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table> <p style="margin-left: 40px;">└ Serial communication baud rate selection 0: 9600[bps] 1: 19200[bps] 2: 38400[bps] 3: 57600[bps]</p> <p style="margin-left: 40px;">└ Serial communication response delay time 0: Disabled 1: Enabled, reply sent after delay time of 800μs or more.</p> <p style="margin-left: 40px;">└ Encoder output pulse setting selection (refer to parameter No. 38) 0: Output pulse specification 1: Division ratio setting</p>	0				0000	<p>No corresponding parameter (No serial communication function)</p> <p>PC03</p> <p>Encoder output pulses selection Used to select encoder output pulse setting.</p> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th style="width: 100px;">Setting digit</th> <th style="width: 700px;">Explanation</th> <th style="width: 100px;">Initial value</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">__ __ X</td> <td>Encoder output pulse setting selection 0: Output pulse setting (When "_ 1 0 _" is set for this parameter, [AL.37 parameter error] occurs.) 1: Dividing ratio setting 3: A/B-phase pulse electronic gear setting 4: A/B-phase pulse through output setting Since output pulse setting cannot be used when using a linear servo motor, selecting "0" will output the dividing ratio setting. The "4" setting is available only when using the A/B/Z-phase differential output linear encoder. In this case, the "encoder output pulse phase selection (__ __ X)" will be disabled. [AL.37 parameter error] occurs when another encoder is connected. If a standard control mode ("__ 0 __") is selected in [Pr. PA01 operation mode], [AL.37 parameter error] occurs.</td> <td style="text-align: center;">0h</td> </tr> </tbody> </table>	Setting digit	Explanation	Initial value	__ __ X	Encoder output pulse setting selection 0: Output pulse setting (When "_ 1 0 _" is set for this parameter, [AL.37 parameter error] occurs.) 1: Dividing ratio setting 3: A/B-phase pulse electronic gear setting 4: A/B-phase pulse through output setting Since output pulse setting cannot be used when using a linear servo motor, selecting "0" will output the dividing ratio setting. The "4" setting is available only when using the A/B/Z-phase differential output linear encoder. In this case, the "encoder output pulse phase selection (__ __ X)" will be disabled. [AL.37 parameter error] occurs when another encoder is connected. If a standard control mode ("__ 0 __") is selected in [Pr. PA01 operation mode], [AL.37 parameter error] occurs.	0h	0000h	
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34	<p>PI-PID switching position droop Set the amount of position droop (number of pulses) when the PI control is switched to PID control. When setting the parameter No.32 to "0001", this parameter is enabled.</p>	0		No corresponding parameter											
36	<p>Speed differential compensation Used to set the differential compensation value.</p>	980	PB11	<p>Speed differential compensation Used to set the differential compensation. This parameter is enabled when setting the "PI-PID switching control selection" of [Pr. PB24] to "continuous PID control enabled (__ 3 __)".</p>	980										
38	<p>Encoder output pulses Used to set the encoder pulses (A-phase and B-phase) output by the servo amplifier. Set the value 4 times greater than the A-phase and B-phase pulses. Parameter No. 33 can be used to choose the output pulse setting or output dividing ratio. The number of A-phase and B-phase pulses actually output is 1/4 times greater than the preset number of pulses. The maximum output frequency is 1.3Mpulse/s (after multiplication by 4). Use this parameter within this range.</p> <ul style="list-style-type: none"> For output pulse designation Set parameter No. 33 to "_ 0 __" (initial value). Set the number of pulses per servo motor revolution. Output pulse = setting value [pulse/rev]. For instance, when "5600" is set, the actual output A- and B-phase pulses are as follows. Phase A/phase B output pulse = $\frac{5600}{4} = 1400$ [pulses] For output division ratio setting Set parameter No. 33 to "_ 1 __". The number of pulses per servo motor revolution is divided by the set value. Output pulse = $\frac{\text{Encoder resolution per servo motor revolution}}{\text{Setting value}} = [\text{pulse/rev}]$ For instance, when "8" is set, the actual output A- and B-phase pulses are as follows. Phase A/phase B output pulse = $\frac{131072}{8} \times \frac{1}{4} = 4096$ [pulses] 	4000	PA15	<p>Encoder output pulse Set for the output pulse count, the dividing ratio, or the electronic gear ratio per rotation of the encoder output pulses output by the servo amplifier. (After multiplication of 4) Set the numerator of the electronic gear when "Phase A/phase B pulse electronic gear setting (__ 3 __)" is selected in "Encoder output pulse setting selection" of [Pr. PC03]. The maximum output frequency is 4.6 Mpps. Set to within this range.</p>	4000										

Part 3: Review on Replacement of MR-J2S- _B_ with MR-J4- _B_

MR-J2S- _B_				MR-J4- _B_																										
No.	Name and function			Initial value	No.	Name and function			Initial value																					
40	Parameter writing inhibit			0000	PA19	Parameter writing inhibit			00ABh																					
	Setting value	Setting value operation	Controller			MR Configurator Control by setup software	Used to select the reference range and writing range of parameters. See the table below for the setting value. The setting values of [Pr. PA19] and the accessible parameters.																							
	0000 (Initial value)	Refer to Write	Parameter No. 1 to 75			Parameter No. 1 to 11, No. 40	PA19	Operating setting values		PA	PB	PC	PD	PE	PF	PL														
	000A	Refer to Write	Parameter No. 1 to 75			Parameter No. 40	Other than the below	Read		○	/	/	/	/	/	/														
	000C	Refer to Write	Parameter No. 1 to 75			Parameter No. 1 to 40 Parameter No. 1 to 11, No. 40	000Ah	Read		Only 19	/	/	/	/	/	/														
	000E	Refer to Write	Parameter No. 1 to 75			Parameter No. 1 to 40	Write	Only 19		/	/	/	/	/	/	/														
	000F	Refer to Write	Parameter No. 1 to 75			Parameter No. 1 to 75	000Bh	Read		○	○	○	/	/	/	/														
	100E	Refer to Write	Parameter No. 1 to 75			Parameter No. 1 to 40 Parameter No. 40	Write	○		○	○	○	/	/	/	○														
										000Ch	Read	○	○	○	○	/	/													
										Write	○	○	○	○	/	/	○													
						000Fh	Read	○	○	○	○	○	/																	
						Write	○	○	○	○	○	○	○																	
						00AAh	Read	○	○	○	○	○	/																	
						Write	○	○	○	○	○	○	/																	
						00ABh (Initial value)	Read	○	○	○	○	○	○																	
						Write	○	○	○	○	○	○	○																	
						100Bh	Read	○	/	/	/	/	/																	
						Write	Only 19	/	/	/	/	/	/																	
						100Ch	Read	○	○	○	/	/	/																	
						Write	Only 19	/	/	/	/	/	/																	
						100Fh	Read	○	○	○	○	/	○																	
						Write	Only 19	/	/	/	/	/	○																	
						10AAh	Read	○	○	○	○	○	/																	
						Write	Only 19	/	/	/	/	/	/																	
						10ABh	Read	○	○	○	○	○	○																	
						Write	Only 19	/	/	/	/	/	/																	
49	Gain switching selection			0000	PB26	Gain switching function			0000																					
	Used to select the gain switching condition.					Used to select the gain switching condition. Used to set a condition to enable the gain switching value that was set in [Pr. PB29] to [Pr. PB36] and [Pr. PB56] to [Pr. PB60].																								
<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px; text-align: center;">0</td> <td style="width: 20px; height: 20px; text-align: center;">0</td> <td style="width: 20px; height: 20px; text-align: center;">0</td> <td style="width: 20px; height: 20px; text-align: center;"> </td> </tr> </table>			0	0	0		Gain switching selection			<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Setting digit</th> <th style="width: 70%;">Explanation</th> <th style="width: 20%;">Initial value</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">___ X</td> <td>Gain switching selection 0: Disabled 1: Control command from a controller is enabled 2: Command frequency 3: Pulse droop 4: Servo motor speed/linear servo motor speed</td> <td style="text-align: center;">0h</td> </tr> <tr> <td style="text-align: center;">__ X _</td> <td>Gain switching condition selection 0: Gain enabled after switching above the switching condition 1: Gain enabled after switching below the switching condition</td> <td style="text-align: center;">0h</td> </tr> <tr> <td style="text-align: center;">_ X _ _</td> <td>For manufacturer setting</td> <td style="text-align: center;">0h</td> </tr> <tr> <td style="text-align: center;">X _ _ _</td> <td></td> <td style="text-align: center;">0h</td> </tr> </tbody> </table>			Setting digit	Explanation	Initial value	___ X	Gain switching selection 0: Disabled 1: Control command from a controller is enabled 2: Command frequency 3: Pulse droop 4: Servo motor speed/linear servo motor speed	0h	__ X _	Gain switching condition selection 0: Gain enabled after switching above the switching condition 1: Gain enabled after switching below the switching condition	0h	_ X _ _	For manufacturer setting	0h	X _ _ _		0h	Gain will be changed under the following conditions based on the setting value of parameters No. 52 to 55. 0: Disabled 1: Controller command 2: The appointed frequency is equal to or more than the setting value of parameter No. 50 3: The droop pulse is equal to or more than the setting value of parameter No. 50 4: The servo motor speed is equal to or more than the setting value of parameter No. 50		
0	0	0																												
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__ X _	Gain switching condition selection 0: Gain enabled after switching above the switching condition 1: Gain enabled after switching below the switching condition	0h																												
_ X _ _	For manufacturer setting	0h																												
X _ _ _		0h																												
50	Gain switching condition			10	PB27	Gain switching condition			10																					
	Used to set the values for the gain switching conditions (command frequency, droop pulses, and servo motor speed) selected in parameter No. 49. The set value unit differs depending on the switching condition item.					Used to set the values for the gain switching (command frequency, droop pulses, and servo motor speed/linear servo motor speed) selected in [Pr. PB26]. The set value unit differs depending on the switching condition item. The setting unit for linear servo motor is "mm/s" for "r/min".																								
51	Gain switching time constant			1	PB28	Gain switching time constant			1																					
	Used to set the time constant at which the gains will switch in response to the conditions set in parameters No. 49 and No. 50.					Used to set the time constant till the gain switches in response to the conditions set in [Pr. PB26] and [Pr. PB27].																								
52	Load to motor inertia ratio 2			7.0	PB29	Load to motor inertia ratio/load to motor mass ratio after gain switching.			7.00																					
	Used to set the load to motor inertia ratio when gain switching is enabled.					Used to set the load to motor inertia ratio or load to motor mass ratio when gain switching is enabled. This parameter is enabled only when "Manual mode (___ 3)" is selected in "Gain adjustment mode selection" of [Pr. PA08].																								

Part 3: Review on Replacement of MR-J2S-_B_ with MR-J4-_B_

MR-J2S-_B_			MR-J4-_B_																																																																																									
No.	Name and function	Initial value	No.	Name and function	Initial value																																																																																							
53	Position loop gain 2 changing ratio Used to set the changing ratio for position loop gain 2 when the gain switching is enabled. This parameter is enabled when auto tuning is disabled.	100	PB30	Position loop gain after gain switching Used to set the position loop gain when gain switching is enabled. When a value smaller than 1.0 rad/s is set, the value will be the same as the setting value of [Pr. PB08]. This parameter is enabled only when "Manual mode (_ _ 3)" is selected in "Gain adjustment mode selection" of [Pr. PA08].	0.0																																																																																							
54	Speed loop gain 2 changing ratio Used to set the changing ratio for speed loop gain 2 when the gain switching is enabled. This parameter is enabled when auto tuning is disabled.	100	PB31	Speed loop gain after gain switching Used to set the speed loop gain when gain switching is enabled. When a value smaller than 20 rad/s is set, the value will be the same as the setting value of [Pr. PB09]. This parameter is enabled only when "Manual mode (_ _ 3)" is selected in "Gain adjustment mode selection" of [Pr. PA08].	0																																																																																							
55	Speed integral compensation changing ratio Used to set the changing ratio for speed integral compensation when the gain switching is enabled. This parameter is enabled when auto tuning is disabled.	100	PB32	Speed integral compensation after gain switching Used to set the speed integral compensation when gain switching is enabled. When a value smaller than 0.1 ms set, the value will be the same as the setting value of [Pr. PB10]. This parameter is enabled only when "Manual mode (_ _ 3)" is selected in "Gain adjustment mode selection" of [Pr. PA08].	0.0																																																																																							
60	Option function C Used to select an encoder output pulse direction.  Change in encoder pulse output phase Changes the positions of the pulse output A-phase and B-phase of the encoder.	0000	PC03	Encoder output pulses selection Used to select the encoder pulse direction. <table border="1"> <thead> <tr> <th>Setting digit</th> <th>Explanation</th> <th>Initial value</th> </tr> </thead> <tbody> <tr> <td>---X</td> <td>Encoder output pulse phase selection 0: Phase A 90° lead in CCW or forward direction 1: Phase A 90° lead in CW or negative direction</td> <td>0h</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th rowspan="2">Setting value</th> <th colspan="2">Servo motor rotation direction</th> </tr> <tr> <th>CCW</th> <th>CW</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>A phase </td> <td>A phase </td> </tr> <tr> <td>1</td> <td>A phase </td> <td>A phase </td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th rowspan="2">Setting value</th> <th colspan="2">Servo motor rotation direction/ linear servo motor travel direction</th> </tr> <tr> <th>CCW or positive direction</th> <th>CW or negative direction</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>A phase </td> <td>A phase </td> </tr> <tr> <td>1</td> <td>A phase </td> <td>A phase </td> </tr> </tbody> </table>	Setting digit	Explanation	Initial value	---X	Encoder output pulse phase selection 0: Phase A 90° lead in CCW or forward direction 1: Phase A 90° lead in CW or negative direction	0h	Setting value	Servo motor rotation direction		CCW	CW	0	A phase	A phase	1	A phase	A phase	Setting value	Servo motor rotation direction/ linear servo motor travel direction		CCW or positive direction	CW or negative direction	0	A phase	A phase	1	A phase	A phase	0000h																																																											
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1	A phase	A phase																																																																																										
61	Machine resonance suppression filter 2 Select the machine resonance suppression filter.  Notch frequency selection Set "00" when the active vibration suppression control is set as "effective" or "maintain" (parameter No. 25: _ 1 _ _ or _ 2 _ _). <table border="1"> <thead> <tr> <th>Setting value</th> <th>Frequency</th> <th>Setting value</th> <th>Frequency</th> <th>Setting value</th> <th>Frequency</th> <th>Setting value</th> <th>Frequency</th> </tr> </thead> <tbody> <tr><td>00</td><td>Disabled</td><td>08</td><td>562.5</td><td>10</td><td>281.3</td><td>18</td><td>187.5</td></tr> <tr><td>01</td><td>4500</td><td>09</td><td>500</td><td>11</td><td>264.7</td><td>19</td><td>180</td></tr> <tr><td>02</td><td>2250</td><td>0A</td><td>450</td><td>12</td><td>250</td><td>1A</td><td>173.1</td></tr> <tr><td>03</td><td>1500</td><td>0B</td><td>409.1</td><td>13</td><td>236.8</td><td>1B</td><td>166.7</td></tr> <tr><td>04</td><td>1125</td><td>0C</td><td>375</td><td>14</td><td>225</td><td>1C</td><td>160.1</td></tr> <tr><td>05</td><td>900</td><td>0D</td><td>346.2</td><td>15</td><td>214.3</td><td>1D</td><td>155.2</td></tr> <tr><td>06</td><td>750</td><td>0E</td><td>321.4</td><td>16</td><td>204.5</td><td>1E</td><td>150</td></tr> <tr><td>07</td><td>642.9</td><td>0F</td><td>300</td><td>17</td><td>195.7</td><td>1F</td><td>145.2</td></tr> </tbody> </table> Notch depth selection <table border="1"> <thead> <tr> <th>Setting value</th> <th>Response</th> <th>Gain</th> </tr> </thead> <tbody> <tr><td>0</td><td>Deep</td><td>-40dB</td></tr> <tr><td>1</td><td>to</td><td>-14dB</td></tr> <tr><td>2</td><td></td><td>-8dB</td></tr> <tr><td>3</td><td>Shallow</td><td>-4dB</td></tr> </tbody> </table>	Setting value	Frequency	Setting value	Frequency	Setting value	Frequency	Setting value	Frequency	00	Disabled	08	562.5	10	281.3	18	187.5	01	4500	09	500	11	264.7	19	180	02	2250	0A	450	12	250	1A	173.1	03	1500	0B	409.1	13	236.8	1B	166.7	04	1125	0C	375	14	225	1C	160.1	05	900	0D	346.2	15	214.3	1D	155.2	06	750	0E	321.4	16	204.5	1E	150	07	642.9	0F	300	17	195.7	1F	145.2	Setting value	Response	Gain	0	Deep	-40dB	1	to	-14dB	2		-8dB	3	Shallow	-4dB	0000	PB15	Machine resonance suppression filter 2 Used to set the notch frequency of machine resonance suppression filter 2. When "Enabled (_ _ 1)" in "Machine resonance suppression filter 2 selection" of [Pr. PB16] is selected, this parameter is enabled.	4500
Setting value	Frequency	Setting value	Frequency	Setting value	Frequency	Setting value	Frequency																																																																																					
00	Disabled	08	562.5	10	281.3	18	187.5																																																																																					
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3	Shallow	-4dB																																																																																										
			PB16	Notch shape selection 2 Used to set the shape of the machine resonance suppression filter 2. <table border="1"> <thead> <tr> <th>Setting digit</th> <th>Explanation</th> <th>Initial value</th> </tr> </thead> <tbody> <tr> <td>---X</td> <td>Machine resonance suppression filter 2 selection 0: Disabled 1: Enabled</td> <td>0h</td> </tr> <tr> <td>--X_</td> <td>Notch depth selection 0: -40 dB 1: -14 dB 2: -8 dB 3: -4 dB</td> <td>0h</td> </tr> <tr> <td>_X__</td> <td>Notch width selection 0: α=2 1: α=3 2: α=4 3: α=5</td> <td>0h</td> </tr> <tr> <td>X___</td> <td>For manufacturer setting</td> <td>0h</td> </tr> </tbody> </table>	Setting digit	Explanation	Initial value	---X	Machine resonance suppression filter 2 selection 0: Disabled 1: Enabled	0h	--X_	Notch depth selection 0: -40 dB 1: -14 dB 2: -8 dB 3: -4 dB	0h	_X__	Notch width selection 0: α=2 1: α=3 2: α=4 3: α=5	0h	X___	For manufacturer setting	0h	0000h																																																																								
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X___	For manufacturer setting	0h																																																																																										

3.8 Important Points for Replacement

- (1) When the intermediate connection axis network is OFF, the network of the subsequent axis is not connected to.

Even if alarm has occurred, do not switch off the control circuit power supply. When the control circuit power supply has been switched off, optical module does not operate, and optical transmission of SSCNET III/H communication is interrupted. Therefore, the next axis servo amplifier displays "AA" at the indicator and turns into base circuit shut-off. The servo motor stops with starting dynamic brake.

Part 4
Review on Replacement of

MR-J2S- _CP/CL_

with MR-J4- _A_ -RJ

Part 4: Review on Replacement of MR-J2S-CP/CL_ with MR-J4-A-RJ

Part 4: Review on Replacement of MR-J2S-CP/CL_ with MR-J4-A-RJ

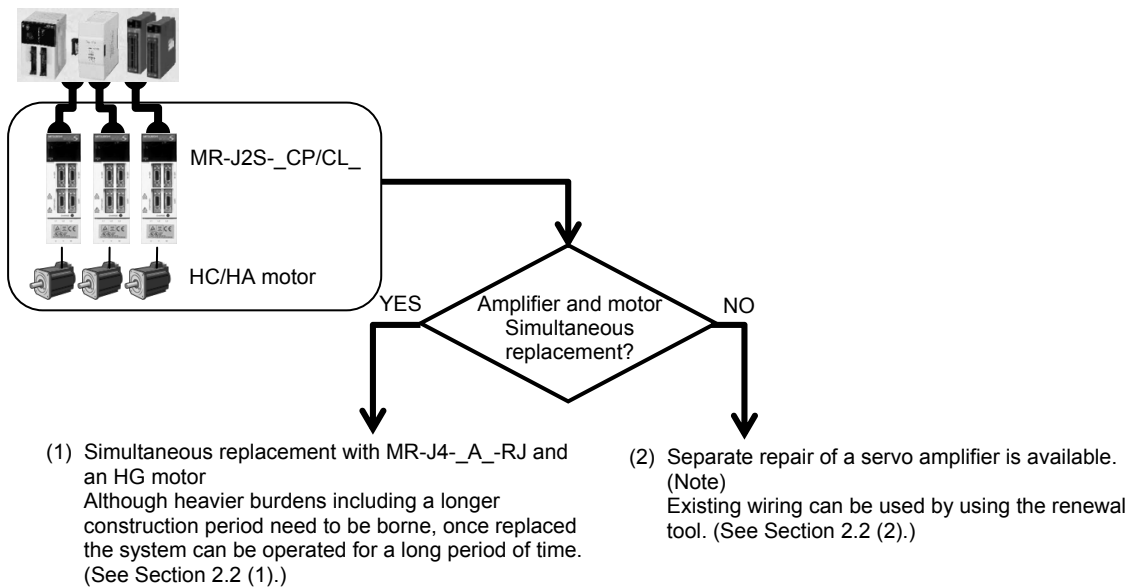
1. SUMMARY

This document describes the changes that are applied to when replacing a system using the MR-J2S-CP/CL_ with a system using the MR-J4-A-RJ.

2. CASE STUDY ON REPLACEMENT OF MR-J2S-CP/CL_

2.1 Consideration of Replacement Method

POINT
<ul style="list-style-type: none"> MR-J2S-CP/CL_ cannot drive an HG motor. When a servo motor is replaced with an HG motor, servo amplifier also needs to be replaced with MR-J4-A-RJ +HG simultaneously.

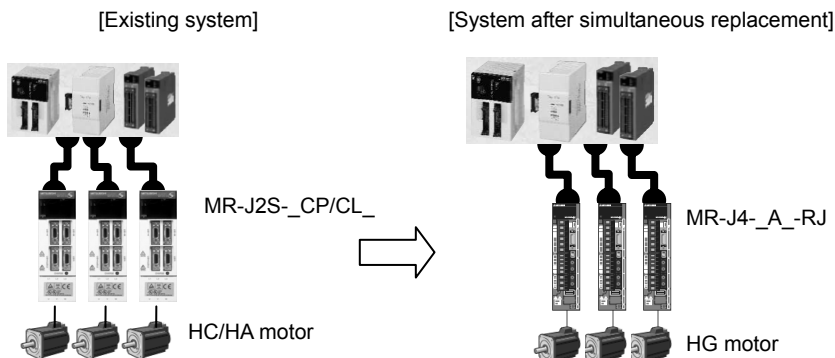


Note. Separate repair means replacement.

2.2 Replacement Method

(1) Simultaneous replacement with MR-J4-A-RJ and an HG motor

The currently used connectors or cables need to be replaced. The parameters of the existing system can be transferred with the parameter converter function of MR Configurator2. (See "Part 7: Common Reference Material".)



Part 4: Review on Replacement of MR-J2S-CP/CL_ with MR-J4-A-RJ

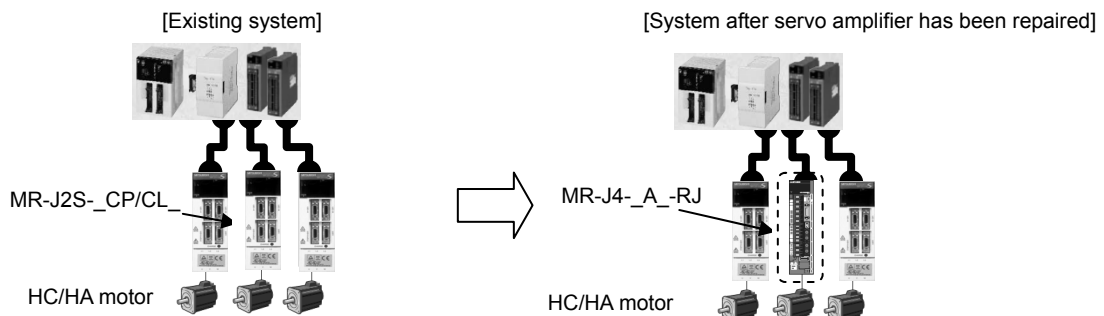
(2) Separate repair of servo amplifier

POINT			
<ul style="list-style-type: none"> MR-J2S-CP/CL_ cannot drive an HG motor. When a servo motor is replaced with an HG motor, servo amplifier also needs to be replaced with MR-J4-A-RJ +HG simultaneously. When an "HC/HA motor" shown below is used, "simultaneous replacement with MR-J4-A-RJ and an HG motor" is recommended. When an HG motor is adopted, the capacity of the servo amplifier needs to be changed. (Consider replacement, referring to "torque characteristics" described in "Part 8: Replacement of Motor".) 			
Existing device models		Replacement models for simultaneous replacement (example)	
Servo motor	Servo amplifier	Servo motor	Servo amplifier
HC-LFS52	MR-J2S-60CP/CL	HG-JR73	MR-J4-70A-RJ
HC-LFS102	MR-J2S-100CP/CL	HG-JR153	MR-J4-200A-RJ
HC-LFS152	MR-J2S-200CP/CL	HG-JR353	MR-J4-350A-RJ
HC-KFS46	MR-J2S-70CP/CL	HG-KR43	MR-J4-40A-RJ
HC-KFS410	MR-J2S-70CP/CL	HG-KR43	MR-J4-40A-RJ
HC-RFS103(B)G2 1/_	MR-J2S-200CP/CL	HG-SR102(B)G7 1/_	MR-J4-100A-RJ
HC-RFS203(B)G2 1/_	MR-J2S-350CP/CL	HG-SR202(B)G7 1/_	MR-J4-200A-RJ
HC-RFS353(B)G2 1/_	MR-J2S-500CP/CL	HG-SR352(B)G7 1/_	MR-J4-350A-RJ
HC-RFS103(B)G5 1/_	MR-J2S-200CP/CL	HG-SR102(B)G5 1/_	MR-J4-100A-RJ
HC-RFS203(B)G5 1/_	MR-J2S-350CP/CL	HG-SR202(B)G5 1/_	MR-J4-200A-RJ
HC-RFS353(B)G5 1/_	MR-J2S-500CP/CL	HG-SR352(B)G5 1/_	MR-J4-350A-RJ
HC-RFS103(B)G7 1/_	MR-J2S-200CP/CL	HG-SR102(B)G7 1/_	MR-J4-100A-RJ
HC-RFS203(B)G7 1/_	MR-J2S-350CP/CL	HG-SR202(B)G7 1/_	MR-J4-200A-RJ
HC-RFS353(B)G7 1/_	MR-J2S-500CP/CL	HG-SR352(B)G7 1/_	MR-J4-350A-RJ

After replacement, an HC/HA motor can be driven by MR-J4-A-RJ. Verify the motors that can be driven with "Part 7: Common Reference Material".

Use the renewal tool when replacing a servo amplifier with MR-J4-A-RJ without replacing the currently used servo motor and existing cables. (See "[Appendix 2] Introduction to Renewal Tool".)

The parameters of the existing system can be transferred with the parameter converter function of MR Configurator2. (See "Part 7: Common Reference Material".)



Part 4: Review on Replacement of MR-J2S-CP/CL_ with MR-J4-A-RJ

3. DIFFERENCES

3.1 Function Comparison Table

(1) J2S (CP/CL) -J4 (A-RJ) comparison

Item	MR-J2S (CP/CL) series (7 kW or less, 100 V/200 V class)	MR-J4-A-RJ series (7 kW or less, 100 V/200 V class)
1	Capacity range	(100 V class) 0.1 kW to 0.4 kW (200 V class) 0.1 kW to 7 kW
2	Internal regenerative resistor	Built-in (0.2 kW to 7 kW)
3	Dynamic brake	Built-in (0.1 kW to 7 kW) Coasting distance may be different.
4	Control circuit power	(100 V Class) Single-phase 100VAC to 120VAC (200 V Class) Single-phase 200VAC to 230VAC
5	Main circuit power	(100 V Class) Single-phase 100VAC to 120VAC (200 V Class) 1-phase 230VAC/3-phase 200VAC to 230VAC (to 750W) 3-phase 200VAC to 230VAC (1 kW to 7kW)
6	24VDC power	Built-in
7	Auto Tuning	Real-time auto tuning: 15 steps
8	Control mode	(CP) Built-in positioning function (CL) Built-in program operation function
9	Manual pulse generator maximum input pulse	Open collector 200 kpps
10	The number of DIO points (excluding EM1)	DI: 8 points, DO: 5 points, DI/DO combination: 1 point
11	Encoder pulse output	ABZ-phase (differential), Z-phase (open-collector)
12	DIO interface	Input: Sink/source Output: Sink
13	Analog input/output	(Input) 2ch 10-bit torque limit, 10-bit override (Output) 10-bit or equivalent x 2ch
14	The number of internal speed commands (Type A)	7 points
15	Parameter setting method	Setup software (SETUP1_ _) Push-button
16	Setup S/W communication	RS-232C
17	Servo motor (Encoder resolution)	HC series (17-bit ABS) HA series (17-bit ABS)
18	Motor maximum torque	HC-KFS 300% HC-MFS 300% HC-SFS 300% HA-LFS 250%, 300%
19	button	Four buttons
20	LED display	7-segment 5-digit
21	Advanced vibration suppression control	Unprovided
22	Adaptive filter	Provided (Adaptive vibration suppression control)
23	Notch filter	Provided (2 pcs.)
24	Tough drive	Unprovided
25	Drive recorder	Unprovided
26	Forced stop	EM1 (DB stop)
27	Point table No.	(CP) up to 31
28	Program No.	(CL) up to 16 programs (120 steps)
29	Position data unit	mm
Note		Functions with difference are shown with shading.

Part 4: Review on Replacement of MR-J2S-CP/CL_ with MR-J4-A-RJ

(2) Positioning function comparison

Item		Model			
		MR-J2S-CP	MR-J2S-CL	MR-J4-A-RJ	
Command method	Point table	up to 31		up to 255	
	Program end		up to 16 programs (120 steps)	up to 256 programs (640 steps)	
	RS-422 communication (Sequential change method)	○	○	○	
	feed length	-999999 to +999999 × 10 ^{STM} [μm]	-999999 to +999999 × 10 ^{STM} [μm]	-999999 to +999999 × 10 ^{STM} [μm] (Note 2)	
	Command method	Signed absolute value command, incremental value command	Signed absolute value command, incremental value command	Signed absolute value command, incremental value command	
	Position data unit	mm	mm	mm/degree /inch/pulse	
Operation Mode	Automatic operation	Standalone positioning operation	○	○	○
		Continuous positioning operation	○	○	○ (CP/CL)
	Manual operation	JOG operation	○	○	○
		Manual pulse generator operation	○	○	○
			(Multiplication input supported, multiplication parameter supported)	(Multiplication input supported, multiplication parameter supported)	(Multiplication input supported, multiplication parameter supported)
	Home position return	Dog type	○	○	○ (CP/CL)
		Count type	○	○	○ (CP/CL)
		Data set type	○	○	○ (CP/CL)
		Stopper type	○	○	○ (CP/CL)
		Home position ignorance (servo-on position as home position)	○	○	○ (CP/CL)
		Dog type rear end reference	○	○	○ (CP/CL)
		Count type front end reference	○	○	○ (CP/CL)
		Dog cradle type	○	○	○ (CP/CL)
		Dog type last Z-phase reference	○	×	○ (CP/CL)
		Dog type rear end reference	○	×	○ (CP/CL)
Dogless Z-phase reference		○	×	○ (CP/CL)	
Stopper type Z-phase reference		×	×	○ (CP/CL)	
Fast home position return	○	×	○ (CP only)		
Display 7segLED status display	Point table No.	○		○	
	Program No.		○	○	
	Step No.		○	○	

Part 4: Review on Replacement of MR-J2S- _CP/CL_ with MR-J4- _A_-RJ

Item	Type			
	MR-J2S-CP	MR-J2S-CL	MR-J4-A-RJ	
Positioning function	Absolute position detection	○	○	○
	Backlash compensation	○	○	○
	Overtravel prevention with external limit switch	○	○	○
	Software stroke limit	○	○	○
	Override with analog input	○	○	○ (CP/CL)
	Teaching function	○	×	○
	General purpose register	\	○ 4 (RAM) 4 (EEPROM)	○ 4 (RAM) 4 (EEPROM)
	Roll feed display	×	×	○
	Temporary stop/restart	○	○	○ (CP/CL)
	Mark detection function (Current position latch function)	×	×	○ (CP/CL)
Fully closed loop control	\	\	○ (CP/CL)	
Linear servo motor control	\	\	○ (CP/CL)	
DD motor control	\	\	○	

Note 1. The symbols in the type field of this table are as follows:

CP : Point table method, CL : Program method

○: Supported, × : Not supported, \: No function

2. Units can be switched using parameters.

Part 4: Review on Replacement of MR-J2S- CP/CL_ with MR-J4- A_-RJ

3.2 Function List

(1) Function List

function	Description	Control mode (Note 1)	
		C P	C L
Positioning mode (Point table method)	Select the predefined 255 point tables, and operate them according to the setting values. Use external input signals or communication functions to select point tables.	○	×
Positioning mode (Program method)	Select one from the predefined 256 programs, and operate it according to the program content. Use external input signals or communication functions to select programs.	×	○
Roll feed display function	Set the status display of commanded position and current position at the start to "0", and perform positioning for the defined travel distance.	○	○
Mark detection function (Current position latch function)	Mark detection signal is turned on, the current position is latched. Latched data can be read using a communication command.	○	○
Manual home position return	Dog type, count type, data set type, stopper type, home position ignorance, dog type rear end reference, count type front end reference, dog cradle type, dog type last Z-phase reference, Dogless Z-phase reference	○	○
High-resolution encoder	A high-resolution encoder capable of 4194304 pulses/rev is used as the encoder for the rotary servo motor compatible with the MELSERVO-J4 series.	○	○
Absolute position detection system	By setting the home position once, it will be unnecessary to return to the home position each time the power is turned on.	○	○
Gain Switching Function	Gain can be switched during rotation and when stopped, and also when using the input device during the operation.	○	○
Advanced vibration suppression control II	This function controls residual vibration or vibration at the end of the arm.	○	○
Shaft resonance suppression filter	When a load is put on the servo motor shaft, a high-frequency machine vibration may be generated due to resonance caused by shaft torsion while the servo motor is being driven. The shaft resonance suppression filter is the filter that controls this vibration.	○	○
Adaptive filter II	With this function, the servo amplifier detects machine resonance and sets filter properties automatically, and then controls the vibration of the machine system.	○	○
Low-pass filter	When a servo system response is raised, it suppresses the high-frequency resonance generated.	○	○
Machine analyzer function	The frequency properties of the machine system are analyzed by only connecting the servo amplifier and the personal computer where MR Configurator2 is installed. MR Configurator2 is necessary for this function.	○	○
Robust filter	If it is not possible to raise the response because the load to motor inertia ratio is high due to the roll feed shaft, etc., the disturbance response can be improved.	○	○
Slight Vibration Suppression Control	A vibration of ± 1 pulse is suppressed when the servo motor stops.	○	○
Electronic gear	Position command can be set to 1/864-33935 times.	○	○
Auto Tuning	Automatically adjusts the optimum servo gain even if the load applied on the servo motor shaft changes.	○	○
Brake unit	Used when there is insufficient regenerative ability in the regenerative option. 5 kW or higher servo amplifier can be used.	○	○
Power regeneration converter	Used when there is insufficient regenerative ability in the regenerative option. 5 kW or higher servo amplifier can be used.	○	○
Regenerative options	Used when the generated regenerative power is high and there is insufficient regenerative ability in the internal regenerative resistor of servo amplifier.	○	○
Alarm History Clear	Deletes the alarm history.	○	○
Input signal selection (device settings)	Input devices such as ST1 (forward rotation start), ST2 (reverse rotation start), and SON (servo-on) can be assigned to a specific CN1 connector pin.	○	○
Output signal selection (device settings)	Output devices such as MBR (electromagnetic brake interlock) can be assigned to a specific CN1 connector pin.	○	○
Output signal (DO) forced output	Output signals can be turned on/off forcibly regardless of the status of the servo. Use for output signal wiring checks, etc.	○	○
Restart after instantaneous power failure	Even if an alarm occurs due to a decrease in input voltage, a restart is possible only by turning on the start signal once the power supply voltage returns to normal. (Available in the future.)	○	○
Command pulse selection	Phase A/phase B pulse train	○	○
Torque limit	The servo motor torque can be limited.	○	○
Status display	The servo status is displayed on the 5-digit, 7-segment LED indicator.	○	○

Part 4: Review on Replacement of MR-J2S- _CP/CL_ with MR-J4- _A_-RJ

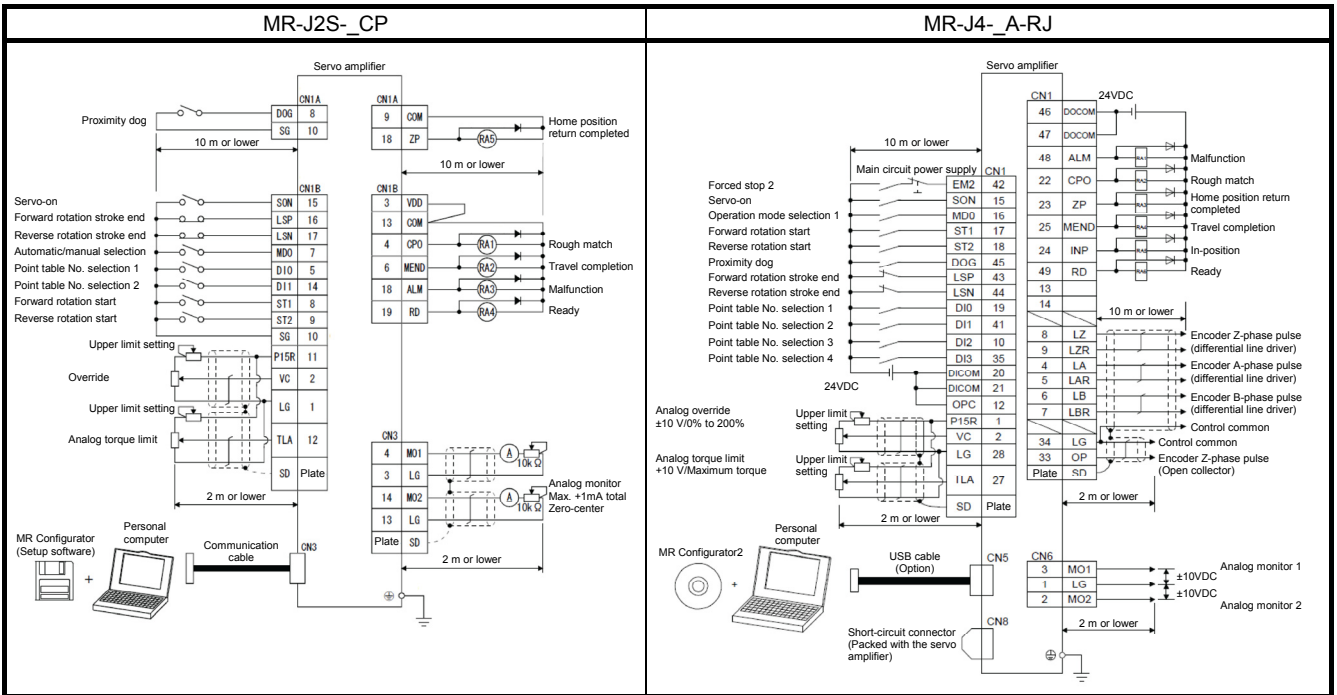
function	Description	Control mode (Note 1)	
		C P	C L
External I/O signal display	The on/off statuses of external I/O signals are displayed on the display.	○	○
VC automatic offset	If the motor does not stop even when the VC (analog speed command) or VLA (analog speed limit) is 0 V, the voltage is automatically offset to stop it.	○	○
Alarm code output	When an alarm occurs, an alarm number is output in 3-bit code.	○	○
Test operation mode	Jog operation, positioning operation, motor-less operation, DO forced output, and program operation. When performing positioning operation, program operation, and single-step feed, MR Configurator2 is required.	○	○
Analog monitor output	The voltage is output in real time for the servo status.	○	○
MR Configurator2	Parameter setting, test operation, monitoring, etc., can be performed using a personal computer.	○	○
Linear servo system	Linear servo motor and linear encoder can be used to construct the linear servo system.	○	○
Direct drive Servo system	Direct drive servo system that drives direct drive motors can be constructed.	○	○
Fully closed loop system	Load side encoder can be used to construct the fully closed loop system.	○	○
One-touch tuning	Gain adjustment of the servo amplifier is possible only by operation of the push button or by one click of the button on MR Configurator2.	○	○
SEMI-F47 function	By complying with the SEMI-F47 standard, even when an instantaneous power failure occurs during the operation, the electrical energy charged in the capacitor can be used to avoid the occurrence of [AL.10 Undervoltage]	○	○
Tough drive function	It is usually possible to continue operation so that the device does not stop even when alarm is about to occur. There are two types of tough drive functions, vibration tough drive and instantaneous power failure tough drive.	○	○
Drive recorder function	By always monitoring the servo status, this function allows fixed time recording of status transitions before and after an alarm occurs. The recorded data can be checked by clicking the wave-form display button on the drive recorder screen of MR Configurator2. However, in the following statuses, the drive recorder will not operate. 1. When the MR Configurator2 graph function is in use. 2. When the machine analyzer function is in use. 3. When [Pr. PF21] is set to "-1".	○	○
STO function	The STO functions are available as IEC/EN 61800-5-2 safety functions. A device safety system can be easily constructed.	○	○
Servo amplifier life diagnosis function	The accumulated energization time and the number of times the burst relay is turned on and off can be checked. This acts as a measure of time if amplifier parts such as capacitor and relay need to be replaced according to their life expectancies before malfunctioning. MR Configurator2 is necessary for this function.	○	○
Power monitoring function	The power running power and regenerative power are calculated from data in the servo amplifier, including speed and current. Power consumption, etc., can be displayed in MR Configurator2.	○	○
Machine diagnosis function	Faulty machine parts such as ball screws and bearings can be detected by presuming friction and vibration elements of the device actuator from data in the servo amplifier. MR Configurator2 is necessary for this function.	○	○
Limit switch	Forward rotation stroke end (LSP) and reverse rotation stroke end (LSN) can be used to limit the travel distance of servo motor.	○	○
S-pattern acceleration/deceleration	Smooth acceleration/deceleration is possible. Set the S-pattern acceleration/deceleration time constants in [Pr.PC03]. Compared with linear acceleration/deceleration time, the acceleration/deceleration time will be longer by the magnitude of S-pattern acceleration/deceleration time constant regardless of commanded speed.	○	○
Software limit	A parameter can be used to limit the travel distance based on addresses. Use a parameter to set a function equivalent to the limit switch.	○	○
Analog override	Limit the servo motor speed with analog input. The setting speed can be changed within the range of 0 to 200%.	○	○
Teaching function	After moving to the target location by JOG operation or manual pulse generator operation, the position data can be retrieved by turning on the teach (TCH) or "set" key on the controller.	○	×

Note 1. CP : positioning mode (point table method), CL : positioning mode (program method)

Part 4: Review on Replacement of MR-J2S-CP/CL_ with MR-J4-A-RJ

3.3 Comparison of Standard Connection Diagrams

(1) Point table method (MR-J2S-CP)

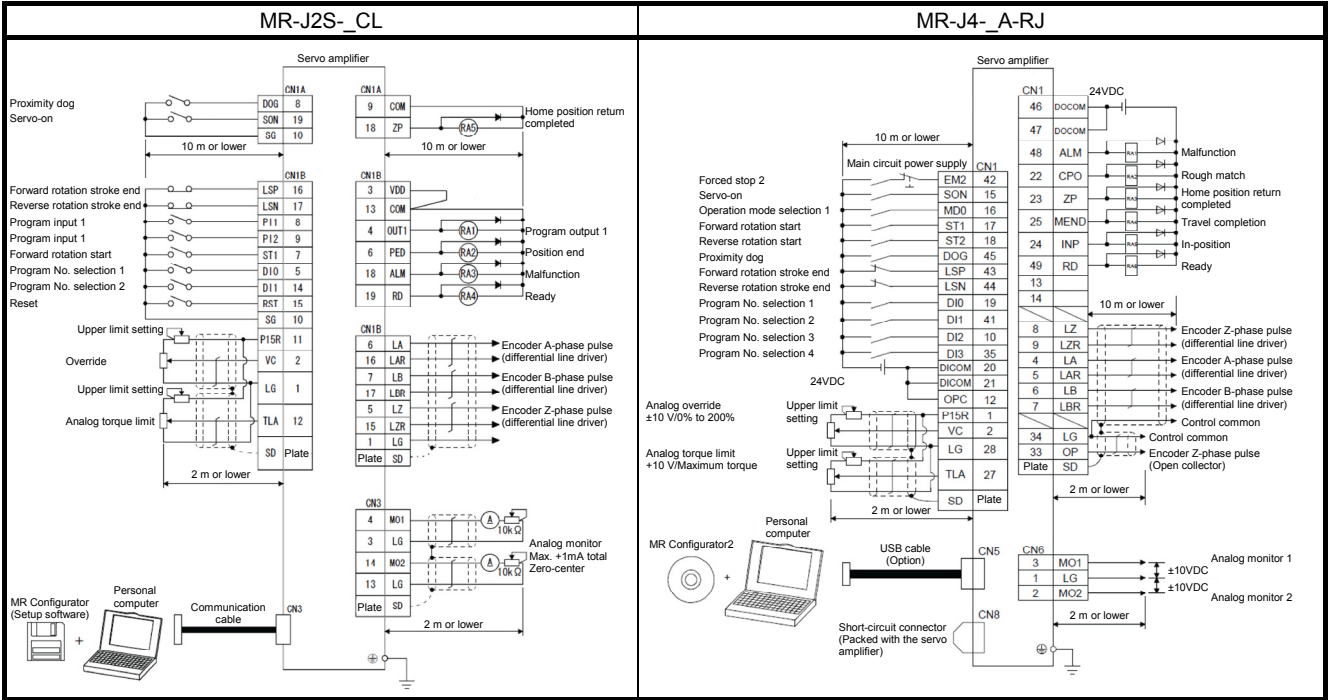


POINT

- Allocate the following output devices to pin CN1-22, pin CN1-23, and pin CN1-25 with [Pr. PD23], [Pr. PD24] and [Pr. PD26].
 CN1-22: CPO (Rough match)
 CN1-23: ZP (Home position return completion)
 CN1-25: MEND (Travel completion)

Part 4: Review on Replacement of MR-J2S-_CP/CL_ with MR-J4-_A_-RJ

(2) Program method (MR-J2S-_CL_)



POINT

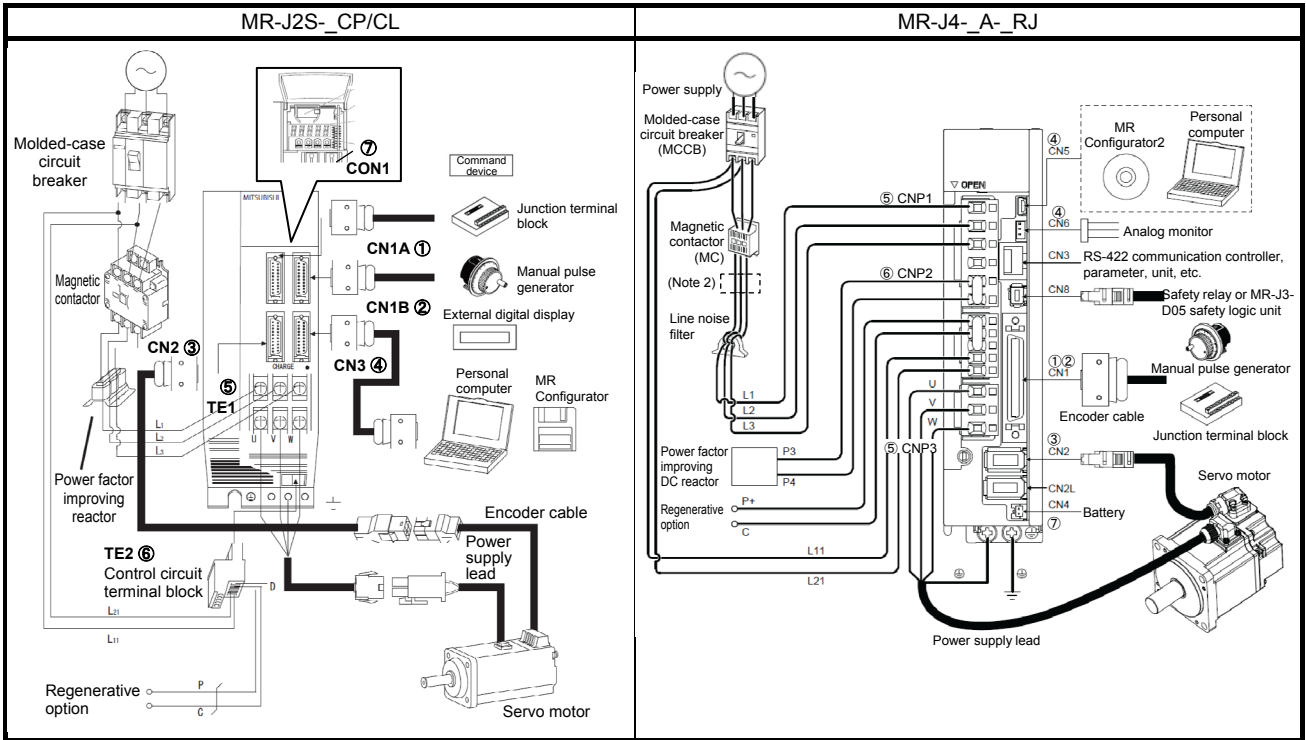
- Allocate the following output devices to pin CN1-22, pin CN1-23, and pin CN1-25 with [Pr. PD23], [Pr. PD24] and [Pr. PD26].
 CN1-22: CPO (Rough match)
 CN1-23: ZP (Home position return completion)
 CN1-25: MEND (Travel completion)

Part 4: Review on Replacement of MR-J2S-CP/CL with MR-J4-A-RJ

3.4 List of Corresponding Connectors and Terminal Blocks

(1) Connector comparison table

An example of connections with the peripheral equipment is shown below. For details on signals, see each servo amplifier instruction manual.



Note 1. The above configuration example is applied to MR-J2S-100CP/CL or a system with less capacity.

Note 1. The above configuration example is applied to MR-J4-200A-RJ or a system with less capacity.
 Note 2. The power factor improving AC reactor can also be used. In this case, the power factor improving DC reactor cannot be used.

• List of connector and terminal block correspondence

MR-J2S-CP/CL		MR-J4-A-RJ	Precautions
①	I/O signal connector CN1A	I/O signal connector CN1	Prepare a new cable.
②	I/O signal connector CN1B	Encoder connector CN2	Must switch to encoder cable (option) or prepare a new cable.
③	Encoder connector CN2	USB communication connector CN5	Must switch to USB cable (option). (Note 1)
		Analog monitor connector CN6	Must switch to monitor cable (option).
④	Communication connector CN3	Main circuit power connector CNP1	Must switch to the power connector (enclosed with the amplifier).
		Servo motor power connector CNP3	
⑤	Main circuit terminal block TE1	Control circuit power connector CNP2	
⑥	Control circuit terminal block TE2	Battery connector CN4	Prepare a new battery.
⑦	Battery connector CON1		

When not using the STO function in MR-J4-A-RJ, attach the short-circuit connector supplied with the servo amplifier to CN8 (STO input signal connector).

The configuration of the main circuit terminal block differs depending on the capacity. See "Part 7: Common Reference Material".

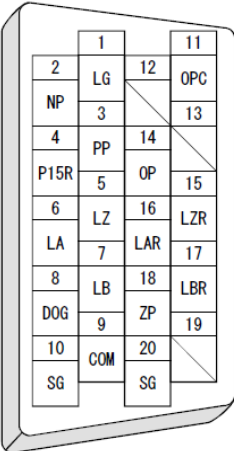
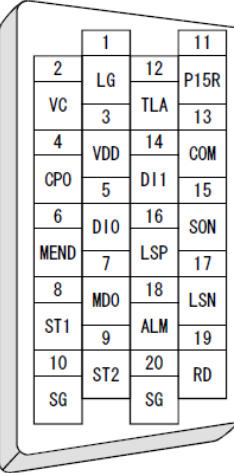
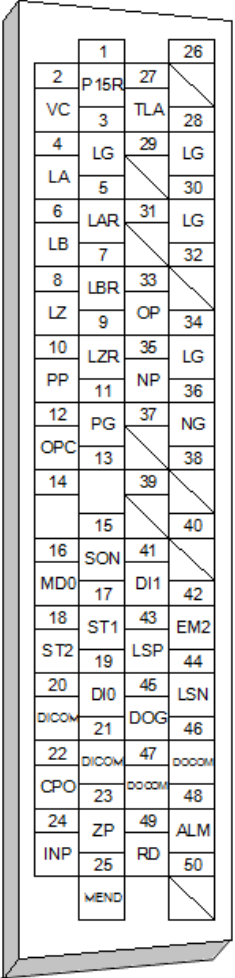
Note 1. When using the multi-dropped communication, connect to "CN3" in "MR-J4-A-RJ".

Part 4: Review on Replacement of MR-J2S-CP/CL_ with MR-J4-A-RJ

(2) Comparison of signals

(a) CN1A/CN1B

(1) Point table method (MR-J2S-CP)

MR-J2S-CP		Signal abbreviation (Note)	MR-J4-A-RJ																																																																										
Connector pin assignment	Connector pin No.		Connector pin No.	Connector pin assignment																																																																									
 <p>CN1A</p> <table border="1"> <tr><td>1</td><td></td><td>11</td></tr> <tr><td>2</td><td>LG</td><td>12</td></tr> <tr><td>3</td><td></td><td>13</td></tr> <tr><td>4</td><td>PP</td><td>14</td></tr> <tr><td>5</td><td>OP</td><td>15</td></tr> <tr><td>6</td><td>LZ</td><td>16</td></tr> <tr><td>7</td><td>LAR</td><td>17</td></tr> <tr><td>8</td><td>LB</td><td>18</td></tr> <tr><td>9</td><td>ZP</td><td>19</td></tr> <tr><td>10</td><td>COM</td><td>20</td></tr> <tr><td>11</td><td>SG</td><td>21</td></tr> </table>	1		11	2	LG	12	3		13	4	PP	14	5	OP	15	6	LZ	16	7	LAR	17	8	LB	18	9	ZP	19	10	COM	20	11	SG	21	CN1A-1	LG	CN1-3 CN1-28																																									
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	CN1A-3	PP	CN1-10*1																																																																										
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 <p>CN1B</p> <table border="1"> <tr><td>1</td><td></td><td>11</td></tr> <tr><td>2</td><td>LG</td><td>12</td></tr> <tr><td>3</td><td>TLA</td><td>13</td></tr> <tr><td>4</td><td>VDD</td><td>14</td></tr> <tr><td>5</td><td>DI1</td><td>15</td></tr> <tr><td>6</td><td>DI0</td><td>16</td></tr> <tr><td>7</td><td>LSP</td><td>17</td></tr> <tr><td>8</td><td>MD0</td><td>18</td></tr> <tr><td>9</td><td>ALM</td><td>19</td></tr> <tr><td>10</td><td>ST2</td><td>20</td></tr> <tr><td>11</td><td>SG</td><td>21</td></tr> </table>	1		11	2	LG	12	3	TLA	13	4	VDD	14	5	DI1	15	6	DI0	16	7	LSP	17	8	MD0	18	9	ALM	19	10	ST2	20	11	SG	21	CN1B-1	LG	CN1-30 CN1-34																																									
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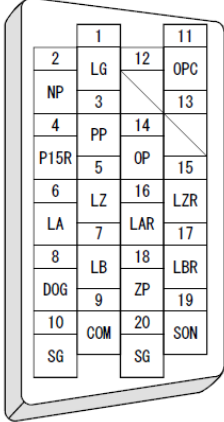
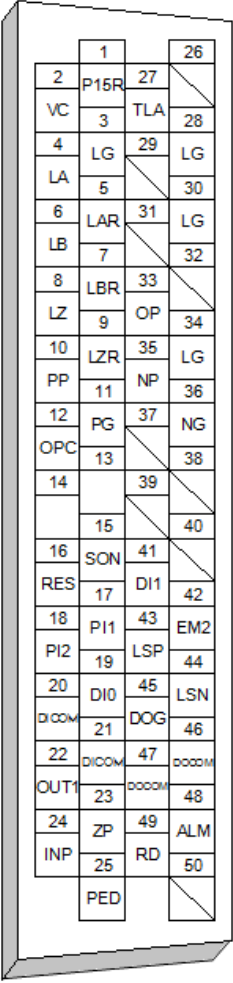
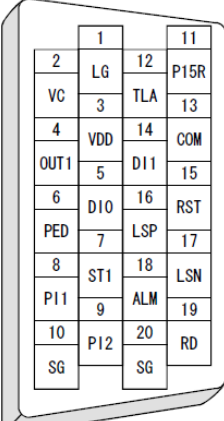
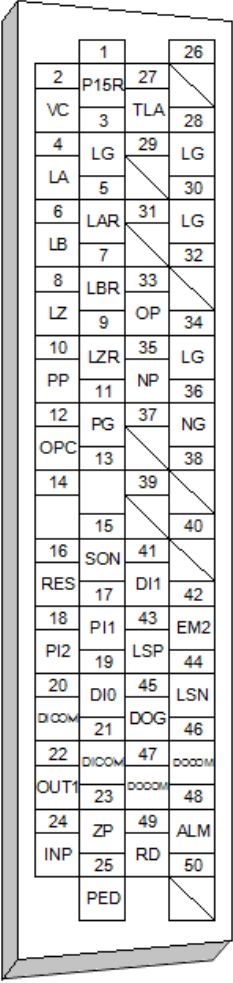
Note. Signal abbreviations in parentheses are for MR-J4-A-RJ.

* 1 When using this signal, enable the PP and NP in [Pr. PD44] and [Pr. PD46].

* 2 When using this signal, enable the ZP in [Pr. PD24].

Part 4: Review on Replacement of MR-J2S- _CP/CL_ with MR-J4- _A_ -RJ

(2) Program method (MR-J2S- _CL)

MR-J2S- _CL		Signal abbreviation (Note)	MR-J4- _A_ -RJ	
Connector pin assignment	Connector pin No.		Connector pin No.	Connector pin assignment
 <p>CN1A</p>	CN1A-1	LG	CN1-3	 <p>CN1</p>
	CN1A-2	NP	CN1-28	
	CN1A-3	PP	CN1-35*1	
	CN1A-4	P15R	CN1-10*1	
	CN1A-5	LZ	CN1-1	
	CN1A-6	LA	CN1-8	
	CN1A-7	LB	CN1-4	
	CN1A-8	DOG	CN1-6	
	CN1A-9	COM (DICOM)	CN1-45	
	CN1A-10	SG (DOCOM)	CN1-20	
	CN1A-11	OPC	CN1-46	
	CN1A-12	-	CN1-12	
	CN1A-13	-	-	
	CN1A-14	OP	CN1-33	
	CN1A-15	LZR	CN1-9	
	CN1A-16	LAR	CN1-5	
	CN1A-17	LBR	CN1-7	
	CN1A-18	ZP	CN1-23*2	
	CN1A-19	SON	CN1-15*3	
	CN1A-20	SG (DOCOM)	CN1-47	
 <p>CN1B</p>	CN1B-1	LG	CN1-30	 <p>CN1</p>
	CN1B-2	VC	CN1-34	
	CN1B-3	VDD	-	
	CN1B-4	OUT1	CN1-22*2	
	CN1B-5	DI0	CN1-19	
	CN1B-6	PED	CN1-25*2	
	CN1B-7	ST1	CN1-17	
	CN1B-8	PI1	CN1-17*3	
	CN1B-9	PI2	CN1-18*3	
	CN1B-10	SG (DOCOM)	CN1-46	
	CN1B-11	P15R	CN1-1	
	CN1B-12	TLA	CN1-27	
	CN1B-13	COM (DICOM)	CN1-21	
	CN1B-14	DI1	CN1-41	
	CN1B-15	RES	CN1-16*3	
	CN1B-16	LSP	CN1-43	
	CN1B-17	LSN	CN1-44	
	CN1B-18	ALM	CN1-48	
	CN1B-19	RD	CN1-49	
	CN1B-20	SG (DOCOM)	CN1-47	

Note. Signal abbreviations in parentheses are for MR-J4- _A_ -RJ.

- * 1 When using this signal, enable the PP and NP in [Pr. PD44] and [Pr. PD46].
- * 2 When using this signal, enable the OUT1, ZP, and PED in [Pr. PD23], [Pr. PD24] and [Pr. PD26].
- * 3 When using this signal, enable the SON, RES, PI1 and PI2 in [Pr. PD04], [Pr. PD06], [Pr. PD08] and [Pr. PD10].

Part 4: Review on Replacement of MR-J2S-CP/CL with MR-J4-A-RJ

(b) CN3 (MR-J2S-CP/CL)

MR-J2S-CP/CL		Signal abbreviation (Note)	MR-J4-A-RJ	
Connector pin assignment	Connector pin No.		Connector pin No.	Connector pin assignment
	CN3-3	LG	CN6-1	
	CN3-4	MO1	CN6-2	
	CN3-14	MO2	CN6-3	
	CN3-13	LG	-	
	CN3-1	LG	CN3-1	
	CN3-5	RDP	CN3-3	
	CN3-9	SDP	CN3-5	
	CN3-11	LG	CN3-7	
	CN3-15	RDN	CN3-6	
	CN3-19	SDN	CN3-4	
	CN3-20	P5(P5D)	CN3-2	
	CN3-2	RXD	-	
	CN3-10	TRE	-	
	CN3-12	TXD	-	


Note. Signal abbreviations in parentheses are for MR-J4-A-RJ.

3.5 Comparison of Peripheral Equipment

POINT	<ul style="list-style-type: none"> See "Part 9: Review on Replacement of Optional Peripheral Equipment".
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Part 4: Review on Replacement of MR-J2S-__CP/CL__ with MR-J4-__A__-RJ

3.6 Comparison of Parameters

 CAUTION	<ul style="list-style-type: none"> • Never perform extreme adjustments and changes to the parameters, otherwise the operation may become unstable. • If fixed values are written in the digits of a parameter, do not change these values. • Do not change parameters for manufacturer setting. • Do not enter any setting value other than those specified for each parameter.
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POINT
<ul style="list-style-type: none"> • For the parameter converter function, see "Part 7: Common Reference Material". • To enable a parameter whose abbreviation is preceded by *, turn the power OFF and then ON after setting the parameter. • For details about parameter settings for replacement, see the MR-J4-__A__-RJ Servo Amplifier Instruction Manual (POSITIONING MODE). • With MR-J4-A__, the deceleration to a stop function is enabled by the factory setting. To disable the deceleration to a stop function, set PA04 to "0 __ __".

3.6.1 Setting requisite parameters upon replacement

The parameters shown in this section are a minimum number of parameters that need to be set for replacement. Depending on the settings of the currently used amplifier, parameters other than these may need to be set.

(1) Common when replacing MR-J2S-__CP__ / MR-J2S-__CL__

(a) Simultaneous replacement with MR-J4-__A__-RJ and an HG motor

Parameter number	Name	Initial value	Setting value	Description
PA04	Function selection A-1	2 0 0 0h	0 0 0 0h	Forced stop deceleration function selection To configure the same settings as for MR-J2S-__CP__ / MR-J2S-__CL__, select "Forced stop deceleration function disabled (EM1)".
PA06	Electronic gear numerator (Commanded pulse multiplication numerator)	1	8 (Note 1)	When using an electronic gear, it is necessary to change the setting value. Set the electronic gear ratio of an existing servo amplifier when simultaneously replacing with MR-J4-__A__-RJ and an HG motor. The actual gear ratio of a motor with a reducer may differ before and after replacement. When the gear ratio differs, set the value taking into account the actual ratio.
PA07	Electronic gear denominator (Commanded pulse multiplication denominator)	1	1 (Note 1)	
PA21	Function selection A-3	0 0 0 1h	3 0 0 1h	Electronic gear selection Select "J2S electronic gear setting value compatibility mode" to continue using the electronic gear ratio set in MR-J2S-__CP__ / MR-J2S-__CL__.
PA09	Auto tuning response	16	8	Auto tuning response setting Enter this setting value for replacement, referring to "3.6.3 Comparison of parameter details". It is necessary to make gain adjustment again when replacing. For details about gain adjustment, see "MR-J2S-__CP__ [Pr. 3] (MR-J4-__A__ [Pr. PA09])" in Section 3.6.3.

Note 1. The example value shown is for when the electronic gear ratio of an existing servo amplifier is set as "8/1".

Part 4: Review on Replacement of MR-J2S- _CP/CL_ with MR-J4- _A_ -RJ

(b) When continuing to use the HC/HA motor:

Parameter number	Name	Initial value	Setting value	Description
PA04	Function selection A-1	2 0 0 0h	0 0 0 0h	Forced stop deceleration function selection To configure the same settings as for MR-J2S- _CP_ /MR-J2S- _CL_, select "Forced stop deceleration function disabled (EM1)".
PA06	Electronic gear numerator (Commanded pulse multiplication numerator)	1	8 (Note 1)	When using an electronic gear, it is necessary to change the setting value. Set the electronic gear ratio of an existing servo amplifier.
PA07	Electronic gear denominator (Commanded pulse multiplication denominator)	1	1 (Note 1)	The actual gear ratio of a motor with a reducer may differ before and after replacement. When the gear ratio differs, set the value taking into account the actual ratio.
PA21	Function selection A-3	0 0 0 1h	0 0 0 1h	Electronic gear selection Use with the initial value as is.
PA09	Auto tuning response	16	8	Auto tuning response setting Enter this setting value for replacement, referring to "3.6.3 Comparison of parameter details". It is necessary to make gain adjustment again when replacing. For details about gain adjustment, see "MR-J2S- _CP_ [Pr. 3] (MR-J4- _A_ [Pr. PA09])" in Section 3.6.3.

Note 1. The example value shown is for when the electronic gear ratio of an existing servo amplifier is set as "8/1".

(2) When replacing MR-J2S- _CP_

Parameter number	Name	Initial value	Setting value	Description
PA01	Operation mode	1 0 0 0h	_ _ _ 6h	Select the servo amplifier control mode. Select the positioning mode (point table method).

(3) When replacing MR-J2S- _CL_

Parameter number	Name	Initial value	Setting value	Description
PA01	Operation mode	1 0 0 0h	_ _ _ 7h	Select the servo amplifier control mode. Select the positioning mode (program method).

Part 4: Review on Replacement of MR-J2S- _CP/CL_ with MR-J4- _A_-RJ

3.6.2 Parameter comparison list

POINT

- Manufacturer setting parameters are not described here.
- The parameters with [CP] can be used only for MR-J2S- _CP_, while the parameters with [CL] can be used only for MR-J2S- _CL_. The parameters without [CP] or [CL] are the parameters that can be used for both MR-J2S- _CP_ and MR-J2S- _CL_.

Parameters for MR-J2S- _CP_ or MR-J2S- _CL_					MR-J4- _A_-RJ parameters							
No.	Abbreviation	Parameter name		Initial value	Customer setting value	No.	Abbreviation	Parameter name		Initial value	Customer setting value	
0	*STY	Command method Regenerative options selection	[CL] Program edit	0000h		PT02	*TOP1	Function selection T-1 (Program Writing Inhibit)		0000h		
			Command method			PT01	*CTY	Command mode selection		0000h		
			Regenerative option			PA02	*REG	Regenerative option		0000h		
1	*FTY	Feeding function selection	ST1 coordinate system selection	0000h		PA14	*POL	Rotation direction selection/travel direction selection		0		
			Feed length multiplication (STM)			PT03	*FTY	Feeding function selection	Feed length multiplication (STM)		0000h	
			Manual pulse generator multiplication						Manual pulse generator multiplication			
			Follow-up of the servo-on (SON) OFF, and forced stop (EMG) OFF in the absolute value command method in the incremental system.			PT02	*TOP1	Function selection T-1 (Follow-up of the servo-on (SON) OFF, and forced stop 2 (EM2) OFF in the absolute value command method in the incremental system)		0000h		
2	*OP1	Function selection 1	Input filter	0002h		PD29	*DIF	Input Filter Setting		0004h		
			Absolute position detection system selection			PA03	*ABS	Absolute position detection system selection		0000h		
3	ATU	Auto tuning	Mode setting response setting	0105h		PA09	RSP	Auto tuning response (Note)		16		
						PA08	ATU	Auto tuning mode (Note)		0001h		
4	*CMX	Electronic gear numerator		1		PA06	*CMX	Electronic gear numerator (command pulse multiplication numerator)		1		
						PA21	*AOP3	Function selection A-3 (Electronic gear selection)		0001h		
5	*CDV	Electronic gear denominator		1		PA07	*CDV	Electronic gear denominator (command pulse multiplication denominator)		1		
						PA21	*AOP3	Function selection A-3 (Electronic gear selection)		0001h		
6	INP	[CP] In-position range		100		PA10	INP	In-position range		100		
	PED	[CL] Position end output		100								
7	PG1	Position loop gain 1		35		PB07	PG1	Model loop gain (Note)		15.0		
8	*ZTY	Home position return type	Home position return types	0010h		PT04	*ZTY	Home position return type		0010h		
			Home position return direction			PT29	*TOP3	Function selection T-3 (Proximity dog polarity selection)		0000h		
9	ZRF	Home position return speed		500		PT05	ZRF	Home position return speed		100		
10	CRF	Creep speed		10		PT06	CRF	Creep speed		10		
11	ZST	Home position shift distance		0		PT07	ZST	Home position shift distance		0		
12	CRP	[CP] Rough match output range		0		PT12	CRP	Rough match output range		0		
13	JOG	JOG speed		100		PT13	JOG	JOG operation		100		
14	*STC	S-pattern acceleration/deceleration time constant		0		PC03	*STC	S-pattern acceleration/deceleration time constant		0		
15	*SNO	Station Number Setting		0		PC20	*SNO	Station Number Setting		0		
16	*BPS	Serial communication function selection - Alarm history clear		0000h		PC21	*SOP	RS-422 communication function selection		0000h		
						PC18	*BPS	Alarm history clear selection		0000h		
17	MOD	Analog monitor output		0100h		PC14	MOD1	Analog monitor 1 output		0000h		
						PC15	MOD2	Analog monitor 2 output		0001h		
18	*DMD	Status display selection	Status of servo amplifier display	0000h		PC36	*DMD	Status display selection		0000h		
			Status display for MR-DP60			No corresponding parameter						
19	*BLK	Parameter writing inhibit		0000h		PA19	*BLK	Parameter writing inhibit		00AAh		
20	*OP2	Function selection 2	Slight Vibration Suppression Control	0000h		PB24	*MVS	Slight vibration suppression control selection		0000h		
22	*OP4	Function selection 4	LSP, LSN stop selection	0000h		PD30	*DOP1	Function selection D-1 (LSP, LSN stop selection)		0000h		

Note. Parameters related to gain adjustment are different from those for the MR-J2S- _CP_ servo amplifier. For details on how to make gain adjustments, refer to the MR-J4- _A_-RJ Servo Amplifier Instruction Manual (POSITIONING MODE).

Part 4: Review on Replacement of MR-J2S- _CP/CL_ with MR-J4- _A_-RJ

Parameters for MR-J2S- _CP_ or MR-J2S- _CL_					MR-J4- _A_-RJ parameters				
No.	Abbreviation	Parameter name	Initial value	Customer setting value	No.	Abbreviation	Parameter name	Initial value	Customer setting value
23	SIC	Serial communication time-out selection	0		PF04	SIC	RS-422 communication time-out selection	0	
24	FFC	Feed forward gain	0		PB04	FFC	Feed forward gain (Note)	0	
25	VCO	Override offset	0		PC37	VCO	Analog override offset	0	
26	TLO	Torque limit offset	0		PC38	TPO	Analog torque limit offset	0	
27	*ENR	Encoder output pulse	4000		PA15	*ENR	Encoder output pulses (See also PC19.)	4000	
28	TL1	Internal torque limit 1	100		PA11	TLP	Forward rotation torque limit	100.0	
					PA12	TLN	Reverse rotation torque limit	100.0	
29	TL2	Internal torque limit 2	100		PC35	TL2	Internal torque limit 2	100.0	
30	*BKC	Backlash compensation	0		PT14	*BKC	Backlash compensation	0	
31	MO1	Analog monitor 1 offset	0		PC39	MO1	Analog monitor 1 offset	0	
32	MO2	Analog monitor 2 offset	0		PC40	MO2	Analog monitor 2 offset	0	
33	MBR	Electromagnetic brake sequence output	100		PC16	MBR	Electromagnetic brake sequence output	0	
34	GD2	Load to motor inertia ratio	70		PB06	GD2	Load to motor inertia ratio (Note)	7.00	
35	PG2	Position loop gain 2	35		PB08	PG2	Position loop gain (Note)	37.0	
36	VG1	Speed loop gain 1	177				No corresponding parameter		
37	VG2	Speed loop gain 2	817		PB09	VG2	Speed loop gain (Note)	823	
38	VIC	Speed integral compensation	48		PB10	VIC	Speed integral compensation (Note)	33.7	
39	VDC	Speed differential compensation	980		PB11	VDC	Speed differential compensation (Note)	980	
42	*ZPS	Home position return position data	0		PT08	*ZPS	Home position return position data	0	
43	DCT	Travel distance after proximity dog	1000		PT09	DCT	Travel distance after proximity dog	1000	
44	ZTM	Stopper type home position return - Stopper time	100		PT10	ZTM	Stopper type home position return - Stopper time	100	
45	ZTT	Stopper type home position return torque limit value	15		PT11	ZTT	Stopper type home position return torque limit value	15.0	
46	*LMP	Software limit +	0		PT15	LMPL	Software limit +	0	
47					PT16	LMPH	Software limit +	0	
48	*LMN	Software limit -	0		PT17	LMNL	Software limit -	0	
49					PT18	LMNH	Software limit -	0	
50	*LPP	Position range output address +	0		PT19	*LPPL	Position range output address +	0	
51					PT20	*LPPH	Position range output address +	0	
52	*LNP	Position range output address -	0		PT21	*LNPL	Position range output address -	0	
53					PT22	*LNPH	Position range output address -	0	

Note. Parameters related to gain adjustment are different from those for the MR-J2S- _CP_ servo amplifier. For details on how to make gain adjustments, refer to the MR-J4- _A_-RJ Servo Amplifier Instruction Manual (POSITIONING MODE).

Part 4: Review on Replacement of MR-J2S- _CP/CL_ with MR-J4- _A_ -RJ

Parameters for MR-J2S- _CP_ or MR-J2S- _CL_					MR-J4- _A_ -RJ parameters				
No.	Abbreviation	Parameter name	Initial value	Customer setting value	No.	Abbreviation	Parameter name	Initial value	Customer setting value
55	*OP6	Function selection 6 (Handle the base circuit when RES (Reset) is enabled)	0000h		PD30	*DOP1	Function selection D-1 (Select the base circuit status when RES (Reset) is ON.	0000h	
57	*OP8	Function selection 8	Protocol checksum selection	0000h	PF01	*FOP1	Function selection F-1	Protocol checksum selection	0000h
			Protocol station No. selection					Protocol station No. selection	
58	*OP9	Function selection 9	Encoder pulse output phase changing	0000h	PC19	*ENRS	Encoder output pulses selection	Encoder output pulse phase selection	0000h
			Encoder pulse setting selection					Encoder output pulse setting selection	
59	*OPA	Function selection A	Torque limit rotation direction	0000h	PD33	*DOP4	Function selection D-4 (Torque limit enabled rotation direction)	0000h	
			Alarm code output		PD34	*DOP5	Function selection D-5 (Alarm code output)	0000h	
61	NH1	Machine resonance suppression filter 1	Notch frequency selection	0000h	PB01	FILT	Adaptive tuning mode (adaptive filter II)	0000h	
			Notch depth		PB13	NH1	Machine resonance suppression filter 1	4500	
					PB14	NHQ1	Notch shape selection 1	0000h	
62	NH2	Machine resonance suppression filter 2	Notch frequency selection	0000h	PB15	NH2	Machine resonance suppression filter 2	4500	
			Notch depth		PB16	NHQ2	Notch shape selection 2	0000h	
					PB18	LPF	Low-pass filter setting	3141	
63	LPF	Low-pass filter Adaptive vibration suppression control	Low-pass filter selection	0000h	PB23	VFBF	Low-pass filter selection	0000h	
			Adaptive vibration suppression control level selection		PB01	FILT	Adaptive tuning mode (adaptive filter II)	0000h	
64	GD2B	Load to motor inertia ratio 2	70		PB29	GD2B	Gain switching load to motor inertia ratio (Note)	7.00	
65	PG2B	Position loop gain 2 changing ratio	100		PB30	PG2B	Position loop gain after gain switching (Note)	0.0	
66	VG2B	Speed loop gain 2 changing ratio	100		PB31	VG2B	Speed loop gain after gain switching (Note)	0	
67	VICB	Speed integral compensation changing ratio	100		PB32	VICB	Speed integral compensation after gain switching (Note)	0.0	
68	*CDP	Gain switching selection	0000h		PB26	*CDP	Gain switching function	0000h	
69	CDS	Gain Switching Condition	10		PB27	CDL	Gain switching condition	10	
70	CDT	Gain switching time constant	1		PB28	CDT	Gain switching time constant	1	
74	OUT1	[CL] OUT1 output time setting	0		PT23	OUT1	OUT1 output setting time	0	
75	OUT2	[CL] OUT2 output time setting	0		PT24	OUT2	OUT2 output setting time	0	
76	OUT3	[CL] OUT3 output time setting	0		PT25	OUT3	OUT3 output setting time	0	
77	*SYC1	[CL] program input polarity selection 1	0000h		PT29	*TOP3	Function selection T-3	P11 (Program input 1) polarity selection	0000h
								P11 (Program input 2) polarity selection	
								P11 (Program input 3) polarity selection	

Note. Parameters related to gain adjustment are different from those for the MR-J2S- _CP_ servo amplifier. For details on how to make gain adjustments, refer to the MR-J4- _A_ -RJ Servo Amplifier Instruction Manual (POSITIONING MODE).

Part 4: Review on Replacement of MR-J2S-__CP/CL__ with MR-J4-__A__-RJ


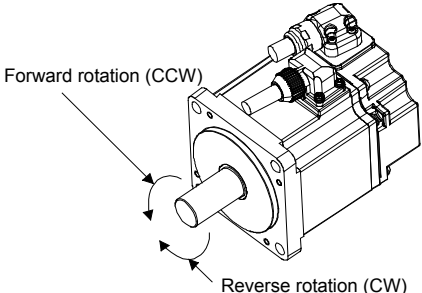
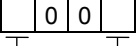
3.6.3 Comparison of parameter details

POINT

- Backslash (\) in initial value fields indicate that the function is not supported.

MR-J2S-__CP__ or MR-J2S-__CL__			MR-J4-__A__-RJ																																											
No.	Name and function	Initial value		No.	Name and function	Initial value																																								
		CP	CL																																											
0	<p>Command method and regenerative option selection Used to select command method and regenerative option.</p> <table border="1" style="margin-left: 20px; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">0</td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> <td style="width: 20px;"></td> </tr> </table> <ul style="list-style-type: none"> [CL] Program edit 0: Permit 1: Inhibit Command method selection 0: Absolute value command method 1: Incremental value command method Regenerative option selection 0: Not used (However, MR-J2S-10CL cannot be used because a regenerative resistor is not built in it.) 1: FR-RC, FR-BU2 2: MR-RB032 3: MR-RB12 4: MR-RB32 5: MR-RB30 6: MR-RB50 (A cooling fan is needed.) 8: MR-RB31 9: MR-RB51 (A cooling fan is needed.) Select the regenerative option compatible with the servo amplifier. A parameter error occurs when a wrong one is selected. 	0				0000h	0000h	PT02	<p>Program writing selection</p> <table border="1" style="margin-left: 20px; border-collapse: collapse;"> <tr> <th style="width: 20%;">Setting digit</th> <th style="width: 80%;">Function</th> </tr> <tr> <td style="text-align: center;">x ___</td> <td>Program writing inhibit 0: Permit 1: Inhibit</td> </tr> </table>	Setting digit	Function	x ___	Program writing inhibit 0: Permit 1: Inhibit	0000h																																
0																																														
Setting digit	Function																																													
x ___	Program writing inhibit 0: Permit 1: Inhibit																																													
				PT01	<p>Command mode selection</p> <table border="1" style="margin-left: 20px; border-collapse: collapse;"> <tr> <th style="width: 20%;">Setting digit</th> <th style="width: 80%;">Function</th> </tr> <tr> <td style="text-align: center;">___x</td> <td>Positioning command method selection 0: Absolute value command method 1: Incremental value command method</td> </tr> </table>	Setting digit	Function	___x	Positioning command method selection 0: Absolute value command method 1: Incremental value command method	0000h																																				
Setting digit	Function																																													
___x	Positioning command method selection 0: Absolute value command method 1: Incremental value command method																																													
				PA02	<p>Regenerative options Select the regenerative option. See the comparison table below for the setting method.</p> <p style="text-align: center;">Regenerative option setting comparison table</p> <table border="1" style="margin-left: 20px; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">MR-J2S-__CP__ No.0</th> <th style="width: 10%;"></th> <th style="width: 20%;">MR-J4-__A__ PA02</th> <th style="width: 40%;">Regenerative option model</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">0 0 __</td><td></td><td style="text-align: center;">0 0 0 0</td><td>Not used (Built-in resistor)</td></tr> <tr><td style="text-align: center;">0 1 __</td><td></td><td style="text-align: center;">0 0 0 1</td><td>FR-RC, FR-BU2</td></tr> <tr><td style="text-align: center;">0 2 __</td><td></td><td style="text-align: center;">0 0 0 2</td><td>MR-RB032</td></tr> <tr><td style="text-align: center;">0 3 __</td><td></td><td style="text-align: center;">0 0 0 3</td><td>MR-RB12</td></tr> <tr><td style="text-align: center;">0 4 __</td><td style="text-align: center;">→</td><td style="text-align: center;">0 0 0 4</td><td>MR-RB32</td></tr> <tr><td style="text-align: center;">0 5 __</td><td></td><td style="text-align: center;">0 0 0 5</td><td>MR-RB30</td></tr> <tr><td style="text-align: center;">0 6 __</td><td></td><td style="text-align: center;">0 0 0 6</td><td>MR-RB50 (Note 1)</td></tr> <tr><td style="text-align: center;">0 8 __</td><td></td><td style="text-align: center;">0 0 0 8</td><td>MR-RB31</td></tr> <tr><td style="text-align: center;">0 9 __</td><td></td><td style="text-align: center;">0 0 0 9</td><td>MR-RB51 (Note 1)</td></tr> </tbody> </table> <p>Note 1: Cooling fan is needed.</p>	MR-J2S-__CP__ No.0		MR-J4-__A__ PA02	Regenerative option model	0 0 __		0 0 0 0	Not used (Built-in resistor)	0 1 __		0 0 0 1	FR-RC, FR-BU2	0 2 __		0 0 0 2	MR-RB032	0 3 __		0 0 0 3	MR-RB12	0 4 __	→	0 0 0 4	MR-RB32	0 5 __		0 0 0 5	MR-RB30	0 6 __		0 0 0 6	MR-RB50 (Note 1)	0 8 __		0 0 0 8	MR-RB31	0 9 __		0 0 0 9	MR-RB51 (Note 1)	0000h
MR-J2S-__CP__ No.0		MR-J4-__A__ PA02	Regenerative option model																																											
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0 4 __	→	0 0 0 4	MR-RB32																																											
0 5 __		0 0 0 5	MR-RB30																																											
0 6 __		0 0 0 6	MR-RB50 (Note 1)																																											
0 8 __		0 0 0 8	MR-RB31																																											
0 9 __		0 0 0 9	MR-RB51 (Note 1)																																											

Part 4: Review on Replacement of MR-J2S-CP/CL_ with MR-J4-A-RJ

MR-J2S-CP_ or MR-J2S-CL_				MR-J4-A-RJ																				
No.	Name and function	Initial value		No.	Name and function	Initial value																		
		CP	CL																					
1	Feeding function selection Select the feed length multiplication and manual pulse generator multiplication. <div style="margin-top: 10px;">  <ul style="list-style-type: none"> — ST1 Coordinate system selection 0 : Increase addresses toward the CCW direction 1 : Increase addresses toward the CW direction — Feed length multiplication (STM) 0: Single 1: 10-fold 2: 100-fold 3: 1000-fold — Manual pulse generator multiplication 0: Single 1: 10-fold 2: 100-fold — Follow-up of the servo-on (SON) OFF, and forced stop (EMG) OFF in the absolute value command method in the incremental system 0: Disabled 1: Enabled Normally, when using this servo amplifier in the absolute value command method in the incremental system, the home position will be erased if the servo-on is turned off or switched to the forced stop state. If this parameter is set to "1", the home position will not be erased even if the servo-on is turned off or switched to the forced stop state. In this case, the operation can be resumed by turning the servo-on (SON) or canceling the forced stop (EMG). </div>	0000h	0000h	PA14	Rotation direction selection Select the rotation direction of the servo motor when turning ST1 (forward rotation start) or ST2 (reverse rotation start) On. <table border="1" style="margin-top: 10px; width: 100%;"> <thead> <tr> <th rowspan="2">Setting value</th> <th colspan="2">Servo motor rotation direction</th> </tr> <tr> <th>During the positioning address increase</th> <th>During the positioning address decrease</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>CCW direction</td> <td>CW direction</td> </tr> <tr> <td>1</td> <td>CW direction</td> <td>CCW direction</td> </tr> </tbody> </table> Servo motor rotation direction is as follows: 	Setting value	Servo motor rotation direction		During the positioning address increase	During the positioning address decrease	0	CCW direction	CW direction	1	CW direction	CCW direction	0							
				Setting value	Servo motor rotation direction																			
					During the positioning address increase	During the positioning address decrease																		
0	CCW direction	CW direction																						
1	CW direction	CCW direction																						
PT03	Feeding function selection <table border="1" style="margin-top: 10px; width: 100%;"> <thead> <tr> <th>Setting digit</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>--- x</td> <td>Feed length multiplication [STM] 0: Single 1: 10-fold 2: 100-fold 3: 1000-fold</td> </tr> <tr> <td>-- x _</td> <td>Manual pulse generator multiplication 0: Single 1: 10-fold 2: 100-fold</td> </tr> </tbody> </table>	Setting digit	Function	--- x	Feed length multiplication [STM] 0: Single 1: 10-fold 2: 100-fold 3: 1000-fold	-- x _	Manual pulse generator multiplication 0: Single 1: 10-fold 2: 100-fold	0000h																
Setting digit	Function																							
--- x	Feed length multiplication [STM] 0: Single 1: 10-fold 2: 100-fold 3: 1000-fold																							
-- x _	Manual pulse generator multiplication 0: Single 1: 10-fold 2: 100-fold																							
PT02	Function selection T-1 <table border="1" style="margin-top: 10px; width: 100%;"> <thead> <tr> <th>Setting digit</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>--- x</td> <td>Follow-up of the servo-on (SON) OFF, and forced stop 2 (EM2) OFF in the absolute value command method in the incremental system. 0: Disabled (Home position will be erased when servo-on or EM2 is turned OFF.) 1: Enabled (Home position will not be erased even when servo-on or EM2 is turned OFF, or when an alarm that can be canceled by resetting is generated. The operation can be resumed.)</td> </tr> </tbody> </table>	Setting digit	Function	--- x	Follow-up of the servo-on (SON) OFF, and forced stop 2 (EM2) OFF in the absolute value command method in the incremental system. 0: Disabled (Home position will be erased when servo-on or EM2 is turned OFF.) 1: Enabled (Home position will not be erased even when servo-on or EM2 is turned OFF, or when an alarm that can be canceled by resetting is generated. The operation can be resumed.)	0000h																		
Setting digit	Function																							
--- x	Follow-up of the servo-on (SON) OFF, and forced stop 2 (EM2) OFF in the absolute value command method in the incremental system. 0: Disabled (Home position will be erased when servo-on or EM2 is turned OFF.) 1: Enabled (Home position will not be erased even when servo-on or EM2 is turned OFF, or when an alarm that can be canceled by resetting is generated. The operation can be resumed.)																							
2	Function selection 1 Used to select the input filter and absolute position detection system. <div style="margin-top: 10px;">  <ul style="list-style-type: none"> — Input filter If an external input signal causes chattering due to noise, etc., the input filter is used to suppress it. 0: None 1: 0.88[ms] 2: 1.77[ms] 3: 2.66[ms] 4: 3.55[ms] 5: 4.44[ms] — Absolute position detection system selection 0: Use in the incremental system 1: Use in the absolute position detection system </div>	0002h	0002h	PD29	Input filter setting If an external input signal causes chattering due to noise, etc., the input filter is used to suppress it. See the comparison table below for the setting method. <table border="1" style="margin-top: 10px; width: 100%;"> <thead> <tr> <th colspan="2">Input filter setting comparison table</th> </tr> <tr> <th>MR-J2S-CP_</th> <th>MR-J4-A_</th> </tr> <tr> <th>No.2</th> <th>PD29</th> </tr> </thead> <tbody> <tr> <td>--- 0</td> <td>0 0 0 0</td> </tr> <tr> <td>--- 1</td> <td>0 0 0 1</td> </tr> <tr> <td>--- 2</td> <td>0 0 0 2</td> </tr> <tr> <td>--- 3</td> <td>0 0 0 3</td> </tr> <tr> <td>--- 4</td> <td>0 0 0 4</td> </tr> <tr> <td>--- 5</td> <td>0 0 0 5</td> </tr> </tbody> </table>	Input filter setting comparison table		MR-J2S-CP_	MR-J4-A_	No.2	PD29	--- 0	0 0 0 0	--- 1	0 0 0 1	--- 2	0 0 0 2	--- 3	0 0 0 3	--- 4	0 0 0 4	--- 5	0 0 0 5	0004h
				Input filter setting comparison table																				
MR-J2S-CP_	MR-J4-A_																							
No.2	PD29																							
--- 0	0 0 0 0																							
--- 1	0 0 0 1																							
--- 2	0 0 0 2																							
--- 3	0 0 0 3																							
--- 4	0 0 0 4																							
--- 5	0 0 0 5																							
PA03	Absolute position detection system When using the absolute position detection system, set "___ 1".	0000h																						

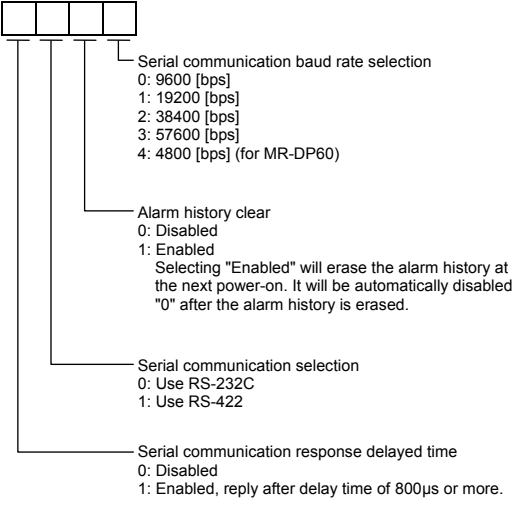
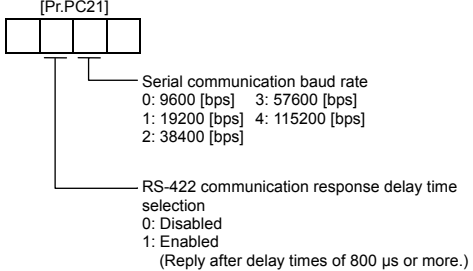
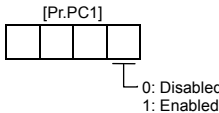
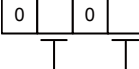
Part 4: Review on Replacement of MR-J2S- CP/CL_ with MR-J4- A_-RJ

MR-J2S- CP_ or MR-J2S- CL_				MR-J4- A_-RJ																																				
No.	Name and function	Initial value		No.	Name and function	Initial value																																		
		CP	CL																																					
3	Auto Tuning Select a response level, etc., when performing auto tuning. <div style="border: 1px solid black; display: inline-block; padding: 2px;">0</div> <div style="border: 1px solid black; display: inline-block; padding: 2px;">0</div>	0105h	0105h	PA09	Auto tuning response Set a response of the auto tuning. See the comparison table below for the setting method. Response level comparison table <table border="1" style="margin-top: 10px;"> <thead> <tr> <th>MR-J2S- CP_</th> <th>MR-J4- A_</th> </tr> </thead> <tbody> <tr> <td>No.3</td> <td>PA09</td> </tr> <tr> <td>__ 0 1</td> <td>8 or 9</td> </tr> <tr> <td>__ 0 2</td> <td>1 1</td> </tr> <tr> <td>__ 0 3</td> <td>1 3</td> </tr> <tr> <td>__ 0 4</td> <td>1 4</td> </tr> <tr> <td>__ 0 5</td> <td>15 or 16</td> </tr> <tr> <td>__ 0 6</td> <td>17 or 18</td> </tr> <tr> <td>__ 0 7</td> <td>19 or 20</td> </tr> <tr> <td>__ 0 8</td> <td>21 or 22</td> </tr> <tr> <td>__ 0 9</td> <td>2 3</td> </tr> <tr> <td>__ 0 A</td> <td>2 5</td> </tr> <tr> <td>__ 0 B</td> <td>26 or 27</td> </tr> <tr> <td>__ 0 C</td> <td>28 or 29</td> </tr> <tr> <td>__ 0 D</td> <td>30 or 31</td> </tr> <tr> <td>__ 0 E</td> <td>3 2</td> </tr> <tr> <td>__ 0 F</td> <td>33 or 34</td> </tr> </tbody> </table>	MR-J2S- CP_	MR-J4- A_	No.3	PA09	__ 0 1	8 or 9	__ 0 2	1 1	__ 0 3	1 3	__ 0 4	1 4	__ 0 5	15 or 16	__ 0 6	17 or 18	__ 0 7	19 or 20	__ 0 8	21 or 22	__ 0 9	2 3	__ 0 A	2 5	__ 0 B	26 or 27	__ 0 C	28 or 29	__ 0 D	30 or 31	__ 0 E	3 2	__ 0 F	33 or 34	16
				MR-J2S- CP_	MR-J4- A_																																			
No.3	PA09																																							
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__ 0 9	2 3																																							
__ 0 A	2 5																																							
__ 0 B	26 or 27																																							
__ 0 C	28 or 29																																							
__ 0 D	30 or 31																																							
__ 0 E	3 2																																							
__ 0 F	33 or 34																																							
PA08	Auto tuning mode Used to select the gain adjustment mode. It is necessary to make gain adjustment again when replacing. Select auto tuning mode 1 (initial value) and make gain adjustment. For details on how to make gain adjustments, refer to MR-J4- A_ Servo Amplifier Instruction Manual, Chapter 6.	0001h																																						
4	Electronic gear numerator Used to set a value for the electronic gear numerator. Setting "0" will set the pulse number of encoder.	1	1	PA21	Electronic gear selection <table border="1" style="margin-top: 10px;"> <thead> <tr> <th>Setting digit</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>x ___</td> <td> Electronic gear selection 0: Electronic gear ([Pr.PA06] and [Pr.PA07]) enabled 3: J2S electronic gear setting value compatibility mode (Electronic gear ([Pr.PA06] and [Pr.PA07] × 32)) The electronic gear setting value set for MR-J2S can be used. </td> </tr> </tbody> </table> Use the initial value when replacing the servo amplifier and the servo motor simultaneously.	Setting digit	Function	x ___	Electronic gear selection 0: Electronic gear ([Pr.PA06] and [Pr.PA07]) enabled 3: J2S electronic gear setting value compatibility mode (Electronic gear ([Pr.PA06] and [Pr.PA07] × 32)) The electronic gear setting value set for MR-J2S can be used.	0001h																														
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PA06	Electronic gear numerator (command pulse multiplication numerator) Used to set a multiplier for the command pulse.	1																																						
5	Electronic gear denominator Used to set a value for the electronic gear denominator.	1	1	PA21	Electronic gear selection Use the initial value when replacing.	0001h																																		
				PA07	Electronic gear denominator (command pulse multiplication denominator) Used to set a multiplier for the command pulse.		1																																	
6	In-position range Set the range of droop pulses occurred when outputting MEND (Travel completion) and INP (In-position). Position end output Set the range of droop pulses occurred when outputting PED (Position end).	100	100	PA10	In-position range Set an in-position range per command unit. It can be changed to servo motor encoder pulse unit in the setting of [Pr.PC24]. <table border="1" style="margin-top: 10px;"> <thead> <tr> <th>Pr. PA01</th> <th>In-position setting range</th> </tr> </thead> <tbody> <tr> <td>__ _ 6 (Positioning mode (Point table method))</td> <td rowspan="2">The range where MEND (Travel completion), PED (Position end), and INP (In-position) are output.</td> </tr> <tr> <td>__ _ 7 (Positioning mode (Program method))</td> </tr> </tbody> </table>	Pr. PA01	In-position setting range	__ _ 6 (Positioning mode (Point table method))	The range where MEND (Travel completion), PED (Position end), and INP (In-position) are output.	__ _ 7 (Positioning mode (Program method))	100																													
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Part 4: Review on Replacement of MR-J2S-CP/CL_ with MR-J4-A-RJ

MR-J2S-CP_ or MR-J2S-CL_				MR-J4-A-RJ												
No.	Name and function	Initial value		No.	Name and function	Initial value										
		CP	CL													
7	Position loop gain 1 Used to set the gain of the position loop 1. Increase the gain to improve track ability in response to the position command.	35	35	PB07	Model loop gain Used to adjust the response gain till the set position. When auto tuning 1 is selected, the auto tuning result is automatically used for this parameter.	15.0										
8	Home position return type Set home position return types, home position return direction, and proximity dog input polarity. <table border="1" style="margin-left: 20px;"> <tr><td>0</td><td></td><td></td><td></td></tr> </table> <p style="margin-left: 20px;"> Home position return types 0: Dog type 1: Count type 2: Data set type 3: Stopper type 4: Home position ignorance (servo-on position as home position) 5: Dog type rear end reference 6: Count type front end reference 7: Dog cradle type Home position return direction 0: Address increasing direction 1: Address decreasing direction Proximity dog input polarity 0: Detect the dog by opening between DOG and SG 1: Detect the dog by shorting between DOG and SG </p>	0				0010h	0010h	PT04	Home position return type <table border="1" style="margin-left: 20px;"> <thead> <tr><th>Setting digit</th><th>Function</th></tr> </thead> <tbody> <tr><td>___x</td><td>Home position return types 0: Dog type (Rear end detection/Z-phase reference) 1: Count type (Front end detection/Z-phase reference) 2: Data set type 3: Stopper type 4: Home position ignorance (servo-on position as home position) 5: Dog type (Rear end detection/Rear end reference) 6: Count type (Front end detection/Front end reference) 7: Dog cradle type 8: Dog type (Front end detection/Z-phase reference) 9: Dog type (Front end detection/Front end reference) A: Dogless type (Z-phase reference)</td></tr> <tr><td>__x_</td><td>Home position return direction 0: Address increasing direction 1: Address decreasing direction When "2" or more is set in this digit, it is recognized as "1: Address decreasing direction".</td></tr> </tbody> </table>	Setting digit	Function	___x	Home position return types 0: Dog type (Rear end detection/Z-phase reference) 1: Count type (Front end detection/Z-phase reference) 2: Data set type 3: Stopper type 4: Home position ignorance (servo-on position as home position) 5: Dog type (Rear end detection/Rear end reference) 6: Count type (Front end detection/Front end reference) 7: Dog cradle type 8: Dog type (Front end detection/Z-phase reference) 9: Dog type (Front end detection/Front end reference) A: Dogless type (Z-phase reference)	__x_	Home position return direction 0: Address increasing direction 1: Address decreasing direction When "2" or more is set in this digit, it is recognized as "1: Address decreasing direction".	0010h
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__x_	Home position return direction 0: Address increasing direction 1: Address decreasing direction When "2" or more is set in this digit, it is recognized as "1: Address decreasing direction".															
				PT29	Function selection T-3 <table border="1" style="margin-left: 20px;"> <thead> <tr><th>Setting digit</th><th>Function</th></tr> </thead> <tbody> <tr><td>___x (HEX)</td><td>___x (BIN): DOG (Proximity dog) polarity selection 0: Turn OFF for detection 1: Turn ON for detection</td></tr> </tbody> </table>	Setting digit	Function	___x (HEX)	___x (BIN): DOG (Proximity dog) polarity selection 0: Turn OFF for detection 1: Turn ON for detection	0000h						
Setting digit	Function															
___x (HEX)	___x (BIN): DOG (Proximity dog) polarity selection 0: Turn OFF for detection 1: Turn ON for detection															
9	Home position return speed Set the servo motor speed when returning to the home position.	500	500	PT05	Home position return speed Set the servo motor speed when returning to the home position.	100										
10	Creep speed Set the creep speed after the proximity dog is detected.	10	10	PT06	Creep speed Set the servo motor speed when returning to the home position.	10										
11	Home position shift distance Set the shift travel distance from the detected position of Z-phase pulse in the encoder.	0	0	PT07	Home position shift distance Set the shift travel distance from the detected position of Z-phase pulse in the encoder.	0										
12	Rough match output range Set the range of remaining distance of the command outputting rough match (CPO).	0	/	PT12	Rough match output range Set the range of remaining distance of the command outputting rough match (CPO).	0										
13	JOG speed Set the JOG speed command.	100	100	PT13	JOG operation Set the JOG speed.	100										
14	S-pattern acceleration/deceleration time constant Set when inserting an S-pattern acceleration/deceleration time constant for the acceleration/deceleration time constant in the point table. This time constant is disabled when returning to the home position.	0	0	PC03	S-pattern acceleration/deceleration time constant This is used to smooth start/stop of the servo motor. Set the time of the arc part for S-pattern acceleration/deceleration. Set the same value as for MR-J2S-CP_.	0										
15	Station number setting Specify the station No. of the multi-dropped communication. Always set one station to one axis of the servo amplifier. Setting one station number to two or more stations will disable a normal communication.	0	0	PC20	Station number setting Used to set the station No. of the servo amplifier. Setting range: 0 to 31	0										

Part 4: Review on Replacement of MR-J2S-CP/CL with MR-J4-A-RJ

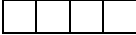
MR-J2S-CP_ or MR-J2S-CL_				MR-J4-A-RJ		
No.	Name and function	Initial value		No.	Name and function	Initial value
		CP	CL			
16	Serial communication function selection - Alarm history clear Used to select the serial communication baud rate and various conditions for communication, and to clear the alarm history. 	0000h	0000h	PC21	RS-422 communication function selection Used to select the communication speed. Adjust the speed to that of the transmitting side (master station). 	0000h
				PC18	Alarm history clear selection Erase the alarm history.  Selecting "Enabled" will erase the alarm history at the next power-on. Automatically disabled when the alarm history is cleared.	
17	Analog monitor output Used to select the signals output to analog monitor 1 (MO1) and analog monitor 2 (MO2). 	0100h	0100h	PC14	Output to analog monitor 1 See the comparison table below for the setting method.	0000h
				PC15	Output to analog monitor 2 See the comparison table below for the setting method.	0001h

MR-J2S-CP_ or MR-J2S-CL_	
No.17 (Target digit number)	Display definition
0	Servo motor speed (± 8 V / max. speed) (Note 3)
1	Torque (± 8 V / max. torque) (Note 3)
2	Servo motor speed (+8 V / max. speed) (Note 3)
3	Torque (+8 V / max. torque) (Note 3)
4	Current command (± 8 V / max. current command)
5	Speed command (± 8 / max. speed)
6	Droop pulses (± 10 V / 128 pulses)
7	Droop pulses (± 10 V / 2048 pulses)
8	Droop pulses (± 10 V / 8192 pulses)
9	Droop pulses (± 10 V / 32768 pulses)
A	Droop pulses (± 10 V / 131072 pulses)
B	Bus voltage (+8 V / 400 V)


MR-J4-A-RJ	
PC14/PC15	Display definition
0000	Servo motor speed (± 8 V / max. speed) (Note 3)
0001	Torque (± 8 V / max. torque) (Note 3)
0002	Servo motor speed (+8 V / max. speed) (Note 3)
0003	Torque (+8 V / max. torque) (Note 3)
0004	Current command (± 8 V / max. current command)
000E	Speed command 2 (± 8 V / max. speed)
0006	Servo motor-side droop pulses (± 10 V / 100 pulses) (Note 1)
0007	Servo motor-side droop pulses (± 10 V / 1000 pulses) (Note 1)
0008	Servo motor-side droop pulses (± 10 V / 10000 pulses) (Note 1)
0008 or 0009	(Note 1, 2)
0009	Servo motor-side droop pulses (± 10 V / 100000 pulses) (Note 1)
000D	Bus voltage (+8 V / 400 V)

- Note 1. Units used for MR-J2S-CP_ or MR-J2S-CL_ are different from those for MR-J4-A-RJ. Note that the input range of existing equipment needs to be adjusted.
- Set "0008" or "0009". When setting the value, note that the input range of existing equipment needs to be adjusted.
 - "Maximum speed" and "Maximum torque" differ depending on the servo motor. Therefore, after the existing motor has been replaced with an HG motor, the output voltage for "Maximum speed" or "Maximum torque" may differ.

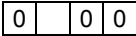
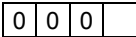
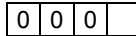
Part 4: Review on Replacement of MR-J2S- CP/CL_ with MR-J4- A_-RJ

MR-J2S- CP_ or MR-J2S- CL_			MR-J4- A_-RJ																																																															
No.	Name and function	Initial value		No.	Name and function	Initial value																																																												
		CP	CL																																																															
18	<p>Status display selection This is used to select a status display shown at power-on.</p>  <p>Servo amplifier status display at power-on 00: Current position (initial value) 01: Command position 02: Command remaining distance 03: Point table No. 04: Cumulative Feedback Pulses 05: Servo motor speed 06: Droop pulses 07: Override voltage 08: Torque limit voltage 09: Regenerative load ratio 0A: Effective load ratio 0B: Peak load ratio 0C: Instantaneous torque 0D: Within one-revolution position at low 0E: Within one-revolution position at high 0F: ABS counter 10: Motor inertia ratio 11: Bus voltage</p> <p>Status display at power-on in MR-DP60 status 00: Current position (initial value) 01: Command position 02: Command remaining distance 03: Point table No. 04: Cumulative Feedback Pulses 05: Servo motor speed 06: Droop pulses 07: Override voltage 08: Torque limit voltage 09: Regenerative load ratio 0A: Effective load ratio 0B: Peak load ratio 0C: Instantaneous torque 0D: Within one-revolution position 0E: ABS counter 0F: Motor inertia ratio 10: Bus voltage</p>	0000h		PC36	<p>Status display selection Status display selection at power-on See the comparison table below for the setting method.</p> <p>Status display selection comparison table Selection of servo amplifier status display at power-on</p> <table border="1"> <thead> <tr> <th>MR-J2S- CP_</th> <th>MR-J4- A_-RJ</th> <th>Display definition</th> </tr> <tr> <th>No.18</th> <th>PC36</th> <th></th> </tr> </thead> <tbody> <tr><td>__ 00</td><td>0_21</td><td>Current position</td></tr> <tr><td>__ 01</td><td>0_22</td><td>Command position</td></tr> <tr><td>__ 02</td><td>0_23</td><td>Command remaining distance</td></tr> <tr><td>__ 03</td><td>0_24</td><td>Point table No.</td></tr> <tr><td>__ 04</td><td>0_00</td><td>Cumulative feedback pulses</td></tr> <tr><td>__ 05</td><td>0_01</td><td>Servo motor speed</td></tr> <tr><td>__ 06</td><td>0_02</td><td>Droop pulses</td></tr> <tr><td>__ 07</td><td>0_26</td><td>Override voltage</td></tr> <tr><td>__ 08</td><td>0_06</td><td>Analog torque limit voltage</td></tr> <tr><td>__ 09</td><td>0_07</td><td>Regenerative load ratio</td></tr> <tr><td>__ 0A</td><td>0_08</td><td>Effective load ratio</td></tr> <tr><td>__ 0B</td><td>0_09</td><td>Peak load ratio</td></tr> <tr><td>__ 0C</td><td>0_0A</td><td>Instantaneous torque</td></tr> <tr><td>__ 0D</td><td>0_0B</td><td>Within one-revolution position (1-pulse unit)</td></tr> <tr><td>__ 0E</td><td>0_0C</td><td>Within one-revolution position (1000-pulse unit)</td></tr> <tr><td>__ 0F</td><td>0_0D</td><td>ABS counter</td></tr> <tr><td>__ 10</td><td>0_0E</td><td>Load to motor inertia ratio</td></tr> <tr><td>__ 11</td><td>0_0F</td><td>Bus voltage</td></tr> </tbody> </table>	MR-J2S- CP_	MR-J4- A_-RJ	Display definition	No.18	PC36		__ 00	0_21	Current position	__ 01	0_22	Command position	__ 02	0_23	Command remaining distance	__ 03	0_24	Point table No.	__ 04	0_00	Cumulative feedback pulses	__ 05	0_01	Servo motor speed	__ 06	0_02	Droop pulses	__ 07	0_26	Override voltage	__ 08	0_06	Analog torque limit voltage	__ 09	0_07	Regenerative load ratio	__ 0A	0_08	Effective load ratio	__ 0B	0_09	Peak load ratio	__ 0C	0_0A	Instantaneous torque	__ 0D	0_0B	Within one-revolution position (1-pulse unit)	__ 0E	0_0C	Within one-revolution position (1000-pulse unit)	__ 0F	0_0D	ABS counter	__ 10	0_0E	Load to motor inertia ratio	__ 11	0_0F	Bus voltage	0000h
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Part 4: Review on Replacement of MR-J2S-__CP/CL__ with MR-J4-__A__-RJ

MR-J2S-__CP__ or MR-J2S-__CL__			MR-J4-__A__-RJ																																																																			
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Part 4: Review on Replacement of MR-J2S-__CP/CL__ with MR-J4-__A__-RJ

MR-J2S-__CP__ or MR-J2S-__CL__				MR-J4-__A__-RJ														
No.	Name and function	Initial value		No.	Name and function	Initial value												
		CP	CL															
19	Parameter writing inhibit Used to select the reference range and writing range of parameters.	0000h	0000h	PA19	Parameter writing inhibit Used to select the reference range and writing range of parameters. In the positioning mode, set [Pr. PA19] to "0 0 A B" in order to read or write the positioning control parameter ([Pr. PT__]). (It is possible to read or write "0 0 A B" : PA to PF, PL, Po, PT.)	00AAh												
20	Function selection 2 Used to select the slight vibration suppression control.  Slight vibration suppression control selection 0: Disabled 1: Enabled	0000h	0000h	PB24	Slight vibration suppression control Used to select the slight vibration suppression control. 0: Disabled 1: Enabled To enable the slight vibration suppression control, select "Manual mode (__ _ 3)" under "Gain adjustment mode selection" in [Pr. PA08]. Slight vibration suppression control cannot be used in the speed control mode. Set the same value as for MR-J2S-__CP__.	0000h												
22	Function selection 4 Used to select a stop method when LSP (Forward rotation stroke end) and LSN (Reverse rotation stroke end) are turned off.  Stop method when forward rotation stroke end(LSP)/reverse rotation stroke end(LSN) are turned off. 0: Sudden stop 1: Soft stop	0000h	0000h	PD30	Function selection D-1  Stop method when LSP(forward rotation stroke end)/LSN(reverse rotation stroke end) are turned off. 0: Sudden stop 1: Soft stop Set the same value as for MR-J2S-__CP__.	0000h												
23	Serial communication time-out selection Used to select the time-out time of the communication protocol. <table border="1"> <thead> <tr> <th>Setting value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Time-out check not carried out</td> </tr> <tr> <td>1 to 60</td> <td>Set the time-out check time Check time = (setting value) [s]</td> </tr> </tbody> </table>	Setting value	Description	0	Time-out check not carried out	1 to 60	Set the time-out check time Check time = (setting value) [s]	0	0	PF04	RS-422 communication time-out selection (Supported version: A3 version or later) Used to select the time-out time of the communication protocol. <table border="1"> <thead> <tr> <th>Setting value</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>Time-out check not carried out</td> </tr> <tr> <td>1 to 60</td> <td>Set the time-out check time Check time = (setting value) [s]</td> </tr> </tbody> </table>	Setting value	Description	0	Time-out check not carried out	1 to 60	Set the time-out check time Check time = (setting value) [s]	0 [s]
Setting value	Description																	
0	Time-out check not carried out																	
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Setting value	Description																	
0	Time-out check not carried out																	
1 to 60	Set the time-out check time Check time = (setting value) [s]																	
24	Feed forward gain Set the feed forward gain. When the setting is 100%, the droop pulses during operation at constant speed are nearly zero. However, sudden acceleration/deceleration will increase the overshoot. As a standard, when setting the feed forward gain as 100%, set 1 s or more as the acceleration/deceleration time constant up to the rated speed.	0	0	PB04	Feed forward gain Set the feed forward gain. Set the same value as for MR-J2S-__CP__.	0												
25	Override offset Used to set the offset voltage for the analog override. Setting range: -999 to 999	0	0	PC37	Analog override offset Set the offset voltage of the VC (Override input). Automatic setting is made by the VC automatic offset. Setting range: -9999 to 9999	0												
26	Torque limit offset Used to set the offset voltage of analog torque limit. Setting range: -999 to 999	0	0	PC38	Analog torque limit offset Used to set the offset voltage of TLA (Analog torque limit). Setting range: -9999 to 9999	0												

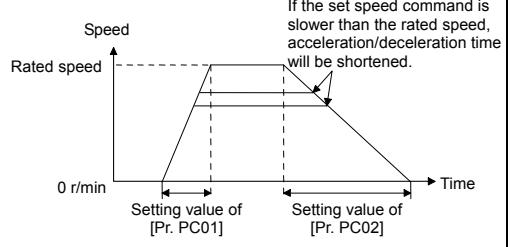
Part 4: Review on Replacement of MR-J2S-CP/CL_ with MR-J4-A-RJ

MR-J2S-CP_ or MR-J2S-CL_				MR-J4-A-RJ																																		
No.	Name and function	Initial value		No.	Name and function	Initial value																																
		CP	CL																																			
27	<p>Encoder output pulses</p> <p>Used to set the encoder pulses (A-phase and B-phase) output by the servo amplifier. Set the value 4 times greater than the A-phase and B-phase pulses.</p> <p>Parameter No. 58 can be used to choose the output pulse setting or output dividing ratio setting.</p> <p>The number of A-phase and B-phase pulses actually output is 1/4 times greater than the preset number of pulses.</p> <p>The maximum output frequency is 1.3 Mpps (after multiplication by 4). Use this parameter within this range.</p> <ul style="list-style-type: none"> For output pulse designation <ul style="list-style-type: none"> Set parameter No. 58 to "0 _ _ _" (initial value). Set the number of pulses per servo motor revolution. Output pulse = setting value [pulse/rev]. For instance, when "5600" is set, the actual output A- and B-phase pulses are as follows. Phase A/phase B output pulse= $\frac{5600}{4} = 1400$ [pulse] For output division ratio setting <ul style="list-style-type: none"> Set parameter No. 58 to "1 _ _ _". The number of pulses per servo motor revolution is divided by the set value. <p>Output pulse = $\frac{\text{Resolution per servo motor revolution}}{\text{Setting value}}$ [pulse/rev]</p> <p>For instance, when "8" is set, the actual output A- and B-phase pulses are as follows.</p> <p>Phase A/phase B output pulse= $\frac{131072}{8} \times \frac{1}{4} = 4096$ [pulse]</p>	4000	4000	PA15	<p>Encoder output pulse</p> <p>Used to set the encoder pulses (A-phase and B-phase) output by the servo amplifier.</p> <p>See the comparison table below for the setting method.</p> <p>Encoder output pulse setting comparison table</p> <p>(1) For primary replacement</p> <table border="1"> <thead> <tr> <th colspan="2">MR-J2S-CP_</th> <th colspan="2">MR-J4-A-RJ</th> </tr> <tr> <th>No.58</th> <th>No.27 (Note 1)</th> <th>PC19</th> <th>PA15 (Note 2)</th> </tr> </thead> <tbody> <tr> <td>0 _ _ _</td> <td>N</td> <td>0 0</td> <td>N</td> </tr> <tr> <td>1 _ _ _</td> <td>N</td> <td>0 1</td> <td>N</td> </tr> </tbody> </table> <p>Note 1. N = J2S setting value. 2. Set the same value as for J2S in MR-J4-A-RJ PA15.</p> <p>(2) For secondary/simultaneous replacement</p> <table border="1"> <thead> <tr> <th colspan="2">MR-J2S-CP_</th> <th colspan="2">MR-J4-A-RJ</th> </tr> <tr> <th>No.58</th> <th>No.27 (Note 1)</th> <th>PC19</th> <th>PA15</th> </tr> </thead> <tbody> <tr> <td>0 _ _ _</td> <td>N</td> <td>0 0 _</td> <td>N</td> </tr> <tr> <td>1 _ _ _</td> <td>N</td> <td>0 1 _</td> <td>N × 32 (Note 2)</td> </tr> </tbody> </table> <p>Note 1. N = J2S setting value. 2. For dividing ratio settings, set a value 32 x the MR-J2S-CP_ setting value for MR-J4-A-RJ PA15.</p>	MR-J2S-CP_		MR-J4-A-RJ		No.58	No.27 (Note 1)	PC19	PA15 (Note 2)	0 _ _ _	N	0 0	N	1 _ _ _	N	0 1	N	MR-J2S-CP_		MR-J4-A-RJ		No.58	No.27 (Note 1)	PC19	PA15	0 _ _ _	N	0 0 _	N	1 _ _ _	N	0 1 _	N × 32 (Note 2)	4000
						MR-J2S-CP_		MR-J4-A-RJ																														
No.58	No.27 (Note 1)	PC19	PA15 (Note 2)																																			
0 _ _ _	N	0 0	N																																			
1 _ _ _	N	0 1	N																																			
MR-J2S-CP_		MR-J4-A-RJ																																				
No.58	No.27 (Note 1)	PC19	PA15																																			
0 _ _ _	N	0 0 _	N																																			
1 _ _ _	N	0 1 _	N × 32 (Note 2)																																			
PC19	Encoder output pulse selection	0000h																																				
28	<p>Internal torque limit 1</p> <p>Limit the servo motor torque assuming that the maximum torque is 100%.</p> <p>When "0" is set, no torque is generated.</p> <p>Setting range: 0 to 100</p>	100	100	PA11	<p>Forward rotation torque limit</p> <p>You can limit the torque generated by the servo motor.</p> <p>Set the same value as for MR-J2S-CP_.</p>	100.0																																
				PA12	<p>Reverse rotation torque limit</p> <p>You can limit the torque generated by the servo motor.</p> <p>Set the same value as for MR-J2S-CP_.</p>	100.0																																
29	<p>Internal torque limit 2</p> <p>Limit the servo motor torque assuming that the maximum torque is 100%.</p> <p>When "0" is set, no torque is generated.</p> <p>Enabled by turning on the internal torque limit selection (TL2).</p> <p>Setting range: 0 to 100</p>	100	100	PC35	<p>Internal torque limit 2</p> <p>Used to set the parameter assuming that the maximum torque is 100.0%. Set for limiting the torque of the servo motor.</p> <p>However, when "0.0" is set, no torque is generated.</p> <p>Turning on TL1 (Internal torque limit selection) will enable the lower torque limit between the Internal torque limit 1 or 2.</p> <p>Setting range: 0.0 to 100.0</p>	100.0																																
30	<p>Backlash compensation</p> <p>Set the backlash compensation that is compensated when the command direction is reversed.</p> <p>Compensate the number of backlash pulses reversely-directed against the home position return direction.</p> <p>In the absolute position detection system, compensation is performed reversely against the operating direction taken at power-on.</p> <p>Note: Depending on the software version of servo amplifier, the setting range varies as follows:</p> <p>[CP] A4 version or later: 0 to 1600 A3 version or earlier: 0 to 1000</p> <p>[CL] A1 version or later: 0 to 1600 A0 version: 0~1000</p>	0	0	PT14	<p>Backlash compensation</p> <p>Set the backlash compensation that is compensated when the command direction is reversed.</p> <p>Compensate the number of backlash pulses reversely-directed against the home position return direction.</p> <p>In the case of home position ignorance (servo-on position as home position), compensate the number of backlash pulses reversely-directed against the initial rotation after turning on the SON (servo-on) to establish the home position.</p> <p>Setting range: 0 to 65535</p>	0																																

Part 4: Review on Replacement of MR-J2S-__CP/CL__ with MR-J4-__A__-RJ

MR-J2S-__CP__ or MR-J2S-__CL__				MR-J4-__A__-RJ		
No.	Name and function	Initial value		No.	Name and function	Initial value
		CP	CL			
31	Analog monitor 1 offset Used to set the offset voltage of Analog monitor 1 (MO1). Setting range: -999 to 999 mV	0	0	PC39	Analog monitor 1 offset Used to set the offset voltage of MO1 (Analog monitor 1). Setting range: -9999 to 9999mV	0
32	Analog monitor 2 offset Used to set the offset voltage of Analog monitor 2 (MO2). Setting range: -999 to 999 mV	0	0	PC40	Analog monitor 2 offset Used to set the offset voltage of MO2 (Analog monitor 2). Setting range: -9999 to 9999mV	0
33	Electromagnetic brake sequence output Used to set the delay time (Tb) between MBR (Electromagnetic brake interlock) OFF and base circuit shut-off. Setting range: 0 to 1000 ms	100	100	PC16	Electromagnetic brake sequence output Used to set the delay time (Tb) between MBR (Electromagnetic brake interlock) OFF and base circuit shut-off. Setting range: 0 to 1000 ms Set the same value as for MR-J2S-__CP__.	0
34	Load to motor inertia ratio Used to set the motor inertia ratio to the servo motor shaft inertia moment. When auto tuning is selected, the auto tuning result is automatically used. Setting range: 0 to 1000; Unit: x1.0	70	70	PB06	Load to motor inertia ratio When auto tuning mode 1 is selected, the auto tuning result is automatically used. Setting range: 0.00 to 300.00; Unit: x1.0 Note that the setting unit is different from that for MR-J2S-__CP__. When setting a value manually, set a value 0.1 x the MR-J2S-__CP__ setting value.	7.00
35	Position loop gain 2 Used to set the gain of the position loop. Set this parameter to increase the position response to level load disturbance. Higher setting increases the response level but is liable to generate vibration and/or noise. When auto tuning is selected, the auto tuning result is automatically used.	35	35	PB08	Position loop gain Used to set the gain of the position loop. When auto tuning mode 1 is selected, the auto tuning result is automatically used.	37.0
36	Speed loop gain 1 Normally, it is unnecessary to change this parameter. Higher setting increases the response level but is liable to generate vibration and/or noise. When auto tuning is selected, the auto tuning result is automatically used.	177	177		No corresponding parameter This parameter is automatically set by the servo amplifier.	
37	Speed loop gain 2 Set this parameter when vibration occurs on machines of low rigidity or large backlash. Higher setting increases the response level but is liable to generate vibration and/or noise. When auto tuning is selected, the auto tuning result is automatically used.	817	817	PB09	Speed loop gain Used to set the gain of the speed loop. When auto tuning mode 1 is selected, the auto tuning result is automatically used.	823
38	Speed integral compensation. Used to set the integral time constant of the speed loop. When auto tuning is selected, the auto tuning result is automatically used.	48	48	PB10	Speed integral compensation Used to set the integral time constant of the speed loop. When auto tuning mode 1 is selected, the auto tuning result is automatically used.	33.7
39	Speed differential compensation Used to set the differential compensation. To enable the setting value, turn on PC (proportional control). Setting range: 0 to 1000	980	980	PB11	Speed differential compensation Used to set the differential compensation. To enable the setting value, turn on PC (proportional control). Setting range: 0 to 1000 Set the same value as for MR-J2S-__CP__.	980

Part 4: Review on Replacement of MR-J2S-__CP/CL__ with MR-J4-__A__-RJ

MR-J2S-__CP__ or MR-J2S-__CL__			MR-J4-__A__-RJ			
No.	Name and function	Initial value		No.	Name and function	Initial value
		CP	CL			
40	JOG operation acceleration/deceleration time constant Set motor acceleration/deceleration time constant during the JOG operation. Setting range: 0 to 20000		100	PC01	JOG operation acceleration time constant Set the acceleration time constant during the JOG operation in the program method. Set the acceleration time required to reach the rated speed from 0 r/min.  <p>For example, for a servo motor with a rated speed of 3000 r/min, set 3000 (3 s) to increase the speed from 0 to 1000 r/min in 1 s. Even if the value more than 20000 ms, it will be clamped at 20000 ms. Setting range: 0 to 50000</p>	0
				PC02	JOG operation deceleration time constant Set the deceleration time constant during the JOG operation in the program method. Set the deceleration time required to reach 0 r/min from the rated speed. Even if the value more than 20000 ms, it will be clamped at 20000 ms. Setting range: 0 to 50000	0
41	Home position return acceleration time constant Set the accel./decel. time constant of the time when returning to the home position. Setting range: 0 to 20000		100	PC30	Home position return acceleration time constant Use this parameter to perform the home return in the program method. Set the acceleration time constant of the time when returning to the home position. Set the acceleration time required to reach the rated speed from 0 r/min. Even if the value more than 20000 ms, it will be clamped at 20000 ms. Setting range: 0 to 50000	0
				PC31	Home position return deceleration time constant Use this parameter to perform the home return in the program method. Set the deceleration time constant of the time when returning to the home position. Set the deceleration time required to reach 0 r/min from the rated speed. Even if the value more than 20000 ms, it will be clamped at 20000 ms. Setting range: 0 to 50000	0

Part 4: Review on Replacement of MR-J2S-__CP/CL__ with MR-J4-__A__-RJ

MR-J2S-__CP__ or MR-J2S-__CL__				MR-J4-__A__-RJ		
No.	Name and function	Initial value		No.	Name and function	Initial value
		CP	CL			
42	Home position return position data Set the current position of the time when the home position return is completed. Setting range: -32768 to 32767	0	0	PT08	Home position return position data Set the current position of the time when the home position return is completed. Note that the home position return position data is changed if the following parameters are changed. Perform the home position return again. • "Position data unit" of [Pr. PT01] • "Feed length multiplication (STM)" of [Pr. PT03] • "Home position return types" of [Pr. PT04] Setting range: -32768 to 32767	0
43	Travel distance after proximity dog Set the "travel distance after proximity dog" when the count type returns to the home position. Setting range: 0 to 65535	1000	1000	PT09	Travel distance after proximity dog When the count type, dog type rear end reference, count type front end reference and dog type front end reference return to the home position, set the "travel distance after proximity dog". Setting range: 0 to 65535	1000
44	Stopper type home position return - Stopper time When the stopper type returns to the home position, after pressing against the stopper, set the time between when the parameter No.45 (ZTT) reaches the torque limit and the time when setting the home position. Setting range: 5 to 1000	100	100	PT10	Stopper type home position return - Stopper time When the stopper type returns to the home position, after pressing against the stopper, set the time between when the [Pr. PT11 Stopper type home position return torque limit value] reaches the torque limit and the time when setting the home position. Setting the value between "0" and "4" will result in the same value as the one with "5" set. Setting range: 0 to 1000	100
45	Stopper type home position return torque limit value Set the torque limit value of the time when the stopper type returns to the home position by a ratio [%] to the maximum torque. Setting range: 1 to 100	15	15	PT11	Stopper type home position return torque limit value Set the torque limit value of the time when the stopper type returns to the home position by a ratio [%] to the maximum torque. Setting "0.0" will result in the same value as the one with "1.0" set. Setting range: 0:0 to 100.0	15.0

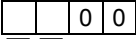
Part 4: Review on Replacement of MR-J2S-CP/CL_ with MR-J4-A-RJ

MR-J2S-CP_ or MR-J2S-CL_				MR-J4-A-RJ		
No.	Name and function	Initial value		No.	Name and function	Initial value
		CP	CL			
46 47	<p>Software limit +</p> <p>Set the address increasing side of the software stroke limit. Setting the same value as the one for the "software limit -" will disable the software limit.</p> <p>Use the same code for the parameter No.46 and No.47. Otherwise, a parameter error occurs.</p> <p style="text-align: center;">Address: □□□□□□</p> <div style="display: flex; justify-content: center; gap: 20px;"> <div style="text-align: center;">Upper 3 digits</div> <div style="text-align: center;">Lower 3 digits</div> </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <div style="text-align: center;">Parameter No.47</div> <div style="text-align: center;">Parameter No.46</div> </div> <p>Setting range: -999999 to 999999</p>	0	0	PT15 PT16	<p>Software limit +</p> <p>Set the address increasing side of the software stroke limit. One set consists of an upper level and lower level.</p> <p style="text-align: center;">Address: □□□□□□</p> <div style="display: flex; justify-content: center; gap: 20px;"> <div style="text-align: center;">Upper 3 digits</div> <div style="text-align: center;">Lower 3 digits</div> </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <div style="text-align: center;">[Pr. PT15]</div> <div style="text-align: center;">[Pr. PT16]</div> </div> <p>The stop method follows the "stop method selection at the software limit detection" of [Pr. PD30]. The initial value is "Sudden stop (Home position erased)".</p> <p>Setting the same value as the one for the "software limit -" will disable the software limit.</p> <p>Use the same code for [Pr. PT15] and [Pr. PT16]. If a different code is set, it will be recognized as a negative code data.</p> <p>Setting range: -999999 to 999999</p>	0
48 49	<p>Software limit -</p> <p>Set the address decreasing side of the software stroke limit. Setting the same value as the one for the "software limit +" will disable the software limit.</p> <p>Use the same code for the parameter No.48 and No.49. Otherwise, a parameter error occurs.</p> <p style="text-align: center;">Address: □□□□□□</p> <div style="display: flex; justify-content: center; gap: 20px;"> <div style="text-align: center;">Upper 3 digits</div> <div style="text-align: center;">Lower 3 digits</div> </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <div style="text-align: center;">Parameter No.49</div> <div style="text-align: center;">Parameter No.48</div> </div> <p>Setting range: -999999 to 999999</p>	0	0	PT17 PT18	<p>Software limit -</p> <p>Set the address decreasing side of the software stroke limit. One set consists of an upper level and lower level.</p> <p style="text-align: center;">Address: □□□□□□</p> <div style="display: flex; justify-content: center; gap: 20px;"> <div style="text-align: center;">Upper 3 digits</div> <div style="text-align: center;">Lower 3 digits</div> </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <div style="text-align: center;">[Pr. PT17]</div> <div style="text-align: center;">[Pr. PT18]</div> </div> <p>The stop method follows the "stop method selection at the software limit detection" of [Pr. PD30]. The initial value is "Sudden stop (Home position erased)".</p> <p>Setting the same value as the one for the "software limit +" will disable the software limit.</p> <p>Use the same code for [Pr. PT17] and [Pr. PT18]. If a different code is set, it will be recognized as a negative code data.</p> <p>Setting range: -999999 to 999999</p>	0
50 51	<p>Position range output address +</p> <p>Set the address increasing side of the position range output address. Use the same code for the parameter No.50 and No.51. Otherwise, a parameter error occurs.</p> <p>Set the range where the position range (POT) is turned on between the parameter No.50 and No.53.</p> <p style="text-align: center;">Address: □□□□□□</p> <div style="display: flex; justify-content: center; gap: 20px;"> <div style="text-align: center;">Upper 3 digits</div> <div style="text-align: center;">Lower 3 digits</div> </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <div style="text-align: center;">Parameter No.51</div> <div style="text-align: center;">Parameter No.50</div> </div> <p>Setting range: -999999 to 999999</p>	0	0	PT19 PT20	<p>Position range output address +</p> <p>Set the address increasing side of the position range output address. One set consists of an upper level and lower level. Set the range where the POT (Position range) is turned on between [Pr. PT19] and [Pr. PT22].</p> <p style="text-align: center;">Address: □□□□□□</p> <div style="display: flex; justify-content: center; gap: 20px;"> <div style="text-align: center;">Upper 3 digits</div> <div style="text-align: center;">Lower 3 digits</div> </div> <div style="display: flex; justify-content: center; gap: 20px; margin-top: 5px;"> <div style="text-align: center;">[Pr. PT21]</div> <div style="text-align: center;">[Pr. PT22]</div> </div> <p>Use the same code for [Pr. PT19] and [Pr. PT20]. [AL. 37 parameter error] occurs when a different code is set.</p> <p>To change the setting, make sure to set the lower 3 digit data first before setting the upper 3 digit data.</p> <p>Setting range: -999999 to 999999</p>	0

Part 4: Review on Replacement of MR-J2S- CP/CL_ with MR-J4- A_-RJ

MR-J2S- CP_ or MR-J2S- CL_				MR-J4- A_-RJ																																				
No.	Name and function	Initial value		No.	Name and function	Initial value																																		
		CP	CL																																					
52 53	Position range output address - Set the address decreasing side of the position range output address. Use the same code for the parameter No.52 and No.53. Otherwise, a parameter error occurs. Address: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Upper 3 digits Lower 3 digits Parameter No.53 Parameter No.52 Setting range: -999999 to 999999	0	0	PT21 PT22	Position range output address - Set the address decreasing side of the position range output address. One set consists of an upper level and lower level. Set the range where the POT (Position range) is turned on between [Pr. PT19] and [Pr. PT22]. Address: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Upper 3 digits Lower 3 digits [Pr. PT21] [Pr. PT22] Use the same code for [Pr. PT21] and [Pr. PT22]. [AL. 37 parameter error] occurs when a different code is set. To change the setting, make sure to set the lower 3 digit data first before setting the upper 3 digit data. Setting range: -999999 to 999999	0																																		
55	Function selection 6 Select the handling method for the base circuit when RES (Reset) is enabled. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Used to select the operation method when RES (Reset) is ON 0: Base circuit shut-off 1: No base circuit shut-off	0000h	0000h	PD30	Function selection D-1 Used to select the base circuit status when RES (Reset) is ON. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Operation to be performed for the short-circuit of RES 0: Base circuit shut-off. 1: No base circuit shut-off Set the same value as for MR-J2S- CP_	0000h																																		
57	Function selection 8 Used to select the serial communication protocol. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Protocol checksum selection 0: Yes (Add checksum) 1: No (Do not add checksum) Protocol station number selection 0: With station numbers 1: No station numbers	0000h	0000h	PF01	Used to select the protocol of function selection F-1 serial communication. (Supported version: A3 version or later) <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Protocol checksum selection 0: Yes (Add checksum) 1: No (Do not add checksum) Protocol station number selection 0: With station numbers 1: No station numbers	0000h																																		
58	Function selection 9 Used to select the encoder output pulse direction and encoder pulse output setting. <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Encoder pulse output phase changing Used to change the output A-phase and B-phase positions of the encoder. <table border="1"> <thead> <tr> <th rowspan="2">Setting value</th> <th colspan="2">Servo motor rotation direction</th> </tr> <tr> <th>CCW</th> <th>CW</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>A phase </td> <td>A phase </td> </tr> <tr> <td></td> <td>B phase </td> <td>B phase </td> </tr> <tr> <td>1</td> <td>A phase </td> <td>A phase </td> </tr> <tr> <td></td> <td>B phase </td> <td>B phase </td> </tr> </tbody> </table> Encoder pulse setting selection (refer to parameter No.27) 0: Output pulse designation 1: Division ratio setting	Setting value	Servo motor rotation direction		CCW	CW	0	A phase	A phase		B phase	B phase	1	A phase	A phase		B phase	B phase	0000h	0000h	PC19	Encoder output pulse selection <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> Encoder pulse output phase changing Changes the positions of the pulse output A-phase and B-phase <table border="1"> <thead> <tr> <th rowspan="2">Setting value</th> <th colspan="2">Servo motor rotation direction</th> </tr> <tr> <th>CCW</th> <th>CW</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>A phase </td> <td>A phase </td> </tr> <tr> <td></td> <td>B phase </td> <td>B phase </td> </tr> <tr> <td>1</td> <td>A phase </td> <td>A phase </td> </tr> <tr> <td></td> <td>B phase </td> <td>B phase </td> </tr> </tbody> </table> Encoder output pulse setting selection 0: Output pulse setting 1: Dividing ratio setting 2: Set the output pulse same as command pulse 3: A/B-phase pulse electronic gear setting 4: A/B-phase pulse through setting Set the same value as for MR-J2S- CP_	Setting value	Servo motor rotation direction		CCW	CW	0	A phase	A phase		B phase	B phase	1	A phase	A phase		B phase	B phase	0000h
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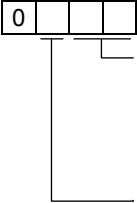
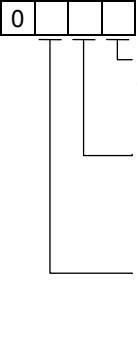
Part 4: Review on Replacement of MR-J2S-CP/CL_ with MR-J4-A-RJ

MR-J2S-CP_ or MR-J2S-CL_				MR-J4-A-RJ																																																																																																																										
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59	Function selection A Select the alarm code and torque limit rotation direction.  <table border="1"> <thead> <tr> <th rowspan="2">Setting value</th> <th colspan="2">Change in servo motor rotation direction</th> </tr> <tr> <th>CCW rotation</th> <th>CW rotation</th> </tr> </thead> <tbody> <tr> <td>0</td> <td style="text-align: center;">○</td> <td style="text-align: center;">○</td> </tr> <tr> <td>1</td> <td style="text-align: center;">○</td> <td style="text-align: center;">○</td> </tr> <tr> <td>2</td> <td style="text-align: center;">○</td> <td style="text-align: center;">○</td> </tr> </tbody> </table> <p>Alarm code output setting</p> <table border="1"> <thead> <tr> <th rowspan="2">Setting value</th> <th colspan="3">Connector pin details</th> </tr> <tr> <th>CN1B-19</th> <th>CN1A-18</th> <th>CN1A-19</th> </tr> </thead> <tbody> <tr> <td>0</td> <td colspan="3">Outputs signals assigned to each pin</td> </tr> <tr> <td>1</td> <td 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rowspan="2">1</td><td>AL.30</td><td>Regenerative error</td></tr> <tr><td>AL.33</td><td>Overvoltage</td></tr> <tr><td rowspan="3">0</td><td rowspan="3">1</td><td rowspan="3">0</td><td>AL.10</td><td>Undervoltage</td></tr> <tr><td>AL.45</td><td>Main circuit device overheat</td></tr> <tr><td>AL.46</td><td>Servo motor overheat</td></tr> <tr><td rowspan="3">0</td><td rowspan="3">1</td><td rowspan="3">1</td><td>AL.50</td><td>Overload 1</td></tr> <tr><td>AL.51</td><td>Overload 2</td></tr> <tr><td>AL.24</td><td>Main circuit error</td></tr> <tr><td rowspan="4">1</td><td rowspan="4">0</td><td rowspan="4">0</td><td>AL.32</td><td>Overcurrent</td></tr> <tr><td>AL.31</td><td>Overspeed</td></tr> <tr><td>AL.35</td><td>Command pulse frequency error</td></tr> <tr><td>AL.52</td><td>Error excessive</td></tr> <tr><td rowspan="4">1</td><td rowspan="4">0</td><td rowspan="4">1</td><td>AL.61</td><td>[CP]Home operation alarm</td></tr> <tr><td>AL.63</td><td>[CL] Home position return uncompleted</td></tr> <tr><td>AL.64</td><td>[CL] Home position setting error</td></tr> <tr><td>AL.16</td><td>Encoder error 1</td></tr> <tr><td rowspan="3">1</td><td rowspan="3">1</td><td rowspan="3">0</td><td>AL.1A</td><td>Motor combination error</td></tr> <tr><td>AL.20</td><td>Encoder error 2</td></tr> <tr><td>AL.25</td><td>Absolute position erased</td></tr> </tbody> </table> <p>Note: 0: OFF between SGs (open) 1: ON between SGs (short-circuit)</p>	Setting value	Change in servo motor rotation direction		CCW rotation	CW rotation	0	○	○	1	○	○	2	○	○	Setting value	Connector pin details			CN1B-19	CN1A-18	CN1A-19	0	Outputs signals assigned to each pin			1	Outputs the alarm code when an alarm code is generated			(Note): Alarm code			Alarm display	Name	Pin CN1B-19	Pin CN1A-18	Pin CN1A-19	0	0	0	88888	Watchdog	AL.12	Memory error 1	AL.13	Clock error	AL.15	Memory error 2	AL.17	Board error	AL.19	Memory error 3	AL.37	Parameter error	AL.39	[CL] Program error	AL.8A	Serial communication time-out error	AL.8E	Serial communication error	0	0	1	AL.30	Regenerative error	AL.33	Overvoltage	0	1	0	AL.10	Undervoltage	AL.45	Main circuit device overheat	AL.46	Servo motor overheat	0	1	1	AL.50	Overload 1	AL.51	Overload 2	AL.24	Main circuit error	1	0	0	AL.32	Overcurrent	AL.31	Overspeed	AL.35	Command pulse frequency error	AL.52	Error excessive	1	0	1	AL.61	[CP]Home operation alarm	AL.63	[CL] Home position return uncompleted	AL.64	[CL] Home position setting error	AL.16	Encoder error 1	1	1	0	AL.1A	Motor combination error	AL.20	Encoder error 2	AL.25	Absolute position erased	0000h	0000h	PD33	Function selection D-4 <table border="1"> <thead> <tr> <th>Setting digit</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>_ x _ _</td> <td>Rotation direction selection enabling torque limit Select the rotation direction that enables the internal torque limit 2 and external torque limit. 0: Enabled in both CCW (forward direction) and CW (negative direction). 1: Enabled in CCW (forward direction) 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Part 4: Review on Replacement of MR-J2S-CP/CL_ with MR-J4-A-RJ

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61	<p>Machine resonance suppression filter 1</p> <p>Select the machine resonance suppression filter.</p> <p>0</p> <p>Notch frequency selection Set "00" when the active vibration suppression control is set as "effective" or "maintain" (parameter No. 63: __.1.___or.__.2.___).</p> <table border="1"> <thead> <tr> <th>Setting value</th> <th>Frequency</th> <th>Setting value</th> <th>Frequency</th> <th>Setting value</th> <th>Frequency</th> <th>Setting value</th> <th>Frequency</th> </tr> </thead> <tbody> <tr><td>00</td><td>Disabled</td><td>08</td><td>562.5</td><td>10</td><td>281.3</td><td>18</td><td>187.5</td></tr> <tr><td>01</td><td>4500</td><td>09</td><td>500</td><td>11</td><td>264.7</td><td>19</td><td>180</td></tr> <tr><td>02</td><td>2250</td><td>0A</td><td>450</td><td>12</td><td>250</td><td>1A</td><td>173.1</td></tr> <tr><td>03</td><td>1500</td><td>0B</td><td>409.1</td><td>13</td><td>236.8</td><td>1B</td><td>166.7</td></tr> <tr><td>04</td><td>1125</td><td>0C</td><td>375</td><td>14</td><td>225</td><td>1C</td><td>160.1</td></tr> <tr><td>05</td><td>900</td><td>0D</td><td>346.2</td><td>15</td><td>214.3</td><td>1D</td><td>155.2</td></tr> <tr><td>06</td><td>750</td><td>0E</td><td>321.4</td><td>16</td><td>204.5</td><td>1E</td><td>150</td></tr> <tr><td>07</td><td>642.9</td><td>0F</td><td>300</td><td>17</td><td>195.7</td><td>1F</td><td>145.2</td></tr> </tbody> </table> <p>Notch depth selection</p> <table border="1"> <thead> <tr> <th>Setting value</th> <th>Response</th> <th>Gain</th> </tr> </thead> <tbody> <tr><td>0</td><td>Deep</td><td>-40dB</td></tr> <tr><td>1</td><td rowspan="2">to</td><td>-14dB</td></tr> <tr><td>2</td><td>-8dB</td></tr> <tr><td>3</td><td>Shallow</td><td>-4dB</td></tr> </tbody> </table>	Setting value	Frequency	Setting value	Frequency	Setting value	Frequency	Setting value	Frequency	00	Disabled	08	562.5	10	281.3	18	187.5	01	4500	09	500	11	264.7	19	180	02	2250	0A	450	12	250	1A	173.1	03	1500	0B	409.1	13	236.8	1B	166.7	04	1125	0C	375	14	225	1C	160.1	05	900	0D	346.2	15	214.3	1D	155.2	06	750	0E	321.4	16	204.5	1E	150	07	642.9	0F	300	17	195.7	1F	145.2	Setting value	Response	Gain	0	Deep	-40dB	1	to	-14dB	2	-8dB	3	Shallow	-4dB	0000h	0000h	PB01	<p>Adaptive tuning mode (adaptive filter II)</p> <p>Used to set the adaptive filter tuning. Select the adjustment mode of machine resonance suppression filter 1.</p> <p>0 0 0</p> <p>Filter tuning mode selection 0: Disabled 1: Automatic setting (Do not set automatic for the torque control.) 2: Manual setting</p> <p>See the comparison table below for the setting method.</p> <p>Setting comparison table for machine resonance suppression filter 1</p> <table border="1"> <thead> <tr> <th colspan="2">MR-J2S-CP_</th> <th colspan="3">MR-J4-A-RJ</th> </tr> <tr> <th>No.61</th> <th>No.63</th> <th>PB01</th> <th>PB13</th> <th>PB14</th> </tr> </thead> <tbody> <tr> <td>0_00</td> <td>_0__</td> <td>0000</td> <td colspan="2">Setting not required</td> </tr> <tr> <td>0_01 to 0_1F</td> <td>_0__</td> <td>0002</td> <td>Set a value according to MR-J2S. (Note)</td> <td>00_0 (Note)</td> </tr> <tr> <td>0_00</td> <td>_1__</td> <td>0001</td> <td colspan="2">Automatic setting</td> </tr> <tr> <td>0_00</td> <td>_2__</td> <td>0001</td> <td colspan="2">Automatic setting</td> </tr> </tbody> </table> <p>Note Set a frequency and notch depth according to the values of MR-J2S-CP_. Set the notch width to "0: $\alpha = 2$". For details, see PB13 and PB14 shown below.</p>	MR-J2S-CP_		MR-J4-A-RJ			No.61	No.63	PB01	PB13	PB14	0_00	_0__	0000	Setting not required		0_01 to 0_1F	_0__	0002	Set a value according to MR-J2S. (Note)	00_0 (Note)	0_00	_1__	0001	Automatic setting		0_00	_2__	0001	Automatic setting		0000h
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Part 4: Review on Replacement of MR-J2S-CP/CL_ with MR-J4-A_-RJ

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No.	Name and function	Initial value		No.	Name and function	Initial value												
		CP	CL															
62	Machine resonance suppression filter 2 Used to set the machine resonance suppression filter.  <p>Notch frequency Use the same setting as the parameter No.61. It is unnecessary to set "00" even if "Enabled" or "Retained" is selected for the adaptive vibration suppression control.</p> <p>Notch depth Use the same setting as the parameter No.61.</p>	0000h	0000h	PB15	Machine resonance suppression filter 2 Used to set the notch frequency of machine resonance suppression filter 2. When "Enabled (_ _ 1)" in "Machine resonance suppression filter 2 selection" of [Pr.PB16] is selected, this parameter is enabled. Setting range: 10 to 4500 Set a value according to the setting of MR-J2S-CP_.	4500												
				PB16	Notch shape selection 2 Used to set the shape of the machine resonance suppression filter 2.  <p>Machine resonance suppression filter 2 selection 0: Disabled 1: Enabled</p> <p>Notch depth selection 0: -40dB 1: -14dB 2: -8dB 3: -4dB</p> <p>Notch width selection 0: $\alpha=2$ 1: $\alpha=3$ 2: $\alpha=4$ 3: $\alpha=5$</p> <p>See the comparison table below for the setting method.</p> <p>Setting comparison table for machine resonance suppression filter 2</p> <table border="1"> <thead> <tr> <th colspan="2">MR-J2S-CP_</th> <th colspan="2">MR-J4-A_-RJ</th> </tr> <tr> <th colspan="2">No62</th> <th>PB15</th> <th>PB16</th> </tr> </thead> <tbody> <tr> <td>0 _ 0 0</td> <td></td> <td>Setting not required</td> <td>0 0 0 0</td> </tr> <tr> <td>0 _ 0 1 to 0 _ 1 F</td> <td>→</td> <td>Set a value according to J2S. (Note 2)</td> <td>0 0 _ 1 (Note 1)</td> </tr> </tbody> </table> <p>Note 1. Set the notch depth according to MR-J2S-CP_. Set the notch width to "0: $\alpha = 2$". Note 2. Set a value while referring to PB15.</p>	MR-J2S-CP_		MR-J4-A_-RJ		No62		PB15	PB16	0 _ 0 0		Setting not required	0 0 0 0	0 _ 0 1 to 0 _ 1 F
MR-J2S-CP_		MR-J4-A_-RJ																
No62		PB15	PB16															
0 _ 0 0		Setting not required	0 0 0 0															
0 _ 0 1 to 0 _ 1 F	→	Set a value according to J2S. (Note 2)	0 0 _ 1 (Note 1)															

Part 4: Review on Replacement of MR-J2S-CP/CL_ with MR-J4-A-RJ

MR-J2S-CP_ or MR-J2S-CL_				MR-J4-A-RJ										
No.	Name and function	Initial value		No.	Name and function	Initial value								
		CP	CL											
63	<p>Low-pass filter/adaptive vibration suppression control</p> <p>Select the low-pass filter/adaptive vibration suppression control.</p> <div style="border: 1px solid black; display: inline-block; padding: 2px;"> <table style="border-collapse: collapse;"> <tr> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">0</td> </tr> </table> </div> <p>Low-pass filter selection 0: Available (Automatic adjustment) 1: Disabled When available is selected, the filter in the zone expressed by the following formula is automatically set. For 1 kW or less $\frac{VG2 \text{ setting value} \times 10}{2\pi \times (1 + GD2 \text{ setting value} \times 0.1)} \text{ [Hz]}$ For 2 kW or more $\frac{VG2 \text{ setting value} \times 5}{2\pi \times (1 + GD2 \text{ setting value} \times 0.1)} \text{ [Hz]}$</p> <p>Adaptive vibration suppression control selection Selecting "Enabled" or "Retained" for the adaptive vibration suppression control will disable the machine resonance suppression filter 1 (Parameter No.61). 0: Disabled 1: Available Usually, machine resonance frequency is detected, and a filter corresponding to the resonance is generated to control machine vibration. 2: Maintenance Stops detection of machine resonance while keeping the characteristics of the filter generated until that moment.</p> <p>Adaptive vibration suppression control level selection Used to set the machine resonance detection sensitivity. 0: Normal 1: High sensitive</p>				0	0000h	0000h	PB23	<p>Low-pass filter selection</p> <div style="border: 1px solid black; display: inline-block; padding: 2px;"> <table style="border-collapse: collapse;"> <tr> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">0</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">0</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">0</td> <td style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">0</td> </tr> </table> </div> <p>Low-pass filter 0: Automatic setting 1: Manual setting 2: Disabled</p> <p>Set "0000 (automatic setting)".</p>	0	0	0	0	0000h
					0									
		0	0	0	0									
PB18	<p>Low-pass filter setting</p> <p>One of the following statuses is applied, depending on how PB23 is set.</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="width: 50%;">PB23</th> <th style="width: 50%;">PB18</th> </tr> </thead> <tbody> <tr> <td>__ 0 __ (Initial value)</td> <td>Automatic setting</td> </tr> <tr> <td>__ 1 __</td> <td>Setting value enabled</td> </tr> <tr> <td>__ 2 __</td> <td>Setting value disabled</td> </tr> </tbody> </table> <p>Nothing needs to be set due to automatic setting.</p>	PB23	PB18	__ 0 __ (Initial value)	Automatic setting	__ 1 __	Setting value enabled	__ 2 __	Setting value disabled	3141				
PB23	PB18													
__ 0 __ (Initial value)	Automatic setting													
__ 1 __	Setting value enabled													
__ 2 __	Setting value disabled													
PB01	<p>Adaptive tuning mode (adaptive filter II)</p> <p>Refer to MR-J2S-CP_ No.61.</p>	0000h												

Part 4: Review on Replacement of MR-J2S-__CP/CL__ with MR-J4-__A__-RJ

MR-J2S-__CP__ or MR-J2S-__CL__				MR-J4-__A__-RJ		
No.	Name and function	Initial value		No.	Name and function	Initial value
		CP	CL			
64	<p>Load to motor inertia ratio 2</p> <p>Used to set the load to motor inertia ratio when gain switching is enabled.</p> <p>Setting range: 0 to 3000; Unit: x0.1</p>	70	70	PB29	<p>Load to motor inertia ratio after gain switching</p> <p>Used to set the load to motor inertia ratio when gain switching is enabled.</p> <p>This parameter is enabled only when "Manual mode (___ 3)" is selected in "Gain adjustment mode selection" of [Pr. PA08].</p> <p>Setting range: 0.00 to 300.00; Unit: x1.0</p> <p>Note that the setting unit is different from that for MR-J2S-__CP__.</p> <p>When setting a value, set a value 0.1 x the MR-J2S-__CP__ setting value.</p>	7.00
65	<p>Position loop gain 2 changing ratio</p> <p>Used to set the changing ratio for position loop gain 2 when the gain switching is enabled.</p> <p>This parameter is enabled when auto tuning is disabled.</p> <p>Setting range: 10 to 200</p>	100	100	PB30	<p>Position loop gain after gain switching</p> <p>When a value smaller than 1.0 rad/s is set, the value will be the same as the setting value of [Pr. PB08].</p> <p>This parameter is enabled only when "Manual mode (___ 3)" is selected in "Gain adjustment mode selection" of [Pr. PA08].</p> <p>Setting range: 0.0 to 2000.0</p> <p>Because the setting unit is different from that for MR-J2S-__CP__, calculate the setting value using the equation below and set it.</p> <p>PB30 setting value = PB08 setting value x MR-J2S-__CP__ No. 65 setting value / 100.</p>	0.0
66	<p>Speed loop gain 2 changing ratio</p> <p>Used to set the changing ratio for speed loop gain 2 when the gain switching is enabled.</p> <p>This parameter is enabled when auto tuning is disabled.</p> <p>Setting range: 10 to 200</p>	100	100	PB31	<p>Speed loop gain after gain switching</p> <p>When a value smaller than 20 rad/s is set, the value will be the same as the setting value of [Pr. PB09].</p> <p>This parameter is enabled only when "Manual mode (___ 3)" is selected in "Gain adjustment mode selection" of [Pr. PA08].</p> <p>Setting range: 0 to 65535</p> <p>Because the setting unit is different from that for MR-J2S-__CP__, calculate the setting value using the equation below and set it.</p> <p>PB31 setting value = PB09 setting value x MR-J2S-__CP__ No. 66 setting value / 100.</p>	0
67	<p>Speed integral compensation changing ratio</p> <p>Used to set the changing ratio for speed integral compensation when the gain switching is enabled.</p> <p>This parameter is enabled when auto tuning is disabled.</p> <p>Setting range: 50 to 1000</p>	100	100	PB32	<p>Speed integral compensation after gain switching</p> <p>When a value smaller than 0.1 ms is set, the value will be the same as the setting value of [Pr. PB10].</p> <p>This parameter is enabled only when "Manual mode (___ 3)" is selected in "Gain adjustment mode selection" of [Pr. PA08].</p> <p>Setting range: 0.0 to 5000.0</p> <p>Because the setting unit is different from that for MR-J2S-__CP__, calculate the setting value using the equation below and set it.</p> <p>PB32 setting value = PB10 setting value x MR-J2S-__CP__ No. 67 setting value / 100.</p>	0.0

Part 4: Review on Replacement of MR-J2S-CP/CL_ with MR-J4-A-RJ

MR-J2S-CP_ or MR-J2S-CL_				MR-J4-A-RJ																													
No.	Name and function	Initial value		No.	Name and function	Initial value																											
		CP	CL																														
68	<p>Gain switching selection</p> <p>Select the gain switching condition.</p> <div style="border: 1px solid black; display: inline-block; padding: 2px;">0 0 0</div> <p>Gain switching selection Gain will be changed under the following conditions based on the setting value of parameters No.64 to No.67.</p> <ul style="list-style-type: none"> 0: Disabled 1: Gain switching (CDP) is ON. 2: The appointed frequency is more than the setting value of parameter No. 69. 3: The droop pulse is more than the setting value of parameter No. 69. 4: The servo motor speed is more than the setting value of parameter No. 69. 	0000h	0000h	PB26	<p>Gain switching function</p> <p>Select the gain switching condition.</p> <p>See the comparison table below for the setting method.</p> <p>Gain switching selection comparison table</p> <table border="1" style="display: inline-table; margin-right: 10px;"> <tr><th>MR-J2S-CP_</th></tr> <tr><th>No.68</th></tr> <tr><td>0 0 0 0</td></tr> <tr><td>0 0 0 1</td></tr> <tr><td>0 0 0 2</td></tr> <tr><td>0 0 0 3</td></tr> <tr><td>0 0 0 4</td></tr> </table> <p style="text-align: center;">→</p> <table border="1" style="display: inline-table;"> <tr><th>MR-J4-A-RJ</th></tr> <tr><th>PB26</th></tr> <tr><td>0 0 0 0</td></tr> <tr><td>0 0 0 1</td></tr> <tr><td>0 0 0 2</td></tr> <tr><td>0 0 0 3</td></tr> <tr><td>0 0 0 4</td></tr> </table>	MR-J2S-CP_	No.68	0 0 0 0	0 0 0 1	0 0 0 2	0 0 0 3	0 0 0 4	MR-J4-A-RJ	PB26	0 0 0 0	0 0 0 1	0 0 0 2	0 0 0 3	0 0 0 4	0000h													
MR-J2S-CP_																																	
No.68																																	
0 0 0 0																																	
0 0 0 1																																	
0 0 0 2																																	
0 0 0 3																																	
0 0 0 4																																	
MR-J4-A-RJ																																	
PB26																																	
0 0 0 0																																	
0 0 0 1																																	
0 0 0 2																																	
0 0 0 3																																	
0 0 0 4																																	
69	<p>Gain switching condition</p> <p>Used to set the values for the gain switching conditions (command frequency, droop pulses, and servo motor speed) selected in parameter No. 68.</p> <p>The set value unit differs depending on the switching condition item.</p> <p>Setting range: 0 to 9999</p>	10	10	PB27	<p>Gain switching condition</p> <p>Used to set the values for the gain switching conditions (command frequency, droop pulses, and servo motor speed) selected in PB26.</p> <p>The set value unit differs depending on the switching condition item.</p> <p>Setting range: 0 to 9999</p> <p>Set the same value as for MR-J2S-CP_.</p>	10																											
70	<p>Gain switching time constant</p> <p>Used to set the time constant at which the gains will switch in response to the conditions set in parameters No. 68 and No. 69.</p> <p>Setting range: 0 to 100</p>	1	1	PB28	<p>Gain switching time constant</p> <p>Used to set the time constant at which the gains will switch in response to the conditions set in PB26 and PB27.</p> <p>Setting range: 0 to 100</p> <p>Set the same value as for MR-J2S-CP_.</p>	1																											
74	<p>OUT1 output time setting</p> <p>Set the output time when the program output 1 (OUT1) is turned on by the OUTON command.</p> <p>If "0" is set, it remains turned on.</p> <p>Setting range: 0 to 2000; Unit: 10ms</p>		0	PT23	<p>OUT1 output setting time</p> <p>Set the output time when the program output 1 (OUT1) is turned on by the OUTON command.</p> <p>If "0" is set, it remains turned on. Use the OUTOF command to turn off.</p> <p>Setting range: 0 to 20000</p>	0																											
75	<p>OUT2 output time setting</p> <p>Set the output time when the program output 2 (OUT2) is turned on by the OUTON command.</p> <p>If "0" is set, it remains turned on.</p> <p>Setting range: 0 to 2000; Unit: 10ms</p>		0	PT24	<p>OUT2 output setting time</p> <p>Set the output time when the program output 2 (OUT2) is turned on by the OUTON command.</p> <p>If "0" is set, it remains turned on. Use the OUTOF command to turn off.</p> <p>Setting range: 0 to 20000</p>	0																											
76	<p>OUT3 output time setting</p> <p>Set the output time when the program output 3 (OUT3) is turned on by the OUTON command.</p> <p>If "0" is set, it remains turned on.</p> <p>Setting range: 0 to 2000; Unit: 10ms</p>		0	PT25	<p>OUT3 output setting time</p> <p>Set the output time when the program output 3 (OUT3) is turned on by the OUTON command.</p> <p>If "0" is set, it remains turned on. Use the OUTOF command to turn off.</p> <p>Setting range: 0 to 20000</p>	0																											
77	<p>Program input polarity selection 1</p> <p>Select the device that reverses the input polarity for the program input 1 (PI1), program input (PI2), and program input (PI3).</p> <div style="border: 1px solid black; display: inline-block; padding: 2px;">0 0 0</div> <table border="1" style="margin-top: 10px;"> <thead> <tr> <th rowspan="2">Signal name</th> <th colspan="2">Initial value</th> </tr> <tr> <th>BIN</th> <th>HEX</th> </tr> </thead> <tbody> <tr> <td>Program input 1</td> <td>0</td> <td>0</td> </tr> <tr> <td>Program input 2</td> <td>0</td> <td></td> </tr> <tr> <td>Program input 3</td> <td>0</td> <td></td> </tr> <tr> <td></td> <td>0</td> <td></td> </tr> </tbody> </table> <p>BIN 0 : Positive logic BIN 1 : Negative logic</p>	Signal name	Initial value		BIN	HEX	Program input 1	0	0	Program input 2	0		Program input 3	0			0			0000h	PT29	<p>Function selection T-3</p> <p>Set the polarities of PI1, PI2 and PI3.</p> <table border="1" style="margin-top: 10px;"> <thead> <tr> <th>Setting digit</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>__x (HEX)</td> <td>__x (BIN): PI1 (Program input 1) polarity selection 0: Positive logic 1: Negative logic</td> </tr> <tr> <td>__x (HEX)</td> <td>__x (BIN): PI2 (Program input 2) polarity selection 0: Positive logic 1: Negative logic</td> </tr> <tr> <td>__x (HEX)</td> <td>__x (BIN): PI3 (Program input 3) polarity selection 0: Positive logic 1: Negative logic</td> </tr> <tr> <td>x___</td> <td>(BIN): For manufacturer setting</td> </tr> </tbody> </table>	Setting digit	Function	__x (HEX)	__x (BIN): PI1 (Program input 1) polarity selection 0: Positive logic 1: Negative logic	__x (HEX)	__x (BIN): PI2 (Program input 2) polarity selection 0: Positive logic 1: Negative logic	__x (HEX)	__x (BIN): PI3 (Program input 3) polarity selection 0: Positive logic 1: Negative logic	x___	(BIN): For manufacturer setting	0000h
Signal name	Initial value																																
	BIN	HEX																															
Program input 1	0	0																															
Program input 2	0																																
Program input 3	0																																
	0																																
Setting digit	Function																																
__x (HEX)	__x (BIN): PI1 (Program input 1) polarity selection 0: Positive logic 1: Negative logic																																
__x (HEX)	__x (BIN): PI2 (Program input 2) polarity selection 0: Positive logic 1: Negative logic																																
__x (HEX)	__x (BIN): PI3 (Program input 3) polarity selection 0: Positive logic 1: Negative logic																																
x___	(BIN): For manufacturer setting																																

Part 4: Review on Replacement of MR-J2S-CP/CL_ with MR-J4-A-RJ

3.7 Comparison of Communication Commands

Table 4.1 compares the read commands between the MR-J2S-CP series and MR-J4-A-RJ series ([Pr.PT01]: when setting "2xxx"), and table 4.2 compares the write commands. The functions added in the MR-J4-A-RJ series are not included here. For details, refer to the Instruction Manual (Revised in spring 2014: Instruction Manual SH (Name) 030133).

POINT
<ul style="list-style-type: none"> • [Pr.PT01]: MR-Configurator2 cannot be used when setting "2xxx".

[Table 4.1] Compares the read commands between MR-J2S-CP and MR-J4-A-RJ ([Pr.PT01]: when setting "2xxx").

(1) Status Display

Command	Data No.	Description	Displayed items		Frame length
			MR-J2S-CP	MR-J4-A-RJ Pr.PT01: when setting "2xxx"	
[0][1]	[8][0]	Data value of status display and processed information	Current position	Current position	12
	[8][1]		Command position:	Command position:	
	[8][2]		Command remaining distance	Command remaining distance	
	[8][3]		Point table No.	Point table No.	
	[8][4]		Cumulative Feedback Pulses	Cumulative Feedback Pulses	
	[8][5]		Servo motor speed	Servo motor speed	
	[8][6]		Droop pulses	Droop pulses	
	[8][7]		Override	Override	
	[8][8]		Torque limit voltage	Torque limit voltage	
	[8][9]		Regenerative load ratio	Regenerative load ratio	
	[8][A]		Effective load ratio	Effective load ratio	
	[8][B]		Peak load ratio	Peak load ratio	
	[8][C]		Instantaneous torque	Instantaneous torque	
	[8][D]		Within one-revolution position	Within one-revolution position	
	[8][E]		ABS counter	ABS counter	
	[8][F]		Load to inertia moment ratio	Load to inertia moment ratio	
[9][0]		Bus voltage	Bus voltage		

(2) Parameter

Command	Data No.	Description		Frame length
		MR-J2S-CP	MR-J4-A-RJ Pr.PT01: when setting "2xxx"	
[0][5]	[0][0] to [5][A]	Current values of each parameter The data number converted from hexadecimal to decimal corresponds to the parameter No.	Current values of each parameter Read the current parameter in the parameter group specified by the command [8][5] + data No. [0][0]. Thus, make sure to specify the parameter group by the command [8][5] + data No. [0][0] before reading the current value. The data number converted from hexadecimal to decimal corresponds to the parameter No.	8

(3) External I/O signal

Command	Data No.	Description		Frame length
		MR-J2S-CP	MR-J4-A-RJ Pr.PT01: when setting "2xxx"	
[1][2]	[0][0]	Input Device Status	Input Device Status	8
	[4][0]	External Input Pin Status	External Input Pin Status	
	[6][0]	Input device status turned on by the communication	Input device status turned on by the communication	
	[8][0]	Output Device Status	Output Device Status	
	[C][0]	External Output Pin Status	External Output Pin Status	

(4) Current alarm

Command	Data No.	Description		Frame length
		MR-J2S-CP	MR-J4-A-RJ Pr.PT01: when setting "2xxx"	
[0][2]	[0][0]	Alarm No. of alarm currently generated	Alarm No. of alarm currently generated	4

Part 4: Review on Replacement of MR-J2S- CP/CL_ with MR-J4- A_-RJ

Command	Data No.	Description	Displayed items		Frame length
			MR-J2S-CP	MR-J4-A-RJ Pr.PT01: when setting "2xxx"	
[3][5]	[8][0]	Data value of status display and processed information when an alarm occurs	Current position	Current position	12
	[8][1]		Command position	Command position	
	[8][2]		Command remaining distance	Command remaining distance	
	[8][3]		Point table No.	Point table No.	
	[8][4]		Cumulative Feedback Pulses	Cumulative Feedback Pulses	
	[8][5]		Servo motor speed	Servo motor speed	
	[8][6]		Droop pulses	Droop pulses	
	[8][7]		Override	Override	
	[8][8]		Torque limit voltage	Torque limit voltage	
	[8][9]		Regenerative load ratio	Regenerative load ratio	
	[8][A]		Effective load ratio	Effective load ratio	
	[8][B]		Peak load ratio	Peak load ratio	
	[8][C]		Instantaneous torque	Instantaneous torque	
	[8][D]		Within one-revolution position	Within one-revolution position	
	[8][E]		ABS counter	ABS counter	
	[8][F]		Load to inertia moment ratio	Load to inertia moment ratio	
[9][0]	Bus voltage	Bus voltage			

(5) Point table

Command	Data No.	Description		Frame length
		MR-J2S-CP	MR-J4-A-RJ Pr.PT01: when setting "2xxx"	
[4][0]	[0][1] to [1][F] (Note 1)	Reading the position data for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	Reading the position data for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	8
[5][0]	[0][1] to [1][F] (Note 1)	Reading the speed data for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	Reading the speed data for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	
[5][4]	[0][1] to [1][F] (Note 1)	Reading the acceleration time constant for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	Reading the acceleration time constant for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	
[5][8]	[0][1] to [1][F] (Note 1)	Reading the deceleration time constant for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	Reading the deceleration time constant for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	
[6][0]	[0][1] to [1][F] (Note 1)	Reading the dwell for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	Reading the dwell for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	
[6][4]	[0][1] to [1][F] (Note 1)	Reading the sub function for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	Reading the sub function for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	

Note 1. MR-J4-A-RJ will be in the range between [0][1] and [F][F].

(6) Group setting

Command	Data No.	Description		Frame length
		MR-J2S-CP	MR-J4-A-RJ Pr.PT01: when setting "2xxx"	
[1][F]	[0][0]	Reading the group setting value.	Reading the group setting value.	4

(7) Software version

Command	Data No.	Description		Frame length
		MR-J2S-CP	MR-J4-A-RJ Pr.PT01: when setting "2xxx"	
[0][2]	[7][0]	Software version	Software version	16

Part 4: Review on Replacement of MR-J2S- _CP/CL_ with MR-J4- _A_ -RJ

[Table 4.2] Compares the write commands between MR-J2S-CP and MR-J4-A-RJ
 ([Pr.PT01]: when setting "2xxx").

(1) Status Display

Command	Data No.	MR-J2S-CP		MR-J4-A-RJ Pr.PT01: when setting "2xxx"		Frame length
		Description	Setting range	Description	Setting range	
[8][1]	[0][0]	Erasing the status display data	1EA5	Erasing the status display data	1EA5	4

(2) Parameter

Command	Data No.	MR-J2S-CP		MR-J4-A-RJ Pr.PT01: when setting "2xxx"		Frame length
		Description	Setting range	Description	Setting range	
[8][4]	[0][0] to [5][A] (Note 1)	Writing each parameter The data number converted from hexadecimal to decimal corresponds to the parameter No.	Varies with the parameter.	Writing each parameter Write the parameter in the parameter group specified by the command [85] + data No. [00]. Thus, make sure to specify the parameter group by the command [85] + data No. [00] before writing the value. The data number converted from hexadecimal to decimal corresponds to the parameter No.	Varies with the parameter.	8
Note		Items that differ from J2S series are shown with shading .				

Note 1. MR-J4-A-RJ will be in the range between [0][1] and [F][F].

(3) External I/O signal

Command	Data No.	MR-J2S-CP		MR-J4-A-RJ Pr.PT01: when setting "2xxx"		Frame length
		Description	Setting range	Description	Setting range	
[9][2]	[6][0]	Communication input device signal	Refer to Section 4.5.	Communication input device signal	Refer to Section 4.5.	8

(4) Alarm history

Command	Data No.	MR-J2S-CP		MR-J4-A-RJ Pr.PT01: when setting "2xxx"		Frame length
		Description	Setting range	Description	Setting range	
[8][2]	[2][0]	Alarm History Clearing	1EA5	Alarm History Clearing	1EA5	4

(5) Current alarm

Command	Data No.	MR-J2S-CP		MR-J4-A-RJ Pr.PT01: when setting "2xxx"		Frame length
		Description	Setting range	Description	Setting range	
[8][2]	[0][0]	Clearing alarms	1EA5	Clearing alarms	1EA5	4

Part 4: Review on Replacement of MR-J2S- CP/CL_ with MR-J4- A_-RJ

(6) Point table

Command	Data No.	MR-J2S-CP		MR-J4-A-RJ Pr.PT01: when setting "2xxx"		Frame length
		Description	Setting range	Description	Setting range	
[C][0]	[0][1] to [1][F] (Note 1)	Writing the position data for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	-999999 to 999999	Writing the position data for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	-999999 to 999999	8
[C][6]	[0][1] to [1][F] (Note 1)	Writing the speed data for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	0 to Permissible speed	Writing the speed data for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	0 to Permissible speed	8
[C][7]	[0][1] to [1][F] (Note 1)	Writing the acceleration time constant for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	0 to 20000	Writing the acceleration time constant for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	0 to 20000	8
[C][8]	[0][1] to [1][F] (Note 1)	Writing the deceleration time constant for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	0 to 20000	Writing the deceleration time constant for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	0 to 20000	8
[C][A]	[0][1] to [1][F] (Note 1)	Writing the dwell for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	0 to 20000	Writing the dwell for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	0 to 20000	8
[C][B]	[0][1] to [1][F] (Note 1)	Writing the sub function for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	0, 1	Writing the sub function for each point table The data number converted from hexadecimal to decimal corresponds to the point table No.	0 to 3, 8 to 11	8
Note		Items that differ from J2S series are shown with shading .				

Note 1. MR-J4-A-RJ will be in the range between [0][1] and [F][F].

(7) I/O device inhibition

Command	Data No.	MR-J2S-CP		MR-J4-A-RJ Pr.PT01: when setting "2xxx"		Frame length
		Description	Setting range	Description	Setting range	
[9][0]	[0][0]	Turn off the input devices (except EMG, LSP and LSN), external analog input signal, and pulse train input regardless of the external ON/OFF state.	1EA5	Turn off the input devices (except EMG, LSP and LSN), external analog input signal, and pulse train input regardless of the external ON/OFF state.	1EA5	4
	[0][3]	Disable all the output devices (DO). (Inhibit output)	1EA5	Disable all the output devices (DO). (Inhibit output)	1EA5	
	[1][0]	Cancel the inhibition of the input devices (except EMG, LSP and LSN), external analog input signal, and pulse train input.	1EA5	Cancel the inhibition of the input devices (except EMG, LSP and LSN), external analog input signal, and pulse train input.	1EA5	
	[1][3]	Cancel the inhibition of output devices.	1EA5	Cancel the inhibition of output devices.	1EA5	

Part 4: Review on Replacement of MR-J2S- CP/CL_ with MR-J4- A_-RJ

(8) Operation mode selection

Command	Data No.	MR-J2S-CP		MR-J4-A-RJ Pr.PT01: when setting "2xxx"		Frame length
		Description	Setting range	Description	Setting range	
[8][B]	[0][0]	Operation mode switching 0000: Test Operation Mode Cancellation 0001: JOG operation 0002: Positioning operation 0003: Motor-less operation 0004: Output signal (DO) forced output	Refer to the left column.	Operation mode switching 0000: Normal mode (When not in test operation mode) 0001: JOG operation 0002: Positioning operation mode 0004: DO forced output operation mode	Refer to the left column.	4

(9) Data for test operation mode

Command	Data No.	MR-J2S-CP		MR-J4-A-RJ Pr.PT01: when setting "2xxx"		Frame length
		Description	Setting range	Description	Setting range	
[9][2]	[0][0]	Input Signal During Test Operation	Refer to the Instruction Manual.	Input Signal During Test Operation	Instruction Manual	8
	[A][0]	Signal Pin Forced Output	Refer to the Instruction Manual.	Signal Pin Forced Output	To be described in the Instruction Manual	8
[A][0]	[1][0]	Write the speed in the test operation mode (JOG operation/positioning operation).	0000-7FFF	Write the speed in the test operation mode (JOG operation/positioning operation).	0000-7FFF	4
	[1][1]	Write the acceleration/deceleration time constants in the test operation mode (JOG operation/positioning operation).	00000000 to 7FFFFFFF	Write the acceleration/deceleration time constants in the test operation mode (JOG operation/positioning operation).	00000000 to 7FFFFFFF	8
	[1][2]	Cancel the acceleration/deceleration time constants in the test operation mode (JOG operation/positioning operation).	1EA5			4
	[1][3]	Write the pulse travel distance in the test operation mode (positioning operation).	80000000-7FFFFFFF	Refer to Data No. [2][0] and [2][1].		8
	[1][5]	Temporary stop command for the test operation mode (positioning operation).	1EA5	Refer to Data No. [4][1].		4
	[2][0]			Set the travel distance in the test operation mode (positioning operation).	00000000 to 7FFFFFFF	8
	[2][1]			Select the positioning direction of the test operation (positioning operation).	0000 to 0001	4
	[4][0]			The start command for the test operation (positioning operation).	1EA5	4
	[4][1]			Use to stop the test drive (positioning operation) temporarily. Symbols "_" below indicate blanks. STOP: Temporary stop GO_ : Restarting the remaining distance CLR_ : Clearing the remaining distance	STOP GO_ CLR_	4
Note		Functions with a difference are shown with shading.				

(10) Group setting

Command	Data No.	MR-J2S-CP		MR-J4-A-RJ Pr.PT01: when setting "2xxx"		Frame length
		Description	Setting range	Description	Setting range	
[9][F]	[0][0]	Set groups	a to f	Set groups	a to f	4

Part 4: Review on Replacement of MR-J2S- _CP/CL_ with MR-J4- _A_ -RJ

Table 4.3 compares the read commands between the MR-J2S- CL series and MR-J4-A-RJ series ([Pr.PT01]: when setting "3xxx"), and table 4.4 compares the write commands. The functions added in the MR-J4-A-RJ series are not included here. For details, refer to the Instruction Manual (Revised in spring 2014: Instruction Manual SH (Name) 030133).

[Table 4.3] Compares the read commands between MR-J2S-CL and MR-J4-A-RJ ([Pr.PT01]: when setting "3xxx").

(1) Status Display

Command	Data No.	Description	Displayed items		Frame length
			MR-J2S-CL	MR-J4-A-RJ Pr.PT01: when setting "3xxx"	
[0][1]	[8][0]	Data value of status display and processed information	Current position	Current position	12
	[8][1]		Command position	Command position	
	[8][2]		Command remaining distance	Command remaining distance	
	[8][3]		Program No.	Program No.	
	[8][4]		Step No.	Step No.	
	[8][5]		Cumulative Feedback Pulses	Cumulative Feedback Pulses	
	[8][6]		Servo motor speed	Servo motor speed	
	[8][7]		Droop pulses	Droop pulses	
	[8][8]		Override	Override	
	[8][9]		Torque limit voltage	Torque limit voltage	
	[8][A]		Regenerative load ratio	Regenerative load ratio	
	[8][B]		Effective load ratio	Effective load ratio	
	[8][C]		Peak load ratio	Peak load ratio	
	[8][D]		Instantaneous torque	Instantaneous torque	
	[8][E]		Within one-revolution position	Within one-revolution position	
	[8][F]		ABS counter	ABS counter	
	[9][0]		Load to inertia moment ratio	Load to inertia moment ratio	
[9][1]	Bus voltage	Bus voltage			

(2) Parameter

Command	Data No.	Description		Frame length
		MR-J2S-CL	MR-J4-A-RJ Pr.PT01: when setting "3xxx"	
[0][5]	[0][0] to [5][A]	Current values of each parameter The data number converted from hexadecimal to decimal corresponds to the parameter No.	Current values of each parameter Read the current parameter in the parameter group specified by the command [8][5] + data No. [0][0]. Thus, make sure to specify the parameter group by the command [8][5] + data No. [0][0] before reading the current value. The data number converted from hexadecimal to decimal corresponds to the parameter No.	8

(3) External I/O signal

Command	Data No.	Description		Frame length
		MR-J2S-CL	MR-J4-A-RJ Pr.PT01: when setting "3xxx"	
[1][2]	[0][0]	Input Device Status	Input Device Status	8
	[4][0]	External Input Pin Status	External Input Pin Status	
	[6][0]	Input device status turned on by the communication	Input device status turned on by the communication	
	[8][0]	Output Device Status	Output Device Status	
	[C][0]	External Output Pin Status	External Output Pin Status	

Part 4: Review on Replacement of MR-J2S- CP/CL_ with MR-J4- A_-RJ

(4) Current alarm

Command	Data No.	Description		Frame length
		MR-J2S- CL	MR-J4-A-RJ Pr.PT01: when setting "3xxx"	
[0][2]	[0][0]	Alarm No. of alarm currently generated	Alarm No. of alarm currently generated	4

Command	Data No.	Description	Displayed items		Frame length
			MR-J2S- CL	MR-J4-A-RJ Pr.PT01: when setting "3xxx"	
[3][5]	[8][0]	Data value of status display and processed information when an alarm occurs	Current position	Current position	12
	[8][1]		Command position	Command position	
	[8][2]		Command remaining distance	Command remaining distance	
	[8][3]		Program No.	Program No.	
	[8][4]		Step No.	Step No.	
	[8][5]		Cumulative Feedback Pulses	Cumulative Feedback Pulses	
	[8][6]		Servo motor speed	Servo motor speed	
	[8][7]		Droop pulses	Droop pulses	
	[8][8]		Override	Override	
	[8][9]		Torque limit voltage	Torque limit voltage	
	[8][A]		Regenerative load ratio	Regenerative load ratio	
	[8][B]		Effective load ratio	Effective load ratio	
	[8][C]		Peak load ratio	Peak load ratio	
	[8][D]		Instantaneous torque	Instantaneous torque	
	[8][E]		Within one-revolution position	Within one-revolution position	
	[8][F]		ABS counter	ABS counter	
[9][0]	Load to inertia moment ratio	Load to inertia moment ratio			
[9][1]	Bus voltage	Bus voltage			

(5) Group setting

Command	Data No.	Description		Frame length
		MR-J2S- CL	MR-J4-A-RJ Pr.PT01: when setting "3xxx"	
[1][F]	[0][0]	Reading the group setting value.	Reading the group setting value.	4

(6) Software version

Command	Data No.	Description		Frame length
		MR-J2S- CL	MR-J4-A-RJ Pr.PT01: when setting "3xxx"	
[0][2]	[7][0]	Software version	Software version	16

Part 4: Review on Replacement of MR-J2S- CP/CL_ with MR-J4- A_ -RJ

[Table 4.4] Compares the write commands between MR-J2S-CL and MR-J4-A-RJ
([Pr.PT01]: when setting "3xxx").

(1) Status Display

Command	Data No.	MR-J2S- CL		MR-J4-A-RJ Pr.PT01: when setting "3xxx"		Frame length
		Description	Setting range	Description	Setting range	
[8][1]	[0][0]	Erasing the status display data	1EA5	Erasing the status display data	1EA5	4

(2) Parameter

Command	Data No.	MR-J2S- CL		MR-J4-A-RJ Pr.PT01: when setting "3xxx"		Frame length
		Description	Setting range	Description	Setting range	
[8][4]	[0][0] to [5][A] (Note 1)	Writing each parameter The data number converted from hexadecimal to decimal corresponds to the parameter No.	Varies with the parameter.	Writing each parameter Write the parameter in the parameter group specified by the command [85] + data No. [00]. Thus, make sure to specify the parameter group by the command [85] + data No. [00] before writing the value. The data number converted from hexadecimal to decimal corresponds to the parameter No.	Varies with the parameter.	8
Note		Items that differ from J2S series are shown with shading .				

Note 1. MR-J4-A-RJ will be in the range between [0][1] and [F][F].

(3) External I/O signal

Command	Data No.	MR-J2S- CL		MR-J4-A-RJ Pr.PT01: when setting "3xxx"		Frame length
		Description	Setting range	Description	Setting range	
[9][2]	[6][0]	Communication input device signal	Refer to Section 4.5.	Communication input device signal	Refer to Section 4.5.	8

(4) Alarm history

Command	Data No.	MR-J2S- CL		MR-J4-A-RJ Pr.PT01: when setting "3xxx"		Frame length
		Description	Setting range	Description	Setting range	
[8][2]	[2][0]	Alarm History Clearing	1EA5	Alarm History Clearing	1EA5	4

(5) Current alarm

Command	Data No.	MR-J2S- CL		MR-J4-A-RJ Pr.PT01: when setting "3xxx"		Frame length
		Description	Setting range	Description	Setting range	
[8][2]	[0][0]	Clearing alarms	1EA5	Clearing alarms	1EA5	4

(6) I/O device inhibition

Command	Data No.	MR-J2S- CL		MR-J4-A-RJ Pr.PT01: when setting "3xxx"		Frame length
		Description	Setting range	Description	Setting range	
[9][0]	[0][0]	Turn off the input devices (except EMG, LSP and LSN), external analog input signal, and pulse train input regardless of the external ON/OFF state.	1EA5	Turn off the input devices (except EMG, LSP and LSN), external analog input signal, and pulse train input regardless of the external ON/OFF state.	1EA5	4
	[0][3]	Disable all the output devices (DO). (Inhibit output)	1EA5	Disable all the output devices (DO). (Inhibit output)	1EA5	
	[1][0]	Cancel the inhibition of the input devices (except EMG, LSP and LSN), external analog input signal, and pulse train input.	1EA5	Cancel the inhibition of the input devices (except EMG, LSP and LSN), external analog input signal, and pulse train input.	1EA5	
	[1][3]	Cancel the inhibition of output devices.	1EA5	Cancel the inhibition of output devices.	1EA5	

Part 4: Review on Replacement of MR-J2S- CP/CL_ with MR-J4- A_-RJ

(7) Operation mode selection

Command	Data No.	MR-J2S- CL		MR-J4-A-RJ Pr.PT01: when setting "3xxx"		Frame length
		Description	Setting range	Description	Setting range	
[8][B]	[0][0]	Operation mode switching 0000: Test Operation Mode Cancellation 0001: JOG operation 0002: Positioning operation 0003: Motor-less operation 0004: Output signal (DO) forced output	Refer to the left column.	Operation mode switching 0000: Normal mode (When not in the test operation mode) 0001: JOG operation 0002: Positioning operation mode 0004: DO forced output operation mode	Refer to the left column.	4

(8) Data for test operation mode

Command	Data No.	MR-J2S- CL		MR-J4-A-RJ Pr.PT01: when setting "3xxx"		Frame length
		Description	Setting range	Description	Setting range	
[9][2]	[0][0]	Input Signal During Test Operation	Refer to the Instruction Manual.	Input Signal During Test Operation	Refer to the Instruction Manual	8
	[A][0]	Signal Pin Forced Output	Refer to the Instruction Manual.	Signal Pin Forced Output	Refer to the Instruction Manual	8
[A][0]	[1][0]	Write the speed in the test operation mode (JOG operation/positioning operation).	0000-7FFF	Write the speed in the test operation mode (JOG operation/positioning operation).	0000-7FFF	4
	[1][1]	Write the acceleration/deceleration time constants in the test operation mode (JOG operation/positioning operation).	00000000 to 7FFFFFFF	Write the acceleration/deceleration time constants in the test operation mode (JOG operation/positioning operation).	00000000 to 7FFFFFFF	8
	[1][2]	Cancel the acceleration/deceleration time constants in the test operation mode (JOG operation/positioning operation).	1EA5			4
	[1][3]	Write the pulse travel distance in the test operation mode (positioning operation).	80000000-7FFFFFFF	Refer to Data No. [2][0] and [2][1].		8
	[1][5]	Temporary stop command for the test operation mode (positioning operation).	1EA5	Refer to Data No. [4][1].		4
	[2][0]			Set the travel distance in the test operation mode (positioning operation).	00000000 to 7FFFFFFF	8
	[2][1]			Select the positioning direction of the test operation (positioning operation).	0000 to 0001	4
	[4][0]			The start command for the test operation (positioning operation).	1EA5	4
	[4][1]			Use to stop the test drive (positioning operation) temporarily. Symbols "-" below indicate blanks. STOP: Temporary stop GO_ : Restarting the remaining distance CLR_ : Clearing the remaining distance	STOP GO_ CLR_	4
Note	Items that differ from J2S series are shown with shading.					

(9) Group setting

Command	Data No.	MR-J2S- CL		MR-J4-A-RJ Pr.PT01: when setting "3xxx"		Frame length
		Description	Setting range	Description	Setting range	
[9][F]	[0][0]	Set groups	a to f	Set groups	a to f	4

Part 5

Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

1. FUNCTIONS AND CONFIGURATION

1.1 Differences Between MR-J2S-30 kW or Higher Capacity Models and MR-J4- _DU_

Item	MR-J2S-30 kW or more series	MR-J4- _DU_ series	Compatibility	Reference material/items
Converter unit	200 V class: MR-HP30KA (When using a servo amplifier of 37 kW, make sure that the power running output is 30 kW or less.) 400 V class: MR-HP55KA4	200 V class: MR-CR55K 400 V class: MR-CR55K4	×	1.2 Combination of a Converter Unit, Drive Unit, and Servo Motor
Installation	Installed in cabinet (Using an outside mounting attachment enables to attach a heat sink outside the cabinet.)	A heat sink is attached outside the cabinet.	×	1.4 Installation
Magnetic contactor control Connector	Not available	Available (Enabled by default. This is the initial value of [PA02], a converter unit parameter.)	—	1.5 Magnetic Contactor Control Connector (CNP1) [Exclusively for MR-J4- _DU_]]
Unit Power consumption display	Not available	Available (Use converter unit parameters [PA08] and [PA15] to set this value.)	—	3 PARAMETERS
SEMI-F47 function selection	Not available	Available (Use converter unit parameter [PA17] and [PF18], and drive unit parameter [PA20] and [PF25] to set this value.)	—	3 PARAMETERS

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

1.2 Combination of a Converter Unit, Drive Unit, and Servo Motor

POINT			
<ul style="list-style-type: none"> MR-J2S- _A/B_ cannot drive an HG motor. When the servo motor is replaced with an HG motor, simultaneous replacement with MR-J4- _A/B_ and an HG motor is necessary. When an HA motor shown below is used, simultaneous replacement with MR-J4- _A_ and an HG motor is recommended. When an HG motor is adopted, the capacity of the servo amplifier needs to be changed. (Consider replacement, referring to "torque characteristics" described in "Part 8: Review on Replacement of Motor".) 			
Existing device models		Replacement models for simultaneous replacement (example)	
Servo motor	Servo amplifier	Servo motor	Servo amplifier
HA-LFS30K2(4)	MR-J2S-30K_(4)	HG-JR22K1M(4)	MR-J4-22K_(4)
HA-LFS37K2(4)	MR-J2S-37K_(4)	HG-JR30K1M(4)	MR-J4-DU30K_(4)
HA-LFS45K24	MR-J2S-45K_4	HG-JR37K1M4	MR-J4-DU37K_4
HA-LFS55K24	MR-J2S-55K_4	HG-JR45K1M4	MR-J4-DU45K_4
HA-LFS25K14	MR-J2S-30K_4	HG-JR25K14	MR-J4-22K_4

[MR-J2S]

(1) 200 V class

Converter unit	Servo amplifier	Servo motor		
		HA-LFS_		
		1000r/min	1500r/min	2000r/min
MR-HP30KA	MR-J2S-30KA/B	30K1	30K1M	30K2
	MR-J2S-37KA/B	(Note) 37K1	(Note) 37K1M	(Note) 37K2

Note. Make sure that the power running effective torque is 75% or less of 37 kW. Use a DC reactor (MR-DCL37K).

(2) 400 V class

Converter unit	Servo amplifier	Servo motor		
		HA-LFS_		
		1000r/min	1500r/min	2000r/min
MR-HP55KA4	MR-J2S-30KA4/B4	25K14,30K14	30K1M4	30K24
	MR-J2S-37KA4/B4	37K14	37K1M4	37K24
	MR-J2S-45KA4/B4		45K1M4	45K24
	MR-J2S-55KA4/B4		50K1M4	55K24

[MR-J4]

(1) 200 V class

Converter unit	Drive unit	Servo motor	
		HG-JR_	
		1000 r/min series	1500 r/min series
MR-CR55K	MR-J4-DU30K_(-RJ)	30K1	30K1M
	MR-J4-DU37K_(-RJ)	37K1	37K1M

(2) 400 V class

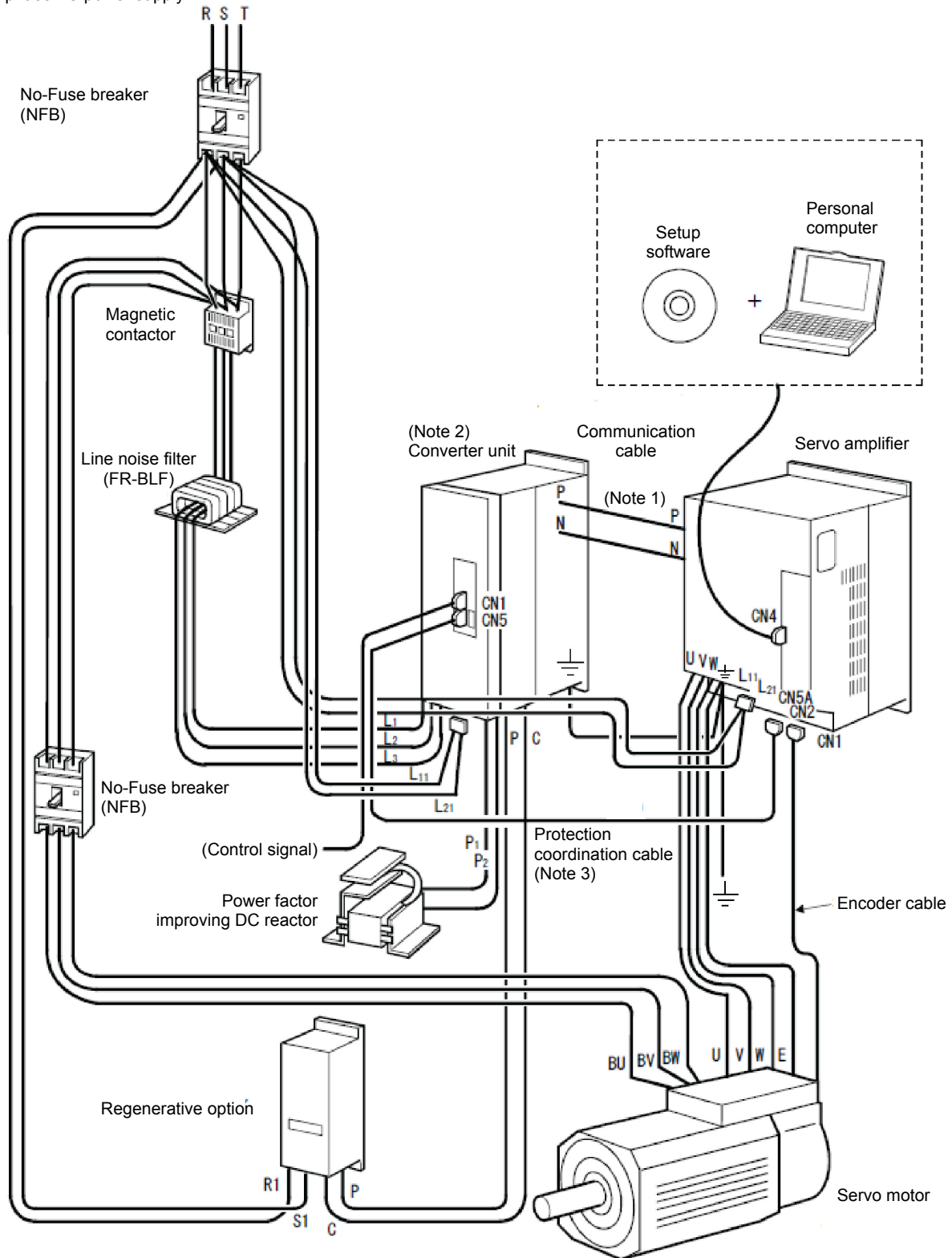
Converter unit	Drive unit	Servo motor	
		HG-JR_	
		1000 r/min series	1500 r/min series
MR-CR55K4	MR-J4-DU30K_4(-RJ)	30K14	30K1M4
	MR-J4-DU37K_4(-RJ)	37K14	37K1M4
	MR-J4-DU45K_4(-RJ)		45K1M4
	MR-J4-DU55K_4(-RJ)		55K1M4

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

1.3 Configuration with Peripheral Equipment

[MR-J2S]

3-phase AC power supply

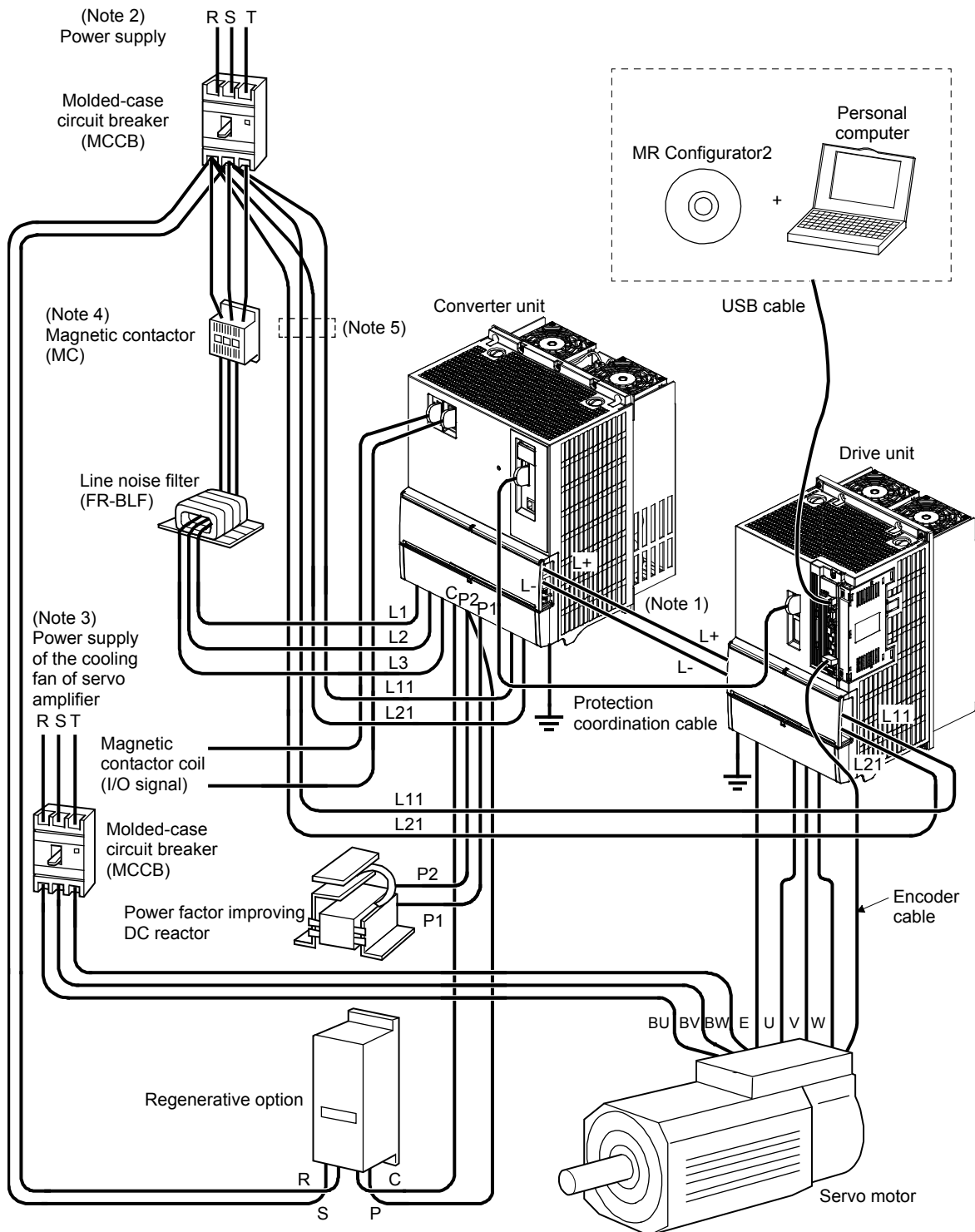


- Note 1. P and N conductor bars to connect a converter unit and servo amplifier are standard accessories.
- 2. This system requires a converter unit.
- 3. Use a MR-J2HBUS_M_SSCNET cable as the protection coordination cable.

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4-DU

[MR-J4]

This diagram shows MR-J4-DU30KB4 and MR-J4-DU37KB4. The way to interface MR-J4-DU(-RJ) is the same as MR-J4-(-RJ). See each servo amplifier instruction manual.



- Note 1. L+ and L- conductors to connect the converter unit and drive unit are standard accessories. The converter unit and drive unit are installed more closely together than they are shown in this diagram.
2. For the power supply specifications, refer to Section 1.2.
3. For the power supply specifications of the cooling fan, refer to the Servo Motor Instruction Manual (Vol. 3).
4. Bus voltage decreases according to the voltage and operation pattern of the main circuit, and there may be a shift in dynamic brake deceleration during forced stop deceleration. If dynamic brake deceleration is not desired, delay the time to turn off the electromagnetic contactor.
5. If the wire used for L11 and L21 is thinner than the wire used for L1, L2, and L3, use a molded-case circuit breaker. (Refer to Section 9.5)

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

1.4 Installation

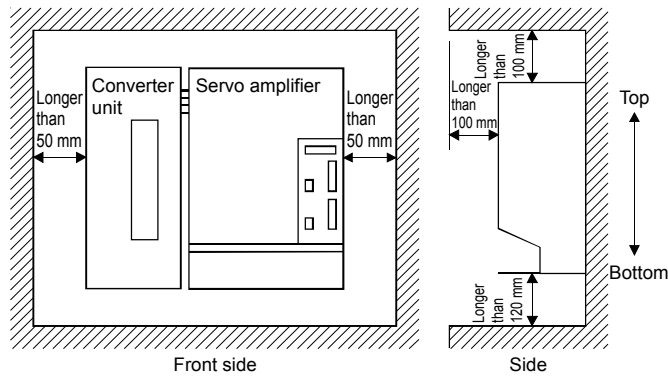
Mounting direction and distance

! Note

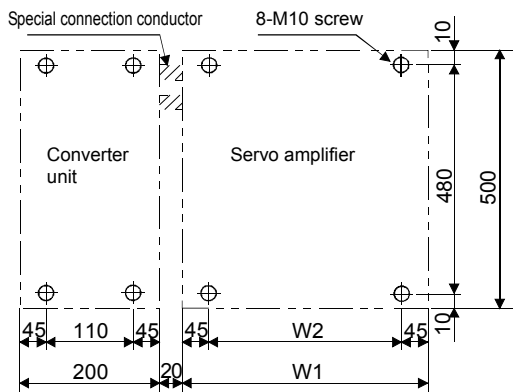
- Install the converter unit and servo amplifier accurately and vertically on a perpendicular wall. Otherwise a malfunction may be caused.
- Secure the prescribed distance between the converter unit/servo amplifier and the inner surface of the cabinet or other devices. Otherwise a malfunction may be caused.
- When using equipment that generates heat, such as regenerative options, set up with sufficient consideration of heat generation so that there is no effect on the converter unit/servo amplifier.

[MR-J2S]

(1) For single installations



(2) Mounting dimensions



[Unit: mm]

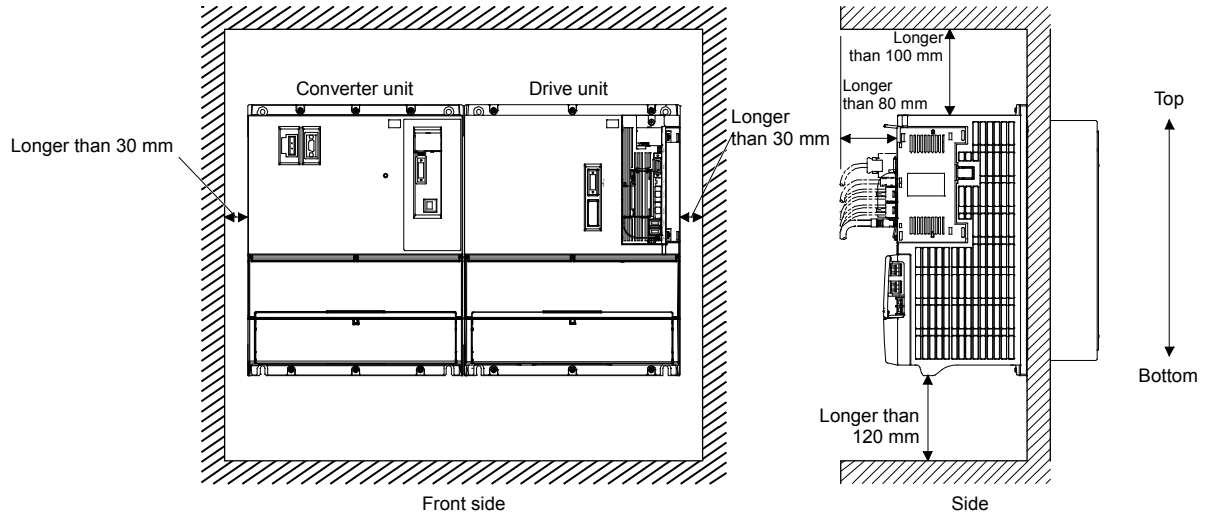
Servo amplifier	Dimensions	
	W1	W2
MR-J2S-30KA4/B4	380	290
MR-J2S-30KA/B, 37KA/B MR-J2S-37KA4/B4, 45KA4/B4, 55KA4/B4	450	360

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4-DU

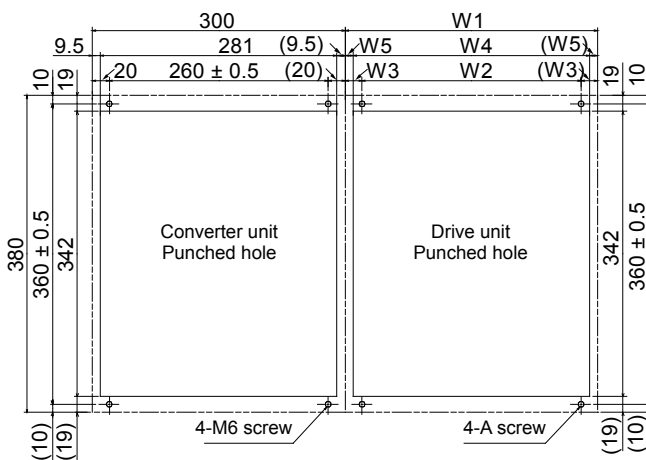
[MR-J4]

POINT

- Make sure to install a drive unit on the right of a converter unit as shown in the diagram.



(2) Mounting hole dimensions



Drive unit	Variable dimensions [mm]					Screw size
	W1	W2	W3	W4	W5	A
MR-J4-DU30K_(-RJ)	300	260 ± 0.5	20	281	9.5	M6
MR-J4-DU37K_(-RJ)						
MR-J4-DU45K_4(-RJ)						
MR-J4-DU55K_4(-RJ)						
MR-J4-DU30K_4(-RJ)	240	120 ± 0.5	60	222	9	M5
MR-J4-DU37K_4(-RJ)						

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

1.5 Magnetic Contactor Control Connector (CNP1) [Exclusively for MR-J4- _DU_]



Note

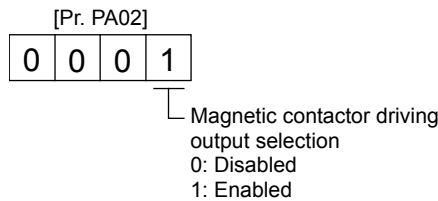
- Connect a magnetic contactor wiring connector to the converter unit. CNP1-1 and L11 are always in conduction. Leaving the connector disconnected can cause an electric shock.

POINT

- The J2S series comes with no magnetic contactor control connector.

Enabling the magnetic contactor output shuts off the main circuit power supply automatically when the drive unit activates an alarm.

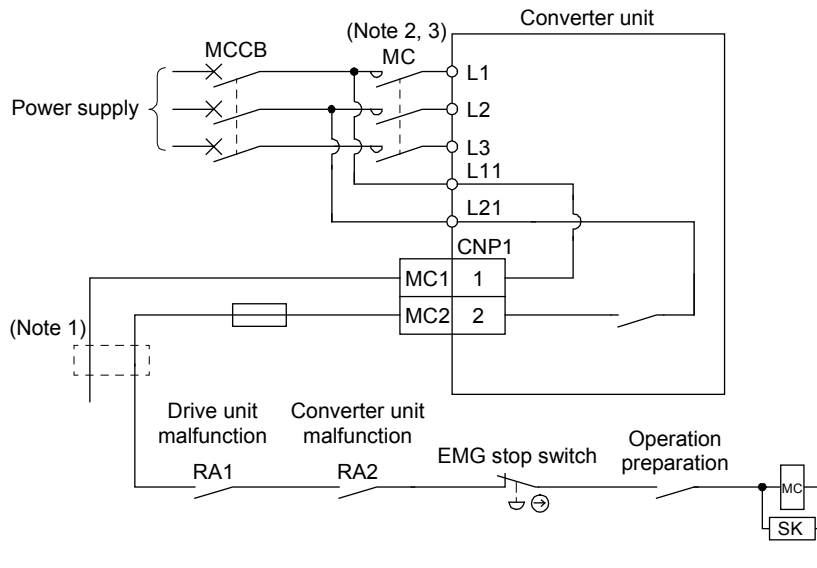
Setting converter unit parameter [Pr. PA02] to "___ 1" (the initial value) enables the magnetic contactor output.



(1) When the magnetic contactor drive output is enabled

Connecting the magnetic contactor control connector (CNP1) to the coil of a magnetic contactor enables the control of the magnetic contactor.

CNP1 connection internal diagram



- Note 1. Use a step-down transformer when the converter unit and drive unit are 400 V class and the coil voltage of the magnetic contactor is 200 V class.
- Note 2. Bus voltage decreases according to the voltage and operation pattern of the main circuit, and there may be a shift in dynamic brake deceleration during forced stop deceleration. If dynamic brake deceleration is not desired, delay the time to turn off the electromagnetic contactor.
- Note 3. If instantaneous power failure or any other problem lowers the voltage of L11 or L21, the magnetic contactor turns off.


When the drive unit sends the converter unit a start up command, the converter unit shorts CNP1-2 and L21, powering the control circuit of the magnetic contactor. This turns on the magnetic contactor and powers up the main circuit of the converter unit.

In the following cases, the converter unit releases CNP1-2 and L21 and powers down the main circuit automatically.

- (a) When the converter unit activates an alarm.
 - (b) When the drive unit activates an alarm.
 - (c) When the forced stop of the converter (EM1) unit is turned off.
 - (d) When the drive unit outputs [AL. 95 STO warning].
- (2) When the magnetic contactor drive output is disabled
Activating an alarm of the converter unit or drive unit does not shut off the main circuit power supply.
Configure the circuit so that an alarm can be detected and the main circuit power supply can be shut off.

2. SIGNALS AND WIRING

2.1 Comparison of Standard Connection Diagrams

 **WARNING** • Insulate the connections of the power supply terminals. Failure to do so may cause electric shock.

 **Note**

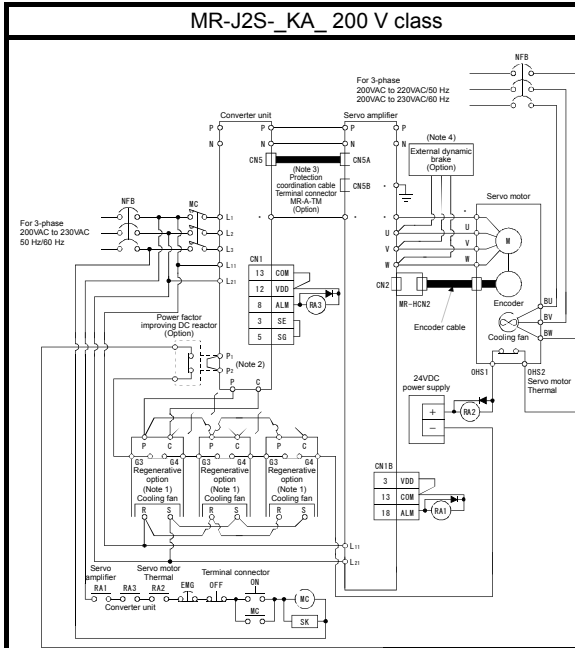
- Always connect a magnetic contactor between the main circuit power supply and L1/L2/L3 of the converter unit in order to configure a power supply shut-off on the power supply side of the converter unit. If a magnetic contactor is not connected, continuous flow of a large current may cause a fire when the converter unit or servo amplifier malfunctions.
- Generate a fault signal and shut off the power supply. Not doing so may cause a fire when a regenerative transistor malfunctions or the like may overheat the regenerative resistor.
- Connect the servo amplifier to U/V/W of the power supply correctly. Otherwise the servo motor will not operate properly.
- Do not connect the servo motor directly to the 3-phase 200 V power supply or the 3-phase 400 V power supply. Otherwise a malfunction may be caused.
- Do not switch the motor power cables while currents are applied to the motor. Doing so may cause an abnormal operation or a malfunction.

POINT

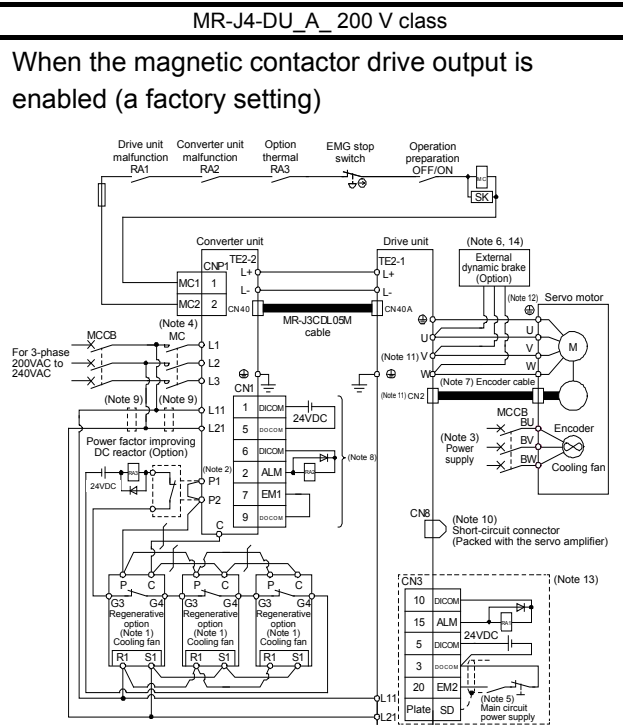
- When using an external dynamic brake, refer to the Servo Amplifier Instruction Manual.

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4-DU

(1) Type A 200 V class

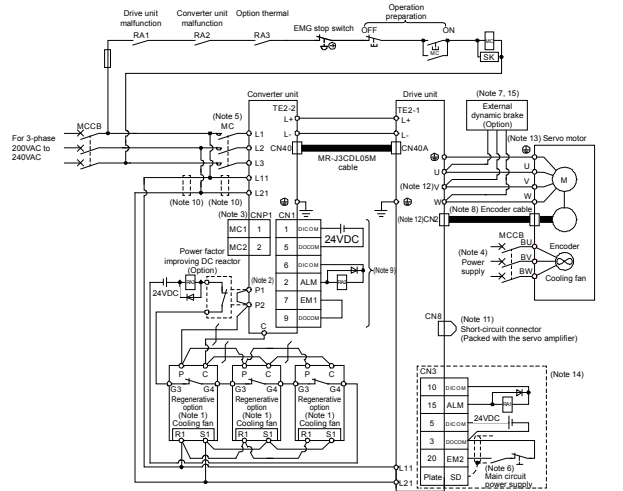


- Note 1. This is a configuration for MR-RB137. Use three MR-RB137s in a set, which provides permissible regenerative power of 3900 W.
- When using a power factor improving DC reactor, remove the short-circuit bar between P1 and P2.
 - Use a MR-J2HBUS_M_SSCNET cable as a protection coordination cable. (Refer to section 10.3.1.)
 - Use an external dynamic brake to this servo amplifier. Without an external dynamic brake, the servo motor keeps running in a free run state at an emergency stop, leading to an accident. Take as many safety measures as possible in the system.



When the magnetic contactor drive output is enabled (a factory setting)

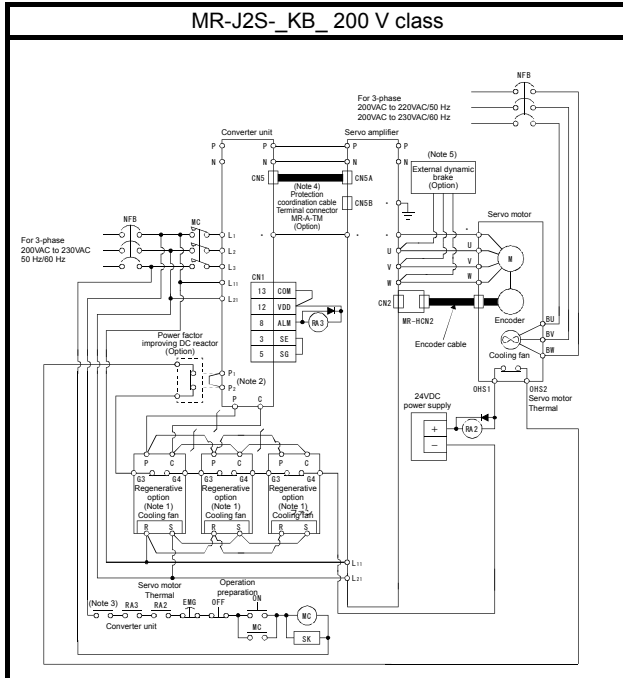
When the magnetic contactor drive output is disabled



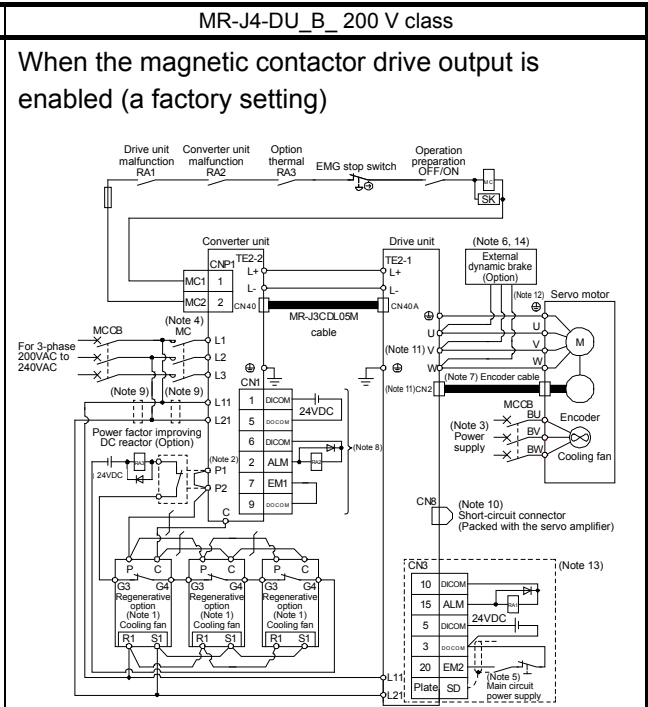
- Note 1. This is a configuration for MR-RB137. Use three MR-RB137s in a set, which provides permissible regenerative power of 3900 W.
- P1 and P2 are connected in factory. When using the power factor improving DC reactor, remove the short-circuit bar across P1 and P2 before connecting the reactor.
 - For the power supply specifications of the cooling fan, refer to the servo motor instruction manual (vol. 3).
 - Use a magnetic contactor with an operation delay time (interval between current being applied to the coil until closure of contacts) of 80 ms or less. Bus voltage decreases according to the voltage and operation pattern of the main circuit, and there may be a shift in dynamic brake deceleration during forced stop deceleration. If dynamic brake deceleration is not desired, delay the time to turn off the electromagnetic contactor.
 - In order to prevent unexpected restarting of the drive unit, configure the circuit so that EM2 is also turned off when the main circuit power supply is turned off.
 - Use an external dynamic brake to this drive unit. Without an external dynamic brake, activation of an alarm which does not cause deceleration to a stop keeps the servo motor running in a free run state at an emergency stop, and may lead to an accident. Take as many safety measures as possible. Refer to Chapter 6 of Instruction manual for alarms which do not cause deceleration to a stop. For wiring the external dynamic brake, refer to Section 9.3.
 - Use of the optional cable is recommended for the encoder cable. For cable selection, refer to the Servo Motor Instruction Manual (vol. 3).
 - This is with a sink I/O interface. For a source I/O interface, refer to Section 3.6.2.
 - If the wire used for L11 and L21 is thinner than the wire used for L1, L2, and L3, use a molded-case circuit breaker. (Refer to Section 9.5)
 - When not using the STO function, mount the short-circuit connector supplied with the drive unit.
 - To avoid a malfunction, do not connect the U, V, W, and CN2 phase terminals of the drive unit to the servo motor of an incorrect axis.
 - For servo motor power cable connection, refer to the Servo Motor Instruction Manual (Vol. 3).
 - This wiring diagram is for MR-J4-DU-B(-RJ). The way to interface MR-J4-DU-B(-RJ) is the same as MR-J4-B(-RJ). See each servo amplifier instruction manual.
 - To comply with SEMI-F47 standard, do not use an external dynamic brake. Do not assign the dynamic brake interlock (DB). Otherwise, the drive unit turns into the servo off state at an instantaneous power failure.

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4-DU

(2) Type B 200 V class

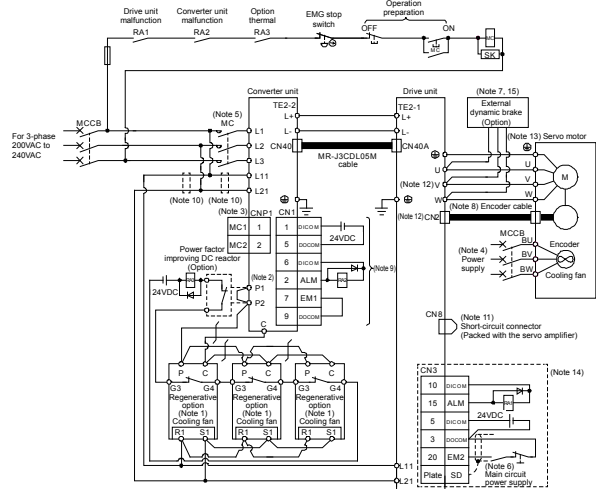


- Note 1. This is a configuration for MR-RB137. Use three MR-RB137s in a set, which provides permissible regenerative power of 3900 W.
- 2. When using a power factor improving DC reactor, remove the short-circuit bar between P1 and P2.
- 3. Shut off the power supply by using an external sequence when a servo alarm occurs.
- 4. Use a MR-J2HBUS_M_SSCNET cable as a protection coordination cable. (Refer to section 10.3.1.)
- 5. Use an external dynamic brake to this servo amplifier. Without an external dynamic brake, the servo motor keeps running in a free run state at an emergency stop, leading to an accident. Take as many safety measures as possible.



When the magnetic contactor drive output is enabled (a factory setting)

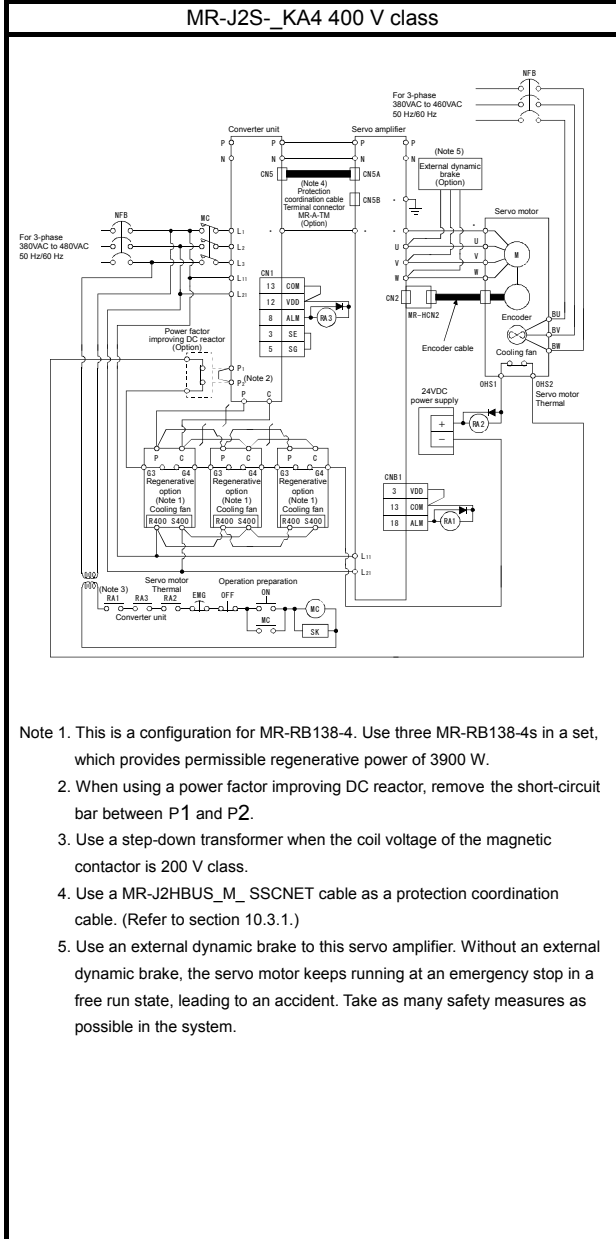
When the magnetic contactor drive output is disabled



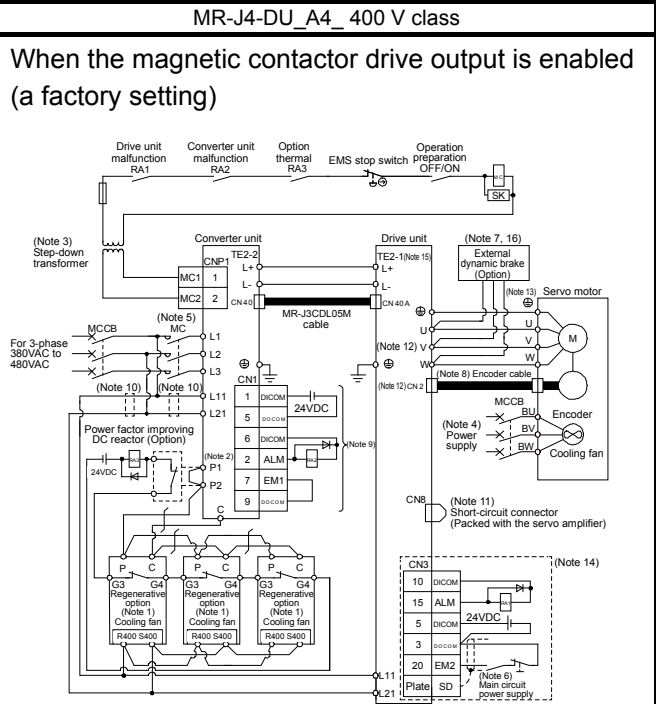
- Note 1. This is a configuration for MR-RB137. Use three MR-RB137s in a set, which provides permissible regenerative power of 3900 W.
- 2. P1 and P2 are connected in factory. When using the power factor improving DC reactor, remove the short-circuit bar across P1 and P2 before connecting the reactor.
- 3. For the power supply specifications of the cooling fan, refer to the servo motor instruction manual (vol. 3).
- 4. Use a magnetic contactor with an operation delay time (interval between current being applied to the coil until closure of contacts) of 80 ms or less. Bus voltage decreases according to the voltage and operation pattern of the main circuit, and there may be a shift in dynamic brake deceleration during forced stop deceleration. If dynamic brake deceleration is not desired, delay the time to turn off the electromagnet contactor.
- 5. In order to prevent unexpected restarting of the drive unit, configure the circuit so that EM2 is also turned off when the main circuit power supply is turned off.
- 6. Use an external dynamic brake to this drive unit. Without an external dynamic brake, activation of an alarm which does not cause deceleration to a stop keeps the servo motor running in a free run state at an emergency stop, and may lead to an accident. Take as many safety measures as possible in the system. Refer to Chapter 6 of Instruction manual for alarms which do not cause deceleration to a stop. For wiring the external dynamic brake, refer to Section 9.3.
- 7. Use of the optional cable is recommended for the encoder cable. For cable selection, refer to the servo motor instruction manual (vol. 3).
- 8. This is with a sink I/O interface. For a source I/O interface, refer to Section 3.6.2.
- 9. If the wire used for L11 and L21 is thinner than the wire used for L1, L2, and L3, use a molded-case circuit breaker. (Refer to Section 9.5)
- 10. When not using the STO function, mount the short-circuit connector supplied with the drive unit.
- 11. To avoid a malfunction, do not connect the U, V, W, and CN2 phase terminals of the drive unit to the servo motor of an incorrect axis.
- 12. For servo motor power cable connection, refer to the servo motor instruction manual (vol. 3).
- 13. This wiring diagram is for MR-J4-DU-B (-RJ). The way to interface MR-J4-DU-(-RJ) is the same as MR-J4-(-RJ). See each servo amplifier instruction manual.
- 14. To comply with SEMI-F47 standard, do not use an external dynamic brake. Do not assign the dynamic brake interlock (DB). Otherwise, the drive unit turns into the servo off state at an instantaneous power failure.

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4-DU

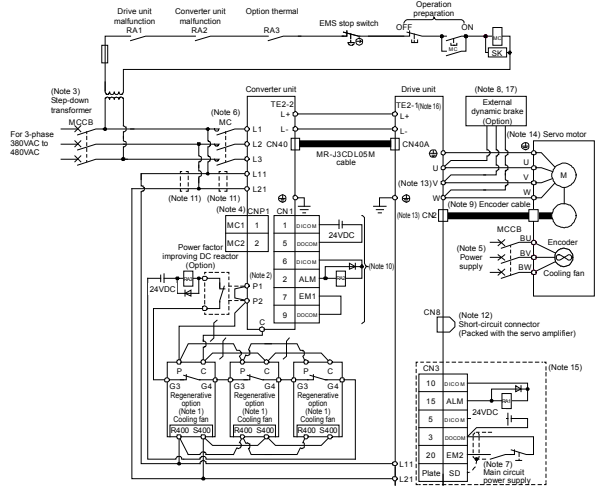
(3) Type A 400 V class



- Note 1. This is a configuration for MR-RB138-4. Use three MR-RB138-4s in a set, which provides permissible regenerative power of 3900 W.
- When using a power factor improving DC reactor, remove the short-circuit bar between P1 and P2.
 - Use a step-down transformer when the coil voltage of the magnetic contactor is 200 V class.
 - Use a power factor improving DC reactor (Option).
 - Use a step-down transformer when the coil voltage of the magnetic contactor is 200 V class.
 - Use a MR-J2HBUS_M_SSCNET cable as a protection coordination cable. (Refer to section 10.3.1.)
 - Use an external dynamic brake to this servo amplifier. Without an external dynamic brake, the servo motor keeps running at an emergency stop in a free run state, leading to an accident. Take as many safety measures as possible in the system.



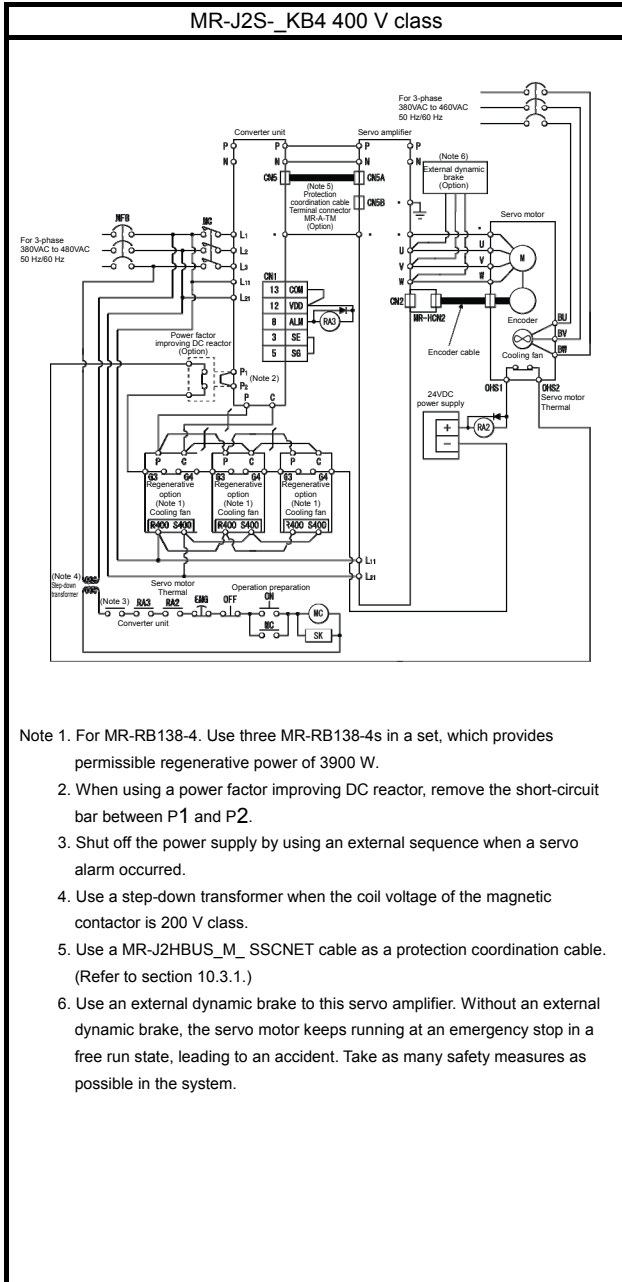
When the magnetic contactor drive output is disabled



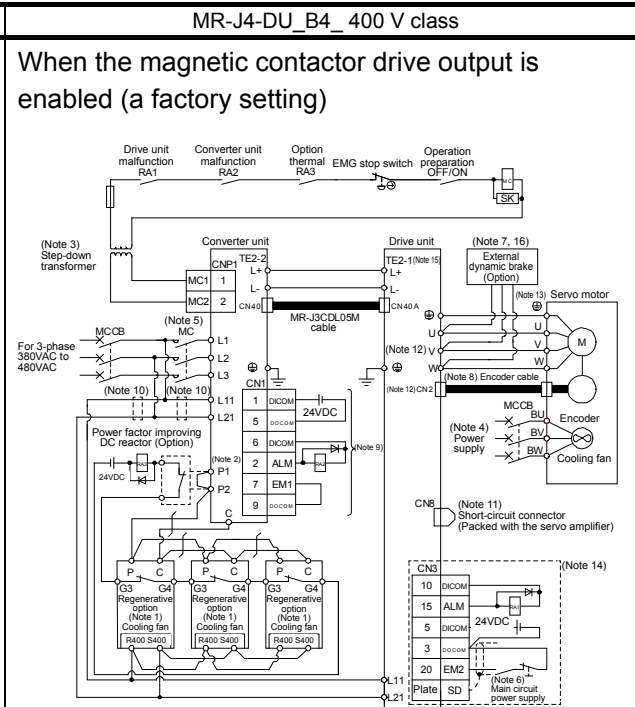
- Note 1. This is a configuration for MR-RB137. Use three MR-RB137s in a set, which provides permissible regenerative power of 3900 W.
- P1 and P2 are connected in factory. When using the power factor improving DC reactor, remove the short-circuit bar across P1 and P2 before connecting the reactor.
 - For the power supply specifications of the cooling fan, refer to the servo motor instruction manual (vol. 3).
 - Use a magnetic contactor with an operation delay time (interval between current being applied to the coil until closure of contacts) of 80 ms or less. Bus voltage decreases according to the voltage and operation pattern of the main circuit, and there may be a shift in dynamic brake deceleration during forced stop deceleration. If dynamic brake deceleration is not desired, delay the time to turn off the electromagnetic contactor.
 - In order to prevent unexpected restarting of the drive unit, configure the circuit so that EM2 is also turned off when the main circuit power supply is turned off.
 - Use an external dynamic brake to this drive unit. Without an external dynamic brake, activation of an alarm which does not cause deceleration to a stop keeps the servo motor running in a free run state at an emergency stop, and may lead to an accident. Take as many safety measures as possible in the system. Refer to Chapter 6 of Instruction manual for alarms which do not cause deceleration to a stop. For wiring the external dynamic brake, refer to Section 9.3.
 - Use of the optional cable is recommended for the encoder cable. For cable selection, refer to the servo motor instruction manual (vol. 3).
 - This is with a sink I/O interface. For a source I/O interface, refer to Section 3.6.2.
 - If the wire used for L11 and L21 is thinner than the wire used for L1, L2, and L3, use a molded-glass circuit breaker. (Refer to Section 9.5)
 - When not using the STO function, mount the short-circuit connector supplied with the drive unit.
 - To avoid a malfunction, do not connect the U, V, W, and CN2 phase terminals of the drive unit to the servo motor of an incorrect axis.
 - For servo motor power cable connection, refer to the servo motor instruction manual (vol. 3).
 - This wiring diagram is for MR-J4-DU-B (-RJ). The way to interface MR-J4-DU-B (-RJ) is the same as MR-J4-B (-RJ). See each servo amplifier instruction manual.
 - To comply with SEMI-F47 standard, do not use an external dynamic brake. Do not assign the dynamic brake interlock (DB). Otherwise, the drive unit turns into the servo off state at an instantaneous power failure.

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4-DU

(4) Type B 400 V class

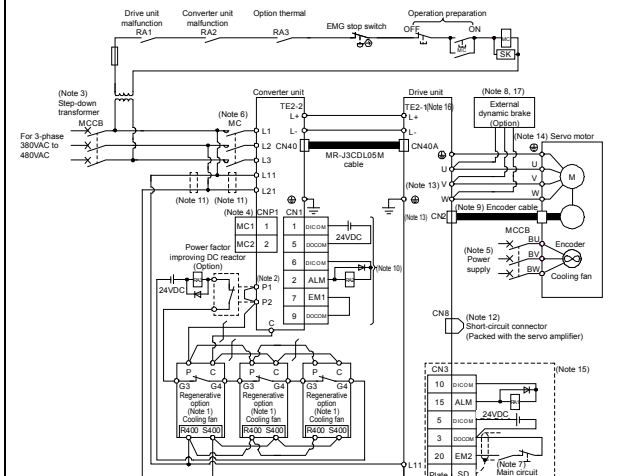


- Note 1. For MR-RB138-4. Use three MR-RB138-4s in a set, which provides permissible regenerative power of 3900 W.
- 2. When using a power factor improving DC reactor, remove the short-circuit bar between P1 and P2.
- 3. Shut off the power supply by using an external sequence when a servo alarm occurred.
- 4. Use a step-down transformer when the coil voltage of the magnetic contactor is 200 V class.
- 5. Use a MR-J2HBUS_M_SSCNET cable as a protection coordination cable. (Refer to section 10.3.1.)
- 6. Use an external dynamic brake to this servo amplifier. Without an external dynamic brake, the servo motor keeps running at an emergency stop in a free run state, leading to an accident. Take as many safety measures as possible in the system.



When the magnetic contactor drive output is enabled (a factory setting)

When the magnetic contactor drive output is disabled

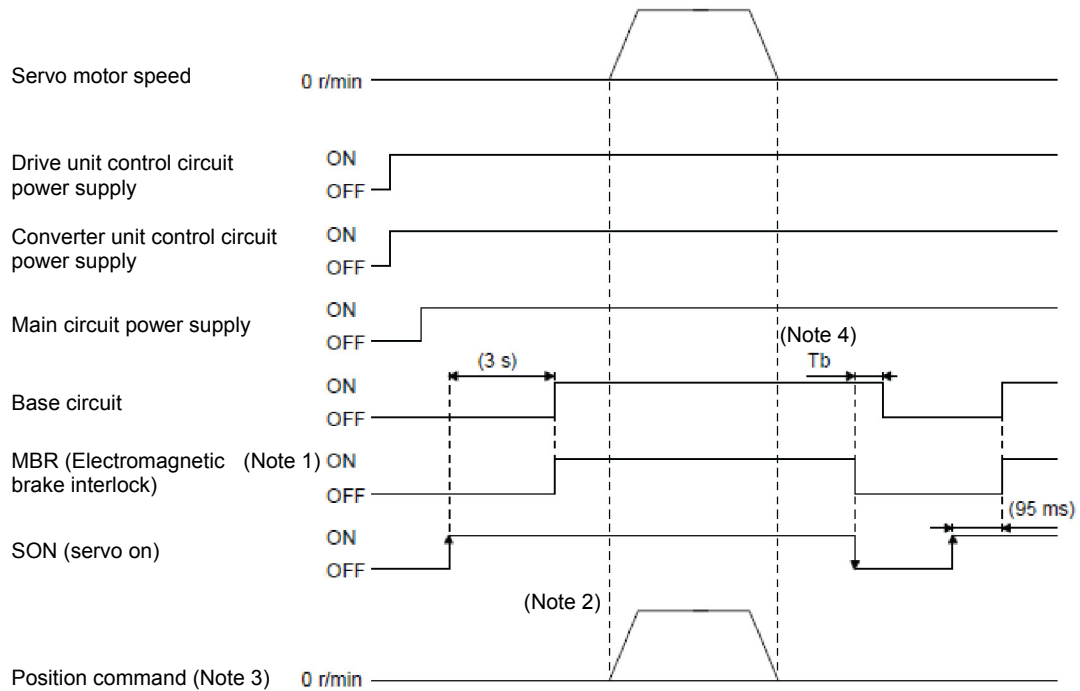


- Note 1. This is a configuration for MR-RB137. Use three MR-RB137s in a set, which provides permissible regenerative power of 3900 W.
- 2. P1 and P2 are connected in factory. When using the power factor improving DC reactor, remove the short-circuit bar across P1 and P2 before connecting the reactor.
- 3. For the power supply specifications of the cooling fan, refer to the servo motor instruction manual (vol. 3).
- 4. Use a magnetic contactor with an operation delay time (interval between current being applied to the coil until closure of contacts) of 80 ms or less. Bus voltage decreases according to the voltage and operation pattern of the main circuit, and there may be a shift in dynamic brake deceleration during forced stop deceleration. If dynamic brake deceleration is not desired, delay the time to turn off the electromagnetic contactor.
- 5. In order to prevent unexpected restarting of the drive unit, configure the circuit so that EM2 is also turned off when the main circuit power supply is turned off.
- 6. Use an external dynamic brake to this drive unit. Without an external dynamic brake, activation of an alarm which does not cause deceleration to a stop keeps the servo motor running in a free run state at an emergency stop, and may lead to an accident. Take as many safety measures as possible in the system. Refer to Chapter 6 of Instruction manual for alarms which do not cause deceleration to a stop. For wiring the external dynamic brake, refer to Section 9.3.
- 7. 3. Use of the optional cable is recommended for the encoder cable. For cable selection, refer to the servo motor instruction manual (vol. 3).
- 8. This is with a sink I/O interface. For a source I/O interface, refer to Section 3.6.2.
- 9. If the wire used for L11 and L21 is thinner than the wire used for L1, L2, and L3, use a molded-case circuit breaker. (Refer to Section 9.5)
- 10. When not using the STO function, mount the short-circuit connector supplied with the drive unit.
- 11. To avoid a malfunction, do not connect the U, V, W, and CN2 phase terminals of the drive unit to the servo motor of an incorrect axis.
- 12. For servo motor power cable connection, refer to the servo motor instruction manual (vol. 3).
- 13. This wiring diagram is for MR-J4-DU_B(-RJ). The way to interface MR-J4-DU_(-RJ) is the same as MR-J4_(-RJ). See each servo amplifier instruction manual.
- 14. To comply with SEMI-F47 standard, do not use an external dynamic brake. Do not assign the dynamic brake interlock (DB). Otherwise, the drive unit turns into the servo off state at an instantaneous power failure.

2.2 Power-on Sequence

- (1) MR-J2S-30 kW or more
 - (a) Power-on sequence
 - 1) For the power supply wiring, make sure to use a magnetic contactor in the main circuit power supply as shown in Section 3.3.1.
Configure so that the magnetic contactor is turned off at the same time as an alarm is generated in the external sequence.
 - 2) Turn on the control circuit power supply L11/L21 at the same time as or before turning on the main circuit power supply.
If the main circuit power supply is not turned on, a warning is displayed on the display. However, the warning disappears and operation returns to normal when the main circuit power supply is turned on.
 - 3) The servo amplifier can receive SON (servo-on) signals approximately 1 s after the main circuit power supply is turned on. Therefore, if SON (servo-on) is turned on at the same time as the three phase power supply, the base circuit will be turned on after approximately 1 s. After approximately 20 ms, RD (Ready) is turned on and operation becomes available.
- (2) MR-J4-DU_A_(-RJ)
 - (a) Power-on procedure
 - 1) For the power supply wiring, make sure to use a magnetic contactor (L1/L2/L3) in the main circuit power supply as shown in Section 2.1.
Configure so that the magnetic contactor is turned off at the same time as an alarm is generated in the external sequence.
 - 2) When the magnetic contactor drive output of the converter unit is enabled, turn on simultaneously the control circuit power supply (L11/L12) of the converter unit and that of the drive unit. The main circuit power supply is turned on automatically after the converter unit and drive unit start up. When an external sequence controls the magnetic contactor, turn on the control circuit power supply (L11/L12) of the converter unit and that of the drive unit at the same time as or before turning on the main circuit power supply. If the main circuit power supply is not turned on, a warning is displayed on the drive unit display. However, the warning disappears and operation returns to normal when the main circuit power supply is turned on.

(b) Timing chart



- Note 1. When an external electromagnetic brake is installed, make sure that MBR controls the electromagnetic brake as shown below.
 ON: The electromagnetic brake is disabled.
 OFF: The electromagnetic brake is enabled.
2. Release the external electromagnetic brake before giving a position command.
3. It is for the position control mode.
4. When SON is off, use [Pr. PC16 electromagnetic brake sequence output] to set the delay time (T_b) from turning off of MBR (electromagnetic brake interlock) to shut-off of the base circuit shut-off.

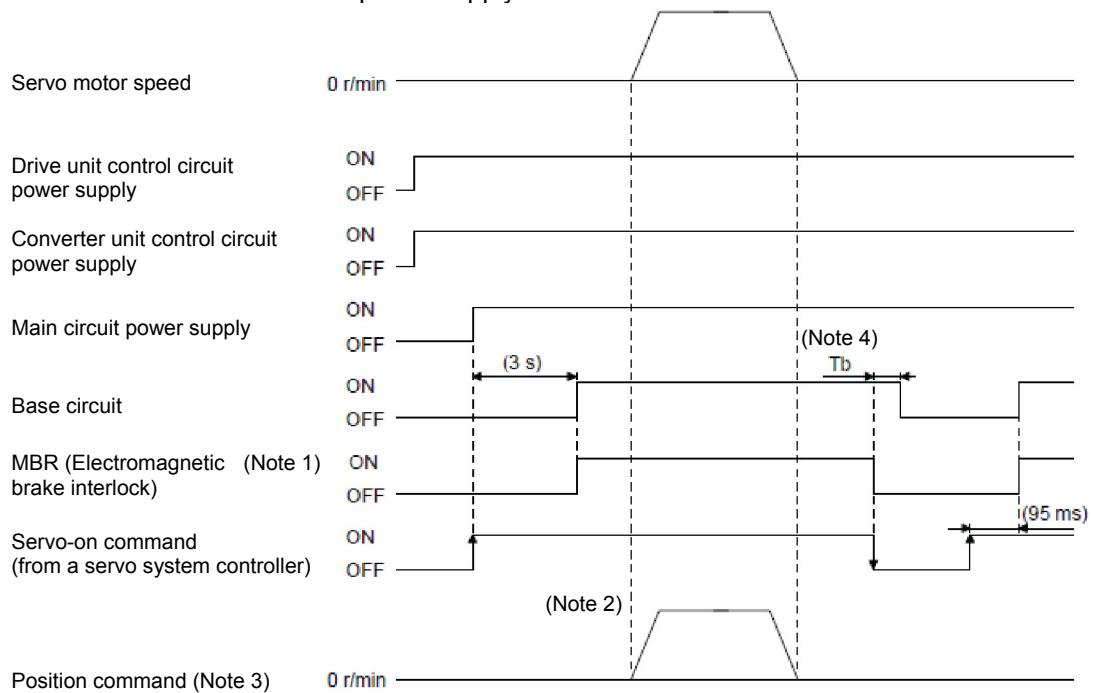
(3) MR-J4-DU_B_(-RJ)

(a) Power-on procedure

- 1) For the power supply wiring, make sure to use a magnetic contactor (L1/L2/L3) in the main circuit power supply as shown in Section 2.1.
Configure the circuit so that the magnetic contactor is turned off at the same time as an alarm is generated in the external sequence.
- 2) Turn on the control circuit power supply (L11/L12) of the converter unit and that of the drive unit at the same time as or before turning on the main circuit power supply. If the main circuit power supply is not turned on, a warning is displayed on the drive unit display. However, the warning disappears and operation returns to normal when the main circuit power supply is turned on.

(b) Timing chart

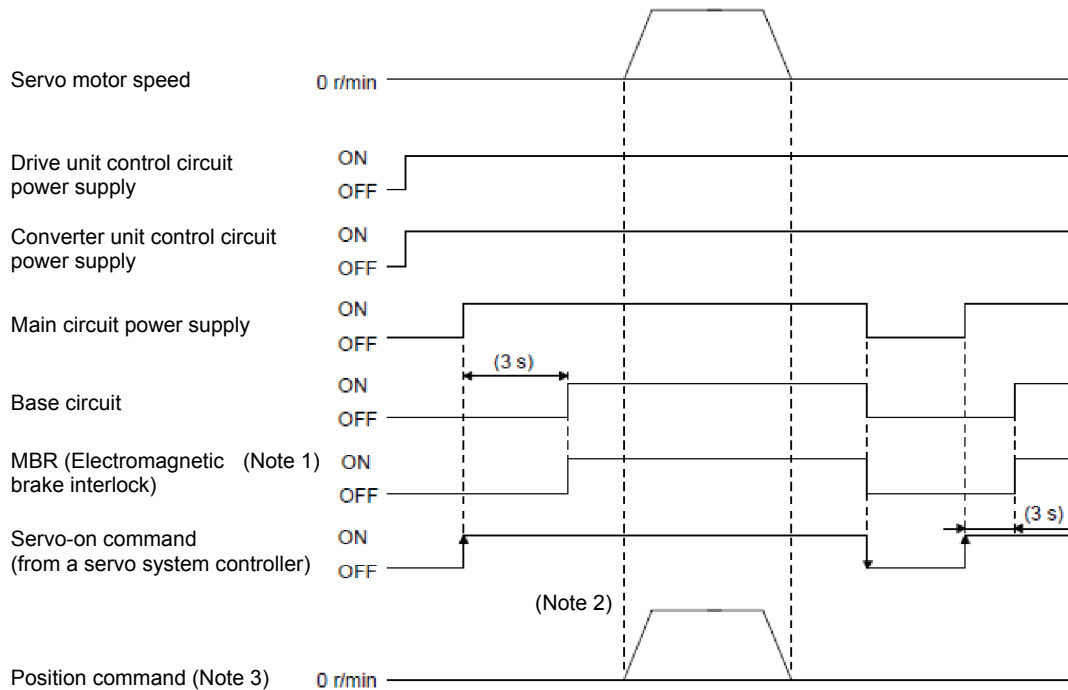
- 1) If the magnetic contactor driving output is enabled and the ready-on is on, turning SON off does not shut off the main circuit power supply.



- Note 1. When an external electromagnetic brake is installed, make sure that MBR controls the electromagnetic brake as shown below.
ON: The electromagnetic brake is disabled.
OFF: The electromagnetic brake is enabled.
2. Release the external electromagnetic brake before giving a position command.
3. It is for the position control mode.
4. When SON is off, use [Pr. PC02 electromagnetic brake sequence output] to set the delay time (T_b) from turning off of MBR (electromagnetic brake interlock) to shut-off of the base circuit shut-off.

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

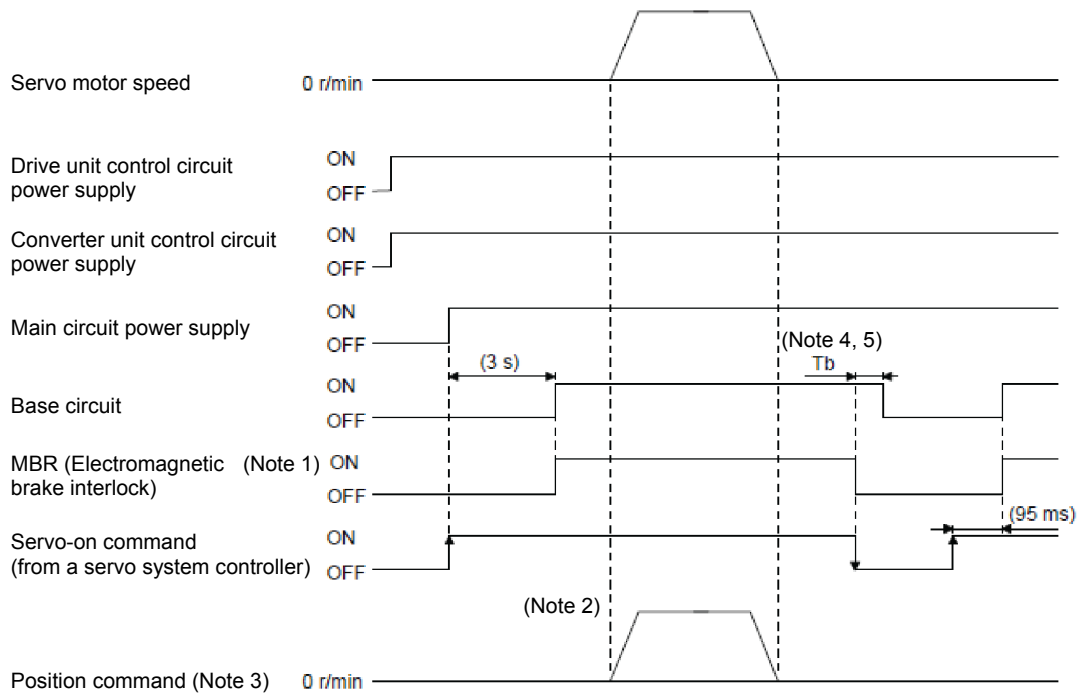
- 2) When the magnetic contactor driving output is enabled and the ready-on is turned off
Turning SON off switches off the magnetic contactor of the converter unit and shut off the main circuit power supply.



- Note 1. When an external electromagnetic brake is installed, make sure that MBR controls the electromagnetic brake as shown below.
ON: The electromagnetic brake is disabled.
OFF: The electromagnetic brake is enabled.
2. Release the external electromagnetic brake before giving a position command.
3. It is for the position control mode.

3) When the magnetic contactor driving output is off

When an alarm occurs, turn off the magnetic contactor by using the external sequence and shut off the main circuit power supply.



- Note 1. When an external electromagnetic brake is installed, make sure that MBR controls the electromagnetic brake as shown below.
 ON: The electromagnetic brake is disabled.
 OFF: The electromagnetic brake is enabled.
2. Release the external electromagnetic brake before giving a position command.
3. It is for the position control mode.
4. When SON is off, use [Pr. PC02 electromagnetic brake sequence output] to set the delay time (T_b) from turning off of MBR (electromagnetic brake interlock) to shut-off of the base circuit.
5. The delay occurs when SON is off and the ready-on is on. Turning off the ready-on switches off SON and the base circuit simultaneously. ($T_b=0$)

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

2.3 List of Corresponding Connectors and Terminal Blocks

(1) Converter unit

(a) Connector comparison table

For the details of signals, refer to each servo amplifier instruction manual.

MR-HP30K,MR-HP55KA4		MR-CR55K,MR-CR55K4																																																										
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Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

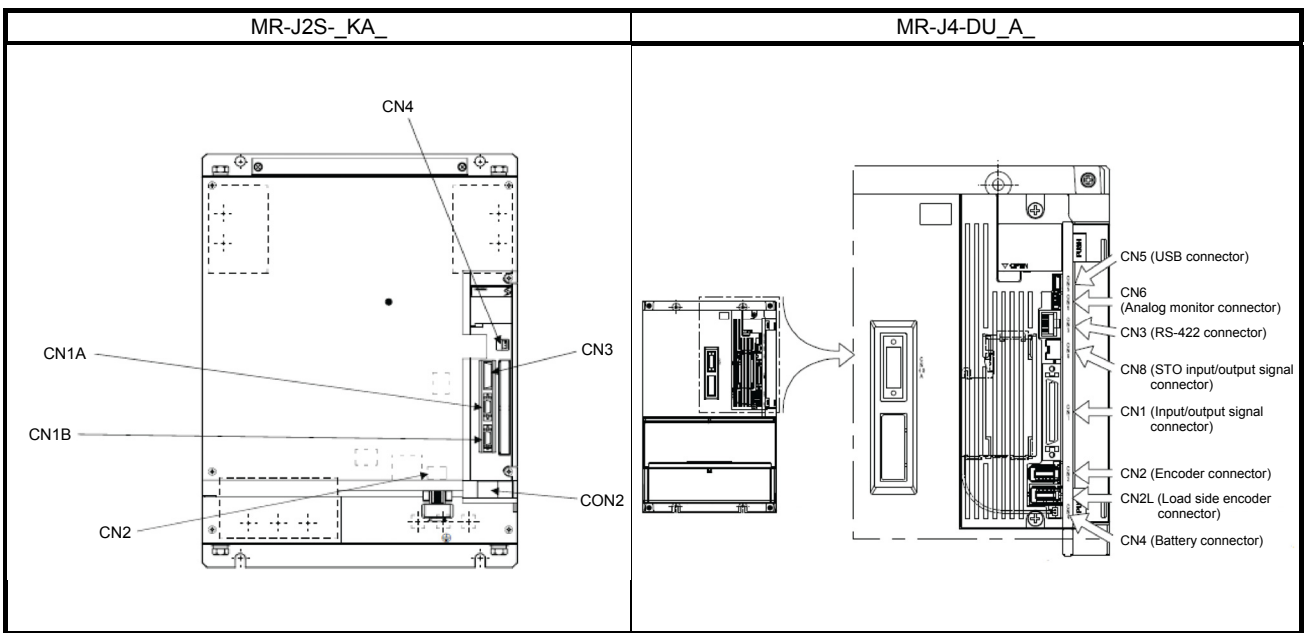
List of Corresponding Connectors and Terminal Blocks

MR-HP30K,MR-HP55KA4		MR-CR55K,MR-CR55K4	Note
(1)	Drive unit connector CN5	Drive unit connector CN40	Must switch to a protection coordination cable (option) or prepare a new cable.
(2)	I/O signal connector CN1	I/O signal connector CN1	Must fabricate a new cable.
(3)	Main circuit terminal block TE1-1, TE1-2	Magnetic contactor wiring connector CNP1	Must fabricate a new cable.
(4)	Control circuit terminal block TE3	Main circuit terminal block TE1-1, TE1-2	
(5)	PN terminal block TE2-1, TE2-2	Control circuit terminal block TE3	
		PN terminal block TE2-1, TE2-2	

(2) Drive unit (Type A)

(a) Connector comparison table

For the details of signals, refer to each servo amplifier instruction manual.



List of Corresponding Connectors and Terminal Blocks

MR-J2S- _A_		MR-J4- _A_	Note
(1)	I/O signal connector CN1A	I/O signal connector CN1	Prepare a new cable.
(2)	I/O signal connector CN1B		
(3)	Encoder connector CN2	Encoder connector CN2	Must switch to encoder cable (option) or prepare a new cable.
(4)	Communication connector CN3	USB communication connector CN5	Switch to USB cable (option).
(5)	Analog monitor CN4	Analog monitor connector CN6	Switch to monitor cable (option).
(6)	PN terminal block TE2-1, TE2-2	PN terminal block TE2-1	
(7)	Servo motor power supply terminal block TE1	Servo motor power connector TE1	
(8)	Control circuit terminal block TE3	Control circuit power connector TE3	
(9)	Battery connector CON1	Battery connector CN4	Prepare a new battery.
(10)	Drive unit connector CN5A	Drive unit connector CN40A	Must switch to a protection coordination cable (option) or prepare a new cable.
(11)	Terminal connector connector CN5B		

When not using the STO function in MR-J4- _A_, attach the short-circuit connector supplied with the servo amplifier to CN8 (STO input signal connector).

The configuration of the main circuit terminal block differs depending on the capacity. See "Part 7: Common Reference Material".

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

(b) Comparison of signals

1) CN1A/CN1B

Refer to Section 3.4 of "Part 2: Replacement of MR-J2S- _A_ with MR-J4- _A_".

2) CN3

MR-J2S- _A_		Signal abbreviation (Note)	MR-J4- _A_	
Connector pin assignment	Connector pin No.		Connector pin No.	Connector pin assignment
	CN3-1	LG	CN3-1	
	CN3-5	RDP	CN3-3	
	CN3-9	SDP	CN3-5	
	CN3-11	LG	CN3-7	
	CN3-15	RDN	CN3-6	
	CN3-19	SDN	CN3-4	
	CN3-20	P5(P5D)	CN3-2	
	CN3-2	RXD	-	
	CN3-10	TRE	-	
	CN3-12	TXD	-	

Note. Signal abbreviations in parentheses are for MR-J4- _A_.

3) CN4

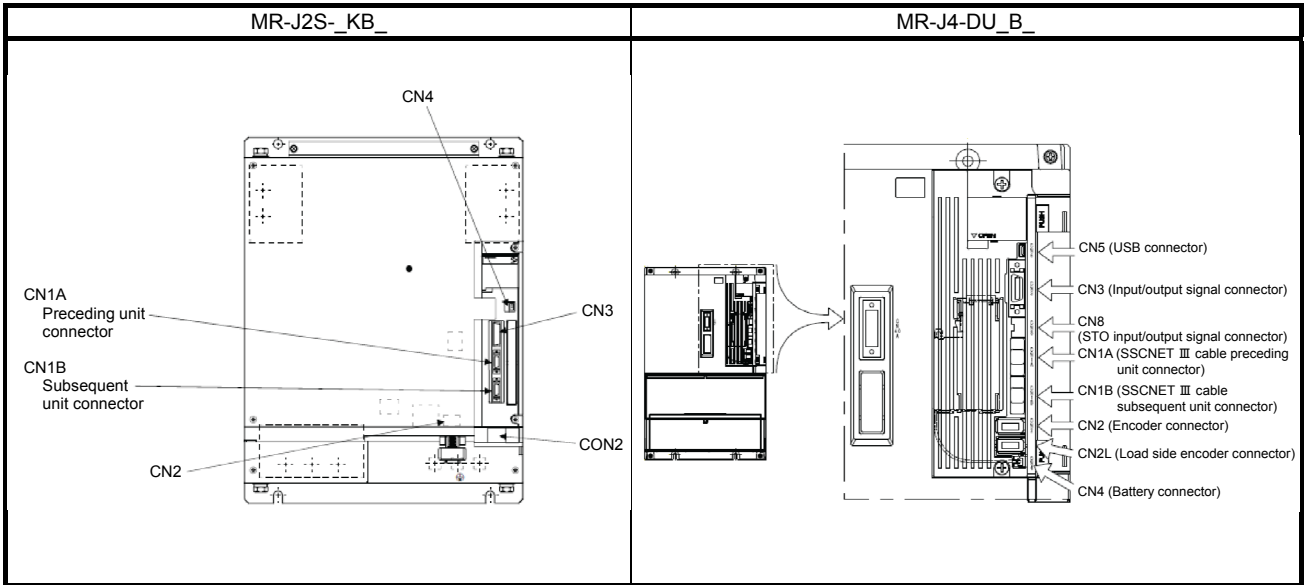
MR-J2S- _A_		Signal symbol	MR-J4- _A_	
Connector pin assignment	Connector pin No.		Connector pin No.	Connector pin assignment
	CN4-1	MO1	CN6-3	
	CN4-2	MO2	CN6-2	
	CN4-4	LG	CN6-1	

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

(3) Drive unit (Type B)

(a) Connector comparison table

For the details of signals, refer to each servo amplifier instruction manual.



List of Corresponding Connectors and Terminal Blocks

	MR-J2S- _B_	MR-J4- _B_	Note
(1)	SSCNET cable connector CN1A	SSCNET III cable connector CN1	Prepare a new cable.
(2)	SSCNET cable connector CN1B		
(3)	Encoder connector CN2	Encoder connector CN2	Must switch to encoder cable (option) or prepare a new cable.
(4)	Communication connector CN3	USB communication connector CN5	Switch to USB cable (option).
(5)	Analog monitor CN 4	I/O signal connector CN3	Prepare a new cable.
(6)	I/O signal connector CON2		
(7)	PN terminal block TE2-1, TE2-2	PN terminal block TE2-1	
(8)	Servo motor power supply terminal block TE1	Servo motor power connector TE1	
(9)	Control circuit terminal block TE3	Control circuit power connector TE3	
(10)	Battery connector CON1	Battery connector CN4	Prepare a new battery.
(11)	Drive unit connector CN5A	Drive unit connector CN40A	Must switch to a protection coordination cable (option) or prepare a new cable.
(12)	Terminal connector connector CN5B		

When not using the STO function in MR-J4- _B_ , mount the short-circuit connector supplied with the servo amplifier to CN8 (STO input signal connector).

The configuration of the main circuit terminal block differs depending on the capacity. See "Part 7: Common Reference Material".

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

(b) Comparison of signals


MR-J2S- _B_		Abbreviation	MR-J4- _B_	
Connector pin assignment	Connector pin No.	(Note 3)	Connector pin No.	Connector pin assignment
	CON2-1	SG (DOCOM)	CN3-3	
	CON2-2	EM1 (EM2)	CN3-20 (Note 1)	
	CON2-3	MBR	CN3-13	
	CON2-4	DB	(Note 2)	
	CON2-15	VDD		
	CON2-18	COM (DICOM)	CN3-5 CN3-10	
	CN3-6	LA	CN3-6	
	CN3-16	LAR	CN3-16	
	CN3-7	LB	CN3-7	
	CN3-17	LBR	CN3-17	
	CN3-8	LZ	CN3-8	
	CN3-18	LZR	CN3-18	
	CN4-1	MO1	CN3-4	
	CN4-2	MO2	CN3-14	
	CN4-4	LG	CN3-1 CN3-11	
	Plate	SD	Plate	

- Note 1. The factory setting for MR-J4- _B_ is EM2.
 2. Set with [Pr. PD07] to [PD09] for use.
 3. Signals unique to MR-J4- _B_ are in parentheses.

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

3 PARAMETERS

3.1 Comparison of Parameters



Note

- Never perform extreme adjustments and changes to the parameters, otherwise the operation may become unstable.
- If fixed values are written in the digits of a parameter, do not change these values.
- Do not change parameters for manufacturer setting.
- Do not enter any setting value other than those specified for each parameter.

POINT

- For the parameter converter function, see "Part 7: Common Reference Material".
- To enable a parameter whose abbreviation is preceded by *, turn the power OFF and then ON after setting the parameter.
- For details about parameter settings for replacement, see the MR-J4- _A_ /MR-J4- _B_ Servo Amplifier Instruction Manual.
- With the drive unit, the deceleration to a stop function is enabled in the factory setting. To disable the deceleration to a stop function, set PA04 to "0 _ _ _".

(1) Converter unit

(a) Parameter comparison list

POINT

- Manufacturer setting parameters are not described here.

MR-HP30K,MR-HP55KA4					MR-CR55K,MR-CR55K4				
No.	Abbreviation	Parameter name	Initial value	Customer setting value	No.	Abbreviation	Parameter name	Initial value	Customer setting value
0	*STY	Control mode and regenerative option selection	0000h		PA01	*REG	Regenerative options	0000h	
					PA02	*MCC	Magnetic contactor drive output selection	0001h	
4	*DMD	Status display selection	0000h		PA08	*DMD	Status display selection	0000h	
					PA15	AOP3	Function selection A-3	0000h	
5	*ACL	Alarm history clear	0000h		PA09	*BPS	Alarm history clear	0000h	
					PA12	*DIF	Input filter setting	0002h	
					PA17	*AOP5	Function selection A-5	0001h	
					PA18	CVAT	Voltage sag detection time for SEMI-F47	200	

(b) Comparison of parameter details

MR-HP30K,MR-HP55KA4			MR-CR55K,MR-CR55K4		
No.	Name and function	Initial value	No.	Name and function	Initial value
0	Control mode and regenerative option selection Used to select a control mode and a regenerative option. <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;"> </div> </div> <div style="margin-left: 20px;"> Selection of regenerative option 0: Not used 1: MR-RB136-4 } Only for MR-HP55KA4 2: MR-RB138-4(3 units) 3: MR-RB139 } Only for MR-HP30KA 4: MR-RB137(3 units) </div> <div style="margin-left: 20px; margin-top: 5px;"> Setting values "1" and "2" are only for MR-HP55KA4, while "3" and "4" are only for MR-HP30KA. Incorrect setting will cause a parameter error (AL.37). </div>	0000h	PA01	Regenerative options Select a regenerative option. Set correctly otherwise [AL. 37 Parameter error] will occur. <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">0</div> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;"> </div> </div> <div style="margin-left: 20px;"> Regenerative option selection 00: Do not use regenerative options When using a brake unit FR-BU2-(H), select this value. 01: MR-RB139 02: MR-RB137(3 units) 13: MR-RB137-4 14: MR-RB13V-4(3 units) </div>	0000h

5 - 25

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

MR-HP30K,MR-HP55KA4			MR-CR55K,MR-CR55K4		
No.	Name and function	Initial value	No.	Name and function	Initial value
			PA02	Magnetic contactor drive output selection <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value=""/> Magnetic contactor driving output selection Select magnetic contactor driving output. 0: Disabled 1: Enabled	0001h
4	Status display selection Used to select a status display shown at power-on. <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value=""/> Status display of the converter unit at power-on 0: Bus voltage(initial value) 1: Effective load ratio 2: Peak load ratio 3: Regenerative load ratio	0000h	PA08	Status display selection Used to select a status display shown at power-on. <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value=""/> Status display shown at power-on 0: Status 1: Bus voltage 2: Effective load ratio 3: Peak load ratio 4: Regenerative load ratio 5: Unit power consumption 1 6: Unit integrating power consumption 1 7: Unit integrating power consumption 2	0000h
			PA15	Function selection A-3 <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value=""/> Unit power consumption unit selection 0: 1kW unit 1: 0.1kW unit	0000h
5	Alarm history clear Used to set the alarm history clear. <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value=""/> Alarm history clear 0: Disabled 1: Enabled When alarm history clear is enabled, the alarm history is cleared at next power-on. After the alarm history is cleared, the setting is automatically disabled (0).	0000h	PA09	Alarm history clear Used to erase the alarm history. <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value=""/> Alarm history clear 0: Disabled 1: Enabled Selecting "Enabled" will erase the alarm history at the next power-on. It will be automatically disabled after the alarm history is erased.	0000h
			PA12	Input filter setting <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value=""/> Select an input filter. If an external input signal causes chattering due to noise, etc., the input filter is used to suppress it. 0: None 1: 1.777 [ms] 2: 3.555 [ms] 3: 5.333 [ms]	0002h
			PA17	Function selection A-5 (Note 1) <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value=""/> Detection method selection for [AL. 10 Undervoltage]: Set when [AL. 10 Undervoltage] occurs due to power supply voltage distortion. 0: When [AL. 10] does not occur 1: When [AL. 10] occurs SEMI-F47 function selection 0: Disabled 1: Enabled By selecting "1" in this digit, even when an instantaneous power failure occurs during the operation, the electrical energy charged in the capacitor can be used to avoid the occurrence of [AL.10 Undervoltage]. [Voltage sag detection time for Pr. PA18SEMI-F47] can be used to set the waiting time before [AL. 10 Undervoltage] occurs.	0001h
			PA18	SEMI-F47 function: voltage sag detection wait (Note 1) Used to set the waiting time before activating [AL. 10 Undervoltage]. Selecting "disabled (__0_)" for "SEMI-F47 function selection" of [Pr. PA17] also disables this parameter. Setting range: 30 to 200	200 [ms]

Note 1. Set [Pr. PA17 SEMI-F47 function selection] and [Pr. PA18 SEMI-F47 function Voltage sag detection wait] of the converter unit according to [Pr. PA20 SEMI-F47 function selection] and [Pr. PF25 SEMI-F47 function Voltage sag detection wait] of a drive unit.

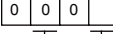
Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

(2) Drive unit

POINT
<ul style="list-style-type: none"> Manufacturer setting parameters are not described here.

(a) Type A 200 V class

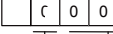
Here are described settings of drive unit specific parameters. Settings of the other parameters are the same as MR-J4- _A_ (-RJ). See Chapter 5 of "MR-J4- _A_ (-RJ) Servo Amplifier Instruction Manual".

MR-J2SA			MR-J4A		
No.	Name and function	Initial value	No.	Name and function	Initial value
0	Control mode and regenerative option selection  See the MR-J2S- _A_ servo amplifier Instruction Manual. Make sure to select regenerative option selection "0".	0000h	PA02	Regenerative options Select a regenerative option. For a drive unit, select a regenerative option by configuring the converter unit. Select "__ 0 0" or "__ 0 1", otherwise [AL. 37 Parameter error] will occur. 00: Use no regenerative option, or use a regenerative option by configuring the converter unit. 01: FR-BU2-(H) When FR-BU2-(H) is used and the power supply voltage distortion causes [AL. 10 Undervoltage], select "Method2 (___ 1)" for "Undervoltage alarm detection method selection" of [Pr. PC27]. 0: When [AL. 10] does not occur 1: When [AL. 10] occurs	0000h

(b) Type B 200 V class

POINT
<ul style="list-style-type: none"> Connecting to a servo system controller results in servo parameters of the controller written to the corresponding parameters of the drive unit. Some servo system controller models, drive unit software versions, and MR Configurator2 software versions limit setting of some parameters or setting values of the parameters. For details, refer to servo system controller user's manuals.

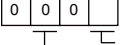
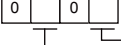
Here are described settings of drive unit specific parameters. Settings of the other parameters are the same as MR-J4- _B_ (-RJ). See Chapter 5 of "MR-J4- _B_ (-RJ) Servo Amplifier Instruction Manual".

MR-J2SB			MR-J4B		
No.	Name and function	Initial value	No.	Name and function	Initial value
2	Regenerative resistor  Regenerative option selection Make sure to set "00". See the MR-J2S- _B_ servo amplifier Instruction Manual.	0000h	PA02	Regenerative options Select a regenerative option. For a drive unit, select a regenerative option by configuring the converter unit. Select "__ 0 0" or "__ 0 1", otherwise [AL. 37 Parameter error] will occur. 00: Use no regenerative option, or use a regenerative option by configuring the converter unit. 01: FR-BU2-(H) When FR-BU2-(H) is used and the power supply voltage distortion causes [AL. 10 Undervoltage], select "Method2 (___ 1)" for "Undervoltage alarm detection method selection" of [Pr. PC20]. 0: When [AL. 10] does not occur 1: When [AL. 10] occurs	0000h

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

(c) Type A 400 V class

Here are described settings of drive unit specific parameters. Settings of the other parameters are the same as MR-J4- _A_ (-RJ). See Chapter 5 of "MR-J4- _A_ (-RJ) Servo Amplifier Instruction Manual".

MR-J2SA			MR-J4A																																																																		
No.	Name and function	Initial value	No.	Name and function	Initial value																																																																
0	Control mode and regenerative option selection  <p>See the MR-J2S- _A_ servo amplifier Instruction Manual. Regenerative option selection Make sure to set "0".</p>	0000h	PA02	Regenerative options Select a regenerative option. For a drive unit, select a regenerative option by configuring the converter unit. Select "_ _ 0 0" or "_ _ 0 1", otherwise [AL. 37 Parameter error] will occur. 00: Use no regenerative option, or use a regenerative option by configuring the converter unit. 01: FR-BU2-(H) When FR-BU2-(H) is used and the power supply voltage distortion causes [AL. 10 Undervoltage], select "Method2 (_ _ _ 1)" for "Undervoltage alarm detection method selection" of [Pr. PC27]. 0: When [AL. 10] does not occur 1: When [AL. 10] occurs	0000h																																																																
17	Analog monitor output  <table border="1"> <thead> <tr> <th>Setting value</th> <th>Analog monitor 2 (MO2)</th> <th>Analog monitor 1 (MO1)</th> </tr> </thead> <tbody> <tr><td>0</td><td>Servo motor speed (± 8 V/max. speed)</td><td></td></tr> <tr><td>1</td><td>Torque (± 8/max. torque)</td><td></td></tr> <tr><td>2</td><td>Servo motor speed (± 8 V/max. speed)</td><td></td></tr> <tr><td>3</td><td>Torque (± 8/max. torque)</td><td></td></tr> <tr><td>4</td><td>Current command (± 8 V/max. current command)</td><td></td></tr> <tr><td>5</td><td>Speed command (± 8/max. speed)</td><td></td></tr> <tr><td>6</td><td>Droop pulse (± 10V/128pulse)</td><td></td></tr> <tr><td>7</td><td>Droop pulse (± 10V/2048pulse)</td><td></td></tr> <tr><td>8</td><td>Droop pulse (± 10V/8192pulse)</td><td></td></tr> <tr><td>9</td><td>Droop pulse (± 10V/32768pulse)</td><td></td></tr> <tr><td>A</td><td>Droop pulse (± 10V/131072pulse)</td><td></td></tr> <tr><td>B</td><td>Bus voltage (+8V/800V)</td><td></td></tr> </tbody> </table>	Setting value	Analog monitor 2 (MO2)	Analog monitor 1 (MO1)	0	Servo motor speed (± 8 V/max. speed)		1	Torque (± 8 /max. torque)		2	Servo motor speed (± 8 V/max. speed)		3	Torque (± 8 /max. torque)		4	Current command (± 8 V/max. current command)		5	Speed command (± 8 /max. speed)		6	Droop pulse (± 10 V/128pulse)		7	Droop pulse (± 10 V/2048pulse)		8	Droop pulse (± 10 V/8192pulse)		9	Droop pulse (± 10 V/32768pulse)		A	Droop pulse (± 10 V/131072pulse)		B	Bus voltage (+8V/800V)		0100h	Analog monitor output <table border="1"> <thead> <tr> <th>PC14/PC15</th> <th>Display definition</th> </tr> </thead> <tbody> <tr><td>0000</td><td>Servo motor speed (± 8 V/max. speed) (Note 1)</td></tr> <tr><td>0001</td><td>Torque (± 8 V/max. torque) (Note 1)</td></tr> <tr><td>0002</td><td>Servo motor speed (± 8 V/max. speed) (Note 1)</td></tr> <tr><td>0003</td><td>Torque (± 8 V/max. torque) (Note 1)</td></tr> <tr><td>0004</td><td>Current command (± 8 V/max. current command)</td></tr> <tr><td>0005</td><td>Command pulse frequency (± 10 V/4 Mpps) (Note 2)</td></tr> <tr><td>0006</td><td>Servo motor-side droop pulses (± 10 V/100 pulses) (Note 2)</td></tr> <tr><td>0007</td><td>Servo motor-side droop pulses (± 10 V/1000 pulses) (Note 2)</td></tr> <tr><td>0008</td><td>Servo motor-side droop pulses (± 10 V/10000 pulses) (Note 2)</td></tr> <tr><td>0008 or 0009</td><td>(Note 2, 3)</td></tr> <tr><td>0009</td><td>Servo motor-side droop pulses (± 10 V/100000 pulses) (Note 2)</td></tr> <tr><td>000D</td><td>Bus voltage (+8 V/400 V)</td></tr> </tbody> </table>	PC14/PC15	Display definition	0000	Servo motor speed (± 8 V/max. speed) (Note 1)	0001	Torque (± 8 V/max. torque) (Note 1)	0002	Servo motor speed (± 8 V/max. speed) (Note 1)	0003	Torque (± 8 V/max. torque) (Note 1)	0004	Current command (± 8 V/max. current command)	0005	Command pulse frequency (± 10 V/4 Mpps) (Note 2)	0006	Servo motor-side droop pulses (± 10 V/100 pulses) (Note 2)	0007	Servo motor-side droop pulses (± 10 V/1000 pulses) (Note 2)	0008	Servo motor-side droop pulses (± 10 V/10000 pulses) (Note 2)	0008 or 0009	(Note 2, 3)	0009	Servo motor-side droop pulses (± 10 V/100000 pulses) (Note 2)	000D	Bus voltage (+8 V/400 V)	0000h
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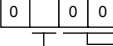
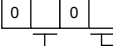
- Note 1. "Maximum speed" and "Maximum torque" differ depending on the servo motor. Therefore, after the existing motor has been replaced with an HG motor, the output voltage for "Maximum speed" or "Maximum torque" may differ.
- Units used for MR-J2S- _A_ are different from those for MR-J4- _A_ . Note that the input range of existing equipment needs to be adjusted.
 - Set "0008" or "0009". When setting the value, note that the input range of existing equipment needs to be adjusted.

(d) Type B 400V class

POINT
<ul style="list-style-type: none"> Connecting to a servo system controller writes servo parameters of the controller into the corresponding parameters of the drive unit. There are some servo system controller models, drive unit software versions, or MR Configurator2 software versions which limit setting of some parameters or setting values of the parameters. For details, refer to servo system controller user's manuals.

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4-DU

Here are described settings of drive unit specific parameters. Settings of the other parameters are the same as MR-J4-B-(-RJ). See Chapter 5 of "MR-J4-B-(-RJ) Servo Amplifier Instruction Manual".

MR-J2SB			MR-J4B																																																																																																																																																																																																								
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2	Regenerative resistor  Regenerative option selection Make sure to set "00". See the MR-J2S- <u>B</u> - servo amplifier Instruction Manual.	0000h	PA02	Regenerative options Select a regenerative option. For a drive unit, select a regenerative option by configuring the converter unit. Select " <u> </u> 0 0" or " <u> </u> 0 1", otherwise [AL. 37 Parameter error] will occur. 00: Use no regenerative option, or use a regenerative option by configuring the converter unit. 01: FR-BU2(-H) When FR-BU2(-H) is used and the power supply voltage distortion causes [AL. 10 Undervoltage], select "Method2 (<u> </u> 1)" for "Undervoltage alarm detection method selection" of [Pr. PC20]. 0: When [AL. 10] does not occur 1: When [AL. 10] occurs	0000h																																																																																																																																																																																																						
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Setting values with ○ are available for each mode. Standard: Use a rotary servo motor in the standard (semi closed loop system) mode. Full.: Use a rotary servo motor in the fully closed loop system mode. Lin.: Use a linear servo motor. DD: Use a direct drive motor (DD motor). 2. Encoder pulse units.	Setting digit	Explanation	Initial value	<u> </u> X X	Analog monitor 1 output selection For details, refer to the following table.	00h	<u> </u> X <u> </u>	For manufacturer setting	0h	X <u> </u> <u> </u>		0h	Setting value	Item	Operation Mode (Note 1)				Standard	Full.	Lin.	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11	Load side droop pulses (± 10 V/1000 pulses) (Note 2)	○	○	○	○																																																																																																																																																																																																						
12	Load side droop pulses (± 10 V/10000 pulses) (Note 2)	○	○	○	○																																																																																																																																																																																																						
13	Load side droop pulses (± 10 V/100000 pulses) (Note 2)	○	○	○	○																																																																																																																																																																																																						
14	Load side droop pulses (± 10 V/1M pulses) (Note 2)	○	○	○	○																																																																																																																																																																																																						
15	Servo motor side/Load side position deviation (± 10 V/100000 pulses)	○	○	○	○																																																																																																																																																																																																						
16	Servo motor side/Load side position deviation (± 8 V/max. rotational speed or max. speed)	○	○	○	○																																																																																																																																																																																																						
17	Encoder inside temperature (± 10 V/ ± 128 °C)	○	○	○	○																																																																																																																																																																																																						
			PC10																																																																																																																																																																																																								

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

4 CHARACTERISTICS

4.1 Capacity of Power Source Facility and Generation Loss

(1) Calorific values of converter units and drive units

Table 8.1 shows heat losses at rated load and power supply capacity for a set of a converter unit and drive unit. When a servo motor runs at a speed less than its rated speed, its power supply capacity becomes less than a value in the table while its calorific value remains the same.

A servo motor needs 2 to 2.5 times as much instantaneous power in acceleration as in normal operation. Use a power supply which can keep within an allowable power fluctuation range the voltage at the main circuit power supply terminals (L1/L2/L3) of the converter unit. Power supply capacities are changeable depending on power impedance.

An actual calorific value is between the amount at rated output and that at servo-off depending on the frequency of use during operation. When designing an enclosed cabinet, refer to the table considering the worst use conditions. The calorific values in Table 8.1 do not include those at regeneration.

Power supply capacities and calorific values per axis at rated output for MR-J4 series

Converter unit	Drive unit	Servo motor	Power supply capacity [kVA]		(Note) The calorific value of a drive unit [W]			Required heat dissipation area [m ²]
			Power factor improving DC reactor not used	Power factor improving DC reactor used	At rated output	At rated output [Internal heat generation at external cooling]	Servo off	
MR-CR55K	MR-J4-DU30K_(-RJ)	HG-JR30K1 HG-JR30K1M	48	40	1350 (900 + 450)	470	60 (30 + 30)	31.0
	MR-J4-DU37K_(-RJ)	HG-JR37K1 HG-JR37K1M	59	49	1550 (1000 + 550)	550		36.6
MR-CR55K4	MR-J4-DU30K_4(-RJ)	HG-JR30K14 HG-JR30K1M4	48	40	1070 (790 + 280)	390		25.8
	MR-J4-DU37K_4(-RJ)	HG-JR37K14 HG-JR37K1M4	59	49	1252 (910 + 342)	470		30.8
	MR-J4-DU45K_4(-RJ)	HG-JR45K1M4	71	59	1580 (1110 + 470)	550		42.4
	MR-J4-DU55K_4(-RJ)	HG-JR55K1M4	87	72	1940 (1440 + 500)	650		43.0

Note. A term on the left in () is for a drive unit and one on the right is for a converter unit.

Power supply capacities and calorific values per axis at rated output for MR-J2S series

Servo amplifier	Converter unit	Power supply capacity [kVA]		(Note) The calorific value of a servo amplifier [W]		Required heat dissipation area [m ²]
		Power factor improving DC reactor not used	Power factor improving DC reactor used	At rated output	At zero torque	
MR-J2S-30KA/B	MR-HP30KA	48	40	1650 (1100 + 550)	60 (30 + 30)	24.1
MR-J2S-37KA/B		59	49	1850 (1300 + 550)	60 (30 + 30)	30.6
MR-J2S-30KA4/B4	MR-HP55KA4	48	40	1290 (1010 + 280)	60 (30 + 30)	24.1
MR-J2S-37KA4/B4		59	49	1650 (1310 + 342)	60 (30 + 30)	30.6
MR-J2S-45KA4/B4		71	59	1810 (1370 + 440)	60 (30 + 30)	33.5
MR-J2S-55KA4/B4		87	72	2190 (1690 + 500)	60 (30 + 30)	40.5

Note. A term on the left in () is for a servo amplifier and one on the right is for a converter unit.

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

4.2 Inrush Current When Turning On the Main Circuit/Control Circuit Power Supply

POINT
<ul style="list-style-type: none"> ● Inrush current values are changeable depending on the frequency of turning on/off the power supplies and ambient temperature.

A large current flows through the power supplies. Make sure to use a molded-case circuit breaker and magnetic contactor. (Refer to Section 9.5)

When a circuit protector is used, inertia delay types are recommended because no inrush current trips them.

MR-J4 series Inrush current when turning on the main circuit/control circuit power supply

The table below shows inrush currents (references) when the maximum allowable voltage (200VAC class: 240VAC, 400VAC class: 480VAC) is applied. The power supply capacity is 2500 kVA and the wiring length is 1 m.

Converter unit	Servo amplifier	Inrush current(A _{0-P})	
		Main circuit power supply (L ₁ /L ₂ /L ₃)	Control circuit power supply (L ₁₁ /L ₂₁)
MR-CR55K	MR-J4-DU30K_(-RJ)	154 A (Attenuates to approximately 20 A in 150 ms)	31A (Attenuates to approximately 2 A in 60 ms)
	MR-J4-DU37K_(-RJ)		
MR-CR55K4	MR-J4-DU30K_4(-RJ)	305 A (Attenuates to approximately 20 A in 70 ms)	27A (Attenuates to approximately 2 A in 45 ms)
	MR-J4-DU37K_4(-RJ)	305 A (Attenuates to approximately 20 A in 70 ms)	
	MR-J4-DU45K_4(-RJ)	305 A (Attenuates to approximately 20 A in 70 ms)	
	MR-J4-DU55K_4(-RJ)		

MR-J2S series Inrush current when turning on the main circuit/control circuit power supply

The table below shows inrush currents (references) when the maximum allowable voltage (200VAC class: 253VAC, 400VAC class: 528VAC) is applied. The power supply capacity is 2500 kVA and the wiring length is 1 m.

Converter unit	Servo amplifier	Inrush current(A _{0-P})	
		Main circuit power supply (L ₁ /L ₂ /L ₃)	Control circuit power supply (L ₁₁ /L ₂₁)
MR-HP30KA	MR-J2S-30K_	270A (Attenuates to approximately 20 A in 160 ms)	7A (Attenuates to approximately 0A in 200 ms)
	MR-J2S-37K_		
MR-HP55KA4	MR-J2S-30K_4	554A (Attenuates to approximately 20 A in 80 ms)	15A (Attenuates to approximately 0A in 150 ms)
	MR-J2S-37K_4	555A (Attenuates to approximately 20 A in 100 ms)	
	MR-J2S-45K_4	556A (Attenuates to approximately 20 A in 100 ms)	
	MR-J2S-55K_4		

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

5 OPTIONS AND PERIPHERAL EQUIPMENT

5.1 Comparison Table of Cable Option Combinations

Cable option combinations

Application	MR-J2S series	MR-J4 series	Note
Protection coordination cable	MR-J2HBUS_M	MR-J3CDL05M	Connector shape will be changed. Cable must be changed.
Connector set	MR-J2CNS	MR-J2CN1-A	Connector shape will be changed. Cable must be changed.
Magnetic contactor wiring connector		Note 1	Prepare a new cable.
Digital I/O connector	MR-HP4CN1	Note 1	Connector shape will be changed. Cable must be changed.
Terminal connector	MR-A-TM		

Note 1. Packed with a converter unit

5.1.1 MR-J3CDL05M (0.5 m) Protection Coordination Cable

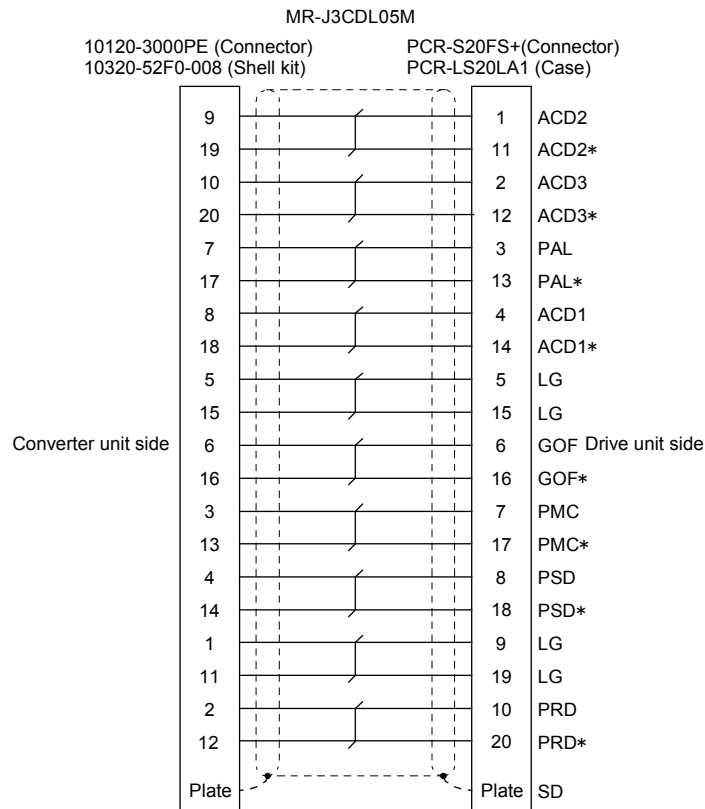


Note

- When fabricating a protection coordination cable, do wiring correctly. Failure to do so may result in the servo motor working unexpectedly.

This is a cable to connect a converter unit and drive unit.

(1) Internal wiring diagram



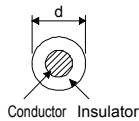
Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

(2) Fabrication of a protection coordination cable

Fabricate a cable according to the internal wiring diagram of the section (1) using a MR-J2CN1-A connector set and recommended wires shown below.

model	Length [m]	Core size [mm ²]	Number of cores	Characteristics of a core			(Note 2) Cable OD Cable outer diameter [mm]	Recommended wire type
				Configuration [wires/mm]	Conductor resistance [Ω/km]	(Note 1) insulator outer diameter insulator OD d [mm]		
MR-J3CDL05M	0.5	0.08	20 (10 pairs)	7/0.127	222 or less	0.38	6.1	UL 20276 AWG#28 10 pair (cream)

Note 1. d is as shown below.



- This is the standard outside diameter. Although no tolerance is described, the diameter can be up to 10 percent larger than shown in the table.

5.2 Wire Selection Example

POINT
<ul style="list-style-type: none"> To comply with the IEC/EN/UL/CSA standard, do wiring by using wires described in App. 2. To comply with other standards, use wires compliant with each standard. Selection conditions of wire size is as follows. Wiring condition: In-air, one-row wiring Wiring length: 30 m or lower:

POINT
<ul style="list-style-type: none"> If using the existing cables, see "[Appendix 2] Introduction to Renewal Tool".

5.2.1 MR-J2S-series power supply wire size

In this case, the power supply wire used is a 600 V plastic one and the wiring distance is 30 m or less. When the wiring distance exceeds 30 m, select another wire size in consideration of the voltage drop. The alphabet letters (a, b, c) on the table correspond to crimp terminals used when wiring a servo amplifier. The method of wiring a servo motor differs depending on the type and capacity of the servo motor. To comply with the UL/cUL (CSA) standard, use UL-approved copper wires rated at 60°C or higher for wiring.

Wire size selection example 1 (IV wire)

Recommended wire

Converter unit	Drive unit	Wire [mm ²]					
		(1) L ₁ /L ₂ /L ₃ /⊕	(2) L ₁₁ /L ₂₁	(3) U/V/W P1/P2/⊕	(4) P/C	(5) OHS1/OHS2	(6) BU/BV/BW
MR-HP30KA	MR-J2S-30KA/B	50(AWG1/0)	2(AWG14)	60(AWG2/0)	5.5(AWG10)	1.25(AWG16)	1.25(AWG16)
	MR-J2S-37KA/B	60(AWG2/0)		80(AWG3/0)			
MR-HP55KA4	MR-J2S-30KA4/B4	22(AWG4)	2(AWG14)	30(AWG2)	5.5(AWG10)	1.25(AWG16)	1.25(AWG16)
	MR-J2S-37KA4/B4	30(AWG2)		38(AWG2)			
	MR-J2S-45KA4/B4	38(AWG2)		50(AWG1/0)			
	MR-J2S-55KA4/B4	50(AWG1/0)		60(AWG2/0)			

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

5.2.2 MR-J4-series, power supply wire size

(1) Example of selecting the wire sizes

For the power supply wire, use a 600 V grade heat-resistant polyvinyl chloride insulated wire (HIV wire). The table below shows selection examples of power supply wire sizes.

Wire size selection example (HIV wire)

Recommended wire

Converter unit (Note 2)	Drive unit (Note 2)	Wire [mm ²] (Note 1, 3)			
		1) L ₁ /L ₂ /L ₃ /⊕	2) L ₁₁ /L ₂₁	3) P2/C	4) U/V/W P1/P2/⊕
MR-CR55K	MR-J4-DU30K_(-RJ)	38 (AWG2): c	1.25 to 2 (AWG 16 to 14): g (Note 4)	5.5 (AWG10): a	60 (AWG2/0): d
	MR-J4-DU37K_(-RJ)	60 (AWG2/0): d			60 (AWG2/0): d
MR-CR55K4	MR-J4-DU30K_4(-RJ)	22 (AWG4): e			22 (AWG4): e
	MR-J4-DU37K_4(-RJ)	22 (AWG4): e			38 (AWG 2): f
	MR-J4-DU45K_4(-RJ)	38 (AWG2): c			38 (AWG2): c
	MR-J4-DU55K_4(-RJ)	38 (AWG2): c			38 (AWG2): c

- Note 1. Alphabets in the table indicate crimping tools. For crimp terminals and applicable tools, see (2) of this section.
 2. To connect these wires to a terminal block, make sure to use the screws that come with the terminal block.
 3. Selected based on the servo motor with the largest rated current of all the servo motors available.
 4. To comply with the IEC/EN/UL/CSA standard, use a wire of 2 mm².

(2) Selection example of crimp terminals

The table below shows selection examples of crimp terminals for a terminal block of a drive unit or converter unit when the wires described in (1) of this section are used.

Symbol	Drive unit/converter unit side crimp terminal				Manufacturer
	(Note 2) Crimp terminal	Applicable tool			
		Body	Head	Dice	
a	FVD5.5-10	YNT-1210S			JST
b	FVD22-10	YF-1 E-4	YNE-38	DH-123 DH-113	
(Note 1) c	R38-10	YPT-60-21 YF-1 E-4	YET-60-1	TD-124 TD-112	
(Note 1) d	R60-10	YPT-60-21 YF-1 E-4	YET-60-1	TD-125 TD-113	
e	FVD22-8	YF-1 E-4	YNE-38	DH-123 DH-113	
(Note 1) f	R38-8	YPT-60-21 YF-1 E-4	YET-60-1	TD-124 TD-112	
g	FVD2-4	YNT-1614			

- Note 1. Cover the crimped portion with an insulating tape.
 2. Installation of a crimp terminal may be impossible depending on the size, so make sure to use the recommended crimp terminal or one equivalent to it.

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

5.3 Selection of No-Fuse Breakers, Fuses, and Magnetic Contactors (example)

5.3.1 MR-J2S-series, no-fuse breakers and magnetic contactors (recommended)

Always use one molded-case circuit breaker/one magnetic contactor with one servo amplifier.

Servo amplifier	Converter unit	Molded-case circuit breaker			Magnetic contactor
		Current		Voltage AC	
		Power factor improving DC reactor not used	Power factor improving DC reactor used		
MR-J2S-30KA/B	MR-HP30KA	400A frame 250A	225A frame 225A	240V	S-N150
MR-J2S-37KA/B		400A frame 300A	400A frame 300A		S-N180
MR-J2S-30KA4/B4	MR-HP55KA4	225A frame 150A	225A frame 125A	600Y/ 347V	S-N95
MR-J2S-37KA4/B4		225A frame 175A	225A frame 150A		S-N125
MR-J2S-45KA4/B4		225A frame 225A	225A frame 175A		S-N150
MR-J2S-55KA4/B4		400A frame 250A	225A frame 225A		S-N180

5.3.2 MR-J4-series, no-fuse breakers, fuses, and magnetic contactors (recommended)

(1) For main circuit power supply

Always use one molded-case circuit breaker and one magnetic contactor with one converter unit. When using a fuse instead of the molded-case circuit breaker, use the one having the specifications given in this section.

Converter unit	Drive unit	Molded-case circuit breaker (Note 1)			Fuse			Magnetic contactor (Note 2)
		Frame, rated current		Voltage AC [V]	Class	Current [A]	Voltage AC [V]	
		Power factor improving DC reactor not used	Power factor improving DC reactor used					
MR-CR55K	MR-J4-DU30K_(-RJ)	225A frame 175A	225A frame 150A	240	T	300	300	S-N150
	MR-J4-DU37K_(-RJ)	225A frame 225A	225A frame 175A			400		S-N180
MR-CR55K4	MR-J4-DU30K_4(-RJ)	100A frame 100A	100A frame 80A	480	T	175	600	S-N65
	MR-J4-DU37K_4(-RJ)	125A frame 125A	100A frame 100A			200		S-N80
	MR-J4-DU45K_4(-RJ)	225A frame 150A	125A frame 125A			300		S-N95
	MR-J4-DU55K_4(-RJ)	225A frame 175A	225A frame 150A			300		S-N150

Note 1. To comply with the IEC/EN/UL/CSA standard, refer to App. 2.

- Use a magnetic contactor with an operation delay time (interval between current being applied to the coil until closure of contacts) of 80 ms or less.

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

(2) For control circuit power supply

When the wiring for the control circuit power supply (L11, L21) is thinner than that for the main circuit power supply (L1, L2, L3), install an overcurrent protection device (molded-case circuit breaker or fuse) to protect the branch circuit.

(a) Converter unit

Converter unit	Molded-case circuit breaker (Note)		Fuse (Class T)		Fuse (Class K5)	
	Frame, rated current	Voltage AC [V]	Current [A]	Voltage AC [V]	Current [A]	Voltage AC [V]
MR-CR55K	30 A frame 5 A	240	1	300	1	250
MR-CR55K4	30 A frame 5 A	480	1	600	1	600

Note. To make a converter unit comply with the IEC/EN/UL/CSA standard, refer to App. 2.

(b) Drive unit

Drive unit	Molded-case circuit breaker (Note)		Fuse (Class T)		Fuse (Class K5)	
	Frame, rated current	Voltage AC [V]	Current [A]	Voltage AC [V]	Current [A]	Voltage AC [V]
MR-J4-DU30K_ (-RJ)	30 A frame 5 A	240	1	300	1	250
MR-J4-DU37K_ (-RJ)						
MR-J4-DU30K_4 (-RJ)	30 A frame 5 A	480	1	600	1	600
MR-J4-DU37K_4 (-RJ)						
MR-J4-DU45K_4 (-RJ)						
MR-J4-DU55K_4 (-RJ)						

Note. To make a drive unit comply with the IEC/EN/UL/CSA standard, refer to App. 2.

5.4 FR-BU2-(H) Brake Unit

POINT						
<ul style="list-style-type: none"> ● In torque control mode, EM2 signals of a drive unit are the same as its EM1 signals. ● Use a 200 V class brake unit and resistor unit for a 200 V class converter unit as well as a 400 V class brake unit and resistor unit for a 400 V class converter unit. Do not use different voltage class units together. ● Do not install a brake unit or resistor unit horizontally or obliquely, otherwise their heat dissipation effect will deteriorate. Make sure to install them vertically. ● The temperature of resistor unit case rises up to 100°C or more. Make sure that any wires or flammables do not come in contact with the case. ● Use a brake unit in ambient temperature of -10 to 50°C. Note that the ambient temperature for brake units is different from that for converter units (0 to 55°C). ● Configure the circuit in such a way that when a malfunction occurs, the power supply is shut off by using an alarm output from a brake unit or resistor unit. ● Use a brake unit in combination with other units as described in Section 9.10.1. ● A brake unit and a regenerative option (regenerative resistors) cannot be used together. ● When using a brake unit, set parameters as described in the table below. 						
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;">Parameter</th> <th style="width: 40%;">Setting value</th> </tr> </thead> <tbody> <tr> <td>[Pr. PA01] of converter units</td> <td style="text-align: center;">__ 0 0 (initial value)</td> </tr> <tr> <td>[Pr. PA02] of drive units</td> <td style="text-align: center;">__ 0 1</td> </tr> </tbody> </table>	Parameter	Setting value	[Pr. PA01] of converter units	__ 0 0 (initial value)	[Pr. PA02] of drive units	__ 0 1
Parameter	Setting value					
[Pr. PA01] of converter units	__ 0 0 (initial value)					
[Pr. PA02] of drive units	__ 0 1					

Connect a brake unit to the buses of a converter unit (between L+ and L- of TE2-1). Brake units regenerate larger power than MR-RB regenerative options. Brake units are used when there is insufficient regenerative ability in regenerative options.

When using a brake unit, make sure to refer to the "FR-BU2 Instruction Manual".

5.4.1 Selection

Use a converter unit, a brake unit, and a resistor unit in the combination described in the table below.

Brake unit		Resistor unit	Connectable units	Continuous allowable power [kW]	Resultant resistance [Ω]	Converter unit
200 V class	FR-BU2-55K	FR-BR-55K	2 (in parallel)	7.82	1	MR-CR55K
		MT-BR5-55K	2 (in parallel)	11.0	1	
400 V class	FR-BU2-H55K	FR-BR-H55K	2 (in parallel)	7.82	4	MR-CR55K4
	FR-BU2-H75K	MT-BR5-H75K	2 (in parallel)	15.0	3.25	

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

5.4.2 Parameter setting of brake units

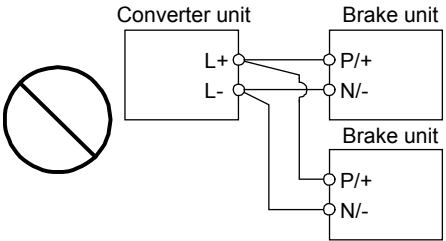
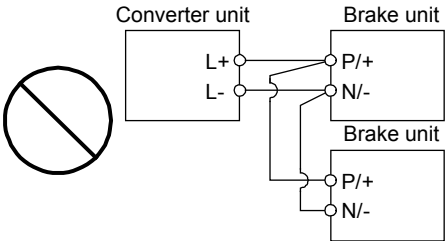
Normally, it is unnecessary to change the FR-BU2-(H) parameters. The table below shows permission for changing each parameter.

Parameter		Permission	Remarks
Number	Name		
0	Brake mode switching	NO	Do not change the setting.
1	Monitor display data selection	Available	Refer to the "FR-BU2 installation guide".
2	Input terminal function selection 1	NO	Do not change the setting.
3	Input terminal function selection 2		
77	Parameter write selection		
78	Cumulative energization time carrying-over times		
CLr	Parameter clear		
ECL	Alarm history clear		
C1	For manufacturer setting		

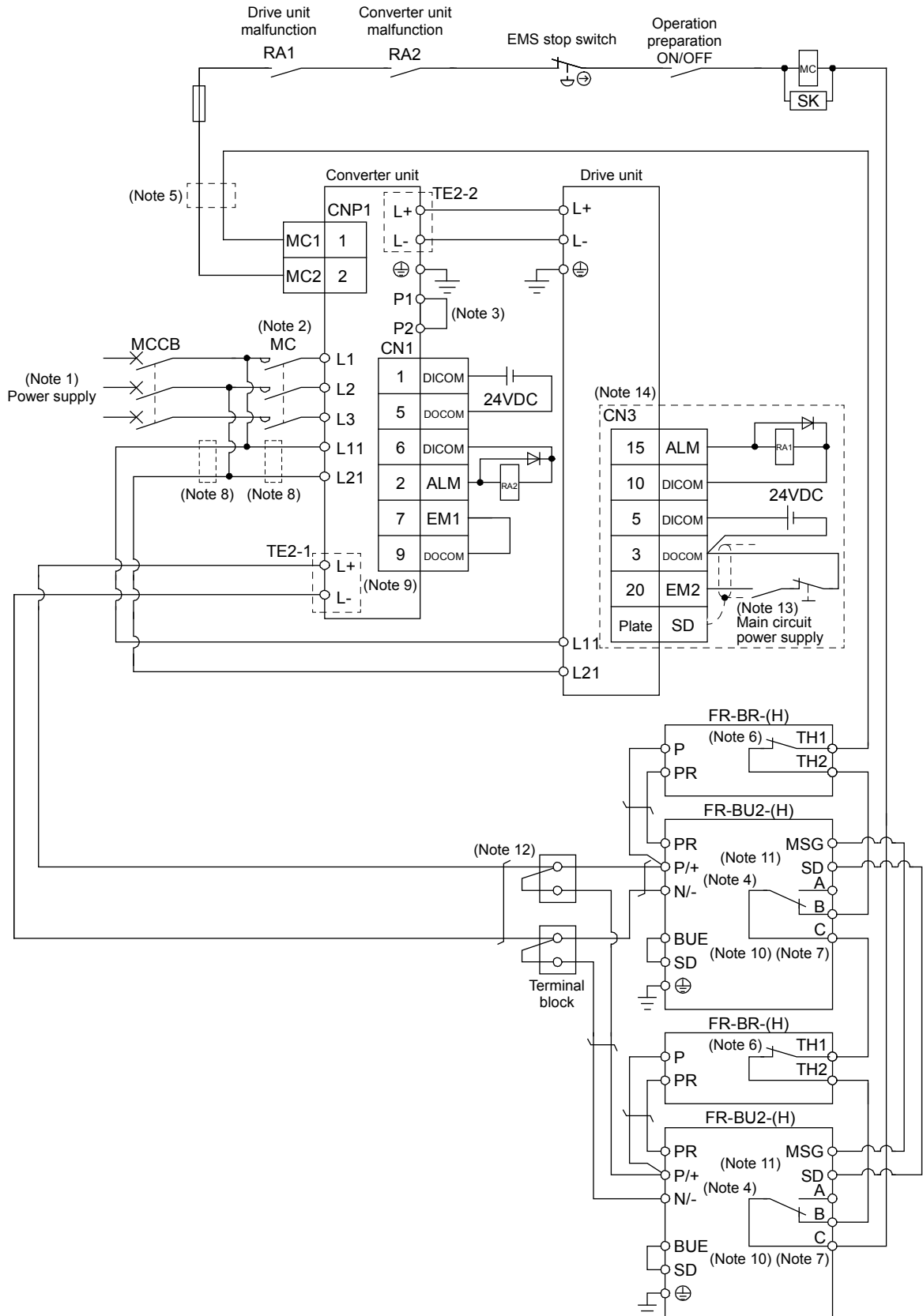
5.4.3 Connection example

POINT
<ul style="list-style-type: none"> Connecting the PR terminal of a brake unit to the L+ terminal of a converter unit will cause a malfunction to the brake unit. Make sure to connect the PR terminal of a brake unit to that of a resistor unit.

(1) Use of the FR-BR-(H) resistor unit

POINT	
<ul style="list-style-type: none"> When connecting two brake units in parallel, use FR-BU2-(H) for both. Otherwise an alarm or malfunction may occur. Make sure to connect the master and slave terminals (MSG, SD) of one brake unit to the master and the slave of the other respectively. Do not connect as shown below. 	
	
Connecting multiple brake units directly to L+ and L-.	Connecting both units directly together.

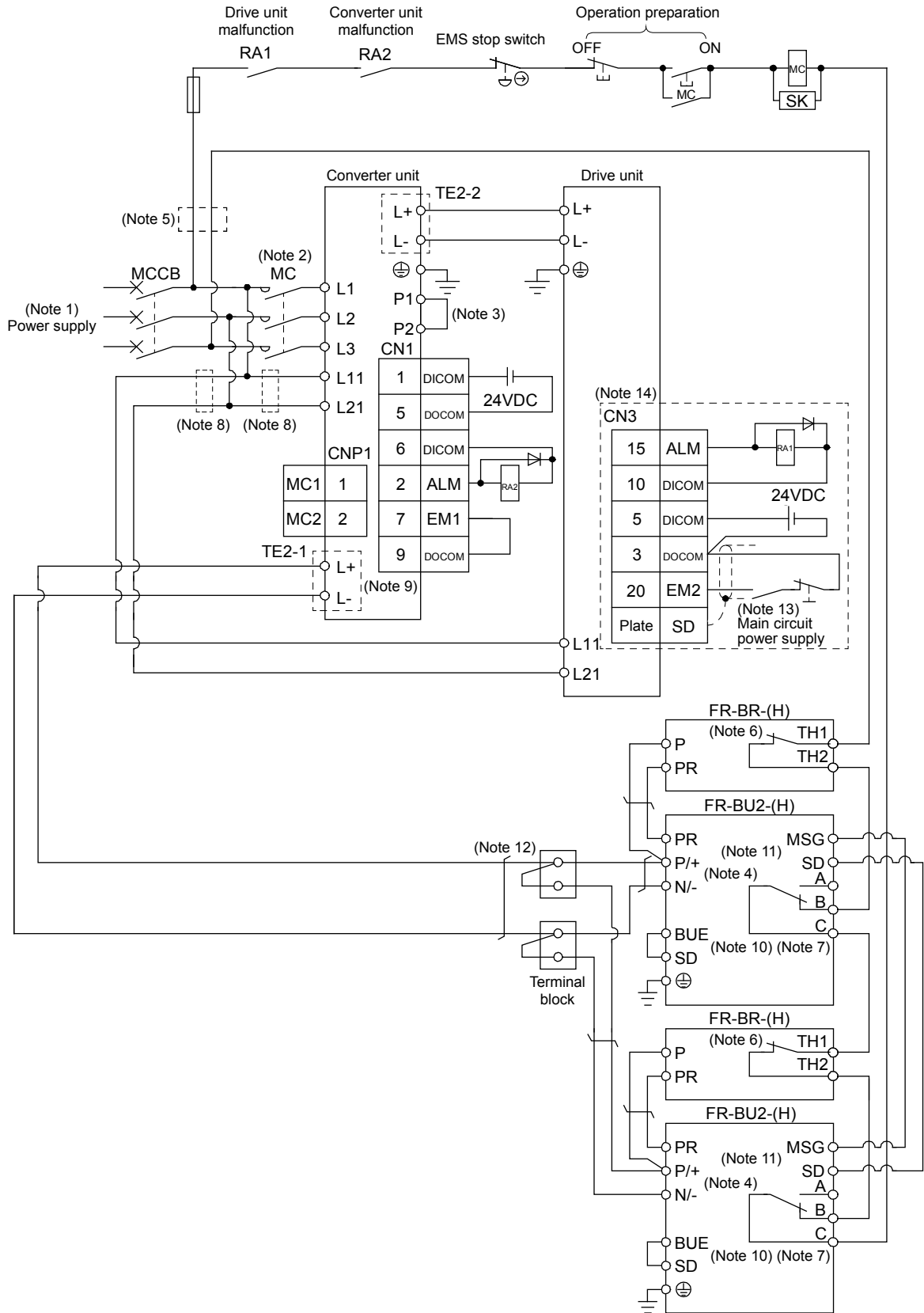
(a) When the magnetic contactor drive output is enabled



Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

- Note
1. For the power supply specifications, refer to Section 1.2.
 2. Use a magnetic contactor with an operation delay time (interval between current being applied to the coil until closure of contacts) of 80 ms or less. Bus voltage decreases according to the voltage and operation pattern of the main circuit, and there may be a shift in dynamic brake deceleration during forced stop deceleration. If dynamic brake deceleration is not desired, delay the time to turn off the electromagnetic contactor.
 3. P1 and P2 are connected in factory. When using the power factor improving DC reactor, remove the short-circuit bar across P1 and P2 before connecting the reactor. For details, refer to Section 9.6.
 4. Make sure that the connection destinations of the P/+ terminal and N/- terminal of a brake unit are correct. Otherwise a malfunction will occur to a converter unit or brake unit.
 5. For 400 V class, use a step-down transformer.
 6. Contact rating: 1b normally closed contact, 5 A at 110VAC/3 A at 220VAC
Normal: TH1 and TH2 are connected. Abnormal: TH1 and TH2 are disconnected.
 7. Contact rating: 230VAC_0.3 A/30VDC_0.3 A
Normal: B and C are connected/A and C are disconnected. Abnormal: B and C are disconnected/A and C are connected.
 8. If the wire used for L11 and L21 is thinner than the wire used for L1, L2, and L3, use a molded-case circuit breaker. (Refer to Section 9.5)
 9. Do not connect multiple wires directly to L+ and L- terminals of TE2-1 of a converter unit.
 10. Make sure to connect between BUE and SD. (Wired in factory.)
 11. Make sure that the connection destinations of MSG terminal and SD terminal of a brake unit are correct. Otherwise a malfunction will occur to a converter unit or brake unit.
 12. Connect L+ and L- terminals of TE2-1 of a converter unit to terminal blocks by using wires described in (4) of this section.
 13. In order to prevent unexpected restarting of the drive unit, configure the circuit so that EM2 is also turned off when the main circuit power supply is turned off.
 14. This wiring diagram is for MR-J4-DU_B_(-RJ) . The way to interface MR-J4-DU_(-RJ) is the same as MR-J4_(-RJ). See each servo amplifier instruction manual.

(b) When the magnetic contactor drive output is disabled

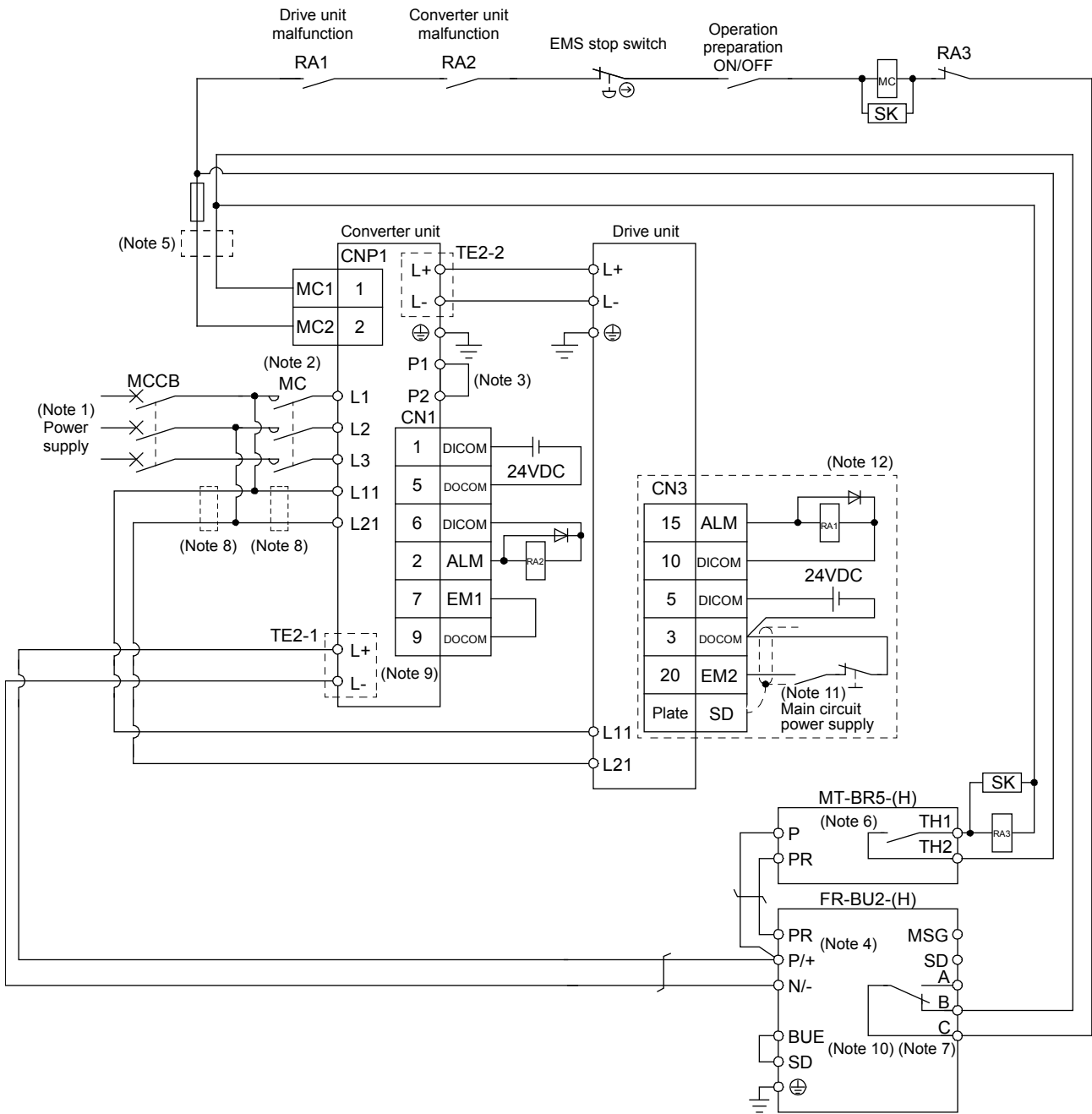


Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

- Note
1. For the power supply specifications, refer to Section 1.2.
 2. Use a magnetic contactor with an operation delay time (interval between current being applied to the coil until closure of contacts) of 80 ms or less. Bus voltage decreases according to the voltage and operation pattern of the main circuit, and there may be a shift in dynamic brake deceleration during forced stop deceleration. If dynamic brake deceleration is not desired, delay the time to turn off the electromagnetic contactor.
 3. P1 and P2 are connected in factory. When using the power factor improving DC reactor, remove the short-circuit bar across P1 and P2 before connecting the reactor. For details, refer to Section 9.6.
 4. Make sure that the connection destinations of the P/+ terminal and N/- terminal of a brake unit are correct. Otherwise a malfunction will occur to a converter unit or brake unit.
 5. For 400 V class, use a step-down transformer.
 6. Contact rating: 1b normally closed contact, 5 A at 110VAC/ 3 A at 220VAC
Normal: TH1 and TH2 are connected. Abnormal: TH1 and TH2 are disconnected.
 7. Contact rating: 230VAC_0.3 A/30VDC_0.3 A
Normal: B and C are connected/A and C are disconnected. Abnormal: B and C are disconnected/A and C are connected.
 8. If the wire used for L11 and L21 is thinner than the wire used for L1, L2, and L3, use a molded-case circuit breaker. (Refer to Section 9.5)
 9. Do not connect multiple wires directly to L+ and L- terminals of TE2-1 of a converter unit.
 10. Make sure to connect between BUE and SD. (Wired in factory.)
 11. Make sure that the connection destinations of MSG terminal and SD terminal of a brake unit are correct. Otherwise a malfunction will occur to a converter unit or brake unit.
 12. Connect L+ and L- terminals of TE2-1 of a converter unit to terminal blocks by using wires described in (4) of this section.
 13. In order to prevent unexpected restarting of the drive unit, configure the circuit so that EM2 is also turned off when the main circuit power supply is turned off.
 14. This wiring diagram is for MR-J4-DU_B_(-RJ). The way to interface MR-J4-DU_(-RJ) is the same as MR-J4_(-RJ). See each servo amplifier instruction manual.

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

- (2) Use of the MT-BR5-(H) resistor unit
 - (a) When connecting one converter unit to one brake unit
 - 1) When the magnetic contactor drive output is enabled

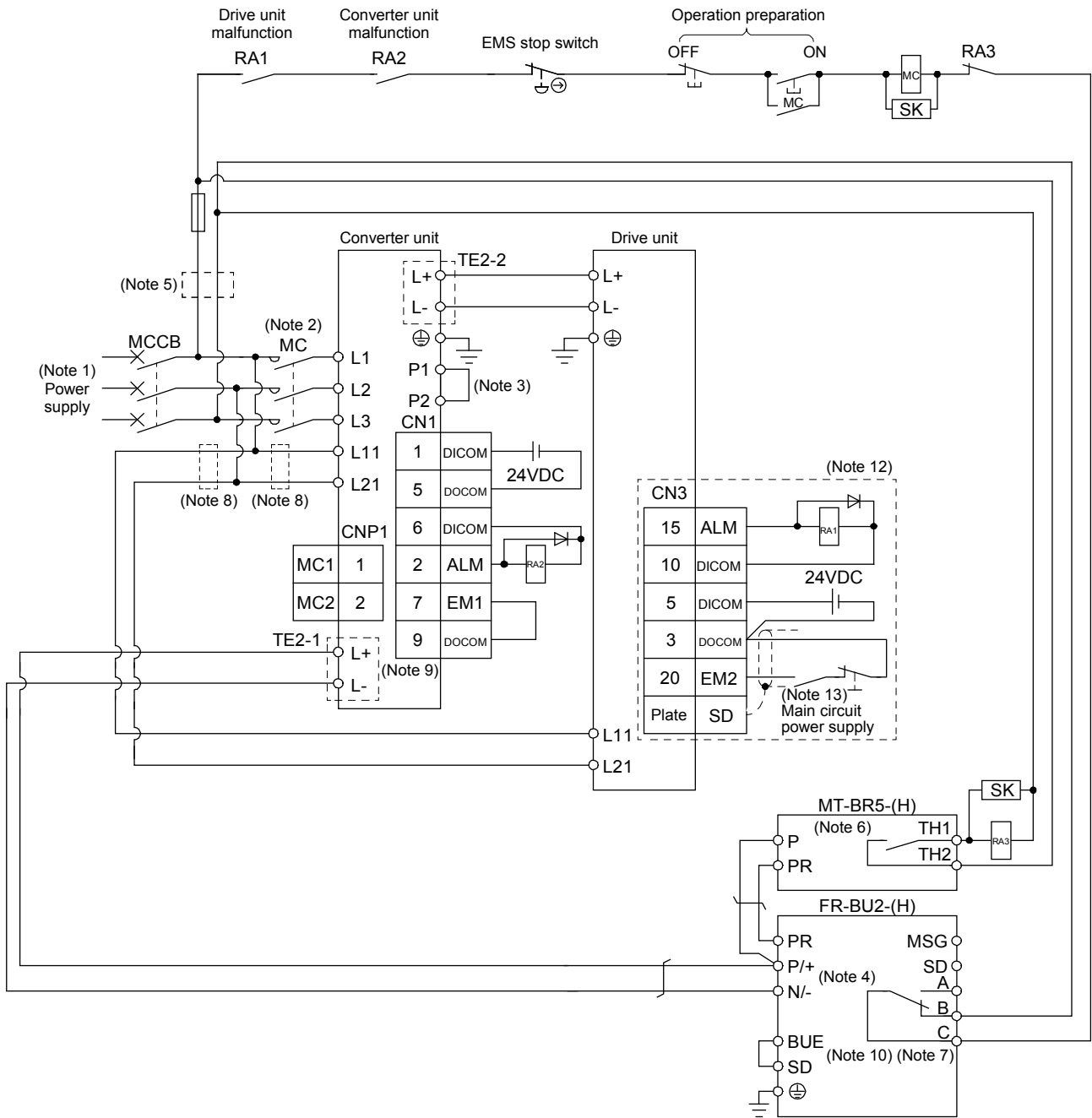


Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

- Note
1. For the power supply specifications, refer to Section 1.2.
 2. Use a magnetic contactor with an operation delay time (interval between current being applied to the coil until closure of contacts) of 80 ms or less. Bus voltage decreases according to the voltage and operation pattern of the main circuit, and there may be a shift in dynamic brake deceleration during forced stop deceleration. If dynamic brake deceleration is not desired, delay the time to turn off the electromagnetic contactor.
 3. P1 and P2 are connected in factory. When using the power factor improving DC reactor, remove the short-circuit bar across P1 and P2 before connecting the reactor. For details, refer to Section 9.6.
 4. Make sure that the connection destinations of the P/+ terminal and N/- terminal of a brake unit are correct. Otherwise a malfunction will occur to a converter unit or brake unit.
 5. For 400 V class, use a step-down transformer.
 6. Contact rating: 1a normally open contact, 5 A at 110 VAC/ 3 A at 220 VAC
Normal: TH1 and TH2 are disconnected. Abnormal: TH1 and TH2 are connected.
 7. Contact rating: 230VAC_0.3 A/30VDC_0.3 A
Normal: B and C are connected/A and C are disconnected. Abnormal: B and C are disconnected/A and C are connected.
 8. If the wire used for L11 and L21 is thinner than the wire used for L1, L2, and L3, use a molded-case circuit breaker. (Refer to Section 9.5)
 9. Do not connect multiple wires directly to L+ and L- terminals of TE2-1 of a converter unit.
 10. Make sure to connect between BUE and SD. (Wired in factory.)
 11. In order to prevent unexpected restarting of the drive unit, configure the circuit so that EM2 is also turned off when the main circuit power supply is turned off.
 12. This wiring diagram is for MR-J4-DU_B_(-RJ). The way to interface MR-J4-DU_(-RJ) is the same as MR-J4_(-RJ). See each servo amplifier instruction manual.

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

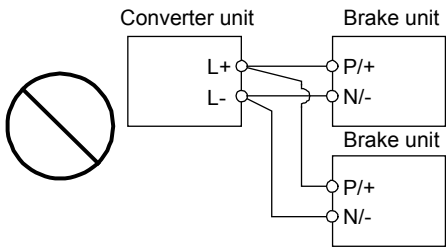
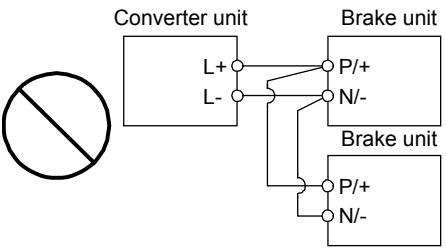
2) When the magnetic contactor drive output is disabled



Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

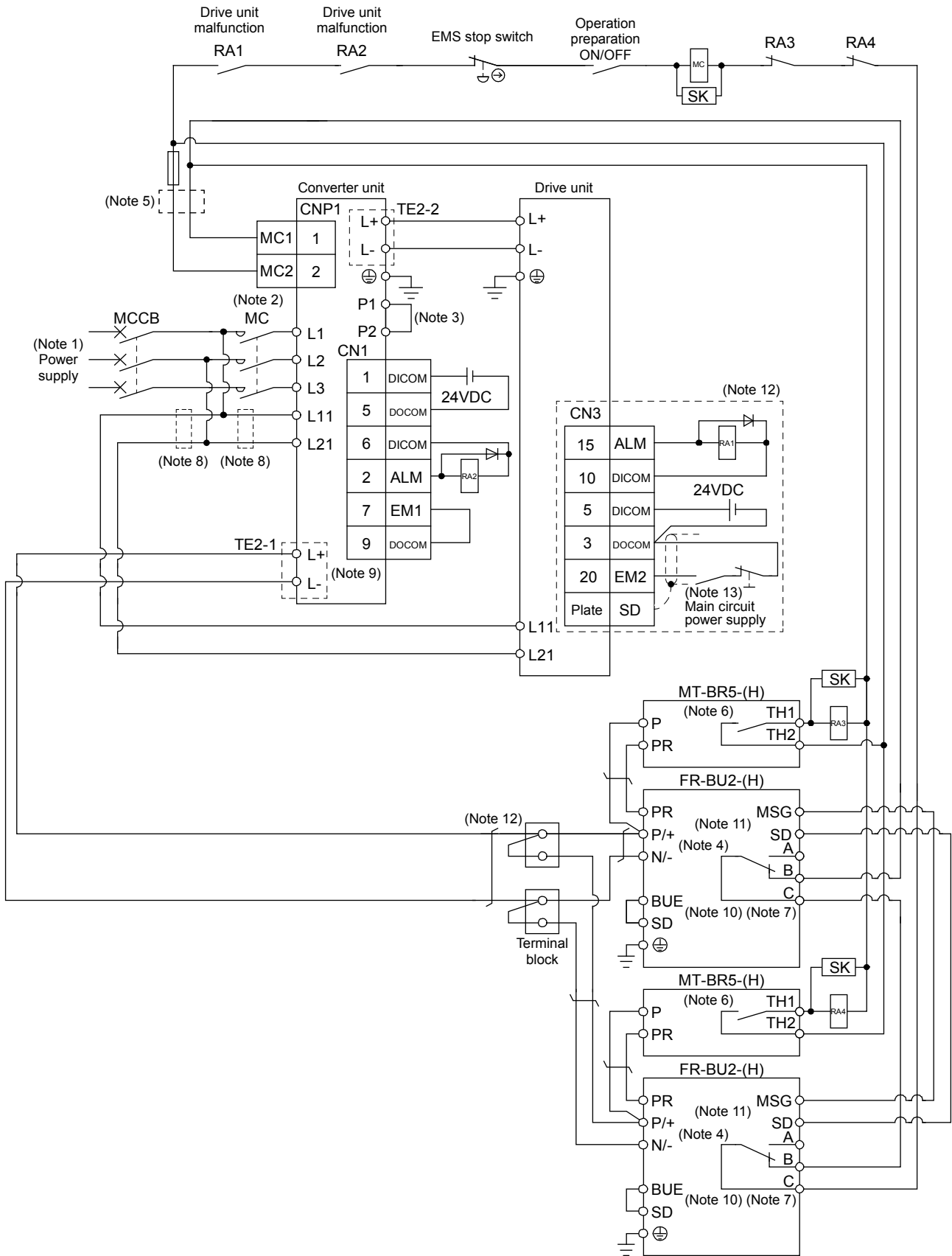
- Note
1. For the power supply specifications, refer to Section 1.2.
 2. Use a magnetic contactor with an operation delay time (interval between current being applied to the coil until closure of contacts) of 80 ms or less. Bus voltage decreases according to the voltage and operation pattern of the main circuit, and there may be a shift in dynamic brake deceleration during forced stop deceleration. If dynamic brake deceleration is not desired, delay the time to turn off the electromagnetic contactor.
 3. P1 and P2 are connected in factory. When using the power factor improving DC reactor, remove the short-circuit bar across P1 and P2 before connecting the reactor. For details, refer to Section 9.6.
 4. Make sure that the connection destinations of the P/+ terminal and N/- terminal of a brake unit are correct. Otherwise a malfunction will occur to a converter unit or brake unit.
 5. For 400 V class, use a step-down transformer.
 6. Contact rating: 1a normally open contact, 5 A at 110VAC/3 A at 220VAC
Normal: TH1 and TH2 are disconnected. Abnormal: TH1 and TH2 are connected.
 7. Contact rating: 230VAC_0.3 A/30VDC_0.3 A
Normal: B and C are connected/A and C are disconnected. Abnormal: B and C are disconnected/A and C are connected.
 8. If the wire used for L11 and L21 is thinner than the wire used for L1, L2, and L3, use a molded-case circuit breaker. (Refer to Section 9.5)
 9. Do not connect multiple wires directly to L+ and L- terminals of TE2-1 of a converter unit.
 10. Make sure to connect between BUE and SD. (Wired in factory.)
 11. In order to prevent unexpected restarting of the drive unit, configure the circuit so that EM2 is also turned off when the main circuit power supply is turned off.
 12. This wiring diagram is for MR-J4-DU_B_(-RJ). The way to interface MR-J4-DU_(-RJ) is the same as MR-J4_(-RJ). See each servo amplifier instruction manual.

(b) When connecting one converter unit to two brake units

POINT	
<ul style="list-style-type: none">• When connecting two brake units in parallel, use FR-BU2-(H) for both. Otherwise an alarm or malfunction may occur.• Make sure to connect the master and slave terminals (MSG, SD) of one brake unit to those of the other respectively.• Do not connect as shown below.	
	
Connecting both units directly to L+ and L-.	Connecting both units directly together.

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

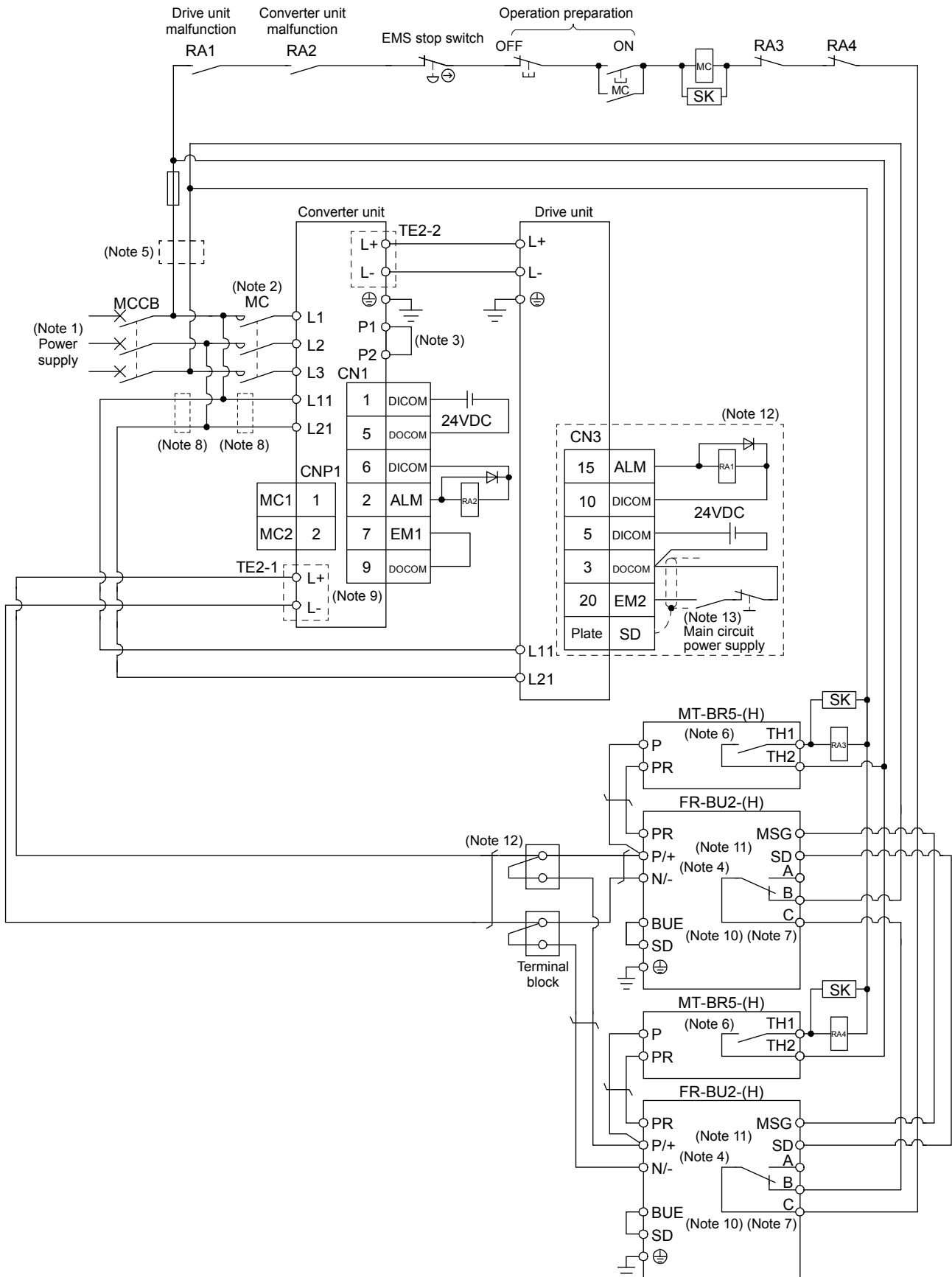
1) When the magnetic contactor drive output is enabled



Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

- Note
1. For the power supply specifications, refer to Section 1.2.
 2. Use a magnetic contactor with an operation delay time (interval between current being applied to the coil until closure of contacts) of 80 ms or less. Bus voltage decreases according to the voltage and operation pattern of the main circuit, and there may be a shift in dynamic brake deceleration during forced stop deceleration. If dynamic brake deceleration is not desired, delay the time to turn off the electromagnetic contactor.
 3. P1 and P2 are connected in factory. When using the power factor improving DC reactor, remove the short-circuit bar across P1 and P2 before connecting the reactor. For details, refer to Section 9.6.
 4. Make sure that the connection destinations of the P/+ terminal and N/- terminal of a brake unit are correct. Otherwise a malfunction will occur to a converter unit or brake unit.
 5. For 400 V class, use a step-down transformer.
 6. Contact rating: 1a normally open contact, 5 A at 110VAC/3 A at 220VAC
Normal: TH1 and TH2 are disconnected. Abnormal: TH1 and TH2 are connected.
 7. Contact rating: 230VAC_0.3 A/30VDC_0.3 A
Normal: B and C are connected/A and C are disconnected. Abnormal: B and C are disconnected/A and C are connected.
 8. If the wire used for L11 and L21 is thinner than the wire used for L1, L2, and L3, use a molded-case circuit breaker. (Refer to Section 9.5)
 9. Do not connect multiple wires directly to L+ and L- terminals of TE2-1 of a converter unit.
 10. Make sure to connect between BUE and SD. (Wired in factory.)
 11. Make sure that the connection destinations of MSG terminal and SD terminal of a brake unit are correct. Otherwise a malfunction will occur to a converter unit or brake unit.
 12. Connect L+ and L- terminals of a converter unit to terminal blocks by using wires described in (4) of this section.
 13. In order to prevent unexpected restarting of the drive unit, configure the circuit so that EM2 is also turned off when the main circuit power supply is turned off.
 14. This wiring diagram is for MR-J4-DU_B_(-RJ). The way to interface MR-J4-DU_(-RJ) is the same as MR-J4_(-RJ). See each servo amplifier instruction manual.

2) When the magnetic contactor drive output is disabled



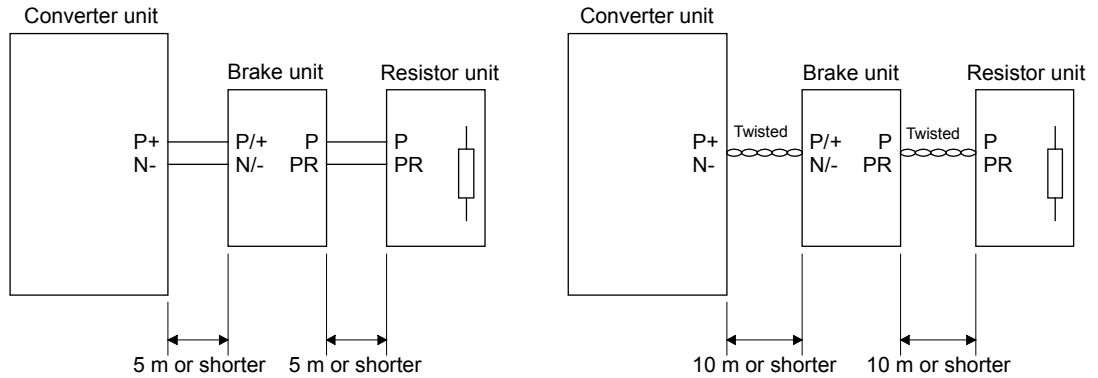
Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

- Note
1. For the power supply specifications, refer to Section 1.2.
 2. Use a magnetic contactor with an operation delay time (interval between current being applied to the coil until closure of contacts) of 80 ms or less. Bus voltage decreases according to the voltage and operation pattern of the main circuit, and there may be a shift in dynamic brake deceleration during forced stop deceleration. If dynamic brake deceleration is not desired, delay the time to turn off the electromagnetic contactor.
 3. P1 and P2 are connected in factory. When using the power factor improving DC reactor, remove the short-circuit bar across P1 and P2 before connecting the reactor. For details, refer to Section 9.6.
 4. Make sure that the connection destinations of the P/+ terminal and N/- terminal of a brake unit are correct. Otherwise a malfunction will occur to a converter unit or brake unit.
 5. For 400 V class, use a step-down transformer.
 6. Contact rating: 1a normally open contact, 5 A at 110 VAC/ 3 A at 220 VAC
Normal: TH1 and TH2 are disconnected. Abnormal: TH1 and TH2 are connected.
 7. Contact rating: 230VAC_0.3 A/DC30VDC_0.3 A
Normal: B and C are connected/A and C are disconnected. Abnormal: B and C are disconnected/A and C are connected.
 8. If the wire used for L11 and L21 is thinner than the wire used for L1, L2, and L3, use a molded-case circuit breaker. (Refer to Section 9.5)
 9. Do not connect multiple wires directly to L+ and L- terminals of TE2-1 of a converter unit.
 10. Make sure to connect between BUE and SD. (Wired in factory.)
 11. Make sure that the connection destinations of MSG terminal and SD terminal of a brake unit are correct. Otherwise a malfunction will occur to a converter unit or brake unit.
 12. Connect L+ and L- terminals of a converter unit to terminal blocks by using wires described in (4) of this section.
 13. In order to prevent unexpected restarting of the drive unit, configure the circuit so that EM2 is also turned off when the main circuit power supply is turned off.
 14. This wiring diagram is for MR-J4-DU_B_(-RJ). The way to interface MR-J4-DU_(-RJ) is the same as MR-J4_(-RJ). See each servo amplifier instruction manual.

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

(3) Wiring precautions

Use as short wires as possible between a converter unit and brake unit and between a resistor unit and a brake unit. If using a wire of 5 m or longer, be sure to use a twist wire (with 5 or more twists in 1 m). Make sure that a wire is 10 m or shorter even when it is a twisted wire. If a wire of 5 m or longer is not a twisted wire, or if a wire is a twisted wire and longer than 10 m, a malfunction may occur to a brake unit.

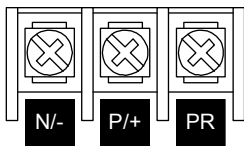


(4) Wires

(a) Wires for brake units

HIV wire (600 V grade heat-resistant polyvinyl chloride insulated wire) is recommended for use in brake units.

1) Main circuit terminals



Terminal block

	Brake unit	Main circuit terminal screw size	Crimp terminal N/-, P/+, PR, ⊕	Tightening torque [N•m]	Cable gauge	
					N/-, P/+, PR, ⊕	
					HIV wire [mm ²]	AWG
200 V class	FR-BU2-55K	M6	14-6	4.4	14	6
400 V class	FR-BU2-H55K	M5	5.5-5	2.5	5.5	10
	FR-BU2-H75K	M6	14-6	4.4	14	6

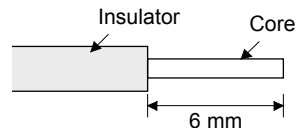
2) Control circuit terminal

POINT

- Fix a screw tightly otherwise the wire may come off or a malfunction may occur. Fixing a screw too tightly can damage the screw or brake unit, resulting in a short circuit or malfunction.



Terminal block



Do wiring with the stripped cable twisted to prevent it from becoming loose. Do not solder it.

Screw size: M3

Tightening torque: 0.5 N•m to 0.6 N•m

Cable gauge: 0.3 mm² to 0.75 mm²

Driver: Small-size slotted screw driver

(Blade thickness: 0.4 mm/Blade width: 2.5 mm)

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

(b) Wires between a converter unit and terminal blocks when two brake units are used.

Brake unit		Cable gauge	
		HIV wire [mm ²]	AWG
200 V class	FR-BU2-55K	38	2
400 V class	FR-BU2-H55K	14	6
	FR-BU2-H75K	38	2

(5) Crimp terminals for L+ and L- terminals of TE2-1 of a converter unit.

(a) Recommended crimp terminals

POINT
<ul style="list-style-type: none"> Installation of a crimp terminal may be impossible depending on the size, so make sure to use the recommended crimp terminal or one equivalent to it.

Converter unit		Brake unit	Connectable units	Crimp terminal (manufacturer)	(Note 1) Applicable tool
200 V class	MR-CR55K	FR-BU2-55K	2	38-S6 (JST) (Note 2) R38-6S (NICHIFU) (Note 2)	a
400 V class	MR-CR55K4	FR-BU2-H55K	2	FVD14-6 (JST)	b
		FR-BU2-H75K	2	38-S6 (JST) (Note 2) R38-6S (NICHIFU) (Note 2)	a

Note 1. Symbols in the "Applicable tool" column indicate applicable tools described in (b) of this section (5).
2. Coat the crimping part with an insulation tube.

(b) Applicable tool

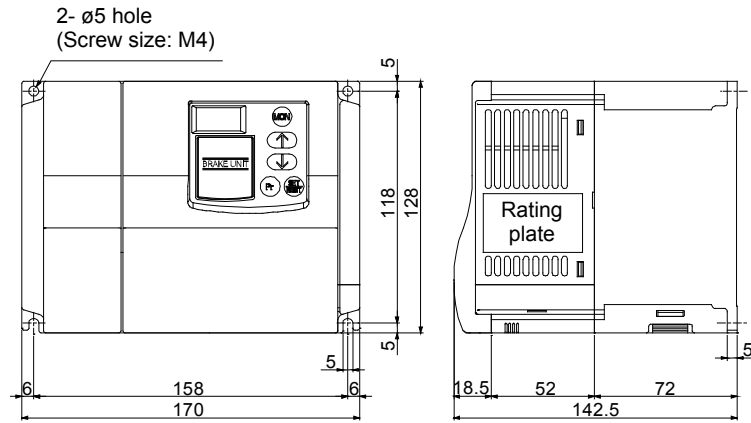
Symbol	Converter unit side crimp terminal				
	Crimp terminal	Applicable tool			Manufacturer
		Body	Head	Dice	
a	38-S6	YPT-60-21	YET-60-1	TD-124 TD-112	JST
		YF-1 E-4			
	R38-6S	NOP60 NOM60			NICHIFU
b	FDV14-6	YF-1 E-4	YNE-38	DH-112 DH-122	JST

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

5.4.4 Dimensions

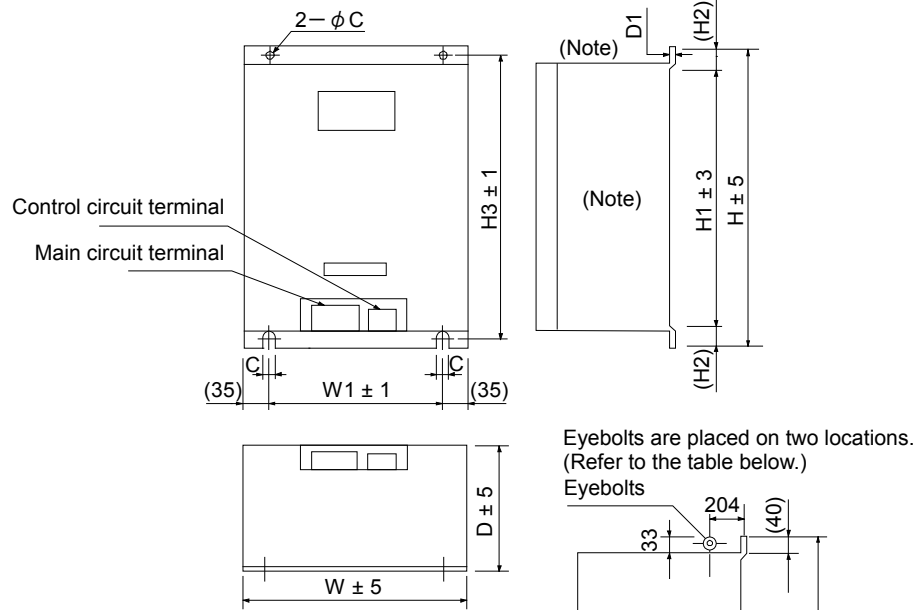
- (1) FR-BU2-(H) brake unit
FR-BU2-55K/FR-BU2-H55K/FR-BU2-H75K

[Unit: mm]



- (2) FR-BR-(H) resistor unit

[Unit: mm]



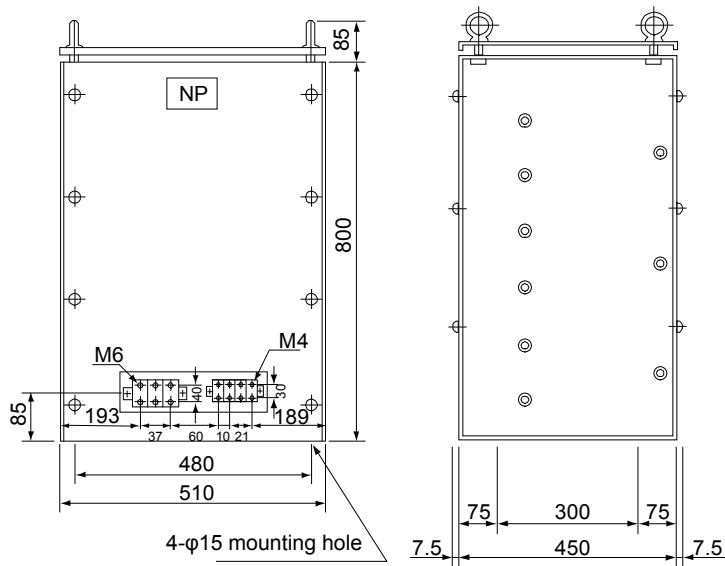
Note. Air vents are provided on both right and left sides and the top of the body. The bottom of the body is open.

Resistor unit		W	W1	H	H1	H2	H3	D	D1	C	Approx. mass [kg]
200 V class	FR-BR-55K	480	410	700	620	40	670	450	3.2	12	70
400 V class	FR-BR-H55K	480	410	700	620	20	670	450	3.2	12	70

Part 5: Review on Replacement of MR-J2S-30 kW or Higher Capacity Models with MR-J4- _DU_

(3) MT-BR5-(H) resistor unit

[Unit: mm]



Resistor unit		Resistance value	Approx. mass [kg]
200 V class	MT-BR5-55K	2.0 Ω	50
400 V class	MT-BR5-H75K	6.5 Ω	70

5.5 Comparison of Peripheral Equipment

POINT
<ul style="list-style-type: none"> See "Part 9: Review on Replacement of Optional Peripheral Equipment".

Part 6
Review on Replacement of
MR-J2M with MR-J4

Part 6: Review on Replacement of MR-J2M with MR-J4

Part 6: Review on Replacement of MR-J2M with MR-J4

1 SUMMARY

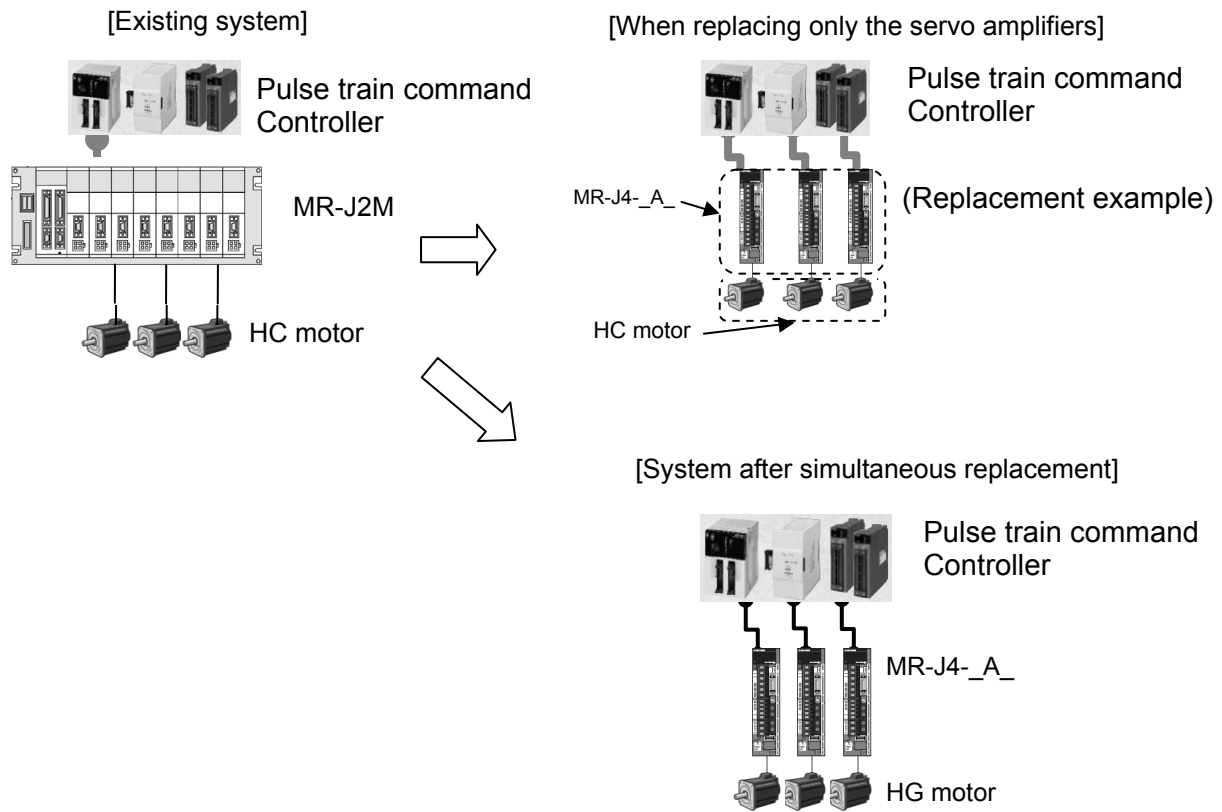
This document describes the changes that are applied to when replacing a system using the MR-J2M series with a system using the MR-J4 series. The functions and performance of the MR-J4 series are greatly improved from the MR-J2M series. Mounting dimensions of the both series are significantly different. For the details of the differences, refer to the descriptions in this document.

2 CASE STUDY ON REPLACEMENT OF MR-J2M

2.1 Replacement Method

(1) Simultaneous replacement with MR-J4-_A_ and an HG motor

The currently used connectors or cables need to be replaced. The existing cables cannot be used as they are.



2.2 Equipment Configuration

This section shows the basic models recommended for replacing the amplifier and motor as a set.

Series	model			Example of replacement model	Attachment compatibility (O: Interchangeable)
	Base unit	Interface unit	Drive Unit		
200VAC Universal Interface	MR-J2M-BU_	MR-J2M-P8A	MR-J2M-10DU	MR-J4-10A	Note 1
			MR-J2M-20DU	MR-J4-20A	Note 1
			MR-J2M-40DU	MR-J4-40A	Note 1
			MR-J2M-70DU	MR-J4-70A	Note 1
200VAC SSCNET Interface	MR-J2M-BU_	MR-J2M-P8B	MR-J2M-10DU	MR-J4-10B	Note 1
			MR-J2M-20DU	MR-J4-20B	Note 1
			MR-J2M-40DU	MR-J4-40B	Note 1
			MR-J2M-70DU	MR-J4-70B	Note 1

Note 1. These replacement models do not have compatibility in mounting.

Part 6: Review on Replacement of MR-J2M with MR-J4

3 DIFFERENCES BETWEEN MR-J2M-A AND MR-J4-_A_

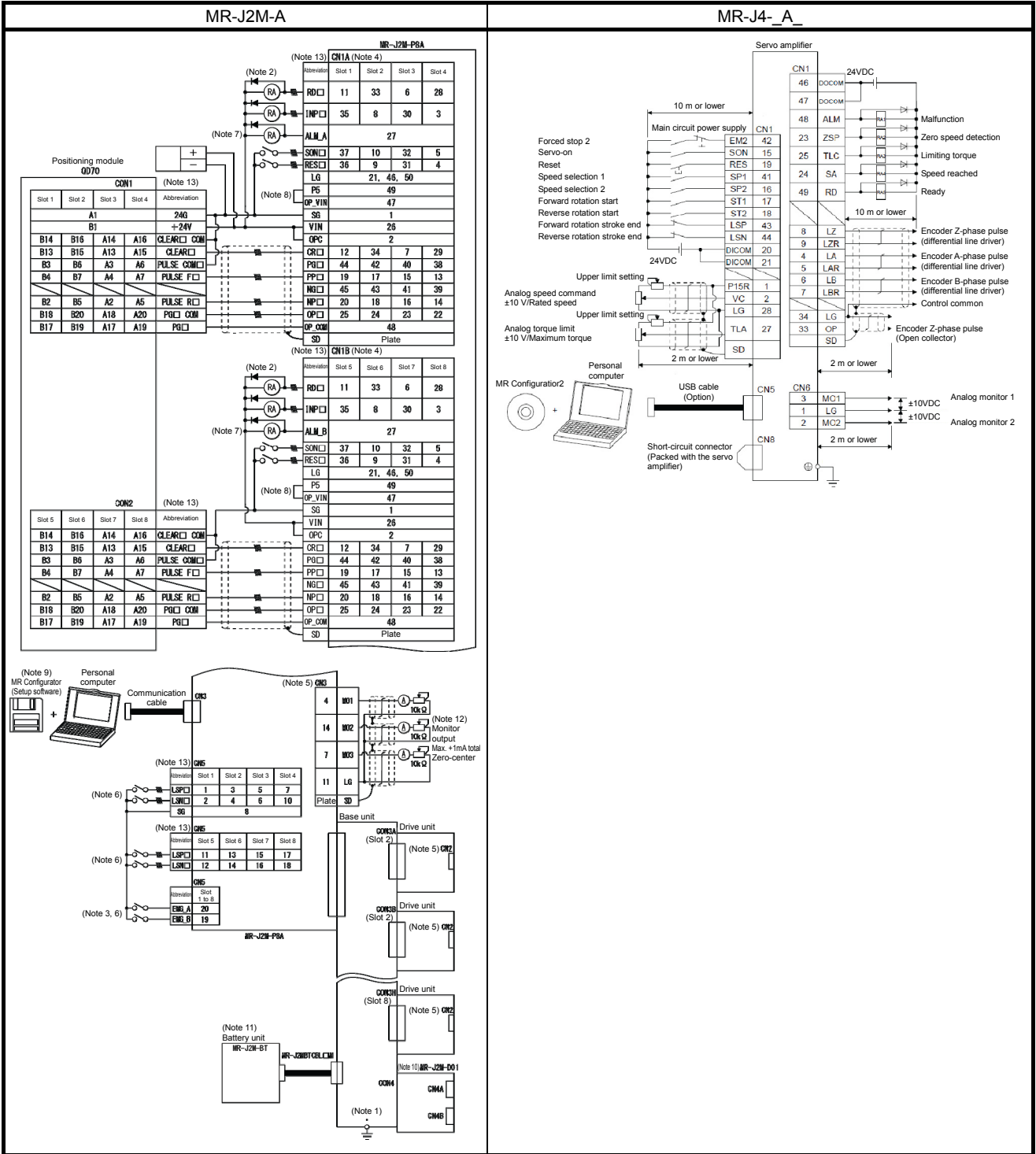
3.1 Function Comparison Table

3.1.1 General

Item	MR-J2M series	MR-J4 series	Reference document/items	
1	Regenerative resistor	External option	Built-in (200 W or more)	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 11.2
2	Dynamic brake	Built-in	Built-in (Coasting distance is different.)	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 11.3
3	Control circuit power	Single-phase 200VAC to 230VAC	Single-phase 200VAC to 240VAC	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 1.3
4	Main circuit power	Single-phase/3-phase 200VAC to 230VAC 3-phase 200VAC to 230VAC	Single-phase/3-phase 200VAC to 240VAC 3-phase 200VAC to 240VAC	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 1.3
5	24VDC power supply	External supply required	External supply required	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 3.5.4
6	Auto Tuning	Real-time auto tuning: 15 steps	Real-time auto tuning: 40 steps Advanced gain search (available in the future) One-touch tuning	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 6.3
7	Control mode	(A) General-purpose interface • Position control mode (pulse command) (B) SSCNET compatible • Position control mode	(A) General-purpose interface • Position control mode (pulse command) • Speed control mode (analog command) • Torque control mode (analog command) (B) SSCNET III/H compatible • Position control mode • Speed control mode • Torque control mode	MR-J4-_A_ Servo Amplifier Instruction Manual
8	Maximum input pulses	Differential pulse 500 kpps Command pulse: Sink	Differential pulse 4 Mpps Command pulse: Sink	MR-J4-_A_ Servo Amplifier Instruction Manual
9	The number of DIO points (excluding EM1)	(A) General-purpose interface DI: 5 points × 8 axes; DO: 2 points × 8 axes (B) SSCNET-compatible DI: 0 point; DO: 0 point * When an extension I/O unit is used, DI: 32 points; DO: 8 points added	(A) General-purpose interface DI: 9 points, DO: 6 points (B) SSCNET III- / H-compatible DI: 3 points; DO: 3 points	MR-J4-_A_ Servo Amplifier Instruction Manual
10	DIO interface	Input: Sink Output: Sink	Input: Sink/source Output: Sink/source	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 3.2
11	Analog input/output	(A) General-purpose interface (Input) Unprovided (Output) 10-bit or equivalent × 3 ch (B) SSCNET-compatible (Output) 10-bit or equivalent × 3 ch	(A) General-purpose interface (Input) 2 ch Torque: 10-bit; Speed: 14-bit or equivalent (Output) 10-bit or equivalent × 2 ch (B) SSCNET III/H-compatible (Output) 10-bit or equivalent × 2 ch	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 3.5
12	Number of internal speed commands (Type A)	0 points	7 points	MR-J4-_A_ Servo Amplifier Instruction Manual
13	Parameter setting method	MR Configurator (SETUP1_ _)	MR Configurator2 Push-button (Type A)	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 6.1.2
14	Setup S/W communication	RS-232C	USB	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 11.7.3
15	Servo motor (Encoder resolution)	HC series (17-bit ABS)	HG series (22-bit ABS)	MR-J4-_A_ Servo Amplifier Instruction Manual
16	Motor maximum torque	HC-KFS 300% HC-MFS 300%	HG-KR 350% (models with a gear: 300%) HG-MR 300%	MR-J4-_A_ Servo Amplifier Instruction Manual
17	LED display	(Type A) 7-segment 5-digit (Type B) 7-segment 5-digit	(Type A) 7-segment 5-digit (Type B) 7-segment 3-digit	MR-J4-_A_ Servo Amplifier Instruction Manual
18	Advanced vibration suppression control II	Unprovided	Provided	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 7.1.4
19	Adaptive filter	Provided (I)	Provided (II with improved functions)	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 7.1.2
20	Notch filter	Provided (× 2)	Provided (× 5)	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 7.1.6
21	Tough drive	Unprovided	Provided	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 7.3
22	Drive recorder	Unprovided	Provided	MR-J4-_A_ Servo Amplifier Instruction Manual
23	Forced stop	EM1 (DB stop)	EM1 (DB stop)/EM2 (deceleration stop) optional	MR-J4-_A_ Servo Amplifier Instruction Manual

Part 6: Review on Replacement of MR-J2M with MR-J4

3.2 Comparison of Standard Connection Diagrams

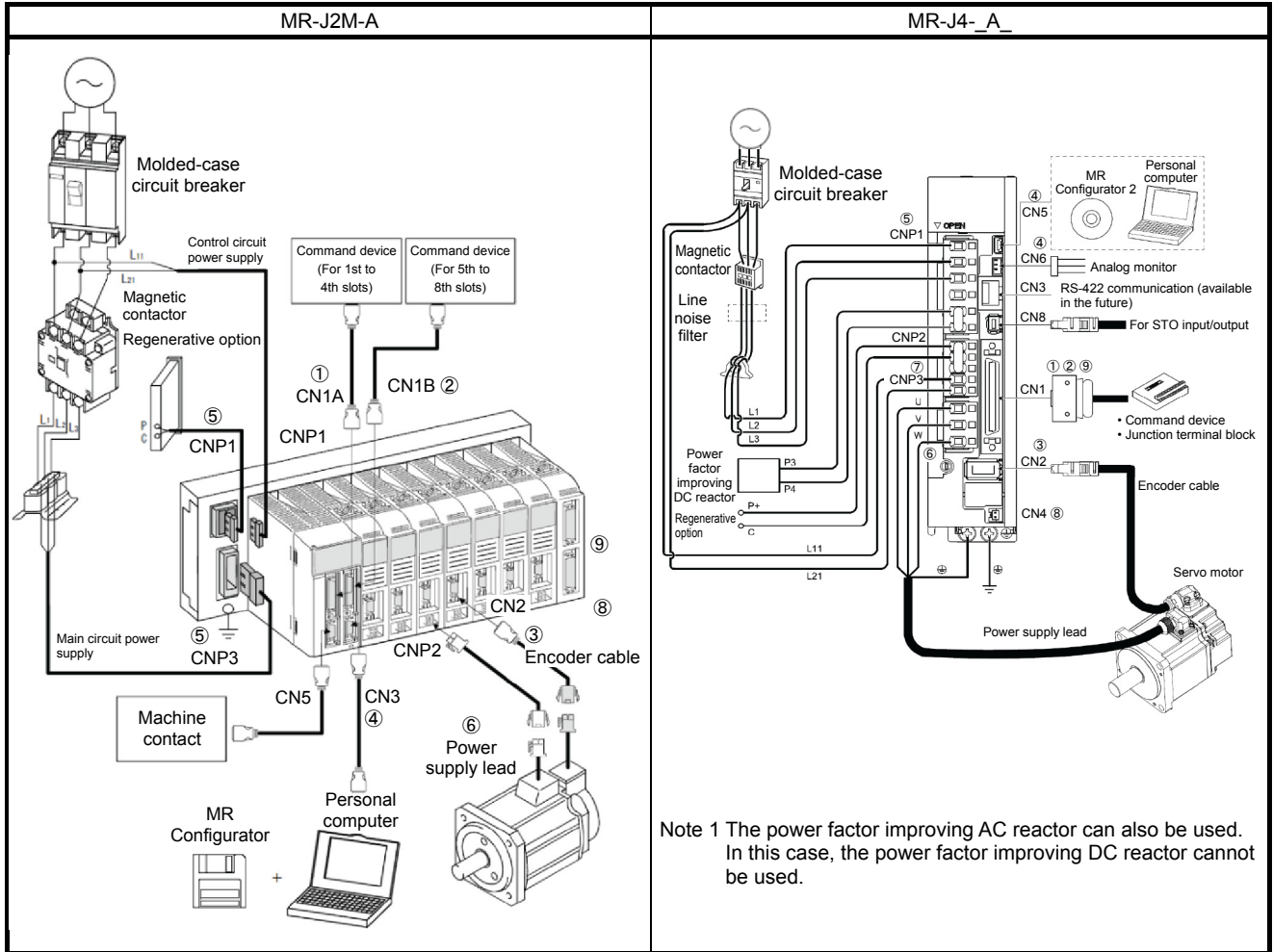


Part 6: Review on Replacement of MR-J2M with MR-J4

3.3 List of Corresponding Connectors and Terminal Blocks

(1) Connector comparison table

An example of connections with the peripheral equipment is shown below. See the respective Installation Guides and Instruction Manuals for details on signals.



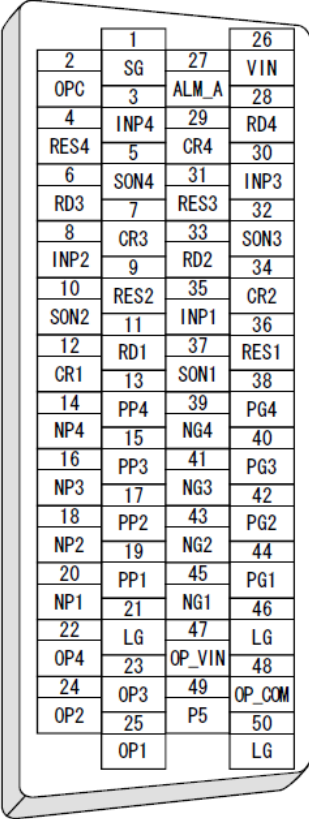
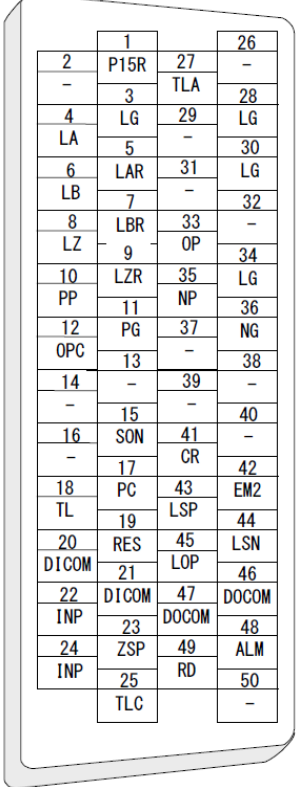
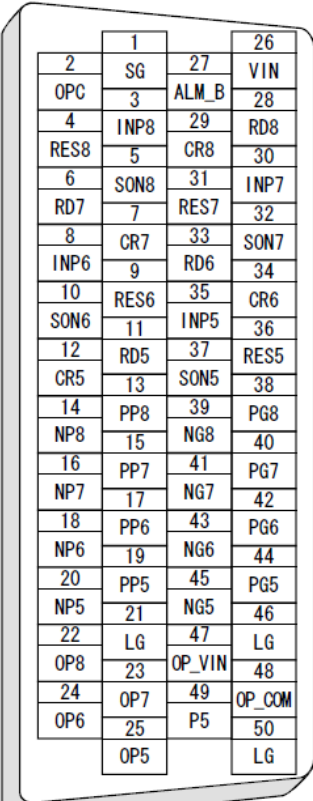
• List of corresponding connectors

MR-J2M-A		MR-J4-A_	Note
(1)	I/O signal connector CN1A	I/O signal connector CN1	Prepare a new cable.
(2)	I/O signal connector CN1B	Encoder connector CN2	Must switch to encoder cable (option) or prepare a new cable.
(4)	Communication connector CN3	USB communication connector CN5	Switch to USB cable (option).
		Analog monitor connector CN6	Switch to monitor cable (option).
(5)	Main circuit power connector CNP3 Regenerative option connector CNP1	Main circuit power connector CNP1 Servo motor power connector CNP3	Switch to the power connector (enclosed with the amplifier).
(6)	Servo motor power connector CNP2	Control circuit power connector CNP2	
(7)	Control circuit power connector CNP1B	Battery connector CN4	Prepare a new battery.
(8)	Battery connector CON5	I/O signal connector CN1	Prepare a new cable.
(9)	Extended I/O unit connector CN4A CN4B		

Note. When not using the STO function, attach a short-circuit connector supplied with a servo amplifier onto CN8 (STO input signal connector).

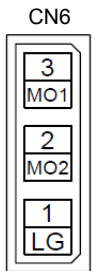
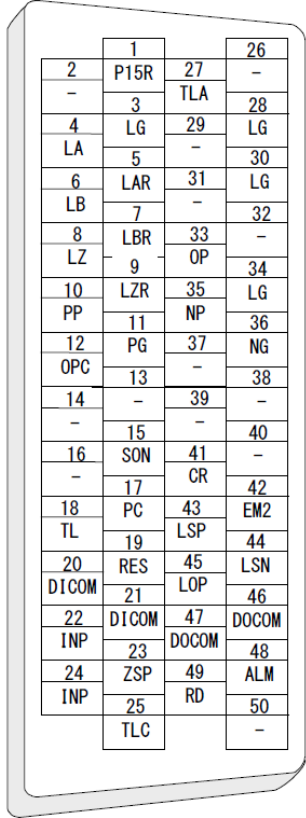
Part 6: Review on Replacement of MR-J2M with MR-J4

(2) Comparison of signals

MR-J2M-A		Signal symbol	MR-J4-_A_																																																																																																									
Connector pin assignment	Connector pin No.		Connector pin No.	Connector pin assignment																																																																																																								
<p style="text-align: center;">CN1A</p>  <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>1</td><td>26</td></tr> <tr><td>2</td><td>VIN</td></tr> <tr><td>3</td><td>ALM_A</td></tr> <tr><td>4</td><td>RD4</td></tr> <tr><td>5</td><td>CR4</td></tr> <tr><td>6</td><td>INP3</td></tr> <tr><td>7</td><td>RES3</td></tr> <tr><td>8</td><td>SON3</td></tr> <tr><td>9</td><td>RD2</td></tr> <tr><td>10</td><td>CR2</td></tr> <tr><td>11</td><td>INP1</td></tr> <tr><td>12</td><td>RES1</td></tr> <tr><td>13</td><td>SON1</td></tr> <tr><td>14</td><td>PG4</td></tr> <tr><td>15</td><td>NG4</td></tr> <tr><td>16</td><td>PG3</td></tr> <tr><td>17</td><td>NG3</td></tr> <tr><td>18</td><td>PG2</td></tr> <tr><td>19</td><td>NG2</td></tr> <tr><td>20</td><td>PG1</td></tr> <tr><td>21</td><td>NG1</td></tr> <tr><td>22</td><td>LG</td></tr> <tr><td>23</td><td>OP_VIN</td></tr> <tr><td>24</td><td>OP_COM</td></tr> <tr><td>25</td><td>50</td></tr> <tr><td>26</td><td>LG</td></tr> </table>	1	26	2	VIN	3	ALM_A	4	RD4	5	CR4	6	INP3	7	RES3	8	SON3	9	RD2	10	CR2	11	INP1	12	RES1	13	SON1	14	PG4	15	NG4	16	PG3	17	NG3	18	PG2	19	NG2	20	PG1	21	NG1	22	LG	23	OP_VIN	24	OP_COM	25	50	26	LG	CN1A-50 CN1A-46 CN1A-21 CN1B-50 CN1B-46 CN1B-21	LG	CN1-3 CN1-28 CN1-30 CN1-34	<p style="text-align: center;">CN1</p>  <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>1</td><td>26</td></tr> <tr><td>2</td><td>-</td></tr> <tr><td>3</td><td>TLA</td></tr> <tr><td>4</td><td>LG</td></tr> <tr><td>5</td><td>-</td></tr> <tr><td>6</td><td>LAR</td></tr> <tr><td>7</td><td>-</td></tr> <tr><td>8</td><td>LBR</td></tr> <tr><td>9</td><td>OP</td></tr> <tr><td>10</td><td>LZR</td></tr> <tr><td>11</td><td>NP</td></tr> <tr><td>12</td><td>PG</td></tr> <tr><td>13</td><td>-</td></tr> <tr><td>14</td><td>-</td></tr> <tr><td>15</td><td>-</td></tr> <tr><td>16</td><td>SON</td></tr> <tr><td>17</td><td>CR</td></tr> <tr><td>18</td><td>PC</td></tr> <tr><td>19</td><td>LSP</td></tr> <tr><td>20</td><td>RES</td></tr> <tr><td>21</td><td>LOP</td></tr> <tr><td>22</td><td>DICOM</td></tr> <tr><td>23</td><td>DOCOM</td></tr> <tr><td>24</td><td>ZSP</td></tr> <tr><td>25</td><td>RD</td></tr> <tr><td>26</td><td>-</td></tr> </table>	1	26	2	-	3	TLA	4	LG	5	-	6	LAR	7	-	8	LBR	9	OP	10	LZR	11	NP	12	PG	13	-	14	-	15	-	16	SON	17	CR	18	PC	19	LSP	20	RES	21	LOP	22	DICOM	23	DOCOM	24	ZSP	25	RD	26	-
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CN1A-26 CN1B-26	VIN (DICOM)	CN1-20 CN1-21																																																																																																										
CN1A-1 CN1B-1	SG (DOCOM)	CN1-46 CN1-47																																																																																																										
CN1A-45 (Slot 1) CN1A-43 (Slot 2) CN1A-41 (Slot 3) CN1A-39 (Slot 4) CN1B-45 (Slot 5) CN1B-43 (Slot 6) CN1B-41 (Slot 7) CN1B-39 (Slot 8)	NG	CN1-36																																																																																																										
CN1A-44 (Slot 1) CN1A-42 (Slot 2) CN1A-40 (Slot 3) CN1A-38 (Slot 4) CN1B-44 (Slot 5) CN1B-42 (Slot 6) CN1B-40 (Slot 7) CN1B-38 (Slot 8)	PG	CN1-11																																																																																																										
CN1A-25 (Slot 1) CN1A-24 (Slot 2) CN1A-23 (Slot 3) CN1A-22 (Slot 4) CN1B-25 (Slot 5) CN1B-24 (Slot 6) CN1B-23 (Slot 7) CN1B-22 (Slot 8)	OP	CN1-33																																																																																																										
CN1A-11 (Slot 1) CN1A-33 (Slot 2) CN1A-6 (Slot 3) CN1A-28 (Slot 4) CN1B-11 (Slot 5) CN1B-33 (Slot 6) CN1B-6 (Slot 7) CN1B-28 (Slot 8)	RD	CN1-49																																																																																																										
<p style="text-align: center;">CN1B</p>  <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>1</td><td>26</td></tr> <tr><td>2</td><td>VIN</td></tr> <tr><td>3</td><td>ALM_B</td></tr> <tr><td>4</td><td>RD8</td></tr> <tr><td>5</td><td>CR8</td></tr> <tr><td>6</td><td>INP7</td></tr> <tr><td>7</td><td>RES7</td></tr> <tr><td>8</td><td>SON7</td></tr> <tr><td>9</td><td>RD6</td></tr> <tr><td>10</td><td>CR6</td></tr> <tr><td>11</td><td>INP5</td></tr> <tr><td>12</td><td>RES5</td></tr> <tr><td>13</td><td>SON5</td></tr> <tr><td>14</td><td>PG8</td></tr> <tr><td>15</td><td>NG8</td></tr> <tr><td>16</td><td>PG7</td></tr> <tr><td>17</td><td>NG7</td></tr> <tr><td>18</td><td>PG6</td></tr> <tr><td>19</td><td>NG6</td></tr> <tr><td>20</td><td>PG5</td></tr> <tr><td>21</td><td>NG5</td></tr> <tr><td>22</td><td>LG</td></tr> <tr><td>23</td><td>OP_VIN</td></tr> <tr><td>24</td><td>OP_COM</td></tr> <tr><td>25</td><td>50</td></tr> <tr><td>26</td><td>LG</td></tr> </table>	1	26	2	VIN	3	ALM_B	4	RD8	5	CR8	6	INP7	7	RES7	8	SON7	9	RD6	10	CR6	11	INP5	12	RES5	13	SON5	14	PG8	15	NG8	16	PG7	17	NG7	18	PG6	19	NG6	20	PG5	21	NG5	22	LG	23	OP_VIN	24	OP_COM	25	50	26	LG																																																								
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Part 6: Review on Replacement of MR-J2M with MR-J4

MR-J2M-A		Signal symbol	MR-J4- _A_									
Connector pin assignment	Connector pin No.		Connector pin No.	Connector pin assignment								
<p>CN1A</p>	CN1A-35 (Slot 1)	INP	CN1-22 CN1-24									
	CN1A-8 (Slot 2)											
	CN1A-30 (Slot 3)											
	CN1A-3 (Slot 4)											
	CN1B-35 (Slot 5)											
	CN1B-8 (Slot 6)											
	CN1B-30 (Slot 7)											
	CN1B-3 (Slot 8)											
	CN1A-37 (Slot 1)				SON	CN1-15						
	CN1A-10 (Slot 2)											
CN1A-32 (Slot 3)												
CN1A-5 (Slot 4)												
CN1B-37 (Slot 5)												
CN1B-10 (Slot 6)												
CN1B-32 (Slot 7)												
CN1B-5 (Slot 8)												
CN1A-36 (Slot 1)	RES	CN1-19										
CN1A-9 (Slot 2)												
CN1A-31 (Slot 3)												
CN1A-4 (Slot 4)												
CN1B-36 (Slot 5)												
CN1B-9 (Slot 6)												
CN1B-31 (Slot 7)												
CN1B-4 (Slot 8)												
CN5-19 (Slot 1-4)				EMG (EM2)	CN1-42							
CN5-20 (Slot 5-8)												
CN5-1 (Slot 1)	LSP	CN1-43										
CN5-3 (Slot 2)												
CN5-5 (Slot 3)												
CN5-7 (Slot 4)												
CN5-11 (Slot 5)												
CN5-13 (Slot 6)												
CN5-15 (Slot 7)												
CN5-17 (Slot 8)												
CN5-2 (Slot 1)				LSN	CN1-44							
CN5-4 (Slot 2)												
CN5-6 (Slot 3)												
CN5-10 (Slot 4)												
CN5-12 (Slot 5)												
CN5-14 (Slot 6)												
CN5-16 (Slot 7)												
CN5-18 (Slot 8)												
CN1A-27 (Slot 1-4)	ALM	CN1-48										
CN1B-27 (Slot 5-8)												
CN3-1				LG	CN6-1							
CN3-3												
CN3-11												
CN3-13												
CN3-4							MO1	CN6-2				
CN3-14												
CN3-7										MO3	-	



Part 6: Review on Replacement of MR-J2M with MR-J4

3.4 Comparison of Peripheral Equipment

POINT	
	<ul style="list-style-type: none"> See "Part 9: Review on Replacement of Optional Peripheral Equipment".

3.5 Comparison of Parameters

The correspondence of the MR-J2M series and MR-J4 series parameter numbers is shown below. Refer to the respective Instruction Manuals for detailed specifications of each parameter.

3.5.1 Parameter comparison list

POINT	
	<ul style="list-style-type: none"> With MR-J4-_A_, the deceleration to a stop function is enabled in the factory setting. To disable the deceleration to a stop function, set PA04 to "0 ___". For details, see "Part 2: Replacement of MR-J2S-_A_ with MR-J4-_A_".

(1) Interface unit MR-J2M-P8A

MR-J2M-A (Interface unit MR-J2M-P8A)		MR-J4-_A_		Note
No.	Name	No.	Name	
0	Serial communication function selection	PC21	RS-422 communication function selection	MR-J4-A supports only RS-422. When the personal computer is RS-232C, use the RS422/232C conversion cable DSV-CABV (manufactured by Diatrend).
	Alarm history clear	PC18	Alarm history clear	
1	Regenerative option selection	PA02	Regenerative options	The setting must be changed according to option model.
2	Serial communication protocol checksum selection			The MR-J4-A initial setting is "Provided". Separate consultation is required for other settings.
3	Analog monitor 1 output	PC14	Analog monitor 1 output	The setting value must be changed according to monitor output data.
4	Analog monitor 2 output	PC15	Analog monitor 2 output	
5	Analog monitor 3 output			
6	Analog monitor output 1 offset	PC39	Analog monitor 1 offset	Depends on the hardware. The setting values must be changed.
7	Analog monitor output 2 offset	PC40	Analog monitor 2 offset	
8	Analog monitor output 3 offset			
9	Input signal filter	PD29	Input filter setting	Some of the settings cannot be set.
10	Interface unit serial communication station number selection	PC20	Station number setting	
11	1st slot serial communication station number selection	PC20	Station number setting	
12	2nd slot serial communication station number selection	PC20	Station number setting	
13	3rd slot serial communication station number selection	PC20	Station number setting	
14	4th slot serial communication station number selection	PC20	Station number setting	
15	5th slot serial communication station number selection	PC20	Station number setting	
16	6th slot serial communication station number selection	PC20	Station number setting	
17	7th slot serial communication station number selection	PC20	Station number setting	
18	8th slot serial communication station number selection	PC20	Station number setting	
19	IFU parameter writing inhibit	PA19	Parameter writing inhibit	Change the setting value as necessary.
20	Serial communication time-out selection			The initial setting for MR-J4-_A_ is "No time-out check". Separate consultation is required for other settings.
21 to 29	For manufacturer setting			

Part 6: Review on Replacement of MR-J2M with MR-J4

(2) Drive unit MR-J2M-_DU

MR-J2M-A (Drive unit MR-J2M-_DU)		MR-J4-_A_		Note										
No.	Name	No.	Name											
0	For manufacturer setting													
1	Absolute position detection system	PA03	Absolute position detection system											
2	Auto Tuning	PA09	Auto tuning response	The setting value must be changed based on machine resonance frequency.										
		PA08	Auto tuning mode	The setting value needs to be changed according to the auto tuning mode. Some of the settings cannot be set. <Gain adjustment mode correspondence table> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>MR-J2M-A</th> <th>MR-J4-_A_</th> </tr> </thead> <tbody> <tr> <td>Interpolation mode</td> <td>2 gain adjustment mode 1</td> </tr> <tr> <td>Auto tuning mode 1</td> <td>Auto tuning mode 1</td> </tr> <tr> <td>Auto tuning mode 2</td> <td>Auto tuning mode 2</td> </tr> <tr> <td>Manual mode 1</td> <td></td> </tr> <tr> <td>Manual mode 2</td> <td>Manual mode</td> </tr> </tbody> </table>	MR-J2M-A	MR-J4-_A_	Interpolation mode	2 gain adjustment mode 1	Auto tuning mode 1	Auto tuning mode 1	Auto tuning mode 2	Auto tuning mode 2	Manual mode 1	
MR-J2M-A	MR-J4-_A_													
Interpolation mode	2 gain adjustment mode 1													
Auto tuning mode 1	Auto tuning mode 1													
Auto tuning mode 2	Auto tuning mode 2													
Manual mode 1														
Manual mode 2	Manual mode													
3	Electronic gear numerator	PA06	Electronic gear numerator	The setting value must be changed according to resolution and detection capability.										
4	Electronic gear denominator	PA07	Electronic gear denominator											
5	In-position range	PA10	In-position range	Set it per command input pulse before electronic gear conversion for both J2M-A and J4-A.										
6	Position loop gain 1.	PB07	Model loop gain	The unit system is different. (rad/s→0.1 rad/s)										
7	Position command acceleration/deceleration time constant	PB03	Position command acceleration/deceleration time constant											
8 to 15	For manufacturer setting													
16	Alarm history clear	PC18	Alarm history clear											
17 to 18	For manufacturer setting													
19	DRU parameter writing inhibit	PA19	Parameter writing inhibit	Change the setting value as necessary.										
20	Slight vibration suppression control	PB24	Slight vibration suppression control											
	Encoder cable communication method selection	PC22	Encoder cable communication method selection											
21	Function selection 3 (command pulse selection)	PA13	Command pulse input form											
22	Stop method selection when LSP/LSN is valid	PD30	Stop method selection when LSP/LSN is valid											
23	Feed forward gain	PB04	Feed forward gain											
24	Zero speed	PC17	Zero speed											
25 to 26	For manufacturer setting													
27	Encoder output pulses	PA15	Encoder output pulse	Max. output frequency is different.										
28	Internal torque limit 1	PA11	Forward rotation torque limit											
		PA12	Reverse rotation torque limit											
29 to 32	For manufacturer setting													
33	Electromagnetic brake sequence output	PC16	Electromagnetic brake sequence output											
34	Load to motor inertia ratio	PB06	Load to motor inertia ratio	The unit system is different. (0.1-fold→0.01-fold) Pay attention to the setting value.										
35	Position loop gain 2.	PB08	Position loop gain											

Part 6: Review on Replacement of MR-J2M with MR-J4

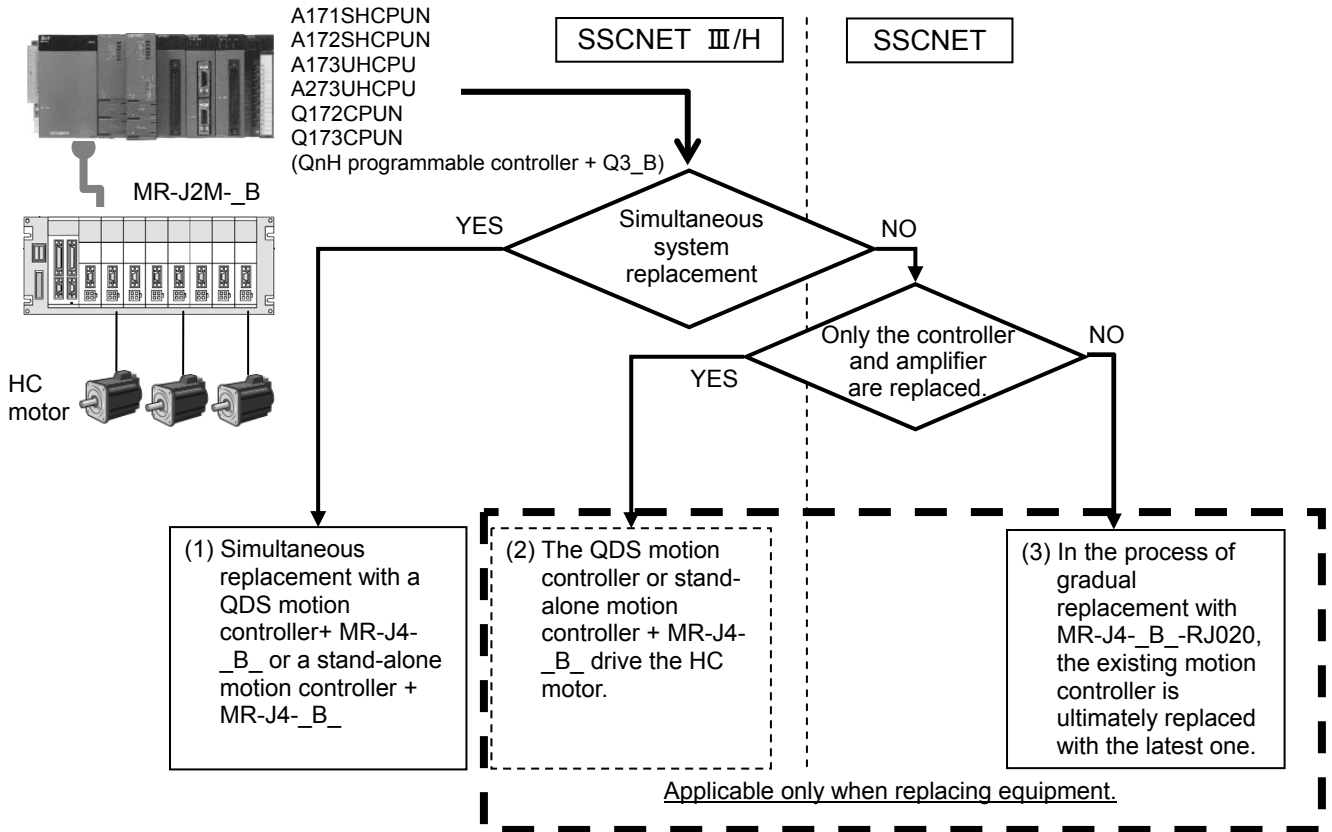
MR-J2M-A (Drive unit MR-J2M-_DU)		MR-J4-_A_		Note
No.	Name	No.	Name	
36	Speed loop gain 1.			No corresponding parameter (Setting not required)
37	Speed loop gain 2.	PB09	Speed loop gain	
38	Speed integral compensation.	PB10	Speed integral compensation	The unit system is different. (ms→0.1 ms)
39	Speed differential compensation	PB11	Speed differential compensation	
40	For manufacturer setting			
41				
42	Input signal selection 1	PD32	Clear (CR) selection	
43 to 49	For manufacturer setting			
50	For manufacturer setting			
51	Operating method selection for RES (Reset) shorting	PD30	Base circuit status selection for RES on	
52	For manufacturer setting			
53	For manufacturer setting			
54	Rotation direction selection	PA14	Rotation direction selection	
	Encoder output pulse phase selection Encoder output pulse setting selection	PC19	Encoder output pulse phase selection Encoder output pulse setting selection	
55	Position command acceleration/deceleration time constant control	PB25	Position acceleration/deceleration filter type selection	
56	For manufacturer setting			
57	For manufacturer setting			
58	Machine resonance suppression filter 1	PB13 PB14	Machine resonance suppression filter 1 Notch shape selection 1	Change the setting value according to the frequency and depth.
59	Machine resonance suppression filter 2	PB15 PB16	Machine resonance suppression filter 2 Notch shape selection 2	Change the setting value according to the frequency and depth.
60	Low-pass filter/adaptive vibration suppression control			No corresponding parameter (Machine resonance filters can be automatically adjusted with PB01.)
61	Load to motor inertia ratio 2	PB29	Load to motor inertia ratio after gain switching	The unit system is different. (0.1-fold → 0.01-fold) Pay attention to the setting value.
62	Position loop gain 2 changing ratio	PB30	Position loop gain after gain switching	It is necessary to convert the ratio to a value to change the setting value.
63	Speed loop gain 2 changing ratio	PB31	Speed loop gain after gain switching	
64	Speed integral compensation changing ratio	PB32	Speed integral compensation after gain switching	
65	Gain switching selection	PB26	Gain switching selection	
66	Gain switching condition	PB27	Gain switching condition	
67	Gain switching time constant	PB28	Gain switching time constant	
68	For manufacturer setting			
69	Command pulse multiplication numerator 2	PC32	Command input pulse multiplication numerator 2	
70	Command pulse multiplication numerator 3	PC33	Command input pulse multiplication numerator 3	
71	Command pulse multiplication numerator 4	PC34	Command input pulse multiplication numerator 4	
72 to 75	For manufacturer setting			
76	Internal torque limit 2	PC35	Internal torque limit 2	The unit system is different. (% → 0.1%)
77 to 84	For manufacturer setting			

Part 6: Review on Replacement of MR-J2M with MR-J4

4 DIFFERENCES BETWEEN MR-J2M-B AND MR-J4-_B_

POINT
<ul style="list-style-type: none"> Before replacement, note that the dimensions, peripheral circuits, and optional peripheral devices for the MR-J2M servo amplifier are different from those for the MR-J4 servo amplifier.

4.1 Review on Replacement Method



For details about (3), see "[Appendix 1] Summary of MR-J4-_B_-RJ020 + MR-J4-T20".

<p>"QDS motion controller" refers to the following model. Q172DSCPU/Q173DSCPU "Stand-alone motion controller" refers to the following model. Q170MSCPU(-S1)</p>
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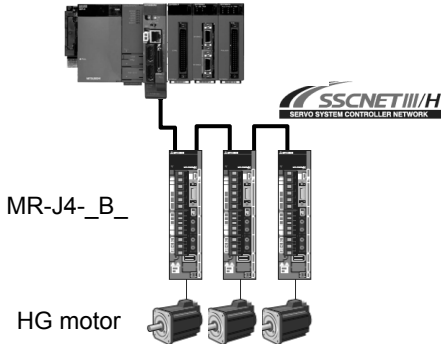
Part 6: Review on Replacement of MR-J2M with MR-J4

4.2 Replacement Method

(1) For simultaneous replacement

QDS motion controller
+ MR-J4-_B_
+ HG motor

QnUD programmable controller + QDS motion controller + Q3_DB

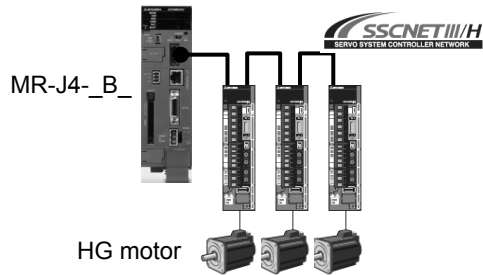


Advantage: Higher-speed motion control and excellent expandability achieve a shorter cycle time.

"QDS motion controller" refers to the following model.
Q172DSCPU/Q173DSCPU

Stand-alone motion controller
+ MR-J4-_B_
+ HG motor

SSCNET III/H-compatible stand-alone motion controller:
Q170MSCPU(-S1)



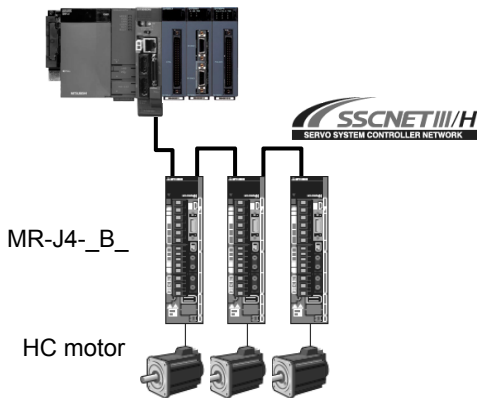
Advantage: High performance equivalent to that of a QDS motion controller can be achieved at a lower cost.

"Stand-alone motion controller" refers to the following model.
Q170MSCPU(-S1)

(2) For replacement of only a controller and an amplifier

QDS motion controller
+ MR-J4-_B_
+ HC motor

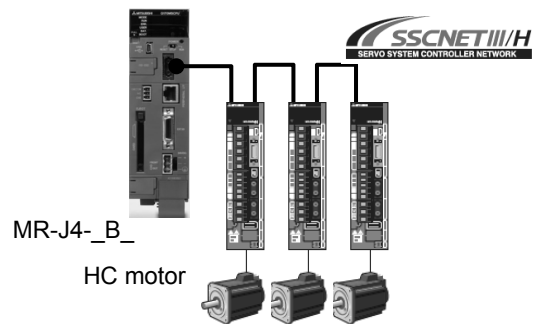
QnUD programmable controller + QDS motion controller + Q3_DB



Advantage: Higher-speed motion control and excellent expandability achieve a shorter cycle time without any changes made to the HC motor.

Stand-alone motion controller
+ MR-J4-_B_
+ HC motor

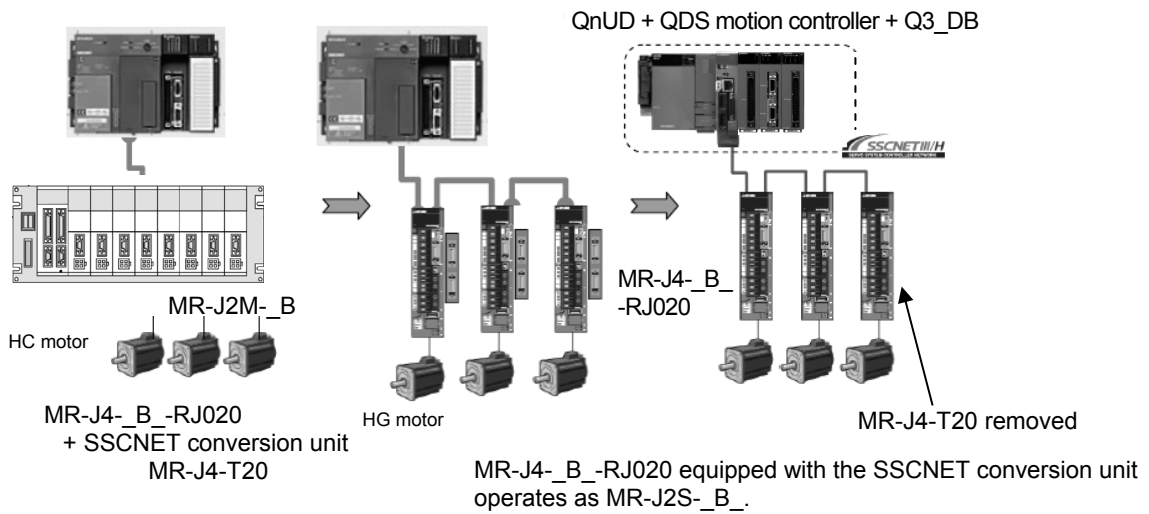
SSCNET III/H-compatible stand-alone motion controller:
Q170MSCPU(-S1)



Advantage: High performance equivalent to that of a QDS motion controller can be achieved at a lower cost without any changes made to the HC motor.

Part 6: Review on Replacement of MR-J2M with MR-J4

- (3) Gradual replacement of MR-J2M-B with MR-J4-B
 See "[Appendix 1] Summary of MR-J4-B-RJ020 + MR-J4-T20".



4.3 Function Comparison Table

- (1) General
 Same as 3.1.1
- (2) Comparison of networks

<Comparison of servo system network specifications>

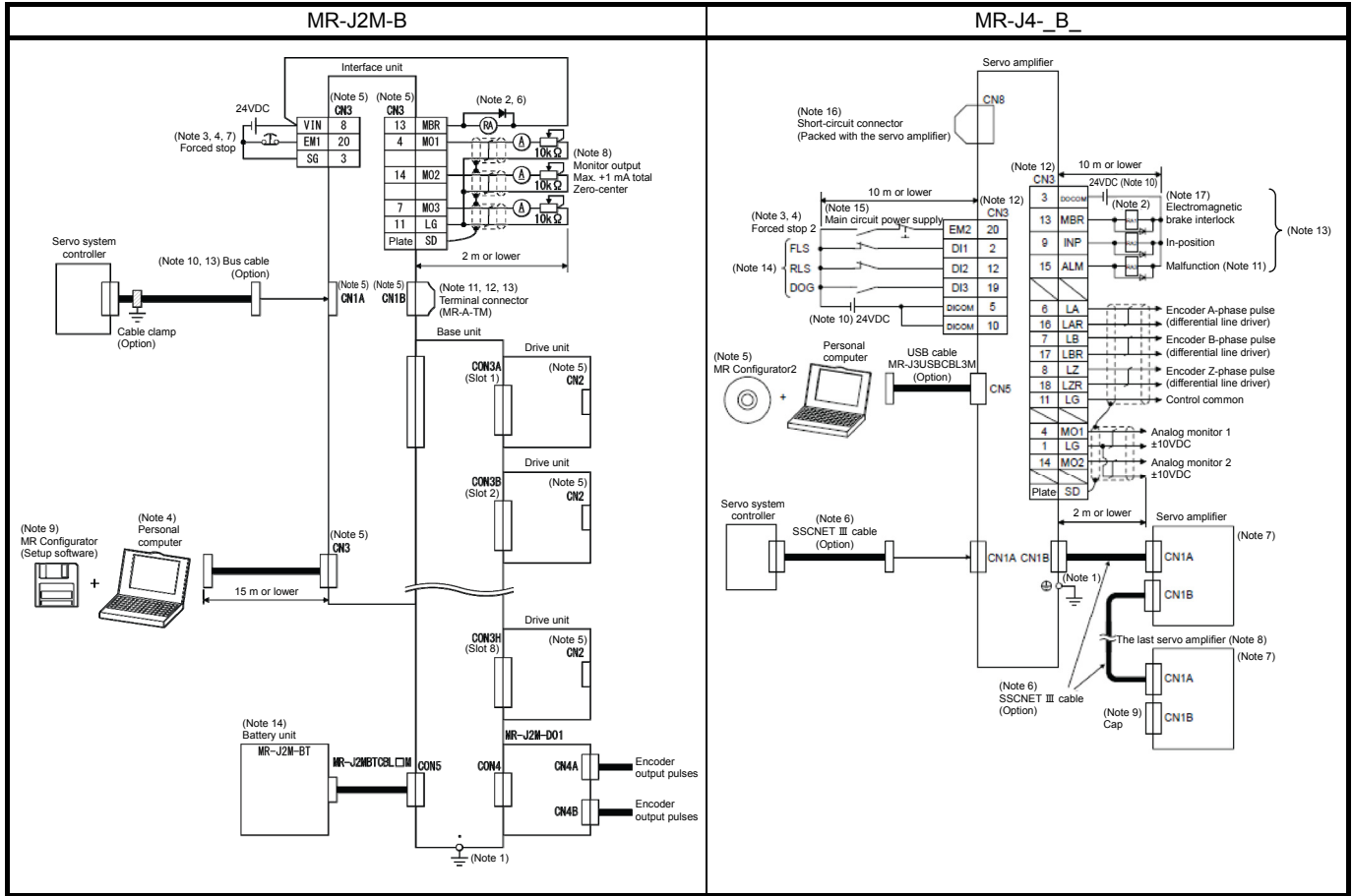
Item	MR-J2M series	
	SSCNET	
Communication media	Metal cable	
Communication speed	5.6Mbps	
Transmission distance	Overall length: 30 m	
	→	
	MR-J4 series (Note 1)	
	SSCNET III	SSCNET III/H
	Optical fiber cable	
	50Mbps	150Mbps
	[Standard cord inside cabinet/standard cable outside cabinet] Maximum distance between stations: 20 m Maximum overall distance: 320 m (20 m x 16 axes)	
	[Long distance cable] Maximum distance between stations: 50 m Maximum overall distance: 800 m (50 m x 16 axes)	[Long distance cable] Maximum distance between stations: 100 m Maximum overall distance: 1600 m (100 m x 16 axes)

Note 1. If the first controller communication is connected using SSCNET III/H in the factory setting, the operation mode will be fixed to "J4 mode". If the communication is connected using SSCNET III, the mode will be fixed to "J3 compatibility mode". To return to the factory setting or to select an arbitrary mode, change the setting with the application "MR-J4(W)-B mode selection".

The application "MR-J4(W)-B mode selection" is available with MR Configurator2 Version 1.12N and later. When a version older than 1.12N is used, download an update version from the MITSUBISHI ELECTRIC FA Global Website.

Part 6: Review on Replacement of MR-J2M with MR-J4

4.4 Comparison of Standard Connection Diagrams

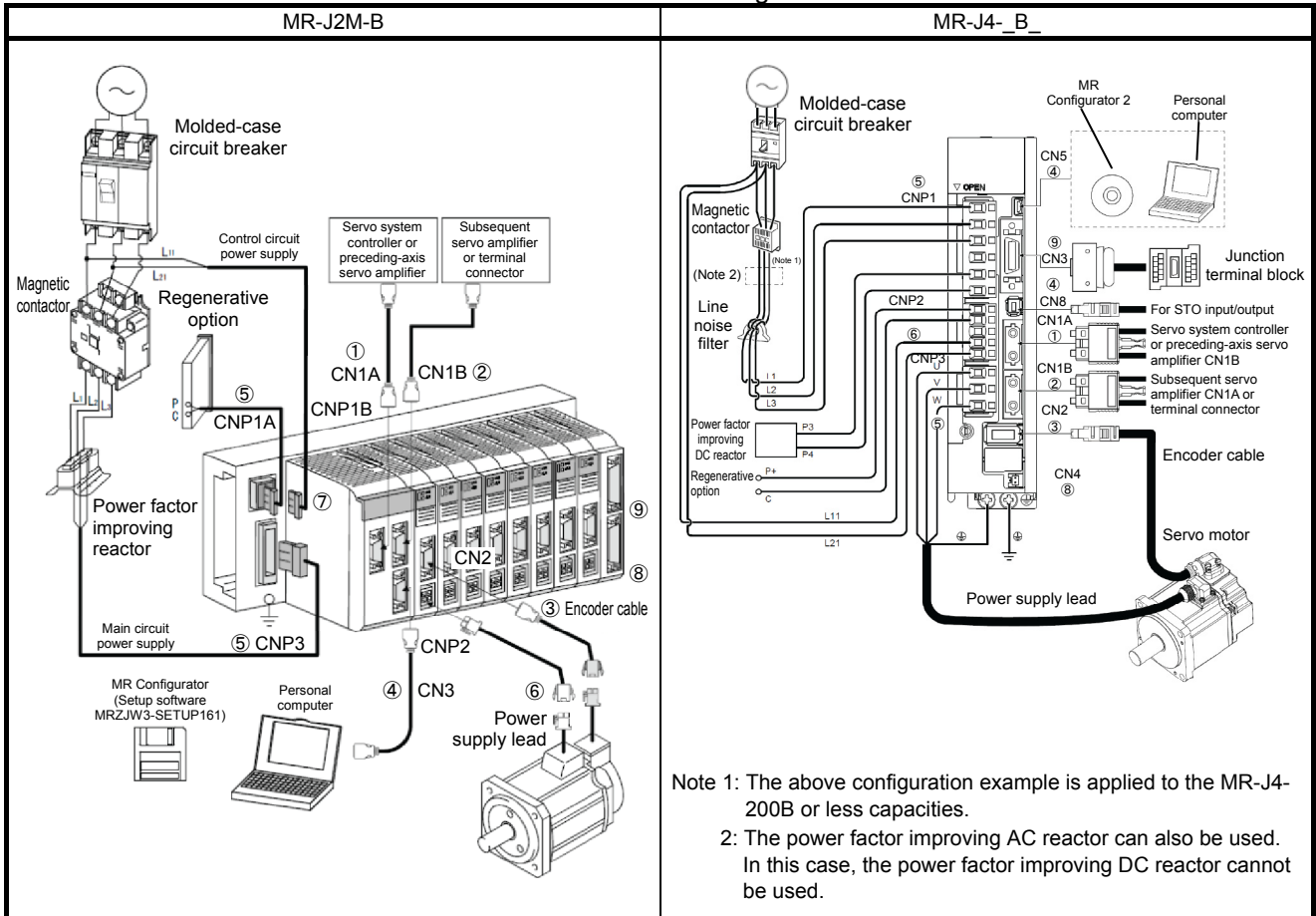


Part 6: Review on Replacement of MR-J2M with MR-J4

4.5 List of Corresponding Connectors and Terminal Blocks

(1) Connector comparison table

An example of connections with the peripheral equipment is shown below. See the respective Installation Guides and Instruction Manuals for details on signals.



• List of corresponding connectors

MR-J2M-B		MR-J4- B_	Note
(1)	Bus cable connector CN1A	SSCNET III cable connector CN1A	Switch to SSCNET III cable (option).
(2)	Bus cable-connecting connector CN1B	SSCNET III cable connector CN1B	Switch to SSCNET III cable (option).
(3)	Encoder connector CN2	Encoder connector CN2	Must switch to encoder cable (option) or prepare a new cable.
(4)	Communication connector CN3	USB communication connector CN5	Switch to USB cable (option).
	PC connection Analog monitor	I/O signal connector CN3	Prepare a new cable.
(5)	Main circuit power connector CNP3 Regenerative option connector CNP1	Main circuit power connector CNP1 Servo motor power connector CNP3	Switch to the power connector (enclosed with the amplifier).
(6)	Servo motor power connector CNP2	Control circuit power connector CNP2	
(7)	Control circuit power connector CNP1B	Battery connector CN4	Prepare a new battery.
(8)	Battery connector CON5	I/O signal connector CN3	Prepare a new cable.
(9)	Extension I/O unit connectors CN4A and CN4B		

Note. When not using the STO function, attach a short-circuit connector supplied with a servo amplifier onto CN8 (STO input signal connector).

Part 6: Review on Replacement of MR-J2M with MR-J4

(2) Comparison of signals

MR-J2M-B		Signal symbol	MR-J4-_B_	
Connector pin assignment	Connector pin No.		Connector Pin number	Connector pin assignment
	CN3-20	EM1 (EM2)	CN3-20	
	CN3-13	MBR	CN3-13*	
	CN3-4	MO1	CN3-4	
	CN3-14	MO2	CN3-14	
	CN3-7	MO3	-	
	CN3-8	VIN (DICOM)	CN3-5 CN3-10	
	CN3-3	SG (DOCOM)	CN3-3	
	CN3-1	LG	CN3-1	
	CN3-11	LG	CN3-11	
	Plate	SD	Plate	

* The following table shows the output device pins and parameters for assigning R-J4-_B_ devices.

Connector pin No.	Parameter	Initial assignment device	I/O division
CN3-13	[Pr. PD07]	MBR	DO-1
CN3-15	[Pr. PD09]	ALM	
CN3-9	[Pr. PD08]	INP	

4.6 Comparison of Peripheral Equipment

POINT
<ul style="list-style-type: none"> See "Part 9: Review on Replacement of Optional Peripheral Equipment".

Part 6: Review on Replacement of MR-J2M with MR-J4

4.7 Comparison of Parameters

The correspondence of the MR-J2M series and MR-J4 series parameter numbers is shown below. Refer to the respective Instruction Manuals for detailed specifications of each parameter.

4.7.1 Parameter comparison list

POINT
<ul style="list-style-type: none"> • With MR-J4-_B_, the deceleration to a stop function is enabled in the factory setting. To disable the deceleration to a stop function, set PA04 to "0 ___". • For details, see "Part 3: Review on Replacement of MR-J2S-_B_ with MR-J4-_B_".

(1) Interface unit MR-J2M-P8A

MR-J2M-B (Interface unit MR-J2M-P8B)		MR-J4-_B_		Note
No.	Name	No.	Name	
0	Serial communication function selection			No serial communication function.
	Alarm history clear	PC21	Alarm history clear	
1	Serial communication time-out selection			No serial communication function.
2	Serial communication protocol checksum selection			No serial communication function.
3	Analog monitor 1 output	PC09	Analog monitor 1 output	The setting value must be changed according to monitor output data.
4	Analog monitor 2 output	PC10	Analog monitor 2 output	
5	Analog monitor 3 output			
6	Analog monitor output 1 offset	PC11	Analog monitor 1 offset	Depends on H/W. Change the setting value.
7	Analog monitor output 2 offset	PC12	Analog monitor 2 offset	
8	Analog monitor output 3 offset			
9	SSCNET type selection (SSCNET communication cycle)			MR-J4-_B_ is compatible with SSCNET III/H only. The communication cycle depends on the specifications of the controller and the number of connected axes.
10	Electromagnetic brake interlock (MBR) axis No. selection			Assigned to CN3.13
	Test operation selection			The test operation can be set with the control axis setting switch (SW2).
11	1st slot serial communication station number selection			The axis No. can be set with the selection rotary switch (SW1).
12	2nd slot serial communication station number selection			
13	3rd slot serial communication station number selection			
14	4th slot serial communication station number selection			
15	5th slot serial communication station number selection			
16	6th slot serial communication station number selection			
17	7th slot serial communication station number selection			
18	8th slot serial communication station number selection			
19	IFU parameter writing inhibit	PA19	Parameter writing inhibit	Change the setting value as necessary.

Part 6: Review on Replacement of MR-J2M with MR-J4

(2) Drive unit MR-J2M-_DU

MR-J2M-B (Drive unit MR-J2M-_DU)		MR-J4-_B_		Note												
No.	Name	No.	Name													
1	Absolute position detection selection	PA03	Absolute position detection system selection													
2	Regenerative resistor	PA02	Regenerative option selection	The setting must be changed according to option model.												
3 to 5	Automatically set from the servo system controller			No corresponding parameter (Setting not required)												
6	Feedback pulse number			No corresponding parameter												
7	Rotation direction selection	PA14	Rotation direction selection													
8	Auto Tuning	PA08	Auto tuning mode	<p>The setting value needs to be changed according to the auto tuning mode. Some of the settings cannot be set.</p> <p>Gain adjustment mode correspondence table</p> <table border="1"> <thead> <tr> <th>MR-J2M-B</th> <th>MR-J4- B</th> </tr> </thead> <tbody> <tr> <td>Interpolation mode</td> <td>2 gain adjustment mode 1</td> </tr> <tr> <td>Auto tuning mode 1</td> <td>Auto tuning mode 1</td> </tr> <tr> <td>Auto tuning mode 2</td> <td>Auto tuning mode 2</td> </tr> <tr> <td>Manual mode 1</td> <td></td> </tr> <tr> <td>Manual mode 2</td> <td>Manual mode</td> </tr> </tbody> </table>	MR-J2M-B	MR-J4- B	Interpolation mode	2 gain adjustment mode 1	Auto tuning mode 1	Auto tuning mode 1	Auto tuning mode 2	Auto tuning mode 2	Manual mode 1		Manual mode 2	Manual mode
MR-J2M-B	MR-J4- B															
Interpolation mode	2 gain adjustment mode 1															
Auto tuning mode 1	Auto tuning mode 1															
Auto tuning mode 2	Auto tuning mode 2															
Manual mode 1																
Manual mode 2	Manual mode															
9	Servo response	PA09	Auto tuning response	The setting value must be changed based on machine resonance frequency.												
10	Forward rotation torque limit			No corresponding parameter												
11	Reverse rotation torque limit															
12	Ratio of load inertia to servo motor inertia (load inertia ratio)	PB06	Load to motor inertia ratio	The unit system is different. (0.1-fold→0.01-fold) Pay attention to setting value.												
13	Position loop gain 1.	PB07	Model loop gain	The unit system is different. (rad/s→0.1 rad/s)												
14	Speed loop gain 1.			No corresponding parameter (Setting not required)												
15	Position loop gain 2.	PB08	Position loop gain	The unit system is different. (rad/s→0.1 rad/s)												
16	Speed loop gain 2.	PB09	Speed loop gain													
17	Speed integral compensation.	PB10	Speed integral compensation	The unit system is different. (ms→0.1 ms)												
18	Machine resonance suppression filter 1	PB13 PB14	Machine resonance suppression filter 1 Notch shape selection 1	Change the setting value according to the frequency and depth.												
19	Feed forward gain	PB04	Feed forward gain													
20	In-position range	PA10	In-position range	Pay attention to the unit system. J2M-B: Set by the feedback pulse unit. J4-B: Set per command pulse.												
21	Electromagnetic brake sequence output	PC02	Electromagnetic brake sequence output													
22	For manufacturer setting															
23	Encoder cable selection	PC04	Encoder communication method selection													
	Servo forced stop	PA04	Servo forced stop selection													
24	Motor-less operation selection	PC05	Motor-less operation selection													
	Slight vibration suppression control selection	PB24	Slight vibration suppression control													
25	Low-pass filter selection	PB23	Low-pass filter selection													
	Adaptive vibration suppression control selection			No corresponding parameter (Machine resonance filters can be automatically adjusted with PB01.)												
	Adaptive vibration suppression control level selection															
26 to 29	For manufacturer setting															
30	Zero speed	PC07	Zero speed													
31	Error excessive alarm level	PC01	Error excessive alarm level	J2MB: 0.025 rev. unit J4B: 1/0.1/0.01/0.001rev. unit selectable												
		PC06	Error excessive alarm level unit selection													

Part 6: Review on Replacement of MR-J2M with MR-J4

MR-J2M-B (Drive unit MR-J2M-_DU)		MR-J4-_B_		Note
No.	Name	No.	Name	
32	PI-PID switching control selection	PB24	PI-PID switching control selection	Switching with PI-PID switching position droop is not possible.
33	Encoder output pulse setting selection	PA15	Encoder output pulse	Max. output frequency is different.
34	PI-PID switching position droop			No corresponding parameter
35	For manufacturer setting			
36	Speed differential compensation	PB11	Speed differential compensation	
37	For manufacturer setting			
38	Encoder output pulses	PA15	Encoder output pulse	Max. output frequency is different.
39	For manufacturer setting			
40	DRU parameter writing inhibit	PA19	Parameter writing inhibit	Change the setting value as necessary.

Part 7
Common Reference Material

Part 7: Common Reference Material

Part 7: Common Reference Material

1. SPECIFICATION DIFFERENCES

1.1 Detailed Specification/Function Differences

(1) Comparison of MR-J2S series and MR-J4 series (A/B-Type)

Item		MR-J2S series	MR-J4 series
1	Capacity range	(100 V class) 0.1 kW to 0.4 kW (200 V class) 0.1 kW to 37 kW (400 V class) 0.6 kW to 55 kW	(100 V class) 0.1 kW to 0.4kW (200 V class) 0.1 kW to 37 kW (400 V class) 0.6 kW to 55 kW
2	Regenerative resistor	Built-in (0.2 kW to 7 kW) External (11 kW to 22 kW)	Built-in (0.2 kW to 7 kW) External (11 kW to 22 kW)
3	Dynamic brake	Built-in (0.1 kW to 7 kW) External (11 kW to 55kW)	Built-in (0.1 kW to 7 kW) External (11 kW to 55 kW) Coasting distance is different.
4	Control circuit power	(100 V class) Single-phase 100VAC to 120VAC (200 V class) Single-phase 200VAC to 230VAC (400 V class) 24VDC (up to 7 kW) Single-phase 380VAC to 480VAC (11 kW to 55kW)	(100 V class) Single-phase 100VAC to 120VAC (200 V class) Single-phase 200VAC to 240VAC (400 V class) Single-phase 380VAC to 480VAC
5	Main circuit power	(100 V class) Single-phase 100VAC to 120VAC (200 V class) Single-phase 230VAC 3-phase 200VAC to 230VAC (up to 750 W) 3-phase 200VAC to 230VAC (1 kW to 37kW) (400 V class) 3-phase 380VAC to 480VAC	(100 V class) Single-phase 100VAC to 120VAC (200 V class) Single-phase/3-phase 200VAC to 240VAC (up to 750 W) 3-phase 200VAC to 240VAC (1 kW to 37kW) (400 V class) 3-phase 380VAC to 480VAC
6	24VDC power	Built-in	External supply required
7	Auto tuning	Real-time auto tuning: 15 steps	Real-time auto tuning: 40 steps One-touch tuning
8	Control mode	(A) General-purpose interface • Position control mode (pulse command) • Speed control mode (analog command/Internal speed command) • Torque control mode (analog command) (B) SSCNET interface • Position control mode • Speed control mode	(A) General-purpose interface • Position control mode (pulse command) • Speed control mode (analog command/Internal speed command) • Torque control mode (analog command) (B) SSCNET III /H interface • Position control mode • Speed control mode • Torque control mode
9	Maximum input pulses	Differential receiver: 500 kpps Open-collector 200 kpps Command pulse: Sink	Differential receiver: 4 Mpps Open-collector 200 kpps Command pulse: Sink
10	The number of DIO points (excluding EM1)	(A) General-purpose interface DI: 8 points, DO: 6 points (B) SSCNET interface DI: 0 points; DO:2 points	(A) General-purpose interface DI: 9 points, DO: 6 points (B) SSCNET III / H interface DI: 3 points; DO: 3 points
11	Encoder pulse output	(A) ABZ-phase (differential), Z-phase (open-collector) (B) ABZ-phase (differential)	(A) ABZ-phase (differential), Z-phase (open-collector) (B) ABZ-phase (differential)
12	DIO interface	Input: Sink/source Output: Sink	Input: Sink/source Output: Sink/ source
13	Analog input/output	(A) General-purpose interface (Input) 2 ch Torque: 10-bit; Speed: 14-bit or equivalent (Output) 10-bit or equivalent × 2 ch (B) SSCNET interface (Output) 10-bit or equivalent × 2 ch	(A) General-purpose interface (Input) 2 ch Torque: 10-bit; Speed: 14-bit or equivalent (Output) 10-bit or equivalent × 2 ch (B) SSCNET III / H interface (Output) 10-bit or equivalent × 2 ch
14	Number of internal speed commands (Type A)	7 points	7 points
15	Parameter setting method	MR Configurator (SETUP1_ _) Push-button (MR-J2S- _A_)	MR Configurator2 Push-button (MR-J4- _A_)
16	Setup software communication function	RS-232C	USB

Part 7: Common Reference Material

Item		MR-J2S series	MR-J4 series
17	Servo motor (Encoder resolution)	HC series (17-bit ABS) HA series (17-bit ABS)	HG series (22-bit ABS)
18	Motor maximum torque	HC-KFS 300%	HG-KR 350% (models with a gear: 300%)
		HC-MFS 300%	HG-MR 300%
		HC-SFS 300%	HG-SR 300%
		HA-LFS 250%,300%	HG-JR 300%
		HC-RFS 250%	HG-RR 250%
		HC-UFS 300%	HG-UR 300%
19	Button (Type A)	4 buttons	4 buttons
20	LED display	(MR-J2S-_A_) 7-segment 5-digit (MR-J2S-_B) 7-segment 2-digit	(MR-J4-_A_) 7-segment 5-digit (MR-J4-_B_) 7-segment 3-digit
21	Advanced vibration suppression control II	Unprovided	Provided
22	Adaptive filter	Provided (Adaptive vibration suppression control)	Provided (Adaptive filter II with improved functions)
23	Notch filter	Provided (2 pcs.)	Provided (5 pcs.)
24	Tough drive	Unprovided	Provided
25	Drive recorder	Unprovided	Provided
26	Forced stop	EM1 (DB stop)	EM1 (DB stop)/EM2 (deceleration stop) optional
Note		Functions with difference are shown with shading .	

Part 7: Common Reference Material

(2) J2S (CP/CL) -J4 (A-RJ) comparison

Item		MR-J2S (CP/CL) series (7 kW or less, 100 V/200 V class)	MR-J4-A-RJ series (7 kW or less, 100 V/200 V class)
1	Capacity range	(100 V class) 0.1 kW to 0.4 kW (200V class) 0.1 kW to 7kW	(100 V class) 0.1 kW to 0.4 kW (200V class) 0.1 kW to 7kW
2	Internal regenerative resistor	Built-in (0.2 kW to 7 kW)	Built-in (0.2 kW to 7 kW)
3	Dynamic brake	Built-in (0.1 kW to 7 kW)	Built-in (0.1 kW to 7 kW) Coasting distance may be different. (Note 1)
4	Control circuit power	(100 V Class) Single-phase 100VAC to 120VAC (200 V Class) Single-phase 200VAC to 230VAC	(100 V Class) Single-phase 100VAC to 120VAC (200 V Class) Single-phase 200VAC to 240VAC
5	Main circuit power	(100 V Class) Single-phase 100VAC to 120VAC (200 V Class) 1-phase 230VAC/3-phase 200VAC to 230VAC (to 750 W) 3-phase 200VAC to 230VAC (1 kW to 7kW)	(100 V Class) Single-phase 100VAC to 120VAC (200 V Class) 1-phase /3-phase 200VAC to 240VAC (to 750 W) 3-phase 200VAC to 240VAC (1 kW to 7kW)
6	24VDC power	Built-in	External supply required
7	Auto tuning	Real-time auto tuning: 15 steps	Real-time auto tuning: 40 steps One-touch tuning
8	Control mode	(CP) Built-in positioning function (CL) Built-in program operation function	Built-in positioning function Built-in program operation function Position control mode (pulse command) Speed control mode (analog command) Torque control mode (analog command)
9	Manual pulse generator maximum input pulse	Open collector 200 kpps	Open collector 200 kpps
10	The number of DIO points (excluding EM1)	DI: 8 points, DO: 5 points, DI/DO combination: 1 point	DI: 11 points, DO: 8 points
11	Encoder pulse output	ABZ-phase (differential), Z-phase (open-collector)	ABZ-phase (differential), Z-phase (open-collector)
12	DIO interface	Input: Sink/source Output: Sink	Input: Sink/source Output: Sink/source
13	Analog input/output	(Input) 2 ch 10-bit torque limit, 10-bit override (Output) 10-bit or equivalent x 2 ch	(Input) 2 ch 10-bit torque limit, 10-bit override or equivalent (Output) 10-bit or equivalent x 2 ch
14	The number of internal speed commands (Type A)	7 points	7 points
15	Parameter setting method	Setup software (SETUP1_ _) Push-button	MR Configurator2 Push-button parameter unit
16	Setup S/W communication	RS-232C	USB
17	Servo motor (Encoder resolution)	HC series (17-bit ABS) HA series (17-bit ABS)	HG series (22-bit ABS)
18	Motor maximum torque	HC-KFS 300%	HG-KR 350% (models with a gear: 300%)
		HC-MFS 300%	HG-MR 300%
		HC-SFS 300%	HG-SR 300%
		HA-LFS 250%, 300%	HG-JR 300%
		HC-RFS 250%	HG-RR 250%
		HC-UFS 300%	HG-UR 300%
19	Button	4 buttons	4 buttons
20	LED display	7-segment 5-digit	7-segment 5-digit
21	Advanced vibration suppression control	Unprovided	Provided
22	Adaptive filter	Provided (Adaptive vibration suppression control)	Provided (Adaptive filter II with improved functions)
23	Notch filter	Provided (2 pcs.)	Provided (5 pcs.)
24	Tough drive	Unprovided	Provided
25	Drive recorder	Unprovided	Provided
26	Forced stop	EM1 (DB stop)	EM1 (DB stop)/EM2 (deceleration stop) optional
27	Point table No.	(CP) up to 31	up to 255
28	Program No.	(CL) up to 16 programs (120 steps)	up to 256 programs (640 steps)
29	Position data unit	mm	mm / degree / inch / pulse
Note		Functions with difference are shown with shading.	

Part 7: Common Reference Material

(3) Comparison of MR-J2M series

Item		MR-J2M series	MR-J4 series
1	Capacity range (to 0.75 kW / 200 V)	0.1 to 0.75 kW / 200 V	0.1 to 0.75 kW / 200 V
2	Regenerative resistor	External option	Built-in (200 W or more)
3	Dynamic brake	Built-in	Built-in (Coasting distance is different.)
4	Control circuit power	Single-phase 200VAC to 230VAC	Single-phase 200VAC to 240VAC
5	Main circuit power	Single-phase/3-phase 200VAC to 230VAC 3-phase 200VAC to 230VAC	1-phase/3-phase 200VAC to 240VAC 3-phase 200VAC to 240VAC
6	24VDC power	External supply required	External supply required
7	Auto tuning	Real-time auto tuning: 15 steps	Real-time auto tuning: 40 steps One-touch tuning
8	Control mode	(A) General-purpose interface • Position control mode (pulse command) (B) SSCNET interface • Position control mode	(A) General-purpose interface • Position control mode (pulse command) • Speed control mode (analog command) • Torque control mode (analog command) (B) SSCNET III/H-interface • Position control mode • Speed control mode • Torque control mode
9	Maximum input pulses	Differential pulse 500 kpps Open-collector 200 kpps Command pulse: Sink	Differential pulse 4 Mpps Open-collector 200 kpps Command pulse: Sink
10	The number of DIO points (excluding EM1)	(A) General-purpose interface DI: 5 points × 8 axes; DO: 2 points × 8 axes (B) SSCNET interface DI: 0 points; DO: 0 points * When an extension I/O unit is used, DI: 32 points; DO: 8 points are added.	(A) General-purpose interface DI: 9 points, DO: 6 points (B) SSCNET III / H interface DI: 3 points; DO: 3 points
11	Encoder pulse output	ABZ-phase (differential) (A) General-purpose interface Z-phase (open collector)	ABZ-phase (differential) (A) General-purpose interface Z-phase (open collector)
12	DIO interface	Input: Sink Output: Sink	Input: Sink/ source Output: Sink/ source
13	Analog input/output	(A) General-purpose interface (Input) Unprovided (Output) 10-bit or equivalent × 3 ch (B) SSCNET interface (Output) 10-bit or equivalent × 3 ch	(A) General-purpose interface (Input) 2 ch Torque: 10-bit; Speed: 14-bit or equivalent (Output) 10-bit or equivalent × 2 ch (B) SSCNET III / H interface (Output) 10-bit or equivalent × 2 ch
14	The number of internal speed commands (Type A)	0 points	7 points
15	Parameter setting method	MR Configurator (SETUP1_ __) Push-button	MR Configurator2 Push-button (MR-J4- _A_)
16	Setup software communication function	RS-232C	USB
17	Servo motor (Encoder resolution)	HC series (17-bit ABS)	HG series (22-bit ABS)
18	Motor maximum torque	HC-KFS 300% HC-MFS 300% HC-UFS 300%	HG-KR 350% (models with a gear: 300%) HG-MR 300% HG-UR 300%
19	Button (Type A)	4 buttons	4 buttons
20	LED display	(MR-J2S- _A_) 7-segment 5-digit (MR-J2S- _B_) 7-segment 5-digit	(MR-J4- _A_) 7-segment 5-digit (MR-J4- _B_) 7-segment 3-digit
21	Advanced vibration suppression control II	Unprovided	Provided
22	Adaptive filter	Provided (I)	Provided (II function upgrading)
23	Notch filter	Provided (2 pcs.)	Provided (5 pcs.)
24	Tough drive	Unprovided	Provided
25	Drive recorder	Unprovided	Provided
26	Forced stop	EM1 (DB stop)	Select EM1 (DB stop) or EM2 (deceleration to a stop)
Note		Functions with difference are shown with shading.	

Part 7: Common Reference Material

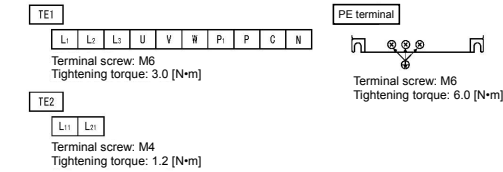
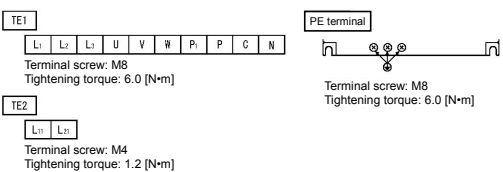
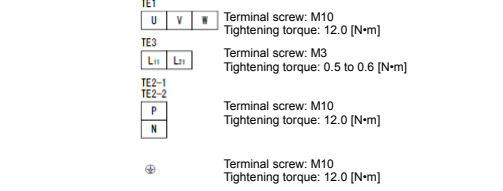
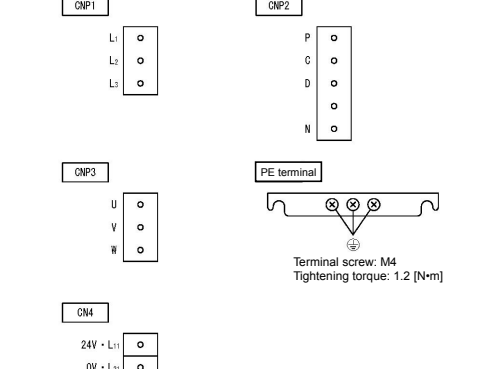
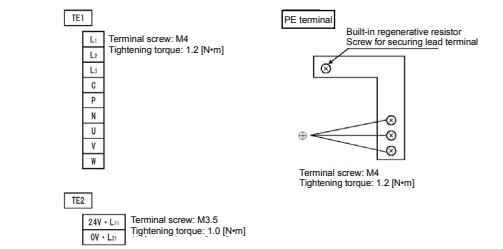
1.2 Servo amplifier

If using the existing cables and motor, see "[Appendix 2] Introduction to Renewal Tool".

1.2.1 Main circuit terminal block

Series	Main circuit terminal block	Series	Main circuit																										
MR-J2S-10_ to MR-J2S-60_	<p>TE1</p> <p>• For 3-phase 200VAC to 230VAC or 1-phase 230VAC</p> <table border="1"> <tr><td>L1</td><td>L2</td><td>L3</td></tr> <tr><td>U</td><td>V</td><td>W</td></tr> </table> <p>Terminal screw: M4 Tightening torque: 1.2 [N·m]</p> <p>TE2</p> <p>← Front side</p> <table border="1"> <tr><td>D</td><td>C</td><td>P</td><td>L11</td><td>L11</td></tr> </table> <p>PE terminal</p> <p>Terminal screw: M4 Tightening torque: 1.2 [N·m]</p>	L1	L2	L3	U	V	W	D	C	P	L11	L11	MR-J4-10_ to MR-J4-60_	<p>CNP1</p> <table border="1"> <tr><td>L1</td></tr> <tr><td>L2</td></tr> <tr><td>L3</td></tr> <tr><td>N-</td></tr> <tr><td>P3</td></tr> <tr><td>P4</td></tr> </table> <p>CNP2</p> <table border="1"> <tr><td>P+</td></tr> <tr><td>C</td></tr> <tr><td>D</td></tr> <tr><td>L11</td></tr> <tr><td>L21</td></tr> </table> <p>CNP3</p> <table border="1"> <tr><td>U</td></tr> <tr><td>V</td></tr> <tr><td>W</td></tr> </table> <p>PE</p> <p>Screw size: M4 Tightening torque: 1.2 [N·m]</p>	L1	L2	L3	N-	P3	P4	P+	C	D	L11	L21	U	V	W	
L1	L2	L3																											
U	V	W																											
D	C	P	L11	L11																									
L1																													
L2																													
L3																													
N-																													
P3																													
P4																													
P+																													
C																													
D																													
L11																													
L21																													
U																													
V																													
W																													
MR-J2S-70_ MR-J2S-100_	<p>TE1</p> <table border="1"> <tr><td>L1</td><td>L2</td><td>L3</td></tr> <tr><td>U</td><td>V</td><td>W</td></tr> </table> <p>Terminal screw: M4 Tightening torque: 1.2 [N·m]</p> <p>TE2</p> <p>← Front side</p> <table border="1"> <tr><td>D</td><td>C</td><td>P</td><td>L21</td><td>L11</td><td>N</td></tr> </table> <p>PE terminal</p> <p>Terminal screw: M4 Tightening torque: 1.2 [N·m]</p>	L1	L2	L3	U	V	W	D	C	P	L21	L11	N	MR-J4-70_ MR-J4-100_	<p>CNP1</p> <table border="1"> <tr><td>L1</td></tr> <tr><td>L2</td></tr> <tr><td>L3</td></tr> <tr><td>N-</td></tr> <tr><td>P3</td></tr> <tr><td>P4</td></tr> </table> <p>CNP2</p> <table border="1"> <tr><td>P+</td></tr> <tr><td>C</td></tr> <tr><td>D</td></tr> <tr><td>L11</td></tr> <tr><td>L21</td></tr> </table> <p>CNP3</p> <table border="1"> <tr><td>U</td></tr> <tr><td>V</td></tr> <tr><td>W</td></tr> </table> <p>PE</p> <p>Screw size: M4 Tightening torque: 1.2 [N·m]</p>	L1	L2	L3	N-	P3	P4	P+	C	D	L11	L21	U	V	W
L1	L2	L3																											
U	V	W																											
D	C	P	L21	L11	N																								
L1																													
L2																													
L3																													
N-																													
P3																													
P4																													
P+																													
C																													
D																													
L11																													
L21																													
U																													
V																													
W																													
MR-J2S-200_ MR-J2S-350_	<p>TE1</p> <table border="1"> <tr><td>L1</td><td>L2</td><td>L3</td><td>U</td><td>V</td><td>W</td></tr> </table> <p>Terminal screw: M4 Tightening torque: 1.2 [N·m]</p> <p>TE2</p> <table border="1"> <tr><td>L11</td><td>L21</td><td>D</td><td>P</td><td>C</td><td>N</td></tr> </table> <p>Terminal screw: M4 Tightening torque: 1.2 [N·m]</p> <p>PE terminal</p> <p>Terminal screw: M4 Tightening torque: 1.2 [N·m]</p>	L1	L2	L3	U	V	W	L11	L21	D	P	C	N	MR-J4-200_ MR-J4-350_	<p>CNP1</p> <table border="1"> <tr><td>L1</td></tr> <tr><td>L2</td></tr> <tr><td>L3</td></tr> <tr><td>N-</td></tr> <tr><td>P3</td></tr> <tr><td>P4</td></tr> </table> <p>CNP2</p> <table border="1"> <tr><td>P+</td></tr> <tr><td>C</td></tr> <tr><td>D</td></tr> <tr><td>L11</td></tr> <tr><td>L21</td></tr> </table> <p>CNP3</p> <table border="1"> <tr><td>U</td></tr> <tr><td>V</td></tr> <tr><td>W</td></tr> </table> <p>PE</p> <p>Screw size: M4 Tightening torque: 1.2 [N·m]</p>	L1	L2	L3	N-	P3	P4	P+	C	D	L11	L21	U	V	W
L1	L2	L3	U	V	W																								
L11	L21	D	P	C	N																								
L1																													
L2																													
L3																													
N-																													
P3																													
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P+																													
C																													
D																													
L11																													
L21																													
U																													
V																													
W																													
MR-J2S-500_	<p>TE1</p> <table border="1"> <tr><td>L1</td></tr> <tr><td>L2</td></tr> <tr><td>L3</td></tr> <tr><td>C</td></tr> <tr><td>P</td></tr> <tr><td>N</td></tr> <tr><td>U</td></tr> <tr><td>V</td></tr> <tr><td>W</td></tr> </table> <p>Terminal screw: M4 Tightening torque: 1.2 [N·m]</p> <p>TE2</p> <table border="1"> <tr><td>L11</td></tr> <tr><td>L21</td></tr> </table> <p>Terminal screw: M3.5 Tightening torque: 0.8 [N·m]</p> <p>PE terminal</p> <p>Built-in regenerative resistor Screw for securing lead terminal</p> <p>Terminal screw: M4 Tightening torque: 1.2 [N·m]</p>	L1	L2	L3	C	P	N	U	V	W	L11	L21	MR-J4-500_	<p>TE2</p> <table border="1"> <tr><td>L11</td></tr> <tr><td>L21</td></tr> </table> <p>TE1</p> <table border="1"> <tr><td>L1</td></tr> <tr><td>L2</td></tr> <tr><td>L3</td></tr> <tr><td>N-</td></tr> </table> <p>TE3</p> <table border="1"> <tr><td>P3</td></tr> <tr><td>P4</td></tr> <tr><td>P+</td></tr> <tr><td>C</td></tr> </table> <p>TE4</p> <table border="1"> <tr><td>D</td></tr> <tr><td>U</td></tr> <tr><td>V</td></tr> <tr><td>W</td></tr> </table> <p>PE</p> <p>Screw size: M3.5 Tightening torque: 0.8 [N·m]</p> <p>Screw size: M4 Tightening torque: 1.2 [N·m]</p> <p>Screw size: M4 Tightening torque: 1.2 [N·m]</p> <p>Screw size: M4 Tightening torque: 1.2 [N·m]</p>	L11	L21	L1	L2	L3	N-	P3	P4	P+	C	D	U	V	W	
L1																													
L2																													
L3																													
C																													
P																													
N																													
U																													
V																													
W																													
L11																													
L21																													
L11																													
L21																													
L1																													
L2																													
L3																													
N-																													
P3																													
P4																													
P+																													
C																													
D																													
U																													
V																													
W																													
MR-J2S-700_	<p>TE1</p> <table border="1"> <tr><td>L1</td><td>L2</td><td>L3</td><td>C</td><td>P</td><td>N</td><td>U</td><td>V</td><td>W</td></tr> </table> <p>Terminal screw: M4 Tightening torque: 1.2 [N·m]</p> <p>TE2</p> <table border="1"> <tr><td>L11</td></tr> <tr><td>L21</td></tr> </table> <p>Terminal screw: M3.5 Tightening torque: 0.8 [N·m]</p> <p>PE terminal</p> <p>Built-in regenerative resistor Screw for securing lead terminal</p> <p>Terminal screw: M4 Tightening torque: 1.2 [N·m]</p>	L1	L2	L3	C	P	N	U	V	W	L11	L21	MR-J4-700_	<p>TE3</p> <table border="1"> <tr><td>N-</td><td>P3</td><td>P4</td></tr> </table> <p>TE1</p> <table border="1"> <tr><td>L1</td><td>L2</td><td>L3</td><td>P+</td><td>C</td><td>U</td><td>V</td><td>W</td></tr> </table> <p>TE2</p> <table border="1"> <tr><td>L11</td><td>L21</td></tr> </table> <p>PE</p> <p>Screw size: M4 Tightening torque: 1.2 [N·m]</p> <p>Screw size: M4 Tightening torque: 1.2 [N·m]</p> <p>Screw size: M3.5 Tightening torque: 0.8 [N·m]</p> <p>Screw size: M4 Tightening torque: 1.2 [N·m]</p>	N-	P3	P4	L1	L2	L3	P+	C	U	V	W	L11	L21		
L1	L2	L3	C	P	N	U	V	W																					
L11																													
L21																													
N-	P3	P4																											
L1	L2	L3	P+	C	U	V	W																						
L11	L21																												

Part 7: Common Reference Material

Series	Main circuit terminal block	Series	Main circuit
<p>MR-J2S-11K_ MR-J2S-15K_</p>	 <p>TE1 Terminal screw: M6 Tightening torque: 3.0 [N·m]</p> <p>TE2 Terminal screw: M4 Tightening torque: 1.2 [N·m]</p> <p>PE terminal Terminal screw: M6 Tightening torque: 6.0 [N·m]</p>	<p>MR-J4-11K_ MR-J4-15K_</p>	<p>TE1-1 L1 L2 L3 U V W</p> <p>TE1-2 P3 P4 P+ C N-</p> <p>TE2 L11 L21</p> <p>PE</p> <p>TE1-1 Screw size: M6 Tightening torque: 3.0 [N·m]</p> <p>TE1-2 Screw size: M6 Tightening torque: 3.0 [N·m]</p> <p>TE2 Screw size: M4 Tightening torque: 1.2 [N·m]</p> <p>PE Screw size: M6 Tightening torque: 3.0 [N·m]</p>
<p>MR-J2S-22K_</p>	 <p>TE1 Terminal screw: M8 Tightening torque: 6.0 [N·m]</p> <p>TE2 Terminal screw: M4 Tightening torque: 1.2 [N·m]</p> <p>PE terminal Terminal screw: M8 Tightening torque: 6.0 [N·m]</p>	<p>MR-J4-22K_</p>	<p>TE1-1 L1 L2 L3 U V W</p> <p>TE1-2 P3 P4 P+ C N-</p> <p>TE2 L11 L21</p> <p>PE</p> <p>TE1-1 Screw size: M8 Tightening torque: 6.0 [N·m]</p> <p>TE1-2 Screw size: M8 Tightening torque: 6.0 [N·m]</p> <p>TE2 Screw size: M4 Tightening torque: 1.2 [N·m]</p> <p>TE2 Screw size: M8 Tightening torque: 6.0 [N·m]</p>
<p>MR-J2S-30K_ MR-J2S-37K_</p>	 <p>TE1 Terminal screw: M10 Tightening torque: 12.0 [N·m]</p> <p>TE3 Terminal screw: M3 Tightening torque: 0.5 to 0.6 [N·m]</p> <p>TE2-1 Terminal screw: M10 Tightening torque: 12.0 [N·m]</p> <p>TE2-2 Terminal screw: M10 Tightening torque: 12.0 [N·m]</p> <p>PE Terminal screw: M10 Tightening torque: 12.0 [N·m]</p>	<p>MR-J4-30K_ MR-J4-37K_</p>	<p>TE2-1 L+ L- L11 L21</p> <p>TE2-2 L+ L- L11 L21</p> <p>TE3 L11 L21</p> <p>PE U V W</p> <p>TE1</p> <p>TE1 Screw size: M10 Tightening torque: 12.0 [N·m]</p> <p>TE2-1 Screw size: M6 Tightening torque: 3.0 [N·m]</p> <p>TE2-2 Screw size: M6 Tightening torque: 3.0 [N·m]</p> <p>TE3 Screw size: M4 Tightening torque: 1.2 [N·m]</p> <p>PE Screw size: M10 Tightening torque: 12.0 [N·m]</p>
<p>MR-J2S-60_4 to MR-J2S-200_4</p>	 <p>CNP2 Terminal screw: M4 Tightening torque: 1.2 [N·m]</p>	<p>MR-J4-60_4 to MR-J4-200_4</p>	<p>CNP1 N- L1 L2 L3 P3 P4</p> <p>CNP2 P+ C D L11 L21</p> <p>CNP3 U V W PE</p> <p>PE</p> <p>Screw size: M4 Tightening torque: 1.2 [N·m]</p>
<p>MR-J2S-350_4</p>	 <p>TE1 Terminal screw: M4 Tightening torque: 1.2 [N·m]</p> <p>TE2 Terminal screw: M3.5 Tightening torque: 1.0 [N·m]</p> <p>PE terminal Terminal screw: M4 Tightening torque: 1.2 [N·m]</p> <p>Built-in regenerative resistor Screw for securing lead terminal</p>	<p>MR-J4-350_4</p>	<p>CNP1 N- L1 L2 L3 P3 P4</p> <p>CNP2 P+ C D L11 L21</p> <p>CNP3 U V W PE</p> <p>PE</p> <p>Screw size: M4 Tightening torque: 1.2 [N·m]</p>

Part 7: Common Reference Material

Series	Main circuit terminal block	Series	Main circuit
MR-J2S-500_4	<p>Terminal screw: M4 Tightening torque: 1.2 [N·m]</p> <p>Terminal screw: M3.5 Tightening torque: 1.0 [N·m]</p>	MR-J4-500_4	<p>TE2 $\boxed{L1, L2}$ TE3 $\boxed{N, P3, P4}$</p> <p>TE1 $\boxed{L1, L2, L3, P+, C, U, V, W}$</p> <p>PE $\oplus \ominus$</p> <p>TE2 Screw size: M3.5 Tightening torque: 0.8 [N·m]</p> <p>TE3 Screw size: M4 Tightening torque: 1.2 [N·m]</p> <p>TE1 Screw size: M4 Tightening torque: 1.2 [N·m]</p> <p>PE Screw size: M4 Tightening torque: 1.2 [N·m]</p>
MR-J2S-700_4	<p>Terminal screw: M4 Tightening torque: 1.2 [N·m]</p> <p>Terminal screw: M3.5 Tightening torque: 0.8 [N·m]</p>	MR-J4-700_4	<p>TE3 $\boxed{N, P3, P4}$</p> <p>TE1 $\boxed{L1, L2, L3, P+, C, U, V, W}$ TE2 $\boxed{L1, L2}$</p> <p>PE $\oplus \ominus$</p> <p>TE3 Screw size: M4 Tightening torque: 1.2 [N·m]</p> <p>TE1 Screw size: M4 Tightening torque: 1.2 [N·m]</p> <p>TE2 Screw size: M3.5 Tightening torque: 0.8 [N·m]</p> <p>PE Screw size: M4 Tightening torque: 1.2 [N·m]</p>
MR-J2S-11K_4, MR-J2S-15K_4	<p>Terminal screw: M6 Tightening torque: 3.0 [N·m]</p> <p>Terminal screw: M4 Tightening torque: 1.2 [N·m]</p>	MR-J4-11K_4, MR-J4-15K_4	<p>TE1-1 $\boxed{L1, L2, L3, U, V, W}$</p> <p>TE1-2 $\boxed{P3, P4, P+, C, N}$ TE2 $\boxed{L1, L2}$</p> <p>PE $\oplus \ominus$</p> <p>TE1-1 Screw size: M6 Tightening torque: 3.0 [N·m]</p> <p>TE1-2 Screw size: M6 Tightening torque: 3.0 [N·m]</p> <p>TE2 Screw size: M4 Tightening torque: 1.2 [N·m]</p> <p>PE Screw size: M6 Tightening torque: 3.0 [N·m]</p>
MR-J2S-22K_4	<p>Terminal screw: M8 Tightening torque: 6.0 [N·m]</p> <p>Terminal screw: M4 Tightening torque: 1.2 [N·m]</p>	MR-J4-22K_4	<p>TE1-1 $\boxed{L1, L2, L3, U, V, W}$</p> <p>TE1-2 $\boxed{P3, P4, P+, C, N}$</p> <p>PE $\oplus \ominus$ TE2 $\boxed{L1, L2}$</p> <p>TE1-1 Screw size: M8 Tightening torque: 6.0 [N·m]</p> <p>TE1-2 Screw size: M8 Tightening torque: 6.0 [N·m]</p> <p>TE2 Screw size: M4 Tightening torque: 1.2 [N·m]</p> <p>PE Screw size: M8 Tightening torque: 6.0 [N·m]</p>
MR-J2S-30K_4, MR-J2S-37K_4	<p>Terminal screw: M10 Tightening torque: 12.0 [N·m]</p> <p>Terminal screw: M3 Tightening torque: 0.5 to 0.6 [N·m]</p> <p>Terminal screw: M10 Tightening torque: 12.0 [N·m]</p> <p>Terminal screw: M10 Tightening torque: 12.0 [N·m]</p>	MR-J4-30K_4, MR-J4-37K_4	<p>TE2 $\boxed{L+, L-}$ TE3 $\boxed{L11, L12}$</p> <p>PE $\oplus \ominus$ TE1 $\boxed{U, V, W}$</p> <p>TE1 Screw size: M8 Tightening torque: 6.0 [N·m]</p> <p>TE2 Screw size: M6 Tightening torque: 3.0 [N·m]</p> <p>TE3 Screw size: M4 Tightening torque: 1.2 [N·m]</p> <p>PE Screw size: M8 Tightening torque: 6.0 [N·m]</p>
MR-J2S-45K_4, MR-J2S-55K_4	<p>Terminal screw: M10 Tightening torque: 12.0 [N·m]</p> <p>Terminal screw: M3 Tightening torque: 0.5 to 0.6 [N·m]</p> <p>Terminal screw: M10 Tightening torque: 12.0 [N·m]</p> <p>Terminal screw: M10 Tightening torque: 12.0 [N·m]</p>	MR-J4-45K_4, MR-J4-55K_4	<p>TE2-1 $\boxed{L+, L-}$ TE2-2 $\boxed{L+, L-}$ TE3 $\boxed{L11, L12}$</p> <p>PE $\oplus \ominus$ TE1 $\boxed{U, V, W}$</p> <p>TE1 Screw size: M10 Tightening torque: 12.0 [N·m]</p> <p>TE2-1 Screw size: M6 Tightening torque: 3.0 [N·m]</p> <p>TE2-2 Screw size: M6 Tightening torque: 3.0 [N·m]</p> <p>TE3 Screw size: M4 Tightening torque: 1.2 [N·m]</p> <p>PE Screw size: M10 Tightening torque: 12.0 [N·m]</p>

Part 7: Common Reference Material

Series	Main circuit terminal block	Series	Main circuit
MR-HP30KA, MR-HP55KA4	<p>TE1-1 Terminal screw: M10 Tightening torque: 12.0 [N·m]</p> <p>TE1-2 Terminal screw: M10 Tightening torque: 12.0 [N·m]</p> <p>TE2-1 Terminal screw: M10 Tightening torque: 12.0 [N·m]</p> <p>TE2-2 Terminal screw: M3 Tightening torque: 0.5 to 0.6 [N·m]</p> <p>TE3 Terminal screw: M3 Tightening torque: 12.0 [N·m]</p> <p>PE Terminal screw: M10 Tightening torque: 12.0 [N·m]</p>	MR-CR55K, MR-CR55K4	<p>TE2-1 Terminal screw: M10 Tightening torque: 12.0 [N·m]</p> <p>TE2-2 Terminal screw: M10 Tightening torque: 12.0 [N·m]</p> <p>TE3 Terminal screw: M6 Tightening torque: 3.0 [N·m]</p> <p>TE2-1 Terminal screw: M6 Tightening torque: 3.0 [N·m]</p> <p>TE2-2 Terminal screw: M6 Tightening torque: 3.0 [N·m]</p> <p>TE3 Terminal screw: M4 Tightening torque: 1.2 [N·m]</p> <p>PE Terminal screw: M10 Tightening torque: 12.0 [N·m]</p>
MR-J2S-10_1 to MR-J2S-40_1	<p>TE1</p> <p>* For 1-phase 100VAC to 120VAC</p> <p>Terminal screw: M4 Tightening torque: 1.2 [N·m]</p> <p>TE2</p> <p>Front side</p> <p>Terminal screw: M4 Tightening torque: 1.2 [N·m]</p> <p>PE terminal</p> <p>Terminal screw: M4 Tightening torque: 1.2 [N·m]</p>	MR-J4-10_1 to MR-J4-40_1	<p>CNP1 Terminal screw: M4 Tightening torque: 1.2 [N·m]</p> <p>CNP2 Terminal screw: M4 Tightening torque: 1.2 [N·m]</p> <p>CNP3 Terminal screw: M4 Tightening torque: 1.2 [N·m]</p> <p>PE Terminal screw: M4 Tightening torque: 1.2 [N·m]</p>

1.2.2 Comparison of encoder signals (CN2)

MR-J2S series		Signal symbol	MR-J4 series	
Connector pin assignment	Connector pin No.		Connector pin No.	Connector pin assignment
	CN2-1 CN2-2 CN2-11 CN2-12	LG	CN2-2	
	CN2-6	MD (MX)	CN2-7	
	CN2-7	MR	CN2-3	
	CN2-9	BAT	CN2-9	
	CN2-16	MDR (MXR)	CN2-8	
	CN2-17	MRR	CN2-4	
	CN2-18 CN2-19 CN2-20	P5	CN2-1	

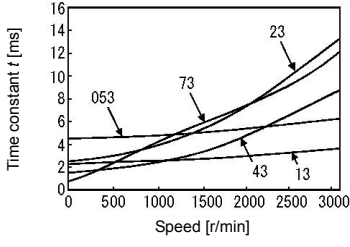
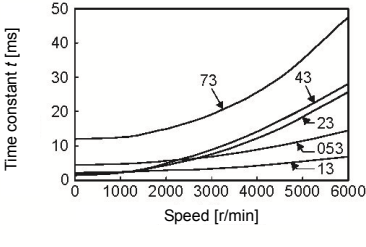
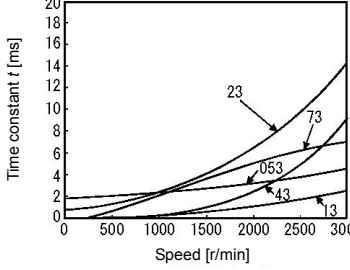
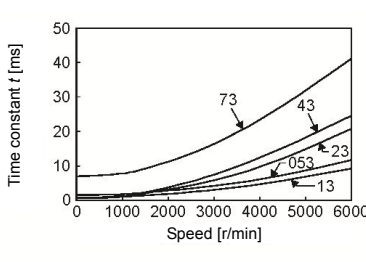
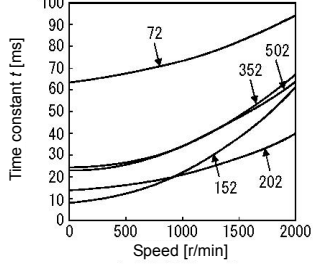
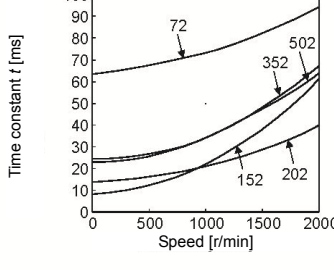
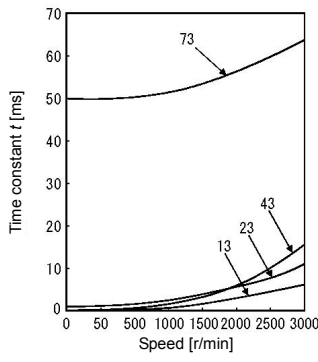
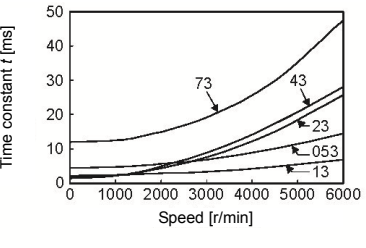
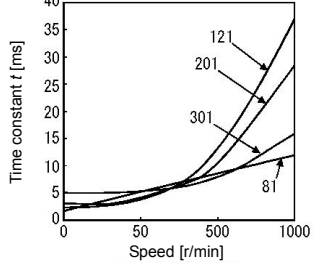
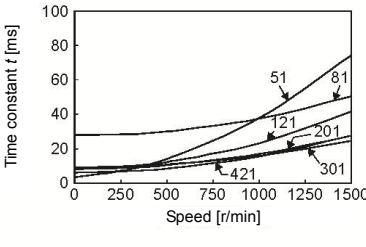
Note 1. Signal abbreviations in parentheses are for MR-J4 series.

Note 2. For the HC/HA motor, THM1 and THM2 are not used.

Part 7: Common Reference Material

1.2.3 Dynamic brake: coasting distance

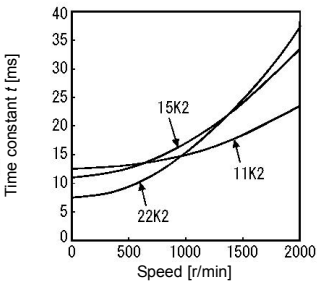
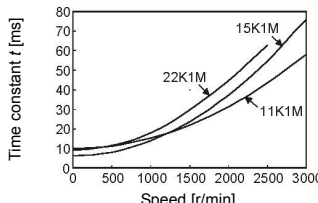
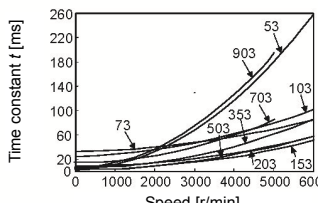
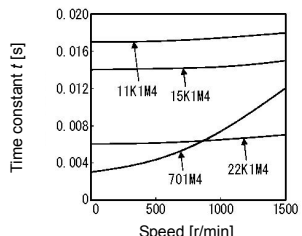
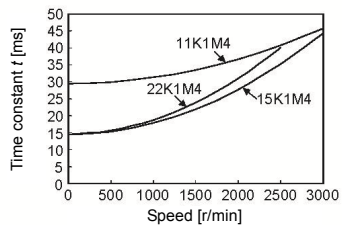
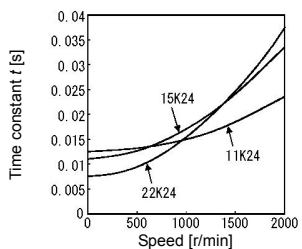
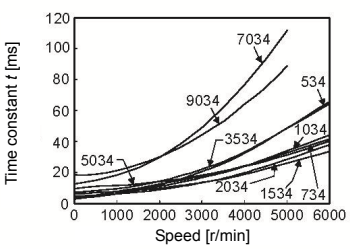
(1) Dynamic brake time constant

Series	Dynamic brake time constant	Series	Dynamic brake time constant
HC-KFS		HG-KR	
HC-MFS		HG-MR	
HC-UFS 2000 r/min		HG-UR	
HC-UFS 3000 r/min		HG-KR	
HC-SFS 1000 r/min		HG-SR 1000 r/min	

Part 7: Common Reference Material

Series	Dynamic brake time constant	Series	Dynamic brake time constant
HC-SFS 2000 r/min		HG-SR 2000 r/min	
HC-SFS 3000 r/min		HG-SR 2000 r/min	
HC-SFS 400V		HG-SR 400V	
HC-LFS		HG-JR 3000 r/min	
HC-RFS		HG-RR	

Part 7: Common Reference Material

Series	Dynamic brake time constant	Series	Dynamic brake time constant
<p>HA-LFS 200V 2000 r/min</p>		<p>HG-JR 200V 1500 r/min 3000 r/min</p>	 <p>HG-JR, HA-JR1500 r/min series</p>  <p>HG-JR, HA-JR3000 r/min series</p>
<p>HA-LFS 400V 1500 r/min</p>		<p>HG-JR 400V 1500 r/min</p>	
<p>HA-LFS 400V 2000 r/min</p>		<p>HG-JR 400V 3000 r/min</p>	

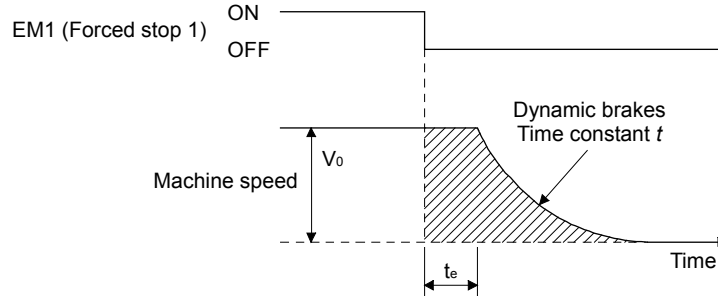
Part 7: Common Reference Material

Series	Dynamic brake time constant	Series	Dynamic brake time constant
<p>HA-LFS 200V Large capacity 2000r/min</p>		<p>HG-JR 200V Large capacity</p>	
<p>HA-LFS 400V Large capacity 2000r/min</p>		<p>HG-JR 400V Large capacity</p>	

Part 7: Common Reference Material

(2) Calculation of coasting distance

The figure shows the pattern in which the servo motor comes to a stop when the dynamic brake is operated. Use equation 5.1 to calculate an approximate coasting distance to a stop. The dynamic brake time constant τ varies with the servo motor and machine operation speeds. (Refer to (1) of this section.) A working part generally has a friction force. Therefore, actual coasting distance will be shorter than a maximum coasting distance calculated with the following equation.



Dynamic Brake Operation Diagram

$$L_{\max} = \frac{V_0}{60} \times \left\{ t_e + \tau \left(1 + \frac{J_L}{J_M} \right) \right\} \dots \dots \dots (7.1)$$

- L_{\max} : Maximum coasting distance [mm]
- V_0 : Machine's fast feed speed [mm/min]
- J_M : Moment of inertia of the servo motor [$\times 10^{-4} \text{kg}\cdot\text{m}^2$]
- J_L : Load moment of inertia converted into equivalent value on servo motor shaft [$\times 10^{-4} \text{kg}\cdot\text{m}^2$]
- τ : Dynamic brake time constant [s]
- t_e : Delay time of control section..... [s]

For 7 kW or lower servo, there is internal relay delay time of about 10 ms. For 11 kW to 55 kW servo, there is delay caused by magnetic contactor built into the external dynamic brake (about 50 ms) and delay caused by the external relay.

Part 7: Common Reference Material

(3) Electronic dynamic brake

The electronic dynamic brake operates in the initial state for HG series servo motors with a 500 W or smaller capacity.

The time constant "τ" for the electronic dynamic brake will be shorter than that for normal dynamic brake. Therefore, coasting distance will be shorter than in normal dynamic brake.

Series	Servo motor
HG-KR	HG-KR053, HG-KR13, HG-KR23, HG-KR43
HG-MR	HG-MR053, HG-MR13, HG-MR23, HG-MR43
HG-SR	HG-SR51, HG-SR52

Parameter settings (for MR-J4-_A_series)

No.	Abbreviation	Name and function	Initial value [unit]	Setting range														
PF09	*FOP5	Function selection F-5 <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Setting digit</th> <th>Explanation</th> <th>Initial value</th> </tr> </thead> <tbody> <tr> <td>___ x</td> <td>Electronic dynamic brake selection. 0: Automatic (effective only for specific servo motors) 2: Disabled Refer to the following table for the specified servo motors. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Series</th> <th>Servo motor</th> </tr> </thead> <tbody> <tr> <td>HG-KR</td> <td>HG-KR053, HG-KR13, HG-KR23, HG-KR43</td> </tr> <tr> <td>HG-MR</td> <td>HG-MR053, HG-MR13, HG-MR23, HG-MR43</td> </tr> <tr> <td>HG-SR</td> <td>HG-SR51, HG-SR52</td> </tr> </tbody> </table> </td> <td>0h</td> </tr> </tbody> </table>	Setting digit	Explanation	Initial value	___ x	Electronic dynamic brake selection. 0: Automatic (effective only for specific servo motors) 2: Disabled Refer to the following table for the specified servo motors. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Series</th> <th>Servo motor</th> </tr> </thead> <tbody> <tr> <td>HG-KR</td> <td>HG-KR053, HG-KR13, HG-KR23, HG-KR43</td> </tr> <tr> <td>HG-MR</td> <td>HG-MR053, HG-MR13, HG-MR23, HG-MR43</td> </tr> <tr> <td>HG-SR</td> <td>HG-SR51, HG-SR52</td> </tr> </tbody> </table>	Series	Servo motor	HG-KR	HG-KR053, HG-KR13, HG-KR23, HG-KR43	HG-MR	HG-MR053, HG-MR13, HG-MR23, HG-MR43	HG-SR	HG-SR51, HG-SR52	0h	Refer to Name and function column.	
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Series	Servo motor																	
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HG-MR	HG-MR053, HG-MR13, HG-MR23, HG-MR43																	
HG-SR	HG-SR51, HG-SR52																	
PF15	DBT	Electronic Dynamic Brake Operating Time Set an operating time for the electronic dynamic brake. (Note 1)	2000 [ms]	0 to 10000														

Parameter settings (for MR-J4-_B_series)

No.	Abbreviation	Name and function	Initial value [unit]	Setting range														
PF06	*FOP5	Function selection F-5 <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Setting digit</th> <th>Explanation</th> <th>Initial value</th> </tr> </thead> <tbody> <tr> <td>___ x</td> <td>Electronic dynamic brake selection. 0: Automatic (effective only for specific servo motors) 2: Disabled Refer to the following table for the specified servo motors. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Series</th> <th>Servo motor</th> </tr> </thead> <tbody> <tr> <td>HG-KR</td> <td>HG-KR053, HG-KR13, HG-KR23, HG-KR43</td> </tr> <tr> <td>HG-MR</td> <td>HG-MR053, HG-MR13, HG-MR23, HG-MR43</td> </tr> <tr> <td>HG-SR</td> <td>HG-SR51, HG-SR52</td> </tr> </tbody> </table> </td> <td>0h</td> </tr> </tbody> </table>	Setting digit	Explanation	Initial value	___ x	Electronic dynamic brake selection. 0: Automatic (effective only for specific servo motors) 2: Disabled Refer to the following table for the specified servo motors. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Series</th> <th>Servo motor</th> </tr> </thead> <tbody> <tr> <td>HG-KR</td> <td>HG-KR053, HG-KR13, HG-KR23, HG-KR43</td> </tr> <tr> <td>HG-MR</td> <td>HG-MR053, HG-MR13, HG-MR23, HG-MR43</td> </tr> <tr> <td>HG-SR</td> <td>HG-SR51, HG-SR52</td> </tr> </tbody> </table>	Series	Servo motor	HG-KR	HG-KR053, HG-KR13, HG-KR23, HG-KR43	HG-MR	HG-MR053, HG-MR13, HG-MR23, HG-MR43	HG-SR	HG-SR51, HG-SR52	0h	Refer to Name and function column.	
Setting digit	Explanation	Initial value																
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Series	Servo motor																	
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HG-MR	HG-MR053, HG-MR13, HG-MR23, HG-MR43																	
HG-SR	HG-SR51, HG-SR52																	
PF12	DBT	Electronic Dynamic Brake Operating Time Set an operating time for the electronic dynamic brake. (Note 1)	2000 [ms]	0 to 10000														

Note 1. When the electronic dynamic brake is released during operation, the servo system cannot be switched on until the PF12 operating time is over.

Part 7: Common Reference Material

1.2.4 Forced stop deceleration function selection

(1) Parameter setting (for MR-J4-_A_series)

POINT
<ul style="list-style-type: none"> With MR-J4-A_, the deceleration to a stop function is enabled by the factory setting. To disable the deceleration to a stop function, set PA04 to "0 ___".

Number	Abbreviation	Name and function	Initial value [unit]	Setting range																											
PA04	*AO P1	Function selection A-1 This is used to select the forced stop input and forced stop deceleration function. <table border="1" style="margin-top: 10px;"> <thead> <tr> <th>Setting digit</th> <th>Explanation</th> <th>Initial value</th> </tr> </thead> <tbody> <tr> <td>___x</td> <td rowspan="3">For manufacturer setting</td> <td>0h</td> </tr> <tr> <td>__x_</td> <td>0h</td> </tr> <tr> <td>_x__</td> <td>0h</td> </tr> <tr> <td>x___</td> <td> Forced stop deceleration function selection 0: Forced stop deceleration function disabled (EM1) 2: Forced stop deceleration function enabled (EM2) See the following table for details. </td> <td>2h</td> </tr> </tbody> </table> <table border="1" style="margin-top: 10px;"> <thead> <tr> <th rowspan="2">Setting value</th> <th rowspan="2">EM2/EM1 selection</th> <th colspan="2">Deceleration method</th> </tr> <tr> <th>EM2 or EM1 is off</th> <th>Alarm occurred</th> </tr> </thead> <tbody> <tr> <td>0___</td> <td>EM1</td> <td>MBR (Electromagnetic brake interlock) turns off without the forced stop deceleration.</td> <td>MBR (Electromagnetic brake interlock) turns off without the forced stop deceleration.</td> </tr> <tr> <td>2___</td> <td>EM2</td> <td>MBR (Electromagnetic brake interlock) turns off after the forced stop deceleration.</td> <td>MBR (Electromagnetic brake interlock) turns off after the forced stop deceleration.</td> </tr> </tbody> </table>	Setting digit	Explanation	Initial value	___x	For manufacturer setting	0h	__x_	0h	_x__	0h	x___	Forced stop deceleration function selection 0: Forced stop deceleration function disabled (EM1) 2: Forced stop deceleration function enabled (EM2) See the following table for details.	2h	Setting value	EM2/EM1 selection	Deceleration method		EM2 or EM1 is off	Alarm occurred	0___	EM1	MBR (Electromagnetic brake interlock) turns off without the forced stop deceleration.	MBR (Electromagnetic brake interlock) turns off without the forced stop deceleration.	2___	EM2	MBR (Electromagnetic brake interlock) turns off after the forced stop deceleration.	MBR (Electromagnetic brake interlock) turns off after the forced stop deceleration.	Refer to Name and function column.	
Setting digit	Explanation	Initial value																													
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Part 7: Common Reference Material

(2) Parameter setting (for MR-J4-_B_series)

POINT
<ul style="list-style-type: none"> With MR-J4-B, the deceleration to a stop function is enabled in the factory setting. To disable the deceleration to a stop function, set PA04 to "0 ___".

Number	Abbreviation	Name and function	Initial value [unit]	Setting range																																			
PA04	*AO P1	Function selection A-1 This is used to select the forced stop input and forced stop deceleration function.	Refer to Name and function column.																																				
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Setting digit</th> <th style="width: 60%;">Explanation</th> <th style="width: 25%;">Initial value</th> </tr> </thead> <tbody> <tr> <td>___x</td> <td rowspan="2">For manufacturer setting</td> <td>0h</td> </tr> <tr> <td>__x_</td> <td>0h</td> </tr> <tr> <td>_x__</td> <td> Servo forced stop selection 0: Enabled (The forced stop input EM2 or EM1 is used.) 1: Disabled (The forced stop input EM2 and EM1 are not used.) See the following table for details. </td> <td>0h</td> </tr> <tr> <td>x___</td> <td> Forced stop deceleration function selection 0: Forced stop deceleration function disabled (EM1) 2: Forced stop deceleration function enabled (EM2) See the following table for details. </td> <td>2h</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Setting value</th> <th rowspan="2">EM2/EM1 selection</th> <th colspan="2">Deceleration method</th> </tr> <tr> <th>EM2 or EM1 is off</th> <th>Alarm occurred</th> </tr> </thead> <tbody> <tr> <td>00__</td> <td>EM1</td> <td>MBR (Electromagnetic brake interlock) turns off without the forced stop deceleration.</td> <td>MBR (Electromagnetic brake interlock) turns off without the forced stop deceleration.</td> </tr> <tr> <td>20__</td> <td>EM2</td> <td>MBR (Electromagnetic brake interlock) turns off after the forced stop deceleration.</td> <td>MBR (Electromagnetic brake interlock) turns off after the forced stop deceleration.</td> </tr> <tr> <td>01__</td> <td>Not using EM2 or EM1</td> <td rowspan="2" style="text-align: center;">/</td> <td>MBR (Electromagnetic brake interlock) turns off without the forced stop deceleration.</td> </tr> <tr> <td>21__</td> <td>Not using EM2 or EM1</td> <td>MBR (Electromagnetic brake interlock) turns off after the forced stop deceleration.</td> </tr> </tbody> </table>					Setting digit	Explanation	Initial value	___x	For manufacturer setting	0h	__x_	0h	_x__	Servo forced stop selection 0: Enabled (The forced stop input EM2 or EM1 is used.) 1: Disabled (The forced stop input EM2 and EM1 are not used.) See the following table for details.	0h	x___	Forced stop deceleration function selection 0: Forced stop deceleration function disabled (EM1) 2: Forced stop deceleration function enabled (EM2) See the following table for details.	2h	Setting value	EM2/EM1 selection	Deceleration method		EM2 or EM1 is off	Alarm occurred	00__	EM1	MBR (Electromagnetic brake interlock) turns off without the forced stop deceleration.	MBR (Electromagnetic brake interlock) turns off without the forced stop deceleration.	20__	EM2	MBR (Electromagnetic brake interlock) turns off after the forced stop deceleration.	MBR (Electromagnetic brake interlock) turns off after the forced stop deceleration.	01__	Not using EM2 or EM1	/	MBR (Electromagnetic brake interlock) turns off without the forced stop deceleration.	21__	Not using EM2 or EM1	MBR (Electromagnetic brake interlock) turns off after the forced stop deceleration.
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00__	EM1	MBR (Electromagnetic brake interlock) turns off without the forced stop deceleration.	MBR (Electromagnetic brake interlock) turns off without the forced stop deceleration.																																				
20__	EM2	MBR (Electromagnetic brake interlock) turns off after the forced stop deceleration.	MBR (Electromagnetic brake interlock) turns off after the forced stop deceleration.																																				
01__	Not using EM2 or EM1	/	MBR (Electromagnetic brake interlock) turns off without the forced stop deceleration.																																				
21__	Not using EM2 or EM1		MBR (Electromagnetic brake interlock) turns off after the forced stop deceleration.																																				

1.2.5 24VDC power supply for interface: built-in ⇒ outside supply requisite

These are the recommended specifications for a 24VDC power source for interface that is required for renewal.

Select according to the following specifications.

Item	MR-J2S series	MR-J2M series	MR-J4 series
For interface 24VDC power supply	Servo amplifier	/	External supply required 24VDC ±10% Power capacity MR-J4-_A_: 500 mA or more MR-J4-_B_: 300 mA or more
	Internal power supply		
	External supply 24VDC ±10% Power capacity: 80 mA or more	External supply 24VDC ±10% Power capacity: 300 mA or more	

Part 7: Common Reference Material

1.2.6 Servo setup software: MR Configurator ⇒ MR Configurator2

Item	MR-J2S series	MR-J4 series
Servo setup software	MR Configurator Model: MRZJW3-SETUP161E	MR Configurator2 Model: SW1DNC-MRC2-E

(1) MR Configurator2 (SW1DNC-MRC2-E) specification

Item	Description
Project	Create/read/save/delete project, system setting, and print
Parameter	Parameter setting, amplifier axis name setting, parameter converter (Note 1)
Positioning data (Note 6)	Point table, program, indirect addressing
Monitor	Display all, I/O monitor, graph, and ABS data display
Diagnostics	Alarm display, alarm onset data display, drive recorder, display of the reason for no rotation, system configuration, life diagnosis, machine diagnosis, fully closed loop diagnosis (Note 2), linear diagnosis (Note 3)
Test operation	Jog operation (Note 4), positioning operation, motor-less operation (Note 5), DO forced output, and program operation, test operation event information, single-step feed (Note 6)
Adjustment	One-touch tuning, tuning, and machine analyzer
Others	Servo assistant, parameter setting range update, help display, connection to MITSUBISHI ELECTRIC FA Global Website

- Note
1. This function is available only in standard control mode.
 2. This function is available only in fully closed loop control mode.
 3. This function is available only in linear servo motor control mode.
 4. This function is available in standard control mode, fully closed loop control mode, and DD motor control mode.
 5. This function is available only in standard control mode. This function will be available in the future with fully closed loop control mode, linear servo motor control mode, DD motor control mode.
 6. SW1DNC-MRC2-E supports only MR-J4A-RJ.

(2) System configuration

For servo setup software components, see the Instruction Manual.

1.2.7 Communication I/F: RS232C ⇒ USB

For connection with PC-AT compatible personal computer

Item	MR-J2S series	MR-J4 series
Communication cable	RS-232C communication MR-CPCATCBL3M Cable length: 3 m	USB communication MR-J3USBCBL3M Cable length: 3 m

Part 7: Common Reference Material

1.2.8 Servo amplifier initializing time

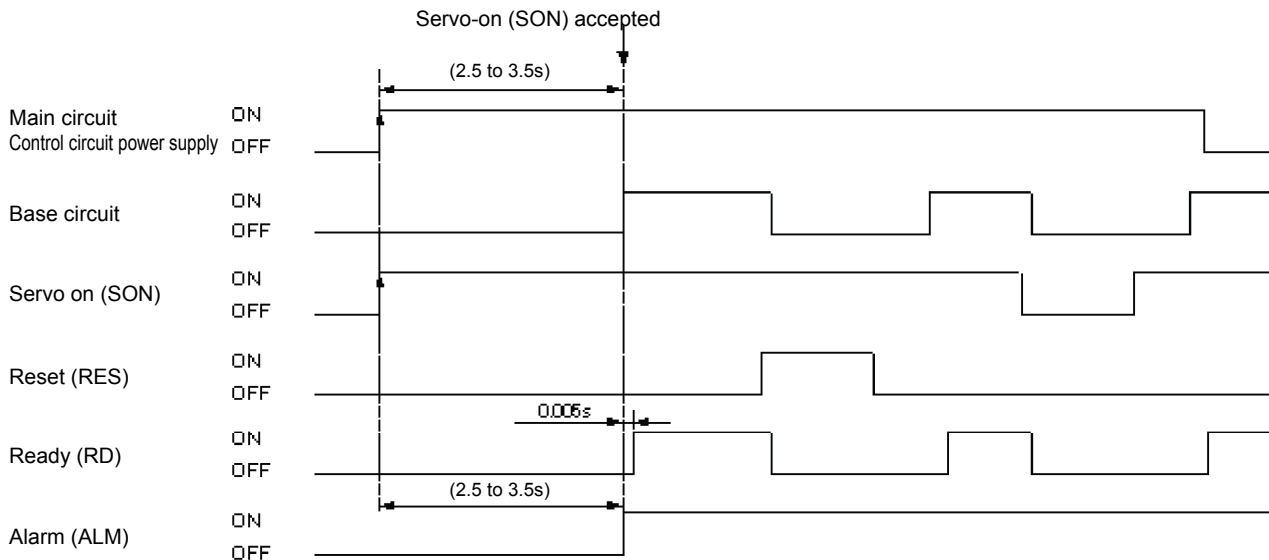
This section explains the initializing time of the servo amplifier (the time taken between power-on and servo-on reception). The initializing time is 2 s at maximum for the MR-J2S- A servo amplifier, but 3.5 s at maximum for the MR-J4- A servo amplifier. Note the initializing time difference upon replacement.

<Points to note upon replacement>

- (1) When using the electromagnetic brake to prevent a drop in a vertical lift application or the like with an external timer to adjust the brake release time, the lift may drop due to a longer servo-lock time. Adjust the brake release time as necessary or use MBR (electromagnetic brake interlock signal).
- (2) A longer servo-on time at power-on may cause a delay in the motor starting time after power-up. Please take note.

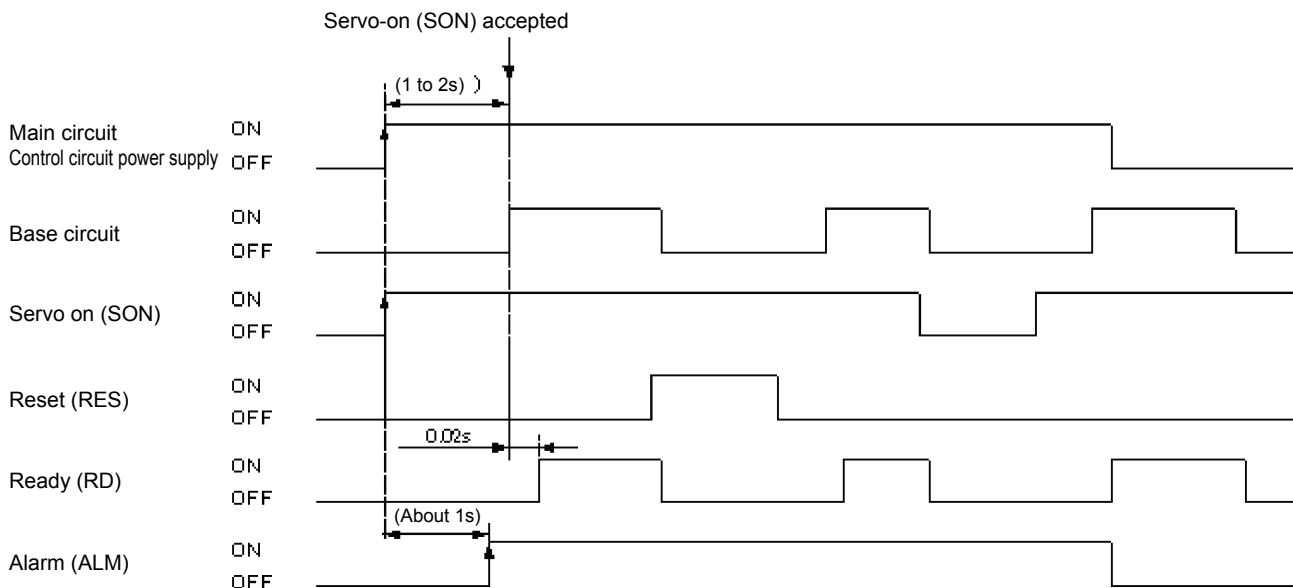
(1) MR-J4- A_ / MR-J4- B_ series servo amplifier

The initializing time is 2.5 to 3.5 s.



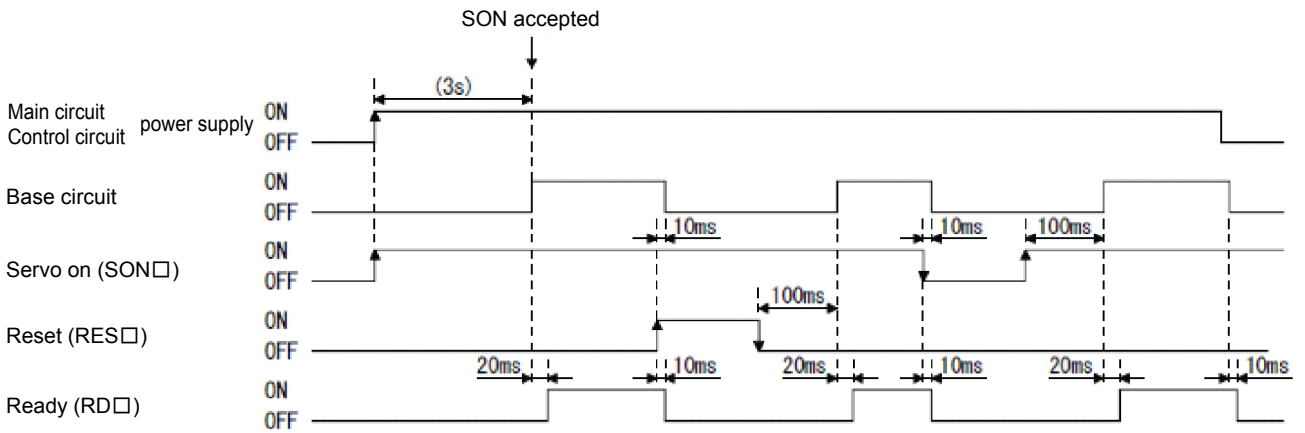
(2) MR-J2S- A_ series servo amplifier

The initializing time is 1 to 2 s.

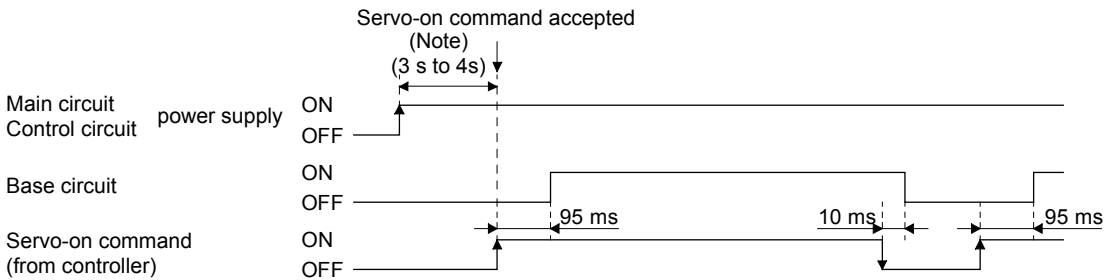


Part 7: Common Reference Material

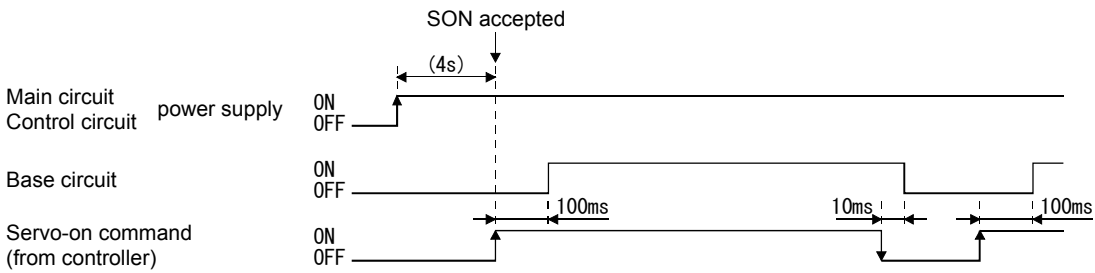
(3) MR-J2M-P8A series servo amplifier
The initializing time is 3 s.



(4) MR-J2S-_B_ series servo amplifier
The initializing time is 3 to 4 s.



(5) MR-J2M-P8B series servo amplifier
The initializing time is 4 s.



Part 7: Common Reference Material

1.2.9 The pulse width of the encoder Z-Phase pulse

Note that the pulse width and start-up timing of the encoder Z-phase pulse signal (OP) output from the servo amplifier are different between the MR-J2S / MR-J2M series and the MR-J4 series.

<Precautions>

- * Always reset the home position upon replacement.

<Amplifier replacement>

	MR-J2S/MR-J2M series	MR-J4 series
At low speed	<p>128/131,072 pulses (Example: At 10 r/min)</p> <p>128 pulses (Approximately 6ms) (Note)</p> <p>* This is the pulse width when the motor rotates at 10 r/min. The pulse width changes depending on rotational frequency.</p>	<p>128/131,072 pulses (Example: At 10 r/min)</p> <p>128 pulses (Approximately 6ms) (Note)</p> <p>* This is the pulse width when the motor rotates at 10 r/min. The pulse width changes depending on rotational frequency.</p>
At high speed	<p>Approximately 900 μs fixed</p> <p>Approximately 900 μs</p>	<p>Approximately 400 μs fixed</p> <p>Approximately 400 μs</p>

<Simultaneous replacement>

	HG-KR, MR, SR motor
At low speed	<p>4,096 / 4,194,304 pulses (Example: At 10 r/min)</p> <p>4096 pulses (Approximately 6ms) (Note)</p> <p>* This is the pulse width when the motor rotates at 10 r/min. The pulse width changes depending on rotational frequency.</p>
At high speed	<p>Approximately 400 μs fixed</p> <p>Approximately 400 μs</p>

Part 7: Common Reference Material

2. SERVO AMPLIFIER DIMENSIONS/ATTACHMENT DIFFERENCES

2.1 MR-J2S ⇒MR-J4 Comparison Table of Servo Amplifier Dimensions/Installation Differences

2.1.1 200 V class (22 kW or less A/B-Type)

The following table shows comparison of the MR-J2S series and MR-J4 series dimensions. The height and width of the MR-J4 series are the same or smaller than the MR-J2S series basically. The depth is larger for the 400 W and 600 W capacities. The replacements for 1 kW or less capacity types are possible using the same mounting holes. The number of mounting screws is different for the 2 kW and 3.5 kW capacities, and the mounting screw distance is different for the 5 kW to 22 kW capacities. The screw sizes are different for the 11 kW and 15 kW capacities. (See the comparison of dimensions.)

Comparison of dimensions (comparison between the same capacity types) Unit: mm

Model MR-J2S series	Model MR-J4 series	Height		Width		Depth		Mounting screw pitch			
		MR-J2S	MR-J4	MR-J2S	MR-J4	MR-J2S	MR-J4	MR-J2S	MR-J4		
MR-J2S-10_	MR-J4-10_	168	168	50	40	135	135	156 (Vertical)/ 2 (screws)	156 (Vertical)/ 2 (screws)		
MR-J2S-20_	MR-J4-20_			70	60					190	185
MR-J2S-40_	MR-J4-40_										
MR-J2S-60_	MR-J4-60_			156 (Vertical)/ 42 (Horizontal) (3 screws)	156 (Vertical)/ 42 (Horizontal) (3 screws)						
MR-J2S-70_	MR-J4-70_					156 (Vertical)/ 78 (Horizontal) (4 screws)	156 (Vertical)/ 78 (Horizontal) (3 screws) (Note 2)				
MR-J2S-100_	MR-J4-100_			250	250			130	105	200	200
MR-J2S-200_	MR-J4-200_	350	300			180	172				
MR-J2S-350_	MR-J4-350_			400	400			260	220	260	260
MR-J2S-500_	MR-J4-500_	376 (Vertical)/ 326 (Horizontal) (4 screws)	376 (Vertical)/ 236 (Horizontal) (4 screws)								
MR-J2S-700_	MR-J4-700_					400	400	260	220		
MR-J2S-11K_	MR-J4-11K_	350	260	350	260			376 (Vertical)/ 326 (Horizontal) (4 screws)	376 (Vertical)/ 236 (Horizontal) (4 screws)		
MR-J2S-15K_	MR-J4-15K_					376 (Vertical)/ 326 (Horizontal) (4 screws)	376 (Vertical)/ 236 (Horizontal) (4 screws)				
MR-J2S-22K_	MR-J4-22K_									376 (Vertical)/ 326 (Horizontal) (4 screws)	376 (Vertical)/ 236 (Horizontal) (4 screws)

- Note 1. The depth will increase.
2. The number of mounting screws will be changed.

- Dimensions with differences are **shown with shading**.

2.1.2 100V class (0.4kW or less A/B-Type)

The following table shows comparison of the MR-J2S series and MR-J4 series dimensions. The height and width of the MR-J4 series are the same or smaller than the MR-J2S series basically. The depth is larger for the 400 W and 600 W capacities. The mounting dimensions are interchangeable.

Comparison of dimensions (comparison between the same capacity types) Unit: mm

Model MR-J2S series	Model MR-J4 series	Height		Width		Depth		Mounting screw pitch			
		MR-J2S	MR-J4	MR-J2S	MR-J4	MR-J2S	MR-J4	MR-J2S	MR-J4		
MR-J2S-10_1	MR-J4-10_1	168	168	50	40	135	135	156 (Vertical)/ 2 (screws)	156 (Vertical)/ 2 (screws)		
MR-J2S-20_1	MR-J4-20_1			70	60					190	185
MR-J2S-40_1	MR-J4-40_1										
MR-J2S-60_1	MR-J4-60_1	156 (Vertical)/ 42 (Horizontal) (3 screws)	156 (Vertical)/ 42 (Horizontal) (3 screws)								
MR-J2S-70_1	MR-J4-70_1			156 (Vertical)/ 78 (Horizontal) (4 screws)	156 (Vertical)/ 78 (Horizontal) (3 screws) (Note 2)						
MR-J2S-100_1	MR-J4-100_1	250	250			130	105	200	200	235 (Vertical)/ 118 (Horizontal) (4 screws)	235 (Vertical)/ 93 (Horizontal) (4 screws)
MR-J2S-200_1	MR-J4-200_1			350	300						
MR-J2S-350_1	MR-J4-350_1	400	400			260	220	260	260	376 (Vertical)/ 236 (Horizontal) (4 screws)	380 (Vertical)/ 196 (Horizontal) (4 screws)
MR-J2S-500_1	MR-J4-500_1			376 (Vertical)/ 326 (Horizontal) (4 screws)	376 (Vertical)/ 236 (Horizontal) (4 screws)						
MR-J2S-700_1	MR-J4-700_1					400	400				
MR-J2S-11K_1	MR-J4-11K_1	350	260	350	260			376 (Vertical)/ 326 (Horizontal) (4 screws)	376 (Vertical)/ 236 (Horizontal) (4 screws)		
MR-J2S-15K_1	MR-J4-15K_1					376 (Vertical)/ 326 (Horizontal) (4 screws)	376 (Vertical)/ 236 (Horizontal) (4 screws)				
MR-J2S-22K_1	MR-J4-22K_1									376 (Vertical)/ 326 (Horizontal) (4 screws)	376 (Vertical)/ 236 (Horizontal) (4 screws)

- Note 1. The depth will increase.
2. The number of mounting screws will be changed.

- Dimensions with differences are **shown with shading**.

Part 7: Common Reference Material

2.1.3 200V class (7 kW or less CP/CL-Type)

The following table shows comparison of the MR-J2S series and MR-J4 series dimensions. The height and width of the MR-J4 series are the same or smaller than the MR-J2S series basically. The depth is larger for the 400 W and 600 W capacities. The replacements for 1 kW or less capacity types are possible using the same mounting holes. The number of mounting screws is different for the 2 kW and 3.5 kW capacities, and the mounting screw distance is different for the 5 kW to 7kW capacities.

Comparison of dimensions (comparison between the same capacity types) Unit: mm

Model MR-J2S series	Model MR-J4 series	Height		Width		Depth		Mounting screw pitch				
		MR-J2S	MR-J4	MR-J2S	MR-J4	MR-J2S	MR-J4	MR-J2S	MR-J4			
MR-J2S-10_	MR-J4-10A-RJ	168	168	50	40	135	135	156 (Vertical) (2 screws)	156 (Vertical) (2 screws)			
MR-J2S-20_	MR-J4-20 A-RJ			70							170 (Note 1)	
MR-J2S-40_	MR-J4-40 A-RJ											
MR-J2S-60_	MR-J4-60 A-RJ			90	90	60	190			185	156 (Vertical)/ 42 (Horizontal) (3 screws)	156 (Vertical)/ 42 (Horizontal) (3 screws)
MR-J2S-70_	MR-J4-70 A-RJ											
MR-J2S-100_	MR-J4-100 A-RJ			90	90	195	195			156 (Vertical)/ 78 (Horizontal) (4 screws)	156 (Vertical)/ 78 (Horizontal) (3 screws) (3 screws) (Note 2)	
MR-J2S-200_	MR-J4-200 A-RJ											
MR-J2S-350_	MR-J4-350 A-RJ											
MR-J2S-500_	MR-J4-500 A-RJ	250	250	130	105	200	200	235 (Vertical)/ 118 (Horizontal) (4 screws)	235 (Vertical)/ 93 (Horizontal) (4 screws)			
MR-J2S-700_	MR-J4-700 A-RJ	350	300	180	172			335 (Vertical)/ 160 (Horizontal) (4 screws)	285 (Vertical) / 160 (Horizontal) (4 screws)			

- Note 1. The depth will increase.
2. The number of mounting screws will be changed.

- Dimensions with differences are **shown with shading**.

2.1.4 100V class (0.4kW or less CP/CL-Type)

The following table shows comparison of the MR-J2S series and MR-J4 series dimensions. The height and width of the MR-J3 series are the same or smaller than the MR-J2S series. The depth is larger for the 400 W capacity. The mounting dimensions are interchangeable.

Comparison of dimensions (comparison between the same capacity types) Unit: mm

Model MR-J2S series	Model MR-J4 series	Height		Width		Depth		Mounting screw pitch			
		MR-J2S	MR-J4	MR-J2S	MR-J4	MR-J2S	MR-J4	MR-J2S	MR-J4		
MR-J2S-10_1	MR-J4-10 A1-RJ	168	168	50	40	135	135	156 (Vertical) (2 screws)	156 (Vertical) (2 screws)		
MR-J2S-20_1	MR-J4-20 A1-RJ			70							170 (Note 1)
MR-J2S-40_1	MR-J4-40 A1-RJ										

- Note 1. The depth will increase.
2. The number of mounting screws will be changed.

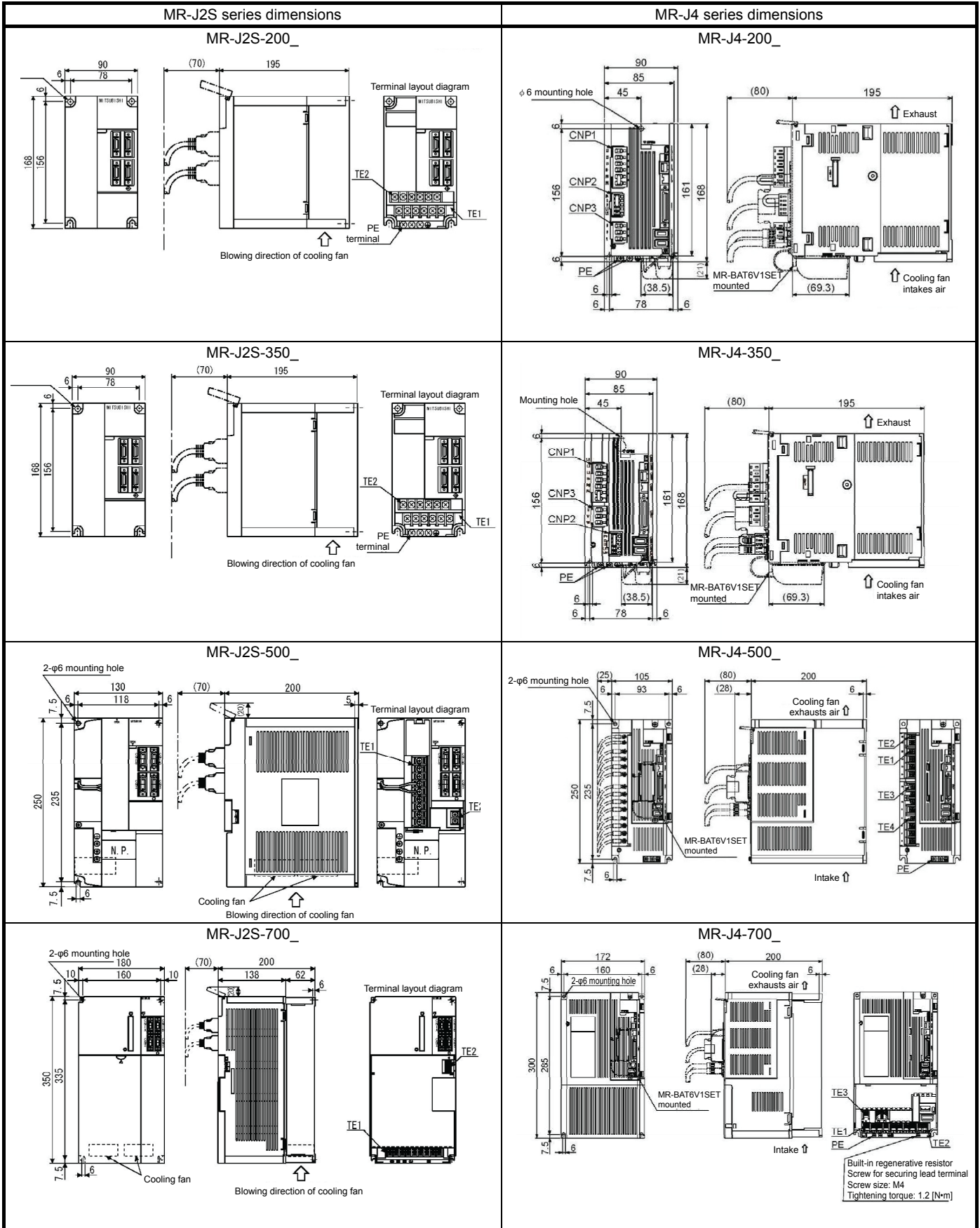
- Dimensions with differences are **shown with shading**.

Part 7: Common Reference Material

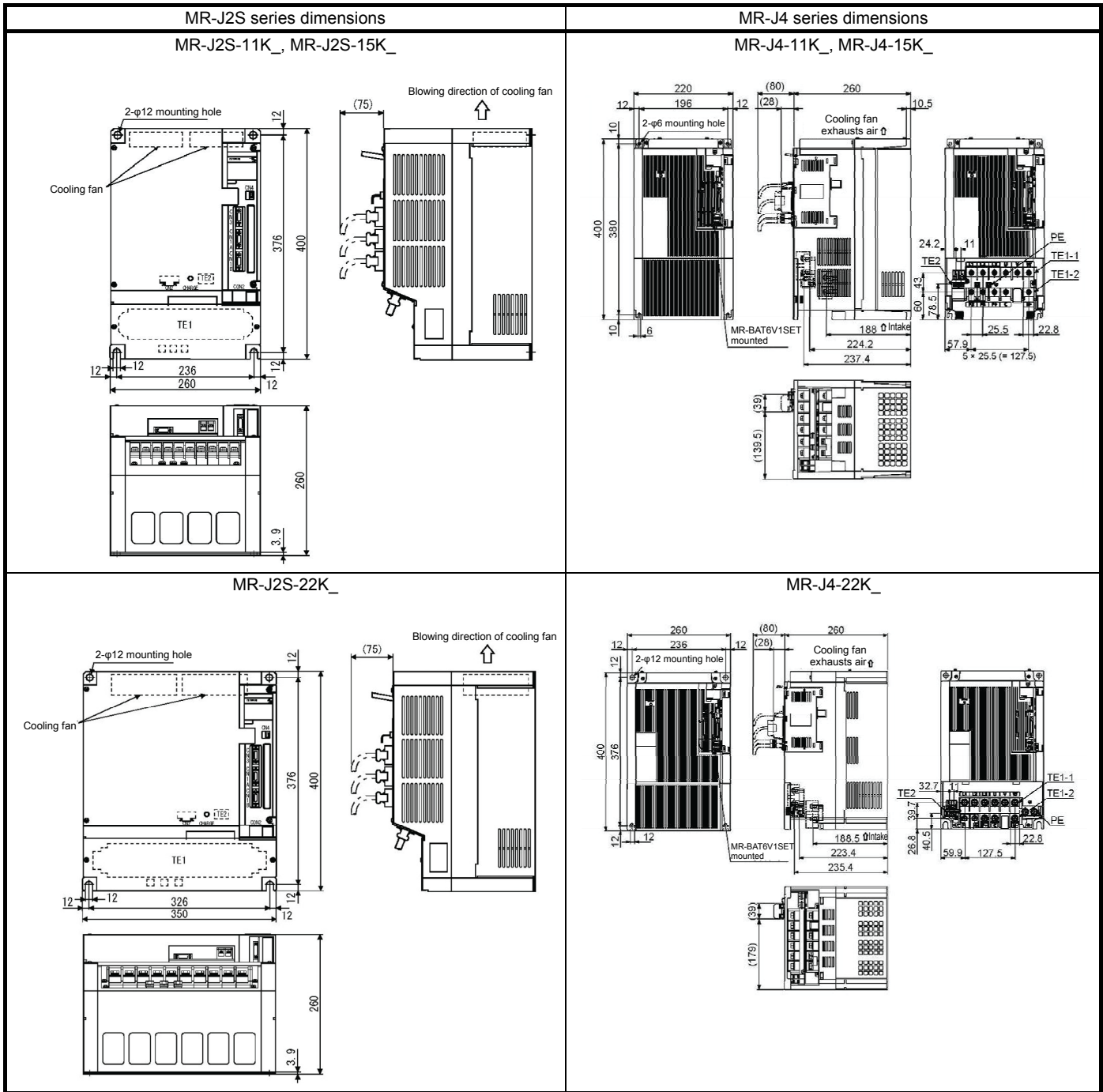
Comparison of 200 V / 100 V class dimensions

MR-J2S series dimensions MR-J2S-10_, MR-J2S-20_				MR-J4 series dimensions MR-J4-10_, MR-J4-20_																															
<table border="1"> <thead> <tr> <th rowspan="2">Servo amplifier</th> <th colspan="2">Variable dimensions</th> <th rowspan="2">Mass [kg]</th> </tr> <tr> <th>A</th> <th>B</th> </tr> </thead> <tbody> <tr> <td>MR-J2S-10A(1)</td> <td>50</td> <td>6</td> <td>0.7</td> </tr> <tr> <td>MR-J2S-20A(1)</td> <td>70</td> <td>22</td> <td>1.1</td> </tr> </tbody> </table>				Servo amplifier	Variable dimensions		Mass [kg]	A	B	MR-J2S-10A(1)	50	6	0.7	MR-J2S-20A(1)	70	22	1.1	<table border="1"> <thead> <tr> <th rowspan="2">Servo amplifier</th> <th colspan="2">Variable dimensions</th> <th rowspan="2">Mass [kg]</th> </tr> <tr> <th>A</th> <th>B</th> </tr> </thead> <tbody> <tr> <td>MR-J2S-10A(1)</td> <td>50</td> <td>6</td> <td>0.7</td> </tr> <tr> <td>MR-J2S-20A(1)</td> <td>70</td> <td>22</td> <td>1.1</td> </tr> </tbody> </table>				Servo amplifier	Variable dimensions		Mass [kg]	A	B	MR-J2S-10A(1)	50	6	0.7	MR-J2S-20A(1)	70	22	1.1
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<h3>MR-J2S-40_, MR-J2S-60_</h3>				<h3>MR-J4-40_, MR-J4-60_</h3>																															
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<h3>MR-J2S-70_, MR-J2S-100_</h3>				<h3>MR-J4-70_, MR-J4-100_</h3>																															
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Part 7: Common Reference Material



Part 7: Common Reference Material



Part 7: Common Reference Material

2.1.5 200 V class (30kW or more A/B-Type)

The following table shows comparison of the MR-J2S series and MR-J4 series dimensions. The height and width of the MR-J4 series are the same or smaller than the MR-J2S series basically. The depth will increase when a heat sink is placed in a cabinet. For the mounting dimensions, the mounting screw pitch and screw sizes will be changed. (See the comparison of dimensions.)

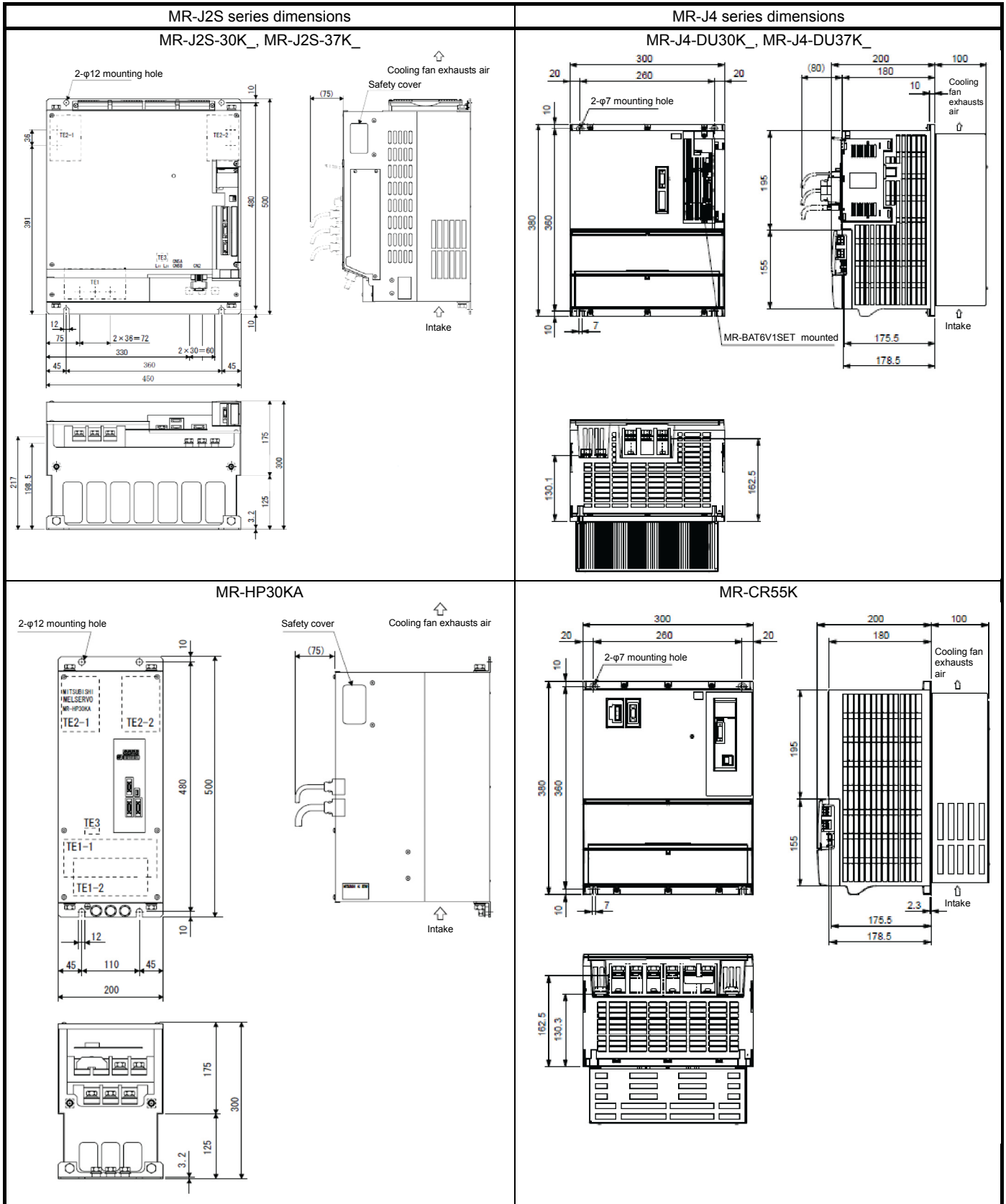
Comparison of dimensions (comparison between the same capacity types) Unit: mm

Model MR-J2S series	Model MR-J4 series	Height		Width		Depth		Mounting screw pitch	
		MR-J2S	MR-J4	MR-J2S	MR-J4	MR-J2S	MR-J4	MR-J2S	MR-J4
MR-J2S-30K_	MR-J4-DU30K_	500	380	450	300	300	200 (328) (Note 1)	480 (Vertical)/ 360 (Horizontal) (4 screws)	
MR-J2S-37K_	MR-J4-DU37K_							360 (Vertical)/ 260 (Horizontal) (4 screws)	
MR-HP30KA	MR-CR55K			200	300			480 (Vertical)/ 110 (Horizontal) (4 screws)	

Note 1. The values in the parentheses are applied to when a heat sink is placed in a cabinet. Pay attention to the depth.

- Dimensions with differences are **shown with shading**.

Part 7: Common Reference Material



Part 7: Common Reference Material

2.1.6 400 V class (22 kW or less A/B-Type)

The following table shows comparison of the MR-J2S series and MR-J4 series dimensions. The height and width of the MR-J3 series are the same or smaller than the MR-J2S series. The 5 kW capacity types are interchangeable. Please note the following when replacing: The number of mounting screws is different for the 600 W to 2 kW capacities, and the mounting screw distance is different for the 3.5 kW and 7 kW to 22 kW capacities. The screw sizes are different for the 11 kW and 15 kW capacities. (See the comparison of dimensions.)

Comparison of dimensions (comparison between the same capacity types) Unit: mm

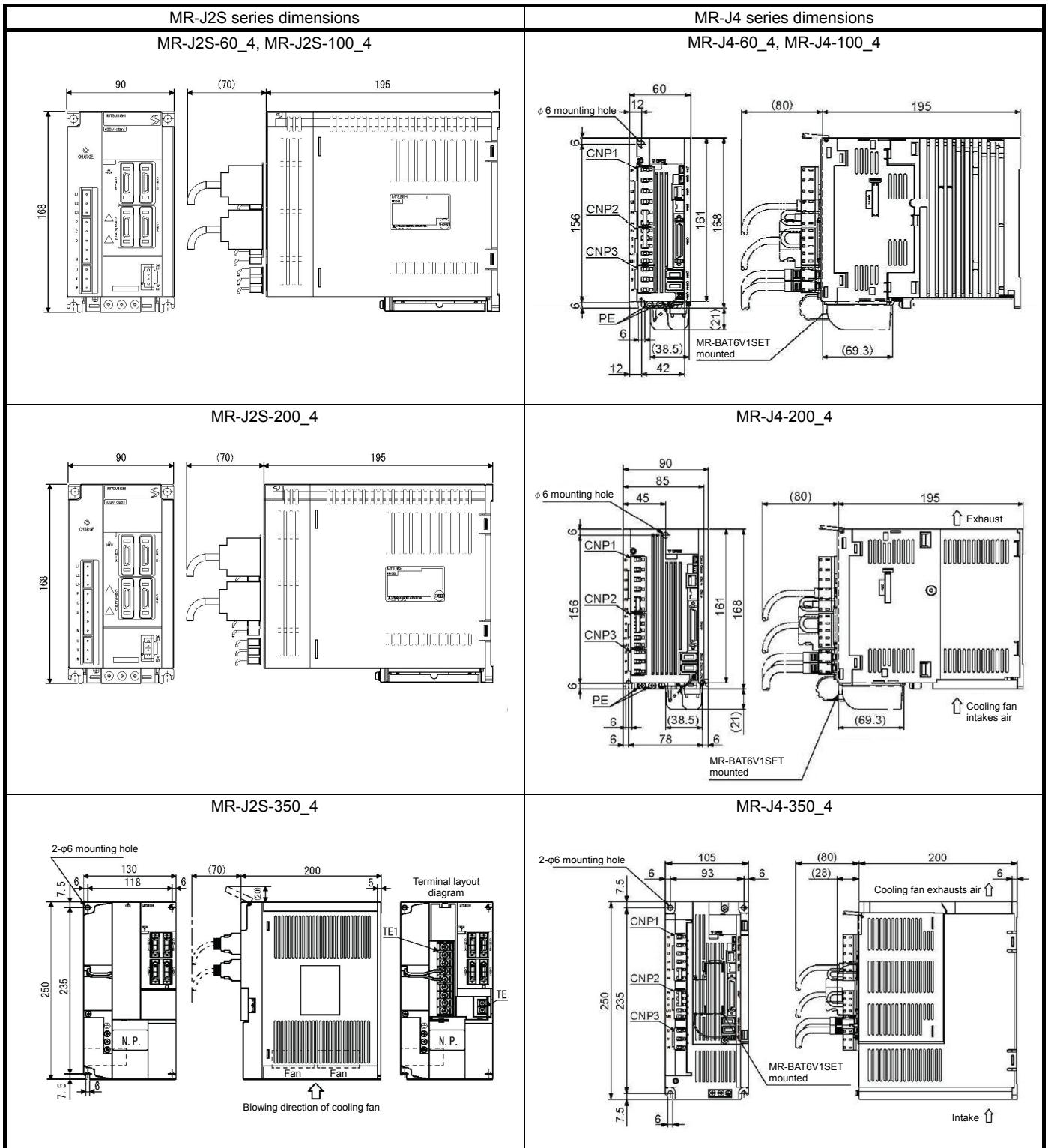
Model MR-J2S series	Model MR-J4 series	Height		Width		Depth		Mounting screw pitch	
		MR-J2S	MR-J4	MR-J2S	MR-J4	MR-J2S	MR-J4	MR-J2S	MR-J4
MR-J2S-60_4	MR-J4-60_4	168	168	90	60	195	195	156 (Vertical)/ 78 (Horizontal) (4 screws)	156 (Vertical)/ 42 (Horizontal) (3 screws) (Note)
MR-J2S-100_4	MR-J4-100_4				90				156 (Vertical)/ 78 (Horizontal) (3 screws) (Note)
MR-J2S-200_4	MR-J4-200_4								235 (Vertical)/ 93 (Horizontal) (4 screws)
MR-J2S-350_4	MR-J4-350_4	250	250	130	105	200	200	235 (Vertical)/ 118 (Horizontal) (4 screws)	235 (Vertical)/118 (Horizontal) (4 screws)
MR-J2S-500_4	MR-J4-500_4				130				335 (Vertical)/ 160 (Horizontal) (4 screws)
MR-J2S-700_4	MR-J4-700_4								300
MR-J2S-11K_4	MR-J4-11K_4	400	400	260	220	260	260	376 (Vertical)/ 236 (Horizontal) (4 screws)	380 (Vertical)/ 196 (Horizontal) (4 screws)
MR-J2S-15K_4	MR-J4-15K_4				350				260
MR-J2S-22K_4	MR-J4-22K_4								

Note. The number of mounting screws will be changed.

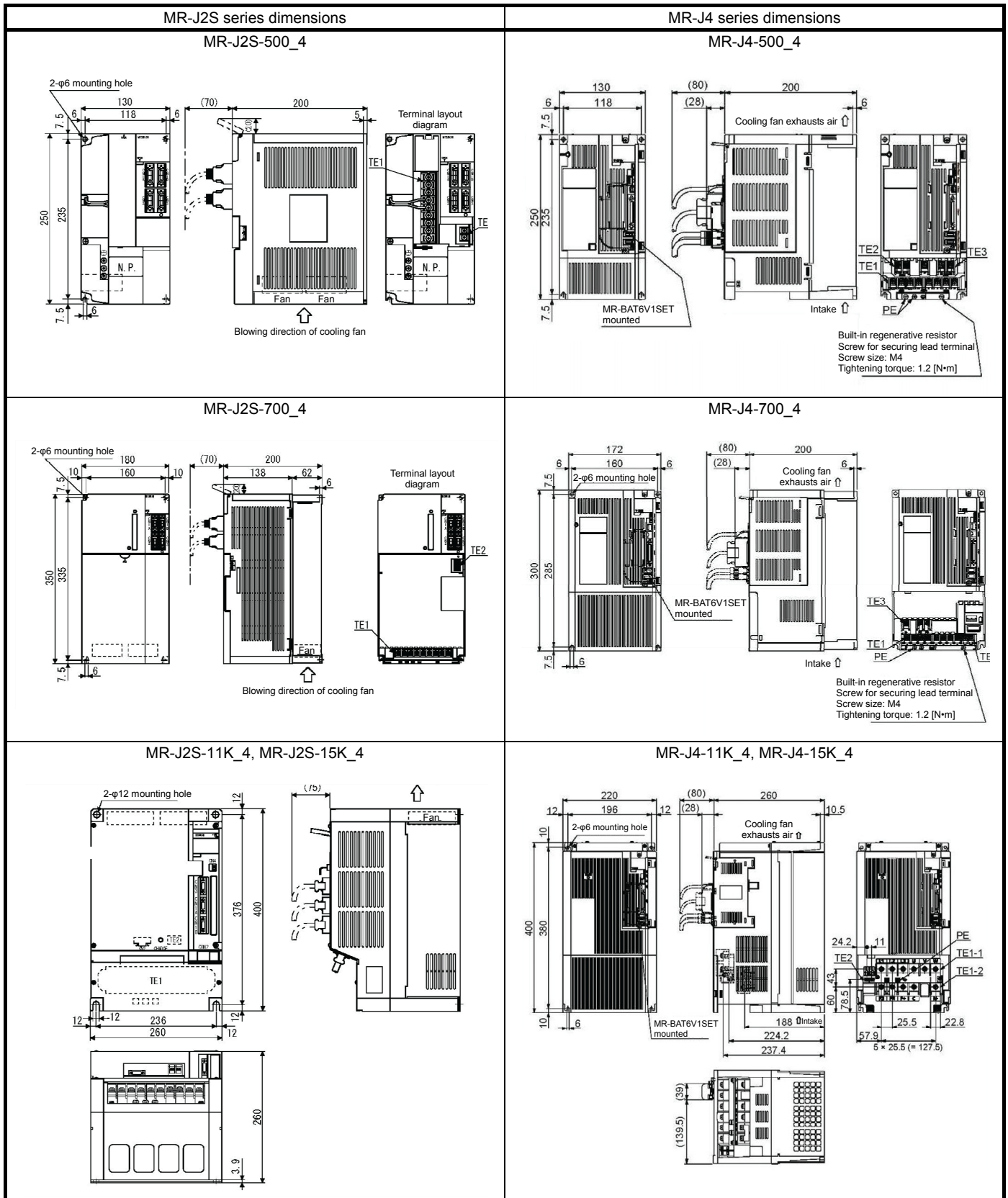
- Dimensions with differences are **shown with shading**.

Part 7: Common Reference Material

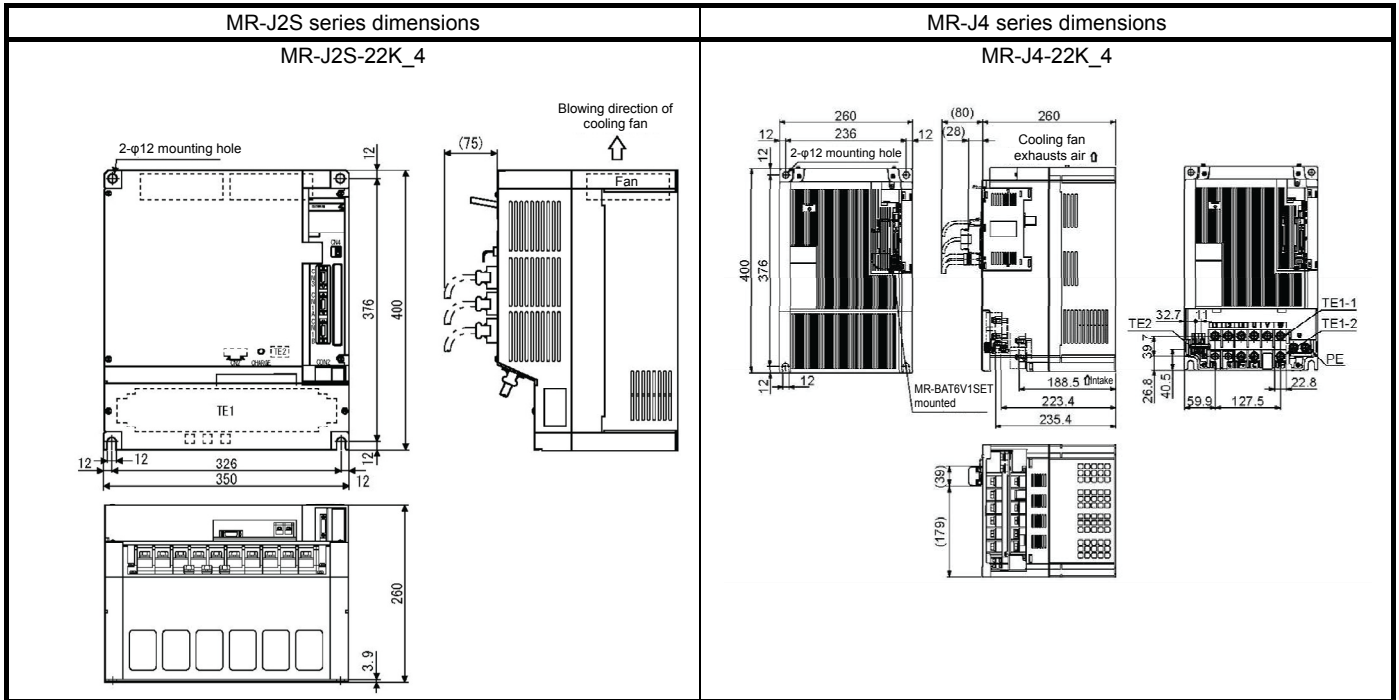
Comparison of 400 V class dimensions



Part 7: Common Reference Material



Part 7: Common Reference Material



2.1.7 400V class (30kW or more A/B-Type)

The following table shows comparison of the MR-J2S series and MR-J4 series dimensions. The height and width of the MR-J4 series are the same or smaller than the MR-J2S series basically. The depth will increase when a heat sink is placed in a cabinet. For the mounting dimensions, the mounting screw pitch and screw sizes will be changed. (See the comparison of dimensions.)

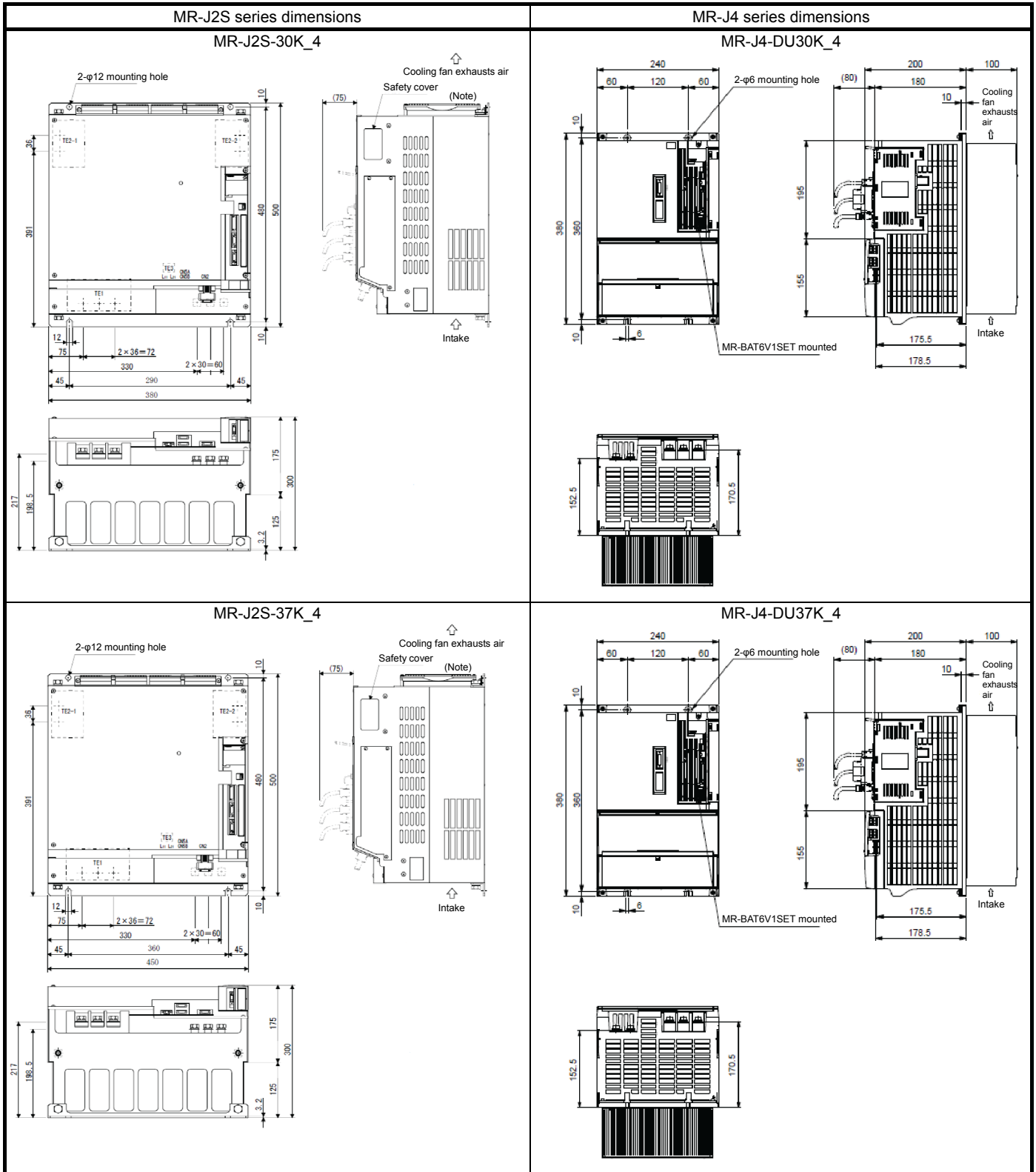
Comparison of dimensions (comparison between the same capacity types) Unit: mm

Model MR-J2S series	Model MR-J4 series	Height		Width		Depth		Mounting screw pitch	
		MR-J2S	MR-J4	MR-J2S	MR-J4	MR-J2S	MR-J4	MR-J2S	MR-J4
MR-J2S-30K_4	MR-J4-DU30K_4	500	380	380	240	300	200 (328) (Note 1)	480 (Vertical)/ 290 (Horizontal) (4 screws)	360 (Vertical)/ 120 (Horizontal) (4 screws)
MR-J2S-37K_4	MR-J4-DU37K_4			450				480 (Vertical)/ 360 (Horizontal) (4 screws)	
MR-J2S-45K_4	MR-J4-DU45K_4			200	300			480 (Vertical)/ 110 (Horizontal) (4 screws)	360 (Vertical)/ 260 (Horizontal) (4 screws)
MR-J2S-55K_4	MR-J4-DU55K_4								
MR-HP55KA4	MR-CR55K4								

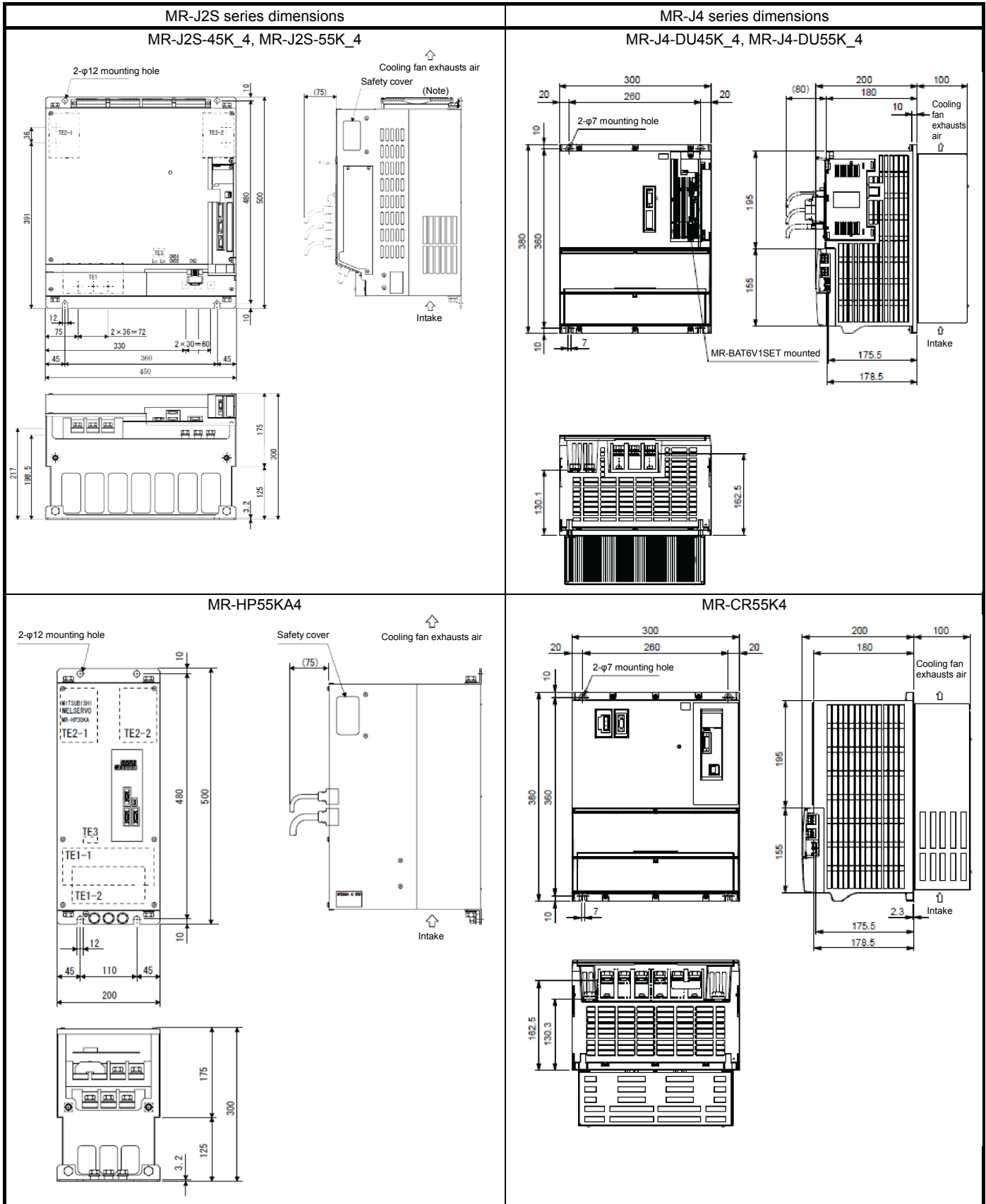
Note 1. The values in the parentheses are applied to when a heat sink is placed in a cabinet. Pay attention to the depth.

- Dimensions with differences are **shown with shading**.

Part 7: Common Reference Material



Part 7: Common Reference Material



Part 7: Common Reference Material

2.2 MR-J2M- →MR-J4- Comparison Table of Servo Amplifier Dimensions/Installation Differences

The following table shows comparison of the MR-J2M series and MR-J4 series dimensions. The width of the MR-J4 series is the same or smaller than the MR-J2M series. The depth is larger for the 400 W and 750 W capacities. Note that the height is larger for all the capacities. Mounting dimensions of the both series are significantly different. Please take note.

Comparison of dimensions (comparison between the same capacity types) Unit: mm

Model MR-J2M series	Model MR-J4 series	Height		Width		Depth		Mounting screw pitch		
		MR-J2M	MR-J4	MR-J2M	MR-J4	MR-J2M	MR-J4	MR-J2M	MR-J4	
MR-J2M-BU4 + MR-J2M-P8A + MR-J2M- _{DU}	MR-J4-10, 20A × 4 units	140	168 (Note 1)	230	40 × 4 = 160	158	135	86 (Vertical)/ 218 (Horizontal) (4 screws)	156 (Vertical) (2 screws) × 4	
	MR-J4-40A × 4 units									170 (Note 1)
	MR-J4-70A × 2 units									60 × 2 = 120
MR-J2M-BU6 + MR-J2M-P8A + MR-J2M- _{DU}	MR-J4-10, 20A × 6 units	140	168 (Note 1)	290	40 × 6 = 240	158	135	86 (Vertical)/ 278 (Horizontal) (4 screws)	156 (Vertical) (2 screws) × 6	
	MR-J4-40A × 6 units									170 (Note 1)
	MR-J4-70A × 3 units									60 × 3 = 180
MR-J2M-BU8 + MR-J2M-P8A + MR-J2M- _{DU}	MR-J4-10, 20A × 8 units	140	168 (Note 1)	350	40 × 8 = 320	158	135	86 (Vertical)/ 338 (Horizontal) (4 screws)	156 (Vertical) (2 screws) × 8	
	MR-J4-40A × 8 units									170 (Note 1)
	MR-J4-70A × 4 units									60 × 4 = 240

Note 1. The width will increase.

Dimensions with differences are **shown with shading**.

Part 7: Common Reference Material

Comparison between the MR-J2M and the MR-J4 series

Series	Dimensions
<p>MR-J2M-BU4 + MR-J2M-P8A + MR-J2M-_DU</p> <p>MR-J2M-BU4 + MR-J2M-P8B + MR-J2M-_DU</p>	
<p>When four MR-J4-10_ units are closely mounted</p>	<p>* When mounting the servo amplifiers closely, leave a clearance of 1 mm between the adjacent servo amplifiers in consideration of mounting tolerances. In this case, keep the ambient temperature within 0 °C to 45 °C or use the servo amplifier with 75% or less of the effective load ratio.</p>

Part 7: Common Reference Material

Series	Dimensions	
<p>MR-J2M-BU6 + MR-J2M-P8A + MR-J2M-_DU</p> <p>MR-J2M-BU6 + MR-J2M-P8B + MR-J2M-_DU</p>		
<p>When six MR-J4-10_ units are closely mounted</p>		
<p>* When mounting the servo amplifiers closely, leave a clearance of 1 mm between the adjacent servo amplifiers in consideration of mounting tolerances. In this case, keep the ambient temperature within 0 °C to 45 °C or use the servo amplifier with 75% or less of the effective load ratio.</p>		

Part 7: Common Reference Material

Series	Dimensions	
<p>MR-J2M-BU8 + MR-J2M-P8A + MR-J2M-_DU</p> <p>MR-J2M-BU8 + MR-J2M-P8B+ MR-J2M-_DU</p>		
<p>When eight MR-J4-10_ units are closely mounted</p>		
<p>* When mounting the servo amplifiers closely, leave a clearance of 1 mm between the adjacent servo amplifiers in consideration of mounting tolerances. In this case, keep the ambient temperature within 0 °C to 45 °C or use the servo amplifier with 75% or less of the effective load ratio.</p>		

Part 7: Common Reference Material

2.3 Parameter Conversion

2.3.1 Operation procedure of parameter conversion

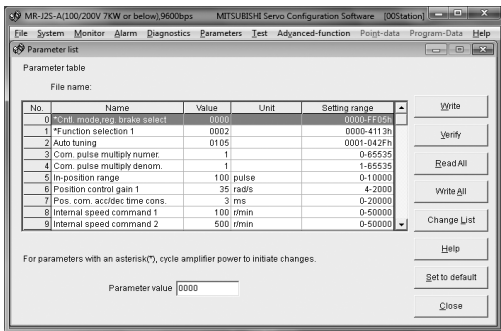
The parameter converter function of MR Configurator2 allows the servo parameters of MR-J2S-A/CP/CL- to be changed to the servo parameters of MR-J4-A-.

(Conversion of MR-J2S-A-: version 1.12N or more; conversion of MR-J2S-CP/CL-: version 1.25B or more)

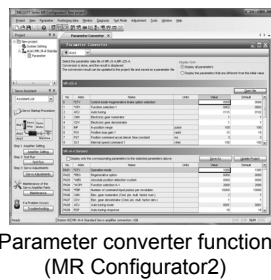
POINT

- This applies only to the common parameters of MR-J2S-A/CP/CL- and MR-J4-A-.

Additional parameters of MR-J4-A- are set to the initial values of MR-J4-A-.



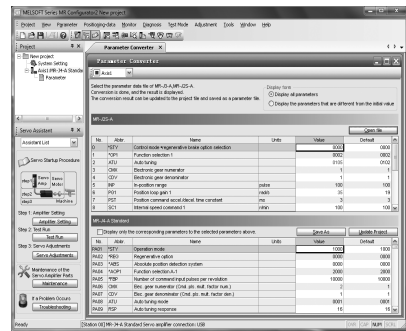
MR Configurator



Parameter converter function (MR Configurator2)

Data files

Change MR-J2S-A/CP/CL- to MR-J4-A-



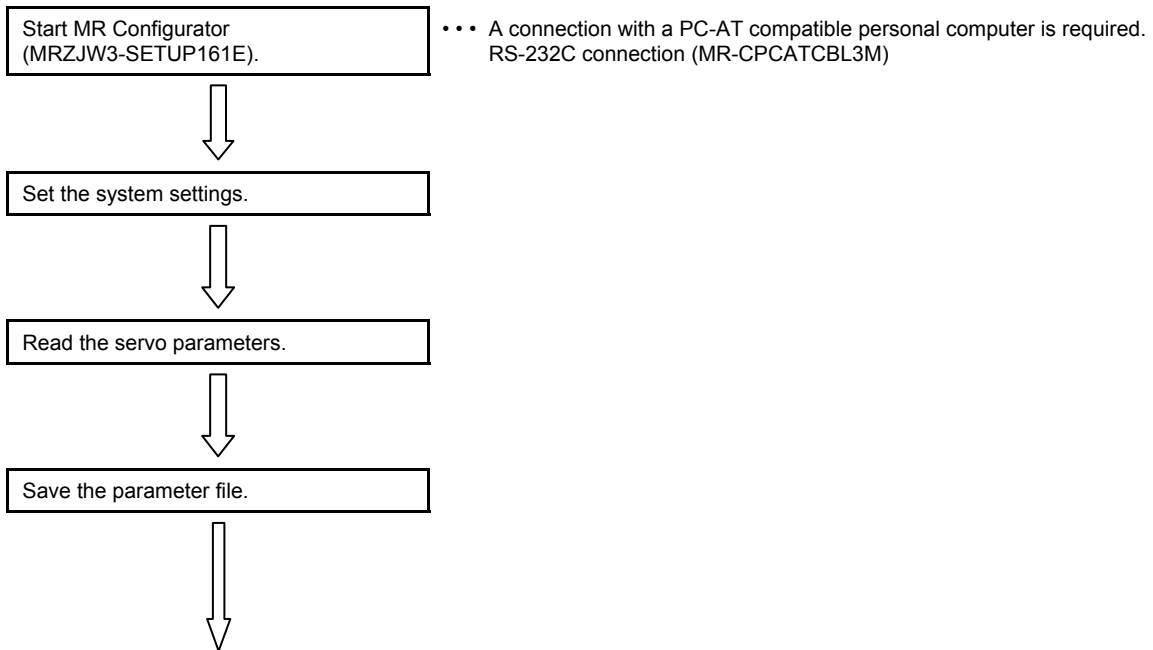
MR Configurator2

"MR Configurator (SETUP161)" can be downloaded from the MITSUBISHI ELECTRIC FA Global Website.

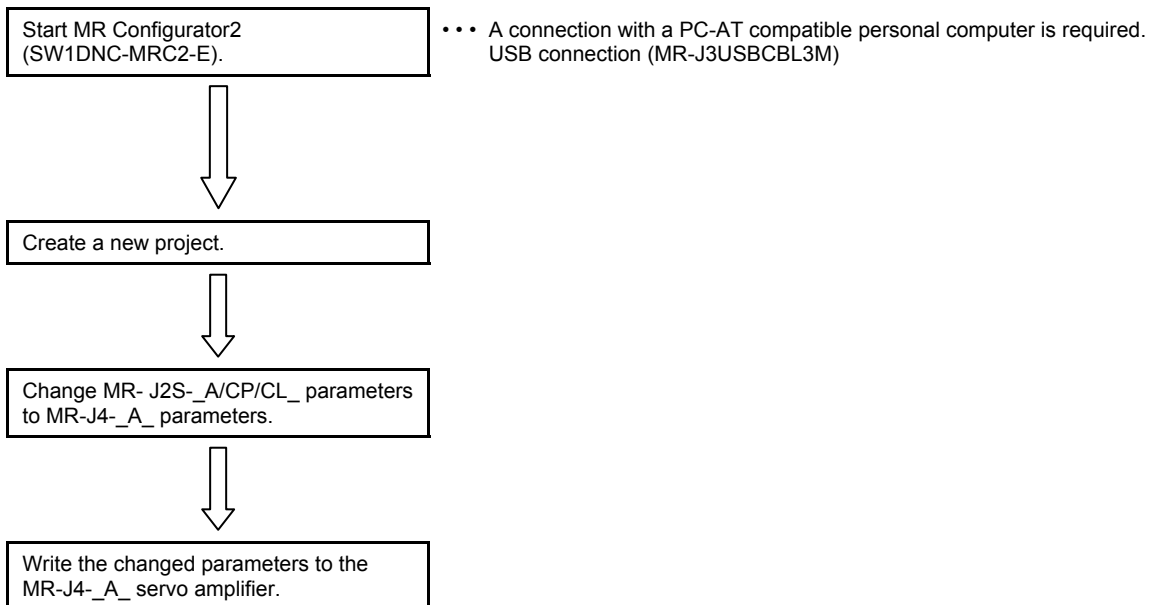
Part 7: Common Reference Material

2.3.2 MR-J2S-_A/CP/CL parameter diversion procedure

- Parameter reading from the servo amplifier MR- J2S-_A/CP/CL_



- Converting the parameters of MR- J2S-_A/CP/CL_ and writing them to the MR-J4-_A_ servo amplifier



Part 7: Common Reference Material

2.3.3 Parameter reading from the servo amplifier MR- J2S- _A/CP/CL_

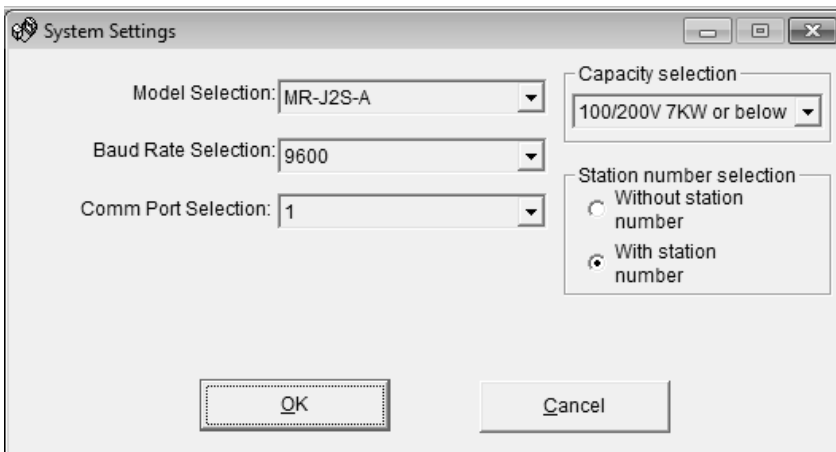
(1) Start MR Configurator (MRZJW3-SETUP161E).



(2) Set the system settings.

Click [System] in the menu to display the system settings dialog box.

Set the Model Selection, Baud Rate Selection, Comm Port Selection, Capacity selection, and Station number selection.

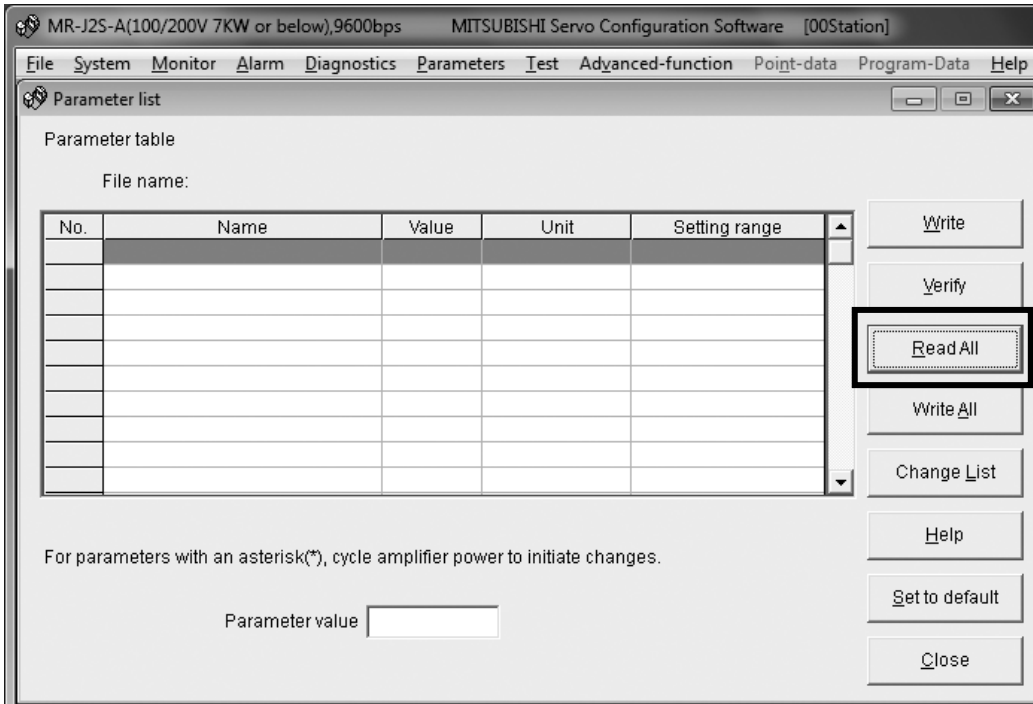


Part 7: Common Reference Material

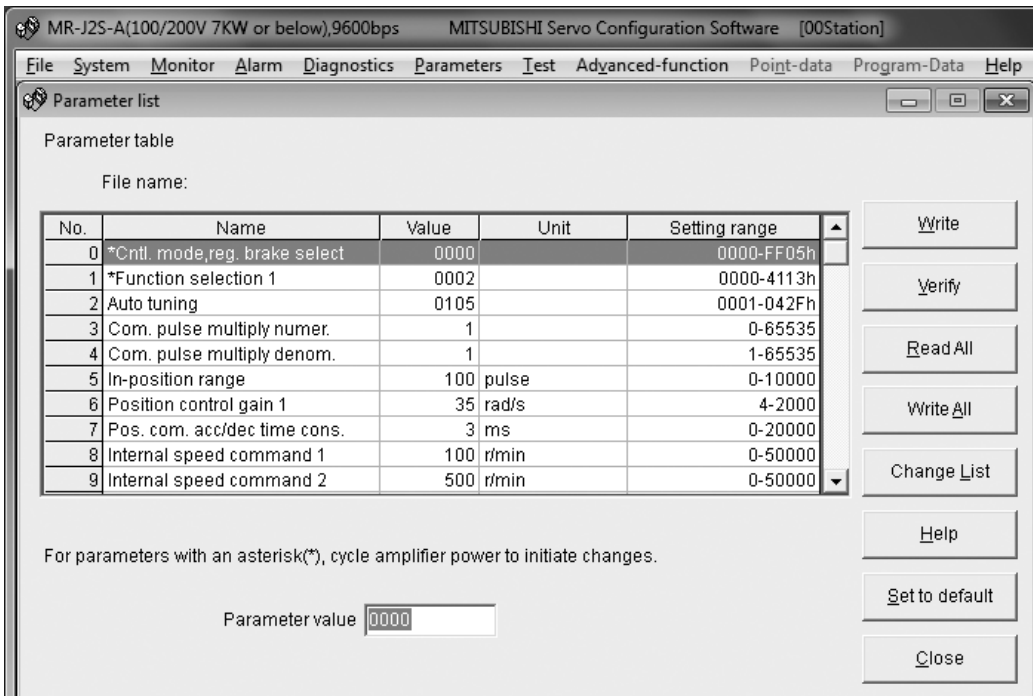
(3) Read the servo parameters.

Click [Parameters] in the menu to display the parameter list screen.

Connect the MR- J2S- _A/CP/CL_ amplifier to a personal computer and click the [Read All] button.



The parameter values are displayed in the list of parameters.



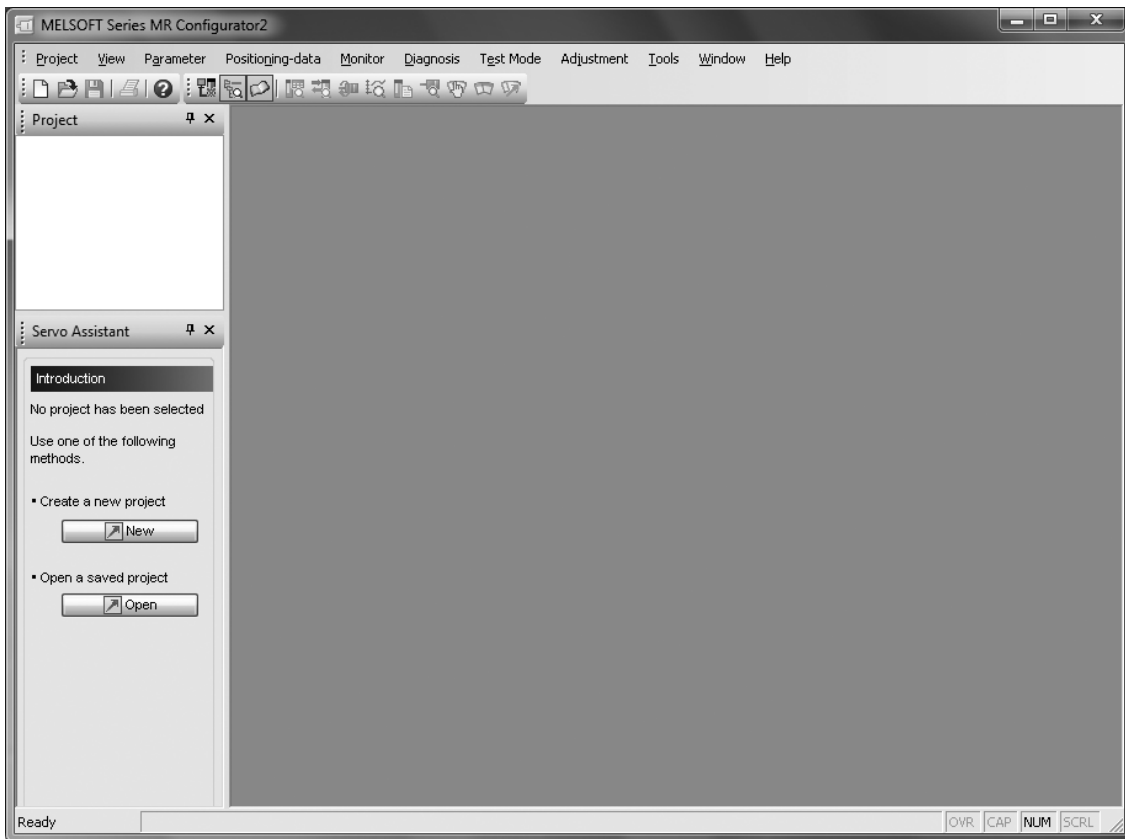
Select [File] - [Save] to save the parameter file.

(The work with MR Configurator (MRZJW3-SETUP161E) is finished.)

Part 7: Common Reference Material

2.3.4 Converting the parameters of MR- J2S-_A/CP/CL_ and writing them to the MR-J4-_A_ servo amplifier

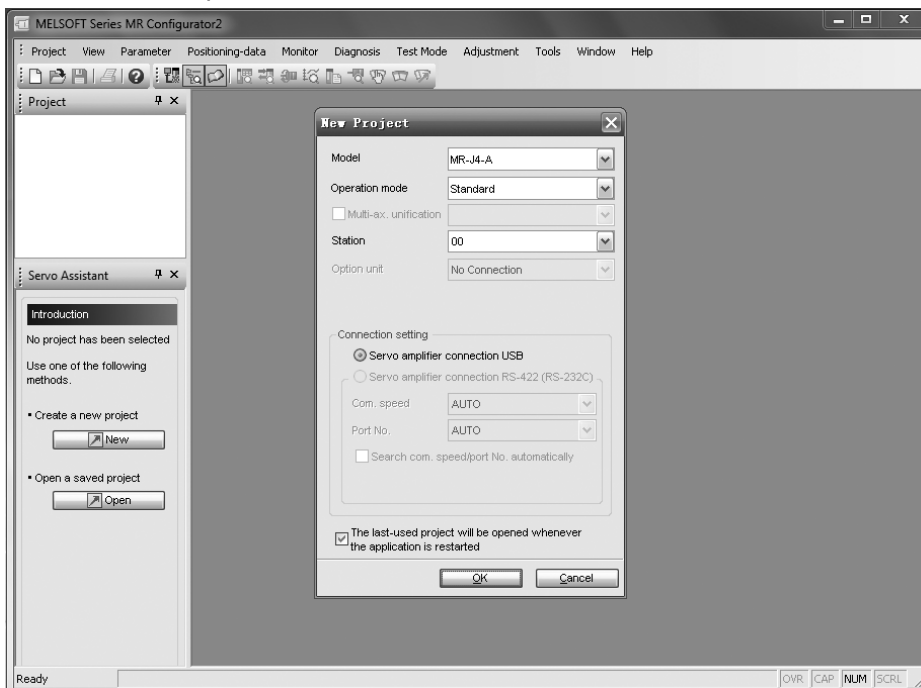
(1) Start MR Configurator2 (SW1DNC-MRC2-E).



(2) Create a new project.

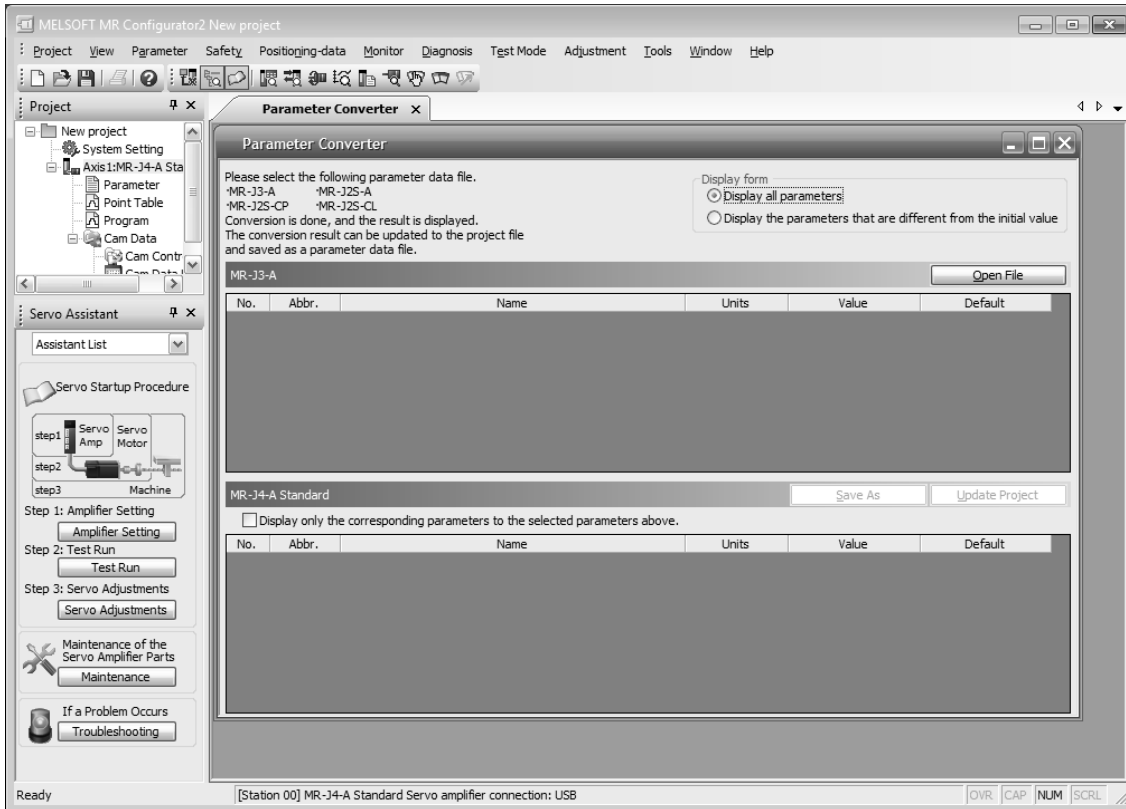
Select [Project] - [New] from the menu to display the New project dialog box.

Set the Model, Operation mode, and Station.

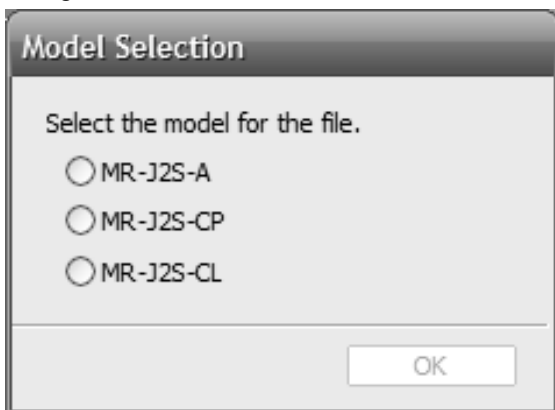


Part 7: Common Reference Material

- (3) Change MR- J2S-_A/CP/CL_ parameters to MR-J4-_A_ parameters.
Select [Parameter] - [Parameter Converter] from the menu to display the parameter converter screen.
Then click the [Open file] button and specify the user file that was saved with MR Configurator (MRZJW3-SETUP161E).

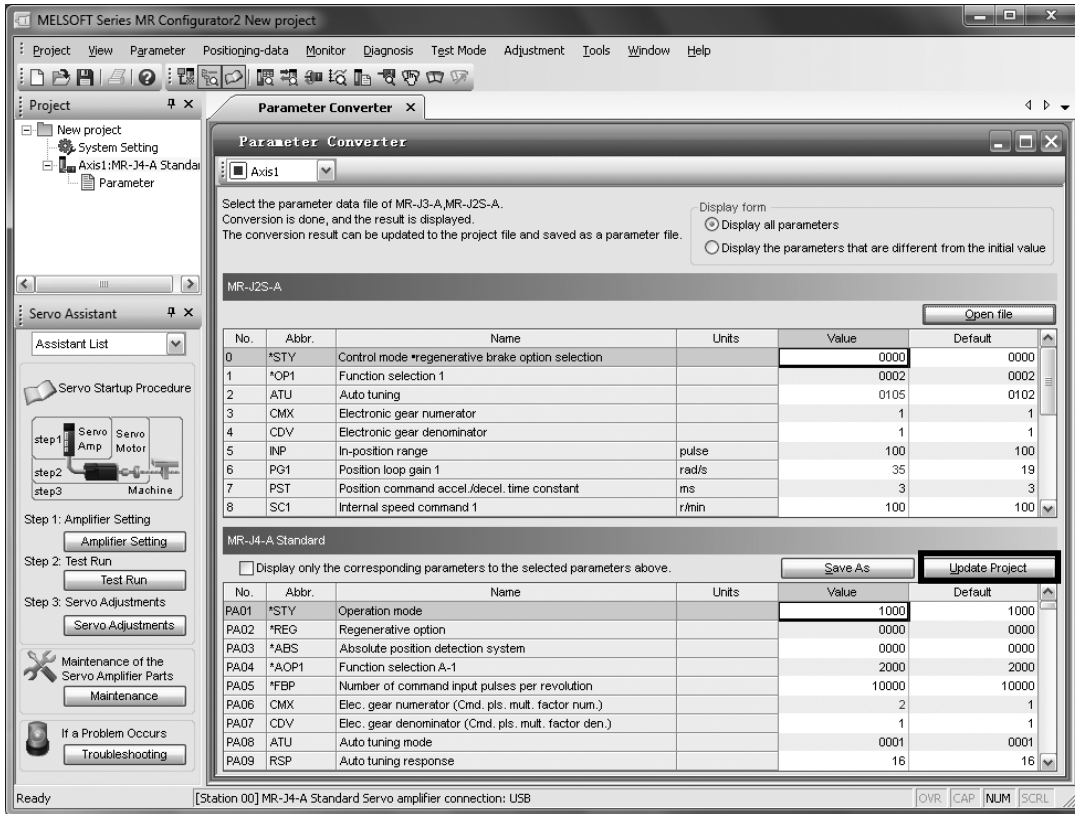


Designate the source model, since the model selection window appears when designating a user file.



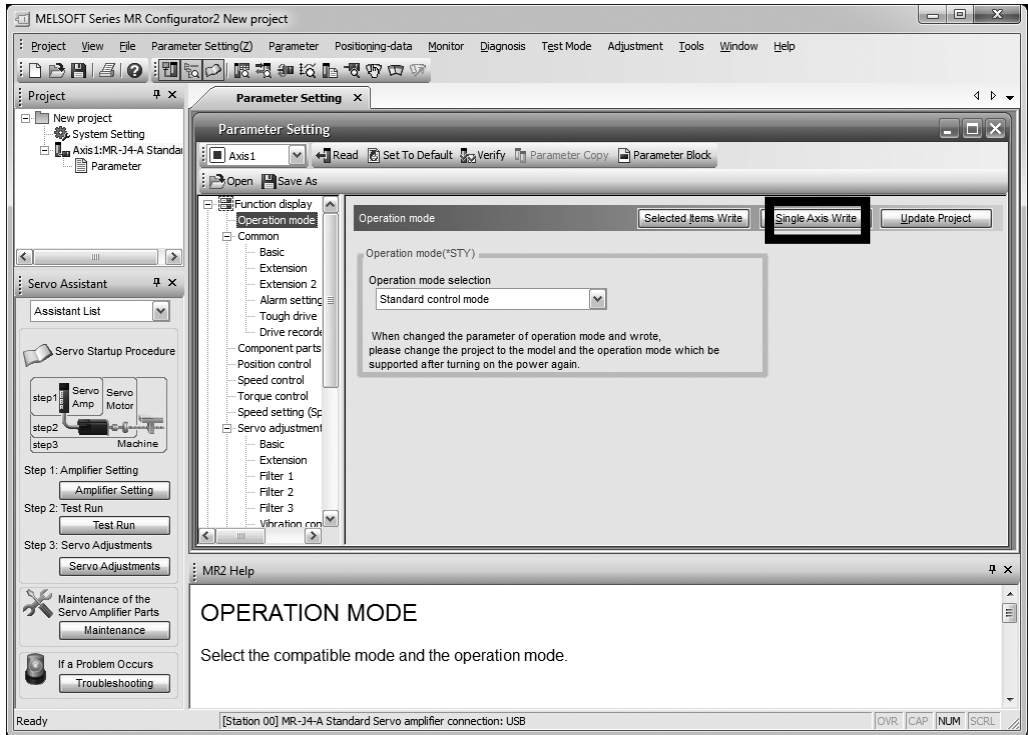
Part 7: Common Reference Material

Click [Update Project].



Part 7: Common Reference Material

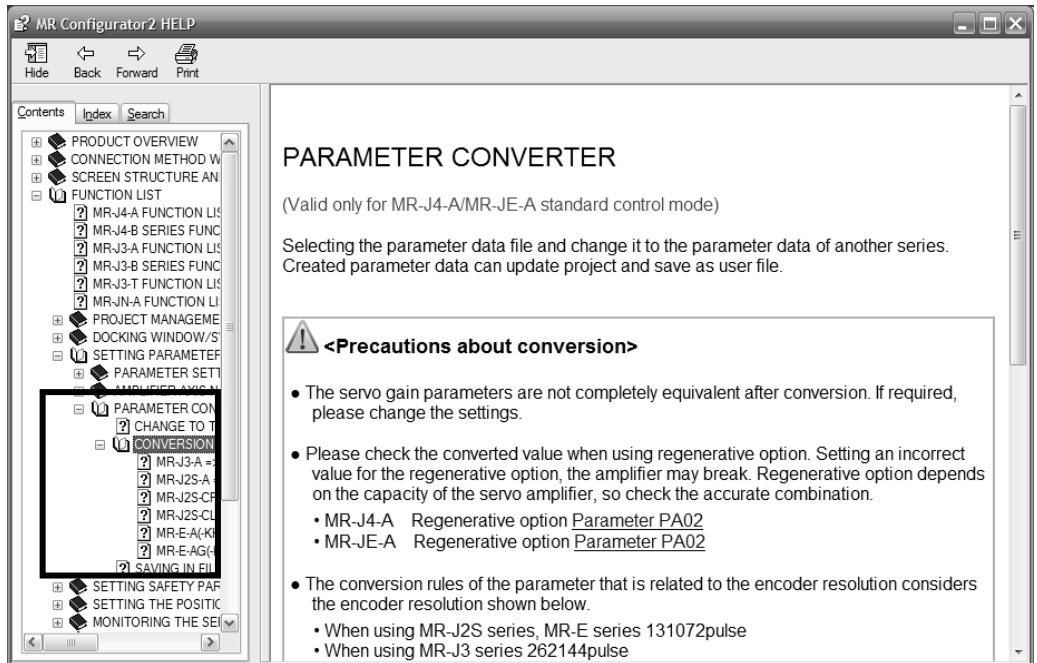
- (4) Write the changed parameters to the MR-J4-_A_ servo amplifier.
 Select [Parameter] - [Parameter Setting] from the menu to display the parameter setting screen.
 Connect the MR-J4-_A_ amplifier to a personal computer and click the [Single Axis Write] button.



The parameter values will be written to the MR-J4-_A_ servo amplifier.

Note: The servo gain is not perfectly equal.

Refer to the MR Configurator2 (SW1DNC-MRC2-E) help for details.



Part 7: Common Reference Material

2.3.5 Conversion rules

(1) Conversion rules (MR-J2S-_A_ => MR-J4-_A_)

The following table shows the parameter conversion rules from MR-J2S-_A_ to MR-J4-_A_.

Parameters not specified in the following table will be set to their initial values.

MR-J2S-_A_			MR-J4-_A_			Conversion rule
No.	Type	Target	No.	Type	Target	
0	Hex	___X	PA01	Hex	___X	The setting value will be maintained.
		XX__	PA02	Hex	__XX	00__ will be changed to __00. 01__ will be changed to __01. 02__ will be changed to __02. 03__ will be changed to __03. 04__ will be changed to __04. 05__ will be changed to __05. 06__ will be changed to __06. 08__ will be changed to __08. 09__ will be changed to __09. Otherwise, __00 will be set.
1	Hex	X___	PA03	Hex	___X	2___ will be changed to ___3. 3___ will be changed to ___2. Otherwise, the setting value will be maintained.
		__X_	PA04	Hex	___X	The setting value will be maintained.
		___X	PD29	Hex	___X	___1 will be changed to ___2. ___2 will be changed to ___4. ___3 will be changed to ___4. Otherwise, the setting value will be maintained.
2	Hex	_X__	PA08	Hex	___X	_4_ will be changed to ___3. Otherwise, the setting value will be maintained.
		___X	PA09	Dec	-	___1 will be changed to 8. ___2 will be changed to 11. ___3 will be changed to 13. ___4 will be changed to 14. ___5 will be changed to 16. ___6 will be changed to 18. ___7 will be changed to 19. ___8 will be changed to 21. ___9 will be changed to 23. ___A will be changed to 25. ___B will be changed to 27. ___C will be changed to 28. ___D will be changed to 30. ___E will be changed to 32. ___F will be changed to 34.
3	Dec	-	PA05	Dec	-	(1) When the setting value of No. 3 is 0
4	Dec	-	PA06	Dec	-	(1-1) When the setting value of No. 4 is 1000 to 50000 PA05: The setting value of No. 4 will be maintained. PA06: The initial value will be set. PA07: The initial value will be set. PA21: 1 ___ will be set.
			PA07	Dec	-	(1-2) When the setting value of No. 4 is other than 1000 to 50000 PA05: The initial value will be set. PA06: 262144 will be set. PA07: The setting value of No. 4 will be maintained. PA21: 2 ___ will be set.
4	Dec	-	PA21	Hex	X___	(2) When the setting value of No. 3 is other than 0 PA05: The initial value will be set. PA06: Twice the setting value of No. 3 will be set. PA07: The setting value of No. 4 will be maintained. PA21: 2 ___ will be set.
5	Dec	-	PA10	Dec	-	The setting value will be maintained.
6	Dec	-	PB07	Dec	-	The setting value will be multiplied by 2/3 and one decimal place will be added.
7	Dec	-	PB03	Dec	-	The setting value will be maintained.

Hex: hexadecimal parameter; Dec: decimal parameter

Part 7: Common Reference Material

MR-J2S-_A_			MR-J4-_A_			Conversion rule
No.	Type	Target	No.	Type	Target	
8	Dec	-	PC05	Dec	-	The setting value will be maintained.
9	Dec	-	PC06	Dec	-	The setting value will be maintained.
10	Dec	-	PC07	Dec	-	The setting value will be maintained.
11	Dec	-	PC01	Dec	-	The setting value will be maintained.
12	Dec	-	PC02	Dec	-	The setting value will be maintained.
13	Dec	-	PC03	Dec	-	The setting value will be maintained.
14	Dec	-	PC04	Dec	-	The setting value will be maintained.
15	Dec	-	PC20	Dec	-	The setting value will be maintained.
16	Hex	___X	PC21	Hex	__X_	The setting value will be maintained.
		__X_	PC18	Hex	___X	The setting value will be maintained.
		X___	PC21	Hex	_X__	The setting value will be maintained.
17	Hex	___X	PC14	Hex	___X	___9 will be changed to ___8. ___A will be changed to ___9. ___B will be changed to ___D. Otherwise, the setting value will be maintained.
		_X__	PC15	Hex	___X	_9__ will be changed to ___8. _A__ will be changed to ___9. _B__ will be changed to ___D. Otherwise, the setting value will be maintained.
18	Hex	___X	PC36	Hex	___X	The setting value will be maintained.
		__X_	PC36	Hex	_X__	The setting value will be maintained.
20	Hex	_X__	PB24	Hex	___X	The setting value will be maintained.
		___X	PC22	Hex	___X	The setting value will be maintained.
		X___	PC22	Hex	X___	The setting value will be maintained.
		__X_	PC23	Hex	___X	The setting value will be maintained.
21	Hex	__XX	PA13	Hex	__XX	The setting value will be maintained.
22	Hex	_X__	PC23	Hex	_X__	The setting value will be maintained.
		___X	PD30	Hex	___X	The setting value will be maintained.
23	Dec	-	PB04	Dec	-	The setting value will be maintained.
24	Dec	-	PC17	Dec	-	The setting value will be maintained.
25	Dec	-	PC12	Dec	-	The setting value will be maintained.
26	Dec	-	PC13	Dec	-	One decimal place will be added.
27	Dec	-	PA15	Dec	-	(1) When the setting value of No. 54 is 1___ 32 times the setting value of No. 27 will be set. (2) When the setting value of No. 54 is other than 1___ the setting value of No. 27 will be maintained.
54	Hex	X___				
28	Dec	-	PA11	Dec	-	One decimal place will be added.
		-	PA12	Dec	-	One decimal place will be added.
33	Dec	-	PC16	Dec	-	The setting value will be maintained.
34	Dec	-	PB06	Dec	-	One decimal place will be added.
35	Dec	-	PB08	Dec	-	One decimal place will be added.
37	Dec	-	PB09	Dec	-	The setting value will be maintained.
38	Dec	-	PB10	Dec	-	One decimal place will be added.
39	Dec	-	PB11	Dec	-	The setting value will be maintained.
41	Hex	___X	PD01	Hex	___X	___0 will be changed to ___0. ___1 will be changed to ___4. Otherwise, the initial value will be set.
		XX	PD01	Hex	_X__	_00_ will be changed to _0__. _01_ will be changed to _4__. _10_ will be changed to _8__. _11_ will be changed to _C__. Otherwise, the initial value will be set.

Hex: hexadecimal parameter; Dec: decimal parameter

Part 7: Common Reference Material

MR-J2S-_A_			MR-J4-_A_			Conversion rule
No.	Type	Target	No.	Type	Target	
42	Hex	-	PD29	Hex	-	Displayed due to the nature of the conversion rules.
		__X_	PD32	Hex	___X	The setting value will be maintained.
49	Hex	___X	PD34	Hex	___X	The setting value will be maintained.
51	Hex	_X__	PD30	Hex	__X_	The setting value will be maintained.
54	Hex	___X	PA14	Dec	-	The hexadecimal number is converted to decimal.
		XX__	PC19	Hex	__XX	The setting value will be maintained.
55	Hex	__X_	PB25	Hex	__X_	The setting value will be maintained.
58	Hex	__XX	PB01	Hex	___X	__00 will be changed to ___0. Otherwise, ___2 will be set.
		__XX	PB13	Dec	-	__00 will be changed to 4500. __01 will be changed to 4500. __02 will be changed to 2250. __03 will be changed to 1500. __04 will be changed to 1125. __05 will be changed to 900. __06 will be changed to 750. __07 will be changed to 643. __08 will be changed to 563. __09 will be changed to 500. __0A will be changed to 450. __0B will be changed to 409. __0C will be changed to 375. __0D will be changed to 346. __0E will be changed to 321. __0F will be changed to 300. __10 will be changed to 281. __11 will be changed to 265. __12 will be changed to 250. __13 will be changed to 237. __14 will be changed to 225. __15 will be changed to 214. __16 will be changed to 205. __17 will be changed to 196. __18 will be changed to 188. __19 will be changed to 180. __1A will be changed to 173. __1B will be changed to 167. __1C will be changed to 160. __1D will be changed to 155. __1E will be changed to 150. __1F will be changed to 145.
		_X__	PB14	Hex	__X_	The setting value will be maintained.

Hex: hexadecimal parameter; Dec: decimal parameter

Part 7: Common Reference Material

MR-J2S- _A_			MR-J4- _A_			Conversion rule
No.	Type	Target	No.	Type	Target	
59	Hex	__ XX	PB15	Dec	-	__ 00 will be changed to 4500. __ 01 will be changed to 4500. __ 02 will be changed to 2250. __ 03 will be changed to 1500. __ 04 will be changed to 1125. __ 05 will be changed to 900. __ 06 will be changed to 750. __ 07 will be changed to 643. __ 08 will be changed to 563. __ 09 will be changed to 500. __ 0A will be changed to 450. __ 0B will be changed to 409. __ 0C will be changed to 375. __ 0D will be changed to 346. __ 0E will be changed to 321. __ 0F will be changed to 300. __ 10 will be changed to 281. __ 11 will be changed to 265. __ 12 will be changed to 250. __ 13 will be changed to 237. __ 14 will be changed to 225. __ 15 will be changed to 214. __ 16 will be changed to 205. __ 17 will be changed to 196. __ 18 will be changed to 188. __ 19 will be changed to 180. __ 1A will be changed to 173. __ 1B will be changed to 167. __ 1C will be changed to 160. __ 1D will be changed to 155. __ 1E will be changed to 150. __ 1F will be changed to 145.
		__ XX	PB16	Hex	___ X	__ 00 will be changed to ___ 0. Otherwise, ___ 1 will be set.
		_ X _	PB16	Hex	_ X _	The setting value will be maintained.
60	Hex	_ X _	PB18	Dec	-	__ 1 _ will be changed to 18000. Otherwise, the initial value will be set.
		__ X _	PB23	Hex	_ X _	The setting value will be maintained.
61	Dec	-	PB29	Dec	-	One decimal place will be added.
35	Dec	-	PB30	Dec	-	The value will be $(\text{No. 35}) \times (\text{No. 62}) \div 100$. One decimal place will be added.
62	Dec	-				
37	Dec	-	PB31	Dec	-	The value will be $(\text{No. 37}) \times (\text{No. 63}) \div 100$.
63	Dec	-				
38	Dec	-	PB32	Dec	-	One decimal place will be added to $(\text{No. 38}) \times (\text{No. 64}) \div 100$.
64	Dec	-				
65	Hex	___ X	PB26	Hex	___ X	The setting value will be maintained.
66	Dec	-	PB27	Dec	-	The setting value will be maintained.
67	Dec	-	PB28	Dec	-	The setting value will be maintained.
69	Dec	-	PC32	Dec	-	The setting value will be maintained.
70	Dec	-	PC33	Dec	-	The setting value will be maintained.
71	Dec	-	PC34	Dec	-	The setting value will be maintained.
72	Dec	-	PC08	Dec	-	The setting value will be maintained.
73	Dec	-	PC09	Dec	-	The setting value will be maintained.
74	Dec	-	PC10	Dec	-	The setting value will be maintained.
75	Dec	-	PC11	Dec	-	The setting value will be maintained.
76	Dec	-	PC35	Dec	-	One decimal place will be added.
-	-	-	PB33	Dec	-	100.0 will be set.
-	-	-	PB34	Dec	-	100.0 will be set.

Hex: hexadecimal parameter; Dec: decimal parameter

Part 7: Common Reference Material

(2) Conversion rules (MR-J2S-CP_ => MR-J4-A_)

The following table shows the parameter conversion rules from MR-J2S-CP_ to MR-J4-A_.
Parameters not specified in the following table will be set to their initial values.

MR-J2S-CP_			MR-J4-A_			Conversion rule
No.	Type	Target	No.	Type	Target	
0	Hex	__X_	PT01	Hex	___X	__2 will be changed to __0. Otherwise, the setting value will be maintained.
		XX__	PA02	Hex	__XX	00__ will be changed to __00. 01__ will be changed to __01. 02__ will be changed to __02. 03__ will be changed to __03. 04__ will be changed to __04. 05__ will be changed to __05. 06__ will be changed to __06. 08__ will be changed to __08. 09__ will be changed to __09. Otherwise, __00 will be set.
1	Hex	___X	PA14	Dec	-	The hexadecimal number is converted to decimal.
		__X_	PT03	Hex	___X	The setting value will be maintained.
		_X__		Hex	__X_	The setting value will be maintained.
		X___	PT02	Hex	___X	The setting value will be maintained.
2	Hex	___X	PD29	Hex	___X	___5 will be changed to ___4. Otherwise, the setting value will be maintained.
		X___	PA03	Hex	___X	The setting value will be maintained.
3	Hex	___X	PA09	Dec	-	___1 will be changed to 8. ___2 will be changed to 11. ___3 will be changed to 13. ___4 will be changed to 14. ___5 will be changed to 16. ___6 will be changed to 18. ___7 will be changed to 19. ___8 will be changed to 21. ___9 will be changed to 23. ___A will be changed to 25. ___B will be changed to 27. ___C will be changed to 28. ___D will be changed to 30. ___E will be changed to 32. ___F will be changed to 34.
		_X__				PA08
4	Dec	-	PA06	Dec	-	(1) When the setting value of No. 4 is _0__ 131072 will be set. (2) When the setting value of No. 4 is other than 0 the setting value will be maintained.
5	Dec	-	PA07	Dec	-	The setting value will be maintained.
6	Dec	-	PA10	Dec	-	The setting value will be maintained.
7	Dec	-	PB07	Dec	-	The setting value will be multiplied by 2/3 and one decimal place will be added.
8	Hex	___X	PT04	Hex	___X	The setting value will be maintained.
		__X_		Hex	__X_	The setting value will be maintained.
		_X__	PT29	Hex	___X	The setting value will be maintained.
9	Dec	-	PT05	Dec	-	The setting value will be maintained.
10	Dec	-	PT06	Dec	-	The setting value will be maintained.
11	Dec	-	PT07	Dec	-	The setting value will be maintained.
12	Dec	-	PT12	Dec	-	The setting value will be maintained.
13	Dec	-	PT13	Dec	-	The setting value will be maintained.

Hex: hexadecimal parameter; Dec: decimal parameter

Part 7: Common Reference Material

MR-J2S-CP_			MR-J4-A_			Conversion rule
No.	Type	Target	No.	Type	Target	
14	Dec	-	PC03	Dec	-	The setting value will be maintained.
15	Dec	-	PC20	Dec	-	The setting value will be maintained.
16	Hex	___X	PC21	Hex	__X_	___4 will be changed to ___6. Otherwise, the setting value will be maintained.
		__X_	PC18	Hex	___X	The setting value will be maintained.
		X___	PC21	Hex	_X__	The setting value will be maintained.
17	Hex	___X	PC14	Hex	___X	___5 will be changed to ___E. ___9 will be changed to ___8. ___A will be changed to ___9. ___B will be changed to ___D. Otherwise, the setting value will be maintained.
		_X__	PC15	Hex	___X	_5__ will be changed to ___E. _9__ will be changed to ___8. _A__ will be changed to ___9. _B__ will be changed to ___D. Otherwise, the setting value will be maintained.
18	Hex	__XX	PC36	Hex	__XX	__00 will be changed to __21. __01 will be changed to __22. __02 will be changed to __23. __03 will be changed to __24. __04 will be changed to __00. __05 will be changed to __01. __06 will be changed to __02. __07 will be changed to __27. __08 will be changed to __06. __09 will be changed to __07. __0A will be changed to __08. __0B will be changed to __09. __0C will be changed to __10. __0D will be changed to __0B. __0E will be changed to __0C. __0F will be changed to __0D. __10 will be changed to __0E. __11 will be changed to __0F.
20	Hex	_X__	PB24	Hex	___X	The setting value will be maintained.
22	Hex	___X	PD30	Hex	___X	The setting value will be maintained.
24	Dec	-	PB04	Dec	-	The setting value will be maintained.
27	Dec	-	PA15	Dec	-	(1) When the setting value of No. 58 is 1 ___ 32 times the setting value of No. 27 will be set. (2) When the setting value of No. 58 is other than 1 ___ the setting value of No. 27 will be maintained.
58	Hex	X___				
28	Dec	-	PA11	Dec	-	One decimal place will be added.
		-	PA12	Dec	-	One decimal place will be added.
29	Dec	-	PC35	Dec	-	One decimal place will be added.
30	Dec	-	PT14	Dec	-	The setting value will be maintained.
33	Dec	-	PC16	Dec	-	The setting value will be maintained.
34	Dec	-	PB06	Dec	-	One decimal place will be added.
35	Dec	-	PB08	Dec	-	One decimal place will be added.
37	Dec	-	PB09	Dec	-	The setting value will be maintained.
38	Dec	-	PB10	Dec	-	One decimal place will be added.
39	Dec	-	PB11	Dec	-	The setting value will be maintained.
42	Dec	-	PT08	Dec	-	The setting value will be maintained.
43	Dec	-	PT09	Dec	-	The setting value will be maintained.
44	Dec	-	PT10	Dec	-	The setting value will be maintained.

Hex: hexadecimal parameter; Dec: decimal parameter

Part 7: Common Reference Material

MR-J2S-CP_			MR-J4-A_			Conversion rule
No.	Type	Target	No.	Type	Target	
45	Dec	-	PT11	Dec	-	The setting value will be maintained.
46	Dec	-	PT15	Hex	-	The setting value will be maintained.
47	Dec	-	PT16	Hex	-	The setting value will be maintained.
48	Dec	-	PT17	Dec	-	The setting value will be maintained.
49	Dec	-	PT18	Dec	-	The setting value will be maintained.
50	Dec	-	PT19	Dec	-	The setting value will be maintained.
51	Dec	-	PC20	Dec	-	The setting value will be maintained.
52	Dec	-	PT21	Dec	-	The setting value will be maintained.
53	Dec	-	PT22	Dec	-	The setting value will be maintained.
55	Hex	_ X _	PD30	Hex	_ _ X _	The setting value will be maintained.
58	Hex	_ X _	PC19	Hex	_ _ _ X	The setting value will be maintained.
		X _ _	PC19	Hex	_ _ X _	The setting value will be maintained.
59	Hex	_ X _	PD33	Hex	_ X _	The setting value will be maintained.
		X _ _	PD34	Hex	_ _ _ X	The setting value will be maintained.
61	Hex	_ _ XX	PB01	Hex	_ _ _ X	_ _ 0 0 will be changed to _ _ _ 0. Otherwise, _ _ _ 2 will be set.
		_ _ XX	PB13	Dec	-	_ _ 0 0 will be changed to 4500. _ _ 0 1 will be changed to 4500. _ _ 0 2 will be changed to 2250. _ _ 0 3 will be changed to 1500. _ _ 0 4 will be changed to 1125. _ _ 0 5 will be changed to 900. _ _ 0 6 will be changed to 750. _ _ 0 7 will be changed to 643. _ _ 0 8 will be changed to 563. _ _ 0 9 will be changed to 500. _ _ 0 A will be changed to 450. _ _ 0 B will be changed to 409. _ _ 0 C will be changed to 375. _ _ 0 D will be changed to 346. _ _ 0 E will be changed to 321. _ _ 0 F will be changed to 300. _ _ 1 0 will be changed to 281. _ _ 1 1 will be changed to 265. _ _ 1 2 will be changed to 250. _ _ 1 3 will be changed to 237. _ _ 1 4 will be changed to 225. _ _ 1 5 will be changed to 214. _ _ 1 6 will be changed to 205. _ _ 1 7 will be changed to 196. _ _ 1 8 will be changed to 188. _ _ 1 9 will be changed to 180. _ _ 1 A will be changed to 173. _ _ 1 B will be changed to 167. _ _ 1 C will be changed to 160. _ _ 1 D will be changed to 155. _ _ 1 E will be changed to 150. _ _ 1 F will be changed to 145.
		_ X _	PB14	Hex	_ _ X _	The setting value will be maintained.

Hex: hexadecimal parameter; Dec: decimal parameter

Part 7: Common Reference Material

MR-J2S-CP_			MR-J4-A_			Conversion rule
No.	Type	Target	No.	Type	Target	
62	Hex	_X_	PB15	Dec	-	__ 0 0 will be changed to 4500. __ 0 1 will be changed to 4500. __ 0 2 will be changed to 2250. __ 0 3 will be changed to 1500. __ 0 4 will be changed to 1125. __ 0 5 will be changed to 900. __ 0 6 will be changed to 750. __ 0 7 will be changed to 643. __ 0 8 will be changed to 563. __ 0 9 will be changed to 500. __ 0 A will be changed to 450. __ 0 B will be changed to 409. __ 0 C will be changed to 375. __ 0 D will be changed to 346. __ 0 E will be changed to 321. __ 0 F will be changed to 300. __ 1 0 will be changed to 281. __ 1 1 will be changed to 265. __ 1 2 will be changed to 250. __ 1 3 will be changed to 237. __ 1 4 will be changed to 225. __ 1 5 will be changed to 214. __ 1 6 will be changed to 205. __ 1 7 will be changed to 196. __ 1 8 will be changed to 188. __ 1 9 will be changed to 180. __ 1 A will be changed to 173. __ 1 B will be changed to 167. __ 1 C will be changed to 160. __ 1 D will be changed to 155. __ 1 E will be changed to 150. __ 1 F will be changed to 145.
		__XX	PB16	Hex	___X	__ 0 0 will be changed to ___ 0. Otherwise, ___ 1 will be set.
		X		Hex	__X_	The setting value will be maintained.
63	Hex	__X_	PB18	Dec	-	__ 1 _ will be changed to 18000.
		__X_	PB23	Hex	__X_	The setting value will be maintained.
64	Dec	-	PB29	Dec	-	One decimal place will be added.
35	Dec	-	PB30	Dec	-	To the of (No. 35) × (No. 65) ÷ 100: One decimal place will be added.
65	Dec	-				
37	Dec	-	PB31	Dec	-	The value will be (No. 37) × (No. 66) ÷ 100.
66	Dec	-				
38	Dec	-	PB32	Dec	-	To the value of (No. 38) × (No. 67) ÷ 100: One decimal place will be added.
67	Dec	-				
68	Hex	___X	PB26	Hex	___X	The setting value will be maintained.
69	Dec	-	PB27	Dec	-	The setting value will be maintained.
70	Dec	-	PB28	Dec	-	The setting value will be maintained.
-	-	-	PA21	Hex	X___	3 ___ will be set.
-	-	-	PB33	Dec	-	100.0 will be set.
-	-	-	PB34	Dec	-	100.0 will be set.

Hex: hexadecimal parameter; Dec: decimal parameter

Part 7: Common Reference Material

(3) Conversion rules (MR-J2S-CL_ => MR-J4-A_)

The following table shows the parameter conversion rules from MR-J2S-CL_ to MR-J4-A_.

Parameters not specified in the following table will be set to their initial values.

MR-J2S-CL_			MR-J4-A_			Conversion rule
No.	Type	Target	No.	Type	Target	
0	Hex	___X	PT02	Hex	___X	The setting value will be maintained.
		X	PA02	Hex	___X	__2 will be changed to ___0. Otherwise, the setting value will be maintained.
		XX__			__XX	00__ will be changed to __00. 01__ will be changed to __01. 02__ will be changed to __02. 03__ will be changed to __03. 04__ will be changed to __04. 05__ will be changed to __05. 06__ will be changed to __06. 08__ will be changed to __08. 09__ will be changed to __09. Otherwise, __00 will be set.
1	Hex	___X	PA14	Dec	-	The hexadecimal number is converted to decimal.
		___X_	PT03	Hex	___X	The setting value will be maintained.
		_X__		Hex	_X_	The setting value will be maintained.
		X___	PT02	Hex	___X	The setting value will be maintained.
2	Hex	___X	PD29	Hex	___X	___5 will be changed to ___4. Otherwise, the setting value will be maintained.
		X___	PA03	Hex	___X	The setting value will be maintained.
3	Hex	___X	PA09	Dec	-	___1 will be changed to 8. ___2 will be changed to 11. ___3 will be changed to 13. ___4 will be changed to 14. ___5 will be changed to 16. ___6 will be changed to 18. ___7 will be changed to 19. ___8 will be changed to 21. ___9 will be changed to 23. ___A will be changed to 25. ___B will be changed to 27. ___C will be changed to 28. ___D will be changed to 30. ___E will be changed to 32. ___F will be changed to 34.
		_X__	PA08	Hex	___X	_4__ will be changed to ___3. Otherwise, the setting value will be maintained.
4	Dec	-	PA06	Dec	-	(1) When the setting value of No. 4 is _0__ 131072 will be set. (2) When the setting value of No. 4 is other than 0 the setting value will be maintained.
5	Dec	-	PA07	Dec	-	The setting value will be maintained.
6	Dec	-	PA10	Dec	-	The setting value will be maintained.
7	Dec	-	PB07	Dec	-	The setting value will be multiplied by 2/3 and one decimal place will be added.
8	Hex	___X	PT04	Hex	___X	The setting value will be maintained.
		___X_		Hex	_X_	The setting value will be maintained.
		_X__	PT29	Hex	___X	The setting value will be maintained.
9	Dec	-	PT05	Dec	-	The setting value will be maintained.
10	Dec	-	PT06	Dec	-	The setting value will be maintained.
11	Dec	-	PT07	Dec	-	The setting value will be maintained.
12	Dec	-	PT12	Dec	-	The setting value will be maintained.

Hex: hexadecimal parameter; Dec: decimal parameter

Part 7: Common Reference Material

MR-J2S-CL_			MR-J4-A_			Conversion rule
No.	Type	Target	No.	Type	Target	
13	Dec	-	PT13	Dec	-	The setting value will be maintained.
14	Dec	-	PC03	Dec	-	The setting value will be maintained.
15	Dec	-	PC20	Dec	-	The setting value will be maintained.
16	Hex	___X	PC21	Hex	__X_	___4 will be changed to ___6. Otherwise, the setting value will be maintained.
		__X_	PC18	Hex	___X	The setting value will be maintained.
		X___	PC21	Hex	_X__	The setting value will be maintained.
17	Hex	___X	PC14	Hex	___X	___5 will be changed to ___E. ___9 will be changed to ___8. ___A will be changed to ___9. ___B will be changed to ___D. Otherwise, the setting value will be maintained.
		_X__	PC15	Hex	___X	_5_ will be changed to ___E. _9_ will be changed to ___8. _A_ will be changed to ___9. _B_ will be changed to ___D. Otherwise, the setting value will be maintained.
18	Hex	__XX	PC36	Hex	__XX	__00 will be changed to __21. __01 will be changed to __22. __02 will be changed to __23. __03 will be changed to __24. __04 will be changed to __00. __05 will be changed to __01. __06 will be changed to __02. __07 will be changed to __27. __08 will be changed to __06. __09 will be changed to __07. __0A will be changed to __08. __0B will be changed to __09. __0C will be changed to __10. __0D will be changed to __0B. __0E will be changed to __0C. __0F will be changed to __0D. __10 will be changed to __0E. __11 will be changed to __0F.
20	Hex	_X__	PB24	Hex	___X	The setting value will be maintained.
22	Hex	___X	PD30	Hex	___X	The setting value will be maintained.
24	Dec	-	PB04	Dec	-	The setting value will be maintained.
27	Dec	-	PA15	Dec	-	(1) When the setting value of No. 58 is 1 ___ 32 times the setting value of No. 27 will be set. (2) When the setting value of No. 58 is other than 1 ___ the setting value of No. 27 will be maintained.
58	Hex	X___				
28	Dec	-	PA11	Dec	-	One decimal place will be added.
		-	PA12	Dec	-	One decimal place will be added.
29	Dec	-	PC35	Dec	-	One decimal place will be added.
30	Dec	-	PT14	Dec	-	The setting value will be maintained.
33	Dec	-	PC16	Dec	-	The setting value will be maintained.
34	Dec	-	PB06	Dec	-	One decimal place will be added.
35	Dec	-	PB08	Dec	-	One decimal place will be added.
37	Dec	-	PB09	Dec	-	The setting value will be maintained.
38	Dec	-	PB10	Dec	-	One decimal place will be added.
39	Dec	-	PB11	Dec	-	The setting value will be maintained.
40	Dec	-	PC01	Dec	-	The setting value will be maintained.
			PC02	Dec	-	The setting value will be maintained.

Hex: hexadecimal parameter; Dec: decimal parameter

Part 7: Common Reference Material

MR-J2S-CL_			MR-J4-A_			Conversion rule
No.	Type	Target	No.	Type	Target	
41	Dec	-	PC30	Dec	-	The setting value will be maintained.
			PC31	Dec	-	The setting value will be maintained.
42	Dec	-	PT08	Dec	-	The setting value will be maintained.
43	Dec	-	PT09	Dec	-	The setting value will be maintained.
44	Dec	-	PT10	Dec	-	The setting value will be maintained.
45	Dec	-	PT11	Dec	-	The setting value will be maintained.
46	Dec	-	PT15	Hex	-	The setting value will be maintained.
47	Dec	-	PT16	Hex	-	The setting value will be maintained.
48	Dec	-	PT17	Dec	-	The setting value will be maintained.
49	Dec	-	PT18	Dec	-	The setting value will be maintained.
50	Dec	-	PT19	Dec	-	The setting value will be maintained.
51	Dec	-	PC20	Dec	-	The setting value will be maintained.
52	Dec	-	PT21	Dec	-	The setting value will be maintained.
53	Dec	-	PT22	Dec	-	The setting value will be maintained.
55	Hex	_X_	PD30	Hex	_X_	The setting value will be maintained.
58	Hex	_X_	PC19	Hex	_X_	The setting value will be maintained.
		X_	PC19	Hex	_X_	The setting value will be maintained.
59	Hex	_X_	PD33	Hex	_X_	The setting value will be maintained.
		X_	PD34	Hex	_X_	The setting value will be maintained.
61	Hex	_X_	PB01	Hex	_X_	_X_ 0 will be changed to _X_ 0. Otherwise, _X_ 2 will be set.
		X	PB13	Dec	-	_X_ 0 will be changed to 4500. _X_ 1 will be changed to 4500. _X_ 2 will be changed to 2250. _X_ 3 will be changed to 1500. _X_ 4 will be changed to 1125. _X_ 5 will be changed to 900. _X_ 6 will be changed to 750. _X_ 7 will be changed to 643. _X_ 8 will be changed to 563. _X_ 9 will be changed to 500. _X_ 0 A will be changed to 450. _X_ 0 B will be changed to 409. _X_ 0 C will be changed to 375. _X_ 0 D will be changed to 346. _X_ 0 E will be changed to 321. _X_ 0 F will be changed to 300. _X_ 1 0 will be changed to 281. _X_ 1 1 will be changed to 265. _X_ 1 2 will be changed to 250. _X_ 1 3 will be changed to 237. _X_ 1 4 will be changed to 225. _X_ 1 5 will be changed to 214. _X_ 1 6 will be changed to 205. _X_ 1 7 will be changed to 196. _X_ 1 8 will be changed to 188. _X_ 1 9 will be changed to 180. _X_ 1 A will be changed to 173. _X_ 1 B will be changed to 167. _X_ 1 C will be changed to 160. _X_ 1 D will be changed to 155. _X_ 1 E will be changed to 150. _X_ 1 F will be changed to 145.
		X	PB14	Hex	_X_	The setting value will be maintained.

Hex: hexadecimal parameter; Dec: decimal parameter

Part 7: Common Reference Material

MR-J2S-CL_			MR-J4-A_			Conversion rule
No.	Type	Target	No.	Type	Target	
62	Hex	_ X _	PB15	Dec	-	__ 0 0 will be changed to 4500. __ 0 1 will be changed to 4500. __ 0 2 will be changed to 2250. __ 0 3 will be changed to 1500. __ 0 4 will be changed to 1125. __ 0 5 will be changed to 900. __ 0 6 will be changed to 750. __ 0 7 will be changed to 643. __ 0 8 will be changed to 563. __ 0 9 will be changed to 500. __ 0 A will be changed to 450. __ 0 B will be changed to 409. __ 0 C will be changed to 375. __ 0 D will be changed to 346. __ 0 E will be changed to 321. __ 0 F will be changed to 300. __ 1 0 will be changed to 281. __ 1 1 will be changed to 265. __ 1 2 will be changed to 250. __ 1 3 will be changed to 237. __ 1 4 will be changed to 225. __ 1 5 will be changed to 214. __ 1 6 will be changed to 205. __ 1 7 will be changed to 196. __ 1 8 will be changed to 188. __ 1 9 will be changed to 180. __ 1 A will be changed to 173. __ 1 B will be changed to 167. __ 1 C will be changed to 160. __ 1 D will be changed to 155. __ 1 E will be changed to 150. __ 1 F will be changed to 145.
		__ XX	PB16	Hex	___ X	__ 0 0 will be changed to ___ 0. Otherwise, ___ 1 will be set.
		_ X _		Hex	_ X _	The setting value will be maintained.
63	Hex	_ X _	PB18	Dec	-	_ 1 _ will be changed to 18000.
		_ X _	PB23	Hex	_ X _	The setting value will be maintained.
64	Dec	-	PB29	Dec	-	One decimal place will be added.
35	Dec	-	PB30	Dec	-	One decimal place will be added to the value of (No. 35) × (No. 65) ÷ 100.
65	Dec	-				
37	Dec	-	PB31	Dec	-	The value will be (No. 37) × (No. 66) ÷ 100.
66	Dec	-				
38	Dec	-	PB32	Dec	-	One decimal place will be added to the value of (No. 38) × (No. 67) ÷ 100.
67	Dec	-				
68	Hex	___ X	PB26	Hex	___ X	The setting value will be maintained.
69	Dec	-	PB27	Dec	-	The setting value will be maintained.
70	Dec	-	PB28	Dec	-	The setting value will be maintained.
74	Dec	-	PT23	Dec	-	The setting value will be maintained.
75	Dec	-	PT24	Dec	-	The setting value will be maintained.
76	Dec	-	PT25	Dec	-	The setting value will be maintained.
77	Hex	_ X _	PT29	Hex	_ X _	The setting value will be maintained.
-	-	-	PA21	Hex	X ___	3 ___ will be set.
-	-	-	PB33	Dec	-	100.0 will be set.
-	-	-	PB34	Dec	-	100.0 will be set.

Hex: hexadecimal parameter; Dec: decimal parameter

Part 7: Common Reference Material

POINT	
	<ul style="list-style-type: none"> • The parameter writing inhibit after parameter conversion is the initial value (the following setting value). <ul style="list-style-type: none"> • MR-J4-_A_ parameter writing inhibit, parameter PA19: 00AA h • When using analog monitor output, perform an operation check because MR-J2S-_A/CP/CL_ and MR-J4-_A_ have different output voltage specifications for droop pulses. <ul style="list-style-type: none"> • MR-J4-_A_ parameter PC14, parameter PC15 • Various offset parameters cannot be converted. Change the settings as necessary. <ul style="list-style-type: none"> • MR-J4-_A_ parameter PC37 to parameter PC40 • Input/output signal assignments will be initialized. Change the settings as necessary. <ul style="list-style-type: none"> • MR-J4-_A_ parameter PD03 to parameter PD28 • The following parameters of MR-J4-_A_ are compatible with the servo amplifier's S/W version A3 or later. The S/W version can be checked in the system configuration. <ul style="list-style-type: none"> • MR-J4-_A_ RS422 communication function selection parameter PC21 • The output device assignment of the electromagnetic brake through parameter PA04 will be available in the future for MR-J4-_A_. (Note 1) When using the electromagnetic brake on the amplifier, change the output device with parameter PD24. • Selecting restart after instantaneous power failure through parameter PC22 will be available in the future for MR-J4-_A_.

2.3.6 Parameters that need to be checked after parameter conversion

Parameter number	Name	Initial value	Setting value	Description
PA04	Function selection A-1	2000h	0000h	Forced stop deceleration function selection To configure the same settings as those for MR-J2S-_A/CP/CL_, select "Forced stop deceleration function disabled (EM1)".
PA15	Encoder output pulse	-	-	When the encoder output pulse setting is a dividing ratio setting, this must be adjusted to match the number of pulses per servo motor rotation. The parameter converter function converts MR-J2S-_A/CP/CL_ to 131072 [pulse] and MR-J4-_A_ to 4194304. Restore this to the value of MR-J2S-_A_ in the case of amplifier replacement.
PC14	Analog monitor 1 output	-	-	Not converted by the parameter converter function.
PC15	Analog monitor 2 output			Set the items as required.
PC37	Analog speed command offset/ Analog speed limit offset	-	-	Not converted by the parameter converter function. Set the items as required.
PC38	Analog torque command offset/ Analog torque limit offset			
PC39	Analog monitor 1 offset			
PC40	Analog monitor 2 offset			
PD03 to PD28	I/O device selection	-	-	Not converted by the parameter converter function. Set the items as required.

Note 1. For items that have no setting value listed in the table, see "Part 2: Review on Replacement of MR-J2S-_A_ with MR-J4-_A_" and "Part 4: Review on Replacement of MR-J2S-_CP/_CL_ with MR-J4-_A_-RJ".

Part 7: Common Reference Material

2.4 MR-J2S-_B_ Parameter Diversion Procedure

The parameter converter functions of GX Works2 and MT Developer2 convert the servo parameters of MR-J2S-_B_ to those of MR-J4-_B_ when the controller is changed.
(GX Works2: 1.84N or later, MT Developer2: 1.41T or later)

POINT

- This applies only to the common parameters of MR-J2S-_B_ and MR-J4-_B_. Additional parameters of MR-J4-_B_ are set to the initial values of MR-J4-_B_.

(Target model)

- Positioning module QD75M to Simple Motion module QD77MS/LD77MS
- Motion controller A series/Q17nCPUN to Q17nDSCPU/Q170MSCPU

Change controller (parameter converter)

Project file

GX Configurator-QP
SW3/6RNC-GSVE

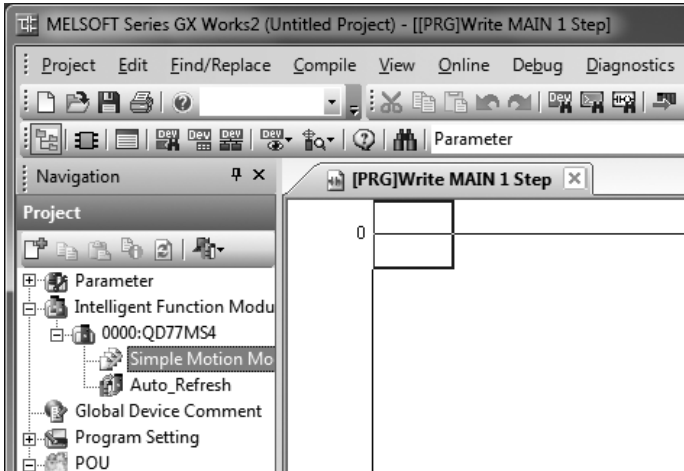
Change MR-J2S-_B_ to MR-J4-_B_

GX Works2 (Simple Motion module setting tool)
MT Developer2

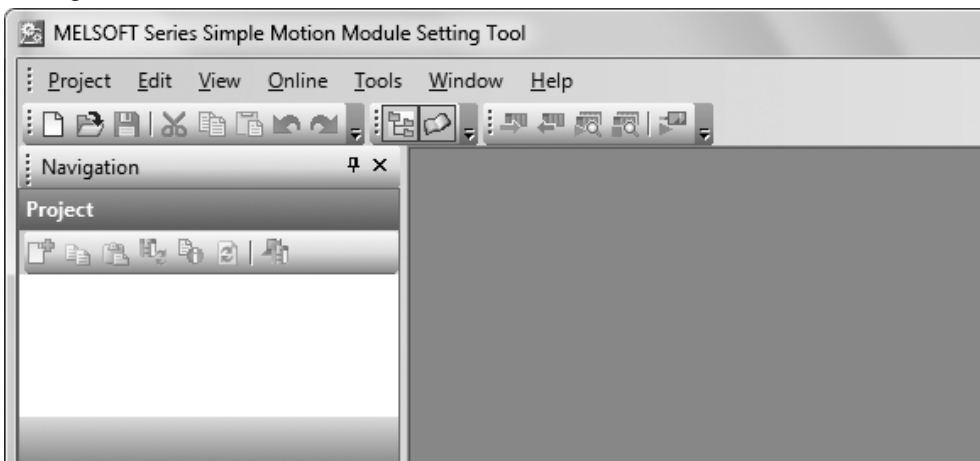
Part 7: Common Reference Material

2.4.1 Changing QD75M to QD77MS/LD77MS

- (1) Start GX Works2 and create a project.
- (2) Add QD77MS/LD77MS as an intelligent function module.



- (3) Double-click the icon of the simple Motion module that you just added to start the simple Motion module setting tool.



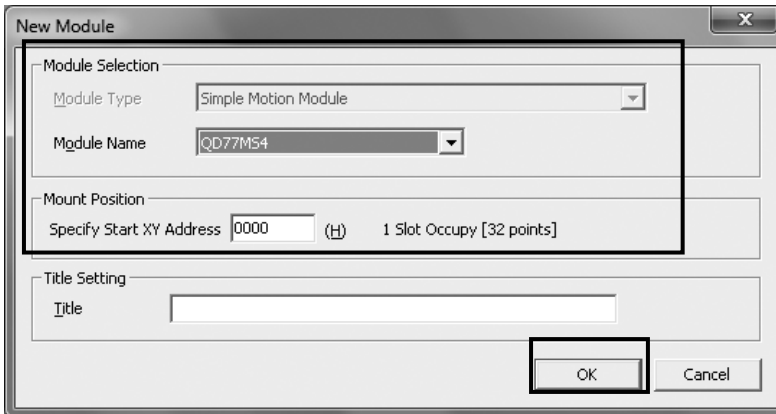
- (4) Read the GX Configurator-QP data.
Click [Project] - [Import GX Configurator-QP Data] from the menu. A dialog box for reading the GX Configurator-QP data is displayed.
Specify the QD75M data as the GX Configurator-QP data and click the [Open] button.

When using QD75 data made on GX Works2, save the QD75 data as GX Configurator-QP data on GX Works2, then perform the above operation.

Part 7: Common Reference Material

- (5) Specify the target module.

Specify the model and the head XY address of the target module, then click the [OK] button.



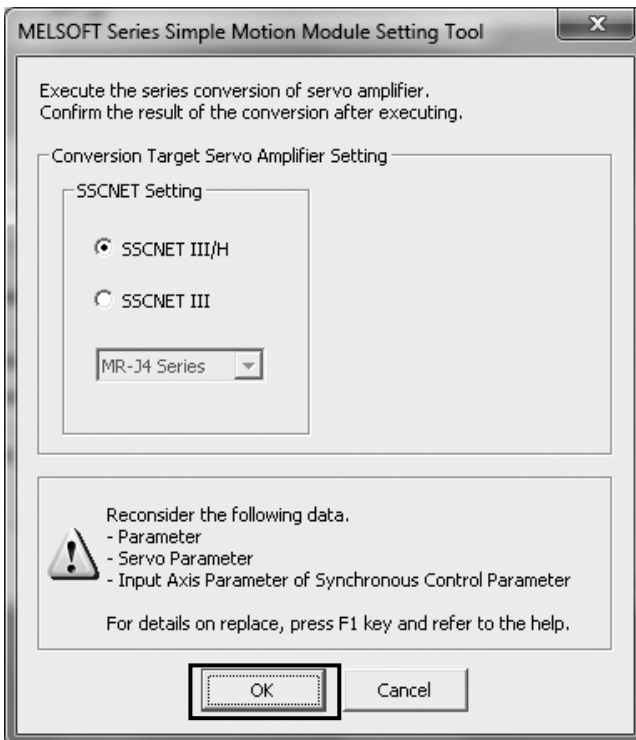
- (6) Execute servo parameter conversion.

Select the target servo amplifier setting and click the [OK] button.

The servo parameters are converted as follows depending on the target servo amplifier setting.

When "SSCNET III / H" is selected, MR-J2S-_B_ is converted to MR-J4-_B_.

When "SSCNET III" is selected, MR-J2S-_B_ is converted to MR-J3-_B_.

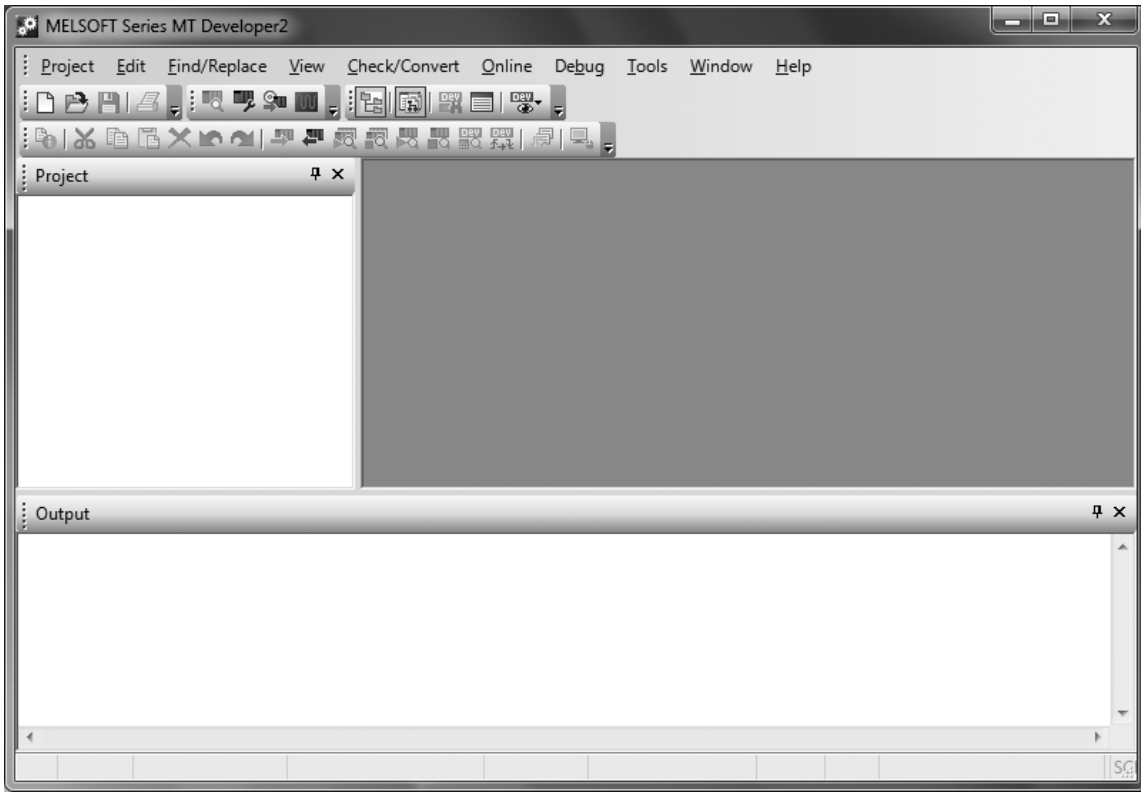


- (7) Parameter conversion is now complete.

Part 7: Common Reference Material

2.4.2 Changing A/QN motion to QDS motion/stand alone motion

(1) Start MT Developer2.

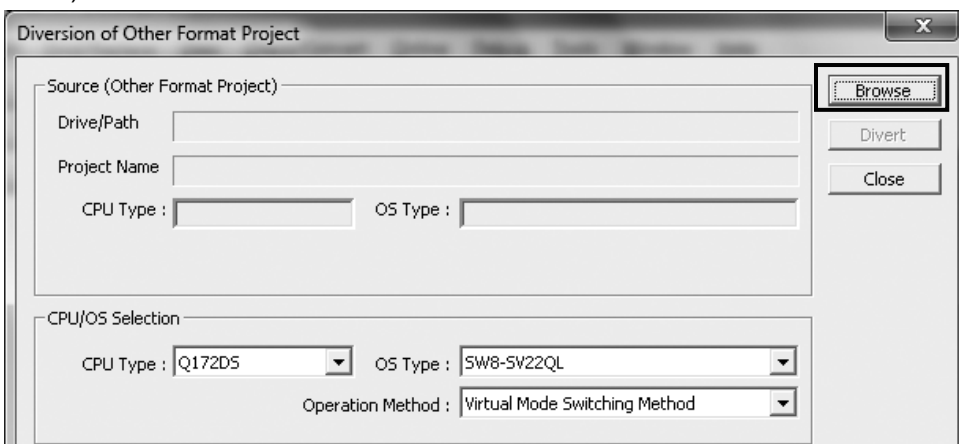


(2) Select the source project.

From the menu, click [Project] - [Divert File] - [Diversion of Other Format Project]. The Diversion of Different Type of Project dialog box is displayed.

Click the [Browse] button to select the source project.

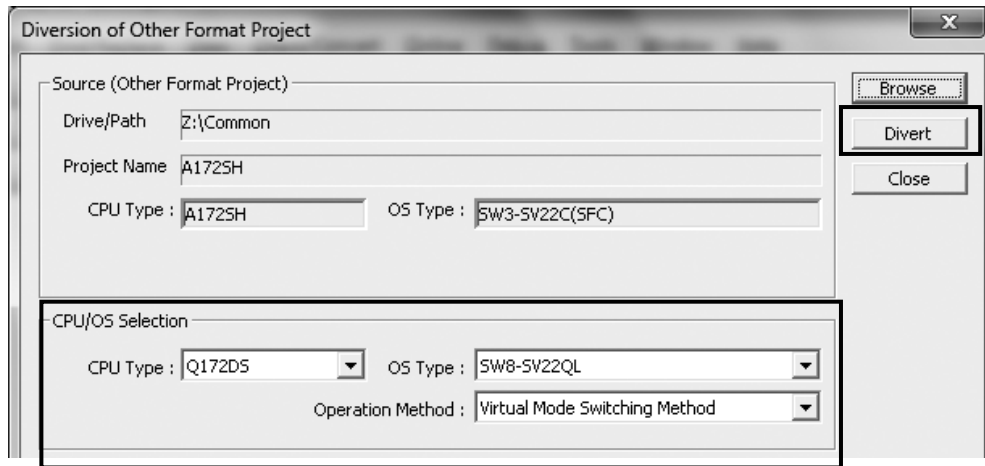
(For an MT Developer2 project, the "Diversion of the MT Developer2 Format Project" dialog box must be used.)



Part 7: Common Reference Material

(3) Execute file diversion.

Select the CPU type, OS type, and Operation method in the CPU/OS selection, and click the [Diversion] button.



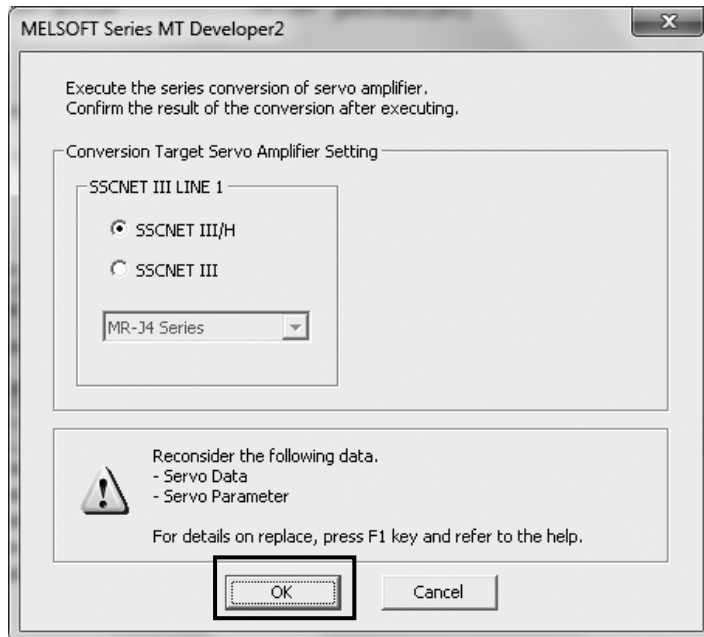
(4) Execute servo parameter conversion.

Select the target servo amplifier setting and click the [OK] button.

The servo parameters are converted as follows depending on the target servo amplifier setting.

When "SSCNET III / H" is selected, MR-J2S-_B_ is converted to MR-J4-_B_.

When "SSCNET III" is selected, MR-J2S-_B_ is converted to MR-J3-_B_.



(5) Parameter conversion is now complete.

Part 7: Common Reference Material

2.4.3 Conversion rules (MR-J2S-_B_ => MR-J4-_B_)

The following table shows the servo parameter conversion rules from MR-J2S-_B_ (standard) to MR-J4-_B_ standard.

Servo parameters not specified in the following table will be set to the initial values.

MR-J2S-_B_				MR-J4-_B_			Conversion rules
No.	Name	Type	Target	No.	Type	Target	
1	Amplifier setting	Hex	___X	PA03	Hex	___X	The setting value will be maintained.
2	Regenerative resistor	Hex	__XX	PA02	Hex	__XX	__00 will be changed to __00.
							__01 will be changed to __01.
							__05 will be changed to __04.
							__08 will be changed to __05.
							__09 will be changed to __06.
							__0B will be changed to __08.
							__0C will be changed to __09.
							__0E will be changed to __FA.
							__10 will be changed to __02.
__11 will be changed to __03.							
							Otherwise, __00 will be set.
7	Rotation direction setting	Dec	-	PA14	Dec	-	The setting value will be maintained.
8	Auto tuning	Hex	___X	PA08	Hex	___X	___2 will be changed to ___3.
							___3 will be changed to ___2.
							___4 will be changed to ___3.
							Otherwise, the setting value will be maintained.
9	Servo response setting	Hex	___X	PA09	Dec	-	___1 will be changed to 8.
							___2 will be changed to 11.
							___3 will be changed to 13.
							___4 will be changed to 14.
							___5 will be changed to 16.
							___6 will be changed to 18.
							___7 will be changed to 19.
							___8 will be changed to 21.
							___9 will be changed to 23.
							___A will be changed to 25.
							___B will be changed to 27.
							___C will be changed to 28.
___D will be changed to 30.							
___E will be changed to 32.							
___F will be changed to 34.							
12	Load to motor inertia ratio	Dec	-	PB06	Dec	-	One decimal place will be added.
13	Position loop gain 1	Dec	-	PB07	Dec	-	The setting value will be multiplied by 2/3 and one decimal place will be added.
15	Position loop gain 2	Dec	-	PB08	Dec	-	One decimal place will be added.
16	Speed loop gain 2	Dec	-	PB09	Dec	-	The setting value will be maintained.
17	Speed integral compensation.	Dec	-	PB10	Dec	-	One decimal place will be added.

Hex: hexadecimal parameter; Dec: decimal parameter

Part 7: Common Reference Material

MR-J2S-__B__				MR-J4-__B__			Conversion rules
No.	Name	Type	Target	No.	Type	Target	
18	Machine resonance suppression filter 1 (Notch filter)	Hex	__XX	PB01	Hex	___X	__00 will be changed to ___0. Otherwise, ___2 will be set.
			__00 will be changed to 4500.				
			__01 will be changed to 4500.				
			__02 will be changed to 2250.				
			__03 will be changed to 1500.				
			__04 will be changed to 1125.				
			__05 will be changed to 900.				
			__06 will be changed to 750.				
			__07 will be changed to 643.				
			__08 will be changed to 563.				
			__09 will be changed to 500.				
			__0A will be changed to 450.				
			__0B will be changed to 409.				
			__0C will be changed to 375.				
			__0D will be changed to 346.				
			__0E will be changed to 321.				
			__0F will be changed to 300.				
			__10 will be changed to 281.				
			__11 will be changed to 265.				
			__12 will be changed to 250.				
			__13 will be changed to 237.				
__14 will be changed to 225.							
__15 will be changed to 214.							
__16 will be changed to 205.							
__17 will be changed to 196.							
__18 will be changed to 188.							
__19 will be changed to 180.							
__1A will be changed to 173.							
__1B will be changed to 167.							
__1C will be changed to 160.							
__1D will be changed to 155.							
__1E will be changed to 150.							
__1F will be changed to 145.							
			X	PB14	Hex	__X_	The setting value will be maintained.
19	Feed forward gain	Dec	-	PB04	Dec	-	The setting value will be maintained.
20	In-position range	Dec	-	PA10	Dec	-	32 times the setting value will be set.
21	Electromagnetic brake sequence output	Dec	-	PC02	Dec	-	The setting value will be maintained.

Hex: hexadecimal parameter; Dec: decimal parameter

Part 7: Common Reference Material

MR-J2S- _B_				MR-J4- _B_			Conversion rules						
No.	Name	Type	Target	No.	Type	Target							
22	Analog monitor output	Hex	_ X _	PC09	Hex	___ X	_ 9 _ will be changed to ___ 8. _ A _ will be changed to ___ 9. _ B _ will be changed to ___ D. Otherwise, the setting value will be maintained.						
			___ X	PC10	Hex	___ X	___ 9 will be changed to ___ 8. ___ A will be changed to ___ 9. ___ B will be changed to ___ D. Otherwise, the setting value will be maintained.						
			Optional function 1 (Servo forced stop selection)	Hex	___ X	PA04	Hex	_ X _	The setting value will be maintained.				
			Optional function 2 (Slight vibration suppression control selection) (Motor-less operation selection)	Hex	_ X _	PB24	Hex	___ X	The setting value will be maintained.				
					_ X _	PC05	Hex	___ X	The setting value will be maintained.				
			Low-pass filter/adaptive vibration suppression control	Hex	_ X _	PB18	Dec	-	_ 1 _ will be changed to 18000. Otherwise, the initial value will be set.				
_ X _	PB23	Hex			___ X	The setting value will be maintained.							
30	Zero speed	Dec	-	PC07	Dec	-	The setting value will be maintained.						
31	Error excessive alarm level	Dec	-	PC01	Dec	-	2 will be set.						
32	Optional function 5 (PI-PID control switching selection)	Hex	___ X	PB24	Hex	___ X	___ 0 will be changed to __ 0 _. ___ 1 will be changed to __ 0 _. ___ 2 will be changed to __ 3 _.						
							Optional function 6 (Encoder pulse output setting selection)	Hex	_ X _	PC03	Hex	___ X	The setting value will be maintained.
							Speed differential compensation	Dec	-	PB11	Dec	-	The setting value will be maintained.
33	Optional function 6 (Encoder pulse output setting selection)	Hex	_ X _	PA15	Dec	-	(1) When the setting value of No. 33 is _ 1 _ 32 times the setting value of No. 38 will be set.						
38	Encoder output pulses	Dec	-				(2) When the setting value of No. 33 is other than _ 1 _ The setting value of No. 38 will be maintained.						
49	Gain switching selection	Hex	___ X	PB26	Hex	___ X	The setting value will be maintained.						
50	Gain switching condition	Dec	-	PB27	Dec	-	The setting value will be maintained.						
51	Gain switching time constant	Dec	-	PB28	Dec	-	The setting value will be maintained.						
52	Load to motor inertia ratio 2	Dec	-	PB29	Dec	-	One decimal place will be added.						
15	Position loop gain 2	Dec	-	PB30	Dec	-	The value will be (No. 15) × (No. 53) ÷ 100.						
53	Position loop gain 2 changing ratio	Dec	-				One decimal place will be added.						
16	Speed loop gain 2	Dec	-	PB31	Dec	-	The value will be (No. 16) × (No. 54) ÷ 100.						
54	Speed loop gain 2 changing ratio	Dec	-										
17	Speed integral compensation.	Dec	-	PB32	Dec	-	The value will be (No. 17) × (No. 55) ÷ 100.						
55	Speed integral compensation gain 2 change ratio	Dec	-				One decimal place will be added.						
60	Option function C	Hex	_ X _	PC03	Hex	___ X	The setting value will be maintained.						

Hex: hexadecimal parameter; Dec: decimal parameter

Part 7: Common Reference Material

MR-J2S-__B__				MR-J4-__B__			Conversion rule
No.	Name	Type	Target	No.	Type	Target	
61	Machine resonance suppression filter 2	Hex	__XX	PB15	Dec	-	__00 will be changed to 4500.
							__01 will be changed to 4500.
							__02 will be changed to 2250.
							__03 will be changed to 1500.
							__04 will be changed to 1125.
							__05 will be changed to 900.
							__06 will be changed to 750.
							__07 will be changed to 643.
							__08 will be changed to 563.
							__09 will be changed to 500.
							__0A will be changed to 450.
							__0B will be changed to 409.
							__0C will be changed to 375.
							__0D will be changed to 346.
							__0E will be changed to 321.
							__0F will be changed to 300.
							__10 will be changed to 281.
							__11 will be changed to 265.
							__12 will be changed to 250.
							__13 will be changed to 237.
							__14 will be changed to 225.
__15 will be changed to 214.							
__16 will be changed to 205.							
__17 will be changed to 196.							
__18 will be changed to 188.							
__19 will be changed to 180.							
__1A will be changed to 173.							
__1B will be changed to 167.							
__1C will be changed to 160.							
__1D will be changed to 155.							
__1E will be changed to 150.							
__1F will be changed to 145.							
__XX	PB16	Hex	___X	__00 will be changed to ___0.			
__X__	PB16	Hex	__X_	Otherwise, ___1 will be set.			
__X__	PB16	Hex	__X_	The setting value will be maintained.			

Hex: hexadecimal parameter; Dec: decimal parameter

Part 7: Common Reference Material

POINT
<ul style="list-style-type: none"> • The conversion rules in the above table give due consideration to compatibility. However, the servo parameter system of MR-J2S-_B_ and MR-J4-_B_ are so different that the rules may not sufficiently apply in cases of special operation (including special specifications). Change the settings as necessary in such cases. • The parameter writing inhibit after parameter conversion is the initial value (the following setting value). <ul style="list-style-type: none"> • MR-J4-_B_ parameter writing inhibit, parameter PA19: 00ABh • The setting value of the error excessive alarm level is 2. Change the settings as necessary. <ul style="list-style-type: none"> • MR-J4-_B_ error excessive alarm level, parameter PC01 • Output signal assignments will be initialized. Change the settings as necessary. <ul style="list-style-type: none"> • MR-J4-_B_ parameter PD07 to parameter PD09 • Various offset parameters cannot be converted. Change the settings as necessary. <ul style="list-style-type: none"> • MR-J4-_B_ parameter PC11, parameter PC12

2.4.4 Parameters that need to be checked after parameter conversion

Parameter number	Name	Initial value	Setting value	Description
PA04	Function selection A-1	2000h	0000h	Forced stop deceleration function selection To configure the same settings as those for MR-J2S-_B_, select "Forced stop deceleration function disabled (EM1)".
PA15	Encoder output pulse	-	-	When the encoder output pulse setting is a dividing ratio setting, this must be adjusted to match the number of pulses per servo motor rotation. The parameter converter function converts MR-J2S-_B_ to 131072 [pulse] and MR-J4-_B_ to 4194304. Restore this to the value of MR-J2S-_B_ in the case of amplifier replacement.
PD07 to PD09	I/O device selection	-	-	Input/output signals assignments will be initialized by the parameter converter function. Set the parameters as required.


Note 1. For items that have no setting value listed in the table, see "Part 3: Review on Replacement of MR-J2S-_B_ with MR-J4-_B_".


Part 7: Common Reference Material

3. COMMON POINTS TO NOTE

3.1 Points to Note When Replacing a Battery

POINT
<ul style="list-style-type: none">• The MR-BAT and A6BAT battery for MR-J2S and the MR-J2M-BT battery unit for MR-J2M cannot be used due to different battery voltage specifications.• The battery replacement procedures for MR-J2S/-J2M and for MR-J4 are different. (The HC/HA motor has a super capacitor condenser.) When replacing the battery for MR-J4, observe the following points and procedures.

 WARNING	<ul style="list-style-type: none">• Before replacing a battery, turn off the main circuit power and wait for 15 minutes or longer until the charge lamp turns off. Then, check the voltage between P+ and N- with a voltage tester or others. Otherwise, an electric shock may occur. In addition, when confirming whether the charge lamp is off or not, always confirm it from the front of the servo amplifier.
--	--

 CAUTION	<ul style="list-style-type: none">• The internal circuits of the servo amplifier may be damaged by static electricity. Always take the following precautions.<ul style="list-style-type: none">• Ground human body and work bench.• Do not touch the conductive areas, such as connector pins and electrical parts, directly by hand.
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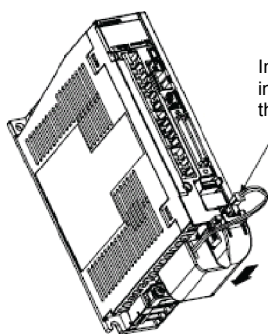
POINT
<ul style="list-style-type: none">• Replacing battery with the control circuit power off will erase the absolute position data.• Verify that the battery for replacement is within its service life.

POINT
<ul style="list-style-type: none">• Replace the old battery with only the control circuit power supply turned on. Replacing battery with the control circuit power on will not erase the absolute position data.

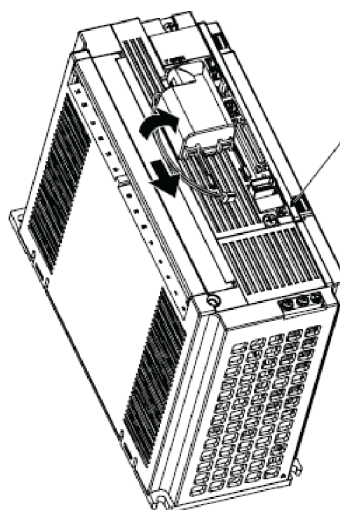
Part 7: Common Reference Material

3.1.1 Servo amplifier battery mounting method

POINT
<ul style="list-style-type: none">For servo amplifiers with a battery holder on the bottom, the structure is such that the grounding wire cannot be laid when the battery is mounted. Always mount the battery after laying the grounding wire of the servo amplifier.



MR-J4-350_ or less



MR-J4-500_ or more

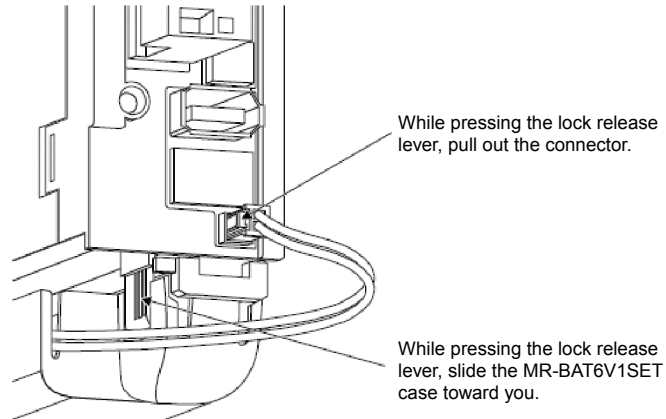
Part 7: Common Reference Material

3.1.2 Disassembly method



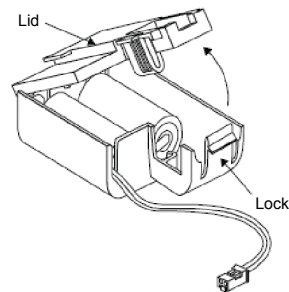
CAUTION

- Pulling out the MR-BAT6V1SET connector without the lock release lever pressed may damage the CN4 connector of the servo amplifier or the connector of the MR-BAT6V1SET connector.

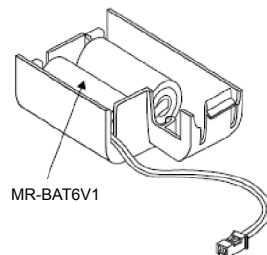


3.1.3 Replacement procedure of MR-BAT6V1SET built-in battery

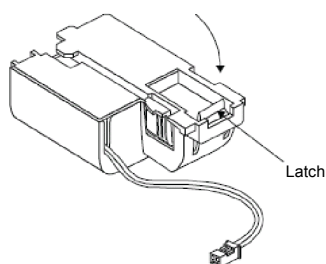
When the MR-BAT6V1SET reaches the end of its life, replace the MR-BAT6V1 battery in the MR-BAT6V1SET.



While pressing the lock, open the lid.



Replace a battery with a new MR-BAT6V1 battery.



Close the lid and press down until secured to the latch of the lock portion.

Part 7: Common Reference Material

4. HC/HA MOTOR DRIVE

4.1 Parameter setting

(1) MR-J4-_A_

When driving the HC/HA series servo motor with MR-J4-_A_, configure [Pr.PC22] at "_ 1 _ _" and select the encoder setting compatible with MR-J2S. If there is an error in the setting, [AL.16: Encoder initial communication error 1] or [AL.20: Encoder normal communication error 1] occurs.

No./symbol/name	Setting digit	Function	Initial value [unit]
PC22 **COP1 Function selection C-1	___x	For manufacturer setting	0h
	__x_		0h
	_x__	Encoder setting selection 0: MR-J4 compatible encoder setting 1: MR-J2S compatible encoder setting If there is an error in the setting, [AL.16: Encoder initial communication error 1] or [AL.20: Encoder normal communication error 1] occurs.	0h
	x___	Encoder cable communication method selection 0: Two-wire type 1: Four-wire type If there is an error in the setting, [AL.16: Encoder initial communication error 1] or [AL.20: Encoder normal communication error 1] occurs.	0h

(2) MR-J4-_B_

When driving the HC/HA series servo motor with MR-J4-_B_, configure [Pr.PC04] at "_ 1 _ _" and select a compatible encoder setting with MR-J2S. If there is an error in the setting, [AL.16: Encoder initial communication error 1] or [AL.20: Encoder normal communication error 1] occurs.

No./symbol/name	Setting digit	Function	Initial value [unit]
PC04 **COP1 Function selection C-1	___x	For manufacturer setting	0h
	__x_		0h
	_x__	Encoder setting selection 0: MR-J4 compatible encoder setting 1: MR-J2S compatible encoder setting If there is an error in the setting, [AL.16: Encoder initial communication error 1] or [AL.20: Encoder normal communication error 1] occurs.	0h
	x___	Encoder cable communication method selection 0: Two-wire type 1: Four-wire type If there is an error in the setting, [AL.16: Encoder initial communication error 1] or [AL.20: Encoder normal communication error 1] occurs.	0h

Part 7: Common Reference Material

4.2 Corresponding Software Version

Servo motor series name	Servo motor model	Servo amplifier model	Standard software corresponding version	
			A type	B type
HC-KFS series	HC-KFS053	MR-J4-10_	A8 or later	
	HC-KFS13	MR-J4-10_	A4 or later	A8 or later
	HC-KFS23	MR-J4-20_	A4 or later	A8 or later
	HC-KFS43	MR-J4-40_	A4 or later	A8 or later
	HC-KFS73	MR-J4-70_	A4 or later	A8 or later
HC-KFS high-speed rotation series	HC-KFS46	MR-J4-70_	A6 or later	
	HC-KFS410	MR-J4-70_	A6 or later	
HC-MFS series	HC-MFS053	MR-J4-10_	A4 or later	A8 or later
	HC-MFS13	MR-J4-10_	A4 or later	A8 or later
	HC-MFS23	MR-J4-20_	A4 or later	A8 or later
	HC-MFS43	MR-J4-40_	A4 or later	A8 or later
	HC-MFS73	MR-J4-70_	A4 or later	A8 or later
HC-LFS series	HC-LFS52	MR-J4-60_	A8 or later	
	HC-LFS102	MR-J4-100_	A8 or later	
	HC-LFS152	MR-J4-200_	A8 or later	
	HC-LFS202	MR-J4-350_	A8 or later	
	HC-LFS302	MR-J4-500_	A8 or later	
HC-SFS 1000 r/min series	HC-SFS81	MR-J4-100_	A8 or later	
	HC-SFS121	MR-J4-200_	A8 or later	
	HC-SFS201	MR-J4-200_	A8 or later	
	HC-SFS301	MR-J4-350_	A8 or later	
HC-SFS 2000 r/min series	HC-SFS52	MR-J4-60_	A4 or later	A8 or later
	HC-SFS102	MR-J4-100_	A4 or later	A8 or later
	HC-SFS152	MR-J4-200_	A4 or later	A8 or later
	HC-SFS202	MR-J4-200_	A4 or later	A8 or later
	HC-SFS352	MR-J4-350_	A4 or later	A8 or later
	HC-SFS502	MR-J4-500_	A8 or later	
	HC-SFS702	MR-J4-700_	A8 or later	
	HC-SFS524	MR-J4-60_4	A8 or later	
	HC-SFS1024	MR-J4-100_4	A8 or later	
	HC-SFS1524	MR-J4-200_4	A8 or later	
	HC-SFS2024	MR-J4-200_4	A8 or later	
	HC-SFS3524	MR-J4-350_4	A8 or later	
	HC-SFS5024	MR-J4-500_4	A8 or later	
	HC-SFS7024	MR-J4-700_4	A8 or later	

Part 7: Common Reference Material

Servo motor series name	Servo motor model	Servo amplifier model	Standard software corresponding version	
			A type	B type
HC-SFS 3000 r/min series	HC-SFS53	MR-J4-60_	A8 or later	
	HC-SFS103	MR-J4-100_	A8 or later	
	HC-SFS153	MR-J4-200_	A8 or later	
	HC-SFS203	MR-J4-200_	A8 or later	
	HC-SFS353	MR-J4-350_	A8 or later	
HC-RFS series	HC-RFS103	MR-J4-200_	A8 or later	
	HC-RFS153	MR-J4-200_	A8 or later	
	HC-RFS203	MR-J4-350_	A8 or later	
	HC-RFS353	MR-J4-500_	B0 or later	
	HC-RFS503	MR-J4-500_	A8 or later	
HA-LFS 1000 r/min series	HA-LFS601	MR-J4-700_	(Note 1)	
	HA-LFS801	MR-J4-11K_	(Note 1)	
	HA-LFS12K1	MR-J4-11K_	(Note 1)	
	HA-LFS15K1	MR-J4-15K_	(Note 1)	
	HA-LFS20K1	MR-J4-22K_	(Note 1)	
	HA-LFS25K1	MR-J4-22K_	(Note 1)	
	HA-LFS6014	MR-J4-700_4	(Note 1)	
	HA-LFS8014	MR-J4-11K_4	(Note 1)	
	HA-LFS12K14	MR-J4-11K_4	(Note 1)	
	HA-LFS15K14	MR-J4-15K_4	(Note 1)	
	HA-LFS20K14	MR-J4-22K_4	(Note 1)	
HA-LFS 1500r/min series	HA-LFS701M	MR-J4-700_	(Note 1)	
	HA-LFS11K1M	MR-J4-11K_	(Note 1)	
	HA-LFS15K1M	MR-J4-15K_	(Note 1)	
	HA-LFS22K1M	MR-J4-22K_	(Note 1)	
	HA-LFS701M4	MR-J4-700_4	(Note 1)	
	HA-LFS11K1M4	MR-J4-11K_4	(Note 1)	
	HA-LFS15K1M4	MR-J4-15K_4	(Note 1)	
	HA-LFS22K1M4	MR-J4-22K_4	(Note 1)	
HA-LFS 2000r/min series	HA-LFS502	MR-J4-500_	A8 or later	
	HA-LFS702	MR-J4-700_	A8 or later	
	HA-LFS11K2	MR-J4-11K_	B0 or later	
	HA-LFS15K2	MR-J4-15K_	B0 or later	
	HA-LFS22K2	MR-J4-22K_	B0 or later	
	HA-LFS11K24	MR-J4-11K_4	(Note 1)	
	HA-LFS15K24	MR-J4-15K_4	(Note 1)	
	HA-LFS22K24	MR-J4-22K_4	(Note 1)	
HC-UFS 2000r/min series	HC-UFS72	MR-J4-70_	B0 or later	
	HC-UFS152	MR-J4-200_	B0 or later	
	HC-UFS202	MR-J4-350_	B0 or later	
	HC-UFS352	MR-J4-500_	B0 or later	
	HC-UFS502	MR-J4-500_	B0 or later	
HC-UFS 3000r/min series	HC-UFS13	MR-J4-10_	A8 or later	
	HC-UFS23	MR-J4-20_	A8 or later	
	HC-UFS43	MR-J4-40_	A8 or later	
	HC-UFS73	MR-J4-70_	A8 or later	

Note 1. If using these servo motors, please contact your local sales office.

Part 7: Common Reference Material

Servo motor series name	Servo motor model	Converter Module name	Servo amplifier model	Standard software Supported version	
				A type	B type
HA-LFS 1000 r/min series	HA-LFS30K1	MR-CR55K	MR-J4-DU30K_	(Note 1)	
	HA-LFS37K1		MR-J4-DU37K_	(Note 1)	
	HA-LFS25K14	MR-CR55K4	MR-J4-DU30K_4	(Note 1)	
	HA-LFS30K14		MR-J4-DU30K_4	(Note 1)	
	HA-LFS37K14		MR-J4-DU37K_4	(Note 1)	
HA-LFS 1500 r/min series	HA-LFS30K1M	MR-CR55K	MR-J4-DU30K_	(Note 1)	
	HA-LFS37K1M	MR-CR55K4	MR-J4-DU37K_	(Note 1)	
	HA-LFS30K1M4		MR-J4-DU30K_4	(Note 1)	
	HA-LFS37K1M4		MR-J4-DU37K_4	(Note 1)	
	HA-LFS45K1M4		MR-J4-DU45K_4	(Note 1)	
	HA-LFS55K1M4		MR-J4-DU55K_4	(Note 1)	
HA-LFS 2000 r/min series	HA-LFS30K2	MR-CR55K	MR-J4-DU30K_	B8 or later	
	HA-LFS37K2	MR-CR55K4	MR-J4-DU37K_	B8 or later	
	HA-LFS30K24		MR-J4-DU30K_4	B8 or later	
	HA-LFS37K24		MR-J4-DU37K_4	B8 or later	
	HA-LFS45K24		MR-J4-DU45K_4	B8 or later	
	HA-LFS55K24		MR-J4-DU55K_4	B8 or later	

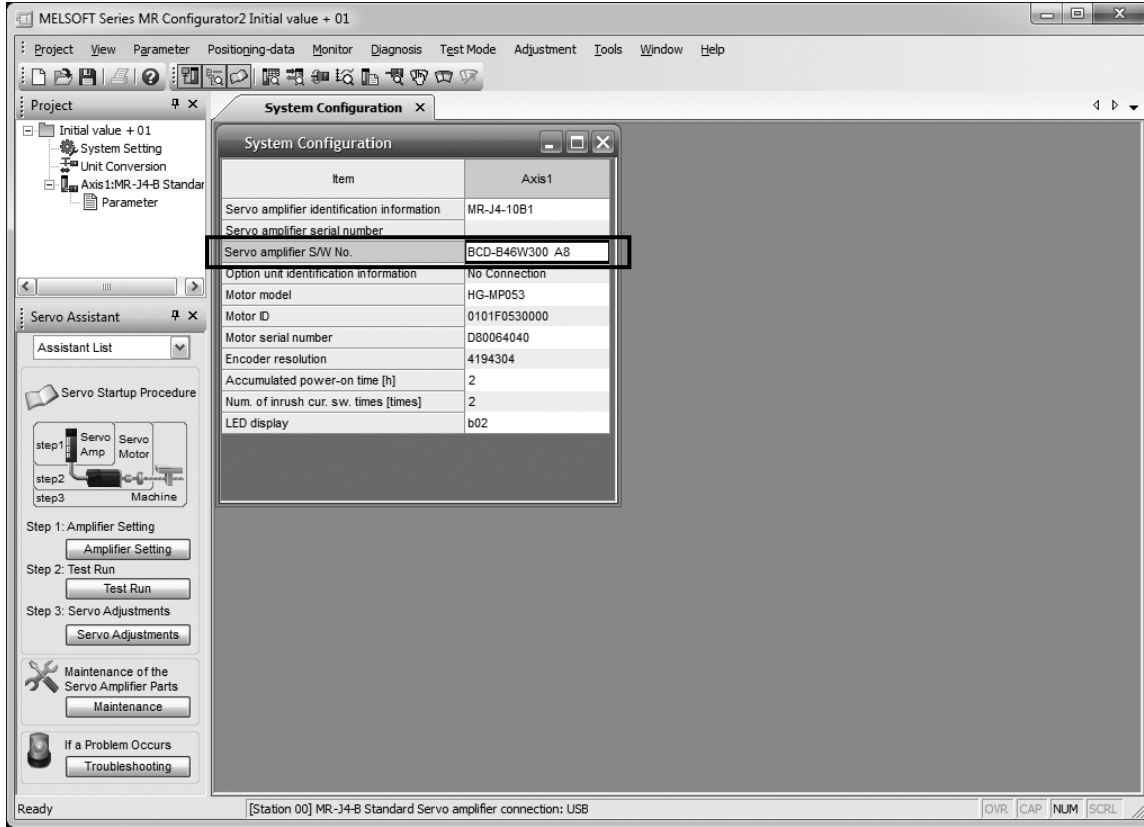
Note 1. Please contact your local sales office if using these servo motors.

Part 7: Common Reference Material

4.2.1 Method for checking the software version

Start MR Configurator2 (SW1DNC-MRC2-E).

Click [Diagnosis] - [System Configuration] from the menu to display the servo amplifier S/W number.



Servo amplifier S/W number : BCD-00000000 00

↓ ↓
S/W number software version

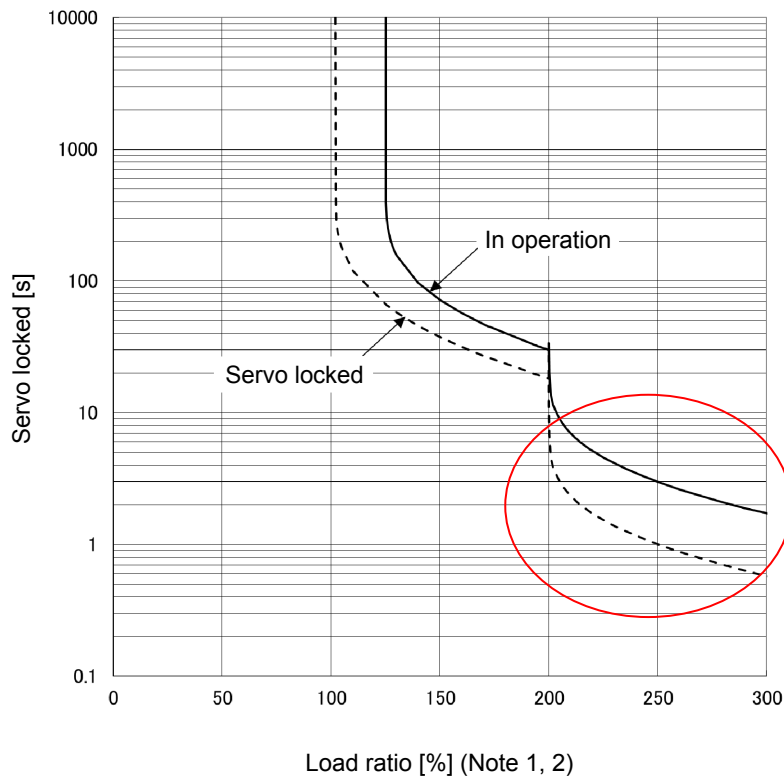
Part 7: Common Reference Material

4.3 Overload Characteristics

(Important Points for Combining the drive unit MR-J4-DU55K_4 and HA-LFS motor)

When using the drive unit MR-J4-DU55K_4 in combination with the HA-LFS motor, the overload characteristics are as shown in the diagram.

For MR-J2S-55K_4, please check your operation pattern, since the overload protection curve (broken line) of the overload ratio over 200% at the servo-lock is added.



- Note 1. When the servo motor is stopped (servo-lock state) or is operating at a low speed of 30 r/min or less, and an operation generating a torque of 100% or more of the rated torque is carried out at an abnormally high frequency, there is a possibility that the servo amplifier may malfunction even though it is within the electronic thermal protection.
- Note 2. The overload ratio over 100% indicates the rated output of a converter unit. For the rated output, refer to MR-J4-DU/MR-CR55K Instruction Manual, section 1.2.1.

Part 8
Review on Replacement
of Motor

Part 8: Review on Replacement of Motor

Part 8: Review on Replacement of Motor

1. SERVO MOTOR REPLACEMENT

1.1 Servo Motor Substitute Model and Compatibility

POINT
<ul style="list-style-type: none"> Compatibility here means the attachment compatibility. For details about the compatibility of servo motor dimensions, reducer specifications, moment of inertia, connector specifications, and torque characteristics, see "2 COMPARISON OF SERVO MOTOR SPECIFICATIONS".

(1) HC-KFS motor

Series	Model	Example of replacement model	Compatibility (○: Compatible)	Note
Small capacity, low inertia HC-KFS series Standard/With brake (B): With brake	HC-KFS053(B)	HG-KR053(B)	○	<ul style="list-style-type: none"> The torque characteristics of ◆ do not correspond to the range up to the high-speed rotation. For further details, see "2.7 Comparison of Servo Motor Torque Characteristics". The capacity of the corresponding servo amplifier will be different if a model marked with ◇ is replaced. The corresponding servo amplifier for HG-KR43 is MR-J4-40_.
	HC-KFS13(B)	HG-KR13(B)		
	HC-KFS23(B)	HG-KR23(B)		
	HC-KFS43(B)	HG-KR43(B)		
	HC-KFS73(B)	HG-KR73(B)		
	HC-KFS46 ◇	HG-KR43		
	HC-KFS410 ◇	HG-KR43 ◆		
Small capacity, low inertia HC-KFS series with general reducer (G1) (B): With brake	HC-KFS053(B)G1 1/5	HG-KR053(B)G1 1/5	○	<ul style="list-style-type: none"> Because the reduction gears of models marked with ◆ are different from the actual reduction ratio, it is required that an electronic gear be set up. Refer to "2.4 Comparison of actual reduction ratios for geared servo motors" for the details.
	HC-KFS053(B)G1 1/12	HG-KR053(B)G1 1/12		
	HC-KFS053(B)G1 1/20	HG-KR053(B)G1 1/20		
	HC-KFS13(B)G1 1/5	HG-KR13(B)G1 1/5		
	HC-KFS13(B)G1 1/12	HG-KR13(B)G1 1/12		
	HC-KFS13(B)G1 1/20	HG-KR13(B)G1 1/20		
	HC-KFS23(B)G1 1/5	HG-KR23(B)G1 1/5		
	HC-KFS23(B)G1 1/12	HG-KR23(B)G1 1/12 ◆		
	HC-KFS23(B)G1 1/20	HG-KR23(B)G1 1/20 ◆		
	HC-KFS43(B)G1 1/5	HG-KR43(B)G1 1/5		
	HC-KFS43(B)G1 1/12	HG-KR43(B)G1 1/12 ◆		
	HC-KFS43(B)G1 1/20	HG-KR43(B)G1 1/20 ◆		
	HC-KFS73(B)G1 1/5	HG-KR73(B)G1 1/5		
HC-KFS73(B)G1 1/12	HG-KR73(B)G1 1/12 ◆			
HC-KFS73(B)G1 1/20	HG-KR73(B)G1 1/20			
Small capacity, low inertia HC-KFS series with high precision reducer (G2) (B): With brake	HC-KFS053(B)G2 1/5	HG-KR053(B)G7 1/5	(Note 1)	
	HC-KFS053(B)G2 1/9	HG-KR053(B)G7 1/9		
	HC-KFS053(B)G2 1/20	HG-KR053(B)G7 1/21		
	HC-KFS053(B)G2 1/29	HG-KR053(B)G7 1/33		
	HC-KFS13(B)G2 1/5	HG-KR13(B)G7 1/5		
	HC-KFS13(B)G2 1/9	HG-KR13(B)G7 1/11		
	HC-KFS13(B)G2 1/20	HG-KR13(B)G7 1/21		
	HC-KFS13(B)G2 1/29	HG-KR13(B)G7 1/33		
	HC-KFS23(B)G2 1/5	HG-KR23(B)G7 1/5		
	HC-KFS23(B)G2 1/9	HG-KR23(B)G7 1/11		
	HC-KFS23(B)G2 1/20	HG-KR23(B)G7 1/21		
	HC-KFS23(B)G2 1/29	HG-KR23(B)G7 1/33		
	HC-KFS43(B)G2 1/5	HG-KR43(B)G7 1/5		
	HC-KFS43(B)G2 1/9	HG-KR43(B)G7 1/11		
	HC-KFS43(B)G2 1/20	HG-KR43(B)G7 1/21		
	HC-KFS43(B)G2 1/29	HG-KR43(B)G7 1/33		
	HC-KFS73(B)G2 1/5	HG-KR73(B)G7 1/5		
	HC-KFS73(B)G2 1/9	HG-KR73(B)G7 1/11		
HC-KFS73(B)G2 1/20	HG-KR73(B)G7 1/21			
HC-KFS73(B)G2 1/29	HG-KR73(B)G7 1/33			

Note 1. For mounting dimensions, see "2.3 Comparison of Mounting Dimensions for Geared Servo Motors".
 2. The power supply and encoder connector will be changed. For further details, see "2.6 Comparison of Servo Motor Connector Specifications".
 For replacement using the existing wiring, use an upgrade tool.

Part 8: Review on Replacement of Motor

Series	Model	Example of replacement model	Compatibility (○: Compatible)	Note
Small capacity, low inertia HC-KFS series with high precision reducer Flange output type (G5) (B): With brake	HC-KFS053(B)G5 1/5	HG-KR053(B)G5 1/5	○	
	HC-KFS053(B)G5 1/11	HG-KR053(B)G5 1/11		
	HC-KFS053(B)G5 1/21	HG-KR053(B)G5 1/21		
	HC-KFS053(B)G5 1/33	HG-KR053(B)G5 1/33		
	HC-KFS053(B)G5 1/45	HG-KR053(B)G5 1/45		
	HC-KFS13(B)G5 1/5	HG-KR13(B)G5 1/5		
	HC-KFS13(B)G5 1/11	HG-KR13(B)G5 1/11		
	HC-KFS13(B)G5 1/21	HG-KR13(B)G5 1/21		
	HC-KFS13(B)G5 1/33	HG-KR13(B)G5 1/33		
	HC-KFS13(B)G5 1/45	HG-KR13(B)G5 1/45		
	HC-KFS23(B)G5 1/5	HG-KR23(B)G5 1/5		
	HC-KFS23(B)G5 1/11	HG-KR23(B)G5 1/11		
	HC-KFS23(B)G5 1/21	HG-KR23(B)G5 1/21		
	HC-KFS23(B)G5 1/33	HG-KR23(B)G5 1/33		
	HC-KFS23(B)G5 1/45	HG-KR23(B)G5 1/45		
	HC-KFS43(B)G5 1/5	HG-KR43(B)G5 1/5		
	HC-KFS43(B)G5 1/11	HG-KR43(B)G5 1/11		
	HC-KFS43(B)G5 1/21	HG-KR43(B)G5 1/21		
	HC-KFS43(B)G5 1/33	HG-KR43(B)G5 1/33		
	HC-KFS43(B)G5 1/45	HG-KR43(B)G5 1/45		
	HC-KFS73(B)G5 1/5	HG-KR73(B)G5 1/5		
	HC-KFS73(B)G5 1/11	HG-KR73(B)G5 1/11		
	HC-KFS73(B)G5 1/21	HG-KR73(B)G5 1/21		
HC-KFS73(B)G5 1/33	HG-KR73(B)G5 1/33			
HC-KFS73(B)G5 1/45	HG-KR73(B)G5 1/45			
Small capacity, low inertia HC-KFS series with high precision reducer Shaft output type (G7) (B): With brake	HC-KFS053(B)G7 1/5	HG-KR053(B)G7 1/5	○	
	HC-KFS053(B)G7 1/11	HG-KR053(B)G7 1/11		
	HC-KFS053(B)G7 1/21	HG-KR053(B)G7 1/21		
	HC-KFS053(B)G7 1/33	HG-KR053(B)G7 1/33		
	HC-KFS053(B)G7 1/45	HG-KR053(B)G7 1/45		
	HC-KFS13(B)G7 1/5	HG-KR13(B)G7 1/5		
	HC-KFS13(B)G7 1/11	HG-KR13(B)G7 1/11		
	HC-KFS13(B)G7 1/21	HG-KR13(B)G7 1/21		
	HC-KFS13(B)G7 1/33	HG-KR13(B)G7 1/33		
	HC-KFS13(B)G7 1/45	HG-KR13(B)G7 1/45		
	HC-KFS23(B)G7 1/5	HG-KR23(B)G7 1/5		
	HC-KFS23(B)G7 1/11	HG-KR23(B)G7 1/11		
	HC-KFS23(B)G7 1/21	HG-KR23(B)G7 1/21		
	HC-KFS23(B)G7 1/33	HG-KR23(B)G7 1/33		
	HC-KFS23(B)G7 1/45	HG-KR23(B)G7 1/45		
	HC-KFS43(B)G7 1/5	HG-KR43(B)G7 1/5		
	HC-KFS43(B)G7 1/11	HG-KR43(B)G7 1/11		
	HC-KFS43(B)G7 1/21	HG-KR43(B)G7 1/21		
	HC-KFS43(B)G7 1/33	HG-KR43(B)G7 1/33		
	HC-KFS43(B)G7 1/45	HG-KR43(B)G7 1/45		
	HC-KFS73(B)G7 1/5	HG-KR73(B)G7 1/5		
	HC-KFS73(B)G7 1/11	HG-KR73(B)G7 1/11		
	HC-KFS73(B)G7 1/21	HG-KR73(B)G7 1/21		
HC-KFS73(B)G7 1/33	HG-KR73(B)G7 1/33			
HC-KFS73(B)G7 1/45	HG-KR73(B)G7 1/45			

Note 1. The power supply and encoder connector will be changed. For further details, see "2.6 Comparison of Servo Motor Connector Specifications".

For replacement using the existing wiring, use an upgrade tool.

Part 8: Review on Replacement of Motor

(2) HC-MFS motor

Series	Model	Example of replacement model	Compatibility (O: Compatible)	Note
Small capacity, ultra-low inertia HC-MFS series Standard/With brake (B): With brake	HC-MFS053(B)	HG-MR053(B)	○	
	HC-MFS13(B)	HG-MR13(B)		
	HC-MFS23(B)	HG-MR23(B)		
	HC-MFS43(B)	HG-MR43(B)		
	HC-MFS73(B)	HG-MR73(B)		
Small capacity, ultra-low inertia HC-MFS series with general reducer (G1) (B): With brake	HC-MFS053(B)G1 1/5	HG-KR053(B)G1 1/5	○	<ul style="list-style-type: none"> The HG-MR series does not support the geared model. The geared model is supported with the HG-KR series. Because the reduction gears of models marked with ◆ are different from the actual reduction ratio, it is required that an electronic gear be set up. Refer to "2.4 Comparison of actual reduction ratios for geared servo motors" for the details.
	HC-MFS053(B)G1 1/12	HG-KR053(B)G1 1/12		
	HC-MFS053(B)G1 1/20	HG-KR053(B)G1 1/20		
	HC-MFS13(B)G1 1/5	HG-KR13(B)G1 1/5		
	HC-MFS13(B)G1 1/12	HG-KR13(B)G1 1/12		
	HC-MFS13(B)G1 1/20	HG-KR13(B)G1 1/20		
	HC-MFS23(B)G1 1/5	HG-KR23(B)G1 1/5		
	HC-MFS23(B)G1 1/12	HG-KR23(B)G1 1/12 ◆		
	HC-MFS23(B)G1 1/20	HG-KR23(B)G1 1/20 ◆		
	HC-MFS43(B)G1 1/5	HG-KR43(B)G1 1/5		
	HC-MFS43(B)G1 1/12	HG-KR43(B)G1 1/12 ◆		
	HC-MFS43(B)G1 1/20	HG-KR43(B)G1 1/20 ◆		
	HC-MFS73(B)G1 1/5	HG-KR73(B)G1 1/5		
	HC-MFS73(B)G1 1/12	HG-KR73(B)G1 1/12 ◆		
HC-MFS73(B)G1 1/20	HG-KR73(B)G1 1/20			
Small capacity, ultra-low inertia HC-MFS series with high precision reducer (G2) (B): With brake	HC-MFS053(B)G2 1/5	HG-KR053(B)G7 1/5	(Note 1)	<ul style="list-style-type: none"> The HG-MR series does not support the geared model. The geared model is supported with the HG-KR series.
	HC-MFS053(B)G2 1/9	HG-KR053(B)G7 1/9		
	HC-MFS053(B)G2 1/20	HG-KR053(B)G7 1/21		
	HC-MFS053(B)G2 1/29	HG-KR053(B)G7 1/33		
	HC-MFS13(B)G2 1/5	HG-KR13(B)G7 1/5		
	HC-MFS13(B)G2 1/9	HG-KR13(B)G7 1/11		
	HC-MFS13(B)G2 1/20	HG-KR13(B)G7 1/21		
	HC-MFS13(B)G2 1/29	HG-KR13(B)G7 1/33		
	HC-MFS23(B)G2 1/5	HG-KR23(B)G7 1/5		
	HC-MFS23(B)G2 1/9	HG-KR23(B)G7 1/11		
	HC-MFS23(B)G2 1/20	HG-KR23(B)G7 1/21		
	HC-MFS23(B)G2 1/29	HG-KR23(B)G7 1/33		
	HC-MFS43(B)G2 1/5	HG-KR43(B)G7 1/5		
	HC-MFS43(B)G2 1/9	HG-KR43(B)G7 1/11		
	HC-MFS43(B)G2 1/20	HG-KR43(B)G7 1/21		
	HC-MFS43(B)G2 1/29	HG-KR43(B)G7 1/33		
	HC-MFS73(B)G2 1/5	HG-KR73(B)G7 1/5		
	HC-MFS73(B)G2 1/9	HG-KR73(B)G7 1/11		
	HC-MFS73(B)G2 1/20	HG-KR73(B)G7 1/21		
	HC-MFS73(B)G2 1/29	HG-KR73(B)G7 1/33		

Note 1. For mounting dimensions, see "2.3 Comparison of Mounting Dimensions for Geared Servo Motors".

2. The power supply and encoder connector will be changed. For further details, see "2.6 Comparison of Servo Motor Connector Specifications".

For replacement using the existing wiring, use an upgrade tool.

Part 8: Review on Replacement of Motor

Series	Model	Example of replacement model	Compatibility (○: Compatible)	Note
Small capacity, ultra-low inertia HC-MFS series with high precision reducer Flange output type (G5) (B): With brake	HC-MFS053(B)G5 1/5	HG-KR053(B)G5 1/5	○	• The HG-MR series does not support the geared model. The geared model is supported with the HG-KR series.
	HC-MFS053(B)G5 1/11	HG-KR053(B)G5 1/11		
	HC-MFS053(B)G5 1/21	HG-KR053(B)G5 1/21		
	HC-MFS053(B)G5 1/33	HG-KR053(B)G5 1/33		
	HC-MFS053(B)G5 1/45	HG-KR053(B)G5 1/45		
	HC-MFS13(B)G5 1/5	HG-KR13(B)G5 1/5		
	HC-MFS13(B)G5 1/11	HG-KR13(B)G5 1/11		
	HC-MFS13(B)G5 1/21	HG-KR13(B)G5 1/21		
	HC-MFS13(B)G5 1/33	HG-KR13(B)G5 1/33		
	HC-MFS13(B)G5 1/45	HG-KR13(B)G5 1/45		
	HC-MFS23(B)G5 1/5	HG-KR23(B)G5 1/5		
	HC-MFS23(B)G5 1/11	HG-KR23(B)G5 1/11		
	HC-MFS23(B)G5 1/21	HG-KR23(B)G5 1/21		
	HC-MFS23(B)G5 1/33	HG-KR23(B)G5 1/33		
	HC-MFS23(B)G5 1/45	HG-KR23(B)G5 1/45		
	HC-MFS43(B)G5 1/5	HG-KR43(B)G5 1/5		
	HC-MFS43(B)G5 1/11	HG-KR43(B)G5 1/11		
	HC-MFS43(B)G5 1/21	HG-KR43(B)G5 1/21		
	HC-MFS43(B)G5 1/33	HG-KR43(B)G5 1/33		
	HC-MFS43(B)G5 1/45	HG-KR43(B)G5 1/45		
HC-MFS73(B)G5 1/5	HG-KR73(B)G5 1/5			
HC-MFS73(B)G5 1/11	HG-KR73(B)G5 1/11			
HC-MFS73(B)G5 1/21	HG-KR73(B)G5 1/21			
HC-MFS73(B)G5 1/33	HG-KR73(B)G5 1/33			
HC-MFS73(B)G5 1/45	HG-KR73(B)G5 1/45			
Small capacity, ultra-low inertia HC-MFS series with high precision reducer Shaft output type (G7) (B): With brake	HC-MFS053(B)G7 1/5	HG-KR053(B)G7 1/5	○	• The HG-MR series does not support the geared model. The geared model is supported with the HG-KR series.
	HC-MFS053(B)G7 1/11	HG-KR053(B)G7 1/11		
	HC-MFS053(B)G7 1/21	HG-KR053(B)G7 1/21		
	HC-MFS053(B)G7 1/33	HG-KR053(B)G7 1/33		
	HC-MFS053(B)G7 1/45	HG-KR053(B)G7 1/45		
	HC-MFS13(B)G7 1/5	HG-KR13(B)G7 1/5		
	HC-MFS13(B)G7 1/11	HG-KR13(B)G7 1/11		
	HC-MFS13(B)G7 1/21	HG-KR13(B)G7 1/21		
	HC-MFS13(B)G7 1/33	HG-KR13(B)G7 1/33		
	HC-MFS13(B)G7 1/45	HG-KR13(B)G7 1/45		
	HC-MFS23(B)G7 1/5	HG-KR23(B)G7 1/5		
	HC-MFS23(B)G7 1/11	HG-KR23(B)G7 1/11		
	HC-MFS23(B)G7 1/21	HG-KR23(B)G7 1/21		
	HC-MFS23(B)G7 1/33	HG-KR23(B)G7 1/33		
	HC-MFS23(B)G7 1/45	HG-KR23(B)G7 1/45		
	HC-MFS43(B)G7 1/5	HG-KR43(B)G7 1/5		
	HC-MFS43(B)G7 1/11	HG-KR43(B)G7 1/11		
	HC-MFS43(B)G7 1/21	HG-KR43(B)G7 1/21		
	HC-MFS43(B)G7 1/33	HG-KR43(B)G7 1/33		
	HC-MFS43(B)G7 1/45	HG-KR43(B)G7 1/45		
HC-MFS73(B)G7 1/5	HG-KR73(B)G7 1/5			
HC-MFS73(B)G7 1/11	HG-KR73(B)G7 1/11			
HC-MFS73(B)G7 1/21	HG-KR73(B)G7 1/21			
HC-MFS73(B)G7 1/33	HG-KR73(B)G7 1/33			
HC-MFS73(B)G7 1/45	HG-KR73(B)G7 1/45			

Note 1. The power supply and encoder connector will be changed. For further details, see "2.6 Comparison of Servo Motor Connector Specifications".

For replacement using the existing wiring, use an upgrade tool.

Part 8: Review on Replacement of Motor

(3) HC-SFS motor

Series	Model	Example of replacement model	Compatibility (○: Compatible)	Note
Medium capacity, medium inertia HC-SFS series Standard/With brake (4): 400 V specifications (B): With brake	HC-SFS81(B)	HG-SR81(B)	○	<ul style="list-style-type: none"> The total length of the motor will be shorter, so confirm that the motor connector does not interfere with the device side. The HG-SR servo motor does not have an oil seal. Use HG-SR_J when an oil seal is required.
	HC-SFS121(B)	HG-SR121(B)		
	HC-SFS201(B)	HG-SR201(B)		
	HC-SFS301(B)	HG-SR301(B)		
	HC-SFS52(4)(B)	HG-SR52(4)(B)		
	HC-SFS102(4)(B)	HG-SR102(4)(B)		
	HC-SFS152(4)(B)	HG-SR152(4)(B)		
	HC-SFS202(4)(B)	HG-SR202(4)(B)		
	HC-SFS352(4)(B)	HG-SR352(4)(B)		
	HC-SFS502(4)(B)	HG-SR502(4)(B)		
	HC-SFS702(4)(B)	HG-SR702(4)(B)		
	HC-SFS53(B)	HG-SR52(B)		
	HC-SFS103(B)	HG-SR102(B)		
	HC-SFS153(B)	HG-SR152(B)		
	HC-SFS203(B)	HG-SR202(B)		
HC-SFS353(B)	HG-SR352(B)			
Medium capacity, medium inertia HC-SFS series with general reducer (4): 400 V specifications (B): With brake G1: Flange-mounting G1H: Foot-mounting	HC-SFS52(4)(B)G1(H) 1/6	HG-SR52(4)(B)G1(H) 1/6	○	<ul style="list-style-type: none"> The total length of the motor will be shorter, so confirm that the motor connector does not interfere with the device side.
	HC-SFS52(4)(B)G1(H) 1/11	HG-SR52(4)(B)G1(H) 1/11		
	HC-SFS52(4)(B)G1(H) 1/17	HG-SR52(4)(B)G1(H) 1/17		
	HC-SFS52(4)(B)G1(H) 1/29	HG-SR52(4)(B)G1(H) 1/29		
	HC-SFS52(4)(B)G1(H) 1/35	HG-SR52(4)(B)G1(H) 1/35		
	HC-SFS52(4)(B)G1(H) 1/43	HG-SR52(4)(B)G1(H) 1/43		
	HC-SFS52(4)(B)G1(H) 1/59	HG-SR52(4)(B)G1(H) 1/59		
	HC-SFS102(4)(B)G1(H) 1/6	HG-SR102(4)(B)G1(H) 1/6		
	HC-SFS102(4)(B)G1(H) 1/11	HG-SR102(4)(B)G1(H) 1/11		
	HC-SFS102(4)(B)G1(H) 1/17	HG-SR102(4)(B)G1(H) 1/17		
	HC-SFS102(4)(B)G1(H) 1/29	HG-SR102(4)(B)G1(H) 1/29		
	HC-SFS102(4)(B)G1(H) 1/35	HG-SR102(4)(B)G1(H) 1/35		
	HC-SFS102(4)(B)G1(H) 1/43	HG-SR102(4)(B)G1(H) 1/43		
	HC-SFS102(4)(B)G1(H) 1/59	HG-SR102(4)(B)G1(H) 1/59		
	HC-SFS152(4)(B)G1(H) 1/6	HG-SR152(4)(B)G1(H) 1/6		
	HC-SFS152(4)(B)G1(H) 1/11	HG-SR152(4)(B)G1(H) 1/11		
	HC-SFS152(4)(B)G1(H) 1/17	HG-SR152(4)(B)G1(H) 1/17		
	HC-SFS152(4)(B)G1(H) 1/29	HG-SR152(4)(B)G1(H) 1/29		
	HC-SFS152(4)(B)G1(H) 1/35	HG-SR152(4)(B)G1(H) 1/35		
	HC-SFS152(4)(B)G1(H) 1/43	HG-SR152(4)(B)G1(H) 1/43		
	HC-SFS152(4)(B)G1(H) 1/59	HG-SR152(4)(B)G1(H) 1/59		
	HC-SFS202(4)(B)G1(H) 1/6	HG-SR202(4)(B)G1(H) 1/6		
	HC-SFS202(4)(B)G1(H) 1/11	HG-SR202(4)(B)G1(H) 1/11		
	HC-SFS202(4)(B)G1(H) 1/17	HG-SR202(4)(B)G1(H) 1/17		
	HC-SFS202(4)(B)G1(H) 1/29	HG-SR202(4)(B)G1(H) 1/29		
	HC-SFS202(4)(B)G1(H) 1/35	HG-SR202(4)(B)G1(H) 1/35		
	HC-SFS202(4)(B)G1(H) 1/43	HG-SR202(4)(B)G1(H) 1/43		
	HC-SFS202(4)(B)G1(H) 1/59	HG-SR202(4)(B)G1(H) 1/59		
	HC-SFS352(4)(B)G1(H) 1/6	HG-SR352(4)(B)G1(H) 1/6		
	HC-SFS352(4)(B)G1(H) 1/11	HG-SR352(4)(B)G1(H) 1/11		
	HC-SFS352(4)(B)G1(H) 1/17	HG-SR352(4)(B)G1(H) 1/17		
	HC-SFS352(4)(B)G1(H) 1/29	HG-SR352(4)(B)G1(H) 1/29		
	HC-SFS352(4)(B)G1(H) 1/35	HG-SR352(4)(B)G1(H) 1/35		

Note 1. The power supply and encoder connector will be changed. For further details, see "2.6 Comparison of Servo Motor Connector Specifications".

For replacement using the existing wiring, use an upgrade tool.

Part 8: Review on Replacement of Motor

Series	Model	Example of replacement model	Compatibility (○: Compatible)	Note
Medium capacity, medium inertia HC-SFS series with general reducer (4): 400 V specifications (B): With brake G1: Flange-mounting G1H: Foot-mounting	HC-SFS352(4)(B)G1(H) 1/43	HG-SR352(4)(B)G1(H) 1/43	○	<ul style="list-style-type: none"> The total length of the motor will be shorter, so confirm that the motor connector does not interfere with the device side.
	HC-SFS352(4)(B)G1(H) 1/59	HG-SR352(4)(B)G1(H) 1/59		
	HC-SFS502(4)(B)G1(H) 1/11	HG-SR502(4)(B)G1(H) 1/11		
	HC-SFS502(4)(B)G1(H) 1/17	HG-SR502(4)(B)G1(H) 1/17		
	HC-SFS502(4)(B)G1(H) 1/29	HG-SR502(4)(B)G1(H) 1/29		
	HC-SFS502(4)(B)G1(H) 1/35	HG-SR502(4)(B)G1(H) 1/35		
	HC-SFS502(4)(B)G1(H) 1/43	HG-SR502(4)(B)G1(H) 1/43		
	HC-SFS702(4)(B)G1(H) 1/11	HG-SR702(4)(B)G1(H) 1/11		
	HC-SFS702(4)(B)G1(H) 1/17	HG-SR702(4)(B)G1(H) 1/17		
	HC-SFS702(4)(B)G1(H) 1/29	HG-SR702(4)(B)G1(H) 1/29		
	HC-SFS702(4)(B)G1(H) 1/35	HG-SR702(4)(B)G1(H) 1/35		
	HC-SFS702(4)(B)G1(H) 1/43	HG-SR702(4)(B)G1(H) 1/43		
Medium capacity, medium inertia HC-SFS series with high precision reducer (G2) (4): 400 V specifications (B): With brake	HC-SFS52(4)(B)G2 1/5	HG-SR52(4)(B)G7 1/5	(Note 1)	<ul style="list-style-type: none"> The total length of the motor will be shorter, so confirm that the motor connector does not interfere with the device side.
	HC-SFS52(4)(B)G2 1/9	HG-SR52(4)(B)G7 1/11		
	HC-SFS52(4)(B)G2 1/20	HG-SR52(4)(B)G7 1/21		
	HC-SFS52(4)(B)G2 1/29	HG-SR52(4)(B)G7 1/33		
	HC-SFS52(4)(B)G2 1/45	HG-SR52(4)(B)G7 1/45		
	HC-SFS102(4)(B)G2 1/5	HG-SR102(4)(B)G7 1/5		
	HC-SFS102(4)(B)G2 1/9	HG-SR102(4)(B)G7 1/11		
	HC-SFS102(4)(B)G2 1/20	HG-SR102(4)(B)G7 1/21		
	HC-SFS102(4)(B)G2 1/29	HG-SR102(4)(B)G7 1/33		
	HC-SFS102(4)(B)G2 1/45	HG-SR102(4)(B)G7 1/45		
	HC-SFS152(4)(B)G2 1/5	HG-SR152(4)(B)G7 1/5		
	HC-SFS152(4)(B)G2 1/9	HG-SR152(4)(B)G7 1/11		
	HC-SFS152(4)(B)G2 1/20	HG-SR152(4)(B)G7 1/21		
	HC-SFS152(4)(B)G2 1/29	HG-SR152(4)(B)G7 1/33		
	HC-SFS152(4)(B)G2 1/45	HG-SR152(4)(B)G7 1/45		
	HC-SFS202(4)(B)G2 1/5	HG-SR202(4)(B)G7 1/5		
	HC-SFS202(4)(B)G2 1/9	HG-SR202(4)(B)G7 1/11		
	HC-SFS202(4)(B)G2 1/20	HG-SR202(4)(B)G7 1/21		
	HC-SFS202(4)(B)G2 1/29	HG-SR202(4)(B)G7 1/33		
	HC-SFS202(4)(B)G2 1/45	HG-SR202(4)(B)G7 1/45		
HC-SFS352(4)(B)G2 1/5	HG-SR352(4)(B)G7 1/5			
HC-SFS352(4)(B)G2 1/9	HG-SR352(4)(B)G7 1/11			
HC-SFS352(4)(B)G2 1/20	HG-SR352(4)(B)G7 1/21			
HC-SFS502(4)(B)G2 1/5	HG-SR502(4)(B)G7 1/5			
HC-SFS502(4)(B)G2 1/9	HG-SR502(4)(B)G7 1/11			
HC-SFS702(4)(B)G2 1/5	HG-SR702(4)(B)G7 1/5			
Medium capacity, medium inertia HC-SFS series with high precision reducer Flange output type (G5) (4): 400 V specifications (B): With brake	HC-SFS52(4)(B)G5 1/5	HG-SR52(4)(B)G5 1/5	○	<ul style="list-style-type: none"> The total length of the motor will be shorter, so confirm that the motor connector does not interfere with the device side.
	HC-SFS52(4)(B)G5 1/11	HG-SR52(4)(B)G5 1/11		
	HC-SFS52(4)(B)G5 1/21	HG-SR52(4)(B)G5 1/21		
	HC-SFS52(4)(B)G5 1/33	HG-SR52(4)(B)G5 1/33		
	HC-SFS52(4)(B)G5 1/45	HG-SR52(4)(B)G5 1/45		
	HC-SFS102(4)(B)G5 1/5	HG-SR102(4)(B)G5 1/5		
	HC-SFS102(4)(B)G5 1/11	HG-SR102(4)(B)G5 1/11		

Note 1. For mounting dimensions, see "2.3 Comparison of Mounting Dimensions for Geared Servo Motors".

2. The power supply and encoder connector will be changed. For further details, see "2.6 Comparison of Servo Motor Connector Specifications".

For replacement using the existing wiring, use an upgrade tool.

Part 8: Review on Replacement of Motor

Series	model	Example of replacement model	Compatibility (○: Compatible)	Note
Medium capacity, medium inertia HC-SFS series with high precision reducer Flange output type (G5) (4): 400 V specifications (B): With brake	HC-SFS102(4)(B)G5 1/21	HG-SR102(4)(B)G5 1/21	○	<ul style="list-style-type: none"> The total length of the motor will be shorter, so confirm that the motor connector does not interfere with the device side.
	HC-SFS102(4)(B)G5 1/33	HG-SR102(4)(B)G5 1/33		
	HC-SFS102(4)(B)G5 1/45	HG-SR102(4)(B)G5 1/45		
	HC-SFS152(4)(B)G5 1/5	HG-SR152(4)(B)G5 1/5		
	HC-SFS152(4)(B)G5 1/11	HG-SR152(4)(B)G5 1/11		
	HC-SFS152(4)(B)G5 1/21	HG-SR152(4)(B)G5 1/21		
	HC-SFS152(4)(B)G5 1/33	HG-SR152(4)(B)G5 1/33		
	HC-SFS152(4)(B)G5 1/45	HG-SR152(4)(B)G5 1/45		
	HC-SFS202(4)(B)G5 1/5	HG-SR202(4)(B)G5 1/5		
	HC-SFS202(4)(B)G5 1/11	HG-SR202(4)(B)G5 1/11		
	HC-SFS202(4)(B)G5 1/21	HG-SR202(4)(B)G5 1/21		
	HC-SFS202(4)(B)G5 1/33	HG-SR202(4)(B)G5 1/33		
	HC-SFS202(4)(B)G5 1/45	HG-SR202(4)(B)G5 1/45		
	HC-SFS352(4)(B)G5 1/5	HG-SR352(4)(B)G5 1/5		
	HC-SFS352(4)(B)G5 1/11	HG-SR352(4)(B)G5 1/11		
	HC-SFS352(4)(B)G5 1/21	HG-SR352(4)(B)G5 1/21		
	HC-SFS502(4)(B)G5 1/5	HG-SR502(4)(B)G5 1/5		
	HC-SFS502(4)(B)G5 1/11	HG-SR502(4)(B)G5 1/11		
HC-SFS702(4)(B)G5 1/5	HG-SR702(4)(B)G5 1/5			
Medium capacity, medium inertia HC-SFS series with high precision reducer Shaft output type (G7) (4): 400 V specifications (B): With brake	HC-SFS52(4)(B)G7 1/5	HG-SR52(4)(B)G7 1/5	○	<ul style="list-style-type: none"> The total length of the motor will be shorter, so confirm that the motor connector does not interfere with the device side.
	HC-SFS52(4)(B)G7 1/11	HG-SR52(4)(B)G7 1/11		
	HC-SFS52(4)(B)G7 1/21	HG-SR52(4)(B)G7 1/21		
	HC-SFS52(4)(B)G7 1/33	HG-SR52(4)(B)G7 1/33		
	HC-SFS52(4)(B)G7 1/45	HG-SR52(4)(B)G7 1/45		
	HC-SFS102(4)(B)G7 1/5	HG-SR102(4)(B)G7 1/5		
	HC-SFS102(4)(B)G7 1/11	HG-SR102(4)(B)G7 1/11		
	HC-SFS102(4)(B)G7 1/21	HG-SR102(4)(B)G7 1/21		
	HC-SFS102(4)(B)G7 1/33	HG-SR102(4)(B)G7 1/33		
	HC-SFS102(4)(B)G7 1/45	HG-SR102(4)(B)G7 1/45		
	HC-SFS152(4)(B)G7 1/5	HG-SR152(4)(B)G7 1/5		
	HC-SFS152(4)(B)G7 1/11	HG-SR152(4)(B)G7 1/11		
	HC-SFS152(4)(B)G7 1/21	HG-SR152(4)(B)G7 1/21		
	HC-SFS152(4)(B)G7 1/33	HG-SR152(4)(B)G7 1/33		
	HC-SFS152(4)(B)G7 1/45	HG-SR152(4)(B)G7 1/45		
	HC-SFS202(4)(B)G7 1/5	HG-SR202(4)(B)G7 1/5		
	HC-SFS202(4)(B)G7 1/11	HG-SR202(4)(B)G7 1/11		
	HC-SFS202(4)(B)G7 1/21	HG-SR202(4)(B)G7 1/21		
	HC-SFS202(4)(B)G7 1/33	HG-SR202(4)(B)G7 1/33		
	HC-SFS202(4)(B)G7 1/45	HG-SR202(4)(B)G7 1/45		
	HC-SFS352(4)(B)G7 1/5	HG-SR352(4)(B)G7 1/5		
HC-SFS352(4)(B)G7 1/11	HG-SR352(4)(B)G7 1/11			
HC-SFS352(4)(B)G7 1/21	HG-SR352(4)(B)G7 1/21			
HC-SFS502(4)(B)G7 1/5	HG-SR502(4)(B)G7 1/5			
HC-SFS502(4)(B)G7 1/11	HG-SR502(4)(B)G7 1/11			
HC-SFS702(4)(B)G7 1/5	HG-SR702(4)(B)G7 1/5			

Note 1. The power supply and encoder connector will be changed. For further details, see "2.6 Comparison of Servo Motor Connector Specifications".

For replacement using the existing wiring, use an upgrade tool.

Part 8: Review on Replacement of Motor

(4) HC-RFS/-LFS/-UFS motor

Series	model	Example of replacement model	Compatibility (O: Compatible)	Note
Medium capacity, ultra-low inertia HC-RFS series (B): With brake	HC-RFS103(B)	HG-RR103(B)	O	
	HC-RFS153(B)	HG-RR153(B)		
	HC-RFS203(B)	HG-RR203(B)		
	HC-RFS353(B)	HG-RR353(B)		
	HC-RFS503(B)	HG-RR503(B)		
Medium capacity, ultra-low inertia HC-RFS series with high precision reducer (G2) (B): With brake	HC-RFS103(B)G2 1/5 ◇	HG-SR102(B)G7 1/5	(Note 1)	<ul style="list-style-type: none"> The HG-RR series does not support the geared model. The geared model is supported with the HG-SR series. Check the output torque because the reduction ratio of models marked with ◆ is greatly different. The capacity of the corresponding servo amplifier will be different if a model marked with ◇ is replaced. The corresponding servo amplifier for HG-SR102 is MR-J4-100_, for HG-SR202 is MR-J4-200_, and for HG-SR352 is MR-J4-350_.
	HC-RFS103(B)G2 1/9 ◇	HG-SR102(B)G7 1/11		
	HC-RFS103(B)G2 1/20 ◇	HG-SR102(B)G7 1/21		
	HC-RFS103(B)G2 1/29 ◇	HG-SR102(B)G7 1/33		
	HC-RFS103(B)G2 1/45 ◇	HG-SR102(B)G7 1/45		
	HC-RFS153(B)G2 1/5	HG-SR152(B)G7 1/5		
	HC-RFS153(B)G2 1/9	HG-SR152(B)G7 1/11		
	HC-RFS153(B)G2 1/20	HG-SR152(B)G7 1/21		
	HC-RFS153(B)G2 1/29	HG-SR152(B)G7 1/33		
	HC-RFS153(B)G2 1/45	HG-SR152(B)G7 1/45		
	HC-RFS203(B)G2 1/5 ◇	HG-SR202(B)G7 1/5		
	HC-RFS203(B)G2 1/9 ◇	HG-SR202(B)G7 1/11		
	HC-RFS203(B)G2 1/20 ◇	HG-SR202(B)G7 1/21		
	HC-RFS203(B)G2 1/29 ◇	HG-SR202(B)G7 1/33		
	HC-RFS203(B)G2 1/45 ◇	HG-SR202(B)G7 1/45		
	HC-RFS353(B)G2 1/5 ◇	HG-SR352(B)G7 1/5		
	HC-RFS353(B)G2 1/9 ◇	HG-SR352(B)G7 1/11		
	HC-RFS353(B)G2 1/20 ◇	HG-SR352(B)G7 1/21		
HC-RFS353(B)G2 1/29 ◇	HG-SR352(B)G7 1/21 ◆			
HC-RFS503(B)G2 1/5	HG-SR502(B)G7 1/5			
HC-RFS503(B)G2 1/9	HG-SR502(B)G7 1/11			
HC-RFS503(B)G2 1/20	HG-SR502(B)G7 1/11 ◆			
Medium capacity, ultra-low inertia HC-RFS series with high precision reducer Flange output type (G5) (B): With brake	HC-RFS103(B)G5 1/5 ◇	HG-SR102(B)G5 1/5	(Note 1)	<ul style="list-style-type: none"> The HG-RR series does not support the geared model. The geared model is supported with the HG-SR series. Check the output torque because the reduction ratio of models marked with ◆ is greatly different. The capacity of the corresponding servo amplifier will be different if a model marked with ◇ is replaced. The corresponding servo amplifier for HG-SR102 is MR-J4-100_, for HG-SR202 is MR-J4-200_, and for HG-SR352 is MR-J4-350_.
	HC-RFS103(B)G5 1/11 ◇	HG-SR102(B)G5 1/11		
	HC-RFS103(B)G5 1/21 ◇	HG-SR102(B)G5 1/21		
	HC-RFS103(B)G5 1/33 ◇	HG-SR102(B)G5 1/33		
	HC-RFS103(B)G5 1/45 ◇	HG-SR102(B)G5 1/45		
	HC-RFS153(B)G5 1/5	HG-SR152(B)G5 1/5		
	HC-RFS153(B)G5 1/11	HG-SR152(B)G5 1/11		
	HC-RFS153(B)G5 1/21	HG-SR152(B)G5 1/21		
	HC-RFS153(B)G5 1/33	HG-SR152(B)G5 1/33		
	HC-RFS153(B)G5 1/45	HG-SR152(B)G5 1/45		
	HC-RFS203(B)G5 1/5 ◇	HG-SR202(B)G5 1/5		
	HC-RFS203(B)G5 1/11 ◇	HG-SR202(B)G5 1/11		
	HC-RFS203(B)G5 1/21 ◇	HG-SR202(B)G5 1/21		
	HC-RFS203(B)G5 1/33 ◇	HG-SR202(B)G5 1/33		
	HC-RFS203(B)G5 1/45 ◇	HG-SR202(B)G5 1/45		
	HC-RFS353(B)G5 1/5 ◇	HG-SR352(B)G5 1/5		
	HC-RFS353(B)G5 1/11 ◇	HG-SR352(B)G5 1/11		
	HC-RFS353(B)G5 1/21 ◇	HG-SR352(B)G5 1/21		
HC-RFS353(B)G5 1/33 ◇	HG-SR352(B)G5 1/21 ◆			
HC-RFS503(B)G5 1/5	HG-SR502(B)G5 1/5			
HC-RFS503(B)G5 1/11	HG-SR502(B)G5 1/11			
HC-RFS503(B)G5 1/21	HG-SR502(B)G5 1/11 ◆			

Note 1. For mounting dimensions, see "2.3 Comparison of Mounting Dimensions for Geared Servo Motors".

2. The power supply and encoder connector will be changed. For further details, see "2.6 Comparison of Servo Motor Connector Specifications".

For replacement using the existing wiring, use an upgrade tool.

Part 8: Review on Replacement of Motor

Series	model	Example of replacement model	Compatibility (○: Compatible)	Note
Medium capacity, ultra-low inertia HC-RFS series with high precision reducer Shaft output type (G7) (B): With brake	HC-RFS103(B)G7 1/5 ◇	HG-SR102(B)G7 1/5	(Note 1)	<ul style="list-style-type: none"> The HG-RR series does not support the geared model. The geared model is supported with the HG-SR series. Check the output torque because the reduction ratio of models marked with ◇ is greatly different. The capacity of the corresponding servo amplifier will be different if a model marked with ◇ is replaced. The corresponding servo amplifier for HG-SR102 is MR-J4-100_, for HG-SR202 is MR-J4-200_, and for HG-SR352 is MR-J4-350_.
	HC-RFS103(B)G7 1/11 ◇	HG-SR102(B)G7 1/11		
	HC-RFS103(B)G7 1/21 ◇	HG-SR102(B)G7 1/21		
	HC-RFS103(B)G7 1/33 ◇	HG-SR102(B)G7 1/33		
	HC-RFS103(B)G7 1/45 ◇	HG-SR102(B)G7 1/45		
	HC-RFS153(B)G7 1/5	HG-SR152(B)G7 1/5		
	HC-RFS153(B)G7 1/11	HG-SR152(B)G7 1/11		
	HC-RFS153(B)G7 1/21	HG-SR152(B)G7 1/21		
	HC-RFS153(B)G7 1/33	HG-SR152(B)G7 1/33		
	HC-RFS153(B)G7 1/45	HG-SR152(B)G7 1/45		
	HC-RFS203(B)G7 1/5 ◇	HG-SR202(B)G7 1/5		
	HC-RFS203(B)G7 1/11 ◇	HG-SR202(B)G7 1/11		
	HC-RFS203(B)G7 1/21 ◇	HG-SR202(B)G7 1/21		
	HC-RFS203(B)G7 1/33 ◇	HG-SR202(B)G7 1/33		
	HC-RFS203(B)G7 1/45 ◇	HG-SR202(B)G7 1/45		
	HC-RFS353(B)G7 1/5 ◇	HG-SR352(B)G7 1/5		
	HC-RFS353(B)G7 1/11 ◇	HG-SR352(B)G7 1/11		
	HC-RFS353(B)G7 1/21 ◇	HG-SR352(B)G7 1/21		
	HC-RFS353(B)G7 1/33 ◇	HG-SR352(B)G7 1/21 ◆		
	HC-RFS503(B)G7 1/5	HG-SR502(B)G7 1/5		
HC-RFS503(B)G7 1/11	HG-SR502(B)G7 1/11			
HC-RFS503(B)G7 1/21	HG-SR502(B)G7 1/11 ◆			
Medium capacity, low inertia HC-LFS series (B): With brake	HC-LFS52(B) ◇	HG-JR73(B)	(Note 1)	<ul style="list-style-type: none"> The capacity of the corresponding servo amplifier will be different if a model marked with ◇ is replaced. The correspondence servo amplifier for HG-JR73 is MR-J4-70_, for HG-JR153 is MR-J4-200_, and for HG-JR353 is MR-J4-350_.
	HC-LFS102(B) ◇	HG-JR153(B)		
	HC-LFS152(B) ◇	HG-JR353(B)		
	HC-LFS202(B)			
	HC-LFS302(B)	HG-JR503(B)		
Small capacity, flat type HC-UFS series (B): With brake	HC-UFS13(B)	HG-KR13(B)	(Note 1)	<ul style="list-style-type: none"> The HG-KR servo motor does not have an oil seal. Use HG-KR_J when an oil seal is required.
	HC-UFS23(B)	HG-KR23(B)		
	HC-UFS43(B)	HG-KR43(B)		
	HC-UFS73(B)	HG-KR73(B)		
Medium capacity, flat type HC-UFS series (B): With brake	HC-UFS72(B)	HG-UR72(B)	○	
	HC-UFS152(B)	HG-UR152(B)		
	HC-UFS202(B)	HG-UR202(B)		
	HC-UFS352(B)	HG-UR352(B)		
	HC-UFS502(B)	HG-UR502(B)		

Note 1. For mounting dimensions, see "2.2 Detailed Comparison of Servo Motor Mounting Dimensions" and "2.3 Comparison of Mounting Dimensions for Geared Servo Motors".

2. The power supply and encoder connector will be changed. For further details, see "2.6 Comparison of Servo Motor Connector Specifications".

For replacement using the existing wiring, use an upgrade tool.

Part 8: Review on Replacement of Motor

(5) HA-LFS motor

Series	Model	Example of replacement model	Compatibility (○: Compatible)	Note
Large capacity, low inertia HA-LFS 1000 r/min series (4): 400 V specifications (B): With brake	HA-LFS601(4)(B)	HG-JR601(4)(B)	(Note 1)	
	HA-LFS801(4)(B)	HG-JR801(4)(B)		
	HA-LFS12K1(4)(B)	HG-JR12K1(4)(B)		
	HA-LFS15K1(4)	HG-JR15K1(4)		
	HA-LFS20K1(4)	HG-JR20K1(4)		
	HA-LFS25K1(4)	HG-JR25K1(4)		
	HA-LFS30K1(4)	HG-JR30K1(4)		
	HA-LFS37K1(4)	HG-JR37K1(4)	○	<ul style="list-style-type: none"> Only flanges and shaft ends have compatibility in mounting. Contact a sales representative regarding the motor model and its delivery, since it is developed upon receipt of order.
	HA-LFS601(4)(B)	HG-JR601(4)(B)R(B)-S		
	HA-LFS801(4)(B)	HG-JR801(4)(B)R(B)-S		
	HA-LFS12K1(4)(B)	HG-JR12K1(4)(B)R(B)-S		
	HA-LFS15K1(4)	HG-JR15K1(4)R-S		
	HA-LFS20K1(4)	HG-JR20K1(4)R-S		
	HA-LFS25K1(4)	HG-JR25K1(4)R-S		
HA-LFS30K1(4)	HG-JR30K1(4)R-S			
HA-LFS37K1(4)	HG-JR37K1(4)R-S			
Large capacity, low inertia HA-LFS 1500 r/min series (4): 400 V specifications (B): With brake	HA-LFS701M(4)(B)	HG-JR701M(4)(B)	(Note 1)	
	HA-LFS11K1M(4)(B)	HG-JR11K1M(4)(B)		
	HA-LFS15K1M(4)(B)	HG-JR15K1M(4)(B)		
	HA-LFS22K1M(4)	HG-JR22K1M(4)		
	HA-LFS30K1M(4)	HG-JR30K1M(4)		
	HA-LFS37K1M(4)	HG-JR37K1M(4)		
	HA-LFS45K1M4	HG-JR45K1M4		
	HA-LFS50K1M4	HG-JR55K1M4	○	<ul style="list-style-type: none"> Only flanges and shaft ends have compatibility in mounting. Contact a sales representative regarding the motor model and its delivery, since it is developed upon receipt of order.
	HA-LFS701M(4)(B)	HG-JR701M(4)(B)R(B)-S		
	HA-LFS11K1M(4)(B)	HG-JR11K1M(4)(B)R(B)-S (□250)		
	HA-LFS15K1M(4)(B)	HG-JR15K1M(4)(B)R(B)-S		
	HA-LFS22K1M(4)	HG-JR22K1M(4)R-S		
	HA-LFS30K1M(4)	HG-JR30K1M(4)R-S		
	HA-LFS37K1M(4)	HG-JR37K1M(4)R-S		
HA-LFS45K1M4	HG-JR45K1M4R-S			
HA-LFS50K1M4	HG-JR55K1M4R-S			
Large capacity, low inertia HA-LFS series 2000 r/min series (4): 400 V specifications (B): With brake	HA-LFS502	HG-SR502	(Note 1)	<ul style="list-style-type: none"> The HG-SR servo motor does not have an oil seal. Use HG-SR_J when an oil seal is required. The capacity of the corresponding servo amplifier will be different if a model marked with ◇ is replaced.
	HA-LFS702	HG-SR702		
	HA-LFS11K2(4)(B)	HG-JR11K1M(4)(B)		
	HA-LFS15K2(4)(B) ◇			
	HA-LFS22K2(4)(B) ◇	HG-JR15K1M(4)(B)		
	HA-LFS30K2(4) ◇	HG-JR22K1M(4)		
	HA-LFS37K2(4) ◇	HG-JR30K1M(4)		
	HA-LFS45K24 ◇	HG-JR37K1M4		
	HA-LFS55K24 ◇	HG-JR45K1M4	○	<ul style="list-style-type: none"> Only flanges and shaft ends have compatibility in mounting. Contact a sales representative regarding the motor model and its delivery, since it is developed upon receipt of order. For the replacement from the ◇ model, the capacity of compatible servo amplifier is different.
	HA-LFS502	HG-SR502R-S		
	HA-LFS702	HG-SR702R-S		
	HA-LFS11K2(4)(B)	HG-JR11K1M(4)(B)R(B)-S (□200)		
	HA-LFS15K2(4)(B) ◇	HG-JR11K1M(4)(B)R(B)-S (□250)		
	HA-LFS22K2(4)(B) ◇	HG-JR15K1M(4)(B)R(B)-S		
HA-LFS30K2(4) ◇	HG-JR22K1M(4)R-S			
HA-LFS37K2(4) ◇	HG-JR30K1M(4)R-S			
HA-LFS45K24 ◇	HG-JR37K1M4R-S			
HA-LFS55K24 ◇	HG-JR45K1M4R-S			

Note 1. Refer to "2.2 Detailed comparison of servo motor mounting dimensions" for mounting dimensions.

2. The power supply and encoder connector will be changed. For further details, see "2.6 Comparison of Servo Motor Connector Specifications".

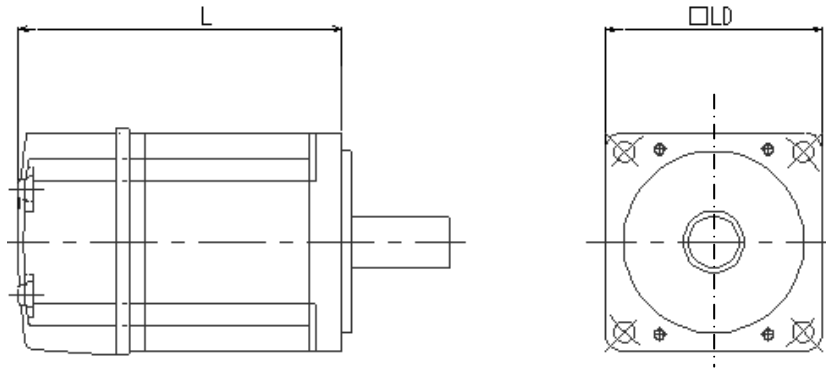
For replacement using the existing wiring, use an upgrade tool.

3. For HA-LFS 1000 r/min series of 15 kW or more, HA-LFS 1500 r/min series of 22 kW or more, and HA-LFS 2000 r/min series of 30 kW or more, their substitute models have different thermal wiring from them. A new encoder cable is required when using the substitutes.

Part 8: Review on Replacement of Motor

2. COMPARISON OF SERVO MOTOR SPECIFICATIONS

2.1 Comparison of Servo Motor Mounting Dimensions

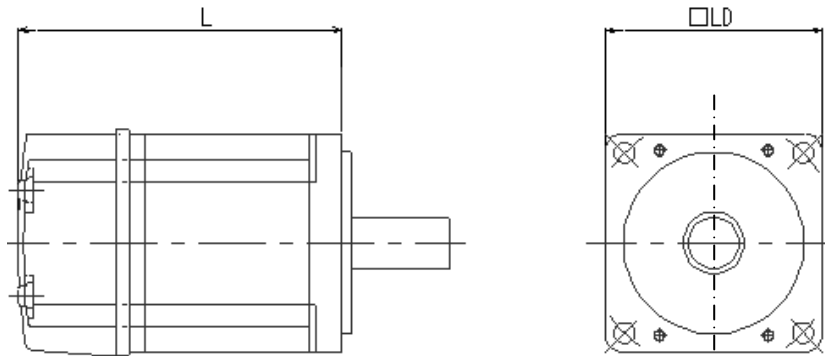


Target product			Replacement product			Note
Model	L	LD	Model	L	LD	
HC-KFS053(B)	81.5(109.5)	40	HG-KR053(B)	66.4(107)	40	(◇ part: Note 2)
HC-MFS053(B)			HG-MR053(B) ◇			
HC-KFS13(B)	96.5(124.5)		HG-KR13(B)	82.4(123)		
HC-MFS13(B)			HG-MR13(B) ◇			
HC-KFS23(B)	99.5(131.5)	60	HG-KR23(B)	76.6(113.4)	60	(Note 2)
HC-MFS23(B)	124.5(156.5)		HG-MR23(B)	98.3(135.1)		
HC-KFS43(B)			HG-KR43(B)			
HC-MFS43(B)	HG-MR43(B)					
HC-KFS73(B)	142(177.5)	80	HG-KR73(B)	112(152.3)	80	
HC-MFS73(B)			HG-MR73(B)			
HC-KFS46	134	60	HG-KR43	98.3	60	
HC-KFS410						
HC-SFS81(B)	170(203)	130	HG-SR81(B)	146.5(181)	130	
HC-SFS121(B)	145(193)	176	HG-SR121(B)	138.5(188)	176	
HC-SFS201(B)	187(235)		HG-SR201(B)	162.5(212)		
HC-SFS301(B)	208(256)		HG-SR301(B)	178.5(228)		
HC-SFS52(B)	120(153)		HG-SR52(B)	118.5(153)		
HC-SFS524(B)		HG-SR524(B)				
HC-SFS53(B)						
HC-SFS102(B)	145(178)	130	HG-SR102(B)	132.5(167)	130	
HC-SFS1024(B)			HG-SR1024(B)			
HC-SFS103(B)						
HC-SFS152(B)	170(203)		HG-SR152(B)	146.5(181)		
HC-SFS1524(B)			HG-SR1524(B)			
HC-SFS153(B)						
HC-SFS202(B)	145(193)	176	HG-SR202(B)	138.5(188)	176	
HC-SFS2024(B)			HG-SR2024(B)			
HC-SFS203(B)						
HC-SFS352(B)	187(235)		HG-SR352(B)	162.5(212)		
HC-SFS3524(B)			HG-SR3524(B)			
HC-SFS353(B)						
HC-SFS502(B)	208(256)	HG-SR502(B)	178.5(228)			
HC-SFS5024(B)		HG-SR5024(B)				
HC-SFS702(B)	292(340)	HG-SR702(B)	218.5(268)			
HC-SFS7024(B)		HG-SR7024(B)				
HC-RFS103(B)	147(185)	100	HG-RR103(B)	145.5(183)	100	
HC-RFS153(B)	172(210)		HG-RR153(B)	170.5(208)		
HC-RFS203(B)	197(235)		HG-RR203(B)	195.5(233)		
HC-RFS353(B)	217(254)	130	HG-RR353(B)	215.5(252)	130	
HC-RFS503(B)	274(311)		HG-RR503(B)	272.5(309)		

Note 1. As for the dimensions not listed here, refer to the catalog or Instruction Manual. () : With brake
 2. Some mounting dimensions have differences. Refer to "2.2 Detailed Comparison of Servo Motor Mounting Dimensions" for detailed dimensions.

[Unit: mm]

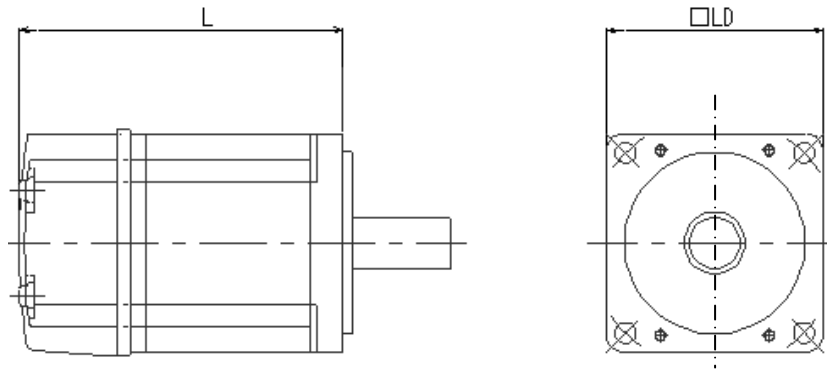
Part 8: Review on Replacement of Motor



Target product			Replacement product			Note
Model	L	LD	Model	L	LD	
HC-LFS52(B)	145.5(178.5)	130	HG-JR73(B)	145.5(191)	90	(Note 2)
HC-LFS102(B)	165.5(198.5)		HG-JR153(B)	199.5(245)		
HC-LFS152(B)	193(226)		HG-JR353(B)	213(251.5)		
HC-LFS202(B)	200(248)	176	HG-JR353(B)	213(251.5)	130	
HC-LFS302(B)	250(298)		HG-JR503(B)	267(305.5)		
HC-UFS13(B)	70(100)	60	HG-KR13(B)	82.4(123)	40	
HC-UFS23(B)	77(111)	80	HG-KR23(B)	76.6(113.4)	60	
HC-UFS43(B)	92(126)		HG-KR43(B)	98.3(135.1)		
HC-UFS73(B)	85(111)	123	HG-KR73(B)	112(152.3)	80	
HC-UFS72(B)	110.5(144)	176	HG-UR72(B)	109(142.5)	176	(Note 2)
HC-UFS152(B)	120(153.5)		HG-UR152(B)	118.5(152)		
HC-UFS202(B)	118(161)	220	HG-UR202(B)	116.5(159.5)	220	
HC-UFS352(B)	142(185)		HG-UR352(B)	140.5(183.5)		
HC-UFS502(B)	166(209)		HG-UR502(B)	164.5(207.5)		
HA-LFS601(B) HA-LFS6014(B)	480(550)	200	HG-JR601(B) HG-JR6014(B)	299.5(372)	220	
			HG-JR601R(B)-S_ HG-JR6014R(B)-S_	389.5(461.5)	200	
HA-LFS801(B) HA-LFS8014(B)	495(610)	250	HG-JR801(B) HG-JR8014(B)	339.5(412)	220	(Note 2)
			HG-JR801R(B)-S_ HG-JR8014R(B)-S_	354(426.5)	250	
HA-LFS12K1(B) HA-LFS12K14(B)	555(670)		HG-JR12K1(B) HG-JR12K14(B)	439.5(512)	220	(Note 2)
		HG-JR12K1R(B)-S_ HG-JR12K14R(B)-S_	454(526.5)	250		
HA-LFS15K1 HA-LFS15K14	605	280	HG-JR15K1 HG-JR15K14	476	250	(Note 2)
			HG-JR15K1R-S_ HG-JR15K14R-S_	488	280	
HA-LFS20K1 HA-LFS20K14	650		HG-JR20K1 HG-JR20K14	538	250	(Note 2)
		HG-JR20K1R-S_ HG-JR20K14R-S_	550	280		
HA-LFS25K1 HA-LFS25K14	640	350	HG-JR25K1 HG-JR25K14	600	250	(Note 2)
			HG-JR25K1R-S_ HG-JR25K14R-S_	617	350	
HA-LFS30K1 HA-LFS30K14	685		HG-JR30K1 HG-JR30K14	600	280	(Note 2)
		HG-JR30K1R-S_ HG-JR30K14R-S_	610	350		
HA-LFS37K1 HA-LFS37K14	785	350	HG-JR37K1 HG-JR37K14	664	280	(Note 2)
			HG-JR37K1R-S_ HG-JR37K14R-S_	674	350	

Note 1. As for the dimensions not listed here, refer to the catalog or Instruction Manual. (): With brake [Unit: mm]
 2. Without attachment compatibility. Refer to "2.2 Detailed Comparison of Servo Motor Mounting Dimensions" for detailed dimensions.

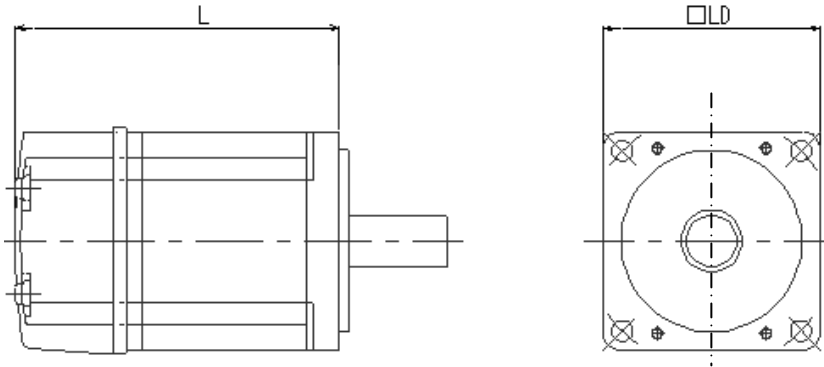
Part 8: Review on Replacement of Motor



Target product			Replacement product			Note
Model	L	LD	Model	L	LD	
HA-LFS701M(B) HA-LFS701M4(B)	480(550)	200	HG-JR701M(B) HG-JR701M4(B)	299.5(372)	220	(Note 2)
			HG-JR701MR(B)-S_ HG-JR701M4R(B)-S_	389.5(461.5)	200	
HA-LFS11K1M(B) HA-LFS11K1M4(B)	495(610)	250	HG-JR11K1M(B) HG-JR11K1M4(B)	339.5(412)	220	(Note 2)
			HG-JR11K1MR(B)-S_(□250) HG-JR11K1M4R(B)-S_(□250)	354(426.5)	250	
HA-LFS15K1M(B) HA-LFS15K1M4(B)	555(670)	250	HG-JR15K1M(B) HG-JR15K1M4(B)	439.5(512)	220	(Note 2)
			HG-JR15K1MR(B)-S_ HG-JR15K1M4R(B)-S_	454(526.5)	250	
HA-LFS22K1M HA-LFS22K1M4	605	280	HG-JR22K1M HG-JR22K1M4	476	250	(Note 2)
			HG-JR22K1MR-S_ HG-JR22K1M4R-S_	488	280	
HA-LFS30K1M	660	280	HG-JR30K1M	538	250	(Note 2)
HA-LFS30K1M4	650		HG-JR30K1MR-S_ HG-JR30K1M4R-S_	550 550	280 280	
HA-LFS37K1M HA-LFS37K1M4	640	350	HG-JR37K1M HG-JR37K1M4	600	250	(Note 2)
			HG-JR37K1MR-S_ HG-JR37K1M4R-S_	617	350	
HA-LFS45K1M4	685	350	HG-JR45K1M4	600	280	(Note 2)
HA-LFS50K1M4	785		HG-JR45K1M4R-S_ HG-JR55K1M4 HG-JR55K1M4R-S_	610 664 674	350 280 350	

Note 1. As for the dimensions not listed here, refer to the catalog or Instruction Manual. (): With brake [Unit: mm]
 2. Without attachment compatibility. Refer to "2.2 Detailed Comparison of Servo Motor Mounting Dimensions" for detailed dimensions.

Part 8: Review on Replacement of Motor

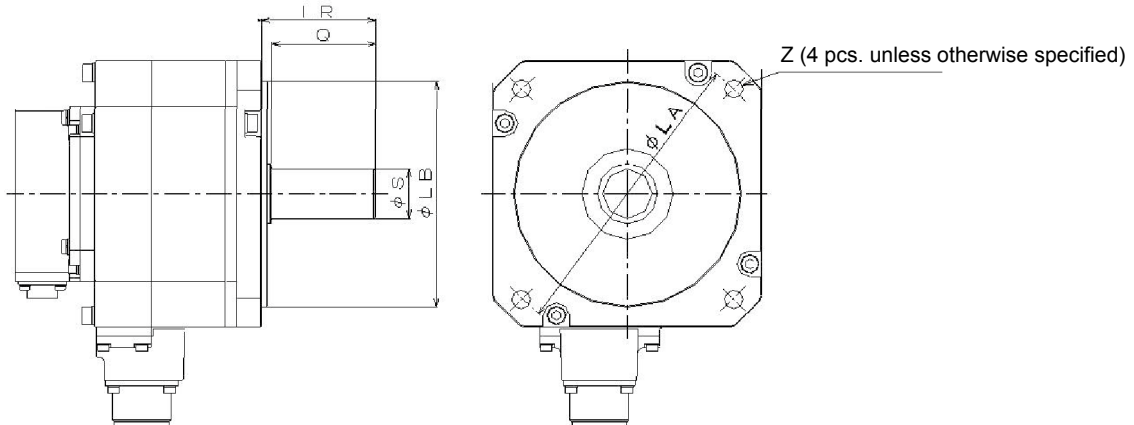


Target product			Replacement product			Note		
Model	L	LD	Model	L	LD			
HA-LFS502	300	200	HG-SR502	178.5	176	(Note 2)		
			HG-SR502R-S_	207	200			
HA-LFS702	342		HG-SR702	218.5	176	(Note 2)		
			HG-SR702R-S_	247	200			
HA-LFS11K2(B) HA-LFS11K24(B)	480(550)		HG-JR11K1M(B) HG-JR11K1M4(B)	339.5(412)	220	(Note 2)		
			HG-JR11K1MR(B)-S_(□200) HG-JR11K1M4R(B)-S_(□200)	429.5(502)	200			
			HA-LFS15K2(B) HA-LFS15K24(B)	495(610)	HG-JR11K1M(B) HG-JR11K1M4(B)	339.5(412)	220	(Note 2)
HG-JR11K1MR(B)-S_(□250) HG-JR11K1M4R(B)-S_(□250)	354(426.5)				250			
HA-LFS22K2(B) HA-LFS22K24(B)	555(670)				HG-JR15K1M(B) HG-JR15K1M4(B)	439.5(512)	220	(Note 2)
					HG-JR15K1MR(B)-S_ HG-JR15K1M4R(B)-S_	454(526.5)	250	
HA-LFS30K2	615	280	HG-JR22K1M	476	250	(Note 2)		
			HG-JR22K1MR-S_	488	280			
HA-LFS30K24	605		HG-JR22K1M4	476	250	(Note 2)		
			HG-JR22K1M4R-S_	488	280			
HA-LFS37K2	660		HG-JR30K1M	538	250	(Note 2)		
			HG-JR30K1MR-S_	550	280			
HA-LFS37K24	650		HG-JR30K1M4	538	250	(Note 2)		
			HG-JR30K1M4R-S_	550	280			
HA-LFS45K24	640		350	HG-JR37K1M4	600	250	(Note 2)	
				HG-JR37K1M4R-S_	617	350		
HA-LFS55K24	685	HG-JR45K1M4		600	280	(Note 2)		
		HG-JR45K1M4R-S_		610	350			

Note 1. As for the dimensions not listed here, refer to the catalog or Instruction Manual. (): With brake [Unit: mm]
 2. Without attachment compatibility. Refer to "2.2 Detailed Comparison of Servo Motor Mounting Dimensions" for detailed dimensions.

Part 8: Review on Replacement of Motor

2.2 Detailed Comparison of Servo Motor Mounting Dimensions



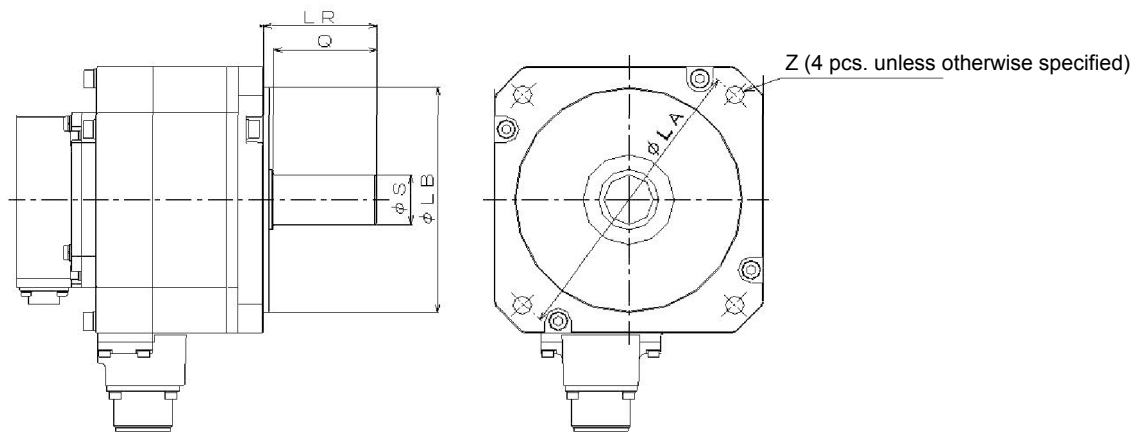
Target product							Replacement product						
Model	LA	LB	LR	Q	S	Z	Model	LA	LB	LR	Q	S	Z
HC-MFS053(B)	46	30	25	22.5	8	2-4.5	HG-MR053(B)	46	30	25	21.5	8	2-4.5
HC-MFS13(B)	46	30	25	22.5	8	2-4.5	HG-MR13(B)	46	30	25	21.5	8	2-4.5
HC-KFS23(B)	70	50	30	27	14	5.8	HG-KR23(B)	70	50	30	26	14	5.8
HC-MFS23(B)							HG-MR23(B)						
HC-KFS43(B)	70	50	30	27	14	5.8	HG-KR43(B)	70	50	30	26	14	5.8
HC-MFS43(B)							HG-MR43(B)						
HC-KFS73(B)	90	70	40	37	19	6.6	HG-KR73(B)	90	70	40	36	19	6.6
HC-MFS73(B)							HG-MR73(B)						
HC-KFS46	70	50	30	27	14	5.8	HG-KR43	70	50	30	26	14	5.8
HC-KFS410	70	50	30	27	14	5.8							
HC-LFS52(B)	145	110	55	50	24	9	HG-JR73(B)	100	80	40	30	16	6.6
HC-LFS102(B)	145	110	55	50	24	9	HG-JR153(B)	100	80	40	30	16	6.6
HC-LFS152(B)	145	110	55	50	24	9	HG-JR353(B)	145	110	55	50	28	9
HC-LFS202(B)	200	114.3	79	75	35	13.5	HG-JR353(B)	145	110	55	50	28	9
HC-LFS302(B)	200	114.3	79	75	35	13.5	HG-JR503(B)	145	110	55	50	28	9
HC-UFS13(B)	70	50	25	19	8	5.8	HG-KR13(B)	46	30	25	21.5	8	2-4.5
HC-UFS23(B)	90	70	30	23.5	14	6.6	HG-KR23(B)	70	50	30	26	14	5.8
HC-UFS43(B)	90	70	30	23.5	14	6.6	HG-KR43(B)	70	50	30	26	14	5.8
HC-UFS73(B)	145	110	40	32.5	19	9	HG-KR73(B)	90	70	40	36	19	6.6
HA-LFS601(B)	215	180	85	80	42	14.5	HG-JR601(B)	235	200	85	79	42	13.5
HA-LFS6014(B)							HG-JR6014(B)						
HA-LFS801(B)	265	230	110	100	55	14.5	HG-JR801(B)	235	200	116	110	55	13.5
HA-LFS8014(B)							HG-JR8014(B)						
HA-LFS12K1(B)	265	230	110	100	55	14.5	HG-JR12K1(B)	235	200	116	110	55	13.5
HA-LFS12K14(B)							HG-JR12K14(B)						
HA-LFS15K1	300	250	140	140	60	19	HG-JR15K1	265	230	140	130	65	24
HA-LFS15K14							HG-JR15K14						
HA-LFS20K1	300	250	140	140	60	19	HG-JR20K1	265	230	140	130	65	24
HA-LFS20K14							HG-JR20K14						
HA-LFS25K1	350	300	140	140	65	19	HG-JR25K1	265	230	140	130	65	24
HA-LFS25K14							HG-JR25K14						
HA-LFS30K1	350	300	140	140	65	19	HG-JR30K1	300	250	140	140	80	24
HA-LFS30K14							HG-JR30K14						
HA-LFS37K1	350	300	170	170	80	19	HG-JR37K1	300	250	140	140	80	24
HA-LFS37K14							HG-JR37K14						

Note 1. As for the dimensions not listed here, refer to the catalog or Instruction Manual. () : With brake

[Unit: mm]

2. Dimensions with differences are shown with shading.

Part 8: Review on Replacement of Motor



Target product							Replacement product						
Model	LA	LB	LR	Q	S	Z	Model	LA	LB	LR	Q	S	Z
HA-LFS701M(B) HA-LFS701M4(B)	215	180	85	80	42	14.5	HG-JR701M(B) HG-JR701M4(B)	235	200	85	79	42	13.5
HA-LFS11K1M(B) HA-LFS11K1M4(B)	265	230	110	100	55	14.5	HG-JR11K1M(B) HG-JR11K1M4(B)	235	200	116	110	55	13.5
HA-LFS15K1M(B) HA-LFS15K1M4(B)	265	230	110	100	55	14.5	HG-JR15K1M(B) HG-JR15K1M4(B)	235	200	116	110	55	13.5
HA-LFS22K1M HA-LFS22K1M4	300	250	140	140	60	19	HG-JR22K1M HG-JR22K1M4	265	230	140	130	65	24
HA-LFS30K1M HA-LFS30K1M4	300	250	140	140	60	19	HG-JR30K1M HG-JR30K1M4	265	230	140	130	65	24
HA-LFS37K1M HA-LFS37K1M4	350	300	140	140	65	19	HG-JR37K1M HG-JR37K1M4	265	230	140	130	65	24
HA-LFS45K1M4	350	300	140	140	65	19	HG-JR45K1M4	300	250	140	140	80	24
HA-LFS50K1M4	350	300	170	170	80	19	HG-JR55K1M4	300	250	140	140	80	24
HA-LFS502	215	180	85	80	42	14.5	HG-SR502	200	114.3	79	75	35	13.5
HA-LFS702	215	180	85	80	42	14.5	HG-SR702	200	114.3	79	75	35	13.5
HA-LFS11K2(B) HA-LFS11K24(B)	215	180	85	80	42	14.5	HG-JR11K1M(B) HG-JR11K1M4(B)	235	200	116	110	55	13.5
HA-LFS15K2(B) HA-LFS15K24(B)	265	230	110	100	55	14.5	HG-JR11K1M(B) HG-JR11K1M4(B)	235	200	116	110	55	13.5
HA-LFS22K2(B) HA-LFS22K24(B)	265	230	110	100	55	14.5	HG-JR15K1M(B) HG-JR15K1M4(B)	235	200	116	110	55	13.5
HA-LFS30K2 HA-LFS30K24	300	250	140	140	60	19	HG-JR22K1M HG-JR22K1M4	265	230	140	130	65	24
HA-LFS37K2 HA-LFS37K24	300	250	140	140	60	19	HG-JR30K1M HG-JR30K1M4	265	230	140	130	65	24
HA-LFS45K24	350	300	140	140	65	19	HG-JR37K1M4	265	230	140	130	65	24
HA-LFS55K24	350	300	140	140	65	19	HG-JR45K1M4	300	250	140	140	80	24

Note 1. As for the dimensions not listed here, refer to the catalog or Instruction Manual. (): With brake

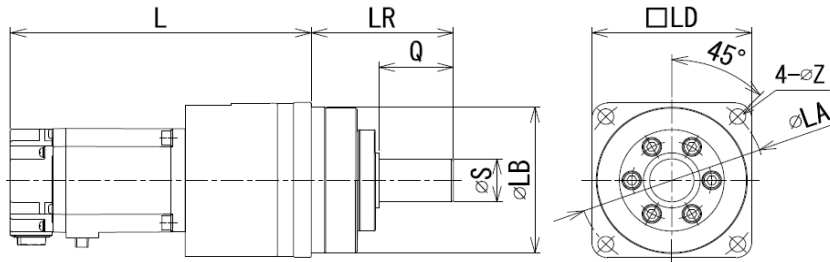
[Unit: mm]

2. Dimensions with differences are shown with shading.

Part 8: Review on Replacement of Motor

2.3 Comparison of Mounting Dimensions for Geared Servo Motors

(For high precision applications: HC-KFS, HC-MFS_G2 to HG-KR_G7)



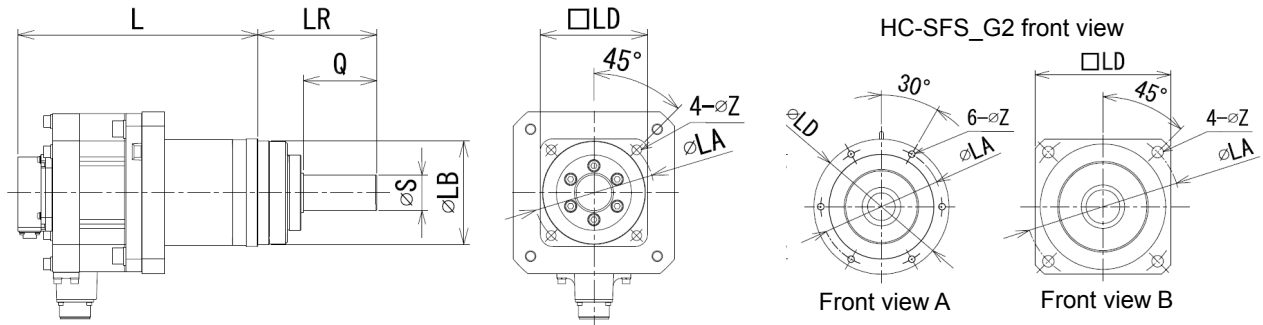
Output (W)	HC-KFS and HC-MFS series (G2)									HG-KR series (G7)								
	Reduction ratio	L	LR	Q	S	LA	LB	LD	Z	Reduction ratio	L	LR	Q	S	LA	LB	LD	Z
50	1/5	130 (158)	55	25	16	80	65	70	6.6	1/5	105.9 (146.5)	42	20	10	46	40	40	3.4
		130.4 (171)	58	28	16	70	56	60	5.5									
	1/9	146 (174)	55	25	16	80	65	70	6.6	1/9	105.9 (146.5)	42	20	10	46	40	40	3.4
	1/20	146 (174)	55	25	16	80	65	70	6.6	1/21	130.4 (171)	58	28	16	70	56	60	5.5
100	1/5	146 (174)	55	25	16	80	65	70	6.6	1/33	130.4 (171)	58	28	16	70	56	60	5.5
		146 (174)	55	25	16	80	65	70	6.6	1/33	130.4 (171)	58	28	16	70	56	60	5.5
	1/9	145 (173)	55	25	16	80	65	70	6.6	1/5	121.9 (162.5)	42	20	10	46	40	40	3.4
	1/9	161 (189)	55	25	16	80	65	70	6.6	1/11	146.4 (187)	58	28	16	70	56	60	5.5
200	1/20	167 (195)	75	35	20	100	80	85	6.6	1/21	146.4 (187)	58	28	16	70	56	60	5.5
	1/29	167 (195)	75	35	20	100	80	85	6.6	1/33	148.9 (189.5)	80	42	25	105	85	90	9
	1/5	157 (189)	55	25	16	80	65	70	6.6	1/5	140.6 (177.4)	58	28	16	70	56	60	5.5
	1/9	175 (207)	75	35	20	100	80	85	6.6	1/11	140.6 (177.4)	58	28	16	70	56	60	5.5
400	1/20	180 (212)	85	40	25	115	95	100	9	1/21	147.6 (184.4)	80	42	25	105	85	90	9
	1/29	180 (212)	85	40	25	115	95	100	9	1/33	147.6 (184.4)	80	42	25	105	85	90	9
	1/5	184 (216)	75	35	20	100	80	85	6.6	1/5	162.3 (199.1)	58	28	16	70	56	60	5.5
	1/9	205 (237)	85	40	25	115	95	100	9	1/11	169.3 (206.1)	80	42	25	105	85	90	9
750	1/20	211 (243)	100	50	32	135	110	115	11	1/21	169.3 (206.1)	80	42	25	105	85	90	9
	1/29	211 (243)	100	50	32	135	110	115	11	1/33	181.3 (218.1)	133	82	40	135	115	120	11
	1/5	212 (247.5)	85	40	25	115	95	100	9	1/5	190 (230.3)	80	42	25	105	85	90	9
	1/9	240 (275.5)	100	50	32	135	110	115	11	1/11	190 (230.3)	80	42	25	105	85	90	9
750	1/20	248 (283.5)	115	60	40	150	125	130	14	1/21	200 (240.3)	133	82	40	135	115	120	11
	1/29	248 (283.5)	115	60	40	150	125	130	14	1/33	200 (240.3)	133	82	40	135	115	120	11

Note 1. As for the dimensions not listed here, refer to the catalog or Instruction Manual. () : With brake

[Unit: mm]

Part 8: Review on Replacement of Motor

(For high precision applications: HC-SFS_G2 to HG-SR_G7 0.5 kW to 1.5 kW)



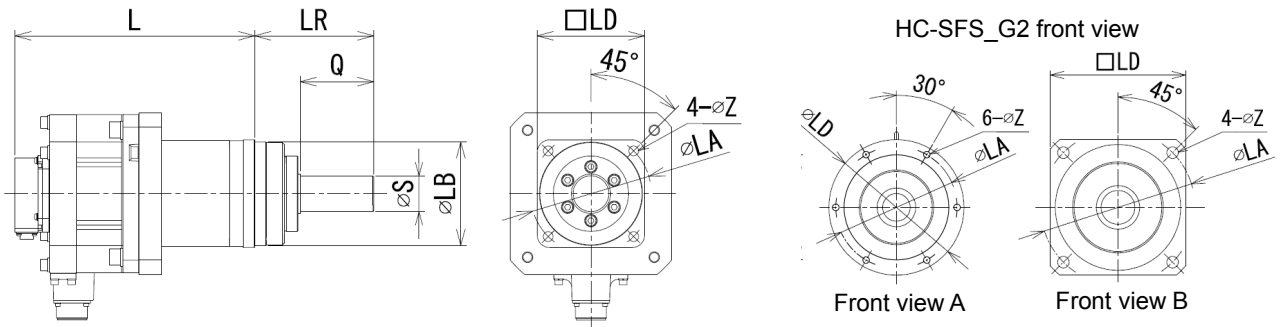
Output (kW)	HC-SFS series (G2)										HG-SR series (G7)								
	Reduction ratio	L	LR	Q	S	LA	LB	LD	Z	Front view	Reduction ratio	L	LR	Q	S	LA	LB	LD	Z
0.5	1/5	276 (309)	100	55	35	160	130	140	12	B	1/5	213.5 (248)	80	42	25	105	85	90	9
	1/9	288 (321)	100	55	35	160	130	140	12	B	1/11	213.5 (248)	80	42	25	105	85	90	9
	1/20	309 (342)	100	55	35	160	130	140	12	B	1/21	225.5 (260)	133	82	40	135	115	120	11
	1/29	337 (370)	140	75	50	220	190	245	12	A	1/33	225.5 (260)	133	82	40	135	115	120	11
	1/45	343 (376)	140	75	50	220	190	245	12	A	1/45	225.5 (260)	133	82	40	135	115	120	11
1.0	1/5	301 (334)	100	55	35	160	130	140	12	B	1/5	227.5 (262)	80	42	25	105	85	90	9
	1/9	313 (346)	100	55	35	160	130	140	12	B	1/11	239.5 (274)	133	82	40	135	115	120	11
	1/20	362 (395)	140	75	50	220	190	245	12	A	1/21	239.5 (274)	133	82	40	135	115	120	11
	1/29	362 (395)	140	75	50	220	190	245	12	A	1/33	255.5 (290)	156	82	50	190	165	170	14
	1/45	389 (422)	160	90	60	280	240	310	14	A	1/45	255.5 (290)	156	82	50	190	165	170	14
1.5	1/5	326 (359)	100	55	35	160	130	140	12	B	1/5	241.5 (276)	80	42	25	105	85	90	9
	1/9	379 (412)	140	75	50	220	190	245	12	A	1/11	253.5 (288)	133	82	40	135	115	120	11
	1/20	387 (420)	140	75	50	220	190	245	12	A	1/21	269.5 (304)	156	82	50	190	165	170	14
	1/29	411 (444)	160	90	60	280	240	310	14	A	1/33	269.5 (304)	156	82	50	190	165	170	14
	1/45	414 (447)	160	90	60	280	240	310	14	A	1/45	269.5 (304)	156	82	50	190	165	170	14

Note 1. As for the dimensions not listed here, refer to the catalog or Instruction Manual. () : With brake

[Unit: mm]

Part 8: Review on Replacement of Motor

(For high precision applications: HC-SFS_G2 to HG-SR_G7 2.0kW to 7.0kW)



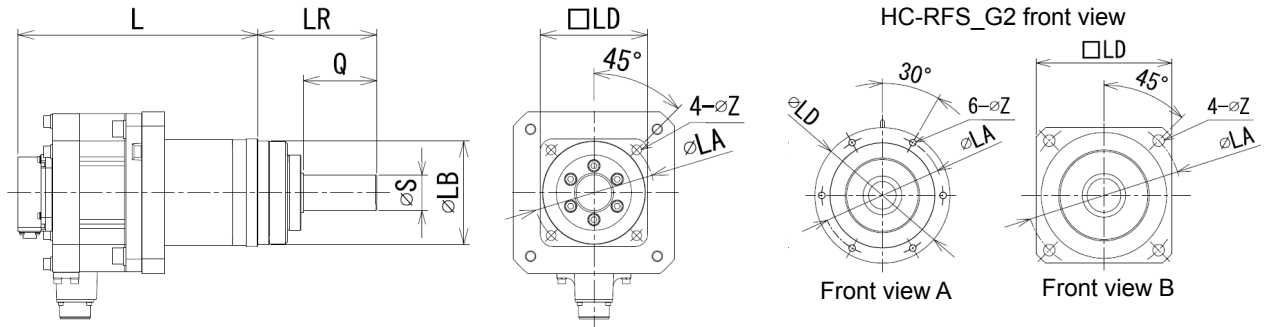
Output (kW)	HC-SFS series (G2)										HG-SR series (G7)								
	Reduction ratio	L	LR	Q	S	LA	LB	LD	Z	Front view	Reduction ratio	L	LR	Q	S	LA	LB	LD	Z
2.0	1/5	348 (396)	140	75	50	220	190	245	12	A	1/5	267.5 (317)	133	82	40	135	115	120	11
	1/9	375 (423)	140	75	50	220	190	245	12	A	1/11	267.5 (317)	133	82	40	135	115	120	11
	1/20	407 (455)	160	90	60	280	240	310	14	A	1/21	287.5 (337)	156	82	50	190	165	170	14
	1/29	407 (455)	160	90	60	280	240	310	14	A	1/33	287.5 (337)	156	82	50	190	165	170	14
	1/45	410 (458)	160	90	60	280	240	310	14	A	1/45	287.5 (337)	156	82	50	190	165	170	14
3.5	1/5	410 (458)	160	90	60	280	240	310	14	A	1/5	291.5 (341)	133	82	40	135	115	120	11
	1/9	442 (490)	160	90	60	280	240	310	14	A	1/11	311.5 (361)	156	82	50	190	165	170	14
	1/20	449 (497)	160	90	60	280	240	310	14	A	1/21	311.5 (361)	156	82	50	190	165	170	14
5.0	1/5	431 (479)	160	90	60	280	240	310	14	A	1/5	327.5 (377)	156	82	50	190	165	170	14
	1/9	463 (511)	160	90	60	280	240	310	14	A	1/11	327.5 (377)	156	82	50	190	165	170	14
7.0	1/5	515 (563)	160	90	60	280	240	310	14	A	1/5	367.5 (417)	156	82	50	190	165	170	14

Note 1. As for the dimensions not listed here, refer to the catalog or Instruction Manual. () : With brake

[Unit: mm]

Part 8: Review on Replacement of Motor

(For high precision applications: HC-RFS_G2 to HG-SR_G7)



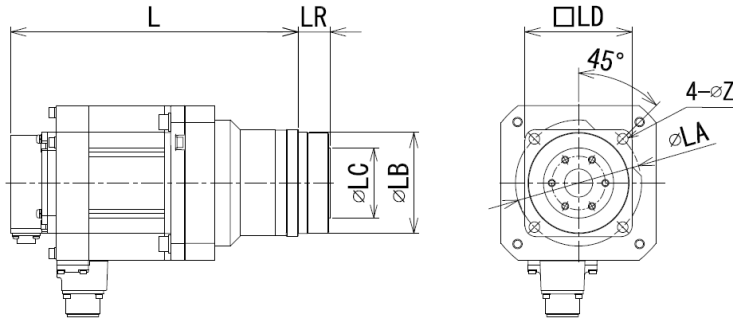
Output (kW)	HC-RFS series (G2)										HG-SR series (G7)								
	Reduction ratio	L	LR	Q	S	LA	LB	LD	Z	Front view	Reduction ratio	L	LR	Q	S	LA	LB	LD	Z
1.0	1/5	301 (339)	100	55	35	160	130	140	12	B	1/5	227.5 (262)	80	42	25	105	85	90	9
	1/9	313 (351)	100	55	35	160	130	140	12	B	1/11	239.5 (274)	133	82	40	135	115	120	11
	1/20	354 (392)	140	75	50	220	190	245	12	A	1/21	239.5 (274)	133	82	40	135	115	120	11
	1/29	354 (392)	140	75	50	220	190	245	12	A	1/33	255.5 (290)	156	82	50	190	165	170	14
	1/45	364 (402)	140	75	50	220	190	245	12	A	1/45	255.5 (290)	156	82	50	190	165	170	14
1.5	1/5	326 (364)	100	55	35	160	130	140	12	B	1/5	241.5 (276)	80	42	25	105	85	90	9
	1/9	375 (413)	140	75	50	220	190	245	12	A	1/11	253.5 (288)	133	82	40	135	115	120	11
	1/20	379 (417)	140	75	50	220	190	245	12	A	1/21	269.5 (304)	156	82	50	190	165	170	14
	1/29	379 (417)	140	75	50	220	190	245	12	A	1/33	269.5 (304)	156	82	50	190	165	170	14
	1/45	410 (448)	160	90	60	280	240	310	14	A	1/45	269.5 (304)	156	82	50	190	165	170	14
2.0	1/5	351 (389)	100	55	35	160	130	140	12	B	1/5	267.5 (317)	133	82	40	135	115	120	11
	1/9	400 (438)	140	75	50	220	190	245	12	A	1/11	267.5 (317)	133	82	40	135	115	120	11
	1/20	404 (442)	140	75	50	220	190	245	12	A	1/21	287.5 (337)	156	82	50	190	165	170	14
	1/29	425 (463)	160	90	60	280	240	310	14	A	1/33	287.5 (337)	156	82	50	190	165	170	14
	1/45	435 (473)	160	90	60	280	240	310	14	A	1/45	287.5 (337)	156	82	50	190	165	170	14
3.5	1/5	418 (455)	140	75	50	220	190	245	12	A	1/5	291.5 (341)	133	82	40	135	115	120	11
	1/9	470 (507)	160	90	60	280	240	310	14	A	1/11	311.5 (361)	156	82	50	190	165	170	14
	1/20	470 (507)	160	90	60	280	240	310	14	A	1/21	311.5 (361)	156	82	50	190	165	170	14
	1/29	470 (507)	160	90	60	280	240	310	14	A	1/21	311.5 (361)	156	82	50	190	165	170	14
5.0	1/5	495 (532)	160	90	60	280	240	310	14	A	1/5	327.5 (377)	156	82	50	190	165	170	14
	1/9	527 (564)	160	90	60	280	240	310	14	A	1/11	327.5 (377)	156	82	50	190	165	170	14
	1/20	527 (564)	160	90	60	280	240	310	14	A	1/11	327.5 (377)	156	82	50	190	165	170	14

Note 1. As for the dimensions not listed here, refer to the catalog or Instruction Manual. (): With brake

[Unit: mm]

Part 8: Review on Replacement of Motor

(For high precision applications: HC-RFS_G5 to HG-SR_G5)

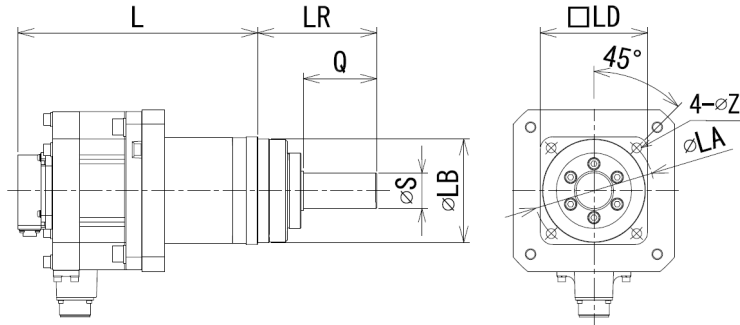


Output (kW)	HC-RFS series (G5)								HG-SR series (G5)							
	Reduction ratio	L	LR	LA	LB	LC	LD	Z	Reduction ratio	L	LR	LA	LB	LC	LD	Z
1.0	1/5	229 (267)	27	105	85	59	90	9	1/5	227.5 (262)	27	105	85	59	90	9
	1/11	229 (267)	27	105	85	59	90	9	1/11	239.5 (274)	35	135	115	84	120	11
	1/21	257 (295)	35	135	115	84	120	11	1/21	239.5 (274)	35	135	115	84	120	11
	1/33	257 (295)	35	135	115	84	120	11	1/33	255.5 (290)	53	190	165	122	170	14
	1/45	270 (308)	53	190	165	122	170	14	1/45	255.5 (290)	53	190	165	122	170	14
1.5	1/5	254 (292)	27	105	85	59	90	9	1/5	241.5 (276)	27	105	85	59	90	9
	1/11	282 (320)	35	135	115	84	120	11	1/11	253.5 (288)	35	135	115	84	120	11
	1/21	282 (320)	35	135	115	84	120	11	1/21	269.5 (304)	53	190	165	122	170	14
	1/33	295 (333)	53	190	165	122	170	14	1/33	269.5 (304)	53	190	165	122	170	14
	1/45	295 (333)	53	190	165	122	170	14	1/45	269.5 (304)	53	190	165	122	170	14
2.0	1/5	279 (317)	27	105	85	59	90	9	1/5	267.5 (317)	35	135	115	84	120	11
	1/11	307 (345)	35	135	115	84	120	11	1/11	267.5 (317)	35	135	115	84	120	11
	1/21	320 (358)	53	190	165	122	170	14	1/21	287.5 (337)	53	190	165	122	170	14
	1/33	320 (358)	53	190	165	122	170	14	1/33	287.5 (337)	53	190	165	122	170	14
	1/45	320 (358)	53	190	165	122	170	14	1/45	287.5 (337)	53	190	165	122	170	14
3.5	1/5	346 (383)	35	135	115	84	120	11	1/5	291.5 (341)	35	135	115	84	120	11
	1/11	346 (383)	35	135	115	84	120	11	1/11	311.5 (361)	53	190	165	122	170	14
	1/21	366 (403)	53	190	165	122	170	14	1/21	311.5 (361)	53	190	165	122	170	14
	1/33	366 (403)	53	190	165	122	170	14	1/33	311.5 (361)	53	190	165	122	170	14
5.0	1/5	403 (440)	35	135	115	84	120	11	1/5	327.5 (377)	53	190	165	122	170	14
	1/11	423 (460)	53	190	165	122	170	14	1/11	327.5 (377)	53	190	165	122	170	14
	1/21	423 (460)	53	190	165	122	170	14	1/21	327.5 (377)	53	190	165	122	170	14

Note 1. As for the dimensions not listed here, refer to the catalog or Instruction Manual. () : With brake [Unit: mm]

Part 8: Review on Replacement of Motor

(For high precision applications: HC-RFS_G7 to HG-SR_G7)



Output (kW)	HC-RFS series (G7)									HG-SR series (G7)								
	Reduction ratio	L	LR	Q	S	LA	LB	LD	Z	Reduction ratio	L	LR	Q	S	LA	LB	LD	Z
1.0	1/5	229 (267)	80	42	25	105	85	90	9	1/5	227.5 (262)	80	42	25	105	85	90	9
	1/11	229 (267)	80	42	25	105	85	90	9	1/11	239.5 (274)	133	82	40	135	115	120	11
	1/21	257 (295)	133	82	40	135	115	120	11	1/21	239.5 (274)	133	82	40	135	115	120	11
	1/33	257 (295)	133	82	40	135	115	120	11	1/33	255.5 (290)	156	82	50	190	165	170	14
	1/45	270 (308)	156	82	50	190	165	170	14	1/45	255.5 (290)	156	82	50	190	165	170	14
1.5	1/5	254 (292)	80	42	25	105	85	90	9	1/5	241.5 (276)	80	42	25	105	85	90	9
	1/11	282 (320)	133	82	40	135	115	120	11	1/11	253.5 (288)	133	82	40	135	115	120	11
	1/21	282 (320)	133	82	40	135	115	120	11	1/21	269.5 (304)	156	82	50	190	165	170	14
	1/33	295 (333)	156	82	50	190	165	170	14	1/33	269.5 (304)	156	82	50	190	165	170	14
	1/45	295 (333)	156	82	50	190	165	170	14	1/45	269.5 (304)	156	82	50	190	165	170	14
2.0	1/5	279 (317)	80	42	25	105	85	90	9	1/5	267.5 (317)	133	82	40	135	115	120	11
	1/11	307 (345)	133	82	40	135	115	120	11	1/11	267.5 (317)	133	82	40	135	115	120	11
	1/21	320 (358)	156	82	50	190	165	170	14	1/21	287.5 (337)	156	82	50	190	165	170	14
	1/33	320 (358)	156	82	50	190	165	170	14	1/33	287.5 (337)	156	82	50	190	165	170	14
	1/45	320 (358)	156	82	50	190	165	170	14	1/45	287.5 (337)	156	82	50	190	165	170	14
3.5	1/5	346 (383)	133	82	40	135	115	120	11	1/5	291.5 (341)	133	82	40	135	115	120	11
	1/11	346 (383)	133	82	40	135	115	120	11	1/11	311.5 (361)	156	82	50	190	165	170	14
	1/21	366 (403)	156	82	50	190	165	170	14	1/21	311.5 (361)	156	82	50	190	165	170	14
	1/33	366 (403)	156	82	50	190	165	170	14	1/21	311.5 (361)	156	82	50	190	165	170	14
5.0	1/5	403 (440)	133	82	40	135	115	120	11	1/5	327.5 (377)	156	82	50	190	165	170	14
	1/11	423 (460)	156	82	50	190	165	170	14	1/11	327.5 (377)	156	82	50	190	165	170	14
	1/21	423 (460)	156	82	50	190	165	170	14	1/11	327.5 (377)	156	82	50	190	165	170	14

Note 1. As for the dimensions not listed here, refer to the catalog or Instruction Manual. (): With brake

[Unit: mm]

Part 8: Review on Replacement of Motor

2.4 Comparison of Actual Reduction Ratios for Geared Servo Motors

Because the actual reduction ratio for some models is different when replacing HC-KFS or MFS_G1 with HG-KR_G1, it is required that an electronic gear be set up.

(For general industrial machines: HC-KFS, HC-MFS_G1 → HG-KR_G1)

Output (W)	Reduction ratio	Actual reduction ratio	
		HC-KFS and HC-MFS series (G1)	HG-KR series (G1)
50	1/5	9/44	9/44
	1/12	49/576	49/576
	1/20	25/484	25/484
100	1/5	9/44	9/44
	1/12	49/576	49/576
	1/20	25/484	25/484
200	1/5	19/96	19/96
	1/12	25/288	961/11664
	1/20	253/5000	513/9984
400	1/5	19/96	19/96
	1/12	25/288	961/11664
	1/20	253/5000	7/135
750	1/5	1/5	1/5
	1/12	525/6048	7/87
	1/20	625/12544	625/12544

Note 1. Actual reduction ratios with differences are shown with shading.

Part 8: Review on Replacement of Motor

2.5 Comparison of Moment of Inertia

(1) HC-KFS motor

Series	Target product			Replacement product		
	Model	Moment of inertia J $\times 10^{-4} \text{ kg}\cdot\text{m}^2$	Load inertia moment ratio	Model	Moment of inertia J $\times 10^{-4} \text{ kg}\cdot\text{m}^2$	Load inertia moment ratio
Small capacity, low inertia HC-KFS series (B): With brake	HC-KFS053(B)	0.053(0.056)	15 times or less	HG-KR053(B)	0.0450(0.0472)	17 times or less
	HC-KFS13(B)	0.084(0.087)		HG-KR13(B)	0.0777(0.0837)	
	HC-KFS23(B)	0.260(0.310)	24 times or less	HG-KR23(B)	0.221(0.243)	26 times or less
	HC-KFS43(B)	0.460(0.510)	22 times or less	HG-KR43(B)	0.371(0.393)	25 times or less
	HC-KFS73(B)	1.51(1.635)	15 times or less	HG-KR73(B)	1.26(1.37)	17 times or less
	HC-KFS46	0.64		HG-KR43	0.371	25 times or less
	HC-KFS410	0.47				
Small capacity, low inertia HC-KFS series with general reducer (G1) (B): With brake	HC-KFS053(B)G1 1/5	0.090(0.093)	5 times or less	HG-KR053(B)G1 1/5	0.0820(0.0840)	5 times or less
	HC-KFS053(B)G1 1/12	0.112(0.115)		HG-KR053(B)G1 1/12	0.104(0.106)	
	HC-KFS053(B)G1 1/20	0.094(0.097)		HG-KR053(B)G1 1/20	0.0860(0.0880)	
	HC-KFS13(B)G1 1/5	0.121(0.124)		HG-KR13(B)G1 1/5	0.115(0.121)	
	HC-KFS13(B)G1 1/12	0.143(0.146)		HG-KR13(B)G1 1/12	0.137(0.143)	
	HC-KFS13(B)G1 1/20	0.125(0.128)		HG-KR13(B)G1 1/20	0.119(0.125)	
	HC-KFS23(B)G1 1/5	0.420(0.470)	7 times or less	HG-KR23(B)G1 1/5	0.375(0.397)	7 times or less
	HC-KFS23(B)G1 1/12	0.470(0.520)		HG-KR23(B)G1 1/12	0.418(0.440)	
	HC-KFS23(B)G1 1/20	0.440(0.490)		HG-KR23(B)G1 1/20	0.391(0.413)	
	HC-KFS43(B)G1 1/5	0.610(0.660)		HG-KR43(B)G1 1/5	0.525(0.547)	
	HC-KFS43(B)G1 1/12	0.660(0.710)		HG-KR43(B)G1 1/12	0.568(0.590)	
	HC-KFS43(B)G1 1/20	0.970(1.02)		HG-KR43(B)G1 1/20	0.881(0.903)	
	HC-KFS73(B)G1 1/5	1.930(2.055)	5 times or less	HG-KR73(B)G1 1/5	1.68(1.79)	5 times or less
	HC-KFS73(B)G1 1/12	2.596(2.721)		HG-KR73(B)G1 1/12	2.35(2.46)	
	HC-KFS73(B)G1 1/20	2.660(2.785)		HG-KR73(B)G1 1/20	2.41(2.52)	
Small capacity, low inertia HC-KFS series with high precision reducer (G2) (B): With brake	HC-KFS053(B)G2 1/5	0.101(0.104)	5 times or less	HG-KR053(B)G7 1/5 (□40)	0.0512(0.0534)	10 times or less
	HC-KFS053(B)G2 1/9	0.095(0.098)		HG-KR053(B)G7 1/5 (□60)	0.119(0.121)	
	HC-KFS053(B)G2 1/20	0.104(0.107)		HG-KR053(B)G7 1/9	0.0492(0.0514)	
	HC-KFS053(B)G2 1/29	0.092(0.095)		HG-KR053(B)G7 1/21	0.0960(0.0980)	
	HC-KFS13(B)G2 1/5	0.132(0.135)		HG-KR053(B)G7 1/33	0.0900(0.0920)	
	HC-KFS13(B)G2 1/9	0.126(0.129)		HG-KR13(B)G7 1/5 (□40)	0.0839(0.0899)	
	HC-KFS13(B)G2 1/20	0.176(0.179)		HG-KR13(B)G7 1/5 (□60)	0.152(0.158)	
	HC-KFS13(B)G2 1/29	0.150(0.153)		HG-KR13(B)G7 1/11	0.139(0.145)	
	HC-KFS23(B)G2 1/5	0.360(0.410)	7 times or less	HG-KR13(B)G7 1/21	0.129(0.135)	14 times or less
	HC-KFS23(B)G2 1/9	0.380(0.430)		HG-KR23(B)G7 1/5	0.428(0.450)	
	HC-KFS23(B)G2 1/20	0.530(0.580)		HG-KR23(B)G7 1/11	0.424(0.446)	
	HC-KFS23(B)G2 1/29	0.450(0.500)		HG-KR23(B)G7 1/21	0.721(0.743)	
	HC-KFS43(B)G2 1/5	0.610(0.660)		HG-KR23(B)G7 1/33	0.674(0.696)	
	HC-KFS43(B)G2 1/9	0.640(0.690)		HG-KR43(B)G7 1/5	0.578(0.600)	
	HC-KFS43(B)G2 1/20	0.740(0.790)		HG-KR43(B)G7 1/11	0.955(0.977)	
	HC-KFS43(B)G2 1/29	0.660(0.710)		HG-KR43(B)G7 1/21	0.871(0.893)	
	HC-KFS73(B)G2 1/5	1.883(2.008)	5 times or less	HG-KR43(B)G7 1/33	0.927(0.949)	10 times or less
	HC-KFS73(B)G2 1/9	1.890(2.015)		HG-KR73(B)G7 1/5	1.95(2.06)	
	HC-KFS73(B)G2 1/20	1.926(2.051)		HG-KR73(B)G7 1/11	1.83(1.94)	
	HC-KFS73(B)G2 1/29	1.820(1.945)		HG-KR73(B)G7 1/21	2.03(2.14)	
			HG-KR73(B)G7 1/33	1.80(1.91)		

Note 1. As for the motor specifications not listed here, refer to the catalog or Instruction Manual.

(): With brake

If the load inertia moment ratio is exceeded, please ask the sales contact.

Part 8: Review on Replacement of Motor

Series	Target product			Replacement product		
	Model	Moment of inertia J × 10 ⁻⁴ kg·m ²	Load inertia moment ratio	Model	Moment of inertia J × 10 ⁻⁴ kg·m ²	Load inertia moment ratio
Small capacity, low inertia HC-KFS series with high precision reducer Flange output type (G5) (B): With brake	HC-KFS053(B)G5 1/5	0.121(0.124)	10 times or less	HG-KR053(B)G5 1/5	0.113(0.115)	10 times or less
	HC-KFS053(B)G5 1/11	0.113(0.116)		HG-KR053(B)G5 1/11	0.105(0.107)	
	HC-KFS053(B)G5 1/21	0.104(0.107)		HG-KR053(B)G5 1/21	0.0960(0.0980)	
	HC-KFS053(B)G5 1/33	0.098(0.101)		HG-KR053(B)G5 1/33	0.0900(0.0920)	
	HC-KFS053(B)G5 1/45	0.098(0.101)		HG-KR053(B)G5 1/45	0.0900(0.0920)	
	HC-KFS13(B)G5 1/5	0.152(0.155)		HG-KR13(B)G5 1/5	0.146(0.152)	
	HC-KFS13(B)G5 1/11	0.144(0.147)		HG-KR13(B)G5 1/11	0.138(0.144)	
	HC-KFS13(B)G5 1/21	0.135(0.138)		HG-KR13(B)G5 1/21	0.129(0.135)	
	HC-KFS13(B)G5 1/33	0.146(0.149)		HG-KR13(B)G5 1/33	0.140(0.146)	
	HC-KFS13(B)G5 1/45	0.145(0.148)		HG-KR13(B)G5 1/45	0.139(0.145)	
	HC-KFS23(B)G5 1/5	0.461(0.511)	14 times or less	HG-KR23(B)G5 1/5	0.422(0.444)	14 times or less
	HC-KFS23(B)G5 1/11	0.463(0.513)		HG-KR23(B)G5 1/11	0.424(0.446)	
	HC-KFS23(B)G5 1/21	0.758(0.808)		HG-KR23(B)G5 1/21	0.719(0.741)	
	HC-KFS23(B)G5 1/33	0.712(0.762)		HG-KR23(B)G5 1/33	0.673(0.695)	
	HC-KFS23(B)G5 1/45	0.711(0.761)		HG-KR23(B)G5 1/45	0.672(0.694)	
	HC-KFS43(B)G5 1/5	0.661(0.711)		HG-KR43(B)G5 1/5	0.572(0.594)	
	HC-KFS43(B)G5 1/11	1.04(1.09)		HG-KR43(B)G5 1/11	0.947(0.969)	
	HC-KFS43(B)G5 1/21	0.960(1.01)		HG-KR43(B)G5 1/21	0.869(0.891)	
	HC-KFS43(B)G5 1/33	1.01(1.06)	10 times or less	HG-KR43(B)G5 1/33	0.921(0.943)	10 times or less
	HC-KFS43(B)G5 1/45	1.00(1.05)		HG-KR43(B)G5 1/45	0.915(0.937)	
	HC-KFS73(B)G5 1/5	2.16(2.28)		HG-KR73(B)G5 1/5	1.91(2.02)	
	HC-KFS73(B)G5 1/11	2.07(2.19)		HG-KR73(B)G5 1/11	1.82(1.93)	
	HC-KFS73(B)G5 1/21	2.26(2.39)	10 times or less	HG-KR73(B)G5 1/21	2.01(2.12)	10 times or less
	HC-KFS73(B)G5 1/33	2.04(2.17)		HG-KR73(B)G5 1/33	1.79(1.90)	
HC-KFS73(B)G5 1/45	2.04(2.16)	HG-KR73(B)G5 1/45		1.79(1.90)		
Small capacity, low inertia HC-KFS series with high precision reducer Shaft output type (G7) (B): With brake	HC-KFS053(B)G7 1/5	0.127(0.130)	10 times or less	HG-KR053(B)G7 1/5	0.119(0.121)	10 times or less
	HC-KFS053(B)G7 1/11	0.114(0.117)		HG-KR053(B)G7 1/11	0.106(0.108)	
	HC-KFS053(B)G7 1/21	0.104(0.107)		HG-KR053(B)G7 1/21	0.0960(0.0980)	
	HC-KFS053(B)G7 1/33	0.098(0.101)		HG-KR053(B)G7 1/33	0.0900(0.0920)	
	HC-KFS053(B)G7 1/45	0.098(0.101)		HG-KR053(B)G7 1/45	0.0900(0.0920)	
	HC-KFS13(B)G7 1/5	0.158(0.161)		HG-KR13(B)G7 1/5	0.152(0.158)	
	HC-KFS13(B)G7 1/11	0.145(0.148)		HG-KR13(B)G7 1/11	0.139(0.145)	
	HC-KFS13(B)G7 1/21	0.135(0.138)		HG-KR13(B)G7 1/21	0.129(0.135)	
	HC-KFS13(B)G7 1/33	0.147(0.150)		HG-KR13(B)G7 1/33	0.141(0.147)	
	HC-KFS13(B)G7 1/45	0.145(0.148)		HG-KR13(B)G7 1/45	0.139(0.145)	
	HC-KFS23(B)G7 1/5	0.467(0.517)	14 times or less	HG-KR23(B)G7 1/5	0.428(0.450)	14 times or less
	HC-KFS23(B)G7 1/11	0.463(0.513)		HG-KR23(B)G7 1/11	0.424(0.446)	
	HC-KFS23(B)G7 1/21	0.760(0.810)		HG-KR23(B)G7 1/21	0.721(0.743)	
	HC-KFS23(B)G7 1/33	0.713(0.763)		HG-KR23(B)G7 1/33	0.674(0.696)	
	HC-KFS23(B)G7 1/45	0.711(0.761)		HG-KR23(B)G7 1/45	0.672(0.694)	
	HC-KFS43(B)G7 1/5	0.667(0.717)		HG-KR43(B)G7 1/5	0.578(0.600)	
	HC-KFS43(B)G7 1/11	1.04(1.09)		HG-KR43(B)G7 1/11	0.955(0.977)	
	HC-KFS43(B)G7 1/21	0.960(1.01)		HG-KR43(B)G7 1/21	0.871(0.893)	
	HC-KFS43(B)G7 1/33	1.02(1.07)	10 times or less	HG-KR43(B)G7 1/33	0.927(0.949)	10 times or less
	HC-KFS43(B)G7 1/45	1.01(1.06)		HG-KR43(B)G7 1/45	0.918(0.940)	
	HC-KFS73(B)G7 1/5	2.20(2.32)		HG-KR73(B)G7 1/5	1.95(2.06)	
	HC-KFS73(B)G7 1/11	2.08(2.20)		HG-KR73(B)G7 1/11	1.83(1.94)	
	HC-KFS73(B)G7 1/21	2.28(2.40)	10 times or less	HG-KR73(B)G7 1/21	2.03(2.14)	10 times or less
	HC-KFS73(B)G7 1/33	2.05(2.17)		HG-KR73(B)G7 1/33	1.80(1.91)	
HC-KFS73(B)G7 1/45	2.04(2.17)	HG-KR73(B)G7 1/45		1.79(1.90)		

Note 1. As for the motor specifications not listed here, refer to the catalog or Instruction Manual.
If the load inertia moment ratio with brake is exceeded, please ask the sales contact.

(): With brake

Part 8: Review on Replacement of Motor

(2) HC-MFS motor

Series	Target product			Replacement product		
	Model	Moment of inertia J $\times 10^{-4} \text{ kg}\cdot\text{m}^2$	Load inertia moment ratio	Model	Moment of inertia J $\times 10^{-4} \text{ kg}\cdot\text{m}^2$	Load inertia moment ratio
Small capacity, ultra-low inertia HC-MFS series (B): With brake	HC-MFS053(B)	0.019(0.022)	30 times or less	HG-MR053(B)	0.0162(0.0224)	35 times or less
	HC-MFS13(B)	0.03(0.032)		HG-MR13(B)	0.0300(0.0362)	32 times or less
	HC-MFS23(B)	0.088(0.136)		HG-MR23(B)	0.0865(0.109)	
	HC-MFS43(B)	0.143(0.191)		HG-MR43(B)	0.142(0.164)	
	HC-MFS73(B)	0.6(0.725)		HG-MR73(B)	0.586(0.694)	
Small capacity, ultra-low inertia HC-MFS series with general reducer (G1) (B): With brake	HC-MFS053(B)G1 1/5	0.055(0.058)	25 times or less	HG-KR053(B)G1 1/5	0.0820(0.0840)	5 times or less
	HC-MFS053(B)G1 1/12	0.077(0.080)		HG-KR053(B)G1 1/12	0.104(0.106)	
	HC-MFS053(B)G1 1/20	0.059(0.062)		HG-KR053(B)G1 1/20	0.0860(0.0880)	
	HC-MFS13(B)G1 1/5	0.067(0.069)		HG-KR13(B)G1 1/5	0.115(0.121)	
	HC-MFS13(B)G1 1/12	0.089(0.091)		HG-KR13(B)G1 1/12	0.137(0.143)	
	HC-MFS13(B)G1 1/20	0.071(0.073)		HG-KR13(B)G1 1/20	0.119(0.125)	
	HC-MFS23(B)G1 1/5	0.249(0.289)		HG-KR23(B)G1 1/5	0.375(0.397)	7 times or less
	HC-MFS23(B)G1 1/12	0.293(0.333)		HG-KR23(B)G1 1/12	0.418(0.440)	
	HC-MFS23(B)G1 1/20	0.266(0.306)		HG-KR23(B)G1 1/20	0.391(0.413)	
	HC-MFS43(B)G1 1/5	0.296(0.344)		HG-KR43(B)G1 1/5	0.525(0.547)	
	HC-MFS43(B)G1 1/12	0.339(0.388)		HG-KR43(B)G1 1/12	0.568(0.590)	
	HC-MFS43(B)G1 1/20	0.653(0.700)		HG-KR43(B)G1 1/20	0.881(0.903)	
	HC-MFS73(B)G1 1/5	1.02(1.145)		HG-KR73(B)G1 1/5	1.68(1.79)	5 times or less
	HC-MFS73(B)G1 1/12	1.686(1.811)		HG-KR73(B)G1 1/12	2.35(2.46)	
HC-MFS73(B)G1 1/20	1.75(1.875)	HG-KR73(B)G1 1/20	2.41(2.52)			
Small capacity, ultra-low inertia HC-MFS series with high precision reducer (G2) (B): With brake	HC-MFS053(B)G2 1/5	0.067(0.070)	25 times or less	HG-KR053(B)G7 1/5 (□40)	0.0512(0.0534)	10 times or less
	HC-MFS053(B)G2 1/9	0.060(0.063)		HG-KR053(B)G7 1/5 (□60)	0.119(0.121)	
	HC-MFS053(B)G2 1/20	0.069(0.072)		HG-KR053(B)G7 1/9	0.0492(0.0514)	
	HC-MFS053(B)G2 1/29	0.057(0.060)		HG-KR053(B)G7 1/21	0.0960(0.0980)	
	HC-MFS13(B)G2 1/5	0.078(0.080)		HG-KR053(B)G7 1/33	0.0900(0.0920)	
	HC-MFS13(B)G2 1/9	0.072(0.074)		HG-KR13(B)G7 1/5 (□40)	0.0839(0.0899)	
	HC-MFS13(B)G2 1/20	0.122(0.124)		HG-KR13(B)G7 1/5 (□60)	0.152(0.158)	
	HC-MFS13(B)G2 1/29	0.096(0.098)		HG-KR13(B)G7 1/11	0.139(0.145)	
	HC-MFS23(B)G2 1/5	0.191(0.239)		HG-KR13(B)G7 1/21	0.129(0.135)	
	HC-MFS23(B)G2 1/9	0.208(0.256)		HG-KR13(B)G7 1/33	0.141(0.147)	
	HC-MFS23(B)G2 1/20	0.357(0.405)		HG-KR23(B)G7 1/5	0.428(0.450)	14 times or less
	HC-MFS23(B)G2 1/9	0.208(0.256)		HG-KR23(B)G7 1/11	0.424(0.446)	
	HC-MFS23(B)G2 1/20	0.357(0.405)		HG-KR23(B)G7 1/21	0.721(0.743)	
	HC-MFS23(B)G2 1/29	0.276(0.324)		HG-KR23(B)G7 1/33	0.674(0.696)	
	HC-MFS43(B)G2 1/5	0.295(0.344)		HG-KR43(B)G7 1/5	0.578(0.600)	
	HC-MFS43(B)G2 1/9	0.323(0.372)		HG-KR43(B)G7 1/11	0.955(0.977)	
	HC-MFS43(B)G2 1/20	0.426(0.475)		HG-KR43(B)G7 1/21	0.871(0.893)	10 times or less
	HC-MFS43(B)G2 1/29	0.338(0.386)		HG-KR43(B)G7 1/33	0.927(0.949)	
	HC-MFS73(B)G2 1/5	0.973(1.098)		HG-KR73(B)G7 1/5	1.95(2.06)	
	HC-MFS73(B)G2 1/9	0.980(1.105)		HG-KR73(B)G7 1/11	1.83(1.94)	
HC-MFS73(B)G2 1/20	1.016(1.141)	HG-KR73(B)G7 1/21	2.03(2.14)			
HC-MFS73(B)G2 1/29	0.910(1.035)	HG-KR73(B)G7 1/33	1.80(1.91)			

Note 1. As for the motor specifications not listed here, refer to the catalog or Instruction Manual.
If the load inertia moment ratio with brake is exceeded, please ask the sales contact.

(): With brake

Part 8: Review on Replacement of Motor

Series	Target product			Replacement product		
	Model	Moment of inertia J × 10 ⁻⁴ kg·m ²	Load inertia moment ratio	Model	Moment of inertia J × 10 ⁻⁴ kg·m ²	Load inertia moment ratio
Small capacity, ultra-low inertia HC-MFS series with high precision reducer Flange output type (G5) (B): With brake	HC-MFS053(B)G5 1/5	0.087(0.090)	25 times or less	HG-KR053(B)G5 1/5	0.113(0.115)	10 times or less
	HC-MFS053(B)G5 1/11	0.079(0.082)		HG-KR053(B)G5 1/11	0.105(0.107)	
	HC-MFS053(B)G5 1/21	0.070(0.073)		HG-KR053(B)G5 1/21	0.0960(0.0980)	
	HC-MFS053(B)G5 1/33	0.064(0.067)		HG-KR053(B)G5 1/33	0.0900(0.0920)	
	HC-MFS053(B)G5 1/45	0.064(0.067)		HG-KR053(B)G5 1/45	0.0900(0.0920)	
	HC-MFS13(B)G5 1/5	0.098(0.100)		HG-KR13(B)G5 1/5	0.146(0.152)	
	HC-MFS13(B)G5 1/11	0.090(0.092)		HG-KR13(B)G5 1/11	0.138(0.144)	
	HC-MFS13(B)G5 1/21	0.081(0.083)		HG-KR13(B)G5 1/21	0.129(0.135)	
	HC-MFS13(B)G5 1/33	0.092(0.094)		HG-KR13(B)G5 1/33	0.140(0.146)	
	HC-MFS13(B)G5 1/45	0.091(0.093)		HG-KR13(B)G5 1/45	0.139(0.145)	
	HC-MFS23(B)G5 1/5	0.289(0.337)		HG-KR23(B)G5 1/5	0.422(0.444)	14 times or less
	HC-MFS23(B)G5 1/11	0.291(0.339)		HG-KR23(B)G5 1/11	0.424(0.446)	
	HC-MFS23(B)G5 1/21	0.586(0.634)		HG-KR23(B)G5 1/21	0.719(0.741)	
	HC-MFS23(B)G5 1/33	0.540(0.588)		HG-KR23(B)G5 1/33	0.673(0.695)	
	HC-MFS23(B)G5 1/45	0.539(0.587)		HG-KR23(B)G5 1/45	0.672(0.694)	
	HC-MFS43(B)G5 1/5	0.344(0.392)		HG-KR43(B)G5 1/5	0.572(0.594)	
	HC-MFS43(B)G5 1/11	0.719(0.767)		HG-KR43(B)G5 1/11	0.947(0.969)	
	HC-MFS43(B)G5 1/21	0.641(0.689)		HG-KR43(B)G5 1/21	0.869(0.891)	
	HC-MFS43(B)G5 1/33	0.693(0.741)		HG-KR43(B)G5 1/33	0.921(0.943)	
	HC-MFS43(B)G5 1/45	0.687(0.735)		HG-KR43(B)G5 1/45	0.915(0.937)	
HC-MFS73(B)G5 1/5	1.25(1.37)	HG-KR73(B)G5 1/5	1.91(2.02)	10 times or less		
HC-MFS73(B)G5 1/11	1.16(1.28)	HG-KR73(B)G5 1/11	1.82(1.93)			
HC-MFS73(B)G5 1/21	1.35(1.48)	HG-KR73(B)G5 1/21	2.01(2.12)			
HC-MFS73(B)G5 1/33	1.13(1.26)	HG-KR73(B)G5 1/33	1.79(1.90)			
HC-MFS73(B)G5 1/45	1.13(1.25)	HG-KR73(B)G5 1/45	1.79(1.90)			
Small capacity, ultra-low inertia HC-MFS series with high precision reducer Shaft output type (G7) (B): With brake	HC-MFS053(B)G7 1/5	0.093(0.096)	25 times or less	HG-KR053(B)G7 1/5	0.119(0.121)	10 times or less
	HC-MFS053(B)G7 1/11	0.080(0.083)		HG-KR053(B)G7 1/11	0.106(0.108)	
	HC-MFS053(B)G7 1/21	0.070(0.073)		HG-KR053(B)G7 1/21	0.0960(0.0980)	
	HC-MFS053(B)G7 1/33	0.064(0.067)		HG-KR053(B)G7 1/33	0.0900(0.0920)	
	HC-MFS053(B)G7 1/45	0.064(0.067)		HG-KR053(B)G7 1/45	0.0900(0.0920)	
	HC-MFS13(B)G7 1/5	0.104(0.106)		HG-KR13(B)G7 1/5	0.152(0.158)	
	HC-MFS13(B)G7 1/11	0.091(0.093)		HG-KR13(B)G7 1/11	0.139(0.145)	
	HC-MFS13(B)G7 1/21	0.081(0.083)		HG-KR13(B)G7 1/21	0.129(0.135)	
	HC-MFS13(B)G7 1/33	0.093(0.095)		HG-KR13(B)G7 1/33	0.141(0.147)	
	HC-MFS13(B)G7 1/45	0.091(0.093)		HG-KR13(B)G7 1/45	0.139(0.145)	
	HC-MFS23(B)G7 1/5	0.295(0.343)		HG-KR23(B)G7 1/5	0.428(0.450)	14 times or less
	HC-MFS23(B)G7 1/11	0.291(0.339)		HG-KR23(B)G7 1/11	0.424(0.446)	
	HC-MFS23(B)G7 1/21	0.588(0.636)		HG-KR23(B)G7 1/21	0.721(0.743)	
	HC-MFS23(B)G7 1/33	0.541(0.589)		HG-KR23(B)G7 1/33	0.674(0.696)	
	HC-MFS23(B)G7 1/45	0.539(0.587)		HG-KR23(B)G7 1/45	0.672(0.694)	
	HC-MFS43(B)G7 1/5	0.350(0.398)		HG-KR43(B)G7 1/5	0.578(0.600)	
	HC-MFS43(B)G7 1/11	0.727(0.775)		HG-KR43(B)G7 1/11	0.955(0.977)	
	HC-MFS43(B)G7 1/21	0.643(0.691)		HG-KR43(B)G7 1/21	0.871(0.893)	
	HC-MFS43(B)G7 1/33	0.699(0.747)		HG-KR43(B)G7 1/33	0.927(0.949)	
	HC-MFS43(B)G7 1/45	0.690(0.738)		HG-KR43(B)G7 1/45	0.918(0.940)	
HC-MFS73(B)G7 1/5	1.29(1.41)	HG-KR73(B)G7 1/5	1.95(2.06)	10 times or less		
HC-MFS73(B)G7 1/11	1.17(1.29)	HG-KR73(B)G7 1/11	1.83(1.94)			
HC-MFS73(B)G7 1/21	1.37(1.49)	HG-KR73(B)G7 1/21	2.03(2.14)			
HC-MFS73(B)G7 1/33	1.14(1.26)	HG-KR73(B)G7 1/33	1.80(1.91)			
HC-MFS73(B)G7 1/45	1.13(1.26)	HG-KR73(B)G7 1/45	1.79(1.90)			

Note 1. As for the motor specifications not listed here, refer to the catalog or Instruction Manual.
If the load inertia moment ratio with brake is exceeded, please ask the sales contact.

(): With brake

Part 8: Review on Replacement of Motor

(3) HC-SFS motor

Series	Target product			Replacement product				
	Model	Moment of inertia J $\times 10^{-4} \text{ kg}\cdot\text{m}^2$	Load inertia moment ratio	Model	Moment of inertia J $\times 10^{-4} \text{ kg}\cdot\text{m}^2$	Load inertia moment ratio		
Medium capacity, medium inertia HC-SFS series (B): With brake	HC-SFS81(B)	20.0(22.0)	15 times or less	HG-SR81(B)	16.0(18.2)	17 times or less		
	HC-SFS121(B)	42.5(52.5)		HG-SR121(B)	46.8(56.5)	15 times or less		
	HC-SFS201(B)	82.0(92.0)		HG-SR201(B)	78.6(88.2)			
	HC-SFS301(B)	101(111)		HG-SR301(B)	99.7(109)			
	HC-SFS52(B),53(B) HC-SFS524(B)	6.6(8.6)		HG-SR52(B) HG-SR524(B)	7.26(9.48)			
	HC-SFS102(B),103(B) HC-SFS1024(B)	13.7(15.7)		HG-SR102(B) HG-SR1024(B)	11.6(13.8)	17 times or less		
	HC-SFS152(B),153(B) HC-SFS1524(B)	20.0(22.0)		HG-SR152(B) HG-SR1524(B)	16.0(18.2)			
	HC-SFS202(B),203(B) HC-SFS2024(B)	42.5(52.5)		HG-SR202(B) HG-SR2024(B)	46.8(56.5)	15 times or less		
	HC-SFS352(B),353(B) HC-SFS3524(B)	82.0(92.0)		HG-SR352(B) HG-SR3524(B)	78.6(88.2)			
	HC-SFS502(B) HC-SFS5024(B)	101(111)		HG-SR502(B) HG-SR5024(B)	99.7(109)			
	HC-SFS702(B) HC-SFS7024(B)	160(170)		HG-SR702(B) HG-SR7024(B)	151(161)			
	Medium capacity, medium inertia HC-SFS series with general reducer (4): 400 V specifications (B): With brake G1: Flange- mounting G1H: Foot- mounting	HC-SFS52(4)(B)G1(H) 1/6		7.33(9.03)	4 times or less	HG-SR52(4)(B)G1(H) 1/6	8.08(10.3)	4 times or less
		HC-SFS52(4)(B)G1(H) 1/11		6.95(8.65)		HG-SR52(4)(B)G1(H) 1/11	7.65(9.85)	
HC-SFS52(4)(B)G1(H) 1/17		6.85(8.55)	HG-SR52(4)(B)G1(H) 1/17	7.53(9.73)				
HC-SFS52(4)(B)G1(H) 1/29		6.78(8.48)	HG-SR52(4)(B)G1(H) 1/29	7.47(9.67)				
HC-SFS52(4)(B)G1(H) 1/35		7.5(9.2)	HG-SR52(4)(B)G1(H) 1/35	8.26(10.5)				
HC-SFS52(4)(B)G1(H) 1/43		7.45(9.15)	HG-SR52(4)(B)G1(H) 1/43	8.22(10.4)				
HC-SFS52(4)(B)G1(H) 1/59		7.43(9.13)	HG-SR52(4)(B)G1(H) 1/59	8.18(10.4)				
HC-SFS102(4)(B)G1(H) 1/6		16.8(18.5)	HG-SR102(4)(B)G1(H) 1/6	14.8(17.0)				
HC-SFS102(4)(B)G1(H) 1/11		15.3(17.0)	HG-SR102(4)(B)G1(H) 1/11	13.3(15.5)				
HC-SFS102(4)(B)G1(H) 1/17		14.9(16.6)	HG-SR102(4)(B)G1(H) 1/17	12.9(15.1)				
HC-SFS102(4)(B)G1(H) 1/29		14.6(16.3)	HG-SR102(4)(B)G1(H) 1/29	12.6(14.8)				
HC-SFS102(4)(B)G1(H) 1/35		14.6(16.3)	HG-SR102(4)(B)G1(H) 1/35	12.6(14.8)				
HC-SFS102(4)(B)G1(H) 1/43		15.7(17.4)	HG-SR102(4)(B)G1(H) 1/43	13.8(16.0)				
HC-SFS102(4)(B)G1(H) 1/59		19.5(21.2)	HG-SR102(4)(B)G1(H) 1/59	19.1(21.3)				
HC-SFS152(4)(B)G1(H) 1/6		23.1(24.8)	HG-SR152(4)(B)G1(H) 1/6	19.2(21.4)				
HC-SFS152(4)(B)G1(H) 1/11		21.5(23.2)	HG-SR152(4)(B)G1(H) 1/11	17.7(19.9)				
HC-SFS152(4)(B)G1(H) 1/17		21.2(22.9)	HG-SR152(4)(B)G1(H) 1/17	17.3(19.5)				
HC-SFS152(4)(B)G1(H) 1/29		22.1(23.8)	HG-SR152(4)(B)G1(H) 1/29	18.4(20.6)				
HC-SFS152(4)(B)G1(H) 1/35		22.0(23.7)	HG-SR152(4)(B)G1(H) 1/35	18.3(20.5)				
HC-SFS152(4)(B)G1(H) 1/43		25.8(27.5)	HG-SR152(4)(B)G1(H) 1/43	23.6(25.8)				
HC-SFS152(4)(B)G1(H) 1/59		25.7(27.4)	HG-SR152(4)(B)G1(H) 1/59	23.5(25.7)				
HC-SFS202(4)(B)G1(H) 1/6		45.6(55.6)	HG-SR202(4)(B)G1(H) 1/6	50.0(59.4)				
HC-SFS202(4)(B)G1(H) 1/11		44.1(54.1)	HG-SR202(4)(B)G1(H) 1/11	48.4(57.8)				
HC-SFS202(4)(B)G1(H) 1/17		43.7(53.7)	HG-SR202(4)(B)G1(H) 1/17	48.1(57.5)				
HC-SFS202(4)(B)G1(H) 1/29		48.9(58.9)	HG-SR202(4)(B)G1(H) 1/29	54.8(64.2)				
HC-SFS202(4)(B)G1(H) 1/35		48.6(58.6)	HG-SR202(4)(B)G1(H) 1/35	54.5(63.9)				
HC-SFS202(4)(B)G1(H) 1/43		48.4(58.4)	HG-SR202(4)(B)G1(H) 1/43	54.3(63.7)				
HC-SFS202(4)(B)G1(H) 1/59		48.3(58.3)	HG-SR202(4)(B)G1(H) 1/59	54.2(63.6)				
HC-SFS352(4)(B)G1(H) 1/6		90.1(100.1)	HG-SR352(4)(B)G1(H) 1/6	87.1(96.5)				
HC-SFS352(4)(B)G1(H) 1/11		86.2(96.2)	HG-SR352(4)(B)G1(H) 1/11	82.8(92.2)				
HC-SFS352(4)(B)G1(H) 1/17		85.0(95.0)	HG-SR352(4)(B)G1(H) 1/17	81.5(90.9)				
HC-SFS352(4)(B)G1(H) 1/29		88.4(98.4)	HG-SR352(4)(B)G1(H) 1/29	86.6(96.0)				
HC-SFS352(4)(B)G1(H) 1/35		88.1(98.1)	HG-SR352(4)(B)G1(H) 1/35	86.3(95.7)				

Note 1. As for the motor specifications not listed here, refer to the catalog or Instruction Manual.

() : With brake

If the load inertia moment ratio with brake is exceeded, please ask the sales contact.

Part 8: Review on Replacement of Motor

Series	Target product			Replacement product		
	Model	Moment of inertia J $\times 10^{-4} \text{ kg}\cdot\text{m}^2$	Load inertia moment ratio	Model	Moment of inertia J $\times 10^{-4} \text{ kg}\cdot\text{m}^2$	Load inertia moment ratio
Medium capacity, medium inertia HC-SFS series with general reducer (4): 400 V specifications (B): With brake G1: Flange-mounting G1H: Foot-mounting	HC-SFS352(4)(B)G1(H) 1/43	106.5(116.5)	4 times or less	HG-SR352(4)(B)G1(H) 1/43	105(114)	4 times or less
	HC-SFS352(4)(B)G1(H) 1/59	105.9(115.9)		HG-SR352(4)(B)G1(H) 1/59	104(113)	
	HC-SFS502(4)(B)G1(H) 1/11	113.4(123.4)		HG-SR502(4)(B)G1(H) 1/11	114(123)	
	HC-SFS502(4)(B)G1(H) 1/17	109.4(119.4)		HG-SR502(4)(B)G1(H) 1/17	110(119)	
	HC-SFS502(4)(B)G1(H) 1/29	138.5(148.5)		HG-SR502(4)(B)G1(H) 1/29	141(150)	
	HC-SFS502(4)(B)G1(H) 1/35	138.0(148.0)		HG-SR502(4)(B)G1(H) 1/35	140(150)	
	HC-SFS502(4)(B)G1(H) 1/43	137.0(147.0)		HG-SR502(4)(B)G1(H) 1/43	139(149)	
	HC-SFS702(4)(B)G1(H) 1/11	198.8(208.8)		HG-SR702(4)(B)G1(H) 1/11	190(199)	
	HC-SFS702(4)(B)G1(H) 1/17	190.0(200.0)		HG-SR702(4)(B)G1(H) 1/17	182(192)	
	HC-SFS702(4)(B)G1(H) 1/29	197.5(207.5)		HG-SR702(4)(B)G1(H) 1/29	192(202)	
	HC-SFS702(4)(B)G1(H) 1/35	197.0(207.0)		HG-SR702(4)(B)G1(H) 1/35	192(201)	
	HC-SFS702(4)(B)G1(H) 1/43	256.8(266.8)		HG-SR702(4)(B)G1(H) 1/43	267(277)	
	Medium capacity, medium inertia HC-SFS series with high precision reducer (G2) (4): 400 V specifications (B): With brake	HC-SFS52(4)(B)G2 1/5		7.9(9.6)	5 times or less	
HC-SFS52(4)(B)G2 1/9		7.55(9.25)	HG-SR52(4)(B)G7 1/11	7.82(10.0)		
HC-SFS52(4)(B)G2 1/20		8.03(9.73)	HG-SR52(4)(B)G7 1/21	10.2(12.4)		
HC-SFS52(4)(B)G2 1/29		9.4(11.1)	HG-SR52(4)(B)G7 1/33	9.96(12.2)		
HC-SFS52(4)(B)G2 1/45		8.43(10.1)	HG-SR52(4)(B)G7 1/45	9.96(12.2)		
HC-SFS102(4)(B)G2 1/5		15.0(16.7)	HG-SR102(4)(B)G7 1/5	12.3(14.5)		
HC-SFS102(4)(B)G2 1/9		14.6(16.3)	HG-SR102(4)(B)G7 1/11	15.0(17.2)		
HC-SFS102(4)(B)G2 1/20		18.4(20.1)	HG-SR102(4)(B)G7 1/21	14.5(16.7)		
HC-SFS102(4)(B)G2 1/29		16.5(18.2)	HG-SR102(4)(B)G7 1/33	16.3(18.5)		
HC-SFS102(4)(B)G2 1/45		20.3(22.0)	HG-SR102(4)(B)G7 1/45	16.3(18.5)		
HC-SFS152(4)(B)G2 1/5		21.2(22.9)	HG-SR152(4)(B)G7 1/5	16.7(18.9)		
HC-SFS152(4)(B)G2 1/9		24.7(26.4)	HG-SR152(4)(B)G7 1/11	19.4(21.6)		
HC-SFS152(4)(B)G2 1/20		24.6(26.3)	HG-SR152(4)(B)G7 1/21	21.7(23.9)		
HC-SFS152(4)(B)G2 1/29		30.3(32.0)	HG-SR152(4)(B)G7 1/33	20.7(22.9)		
HC-SFS152(4)(B)G2 1/45		26.5(28.2)	HG-SR152(4)(B)G7 1/45	20.7(22.9)		
HC-SFS202(4)(B)G2 1/5		49.6(59.6)	HG-SR202(4)(B)G7 1/5	51.7(61.4)		
HC-SFS202(4)(B)G2 1/9		47.2(57.2)	HG-SR202(4)(B)G7 1/11	51.3(61.0)		
HC-SFS202(4)(B)G2 1/20		59.6(69.6)	HG-SR202(4)(B)G7 1/21	53.3(63.0)		
HC-SFS202(4)(B)G2 1/29		52.8(62.8)	HG-SR202(4)(B)G7 1/33	52.2(61.9)		
HC-SFS202(4)(B)G2 1/45		49.1(59.1)	HG-SR202(4)(B)G7 1/45	52.2(61.9)		
HC-SFS352(4)(B)G2 1/5		99.4(109.4)	HG-SR352(4)(B)G7 1/5	83.5(93.1)		
HC-SFS352(4)(B)G2 1/9		91.5(101.5)	HG-SR352(4)(B)G7 1/11	87.0(96.6)		
HC-SFS352(4)(B)G2 1/20		99.1(109.1)	HG-SR352(4)(B)G7 1/21	85.1(94.7)		
HC-SFS502(4)(B)G2 1/5		118.4(128.4)	HG-SR502(4)(B)G7 1/5	111(121)		
HC-SFS502(4)(B)G2 1/9		110.5(120.5)	HG-SR502(4)(B)G7 1/11	108(117)		
HC-SFS702(4)(B)G2 1/5		177.4(187.4)	HG-SR702(4)(B)G7 1/5	163(173)		

Note 1. As for the motor specifications not listed here, refer to the catalog or Instruction Manual.

(): With brake

If the load inertia moment ratio with brake is exceeded, please ask the sales contact.

Part 8: Review on Replacement of Motor

Series	Target product			Replacement product		
	Model	Moment of inertia J $\times 10^{-4} \text{ kg}\cdot\text{m}^2$	Load inertia moment ratio	Model	Moment of inertia J $\times 10^{-4} \text{ kg}\cdot\text{m}^2$	Load inertia moment ratio
Medium capacity, medium inertia HC-SFS series with high precision reducer Flange output type (G5) (4): 400 V specifications (B): With brake	HC-SFS52(4)(B)G5 1/5	7.25(9.25)	10 times or less	HG-SR52(4)(B)G5 1/5	7.91(10.1)	10 times or less
	HC-SFS52(4)(B)G5 1/11	7.16(9.16)		HG-SR52(4)(B)G5 1/11	7.82(10.0)	
	HC-SFS52(4)(B)G5 1/21	9.50(11.5)		HG-SR52(4)(B)G5 1/21	10.2(12.4)	
	HC-SFS52(4)(B)G5 1/33	9.30(11.3)		HG-SR52(4)(B)G5 1/33	9.96(12.2)	
	HC-SFS52(4)(B)G5 1/45	9.30(11.3)		HG-SR52(4)(B)G5 1/45	9.96(12.2)	
	HC-SFS102(4)(B)G5 1/5	14.4(16.4)		HG-SR102(4)(B)G5 1/5	12.3(14.5)	
	HC-SFS102(4)(B)G5 1/11	17.0(19.0)		HG-SR102(4)(B)G5 1/11	14.9(17.1)	
	HC-SFS102(4)(B)G5 1/21	16.6(18.6)		HG-SR102(4)(B)G5 1/21	14.5(16.7)	
	HC-SFS102(4)(B)G5 1/33	18.4(20.4)		HG-SR102(4)(B)G5 1/33	16.3(18.5)	
	HC-SFS102(4)(B)G5 1/45	18.3(20.3)		HG-SR102(4)(B)G5 1/45	16.2(18.4)	
	HC-SFS152(4)(B)G5 1/5	20.7(22.7)		HG-SR152(4)(B)G5 1/5	16.7(18.9)	
	HC-SFS152(4)(B)G5 1/11	23.3(25.3)		HG-SR152(4)(B)G5 1/11	19.3(21.5)	
	HC-SFS152(4)(B)G5 1/21	25.7(27.7)		HG-SR152(4)(B)G5 1/21	21.7(23.9)	
	HC-SFS152(4)(B)G5 1/33	24.7(26.7)		HG-SR152(4)(B)G5 1/33	20.7(22.9)	
	HC-SFS152(4)(B)G5 1/45	24.6(26.6)		HG-SR152(4)(B)G5 1/45	20.6(22.8)	
	HC-SFS202(4)(B)G5 1/5	47.1(57.1)		HG-SR202(4)(B)G5 1/5	51.4(61.1)	
	HC-SFS202(4)(B)G5 1/11	46.9(56.9)		HG-SR202(4)(B)G5 1/11	51.2(60.9)	
	HC-SFS202(4)(B)G5 1/21	48.9(58.9)		HG-SR202(4)(B)G5 1/21	53.2(62.9)	
	HC-SFS202(4)(B)G5 1/33	47.9(57.9)		HG-SR202(4)(B)G5 1/33	52.2(61.9)	
	HC-SFS202(4)(B)G5 1/45	47.9(57.9)		HG-SR202(4)(B)G5 1/45	52.2(61.9)	
	HC-SFS352(4)(B)G5 1/5	86.6(96.6)		HG-SR352(4)(B)G5 1/5	83.2(92.8)	
	HC-SFS352(4)(B)G5 1/11	90.1(100)		HG-SR352(4)(B)G5 1/11	86.7(96.3)	
	HC-SFS352(4)(B)G5 1/21	88.4(98.4)		HG-SR352(4)(B)G5 1/21	85.0(94.6)	
	HC-SFS502(4)(B)G5 1/5	111(121)		HG-SR502(4)(B)G5 1/5	110(119)	
HC-SFS502(4)(B)G5 1/11	109(119)	HG-SR502(4)(B)G5 1/11	108(117)			
HC-SFS702(4)(B)G5 1/5	170(180)	HG-SR702(4)(B)G5 1/5	161(171)			
Medium capacity, medium inertia HC-SFS series with high precision reducer Shaft output type (G7) (4): 400 V specifications (B): With brake	HC-SFS52(4)(B)G7 1/5	7.29(9.29)	10 times or less	HG-SR52(4)(B)G7 1/5	7.95(10.2)	10 times or less
	HC-SFS52(4)(B)G7 1/11	7.16(9.16)		HG-SR52(4)(B)G7 1/11	7.82(10.0)	
	HC-SFS52(4)(B)G7 1/21	9.50(11.5)		HG-SR52(4)(B)G7 1/21	10.2(12.4)	
	HC-SFS52(4)(B)G7 1/33	9.30(11.3)		HG-SR52(4)(B)G7 1/33	9.96(12.2)	
	HC-SFS52(4)(B)G7 1/45	9.30(11.3)		HG-SR52(4)(B)G7 1/45	9.96(12.2)	
	HC-SFS102(4)(B)G7 1/5	14.4(16.4)		HG-SR102(4)(B)G7 1/5	12.3(14.5)	
	HC-SFS102(4)(B)G7 1/11	17.1(19.1)		HG-SR102(4)(B)G7 1/11	15.0(17.2)	
	HC-SFS102(4)(B)G7 1/21	16.6(18.6)		HG-SR102(4)(B)G7 1/21	14.5(16.7)	
	HC-SFS102(4)(B)G7 1/33	18.4(20.4)		HG-SR102(4)(B)G7 1/33	16.3(18.5)	
	HC-SFS102(4)(B)G7 1/45	18.4(20.4)		HG-SR102(4)(B)G7 1/45	16.3(18.5)	
	HC-SFS152(4)(B)G7 1/5	20.7(22.7)		HG-SR152(4)(B)G7 1/5	16.7(18.9)	
	HC-SFS152(4)(B)G7 1/11	23.4(25.4)		HG-SR152(4)(B)G7 1/11	19.4(21.6)	
	HC-SFS152(4)(B)G7 1/21	25.7(27.7)		HG-SR152(4)(B)G7 1/21	21.7(23.9)	
	HC-SFS152(4)(B)G7 1/33	24.7(26.7)		HG-SR152(4)(B)G7 1/33	20.7(22.9)	
	HC-SFS152(4)(B)G7 1/45	24.7(26.7)		HG-SR152(4)(B)G7 1/45	20.7(22.9)	
	HC-SFS202(4)(B)G7 1/5	47.4(57.4)		HG-SR202(4)(B)G7 1/5	51.7(61.4)	
	HC-SFS202(4)(B)G7 1/11	47.0(57.0)		HG-SR202(4)(B)G7 1/11	51.3(61.0)	
	HC-SFS202(4)(B)G7 1/21	49.0(59.0)		HG-SR202(4)(B)G7 1/21	53.3(63.0)	
	HC-SFS202(4)(B)G7 1/33	47.9(57.9)		HG-SR202(4)(B)G7 1/33	52.2(61.9)	
	HC-SFS202(4)(B)G7 1/45	47.9(57.9)		HG-SR202(4)(B)G7 1/45	52.2(61.9)	
	HC-SFS352(4)(B)G7 1/5	86.9(96.9)		HG-SR352(4)(B)G7 1/5	83.5(93.1)	
	HC-SFS352(4)(B)G7 1/11	90.4(100)		HG-SR352(4)(B)G7 1/11	87.0(96.6)	
	HC-SFS352(4)(B)G7 1/21	88.5(98.5)		HG-SR352(4)(B)G7 1/21	85.1(94.7)	
	HC-SFS502(4)(B)G7 1/5	113(123)		HG-SR502(4)(B)G7 1/5	111(121)	
HC-SFS502(4)(B)G7 1/11	109(119)	HG-SR502(4)(B)G7 1/11	108(117)			
HC-SFS702(4)(B)G7 1/5	172(182)	HG-SR702(4)(B)G7 1/5	163(173)			

Note 1. As for the motor specifications not listed here, refer to the catalog or Instruction Manual.
If the load inertia moment ratio with brake is exceeded, please ask the sales contact.

(): With brake

Part 8: Review on Replacement of Motor

(4) HC-RFS motor

Series	Target product			Replacement product		
	Model	Moment of inertia J $\times 10^{-4} \text{ kg}\cdot\text{m}^2$	Load inertia moment ratio	Model	Moment of inertia J $\times 10^{-4} \text{ kg}\cdot\text{m}^2$	Load inertia moment ratio
Medium capacity, ultra-low inertia HC-RFS series (B): With brake	HC-RFS103(B)	1.5(1.85)	5 times or less	HG-RR103(B)	1.50(1.85)	5 times or less
	HC-RFS153(B)	1.9(2.25)		HG-RR153(B)	1.90(2.25)	
	HC-RFS203(B)	2.3(2.65)		HG-RR203(B)	2.30(2.65)	
	HC-RFS353(B)	8.6(11.8)		HG-RR353(B)	8.30(11.8)	
	HC-RFS503(B)	12.0(15.5)		HG-RR503(B)	12.0(15.5)	
Medium capacity, ultra-low inertia HC-RFS series with high precision reducer (G2) (B): With brake	HC-RFS103(B)G2 1/5	4.95(5.3)	5 times or less	HG-SR102(B)G7 1/5	12.3(14.5)	10 times or less
	HC-RFS103(B)G2 1/9	4.6(4.95)		HG-SR102(B)G7 1/11	15.0(17.2)	
	HC-RFS103(B)G2 1/20	8.35(8.7)		HG-SR102(B)G7 1/21	14.5(16.7)	
	HC-RFS103(B)G2 1/29	6.45(6.8)		HG-SR102(B)G7 1/33	16.3(18.5)	
	HC-RFS103(B)G2 1/45	5.48(5.83)		HG-SR102(B)G7 1/45	16.3(18.5)	
	HC-RFS153(B)G2 1/5	5.35(5.7)		HG-SR152(B)G7 1/5	16.7(18.9)	
	HC-RFS153(B)G2 1/9	6.68(7.03)		HG-SR152(B)G7 1/11	19.4(21.6)	
	HC-RFS153(B)G2 1/20	8.75(9.1)		HG-SR152(B)G7 1/21	21.7(23.9)	
	HC-RFS153(B)G2 1/29	6.85(7.2)		HG-SR152(B)G7 1/33	20.7(22.9)	
	HC-RFS153(B)G2 1/45	8.55(8.9)		HG-SR152(B)G7 1/45	20.7(22.9)	
	HC-RFS203(B)G2 1/5	5.75(6.1)		HG-SR202(B)G7 1/5	51.7(61.4)	
	HC-RFS203(B)G2 1/9	7.08(7.43)		HG-SR202(B)G7 1/11	51.3(61.0)	
	HC-RFS203(B)G2 1/20	9.15(9.5)		HG-SR202(B)G7 1/21	53.3(63.0)	
	HC-RFS203(B)G2 1/29	12.7(13.1)		HG-SR202(B)G7 1/33	52.2(61.9)	
	HC-RFS203(B)G2 1/45	8.95(9.3)		HG-SR202(B)G7 1/45	52.2(61.9)	
	HC-RFS353(B)G2 1/5	18.8(20.8)		HG-SR352(B)G7 1/5	83.5(93.1)	
	HC-RFS353(B)G2 1/9	21.1(23.1)		HG-SR352(B)G7 1/11	87.0(96.6)	
	HC-RFS353(B)G2 1/20	28.8(30.8)		HG-SR352(B)G7 1/21	85.1(94.7)	
	HC-RFS353(B)G2 1/29	22.0(24.0)		HG-SR502(B)G7 1/5	111(121)	
	HC-RFS503(B)G2 1/5	32.4(34.4)		HG-SR502(B)G7 1/11	108(117)	
HC-RFS503(B)G2 1/9	24.5(26.5)					
HC-RFS503(B)G2 1/20	32.2(34.2)					
Medium capacity, ultra-low inertia HC-RFS series with high precision reducer Flange output type (G5) (B): With brake	HC-RFS103(B)G5 1/5	2.33(2.68)	5 times or less	HG-SR102(B)G5 1/5	12.3(14.5)	10 times or less
	HC-RFS103(B)G5 1/11	2.25(2.60)		HG-SR102(B)G5 1/11	14.9(17.1)	
	HC-RFS103(B)G5 1/21	4.40(4.75)		HG-SR102(B)G5 1/21	14.5(16.7)	
	HC-RFS103(B)G5 1/33	4.20(4.55)		HG-SR102(B)G5 1/33	16.3(18.5)	
	HC-RFS103(B)G5 1/45	6.10(6.45)		HG-SR102(B)G5 1/45	16.2(18.4)	
	HC-RFS153(B)G5 1/5	2.73(3.08)		HG-SR152(B)G5 1/5	16.7(18.9)	
	HC-RFS153(B)G5 1/11	5.20(5.55)		HG-SR152(B)G5 1/11	19.3(21.5)	
	HC-RFS153(B)G5 1/21	4.80(5.15)		HG-SR152(B)G5 1/21	21.7(23.9)	
	HC-RFS153(B)G5 1/33	6.60(6.95)		HG-SR152(B)G5 1/33	20.7(22.9)	
	HC-RFS153(B)G5 1/45	6.50(6.85)		HG-SR152(B)G5 1/45	20.6(22.8)	
	HC-RFS203(B)G5 1/5	3.13(3.48)		HG-SR202(B)G5 1/5	51.4(61.1)	
	HC-RFS203(B)G5 1/11	5.60(5.95)		HG-SR202(B)G5 1/11	51.2(60.9)	
	HC-RFS203(B)G5 1/21	8.00(8.35)		HG-SR202(B)G5 1/21	53.2(62.9)	
	HC-RFS203(B)G5 1/33	7.00(7.35)		HG-SR202(B)G5 1/33	52.2(61.9)	
	HC-RFS203(B)G5 1/45	6.90(7.25)		HG-SR202(B)G5 1/45	52.2(61.9)	
	HC-RFS353(B)G5 1/5	13.5(16.7)		HG-SR352(B)G5 1/5	83.2(92.8)	
	HC-RFS353(B)G5 1/11	13.3(16.5)		HG-SR352(B)G5 1/11	86.7(96.3)	
	HC-RFS353(B)G5 1/21	15.3(18.5)		HG-SR352(B)G5 1/21	85.0(94.6)	
	HC-RFS353(B)G5 1/33	14.4(17.6)		HG-SR502(B)G5 1/5	110(119)	
	HC-RFS503(B)G5 1/5	16.9(20.4)		HG-SR502(B)G5 1/11	108(117)	
HC-RFS503(B)G5 1/11	20.5(24.0)					
HC-RFS503(B)G5 1/21	18.7(22.2)					

Note 1. As for the motor specifications not listed here, refer to the catalog or Instruction Manual.
If the load inertia moment ratio with brake is exceeded, please ask the sales contact.

(): With brake

Part 8: Review on Replacement of Motor

Series	Target product			Replacement product		
	Model	Moment of inertia J $\times 10^{-4} \text{ kg}\cdot\text{m}^2$	Load inertia moment ratio	Model	Moment of inertia J $\times 10^{-4} \text{ kg}\cdot\text{m}^2$	Load inertia moment ratio
Medium capacity, ultra-low inertia HC-RFS series with high precision reducer Shaft output type (G7) (B): With brake	HC-RFS103(B)G7 1/5	2.37(2.72)	5 times or less	HG-SR102(B)G7 1/5	12.3(14.5)	10 times or less
	HC-RFS103(B)G7 1/11	2.25(2.60)		HG-SR102(B)G7 1/11	15.0(17.2)	
	HC-RFS103(B)G7 1/21	4.40(4.75)		HG-SR102(B)G7 1/21	14.5(16.7)	
	HC-RFS103(B)G7 1/33	4.20(4.55)		HG-SR102(B)G7 1/33	16.3(18.5)	
	HC-RFS103(B)G7 1/45	6.20(6.55)		HG-SR102(B)G7 1/45	16.3(18.5)	
	HC-RFS153(B)G7 1/5	2.77(3.12)		HG-SR152(B)G7 1/5	16.7(18.9)	
	HC-RFS153(B)G7 1/11	5.30(5.65)		HG-SR152(B)G7 1/11	19.4(21.6)	
	HC-RFS153(B)G7 1/21	4.80(5.15)		HG-SR152(B)G7 1/21	21.7(23.9)	
	HC-RFS153(B)G7 1/33	6.60(6.95)		HG-SR152(B)G7 1/33	20.7(22.9)	
	HC-RFS153(B)G7 1/45	6.60(6.95)		HG-SR152(B)G7 1/45	20.7(22.9)	
	HC-RFS203(B)G7 1/5	3.17(3.52)		HG-SR202(B)G7 1/5	51.7(61.4)	
	HC-RFS203(B)G7 1/11	5.70(6.05)		HG-SR202(B)G7 1/11	51.3(61.0)	
	HC-RFS203(B)G7 1/21	8.00(8.35)		HG-SR202(B)G7 1/21	53.3(63.0)	
	HC-RFS203(B)G7 1/33	7.00(7.35)		HG-SR202(B)G7 1/33	52.2(61.9)	
	HC-RFS203(B)G7 1/45	7.00(7.35)		HG-SR202(B)G7 1/45	52.2(61.9)	
	HC-RFS353(B)G7 1/5	13.8(17.0)		HG-SR352(B)G7 1/5	83.5(93.1)	
	HC-RFS353(B)G7 1/11	13.4(16.6)		HG-SR352(B)G7 1/11	87.0(96.6)	
	HC-RFS353(B)G7 1/21	15.4(18.6)		HG-SR352(B)G7 1/21	85.1(94.7)	
	HC-RFS353(B)G7 1/33	14.4(17.6)				
	HC-RFS503(B)G7 1/5	17.2(20.7)		HG-SR502(B)G7 1/5	111(121)	
HC-RFS503(B)G7 1/11	20.7(24.2)					
HC-RFS503(B)G7 1/21	18.8(22.3)	HG-SR502(B)G7 1/11	108(117)			

Note 1. As for the motor specifications not listed here, refer to the catalog or Instruction Manual. (): With brake
If the load inertia moment ratio with brake is exceeded, please ask the sales contact.

(5) HC-LFS/-UFS motor

Series	Target product			Replacement product		
	Model	Moment of inertia J $\times 10^{-4} \text{ kg}\cdot\text{m}^2$	Load inertia moment ratio	Model	Moment of inertia J $\times 10^{-4} \text{ kg}\cdot\text{m}^2$	Load inertia moment ratio
Medium capacity, low inertia HC-LFS series (B): With brake	HC-LFS52(B)	3.2(5.2)	10 times or less	HG-JR73(B)	2.09(2.59)	10 times or less
	HC-LFS102(B)	4.6(6.6)		HG-JR153(B)	3.79(4.29)	
	HC-LFS152(B)	6.4(8.4)		HG-JR353(B)	13.2(15.4)	
	HC-LFS202(B)	22(32)				
	HC-LFS302(B)	36(46)		HG-JR503(B)	19.0(21.2)	
Small capacity, flat type HC-UFS series (B): With brake	HC-UFS13(B)	0.066(0.074)	15 times or less	HG-KR13(B)	0.0777(0.0837)	17 times or less
	HC-UFS23(B)	0.241(0.323)		HG-KR23(B)	0.221(0.243)	26 times or less
	HC-UFS43(B)	0.365(0.447)		HG-KR43(B)	0.371(0.393)	25 times or less
	HC-UFS73(B)	5.90(6.10)		HG-KR73(B)	1.26(1.37)	17 times or less
Medium capacity, flat type HC-UFS series (B): With brake	HC-UFS72(B)	10.4(12.4)		HG-UR72(B)	10.4(12.5)	15 times or less
	HC-UFS152(B)	22.1(24.1)		HG-UR152(B)	22.1(24.2)	
	HC-UFS202(B)	38.2(46.8)		HG-UR202(B)	38.2(46.8)	
	HC-UFS352(B)	76.5(85.1)		HG-UR352(B)	76.5(85.1)	
	HC-UFS502(B)	115(123.6)		HG-UR502(B)	115(124)	

Note 1. As for the motor specifications not listed here, refer to the catalog or Instruction Manual. (): With brake
If the load inertia moment ratio with brake is exceeded, please ask the sales contact.

Part 8: Review on Replacement of Motor

(6) HA-LFS motor

Series	Target product			Replacement product					
	Model	Moment of inertia J $\times 10^{-4} \text{ kg}\cdot\text{m}^2$	Load inertia moment ratio	Model	Moment of inertia J $\times 10^{-4} \text{ kg}\cdot\text{m}^2$	Load inertia moment ratio			
Large capacity, low inertia HA-LFS 1000 r/min series (B): With brake	HA-LFS601(B) HA-LFS6014(B)	105(113)	10 times or less	HG-JR601(B) HG-JR6014(B)	176(196)	10 times or less			
	HA-LFS801(B) HA-LFS8014(B)	220(293)		HG-JR801(B) HG-JR8014(B)	220(240)				
	HA-LFS12K1(B) HA-LFS12K14(B)	295(369)		HG-JR12K1(B) HG-JR12K14(B)	315(336)				
	HA-LFS15K1 HA-LFS15K14	550		HG-JR15K1 HG-JR15K14	489				
	HA-LFS20K1 HA-LFS20K14	650		HG-JR20K1 HG-JR20K14	627				
	HA-LFS25K1 HA-LFS25K14	1080		HG-JR25K1 HG-JR25K14	764				
	HA-LFS30K1 HA-LFS30K14	1310		HG-JR30K1 HG-JR30K14	1377				
	HA-LFS37K1 HA-LFS37K14	1870		HG-JR37K1 HG-JR37K14	1637				
	Large capacity, low inertia HA-LFS 1500 r/min series (B): With brake	HA-LFS701M(B) HA-LFS701M4(B)		105(113)	10 times or less		HG-JR701M(B) HG-JR701M4(B)	176(196)	10 times or less
		HA-LFS11K1M(B) HA-LFS11K1M4(B)		220(293)			HG-JR11K1M(B) HG-JR11K1M4(B)	220(240)	
HA-LFS15K1M(B) HA-LFS15K1M4(B)		295(369)	HG-JR15K1M(B) HG-JR15K1M4(B)	315(336)					
HA-LFS22K1M HA-LFS22K1M4		550	HG-JR22K1M HG-JR22K1M4	489					
HA-LFS30K1M HA-LFS30K1M4		650	HG-JR30K1M HG-JR30K1M4	627					
HA-LFS37K1M HA-LFS37K1M4		1080	HG-JR37K1M HG-JR37K1M4	764					
HA-LFS45K1M4		1310	HG-JR45K1M4	1377					
HA-LFS50K1M4		1870	HG-JR55K1M4	1637					
Large capacity, low inertia HA-LFS 2000 r/min series (B): With brake	HA-LFS502 HA-LFS702	74.0 94.2	10 times or less	HG-SR502 HG-SR702	99.7 151	15 times or less			
	HA-LFS11K2(B) HA-LFS11K24(B)	105(113)		HG-JR11K1M(B) HG-JR11K1M4(B)	220(240)				
	HA-LFS15K2(B) HA-LFS15K24(B)	220(293)				HG-JR15K1M(B) HG-JR15K1M4(B)	315(336)		
	HA-LFS22K2(B) HA-LFS22K24(B)	295(369)		HG-JR22K1M HG-JR22K1M4	489				
	HA-LFS30K2 HA-LFS30K24	550				HG-JR30K1M HG-JR30K1M4	627		
	HA-LFS37K2 HA-LFS37K24	650		HG-JR37K1M4 HG-JR45K1M4	764				
	HA-LFS45K24	1080				HG-JR45K1M4	1377		
	HA-LFS55K24	1310							

Note 1. As for the motor specifications not listed here, refer to the catalog or Instruction Manual.

() : With brake

If the load inertia moment ratio with brake is exceeded, please ask the sales contact.

Part 8: Review on Replacement of Motor

Series	Target product			Replacement product			
	Model	Moment of inertia J $\times 10^{-4} \text{ kg}\cdot\text{m}^2$	Load moment inertia ratio	Model	Moment of inertia J $\times 10^{-4} \text{ kg}\cdot\text{m}^2$	Load moment inertia ratio	
Large capacity, low inertia HA-LFS 1000 r/min series (B): With brake	HA-LFS601(B) HA-LFS6014(B)	105(113)	10 times or less	HG-JR601R(B)-S_ HG-JR6014R(B)-S_	191(212)	10 times or less	
	HA-LFS801(B) HA-LFS8014(B)	220(293)		HG-JR801R(B)-S_ HG-JR8014R(B)-S_	226(246)		
	HA-LFS12K1(B) HA-LFS12K14(B)	295(369)		HG-JR12K1R(B)-S_ HG-JR12K14R(B)-S_	321(342)		
	HA-LFS15K1 HA-LFS15K14	550		HG-JR15K1R-S_ HG-JR15K14R-S_	485		
	HA-LFS20K1 HA-LFS20K14	650		HG-JR20K1R-S_ HG-JR20K14R-S_	623		
	HA-LFS25K1 HA-LFS25K14	1080		HG-JR25K1R-S_ HG-JR25K14R-S_	767		
	HA-LFS30K1 HA-LFS30K14	1310		HG-JR30K1R-S_ HG-JR30K14R-S_	1357		
	HA-LFS37K1 HA-LFS37K14	1870		HG-JR37K1R-S_ HG-JR37K14R-S_	1651		
	Large capacity, low inertia HA-LFS 1500 r/min series (B): With brake	HA-LFS701M(B) HA-LFS701M4(B)		105(113)	HG-JR701MR(B)-S_ HG-JR701M4R(B)-S_		191(212)
		HA-LFS11K1M(B) HA-LFS11K1M4(B)		220(293)	HG-JR11K1MR(B)-S_(□250) HG-JR11K1M4R(B)-S_(□250)		226(246)
		HA-LFS15K1M(B) HA-LFS15K1M4(B)		295(369)	HG-JR15K1MR(B)-S_ HG-JR15K1M4R(B)-S_		321(342)
		HA-LFS22K1M HA-LFS22K1M4		550	HG-JR22K1MR-S_ HG-JR22K1M4R-S_		485
		HA-LFS30K1M HA-LFS30K1M4		650	HG-JR30K1MR-S_ HG-JR30K1M4R-S_		623
		HA-LFS37K1M HA-LFS37K1M4		1080	HG-JR37K1MR-S_ HG-JR37K1M4R-S_		767
HA-LFS45K1M4		1310	HG-JR45K1M4R-S_	1357			
HA-LFS50K1M4		1870	HG-JR55K1M4R-S_	1651			
Large capacity, low inertia HA-LFS 2000 r/min series (B): With brake		HA-LFS502 HA-LFS702	74.0 94.2	HG-SR502R-S_ HG-SR702R-S_	104 155	15 times or less	
		HA-LFS11K2(B) HA-LFS11K24(B)	105(113)	HG-JR11K1MR(B)-S_(□200) HG-JR11K1M4R(B)-S_(□200)	247(267)	10 times or less	
	HA-LFS15K2(B) HA-LFS15K24(B)	220(293)	HG-JR11K1MR(B)-S_(□250) HG-JR11K1M4R(B)-S_(□250)	226(246)			
	HA-LFS22K2(B) HA-LFS22K24(B)	295(369)	HG-JR15K1MR(B)-S_ HG-JR15K1M4R(B)-S_	321(342)			
	HA-LFS30K2 HA-LFS30K24	550	HG-JR22K1MR-S_ HG-JR22K1M4R-S_	485			
	HA-LFS37K2 HA-LFS37K24	650	HG-JR30K1MR-S_ HG-JR30K1M4R-S_	623			
	HA-LFS45K24	1080	HG-JR37K1M4R-S_	767			
	HA-LFS55K24	1310	HG-JR45K1M4R-S_	1357			

Note 1. As for the motor specifications not listed here, refer to the catalog or Instruction Manual.

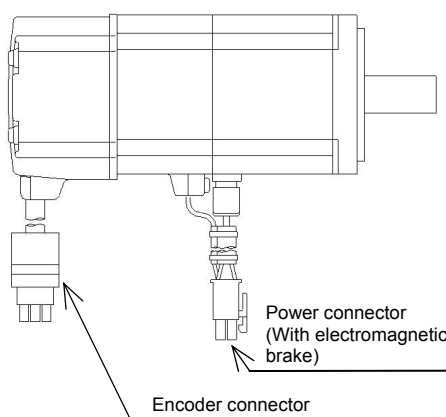
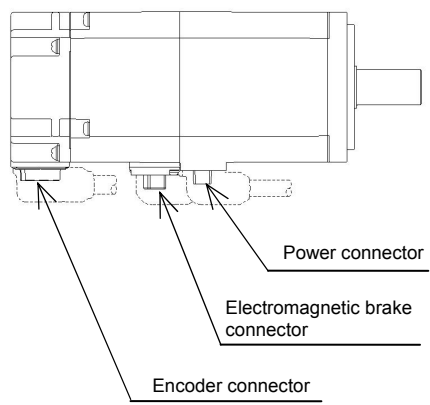
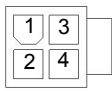
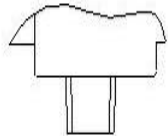
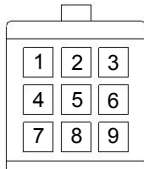

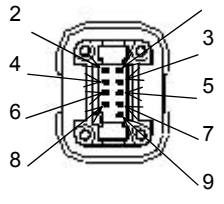
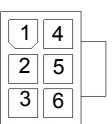
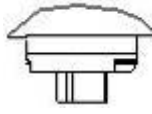
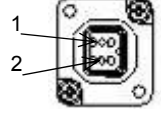
() : With brake

If the load moment inertia ratio with brake is exceeded, please ask the sales contact.

Part 8: Review on Replacement of Motor

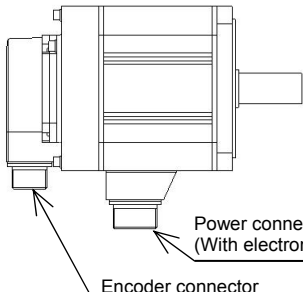
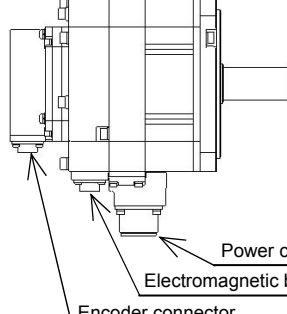
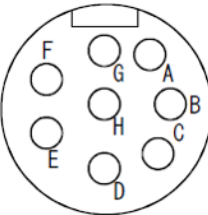
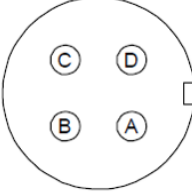
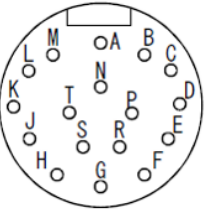
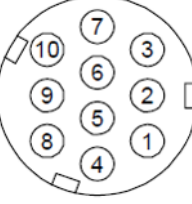
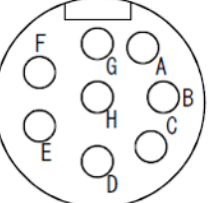
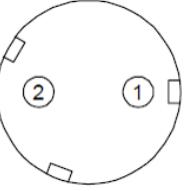
2.6 Comparison of Servo Motor Connector Specifications

(1) HC-KFS/-MFS/-UFS motor

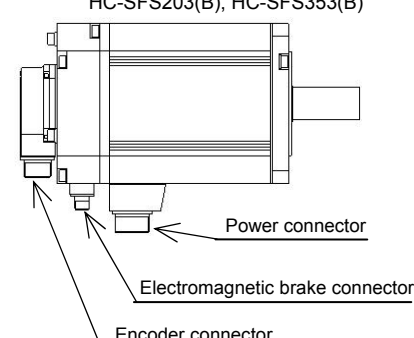
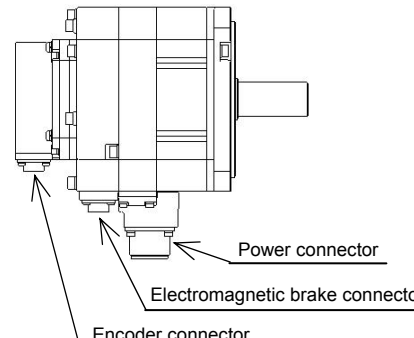
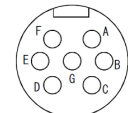
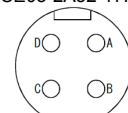
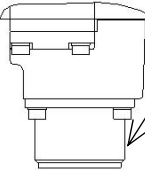
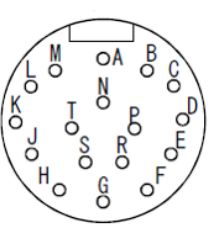
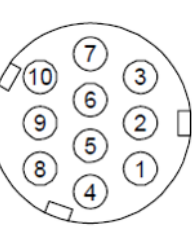
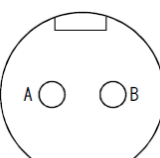
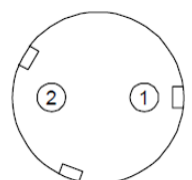
Motor appearance	<p>MR-J2S series (HC-KFS/MFS/UFS)</p>  <p>Encoder connector</p> <p>Power connector (With electromagnetic brake)</p>	<p>MR-J4 series (HG-KR/MR)</p>  <p>Encoder connector</p> <p>Electromagnetic brake connector</p> <p>Power connector</p>																																								
Power connector	<p>Power supply lead 4-AWG19 0.3 m</p> <p>Power connector 5557-04R-210 (Receptacle) 5556PBT (Female terminal)</p> <p>Power connector</p> <p>Pin assignment</p> <table border="1"> <thead> <tr> <th>Pin number</th> <th>Signal name</th> </tr> </thead> <tbody> <tr><td>1</td><td>U</td></tr> <tr><td>2</td><td>V</td></tr> <tr><td>3</td><td>W</td></tr> <tr><td>4</td><td>Earth</td></tr> </tbody> </table> 	Pin number	Signal name	1	U	2	V	3	W	4	Earth	 <p>Power connector</p> <p>Pin assignment</p> <table border="1"> <thead> <tr> <th>Pin number</th> <th>Signal name</th> </tr> </thead> <tbody> <tr><td>1</td><td>Earth</td></tr> <tr><td>2</td><td>U</td></tr> <tr><td>3</td><td>V</td></tr> <tr><td>4</td><td>W</td></tr> </tbody> </table>	Pin number	Signal name	1	Earth	2	U	3	V	4	W																				
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Electromagnetic brake connector (Power connector)	<p>Power supply lead 4-AWG19 0.3 m</p> <p>Brake lead 2-0.3² 0.3 m</p> <p>(USF is an electromagnetic brake cable 2-0.75² 0.3 m)</p> <p>Power connector 5557-06R-210 (Receptacle) 5556PBT (Female terminal)</p> <p>Power connector (with brake)</p> <p>Pin assignment</p> <table border="1"> <thead> <tr> <th>Pin number</th> <th>Signal name</th> </tr> </thead> <tbody> <tr><td>1</td><td>U</td></tr> <tr><td>2</td><td>V</td></tr> <tr><td>3</td><td>W</td></tr> <tr><td>4</td><td>Earth</td></tr> <tr><td>5</td><td>B1</td></tr> <tr><td>6</td><td>B2</td></tr> </tbody> </table> 	Pin number	Signal name	1	U	2	V	3	W	4	Earth	5	B1	6	B2	 <p>Electromagnetic brake connector</p> <p>Pin assignment</p> <table border="1"> <thead> <tr> <th>Pin number</th> <th>Signal name</th> </tr> </thead> <tbody> <tr><td>1</td><td>B1</td></tr> <tr><td>2</td><td>B2</td></tr> </tbody> </table> 	Pin number	Signal name	1	B1	2	B2																				
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Part 8: Review on Replacement of Motor

(2) HC-SFS motor

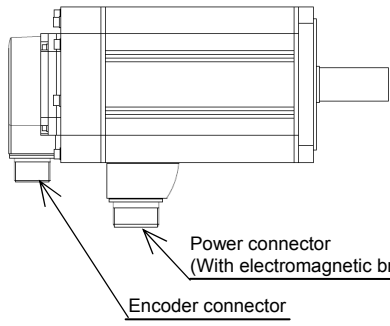
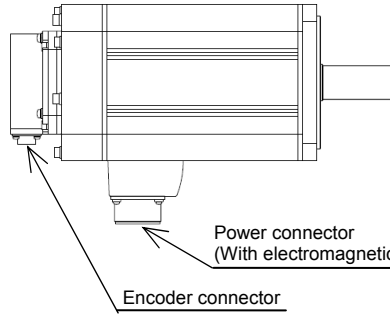
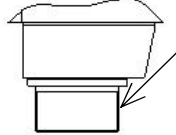
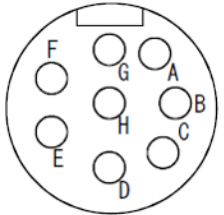
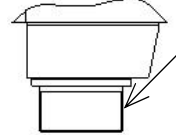
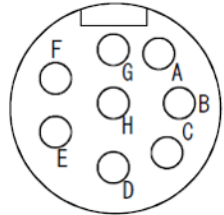

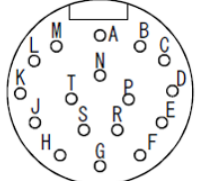
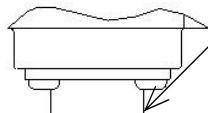
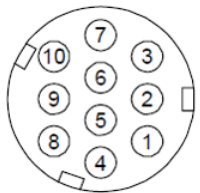
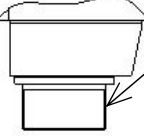
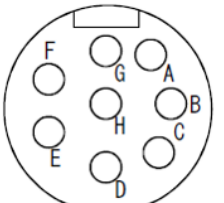
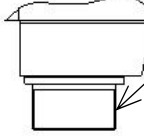
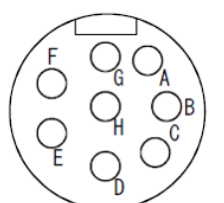
	<p>MR-J2S series (HC-SFS)</p> <p>Target models: HC-SFS81(B) HC-SFS52(4)(B) to HC-SFS152(4)(B) HC-SFS53(B) to HC-SFS153(B)</p>  <p>Power connector (With electromagnetic brake)</p> <p>Encoder connector</p>	<p>MR-J4 series (HG-SR)</p> <p>Target models: HG-SR81(B) HG-SR52(4)(B) to HG-SR152(4)(B)</p>  <p>Power connector</p> <p>Electromagnetic brake connector</p> <p>Encoder connector</p>																																																										
<p>Motor appearance</p>	<p>Power connector CE05-2A22-23P</p> <p>Power connector Pin assignment</p> <table border="1"> <thead> <tr> <th>Pin number</th> <th>Signal name</th> </tr> </thead> <tbody> <tr><td>A</td><td>U</td></tr> <tr><td>B</td><td>V</td></tr> <tr><td>C</td><td>W</td></tr> <tr><td>D</td><td></td></tr> <tr><td>E</td><td></td></tr> <tr><td>F</td><td></td></tr> <tr><td>G</td><td></td></tr> <tr><td>H</td><td></td></tr> </tbody> </table> 	Pin number	Signal name	A	U	B	V	C	W	D		E		F		G		H		<p>Power connector MS3102A18-10P</p> <p>Power connector Pin assignment</p> <table border="1"> <thead> <tr> <th>Pin number</th> <th>Signal name</th> </tr> </thead> <tbody> <tr><td>A</td><td>U</td></tr> <tr><td>B</td><td>V</td></tr> <tr><td>C</td><td>W</td></tr> <tr><td>D</td><td>Earth</td></tr> </tbody> </table> 	Pin number	Signal name	A	U	B	V	C	W	D	Earth																														
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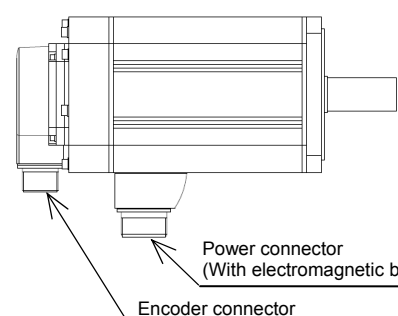
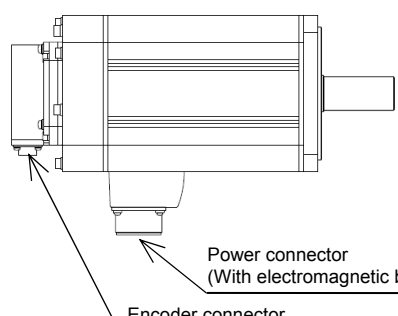
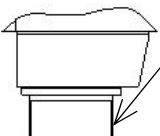
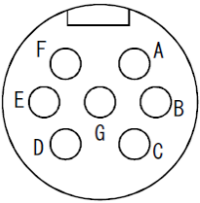
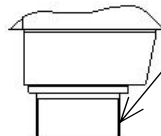
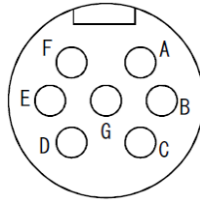
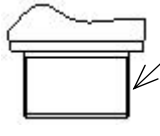
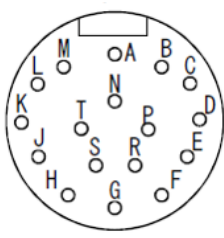
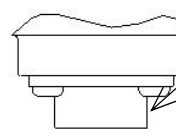
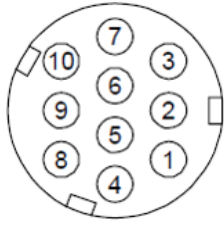
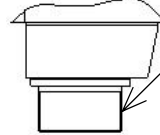
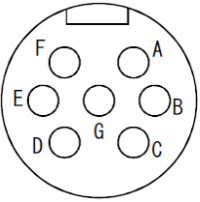
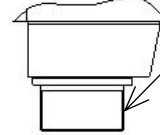
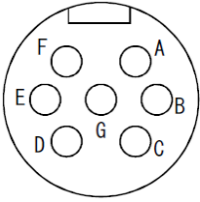
<p>Motor appearance</p>	<p>MR-J2S series (HC-SFS) Target models: HC-SFS121(B) to HC-SFS301(B) HC-SFS202(4)(B) to HC-SFS702(4)(B) HC-SFS203(B), HC-SFS353(B)</p>  <p>Power connector Electromagnetic brake connector Encoder connector</p>	<p>MR-J4 series (HG-SR) Target models: HG-SR121(B) to HG-SR301(B) HG-SR202(4)(B) to HG-SR702(4)(B)</p>  <p>Power connector Electromagnetic brake connector Encoder connector</p>																																																										
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Part 8: Review on Replacement of Motor

(3) HC-RFS motor

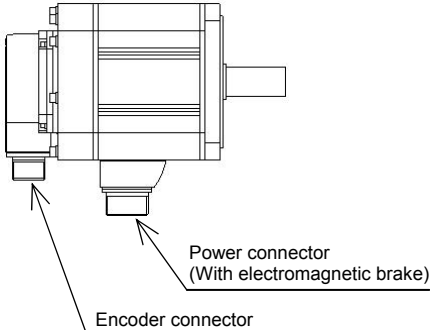
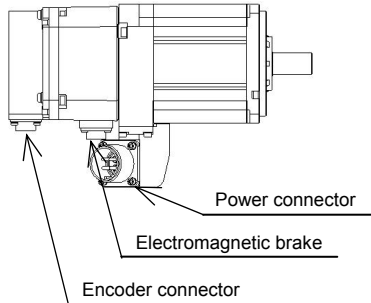
Motor appearance	<p>MR-J2S series (HC-RFS) Target models: HC-RFS103(B), RFS153(B),RFS203(B)</p>  <p>Power connector (With electromagnetic brake)</p> <p>Encoder connector</p>	<p>MR-J4 series (HG-RR) Target model: HG-RR103(B), RR153(B), RR203(B)</p>  <p>Power connector (With electromagnetic brake)</p> <p>Encoder connector</p>																																																										
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Part 8: Review on Replacement of Motor

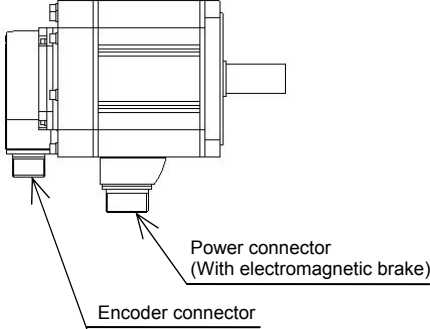
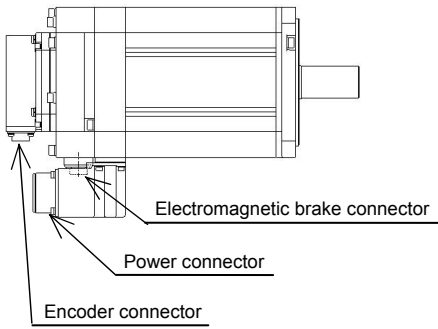
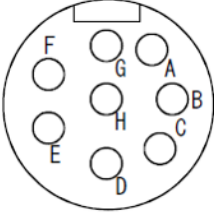
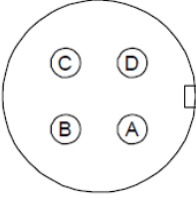
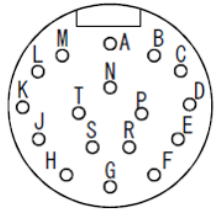
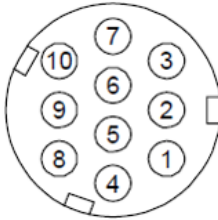
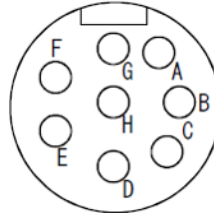
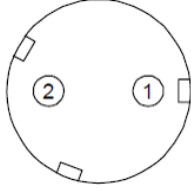
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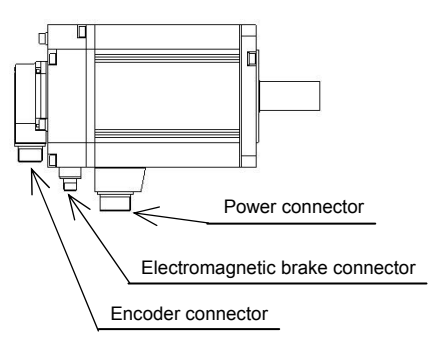
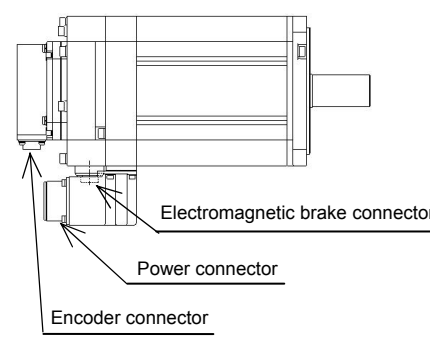
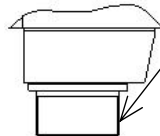
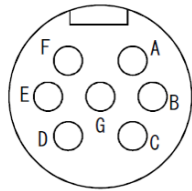
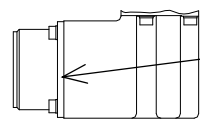
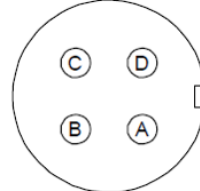

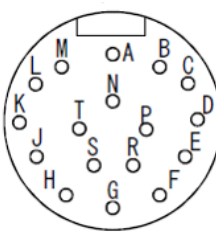
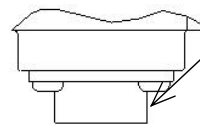
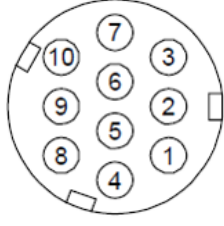
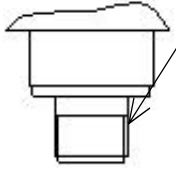
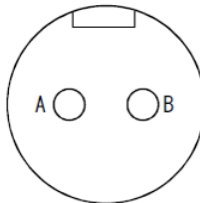
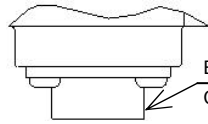
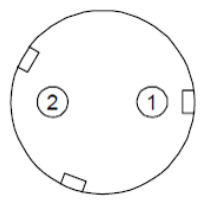
(4) HC-LFS motor

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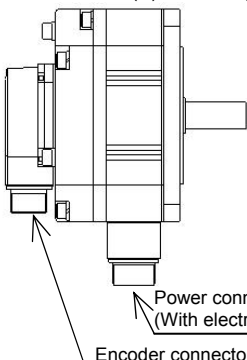
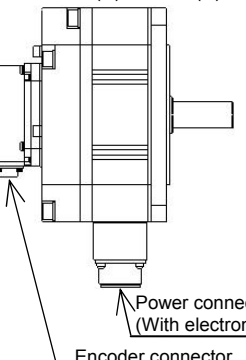
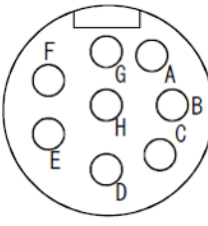
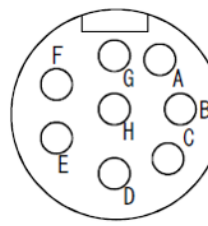
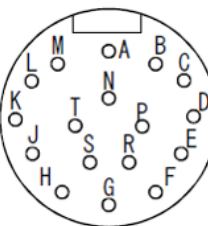
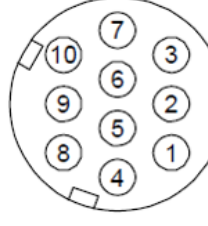
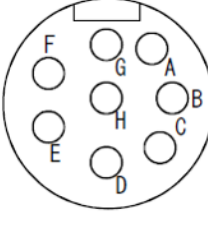
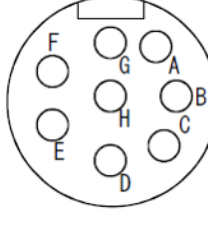
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Part 8: Review on Replacement of Motor

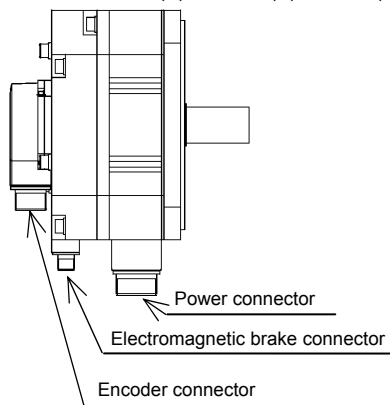
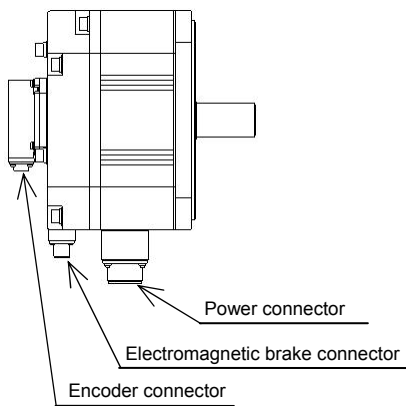
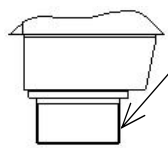
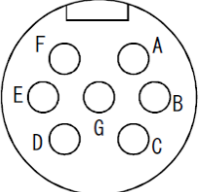
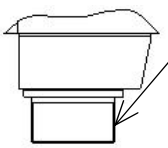
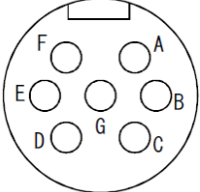
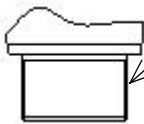
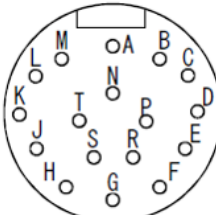
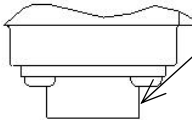
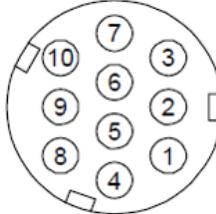
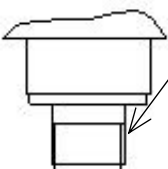
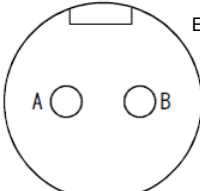
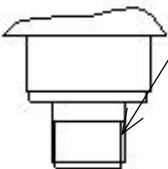
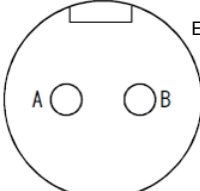
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Part 8: Review on Replacement of Motor

(5) HC-UFS motor

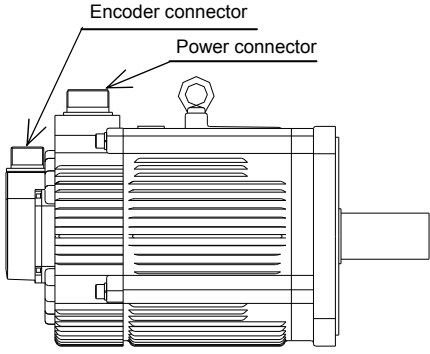
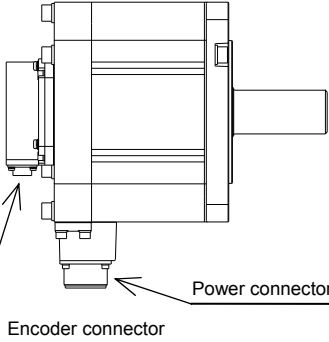
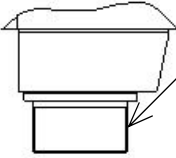
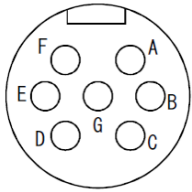
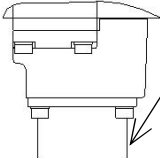
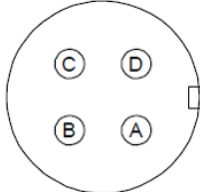
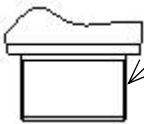
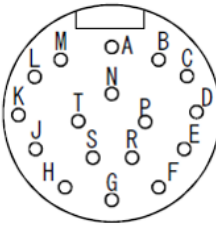
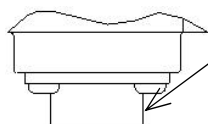
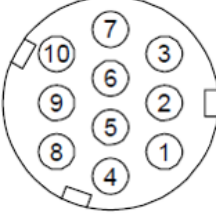
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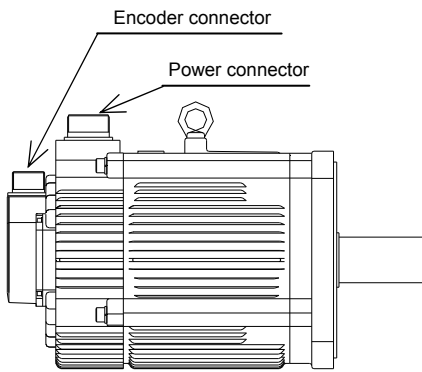
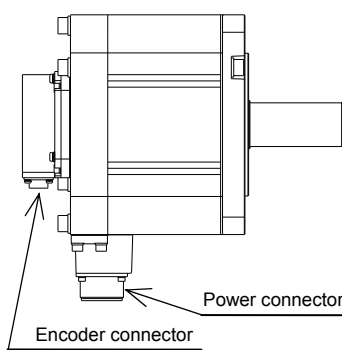
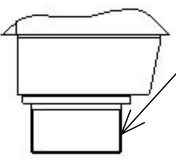
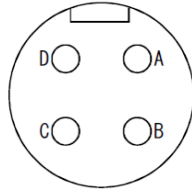
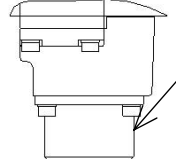
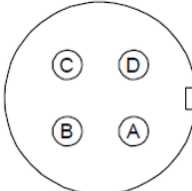

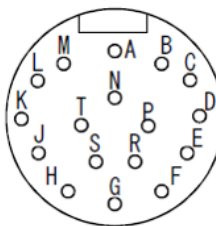
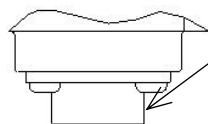
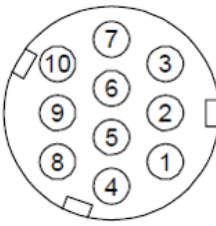
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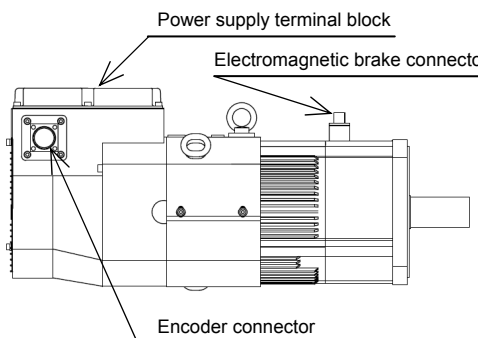
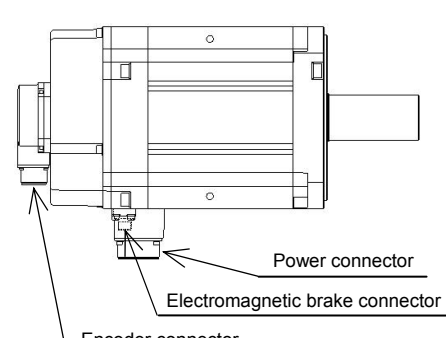
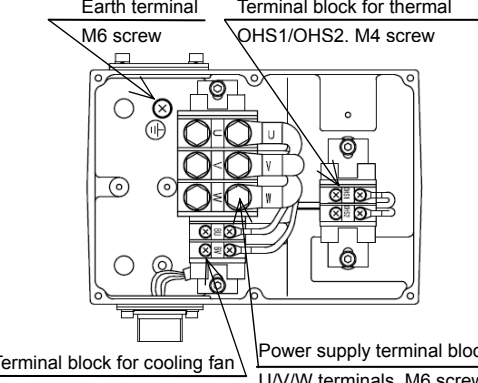
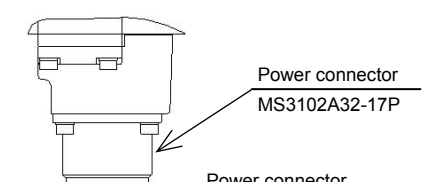
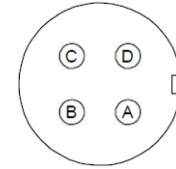
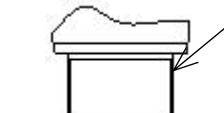
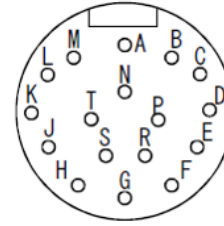
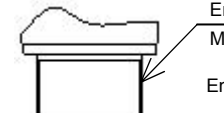
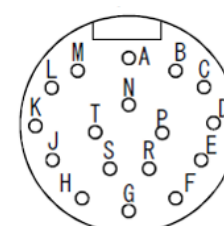
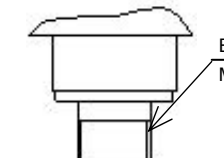
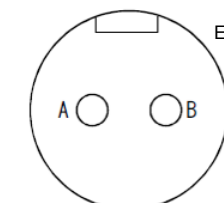
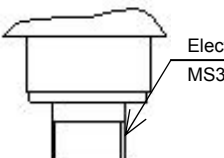
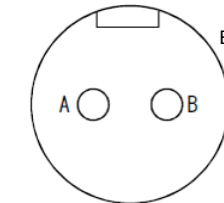
(6) HA-LFS motor

<p>Motor appearance</p>	<p>MR-J2S series (HA-LFS) Target models: HA-LFS502</p>  <p>Encoder connector Power connector</p>	<p>MR-J4 series (HG-UR) Target models: HG-SR502</p>  <p>Encoder connector Power connector</p>																																																										
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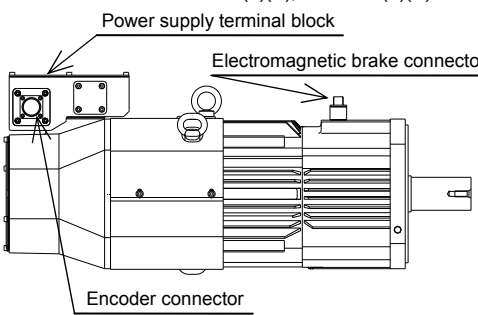
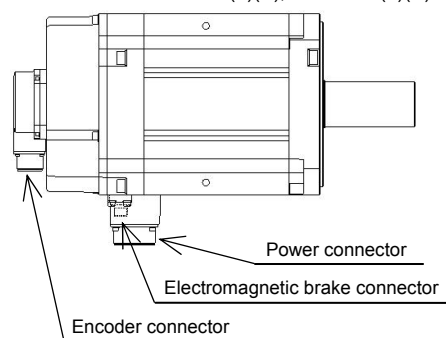
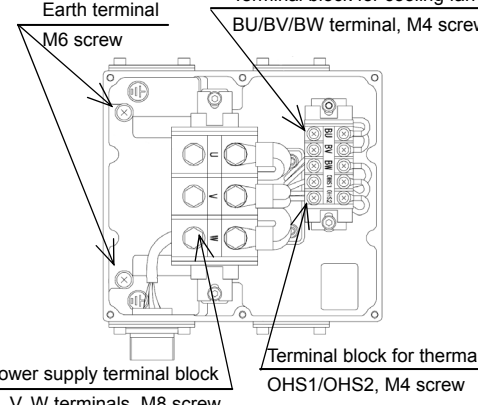
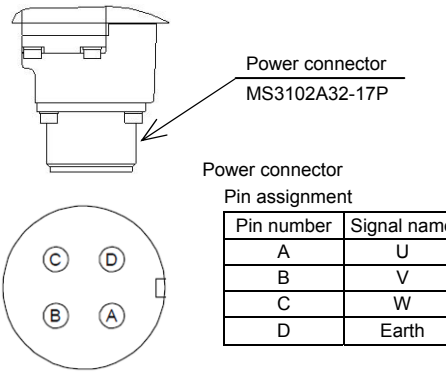
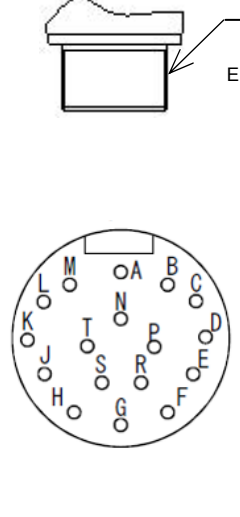
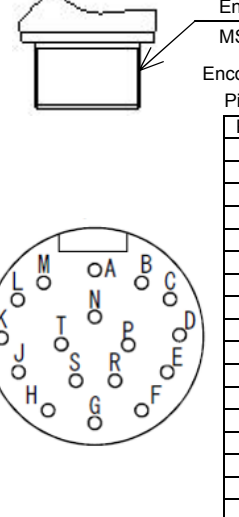
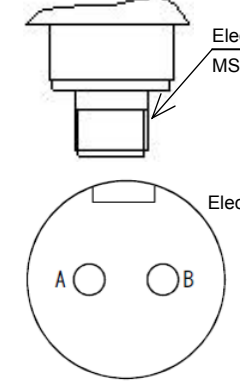
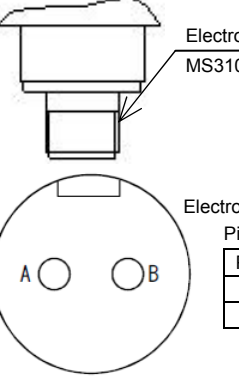
Part 8: Review on Replacement of Motor

<p>Motor appearance</p>	<p>MR-J2S series (HA-LFS) Target models: HA-LFS702</p>  <p>Encoder connector Power connector</p>	<p>MR-J4 series (HG-SR) Target models: HG-SR702</p>  <p>Encoder connector Power connector</p>																																																										
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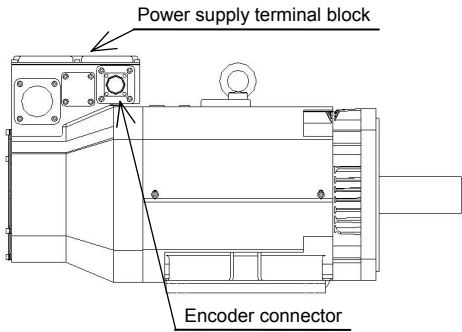
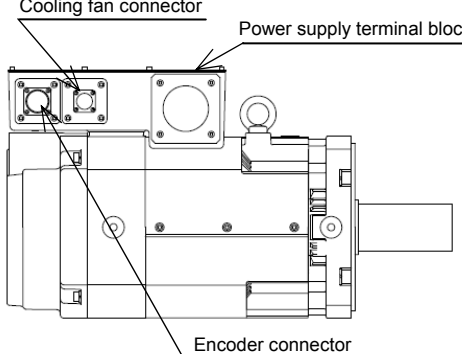
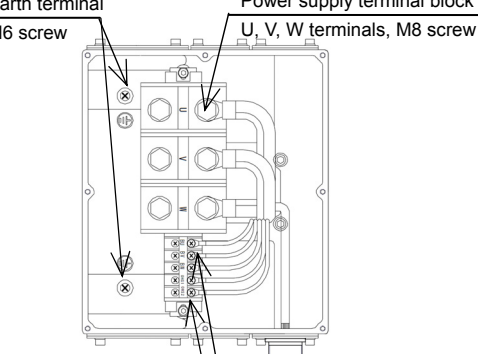
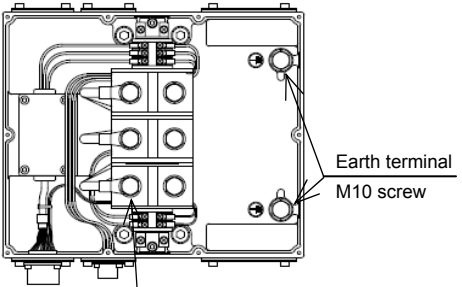
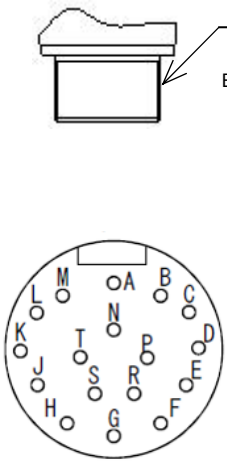
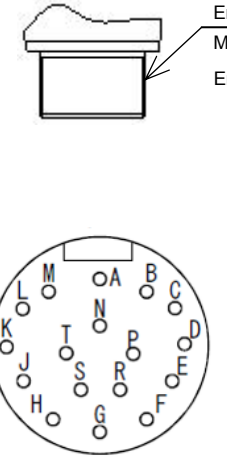
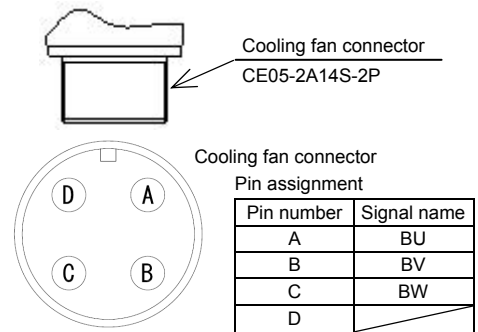
Part 8: Review on Replacement of Motor

<p>Motor appearance</p>	<p>MR-J2S series (HA-LFS) Target models: HA-LFS601(4)(B), LFS701M(4)(B) HA-LFS11K2(4)(B)</p> 	<p>MR-J4 series (HG-JR) Target models: HG-JR601(4)(B), JR701M(4)(B) HG-JR11K1M(4)(B)</p> 																																																																								
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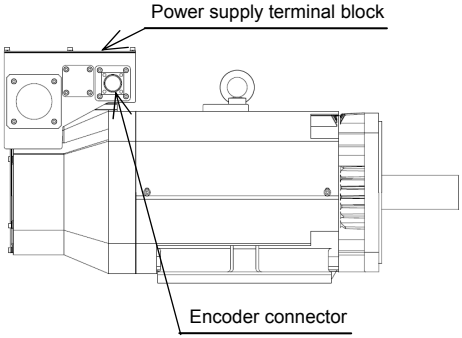
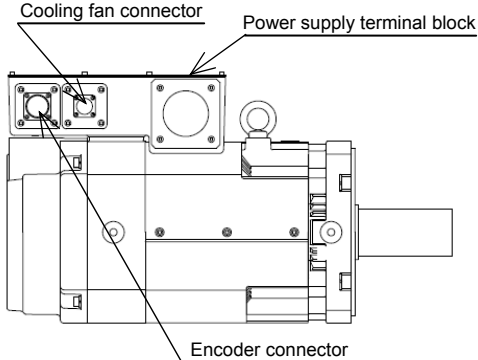
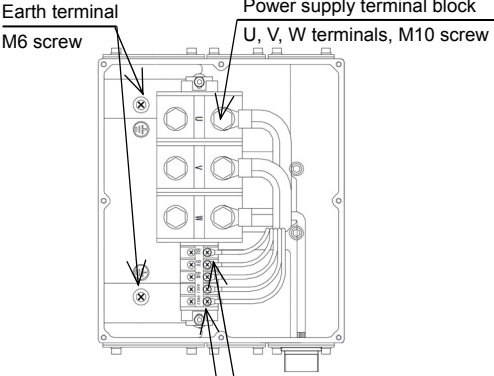
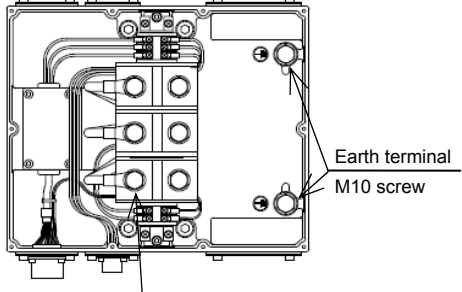
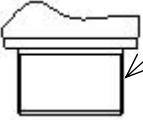
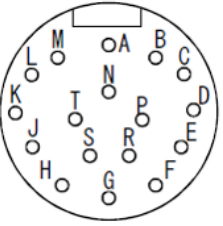
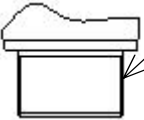
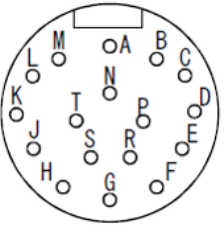
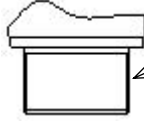
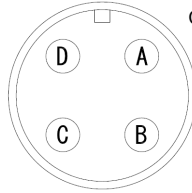
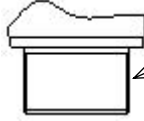
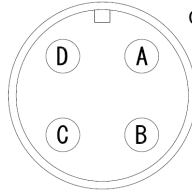
Part 8: Review on Replacement of Motor

<p>Motor appearance</p>	<p>MR-J2S series (HA-LFS) Target models: HA-LFS801(4)(B), LFS12K1(4)(B) HA-LFS11K1M(4)(B), LFS15K1M(4)(B) HA-LFS15K2(4)(B), LFS22K2(4)(B)</p> 	<p>MR-J4 series (HG-JR) Target models: HG-JR801(4)(B), JR12K1(4)(B) HG-JR11K1M(4)(B), JR15K1M(4)(B)</p> 																																																																								
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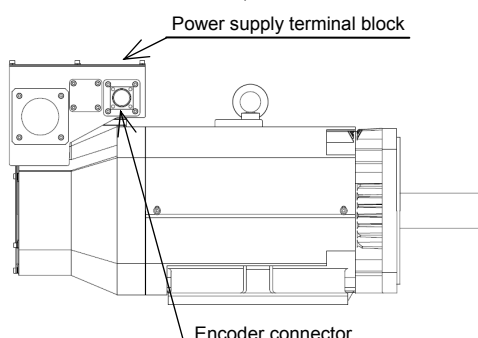
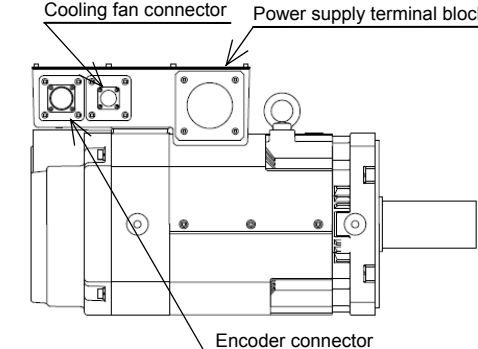
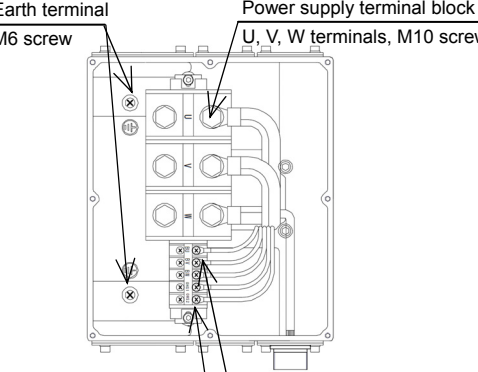
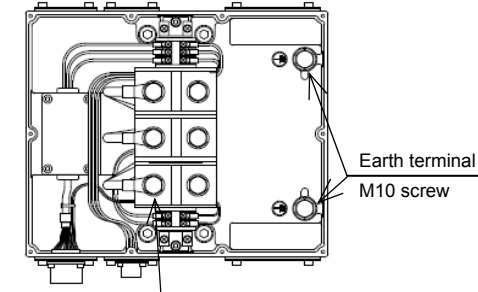
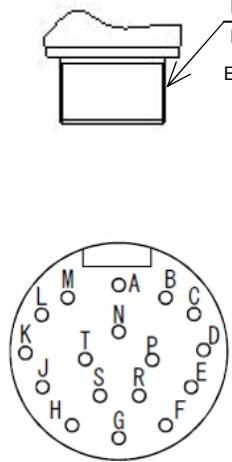
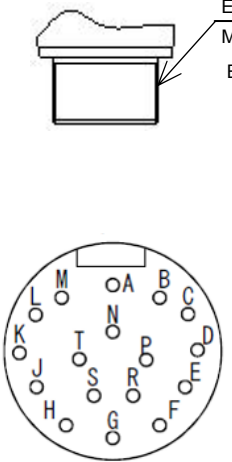
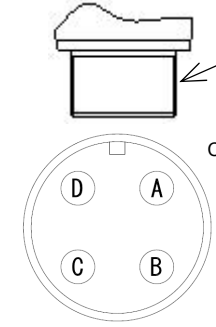
Part 8: Review on Replacement of Motor

<p>Motor appearance</p>	<p>MR-J2S series (HA-LFS) Target models: HA-LFS15K1(4), LFS20K1(4) HA-LFS22K1M(4), LFS30K1M4 HA-LFS30K24, LFS37K24</p>  <p>Power supply terminal block</p> <p>Encoder connector</p>	<p>MR-J4 series (HG-JR) Target models: HG-JR15K1(4), JR20K1(4) HG-JR22K1M(4), JR30K1M4</p>  <p>Cooling fan connector</p> <p>Power supply terminal block</p> <p>Encoder connector</p>																																																																								
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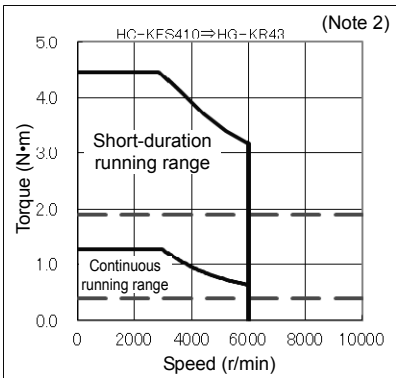
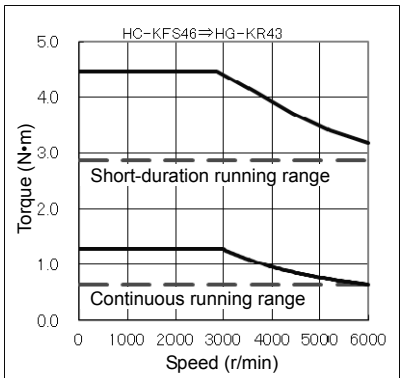
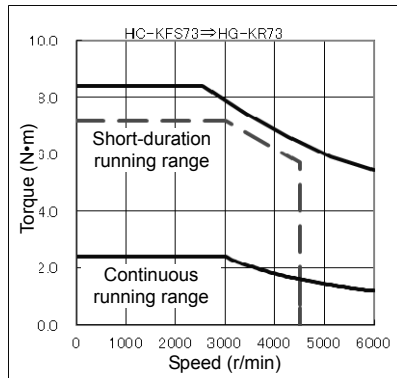
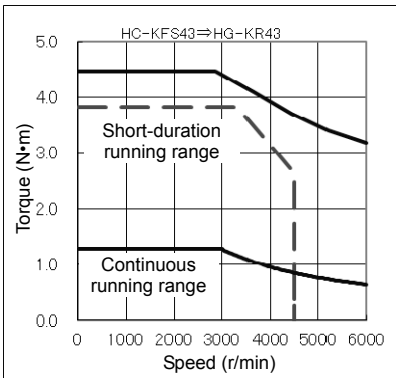
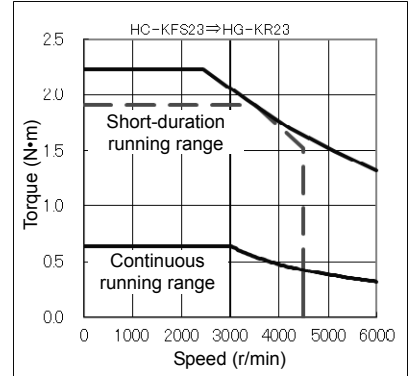
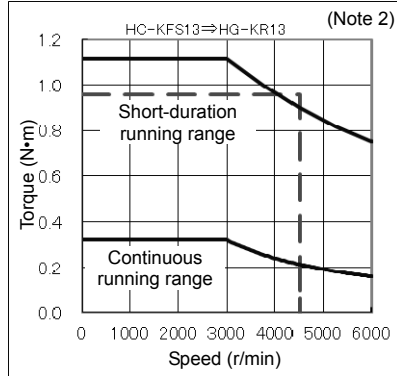
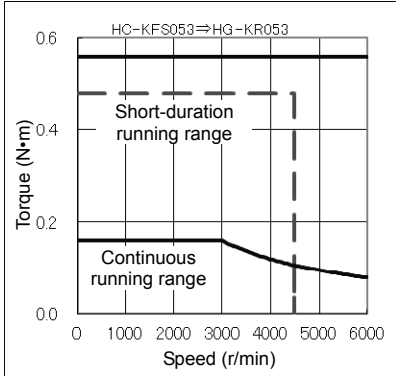
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2.7 Comparison of Servo Motor Torque Characteristics

◆ Comparison of torque characteristics between the HG-KR and HC-KFS series (—: HG-KR, ---: HC-KFS)

• HC-KFS series, 200 V class

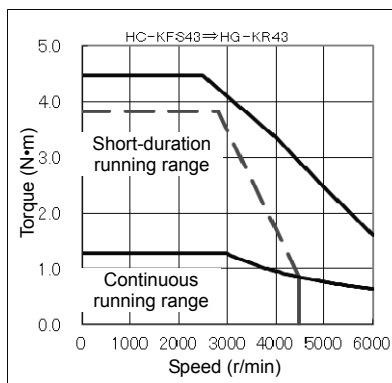
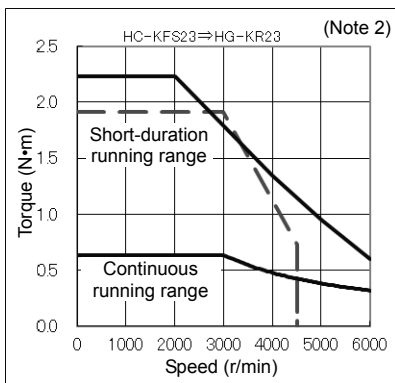
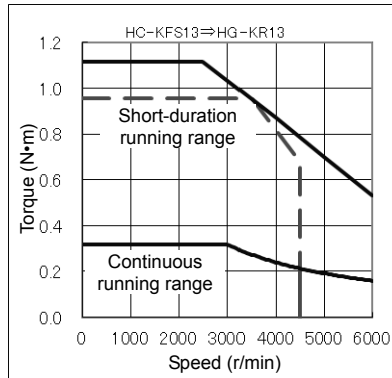
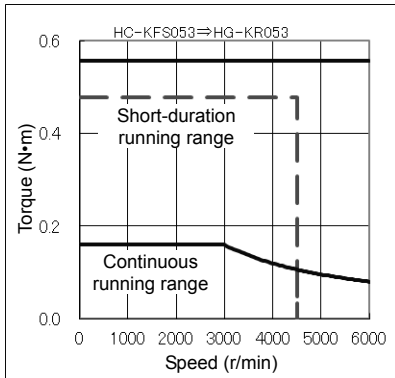


Note 1. The above torque characteristics are for three-phase 200VAC and single -phase 230VAC.
 2. Contact a sales representative if the compatibility of torque characteristics is required.

Part 8: Review on Replacement of Motor

◆ Comparison of torque characteristics between the HG-KR and HC-KFS series (—: HG-KR, ---: HC-KFS)

• HC-KFS series, 100V class

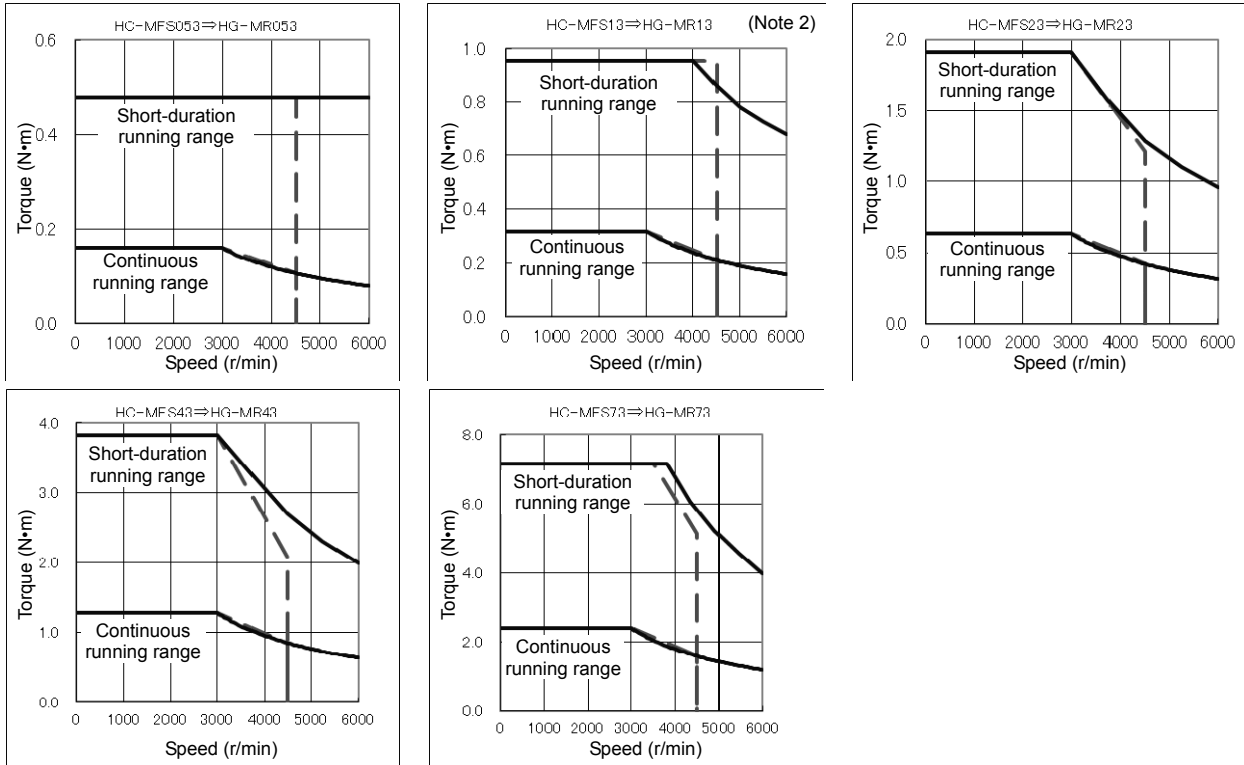


- Note 1. The above torque characteristics are for single-phase 100VAC.
 2. Contact a sales representative if the compatibility of torque characteristics is required.

Part 8: Review on Replacement of Motor

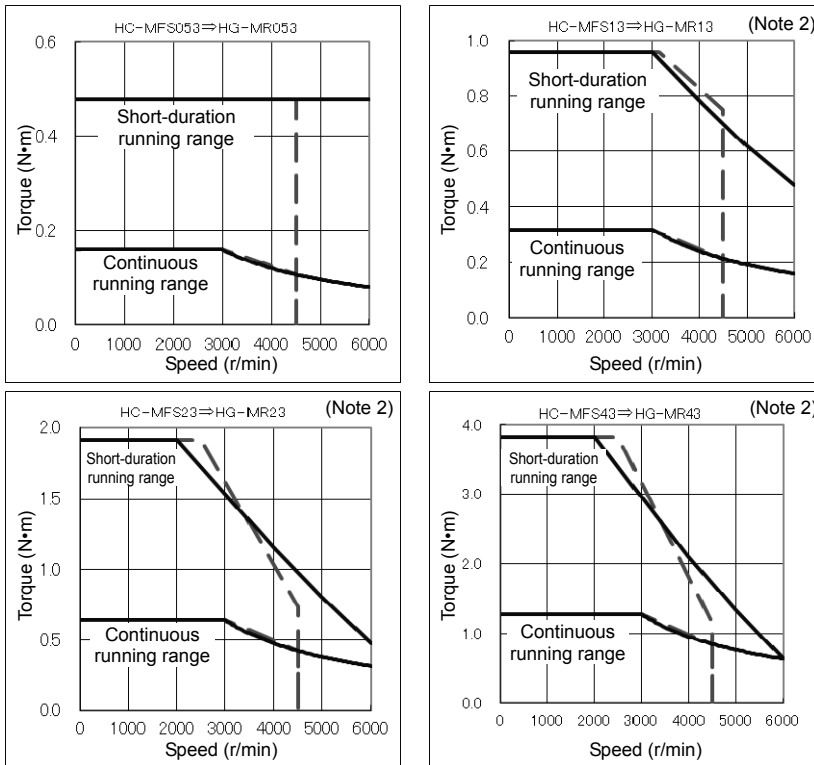
◆ Comparison of torque characteristics between the HG-MR and HC-MFS series (—: HG-MR, - - -: HC-MFS)

• HC-MFS series, 200 V class



- Note 1. The above torque characteristics are for three-phase 200VAC and single -phase 230VAC.
 2. Contact a sales representative if the compatibility of torque characteristics is required.

• HC-MFS series, 100 V class

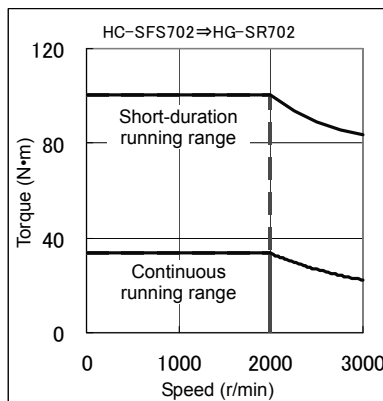
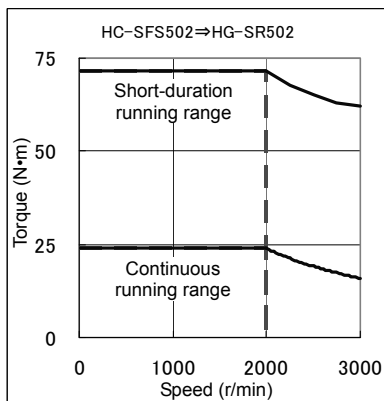
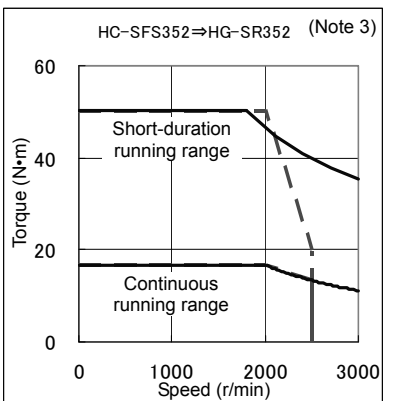
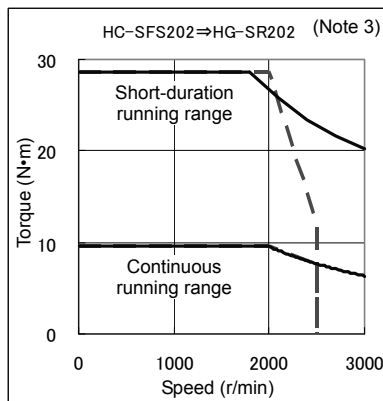
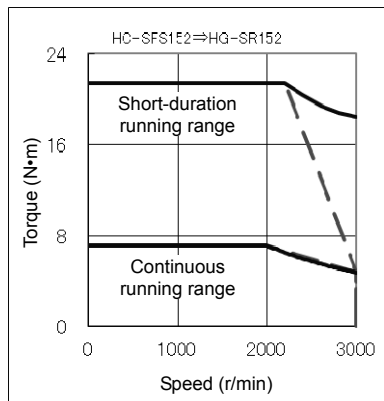
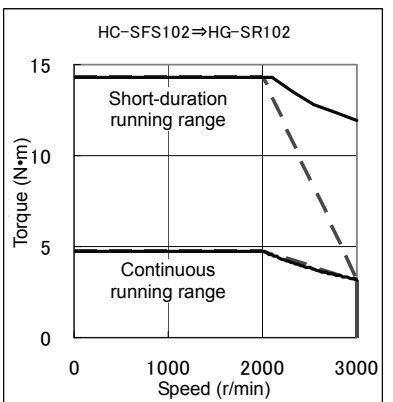
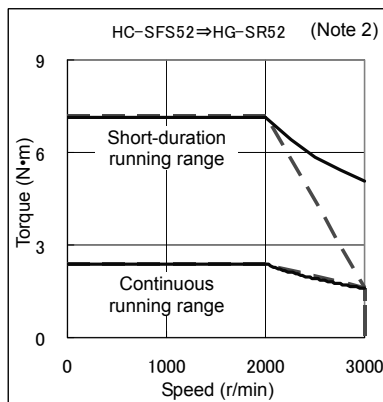
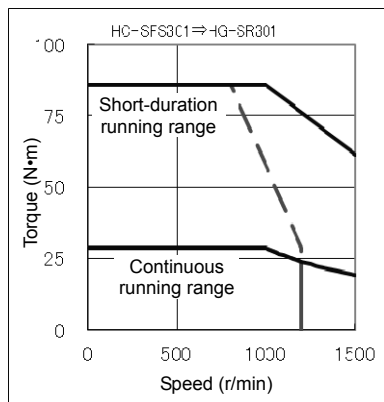
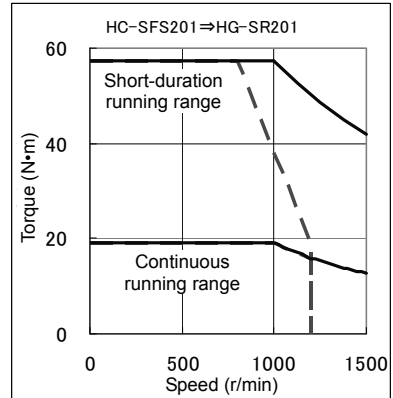
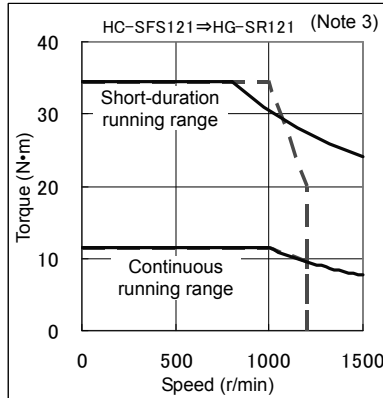
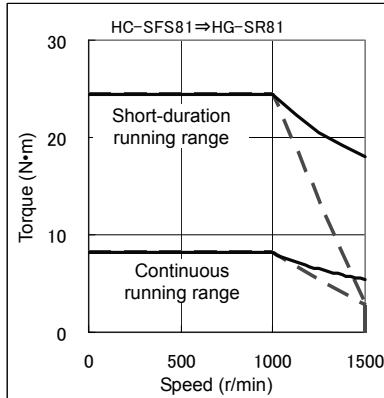


- Note 1. The above torque characteristics are for single-phase 100VAC.
 2. Contact a sales representative if the compatibility of torque characteristics is required.

Part 8: Review on Replacement of Motor

◆ Comparison of torque characteristics between the HG-SR and HC-SFS series (—: HG-SR, - - -: HC-SFS)

• HC-SFS 1000 r/min, 2000 r/min series, 200 V class

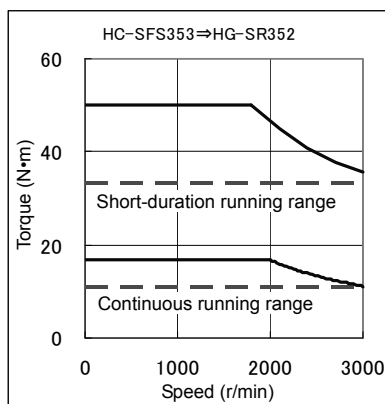
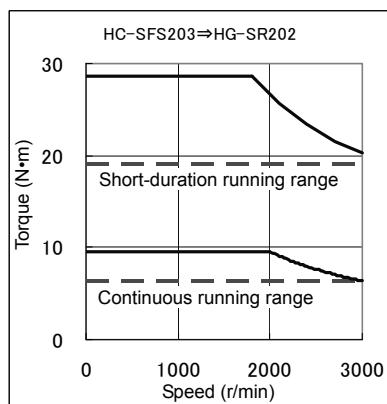
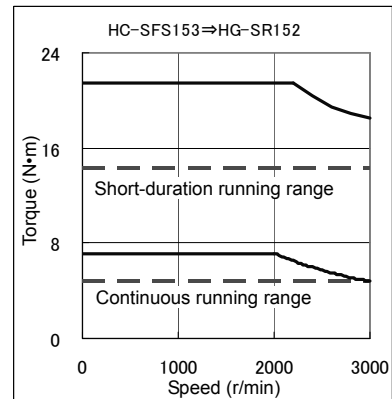
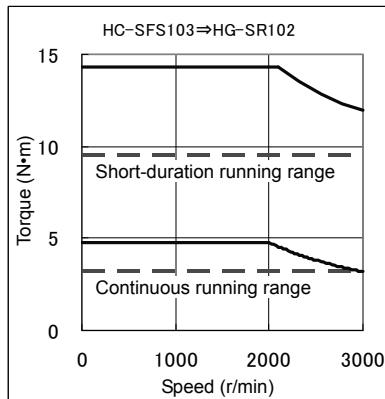
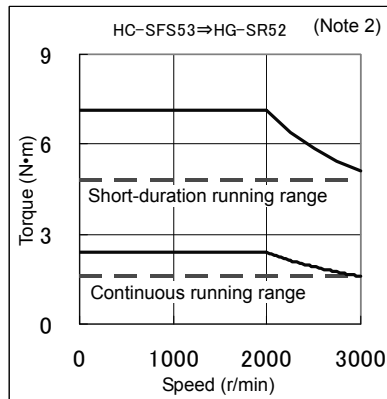


- Note 1. The above torque characteristics are for three-phase 200VAC.
 Note 2. As for single-phase 230VAC, refer to the catalog or Instruction Manual.
 Note 3. Contact a sales representative if the compatibility of torque characteristics is required.

Part 8: Review on Replacement of Motor

◆ Comparison of torque characteristics between the HG-SR and HC-SFS series (—: HG-SR, - - -: HC-SFS)

• HC-SFS 3000 r/min series, 200 V class

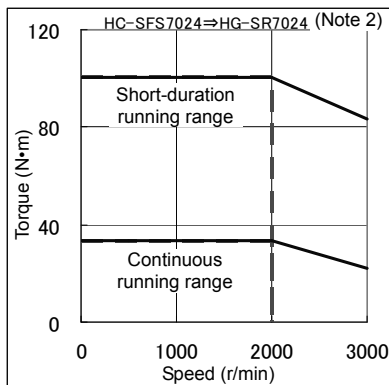
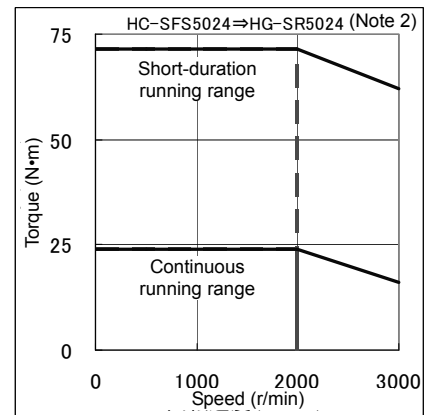
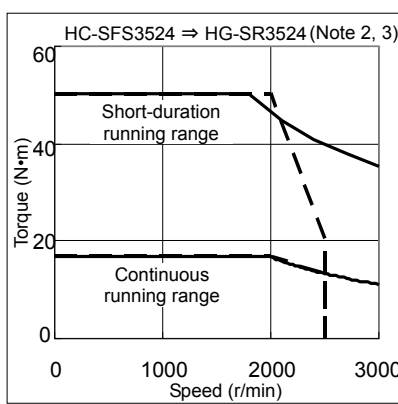
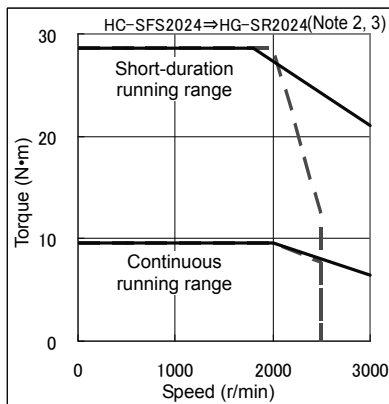
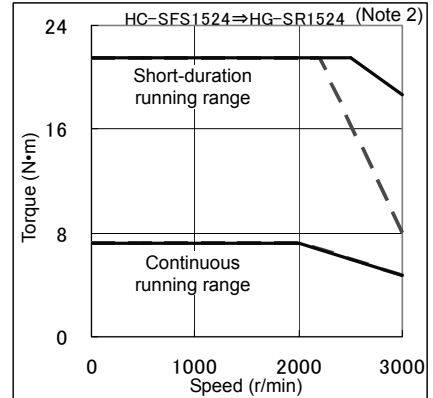
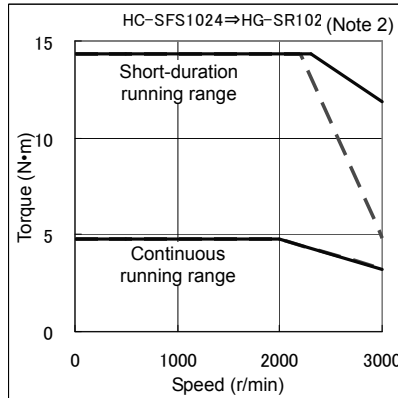
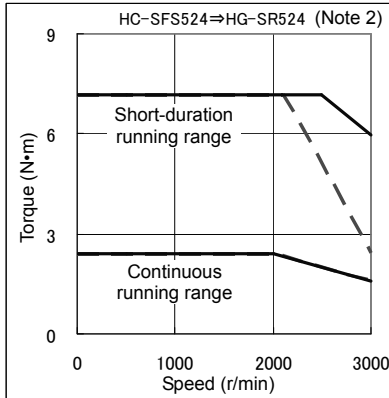


- Note 1. The above torque characteristics are for three-phase 200VAC.
 2. As for single-phase 230VAC, refer to the catalog or Instruction Manual.

Part 8: Review on Replacement of Motor

◆ Comparison of torque characteristics between the HG-SR and HC-SFS series (—: HG-SR, - - -: HC-SFS)

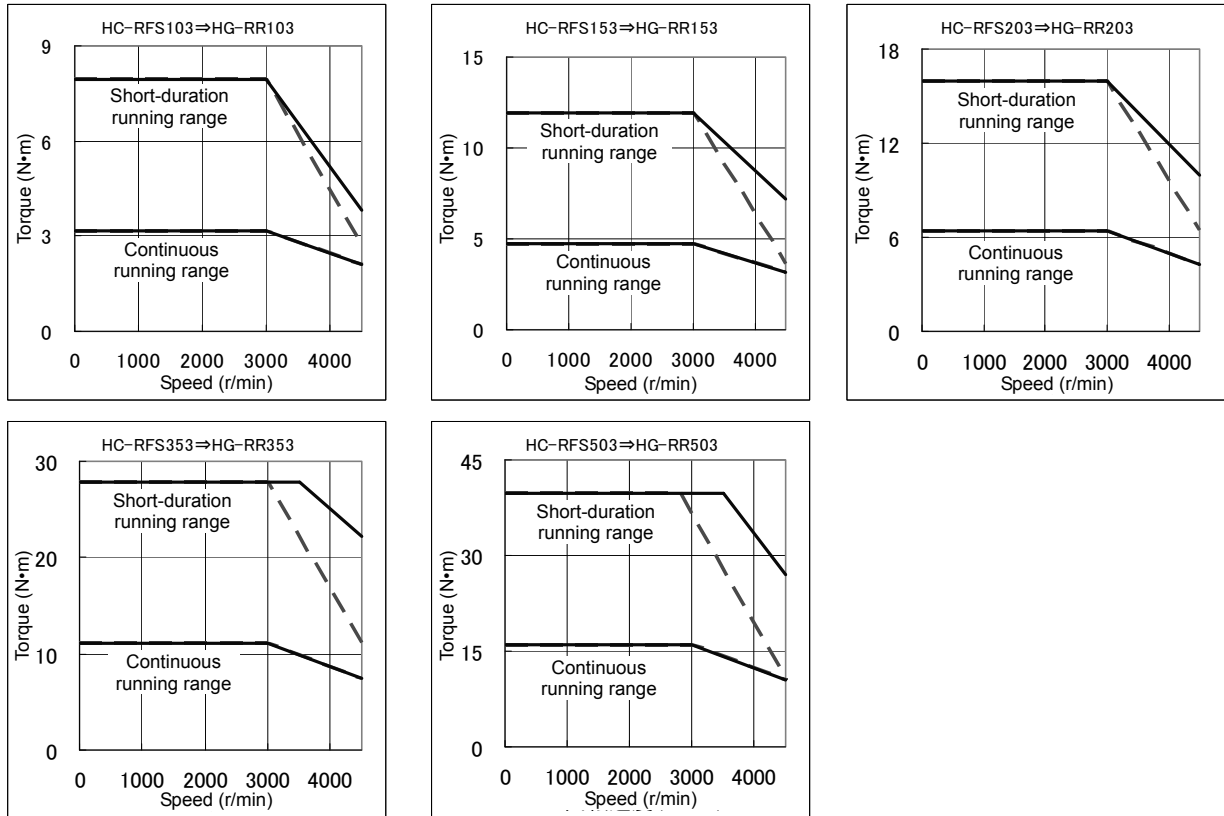
• HC-SFS: 2000 r/min series, 400 V class



- Note
1. The above torque characteristics are for three-phase 400VAC.
 2. As for three-phase 380VAC, refer to the catalog or Instruction Manual.
 3. Contact a sales representative if the compatibility of torque characteristics is required.

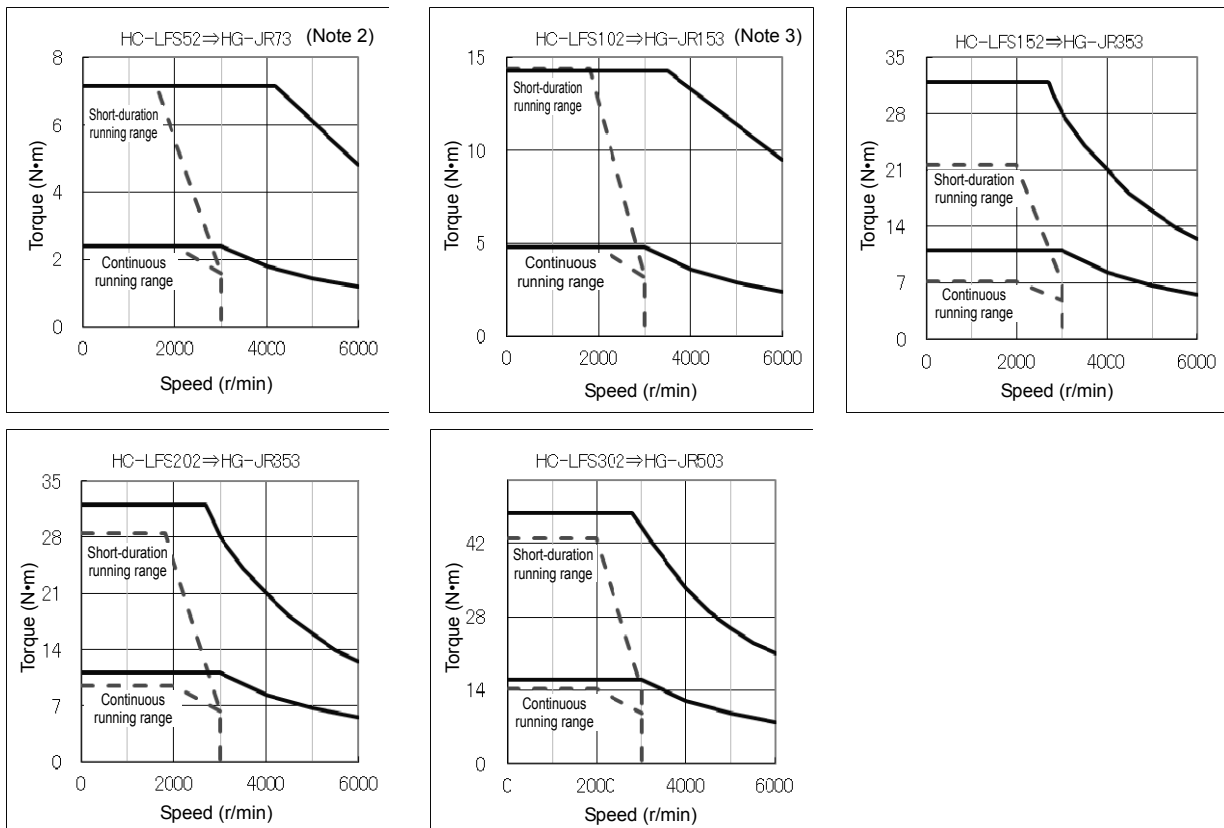
Part 8: Review on Replacement of Motor

◆ Comparison of torque characteristics between the HG-RR and HC-RFS series (—: HG-SR; - - : HC-RFS)



Note 1. The above torque characteristics are for three-phase 200VAC.

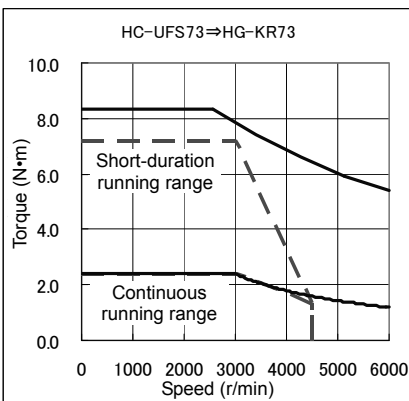
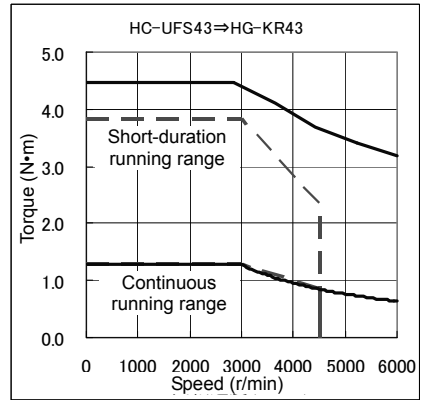
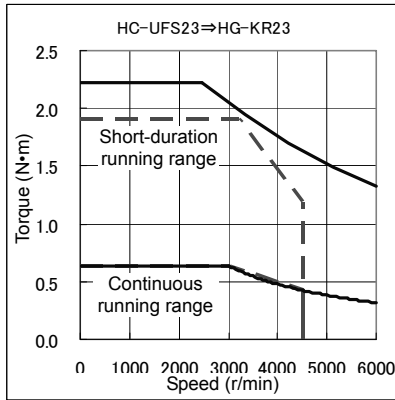
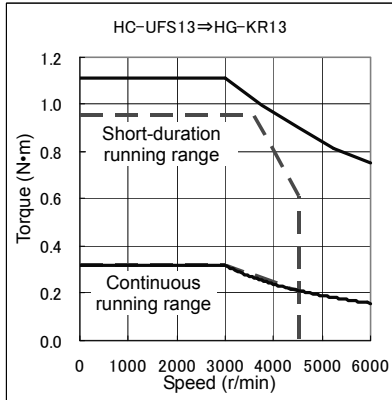
◆ Comparison of torque characteristics between the HG-JR and HC-LFS series (—: HG-JR, - - : HC-LFS)



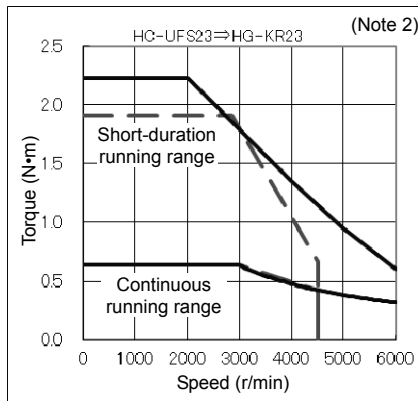
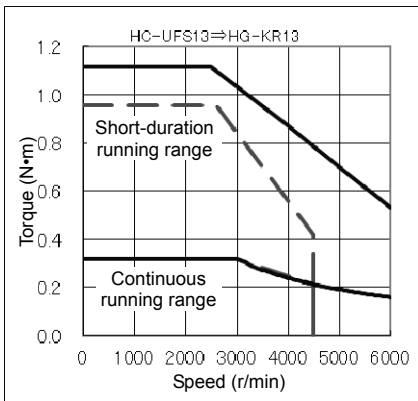
Note 1. The above torque characteristics are for three-phase 200VAC.
 Note 2. As for single-phase 230VAC, contact a sales representative.
 Note 3. Contact a sales representative if the compatibility of torque characteristics is required.

Part 8: Review on Replacement of Motor

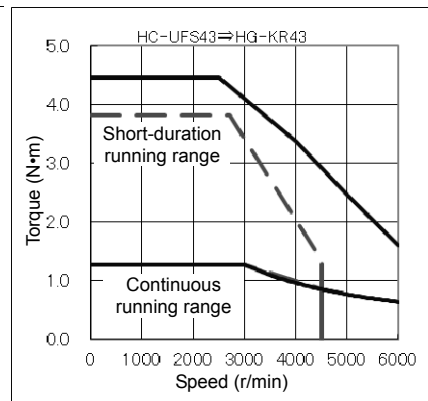
◆ Comparison of torque characteristics between the HG-KR and HC-UFS series (—: HG-KR, ---: HC-UFS)



Note 1. The above torque characteristics are for three-phase 200VAC and single-phase 230VAC.



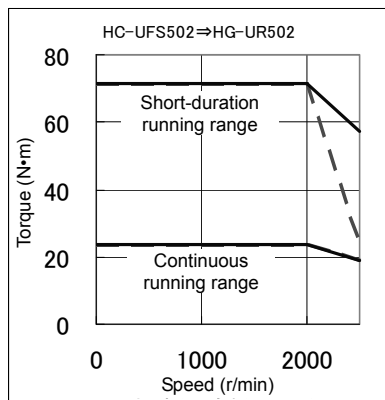
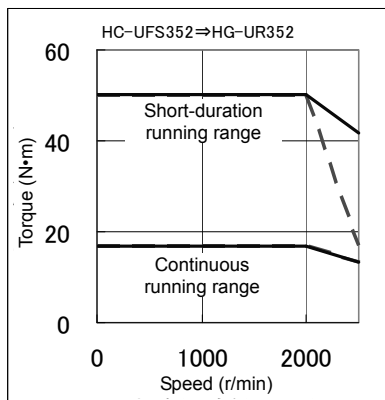
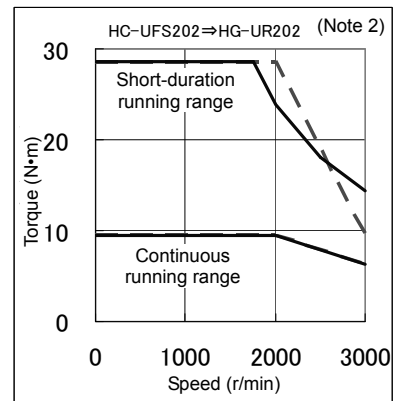
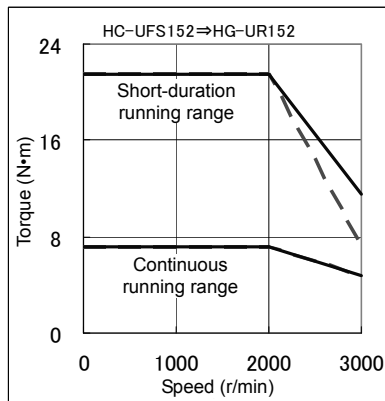
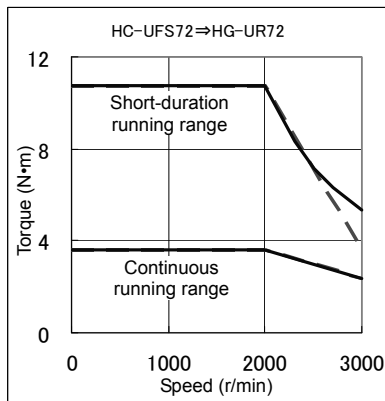
(Note 2)



Note 1. The above torque characteristics are for single-phase 100VAC.
 Note 2. Contact a sales representative if the compatibility of torque characteristics is required.

Part 8: Review on Replacement of Motor

◆ Comparison of torque characteristics between the HG-UR and HC-UFS series (—: HG-UR, - - -: HC-UFS)

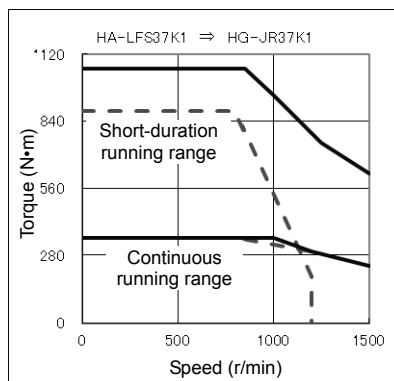
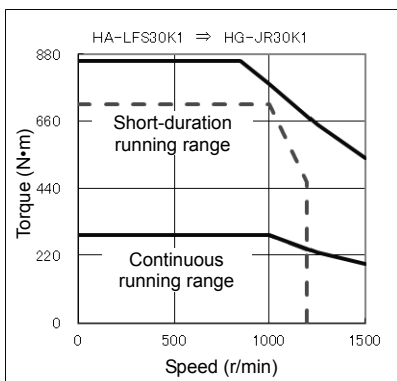
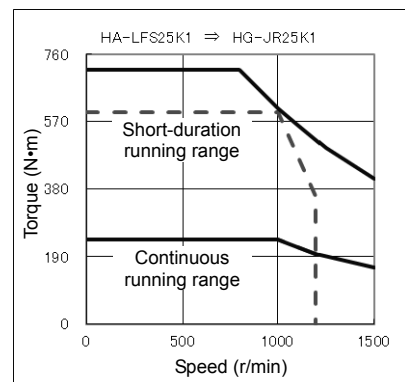
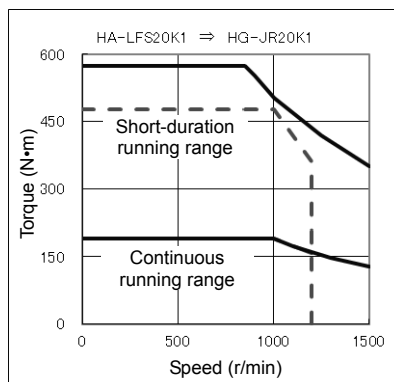
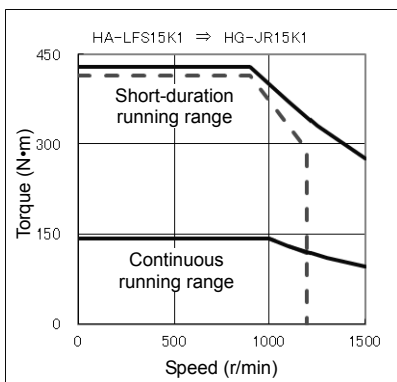
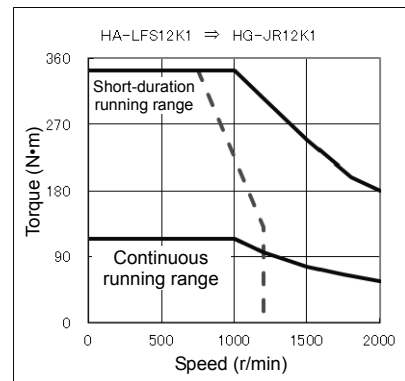
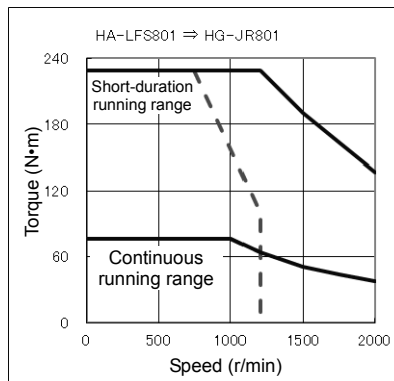
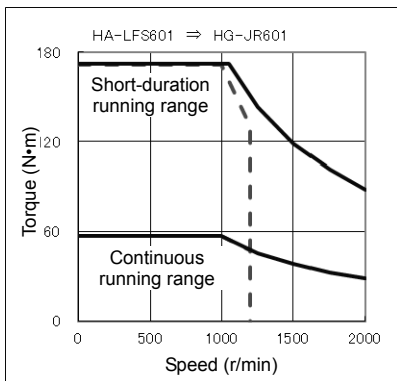


- Note 1. The above torque characteristics are for three-phase 200VAC.
 Note 2. Contact a sales representative if the compatibility of torque characteristics is required.

Part 8: Review on Replacement of Motor

◆ Comparison of torque characteristics between the HG-JR and HA-LFS series (—: HG-JR, - - -: HA-LFS)

• HA-LFS: 1000 r/min series, 200 V class

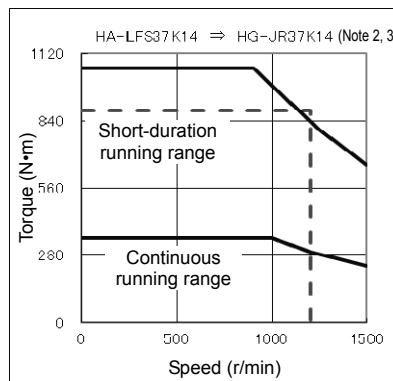
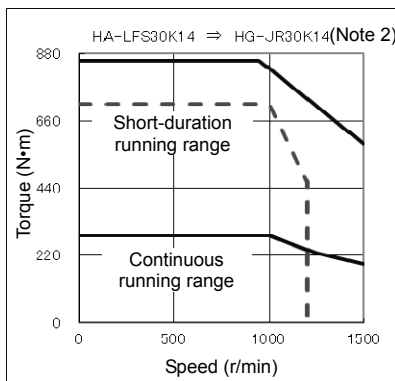
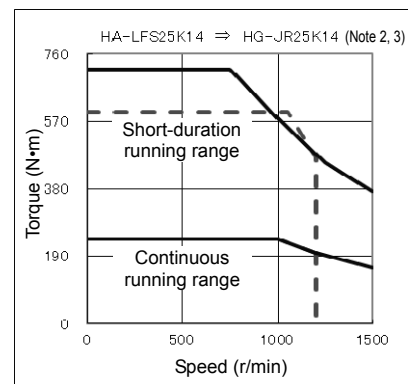
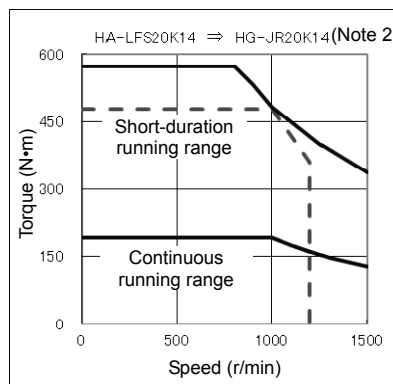
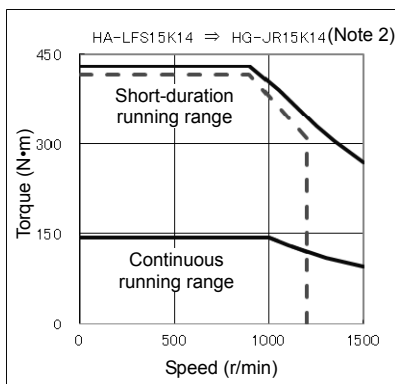
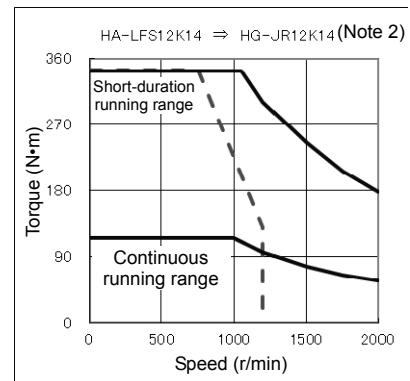
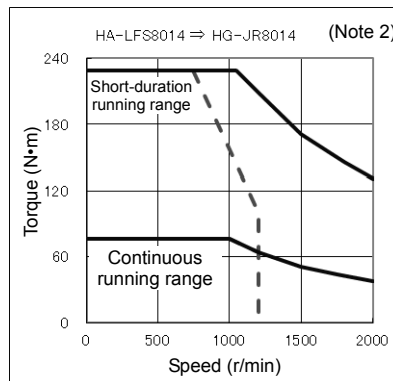
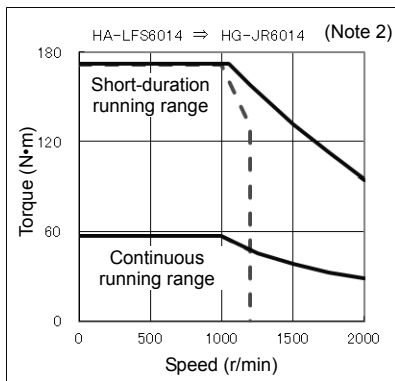


Note 1. The above torque characteristics are for three-phase 200VAC.

Part 8: Review on Replacement of Motor

◆ Comparison of torque characteristics between the HG-JR and HA-LFS series (—: HG-JR, - - -: HA-LFS)

• HA-LFS: 1000 r/min series, 400V class

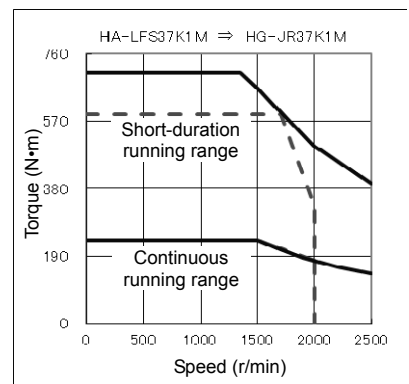
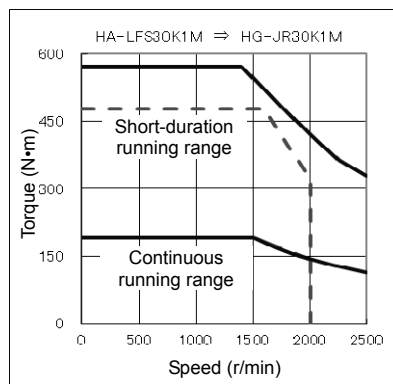
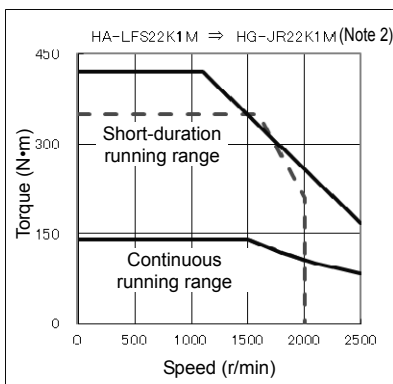
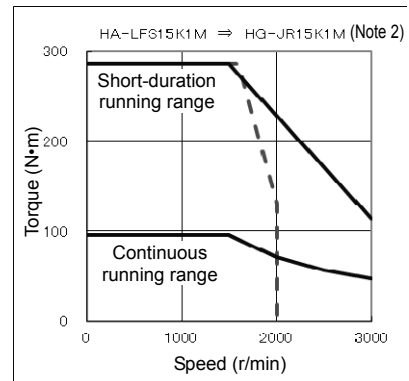
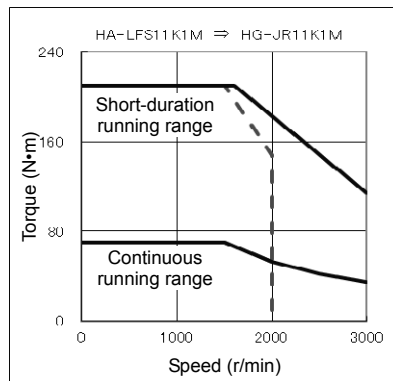
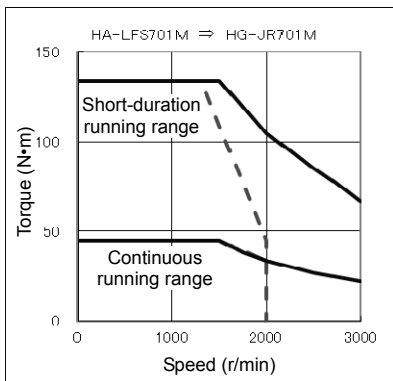


- Note
1. The above torque characteristics are for three-phase 400VAC.
 2. As for three-phase 380VAC, refer to the catalog or Instruction Manual.
 3. Contact a sales representative if the compatibility of torque characteristics is required.

Part 8: Review on Replacement of Motor

◆ Comparison of torque characteristics between the HG-JR and HA-LFS series (—: HG-JR, ---: HA-LFS)

• HA-LFS: 1500 r/min series, 200 V class

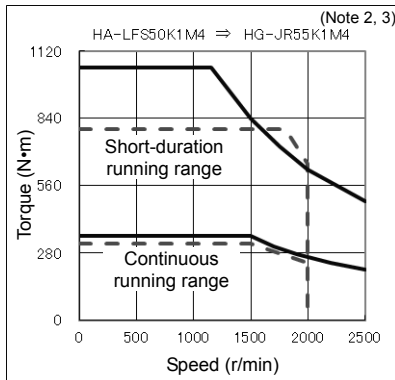
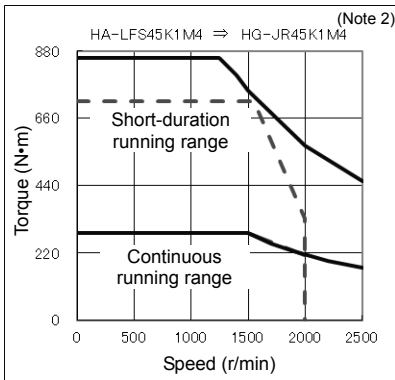
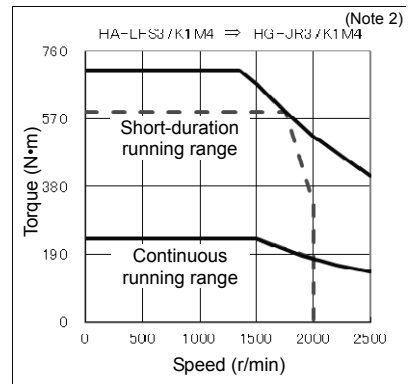
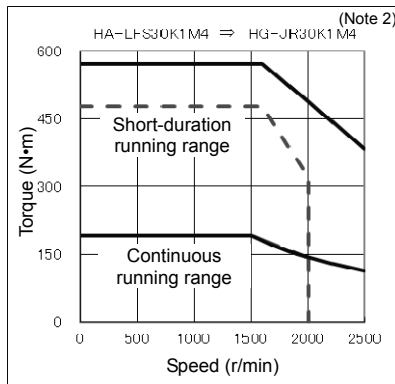
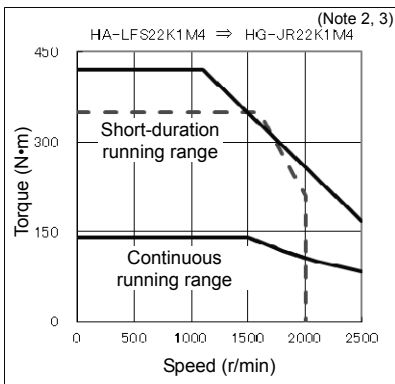
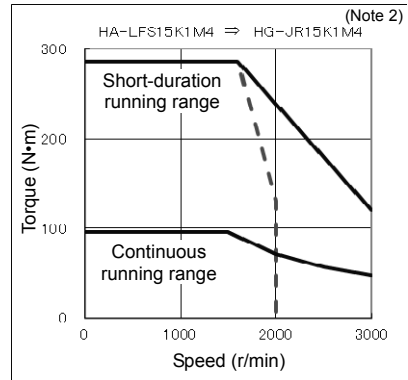
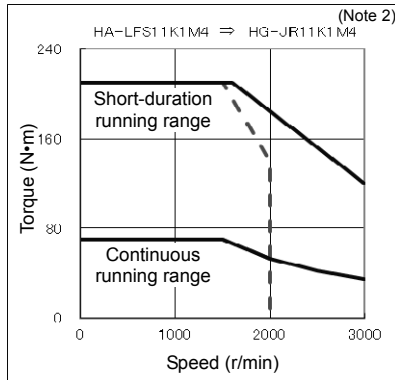
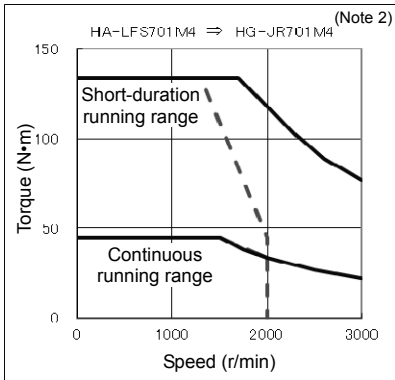


- Note
1. The above torque characteristics are for three-phase 200VAC.
 2. Contact a sales representative if the compatibility of torque characteristics is required.

Part 8: Review on Replacement of Motor

◆ Comparison of torque characteristics between the HG-JR and HA-LFS series (—: HG-JR, - - -: HA-LFS)

• HA-LFS: 1500 r/min series, 400V class

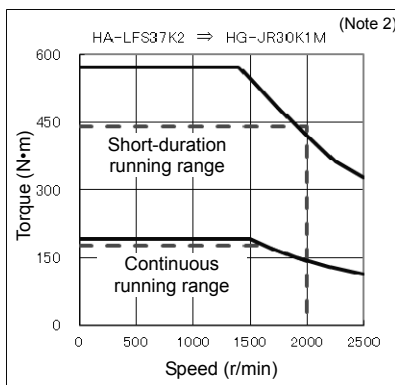
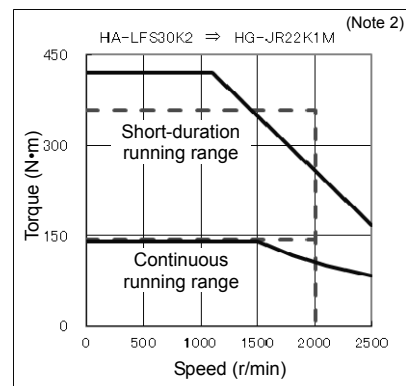
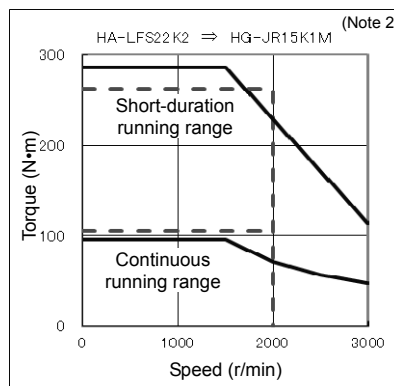
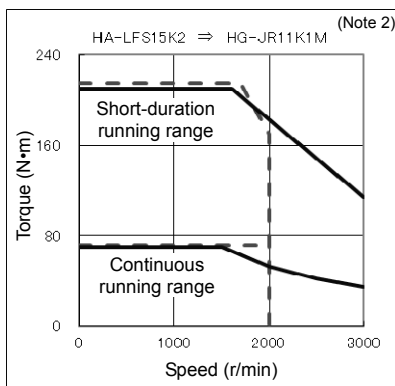
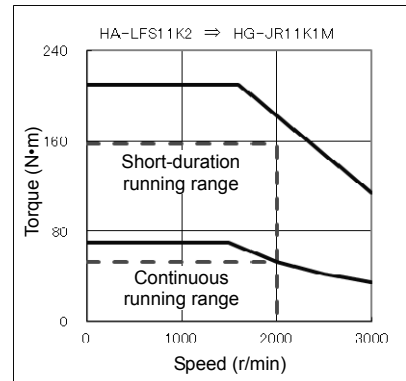
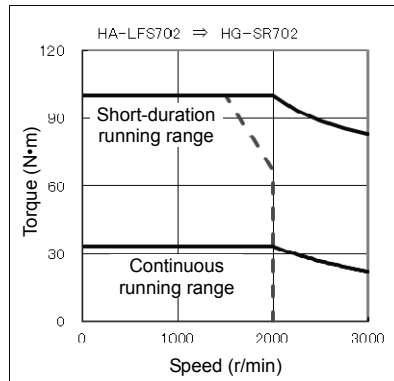
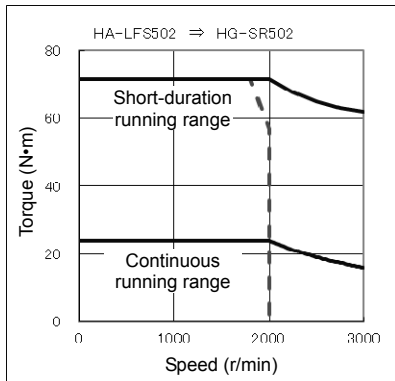


- Note 1. The above torque characteristics are for three-phase 400VAC.
 Note 2. As for three-phase 380VAC, refer to the catalog or Instruction Manual.
 Note 3. Contact a sales representative if the compatibility of torque characteristics is required.

Part 8: Review on Replacement of Motor

◆ Comparison of torque characteristics between the HG-JR, SR and HA-LFS series (—: HG-JR, SR, - - -: HA-LFS)

• HA-LFS: 2000 r/min series, 200 V class

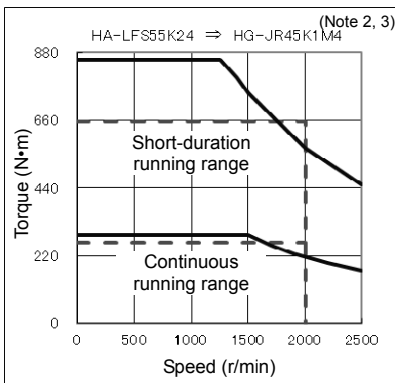
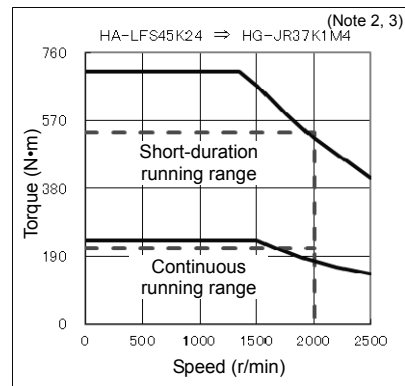
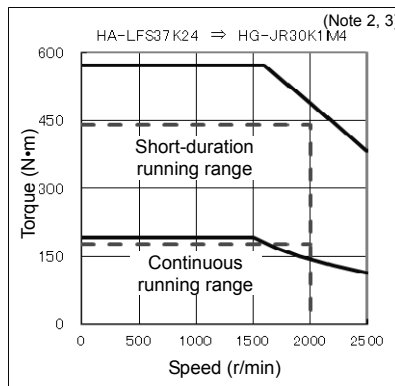
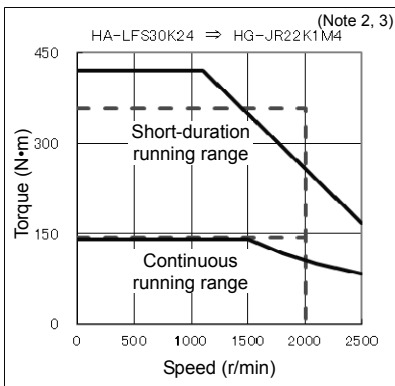
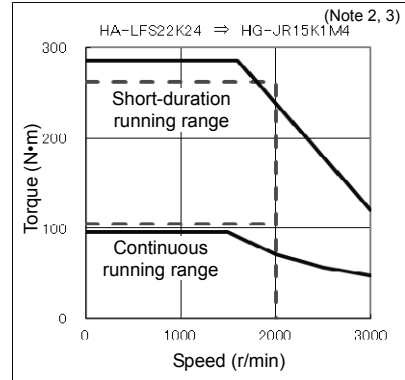
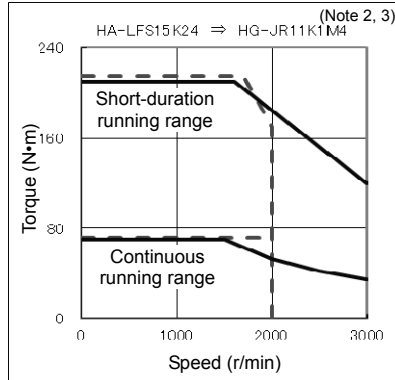
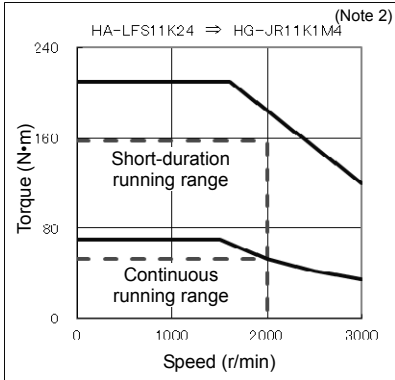


- Note 1. The above torque characteristics are for three-phase 200VAC.
 Note 2. Contact a sales representative if the compatibility of torque characteristics is required.

Part 8: Review on Replacement of Motor

◆ Comparison of torque characteristics between the HG-JR and HA-LFS series (—: HG-JR, ---: HA-LFS)

• HA-LFS: 2000 r/min series, 400V class



- Note
1. The above torque characteristics are for three-phase 400VAC.
 2. As for three-phase 380VAC, refer to the catalog or Instruction Manual.
 3. Contact a sales representative if the compatibility of torque characteristics is required.

Part 9
Review on Replacement
of Optional Peripheral
Equipment

Part 9: Review on Replacement of Optional Peripheral Equipment

Part 9: Review on Replacement of Optional Peripheral Equipment

1. COMPARISON TABLE OF REGENERATIVE OPTION COMBINATIONS

POINT
<ul style="list-style-type: none"> • The MR-J4 series provides the new regenerative options shown in the table below. • When an MR-J2S series regenerative resistor is used as it is with a motor combined, an alarm may occur. • Do not use regenerative options newly provided by the MR-J4 series with the MR-J2S series because use of them causes an amplifier malfunction.

List of new regenerative options

MR-J4-	Regenerative option MR-RB		Accessory regenerative resistor
350_	3N	5N	
500_	31	51	
11K_	5R		GRZG400-0.8 Ω × 4
15K_	9F		GRZG400-0.6 Ω × 5
22K_	9T		GRZG400-0.5 Ω × 5
60_4	1H-4	3M-4	
100_4	1H-4		
200_4	3G-4	5G-4	
500_4	34-4	54-4	
700_4	3U-4	5U-4	
11K_4	5K-4		GRZG400-2.5 Ω × 4
15K_4	6K-4		GRZG400-2 Ω × 5

Part 9: Review on Replacement of Optional Peripheral Equipment

1.1 Regenerative Options (200/100V)

1.1.1 Combination and regenerative power for the MR-J2S series

List of regenerative options

Servo amplifier model MR-J2S-	Built-in regenerative resistor [W]	Permissible regenerative power of regenerative option [W] MR-RB								
		032 [40Ω]	12 [40Ω]	30 [13Ω]	3N [9Ω]	31[6.7Ω]	32 [40Ω]	(Note 1) 50 [13Ω]	(Note 1) 5N [9Ω]	(Note 1) 51 [6.7Ω]
10_(1)		30								
20_(1)	10	30	100							
40_(1)	10	30	100							
60_	10	30	100							
70_	20	30	100					300		
100_	20	30	100					300		
200_	100			300				500		
350_	100			300				500		
500_	130			300				500		
700_	170					300				500
11K_										
15K_										
22K_										
30K_										
37K_										

Servo amplifier model MR-J2S-	Built-in regenerative resistor [W]	(Note 2) Standard accessories [External]	Permissible regenerative power of regenerative option [W] MR-RB							
			(Note 2) 5R [3.2Ω]	(Note 2) 65 [8Ω]	(Note 2) 66 [5Ω]	(Note 2) 67 [4Ω]	(Note 2) 9F [3Ω]	(Note 2) 9T [2.5Ω]	139 [1.3 Ω]	(Note 3) 137 [1.3 Ω]
10_(1)										
20_(1)	10									
40_(1)	10									
60_	10									
70_	20									
100_	20									
200_	100									
350_	100									
500_	130									
700_	170									
11K_		GRZG400-2 Ω × 4 500 (800)		500 (800)						
15K_		GRZG400-1 Ω × 5 850 (1300)			850 (1300)					
22K_		GRZG400-0.8 Ω × 5 850 (1300)				850 (1300)				
30K_									1300	3900
37K_									1300	3900

- Note 1. Always install a cooling fan.
 2. The values in the parentheses are applied to when a cooling fan is installed.
 3.. The value of MR-RB137 is a resultant resistance of three units.

1.1.2 Combination and regenerative power for the MR-J2M series

List of regenerative options

Servo amplifier model	Regenerative power [W]				
	Built-in regenerative resistor	MR-RB032 [40 Ω]	MR-RB14 [26 Ω]	MR-RB34 [26 Ω]	MR-RB54 [26 Ω]
MR-J2M-BU4		30	100	300	500
MR-J2M-BU6					
MR-J2M-BU8					

Part 9: Review on Replacement of Optional Peripheral Equipment

1.1.3 Combination and regenerative power for MR-J4 series (replacement model)

List of regenerative options

Servo amplifier model MR-J4-	Built-in regenerative resistor [W]	Permissible regenerative power of regenerative option [W] MR-RB								
		032 [40Ω]	12 [40Ω]	30 [13Ω]	3N [9Ω]	31 [6.7Ω]	32 [40Ω]	(Note 1) 50 [13Ω]	(Note 1) 5N [9Ω]	(Note 1) 51 [6.7Ω]
10_(-RJ)		30								
20_(-RJ)	10	30	100							
40_(-RJ)	10	30	100							
60_(-RJ)	10	30	100							
70_(-RJ)	20	30	100							
100_(-RJ)	20	30	100					300		
200_(-RJ)	100			300				300		
350_(-RJ)	100				300				500	
500_(-RJ)	130					300				500
700_(-RJ)	170					300				500
11K_										
15K_										
22K_										
DU30K_										
DU37K_										

Servo amplifier Model MR-J4-	Built-in regenerative resistor [W]	(Note 2) Standard accessories [External]	Permissible regenerative power of regenerative option [W] MR-RB								
			(Note 2) 5R [3.2Ω]	(Note 2) 65 [8Ω]	(Note 2) 66 [5Ω]	(Note 2) 67 [4Ω]	(Note 2) 9F [3Ω]	(Note 2) 9T [2.5Ω]	139 [1.3 Ω]	(Note 5) 137 [1.3 Ω]	
10_(-RJ)											
20_(-RJ)	10										
40_(-RJ)	10										
60_(-RJ)	10										
70_(-RJ)	20										
100_(-RJ)	20										
200_(-RJ)	100										
350_(-RJ)	100										
500_(-RJ)	130										
700_(-RJ)	170										
11K_		GRZG400-0.8 Ω × 4 500 (800)	500 (800)								
15K_		GRZG400-0.6 Ω × 5 850 (1300)						850 (1300)			
22K_		GRZG400-0.5 Ω × 5 850 (1300)						850 (1300)			
DU30K_										1300	3900
DU37K_										1300	3900

- Note 1. Always install a cooling fan.
 2. The values in the parentheses are applied to when a cooling fan is installed.
 3. When using a combination with an MR-J4 servo amplifier other than the standard one, contact your local sales office.
 4. A shaded cell in the list shows a combination changed from "MR-J2S series".
 5. The value of MR-RB137 is a resultant resistance of three units connected.

Parameter settings (PA02 for MR-J4) may be required depending on the regenerative option model. Refer to the Instruction Manual for details.

Part 9: Review on Replacement of Optional Peripheral Equipment

1.3 Regenerative Options (400 V class)

1.3.1 Combination and regenerative power for the MR-J2S series

List of regenerative options

Servo amplifier model MR-J2S-	Built-in regenerative resistor [W]	Permissible regenerative power of regenerative option [W] MR-RB										
		1H-4 [82 Ω]	1L-4 [270 Ω]	(Note 1) 3M-4 [120 Ω]	(Note 1) 3H-4 [80 Ω]	(Note 1) 3G-4 [47 Ω]	(Note 1) 34-4 [26 Ω]	(Note 1) 3U-4 [22 Ω]	(Note 1) 5H-4 [80 Ω]	(Note 1) 5G-4 [47 Ω]	(Note 1) 54-4 [26 Ω]	(Note 1) 5U-4 [22 Ω]
60_4	30		100									
100_4	100			300								
200_4	100				300				500			
350_4	100					300				500		
500_4	130					300				500		
700_4	170						300				500	
11K_4												
15K_4												
22K_4												
30K_4												
37K_4												
45K_4												
55K_4												

Servo amplifier model MR-J2S-	Built-in regenerative resistor [W]	(Note 2) Standard accessories [External]	Permissible regenerative power of regenerative option [W] MR-RB						
			(Note 2) 5K-4 [10 Ω]	(Note 2) 6B-4 [20 Ω]	(Note 2) 60-4 [12.5 Ω]	(Note 2) 6K-4 [10 Ω]	136-4 [5 Ω]	(Note 3) 138-4 [5 Ω]	
60_4	30								
100_4	100								
200_4	100								
350_4	100								
500_4	130								
700_4	170								
11K_4		GRZG400-5 Ω × 4 500 (800)		500 (800)					
15K_4		GRZG400-2.5 Ω × 5 850 (1300)			850 (1300)				
22K_4		GRZG400-2 Ω × 5 850 (1300)				850 (1300)			
30K_4							1300	3900	
37K_4							1300	3900	
45K_4							1300	3900	
55K_4							1300	3900	

Note 1. Always install a cooling fan.

2. The values in the parentheses are applied to when a cooling fan is installed.

3. The value of MR-RB138-4 is a resultant resistance of three units.

Part 9: Review on Replacement of Optional Peripheral Equipment

1.3.2 Combination and regenerative power for MR-J4 series (replacement model)

List of regenerative options

Servo amplifier model MR-J4-	Built-in regenerative resistor [W]	Permissible regenerative power of regenerative option [W] MR-RB										
		1H-4 [82 Ω]	1L-4 [270 Ω]	(Note 1) 3M-4 [120 Ω]	(Note 1) 3H-4 [80 Ω]	(Note 1) 3G-4 [47 Ω]	(Note 1) 34-4 [26 Ω]	(Note 1) 3U-4 [22 Ω]	(Note 1) 5H-4 [80 Ω]	(Note 1) 5G-4 [47 Ω]	(Note 1) 54-4 [26 Ω]	(Note 1) 5U-4 [22 Ω]
60_4	15	100		300								
100_4	15	100		300								
200_4	100					300				500		
350_4	100					300				500		
500_4	130						300				500	
700_4	170							500				500
11K_4												
15K_4												
22K_4												
30K_4												
37K_4												
45K_4												
55K_4												

Servo amplifier model MR-J4-	Built-in regenerative resistor [W]	(Note 2) Standard accessories [External]	Permissible regenerative power of regenerative option [W] MR-RB						
			(Note 2) 5K-4 [10 Ω]	(Note 2) 6B-4 [20 Ω]	(Note 2) 60-4 [12.5 Ω]	(Note 2) 6K-4 [10 Ω]	137-4 [4 Ω]	(Note 4) 13V-4 [4 Ω]	
60_4	15								
100_4	15								
200_4	100								
350_4	100								
500_4	130								
700_4	170								
11K_4		GRZG400-2.5 Ω × 4 500 (800)	500 (800)						
15K_4		GRZG400-2 Ω × 5 850 (1300)					850 (1300)		
22K_4		GRZG400-2 Ω × 5 850 (1300)					850 (1300)		
30K_4								1300	3900
37K_4								1300	3900
45K_4								1300	3900
55K_4								1300	3900

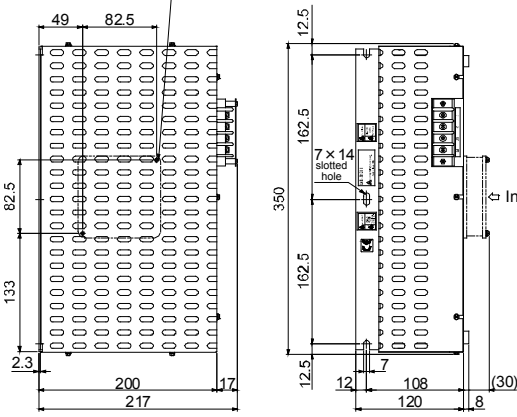
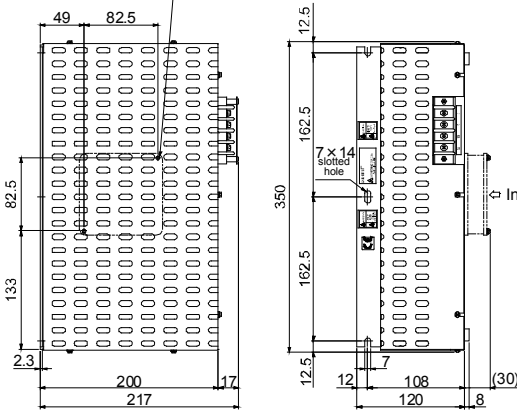
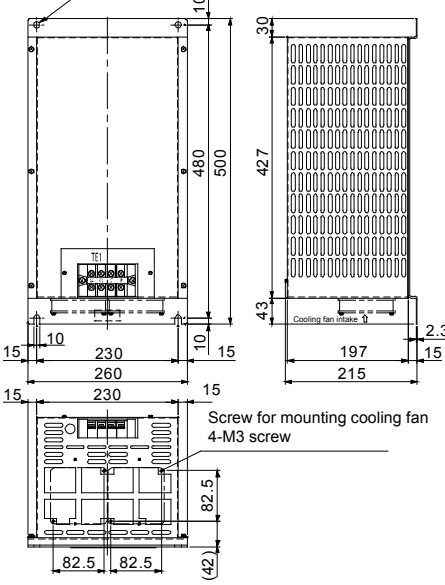
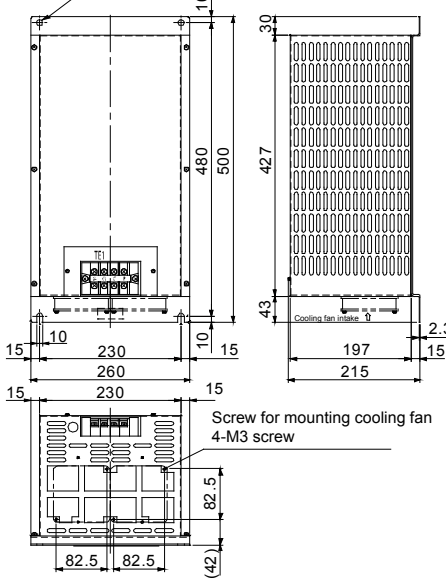
- Note
1. Always install a cooling fan.
 2. The values in the parentheses are applied to when a cooling fan is installed.
 - Changed items are shown with shading.
 - Parameter settings (PA02 for MR-J4) may be required depending on the regenerative option model. Refer to the Instruction Manual for details.
 3. When using a combination with an MR-J4 servo amplifier other than the standard one, contact your local sales office.
 4. The value of MR-RB13V-4 is a resultant resistance of three units connected in parallel.

Part 9: Review on Replacement of Optional Peripheral Equipment

1.4 External Form Comparison

<p>60_4 100_4</p>	<p style="text-align: center;">MR-J2S MR-RB1L-4</p>	<p style="text-align: center;">MR-J4 MR-RB1H-4</p>
<p>200_4 500_4 700_4</p>	<p style="text-align: center;">MR-RB3H-4/MR-RB3G-4/MR-RB34-4</p>	<p style="text-align: center;">MR-RB3G-4/MR-RB34-4/MR-RB3U-4</p>

Part 9: Review on Replacement of Optional Peripheral Equipment

	MR-J2S	MR-J4
200_4 500_4 700_4	<p>MR-RB5H-4/MR-RB5G-4/MR-RB54-4</p> <p>Screw for mounting cooling fan (2-M3 screw) Positioned on opposite side</p> 	<p>MR-RB5G-4/MR-RB54-4/MR-RB5U-4</p> <p>Screw for mounting cooling fan (2-M3 screw) Positioned on opposite side</p> 
11K_4 15K_4 30K_4 37K_4 45K_4 55K_4	<p>MR-RB6B-4/MR-RB60-4</p> <p>MR-RB136-4/MR-RB138-4</p> <p>2-φ6 mounting hole</p>  <p>Screw for mounting cooling fan 4-M3 screw</p>	<p>MR-RB5K-4/MR-RB6K-4</p> <p>MR-RB137-4/MR-RB13V-4</p> <p>2-φ6 mounting hole</p>  <p>Screw for mounting cooling fan 4-M3 screw</p>

Part 9: Review on Replacement of Optional Peripheral Equipment

2. COMPARISON TABLE OF DYNAMIC BRAKE OPTION COMBINATIONS

POINT
<ul style="list-style-type: none"> When an MR-J4-22K servo amplifier and an HG-JR22K1M servo motor are combined, the coasting distance will be longer. Therefore, use a dynamic brake option, DBU-22K-R1.

Dynamic brake option combination

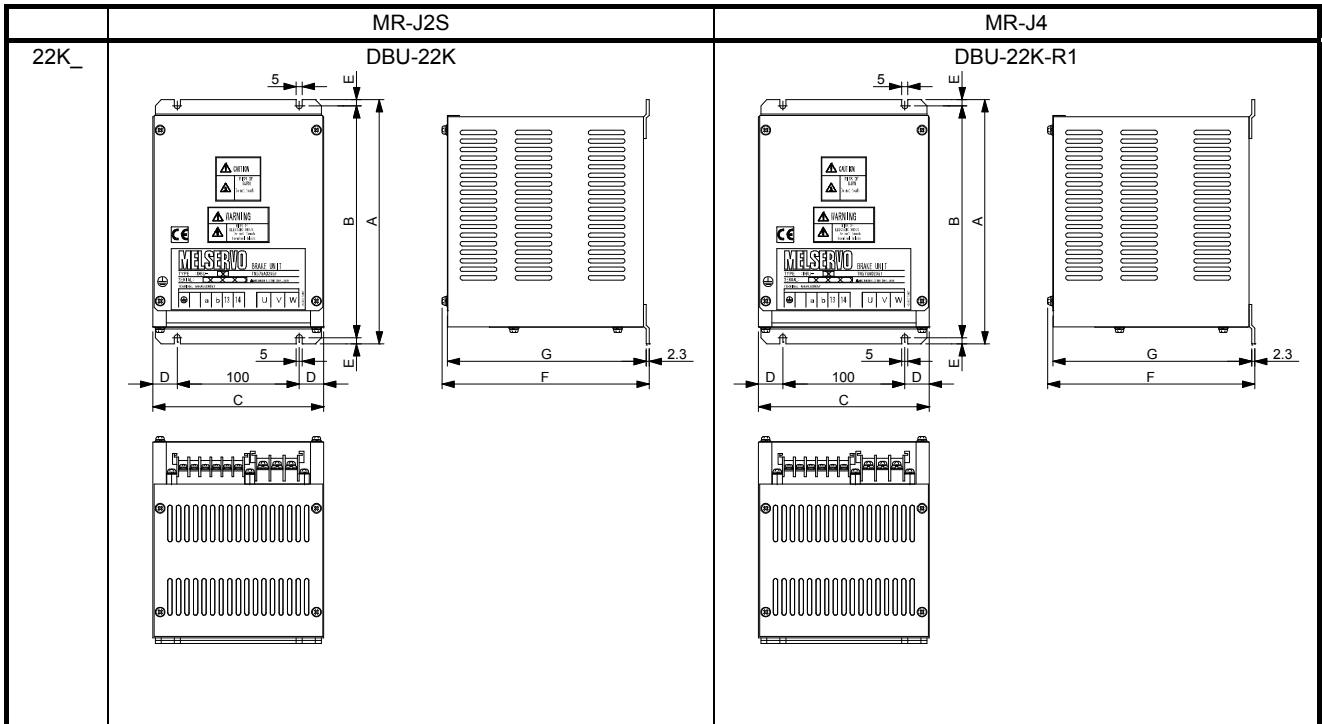
Model	Applicable servo amplifier	
DBU-11K	MR-J2S-11K_	MR-J4-11K_
DBU-15K	MR-J2S-15K_	MR-J4-15K_
DBU-22K	MR-J2S-22K (Note 1)	
DBU-22K-R1		MR-J4-22K_
DBU-37K	MR-J2S-30K_ MR-J2S-37K_	
DBU-37K-R1		MR-J4-DU30K_ MR-J4-DU37K_
DBU-11K-4	MR-J2S-11K_4	MR-J4-11K_4
DBU-22K-4	MR-J2S-15K_4 MR-J2S-22K_4	MR-J4-15K_4 MR-J4-22K_4
DBU-55K-4	MR-J2S-30K_4 MR-J2S-37K_4 MR-J2S-45K_4 MR-J2S-55K_4	
DBU-55K-4-R5		MR-J4-DU30K_4 MR-J4-DU37K_4 MR-J4-DU45K_4 MR-J4-DU55K_4

Changed items are shown with shading.

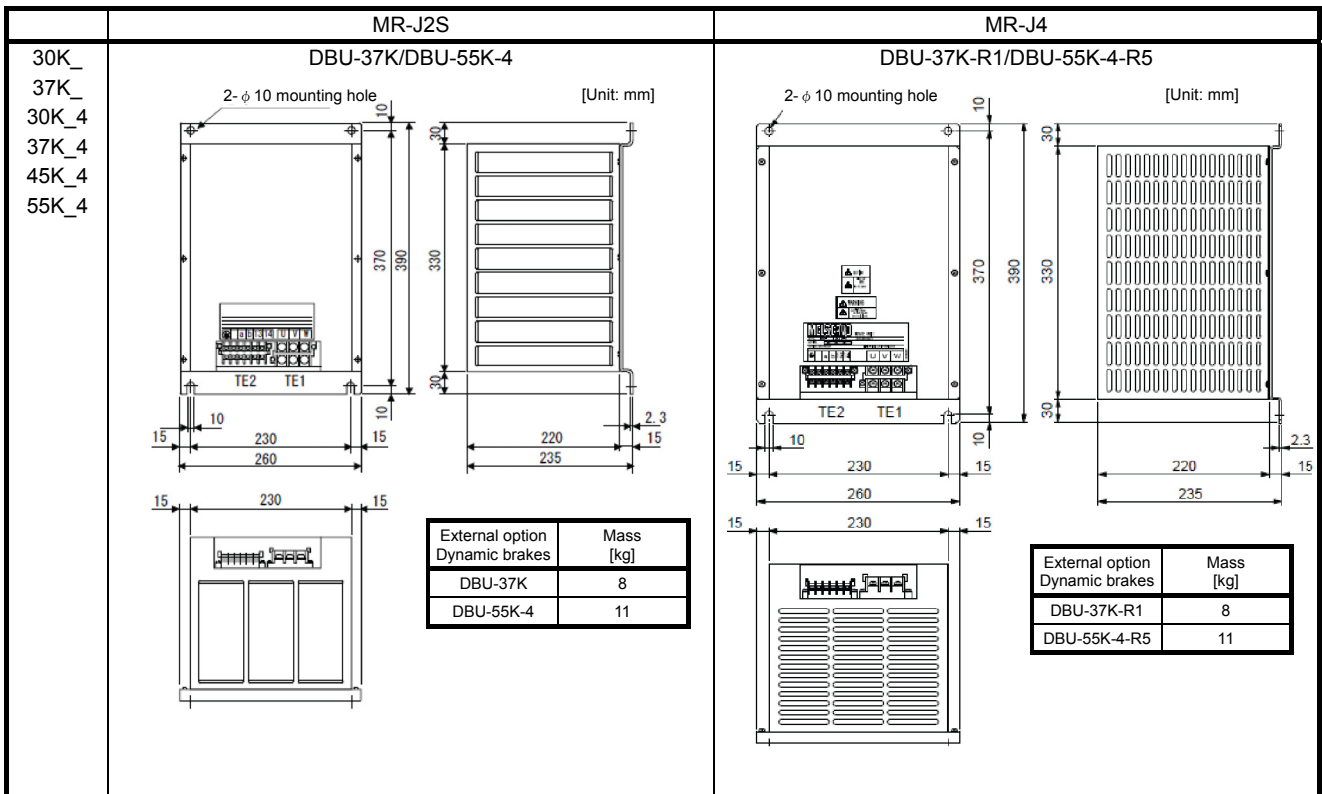
Note 1. DBU-22K can be used when MR-J4-22K_ is combined with an HA-LFS22K1M servo motor.

Part 9: Review on Replacement of Optional Peripheral Equipment

2.1 External Form Comparison



Dynamic brakes	A	B	C	D	E	F	G	Mass [kg]
DBU-22K	250	238	150	25	6	235	228	6
DBU-22K-R1	250	238	150	25	6	235	228	6



Part 9: Review on Replacement of Optional Peripheral Equipment

3. COMPARISON TABLE OF CABLE OPTION COMBINATIONS

Cable option combinations

Application		MR-J2S series	MR-J4 series	Note	
Encoder cable		MR-JCCBL__M-__	MR-J3ENCBL__M-A__-__ MR-J3JCBL03M-A__-L MR-EKCBL__M-__	Connector shape will be changed. Cable must be changed. __M: Cable length A__: Leading direction -__: Bending life	
		MR-JHSCBL__M-__	MR-J3JSCBL03M-A__-L	(MTH) is required for MR-J4-22K__.	
		MR-ENCBL__M-H	MR-ENECBL__M-H-(MTH)	__M: Cable length A__: Leading direction	
Encoder connector set		MR-J2CNM	MR-ECNM	Connector shape will be changed. Cable must be changed. __: Encoder side connector shape	
		MR-J2CNS	MR-J3SCNS__		
		MR-ENCNS	MR-ENCNS2__ MR-ENECNS		
Controller to amplifier cable	B type	MR-J2HBUS__M-A	MR-J3BUS__M-__	Connector will be changed due to change from metal communication to optical communication. __: Cable length -__: Bending life	
CN1 connector set		MR-J2CN1-A	MR-J3BCN1		
Cable for I/O signals			MR-J2HBUS__M		__: Cable length
CN3 connector set			MR-CCN1		
Junction terminal block cable	A type	MR-J2TBL__M	MR-J2M-CN1TBL__M	Connector shape and the number of pin poles will be changed. __: Cable length	
CN1 connector set		MR-J2CN1	MR-J3CN1		
Junction terminal block		MR-TB20	MR-TB50		
Servo motor power supply cable			MR-PWS1CBL__M-A__-__	Cable options are available for MR-J4. __M: Cable length A__: Leading direction -__: Bending life	
			MR-PWS2CBL03M-A__-L		
Power connector set (Servo motor side power connector)		MR-PWCNK__ MR-PWCNS__	MR-PWCNS__	Connector shape will be changed. __: Differ depends on the applied motor.	
Electromagnetic brake cable			MR-BKS1CBL__M-A__-__	Cable options are available for MR-J4. __M: Cable length A__: Leading direction -__: Bending life	
			MR-BKS2CBL03M-A__-L		
Electromagnetic brake connector set		MR-BKCN	MR-BKCNS1__ MR-BKCNS2__ MR-BKCN	Connector shape will be changed. __: Connector shape	
Servo amplifier power connector (1 kW or less)			06JFAT-SAXGDK-H7.5 (Note 1)	CNP1	Change from screw-type to connector-type
Servo amplifier power connector (2 kW)			05JFAT-SAXGDK-H5.0 (Note 1)	CNP2	
			03JFAT-SAXGDK-H7.5 (Note 1)	CNP3	
			06JFAT-SAXGFK-XL (Note 1)	CNP1	
Servo amplifier power connector (3.5 kW)			05JFAT-SAXGDK-H5.0 (Note 1)	CNP2	
			03JFAT-SAXGFK-XL (Note 1)	CNP3	
			06JFAT-SAXGFK-XL (Note 1)	CNP1	
			05JFAT-SAXGDK-H5.0 (Note 1)	CNP2	
			03JFAT-SAXGFK-XL (Note 1)	CNP3	
CN3 communication cable	MR-CPCATCBL3M	MR-J3USBCBL3M	Change from RS-232C communication to USB communication		

Note 1. Manufactured by J.S.T. Mfg. Co., Ltd.

Part 9: Review on Replacement of Optional Peripheral Equipment

4. POWER SUPPLY WIRE SIZE

POINT
<ul style="list-style-type: none"> When using the existing cables, see "[Appendix 2] Introduction to Renewal Tool".

4.1 Selection of Power Supply Wire Size (Example)

4.1.1 MR-J2S-series power supply wire size

In this case, the power supply wire used is a 600 V plastic one and the wiring distance is 30 m or less. When the wiring distance exceeds 30 m, select another wire size in consideration of the voltage drop. The alphabet letters (a, b, c) on the table correspond to crimp terminals used when wiring a servo amplifier. The method of wiring a servo motor differs depending on the type and capacity of the servo motor. To comply with the UL/cUL (CSA) standard, use UL-approved copper wires rated at 60°C or higher for wiring.

Wire size selection example 1 (IV wire)
Recommended wire

Servo amplifier	Power supply wire [mm ²] (Note 1)								
	(1) L1/L2/L3/⊕	(2) L11/L21	(3) U/V/W/P1/P/⊕	(4) P/C	(5) B1/B2	(6) BU/BV/BW			
MR-J2S-10_(1)	2 (AWG14): a	1.25(AWG16)	1.25 (AWG16): a	2 (AWG14): a	1.25 (AWG16)	/			
MR-J2S-20_(1)									
MR-J2S-40_(1)									
MR-J2S-60_									
MR-J2S-70_									
MR-J2S-100_									
MR-J2S-200_							3.5 (AWG12): b	3.5 (AWG12): b	3.5 (AWG12): b
MR-J2S-350_							5.5 (AWG10): b	(Note 2) 5.5 (AWG10): b	
MR-J2S-500_							5.5 (AWG10): b	5.5 (AWG10): b	
MR-J2S-700_							8 (AWG8): c	8 (AWG8): c	3.5 (AWG12): b
MR-J2S-11K_	14 (AWG6): d	22 (AWG4): e	5.5 (AWG10): b						
MR-J2S-15K_	22 (AWG4): e	30 (AWG2): f							
MR-J2S-22K_	50 (AWG1/0): g	60 (AWG2/0): g		2 (AWG14)					

Note 1. For details on crimp terminals and applicable tools, see 4.2.1 (1) of this document.
2. When an HC-RFS203 servo motor is used, the value will be 3.5 mm².

Recommended wire

Servo amplifier	Power supply wire [mm ²] (Note 1)					
	(1) L1/L2/L3/⊕	(2) L11/L21	(3) U/V/W/P1/P/⊕ (Note 2)	(4) P/C	(5) B1/B2	(6) BU/BV/BW
MR-J2S-60_4	2(AWG14)	1.25(AWG16)	1.25(AWG16)	2 (AWG14): a	1.25 (AWG16)	/
MR-J2S-100_4						
MR-J2S-200_4						
MR-J2S-350_4			3.5 (AWG12): b			
MR-J2S-500_4	5.5 (AWG10): b	5.5 (AWG10): b	8 (AWG8): c	3.5 (AWG12): b		
MR-J2S-700_4						
MR-J2S-11K_4	8 (AWG8): c	22 (AWG4): e	22 (AWG4): e	5.5 (AWG10): b	2 (AWG14)	2 (AWG14)
MR-J2S-15K_4						
MR-J2S-22K_4						

Note 1. For details on crimp terminals and applicable tools, see 4.2.1 (2) of this document.
2. P1 is not available for a servo amplifier of 7 kW or less.

Part 9: Review on Replacement of Optional Peripheral Equipment

4.1.2 MR-J4-series power supply wire size

Example of selecting the wire sizes

For the power supply wire, use a 600 V grade heat-resistant polyvinyl chloride insulated wire (HIV wire).

The table below shows selection examples of power supply wire sizes.

Wire size selection example (HIV wire)

Recommended wire

Servo amplifier	Power supply wire [mm ²] (Note 1)			
	(1) L1/L2/L3/⊕	(2) L11/L21	(3) P+/C	(4) U/V/W/⊕ (Note 3)
MR-J4-10_(1) (-RJ)	2 (AWG 14)	1.25 to 2 (AWG 16 to 14) (Note 4)	2 (AWG 14)	AWG 18 to 14 (Note 4)
MR-J4-20_(1) (-RJ)				
MR-J4-40_(1) (-RJ)				
MR-J4-60_(-RJ)				
MR-J4-70_(-RJ)				
MR-J4-100_(-RJ)				
MR-J4-200_(-RJ)				AWG 16 to 10
MR-J4-350_(-RJ)	3.5 (AWG 12)			
MR-J4-500_(-RJ) (Note 2)	5.5 (AWG 10): a	1.25 (AWG 16): a 2 (AWG 14): d (Note 4)	2 (AWG 14): c	2 (AWG 14): c 3.5 (AWG 12): a 5.5 (AWG 10): a
MR-J4-700_(-RJ) (Note 2)	8 (AWG 8): b			2 (AWG 14): c 3.5 (AWG 12): a 5.5 (AWG 10): a 8 (AWG 8): b
MR-J4-11K_(-RJ) (Note 2)	14 (AWG 6): f	1.25 (AWG 16): c 2 (AWG 14): c	3.5 (AWG 12): g	14 (AWG 6): f (Note 5) 5.5 (AWG 10): g 8 (AWG 8): k
MR-J4-15K_(-RJ) (Note 2)	22 (AWG 4): h			5.5 (AWG 10): g
MR-J4-22K_(-RJ) (Note 2)	38 (AWG 2): i		5.5 (AWG 10): j	38 (AWG 2): i

- Note
- Alphabets in the table indicate crimping tools. For crimp terminals and applicable tools, see 4.2.2 (1) of this document.
 - To connect these models to a terminal block, make sure to use the screws that come with the terminal block.
 - This wire size is applicable to the servo amplifier connector and terminal block. For wires connecting to the servo motor, refer to each servo amplifier instruction manual.
 - To comply with the UL/CSA standard, use a wire of 2 mm².
 - This is for connection to a self-cooling linear servo motor.
 - Selection conditions of wire size are as follows.
 - Wiring condition: In-air, one-row wiring
 - Wire length: 30m or less

Part 9: Review on Replacement of Optional Peripheral Equipment

Wire size selection example (HIV wire) Recommended wire

Servo amplifier	Power supply wire [mm ²] (Note 1)			
	(1) L1/L2/L3/⊕	(2) L11/L21	(3) P+/C	(4) U/V/W/⊕ (Note 3)
MR-J4-60_4(-RJ)/ MR-J4-100_4(-RJ)	2 (AWG 14)	1.25 to 2 (AWG 16 to 14) (Note 4)	2 (AWG 14)	AWG 16 to 14
MR-J4-200_4(-RJ)				
MR-J4-350_4(-RJ)				
MR-J4-500_4(-RJ) (Note 2)	2 (AWG 14): b	1.25 (AWG 16): a 2 (AWG 14): c (Note 4)	2 (AWG 14): b	3.5 (AWG 12): a
MR-J4-700_4(-RJ) (Note 2)	3.5 (AWG 12): a			5.5 (AWG 10): a
MR-J4-11K_4(-RJ) (Note 2)	5.5 (AWG 10): d	1.25 (AWG 16): b 2 (AWG 14): b (Note 4)	2 (AWG 14): f	8 (AWG 8): g
MR-J4-15K_4(-RJ) (Note 2)	8 (AWG 8): g		3.5 (AWG 12): d	
MR-J4-22K_4(-RJ) (Note 2)	14 (AWG 6): i		3.5 (AWG 12): e	5.5 (AWG 10): e (Note 5) 8 (AWG 8): h (Note 6) 14 (AWG 6): i

- Note
1. Alphabets in the table indicate crimping tools. For crimp terminals and applicable tools, see 4.2.2 (2) of this document.
 2. To connect these models to a terminal block, make sure to use the screws that come with the terminal block.
 3. This wire size is applicable to the servo amplifier connector and terminal block. For wires connecting to the servo motor, refer to each servo amplifier instruction manual.
 4. To comply with the UL/CSA standard, use a wire of 2 mm².
 5. This is for connection to a self-cooling linear servo motor.
 6. This is for connection to a liquid-cooling linear servo motor.

Part 9: Review on Replacement of Optional Peripheral Equipment

4.2 Selection Example of Crimp Terminals

4.2.1 MR-J2S-series crimp terminal

(1) Selection example of crimp terminals (100 V/200 V class)

Recommended crimp terminals

Symbol	Servo amplifier-side crimp terminals			Symbol	Servo amplifier-side crimp terminals		
	Crimp terminal	Applicable tool	Manufacturer		Crimp terminal	Applicable tool	Manufacturer
a	32959	47387	TE Connectivity	(Note 1, 2) f	38-S6	Main body: YPT-60-21 Dice: TD-124/TD-112	J.S.T. Mfg. Co., Ltd.
b	FDV5.5-4	YNT-1210S	J.S.T. Mfg. Co., Ltd.			Main body: YF-1/E-4 Head: YET-60-1 Dice: TD-124/TD-112	
c	FVD8-5	Main body: YF-1/E-4 Head: YNE-38 Dice: DH-111/DH-121			R38-6S	NOP60 NOM60	NICHIFU
d	FVD14-6	Main body: YF-1/E-4 Head: YNE-38 Dice: DH-112/DH-122		g	(Note 1) R60-8	Main body: YDT-60-21 Dice: TD-125/TD-113	J.S.T. Mfg. Co., Ltd.
e	FVD22-6	Main body: YF-1/E-4 Head: YNE-38 Dice: DH-113/DH-123	Main body: YF-1/E-4 Head: YET-60-1 Dice: TD-125/TD-113				

Note 1. Cover the crimped portion with an insulating tape.

2. Always use recommended crimping terminals or equivalent since some crimping terminals cannot be installed depending on the size.

(2) Selection example of crimp terminals (400V class)

Recommended crimp terminals

Symbol	Servo amplifier-side crimp terminals		
	Crimp terminal	Applicable tool	Manufacturer
a	32959	47387	TE Connectivity
b	32968	59239	
c	FVD8-5	Main body: YF-1/E-4 Head: YNE-38 Dice: DH-111/DH-121	J.S.T. Mfg. Co., Ltd.
d	FVD14-6	Main body: YF-1/E-4 Head: YNE-38 Dice: DH-112/DH-122	
e	FVD22-6	Main body: YF-1/E-4 Head: YNE-38 Dice: DH-113/DH-123	

Part 9: Review on Replacement of Optional Peripheral Equipment

4.2.2 MR-J4-series crimp terminal

(1) Selection example of crimp terminals (200V/100V class)

The table below shows selection examples of a crimp terminal for a servo amplifier terminal block.

Recommended crimp terminals

Symbol	Servo amplifier-side crimp terminals				Manufacturer
	(Note 2) Crimp terminal	Applicable tool			
		Body	Head	Dice	
a	FVD5.5-4	YNT-1210S			JST
b (Note 1)	8-4NS	YHT-8S			
c	FVD2-4	YNT-1614			
d	FVD2-M3				
e	FVD1.25-M3	YNT-2216			
f	FVD14-6	YF-1	YNE-38	DH-122 DH-112	
g	FVD5.5-6	YNT-1210S			
h	FVD22-6	YF-1	YNE-38	DH-123 DH-113	
i	FVD38-8	YF-1	YNE-38	DH-124 DH-114	
j	FVD5.5-8	YNT-1210S			
k	FVD8-6	YF-1/E-4	YNE-38	DH-121 DH-111	

Note 1. Cover the crimped portion with an insulating tape.

2. Installation of a crimp terminal may be impossible depending on the size, so make sure to use the recommended crimp terminal or one equivalent to it.

(2) Selection example of crimp terminals (400V class)

The table below shows selection examples of a crimp terminal for a servo amplifier terminal block.

Recommended crimp terminals


Symbol	Servo amplifier-side crimp terminals				Manufacturer	
	Crimp terminal (Note)	Applicable tool				
		Body	Head	Dice		
a	FVD5.5-4	YNT-1210S			JST	
b	FVD2-4	YNT-1614				
c	FVD2-M3					
d	FVD5.5-6	YNT-1210S				
e	FVD5.5-8	YNT-1210S				
f	FVD2-6	YNT-1614				
g	FVD8-6	YF-1	YNE-38	DH-121/DH-111		
h	FVD8-8					
i	FVD14-8					DH-122/DH-112

Note. Installation of a crimp terminal may be impossible depending on the size, so make sure to use the recommended crimp terminal or one equivalent to it.

Part 9: Review on Replacement of Optional Peripheral Equipment

4.3 Selection of Molded-Case Circuit Breaker, Fuse, and Magnetic Contactor (Example)

4.3.1 MR-J2S series, molded-case circuit breakers, fuses, and magnetic contactors



CAUTION

- Select a molded-case circuit breaker with a short shut-off time to prevent smoking and fire from the servo amplifier.
- Always use one molded-case circuit breaker and one magnetic contactor with one servo amplifier.

When using a fuse instead of the molded-case circuit breaker, use the one having the specifications given in this section.

Molded-case circuit breakers, fuses, and magnetic contactors


Servo amplifier	Molded-case Circuit breakers (Note)	Fuses			Magnetic contactor		
		Class	Current [A]	Voltage [V]			
MR-J2S-10_(1)	30A frame 5A	K5	AC250	10	S-N10		
MR-J2S-20_							
MR-J2S-40_/20_(1)	30A frame 10A					15	
MR-J2S-60_/40_(1)	30A frame 15A					20	
MR-J2S-70_						25	
MR-J2S-100_						40	
MR-J2S-200_	30A frame 20A					70	S-N18
MR-J2S-350_	30A frame 30A					125	S-N20
MR-J2S-500_	50A frame 50A					150	S-N35
MR-J2S-700_	100A frame 75A					200	S-N50
MR-J2S-11K_	100A frame 100A					250	S-N65
MR-J2S-15K_	225A frame 125A					350	S-N95
MR-J2S-22K_	225A frame 175A						S-N125
MR-J2S-60_4	30A frame 5A			S-N10			
MR-J2S-100_4	30A frame 10A						
MR-J2S-200_4	30A frame 15A			S-N18			
MR-J2S-350_4	30A frame 20A			S-N18			
MR-J2S-500_4	50A frame 30A			S-N20			
MR-J2S-700_4	60A frame 40A			S-N25			
MR-J2S-11K_4	100A frame 60A			S-N35			
MR-J2S-15K_4	100A frame 75A			S-N35			
MR-J2S-22K_4	225A frame 125A			S-N65			

Note. Use a molded-case circuit breaker with operating characteristics equivalent or higher than our multi-purpose product.

Part 9: Review on Replacement of Optional Peripheral Equipment

4.3.2 MR-J4 series, molded-case circuit breakers, fuses, and magnetic contactors (recommended)

(1) For main circuit power supply

	<h2 style="margin: 0;">CAUTION</h2>	<ul style="list-style-type: none"> Select a molded-case circuit breaker with a short shut-off time to prevent smoking and fire from the servo amplifier. Always use one molded-case circuit breaker and one magnetic contactor with one servo amplifier.
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When using a fuse instead of the molded-case circuit breaker, use the one having the specifications given in this section.

Molded-case circuit breakers, fuses, and magnetic contactors

Servo amplifier	Molded-case circuit breaker (Note 1)		Fuse			Magnetic contactor (Note 2)	
	Frame, rated current	Voltage AC [V]	Class	Current [A]	Voltage AC [V]		
MR-J4-10_	30 A frame 5 A	240	T	10	300	S-N10	
MR-J4-20_				15			
MR-J4-40_	30 A frame 10 A			20			
MR-J4-60_				40			
MR-J4-70_	30 A frame 15 A			70			
MR-J4-100_				125			
MR-J4-200_	30 A frame 20 A			150			S-N20 (Note 3)
MR-J4-350_	30 A frame 30 A			200			S-N20
MR-J4-500_	50 A frame 50 A			250			S-N35
MR-J4-700_	100 A frame 75 A			350			S-N50
MR-J4-11K_	100 A frame 100 A			10		S-N65	
MR-J4-15K_	125 A frame 125 A			15		S-N95	
MR-J4-22K_	225 A frame 175 A			20		S-N10	
MR-J4-10_1	30 A frame 5 A					S-T10	
MR-J4-20_1	30 A frame 10 A						
MR-J4-40_1	30 A frame 15 A						

- Note
1. In order for the servo amplifier to comply with the UL/CSA standard, see the applicable "Servo Amplifier Instruction Manual".
 2. Use a magnetic contactor with an operation delay time (interval between current being applied to the coil until closure of contacts) of 80 ms or less.
 3. S-N18 can be used when auxiliary contact is not required.

Servo amplifier	Molded-case circuit breaker (Note 1, 3)		Fuses			Magnetic contactor (Note 2)
	Frame, rated current	Voltage AC [V]	Class	Current [A]	Voltage AC [V]	
MR-J4-60_4	30 A frame 5 A	480	T	10	600	S-N10
MR-J4-100_4	30 A frame 10 A			15		
MR-J4-200_4	30 A frame 15 A			25		
MR-J4-350_4	30 A frame 20 A			35		
MR-J4-500_4	30 A frame 20 A			50		S-N18
MR-J4-700_4	30 A frame 30 A			65		S-N20
MR-J4-11K_4	50 A frame 50 A			100		S-N25
MR-J4-15K_4	60 A frame 60 A			150		S-N35
MR-J4-22K_4	100 A frame 100 A			175		S-N50

- Note
1. In order for the servo amplifier to comply with the UL/CSA standard, see the applicable "Servo Amplifier Instruction Manual".
 2. Use a magnetic contactor with an operation delay time (interval between current being applied to the coil until closure of contacts) of 80 ms or less.
 3. Use a molded-case circuit breaker with operating characteristics equivalent or higher than our multi-purpose product.

Part 9: Review on Replacement of Optional Peripheral Equipment

(2) For control circuit power supply

When the wiring for the control circuit power supply (L11, L21) is thinner than that for the main circuit power supply (L1, L2, L3), install an overcurrent protection device (molded-case circuit breaker or fuse) to protect the branch circuit.

Molded-case circuit breaker, fuse

Servo amplifier	Molded-case circuit breaker (Note)		Fuse (Class T)		Fuse (Class K5)	
	Frame, rated current	Voltage AC [V]	Current [A]	Voltage AC [V]	Current [A]	Voltage AC [V]
MR-J4-10_	30 A frame 5 A	240	1	300	1	250
MR-J4-20_						
MR-J4-40_						
MR-J4-60_						
MR-J4-70_						
MR-J4-100_						
MR-J4-200_						
MR-J4-350_						
MR-J4-500_						
MR-J4-700_						
MR-J4-11K_						
MR-J4-15K_						
MR-J4-22K_						
MR-J4-60_4	30 A frame 5 A	480	1	600	1	600
MR-J4-100_4						
MR-J4-200_4						
MR-J4-350_4						
MR-J4-500_4						
MR-J4-700_4						
MR-J4-11K_4						
MR-J4-15K_4						
MR-J4-22K_4						
MR-J4-10_1	30 A frame 5 A	240	1	300	1	250
MR-J4-20_1						
MR-J4-40_1						

Note. In order for the servo amplifier to comply with the UL/CSA standard, see the Servo Amplifier Instruction Manual.

Part 9: Review on Replacement of Optional Peripheral Equipment


5. BATTERY

POINT	<ul style="list-style-type: none"> MR-BAT and A6BAT batteries for MR-J2S, or the MR-J2M-BT battery unit for MR-J2M, cannot be used because their battery voltage specifications are different from those of the MR-J4 series.
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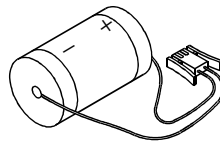
5.1 MR-J2S-Series Battery

5.1.1 Battery replacement procedure

Model: MR-BAT or A6BAT

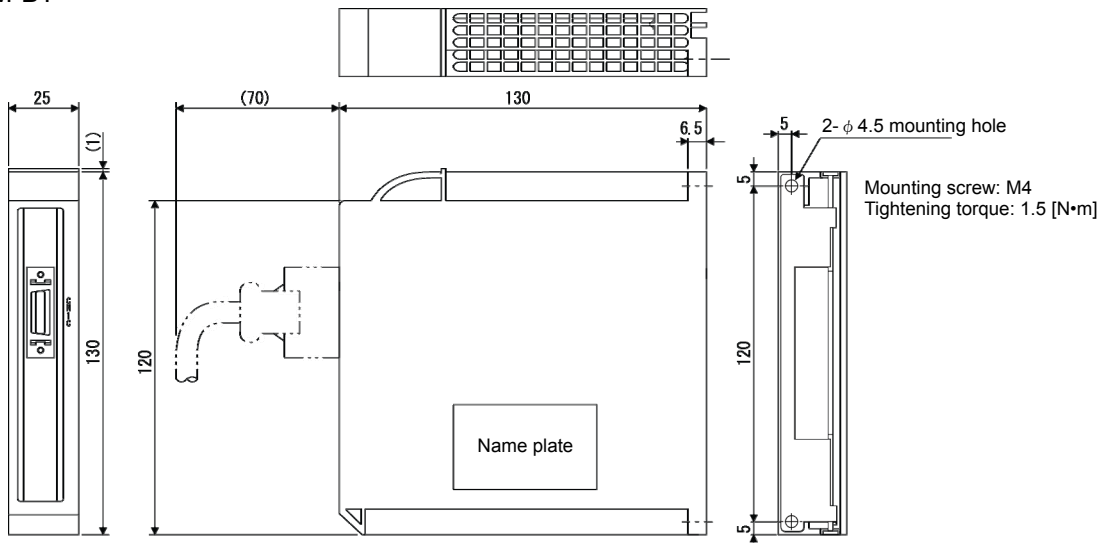
 WARNING	<ul style="list-style-type: none"> Before mounting a battery, turn off the power and wait 15 min or longer until the charge lamp turns off, then check the voltage between P and N with a voltage tester, etc., otherwise an electric shock may occur. In addition, when confirming whether the charge lamp is off or not, always check from the front of the servo amplifier.
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POINT	<ul style="list-style-type: none"> The internal circuits of the servo amplifier may be damaged by static electricity. Always take the following precautions. <ul style="list-style-type: none"> Ground human body and work bench. Do not touch the conductive areas, such as connector pins and electrical parts, directly by hand.
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5.2 MR-J2M-Series Battery Unit

Type: MR-J2M-BT



Part 9: Review on Replacement of Optional Peripheral Equipment

5.3 MR-J4-Series Battery

5.3.1 Battery replacement procedure

Model: MR-BAT6V1SET, MR-BAT6V1BJ, MR-BT6VCASE



WARNING

- Before replacing a battery, turn off the main circuit power and wait for 15 minutes or longer until the charge lamp turns off. Then, check the voltage between P+ and N- with a voltage tester or others. Otherwise, an electric shock may occur. In addition, when confirming whether the charge lamp is off or not, always confirm it from the front of the servo amplifier.



CAUTION

- The internal circuits of the servo amplifier may be damaged by static electricity. Always take the following precautions.
 - Ground your body and the work bench.
 - Do not touch the conductive areas, such as connector pins and electrical parts, directly by hand.
- The built-in battery for the MR-BAT6V1BJ battery for junction battery cable cannot be replaced. Therefore, do not disassemble the MR-BAT6V1BJ battery for junction battery cable. Doing so may cause a malfunction.

POINT

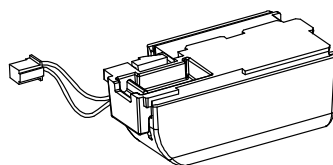
- When using the BAT6V1SET battery and the MR-BT6VCASE battery case are used
Replacing a battery with the control circuit power supply turned off will erase the absolute position data.
When using the MR-BAT6V1BJ battery for junction battery cable
In order to prevent the absolute position data from being erased, replace the MR-BAT6V1BJ battery for junction battery cable according to the procedure described in the Instruction Manual.
- Verify that the battery for replacement is within its service life.

Replace the old battery with only the control circuit power supply turned on. Replacing a battery with the control circuit power supply turned on will cause [AL.9F.1 low battery] but will not erase the absolute position data.

See the Instruction Manual for the procedure for mounting the battery on the servo amplifier.

POINT

- See the Instruction Manual for battery transportation and the new EU Directive on batteries.



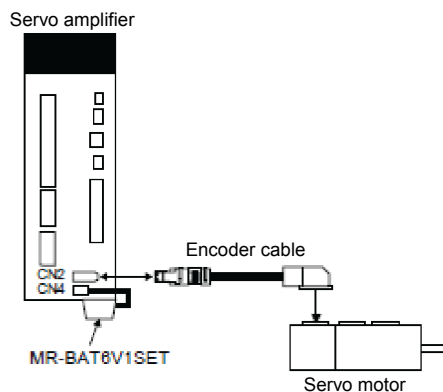
Part 9: Review on Replacement of Optional Peripheral Equipment

POINT
<ul style="list-style-type: none"> • Three types of batteries are used to construct the absolute position detection system: MR-BAT6V1SET battery, MR-BAT6V1BJ battery for junction battery cable, and MR-BT6VCASE battery case. The use of the MR-BAT6V1BJ battery for junction battery cable has the following characteristics distinctive from other batteries. <ul style="list-style-type: none"> • The encoder cable can be removed from the servo amplifier. • A battery can be replaced with the control circuit power supply turned off. • If the encoder lost the absolute position data, always perform home position setting before operation. The encoder will lose the absolute position data in the following cases. In addition, the absolute position data may be erased if the battery is used outside of the specification. <p>When using the MR-BAT6V1SET battery and the MR-BT6VCASE battery case</p> <ul style="list-style-type: none"> • Encoder cable is removed. • A battery is replaced with the control circuit power supply turned off. <p>When using the MR-BAT6V1BJ battery for junction battery cable</p> <ul style="list-style-type: none"> • The connector and the cable are removed between the servo motor and the battery. • A battery is replaced in a procedure different from the procedure described in the Instruction Manual. • The MR-BAT6V1BJ battery for junction battery cable is compatible only with the HG series servo motor. Do not use it with the direct drive motor. • Do not use the MR-BAT6V1BJ battery for junction battery cable with the fully closed loop system. • A single MR-BT6VCASE battery case can retain the absolute position data of up to eight axes of servo motors.

5.3.2 When using the MR-BAT6V1SET battery

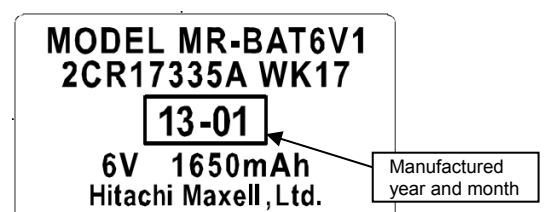
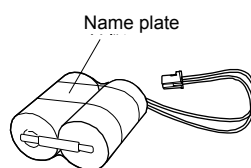
(a) Battery connection

Connect according to the following figure.



(b) Battery manufacture year and month

The manufacture date of an MR-BAT6V1 battery installed in MR-BAT6V1SET is written on the name plate attached to the MR-BAT6V1 battery.

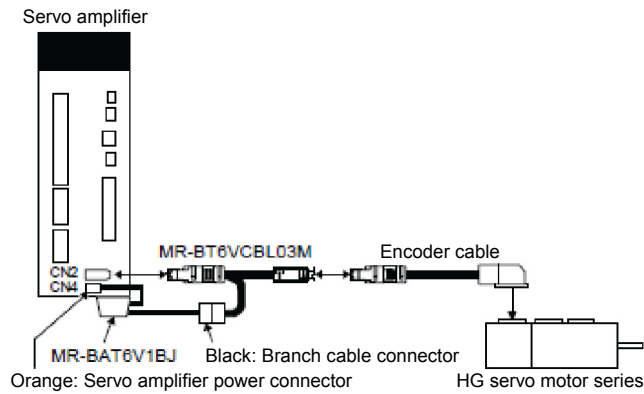


Part 9: Review on Replacement of Optional Peripheral Equipment

5.3.3 When using MR-BAT6V1BJ battery for junction battery cable

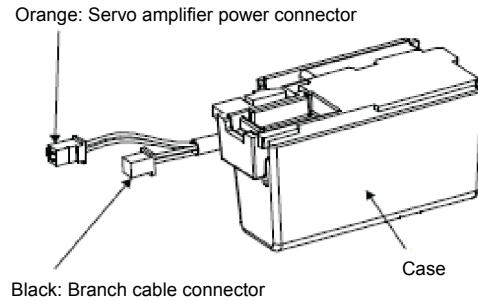
(a) Battery connection

Connect according to the following figure in combination with the MR-BT6VCBL03M junction battery cable.



(b) Battery manufacture year and month

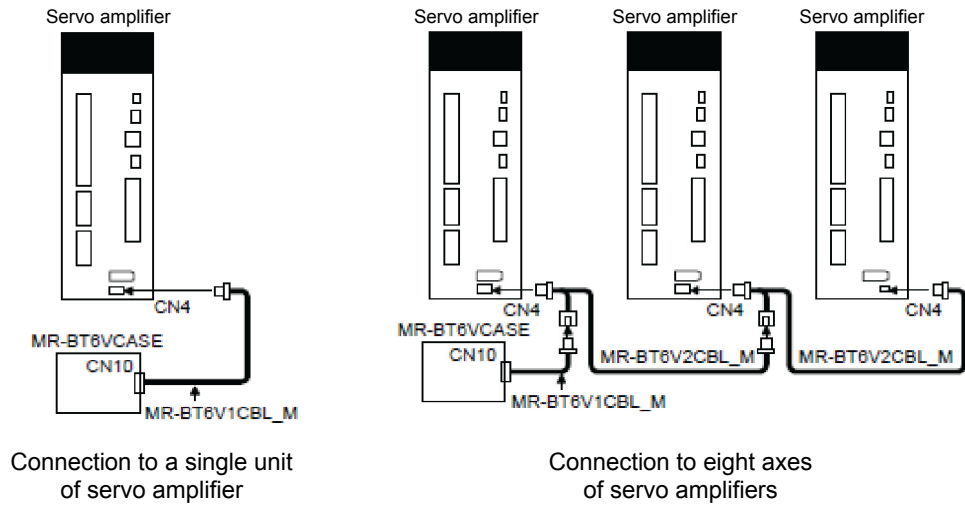
The manufacture year and month are described in the manufacturer's (SERIAL) number marked on the rating name plate. The second digit of the manufacturer's number indicates the first digit of the Christian Era and the third digit indicates the manufacture month (X for October, Y for November, and Z for December). For example, November 2013 is indicated as "SERIAL: _3Y _._._._._".



Part 9: Review on Replacement of Optional Peripheral Equipment

5.3.4 When using MR-BT6VCASE battery case

(a) Battery connection



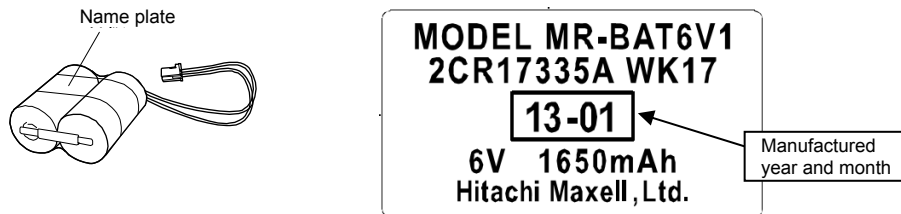
A single MR-BT6VCASE battery case can retain the absolute position data of up to eight axes of servo motors. When using only a direct drive motor, up to four axes of servo amplifiers can be connected. The maximum number of axes includes the number of axes of servo motors and direct drive motors. The maximum number of axes does not include the number of axes of linear servo motors. Refer to the following table for the connectible number of axes of servo motors.

Servo motor	Number of axes									
	0	1	2	3	4	5	6	7	8	
Rotary servo motor	0	1	2	3	4	5	6	7	8	
Direct drive motor	4	4	4	4	4	3	2	1	0	

The battery case accommodates five connected batteries. The battery case contains no batteries. Batteries need to be prepared separately.

(b) Battery manufacture year and month

The manufacture year and month of a MR-BAT6V1 to be housed in the MR-BT6VCASE battery case is written on the name plate attached to the MR-BAT6V1 battery.



Part 9: Review on Replacement of Optional Peripheral Equipment

6. EMC FILTER

POINT
<ul style="list-style-type: none"> Recommended EMC filters for the MR-J2S series are different from those for the MR-J4 series.

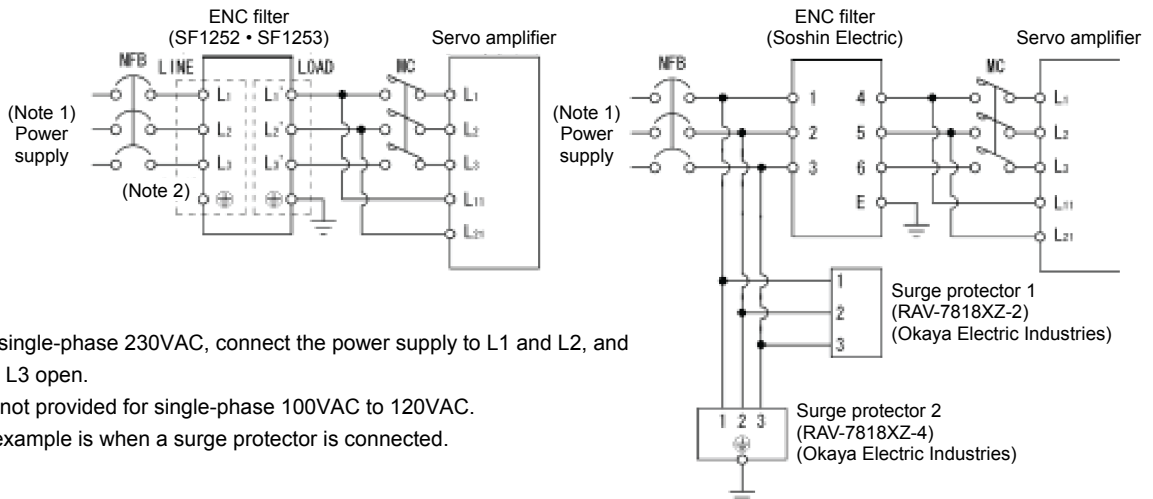
6.1 MR-J2S-Series EMC Filter (200 V/100 V class)

It is recommended that one of the following filters be used to comply with the EN EMC Directive. Some EMC filters have large in leakage current.

Combination with the servo amplifier

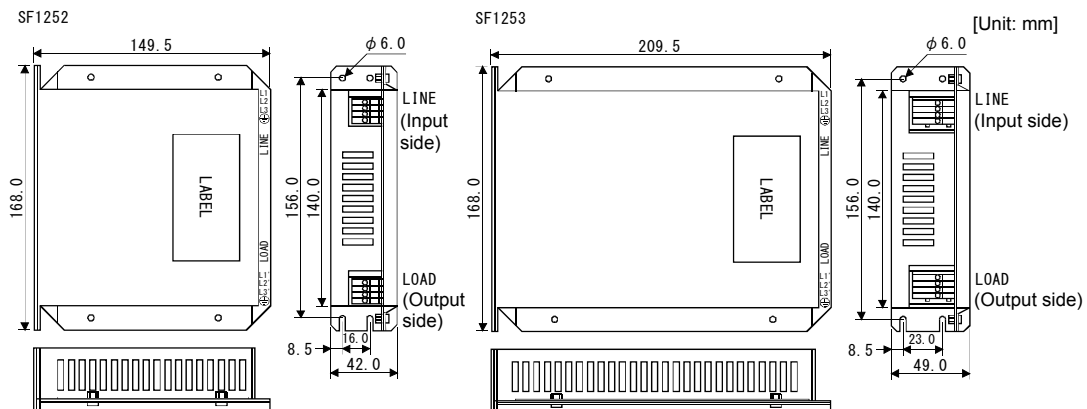
Servo amplifier	Recommended filter		Mass [kg]
	Model	Leakage current [mA]	
MR-J2S-10_ to MR-J2S-100_ MR-J2S-10_1 to MR-J2S-40_1	SF1252	38	0.75
MR-J2S-200_/_MR-J2S-350_	SF1253	57	1.37
MR-J2S-500_	(Note) HF3040A-TM	1.5	5.5
MR-J2S-700_	(Note) HF3050A-TM	1.5	6.7
MR-J2S-11K_	(Note) HF3060A-TMA	3.0	10.0
MR-J2S-15K_	(Note) HF3080A-TMA	3.0	13.0
MR-J2S-22K_	(Note) HF3100A-TMA	3.0	14.5
MR-J2S-30K_/_MR-J2S-37K_	(Note) HF3200A-TMA	3.0	23.5

Note. Soshin Electric. A surge protector is separately required to use any of these EMC filters.
(See EMC Installation Guidelines.)



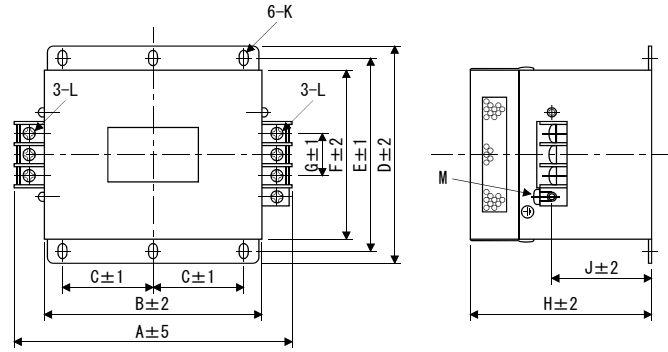
- Note 1. With single-phase 230VAC, connect the power supply to L1 and L2, and leave L3 open.
L3 is not provided for single-phase 100VAC to 120VAC.
2. The example is when a surge protector is connected.

6.1.1 Dimensions



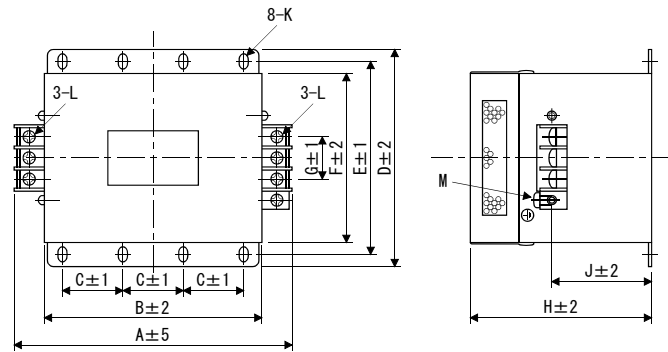
Part 9: Review on Replacement of Optional Peripheral Equipment

HF3040A-TM/HF3050A-TM/HF3060A-TMA



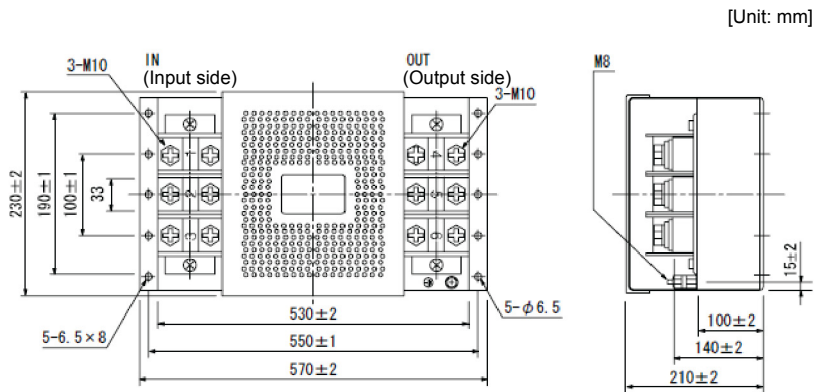
Model	Dimensions [mm]											
	A	B	C	D	E	F	G	H	J	K	L	M
HF3040A-TM	260	210	85	155	140	125	44	140	70	R3.25 length 8	M5	M4
HF3050A-TM	290	240	100	190	175	160	44	170	100		M6	M4
HF3060A-TMA	290	240	100	190	175	160	44	230	160		M6	M4

HF3080A-TMA/HF3100A-TMA



Model	Dimensions [mm]											
	A	B	C	D	E	F	G	H	J	K	L	M
HF3080A-TMA	405	350	100	220	200	180	56	210	135	R4.25 length 12	M8	M6
HF3100A-TMA												

HF3200A-TMA



Part 9: Review on Replacement of Optional Peripheral Equipment

6.2 MR-J2S-Series EMC Filter (400 V class)

It is recommended that one of the following filters be used to comply with the EN EMC Directive. Some EMC filters have large in leakage current.

Combination with the servo amplifier

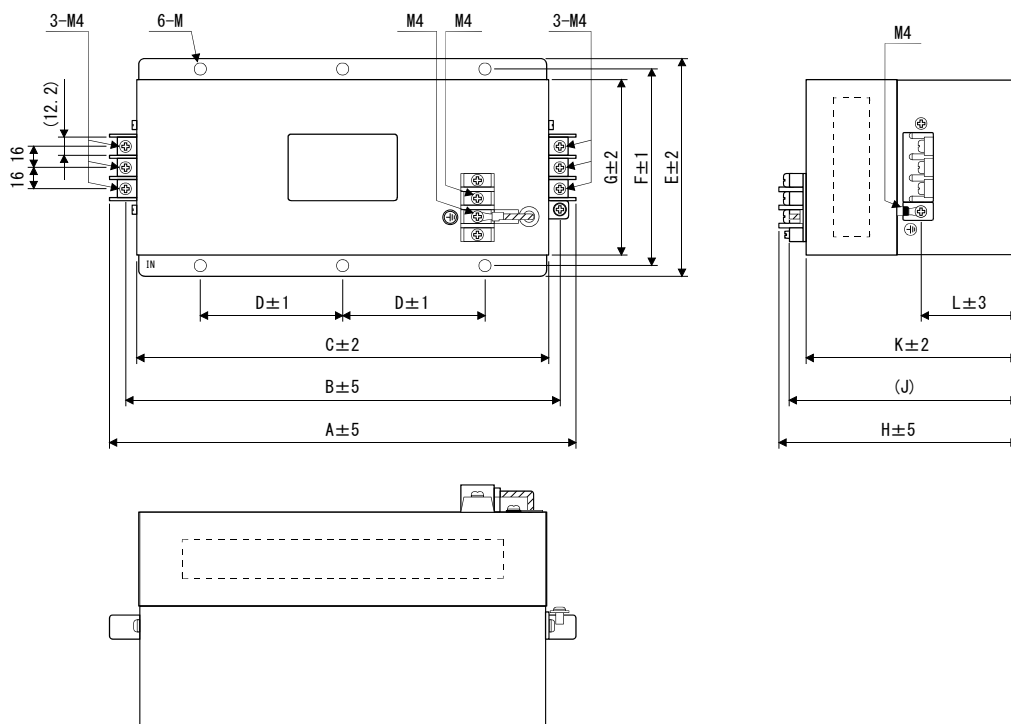
Servo amplifier	Recommended filter		Mass [kg]
	(Note 1) Model	(Note 2) Leakage current [mA]	
MR-J2S-60_4 to MR-J2S-200_4	TF3005C-TX	5.5	6
MR-J2S-350_4 to MR-J2S-700_4	TF3020C-TX		
MR-J2S-11K_4	TF3030C-TX		
MR-J2S-15K_4	TF3040C-TX		
MR-J2S-22K_4	TF3060C-TX		
MR-J2S-30K_4~ MR-J2S-55K_4	TF3150C-TX	5.5	31

Note 1. Soshin Electric

Note 2. When one phase opens with the three-phase neutral-point (N) grounded power supply, the value will be 350 mA.

6.2.1 Dimensions

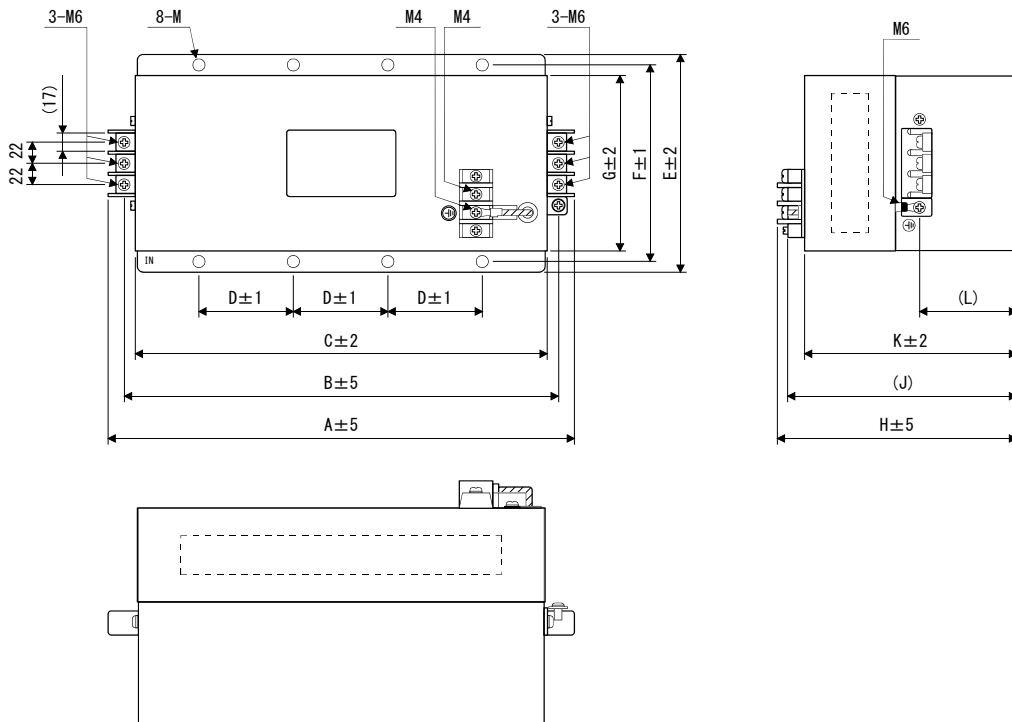
[Unit: mm]



Model	Dimensions [mm]											
	A	B	C	D	E	F	G	H	J	K	L	M
TF3005C-TX	332	308	290	100	155	140	125	170	(160)	150	(67.5)	R3.25 length 8 (For M6)
TF3020C-TX												
TF3030C-TX												

Part 9: Review on Replacement of Optional Peripheral Equipment

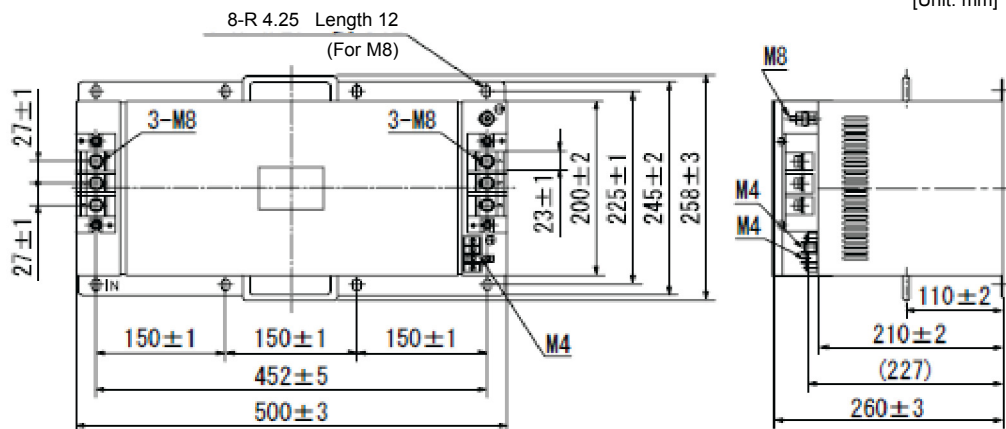
[Unit: mm]



Model	Dimensions [mm]											
	A	B	C	D	E	F	G	H	J	K	L	M
TF3040C-TX	438	412	390	100	175	160	145	200	(190)	180	(91.5)	R3.25 length 8 (For M6)
TF3060C-TX												

TF3150C-TX

[Unit: mm]



Part 9: Review on Replacement of Optional Peripheral Equipment

6.3 MR-J4-Series EMC Filter (Recommended) (200 V class)

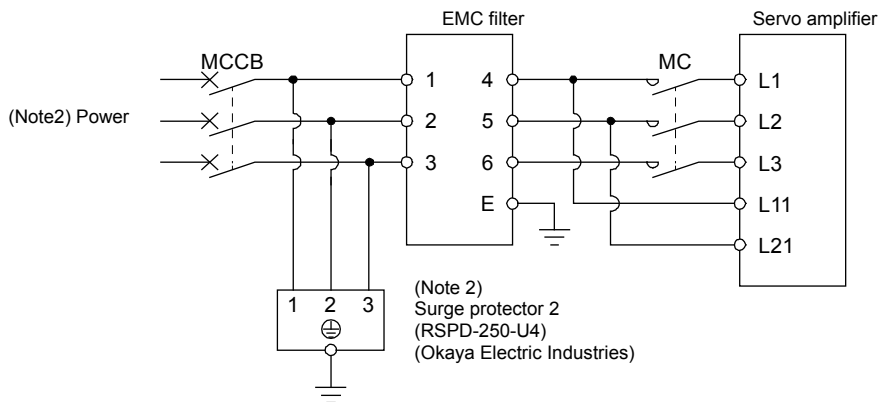
It is recommended that one of the following filters be used to comply with EN EMC directive. Some EMC filters have large in leakage current.

Table. Combination with the servo amplifier

Servo amplifier	Recommended filter (Soshin Electric)			Mass [kg]	
	Model	Rated current [A]	Rated voltage [V AC]		
MR-J4-10_ to MR-J4-100_	(Note) HF3010A-UN	10	250	5	3.5
MR-J4-200_ , MR-J4-350_	(Note) HF3030A-UN	30		5	5.5
MR-J4-500_ , MR-J4-700_	(Note) HF3040A-UN	40		6.5	6
MR-J4-11K_ , MR-J4-15K_ , MR-J4-22K_	(Note) HF3100A-UN	100		12	
MR-J4-30K_ , MR-J4-37K_	(Note) HF3200A-UN	200	250	9	18
MR-J4-10_1 to MR-J4-40_1	(Note) HF3010A-UN	10	250	5	3.5

Note. A surge protector is separately required to use any of these EMC filters.

6.3.1 Connection example



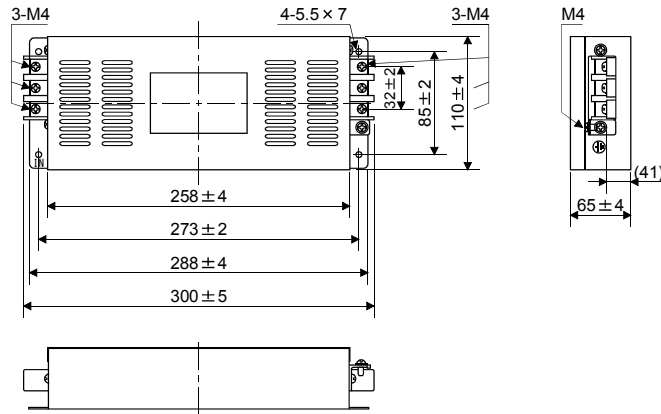
- Note 1. For 1-phase 200VAC to 240VAC, connect the power supply to L1 and L3. Leave L2 open. L2 is not provided for single-phase 100VAC to 120VAC.
- Note 2. The example is when a surge protector is connected.

Part 9: Review on Replacement of Optional Peripheral Equipment

6.3.2 Dimensions

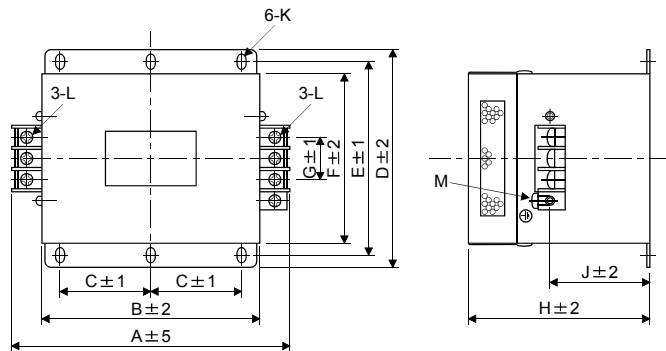
HF3010A-UN

[Unit: mm]



HF3030A-UN/HF-3040A-UN

[Unit: mm]

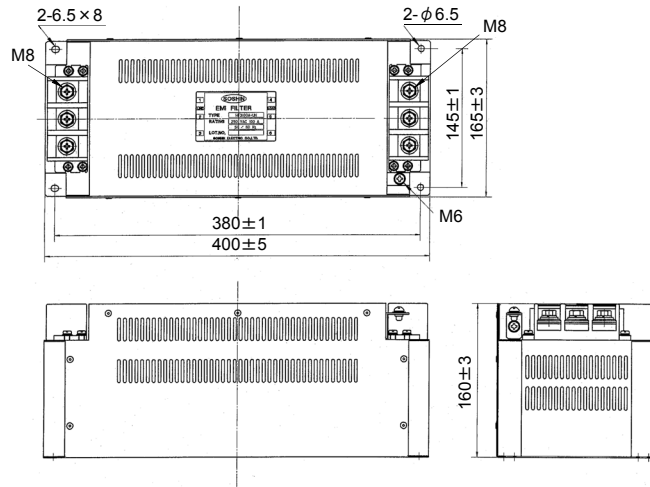


Model	Dimensions [mm]											
	A	B	C	D	E	F	G	H	J	K	L	M
HF3030A-UN	260	210	85	155	140	125	44	140	70	R3.25 length 8	M5	M4
HF3040A-UN												

Part 9: Review on Replacement of Optional Peripheral Equipment

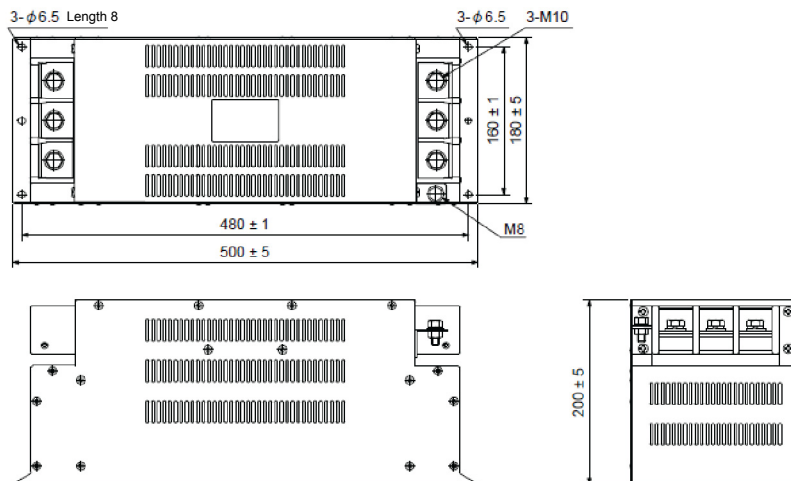
HF3100A-UN

[Unit: mm]



HF3200A-UN

[Unit: mm]



Part 9: Review on Replacement of Optional Peripheral Equipment

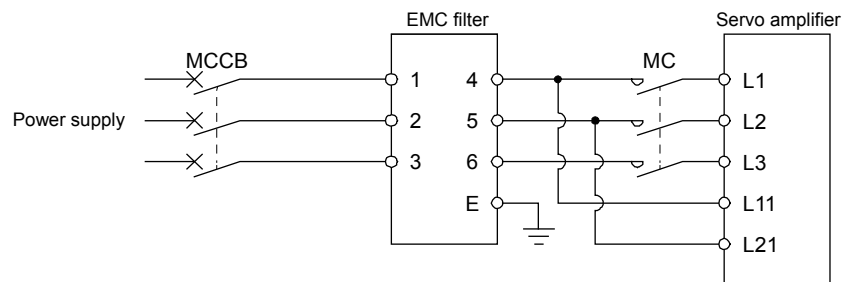
6.4 MR-J4-Series EMC Filter (Recommended) (400V class)

It is recommended that one of the following filters be used to comply with EN EMC directive. Some EMC filters have large in leakage current.

6.4.1 Combination with the servo amplifier

Servo amplifier	Recommended filter (Soshin Electric)				Mass [kg]
	Model	Rated current [A]	Rated voltage [VAC]	Leakage current [mA]	
MR-J4-60_4/MR-J4-100_4	TF3005C-TX	5	500	5.5	6
MR-J4-200_4 to MR-J4-700_4	TF3020C-TX	20			7.5
MR-J4-11K_4	TF3030C-TX	30			12.5
MR-J4-15K_4	TF3040C-TX	40			
MR-J4-22K_4	TF3060C-TX	60			
MR-J4-30K_4~ MR-J4-55K_4	TF3150C-TX	150	500	5.5	31

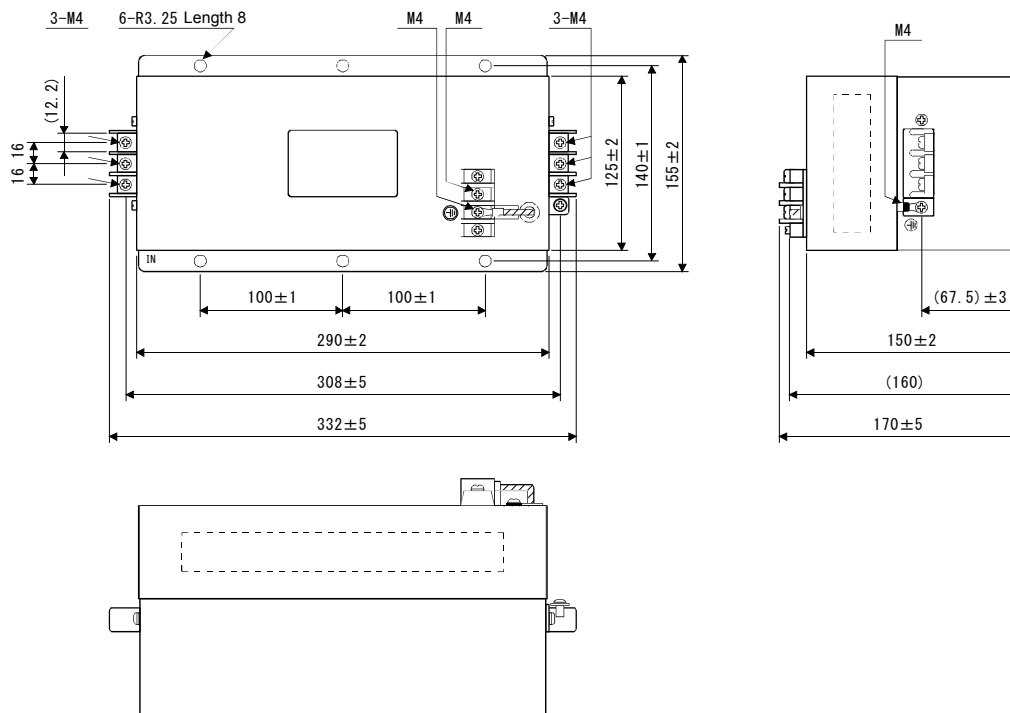
6.4.2 Connection example



6.4.3 Dimensions

TF3005C-TX/TF3020C-TX/TF3030C-TX

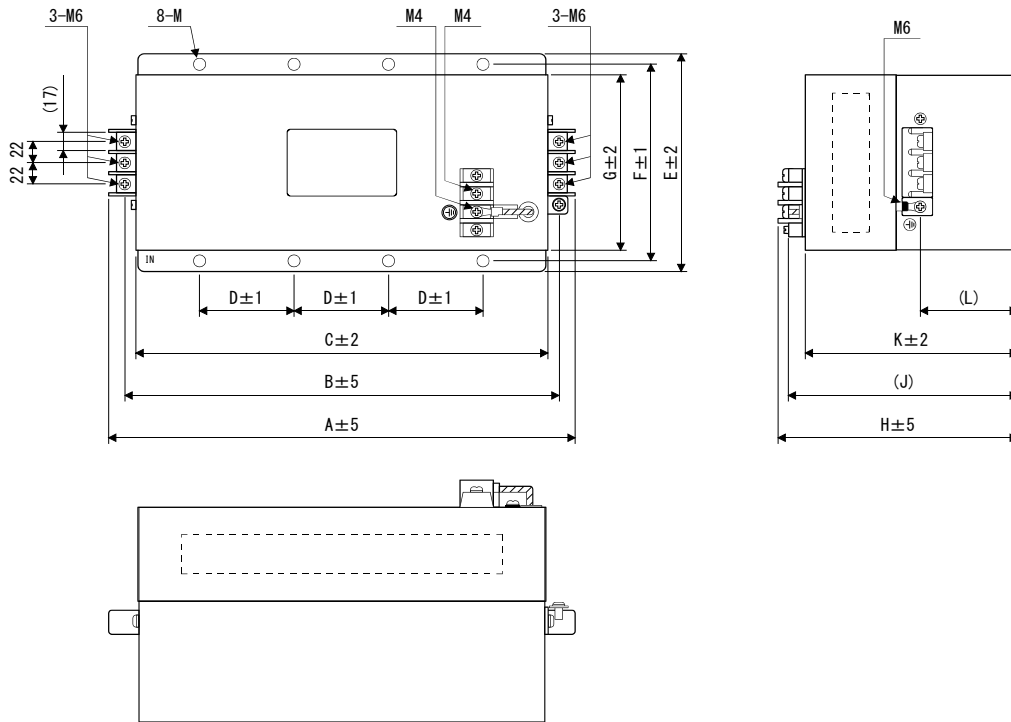
[Unit: mm]



Part 9: Review on Replacement of Optional Peripheral Equipment

TF3040C-TX/TF3060C-TX

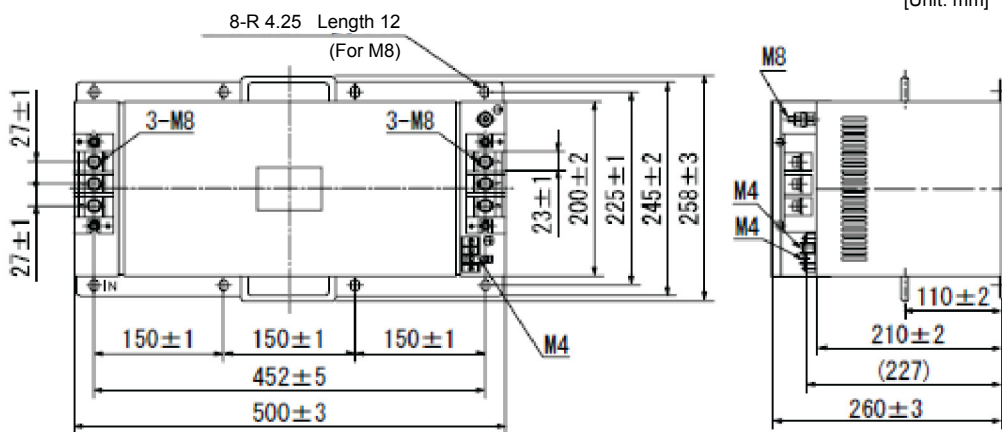
[Unit: mm]



Model	Dimensions [mm]											
	A	B	C	D	E	F	G	H	J	K	L	M
TF3040C-TX	438	412	390	100	175	160	145	200	(190)	180	(91.5)	R3.25 length 8 (For M6)
F3060C-TX												

TF3150C-TX

[Unit: mm]

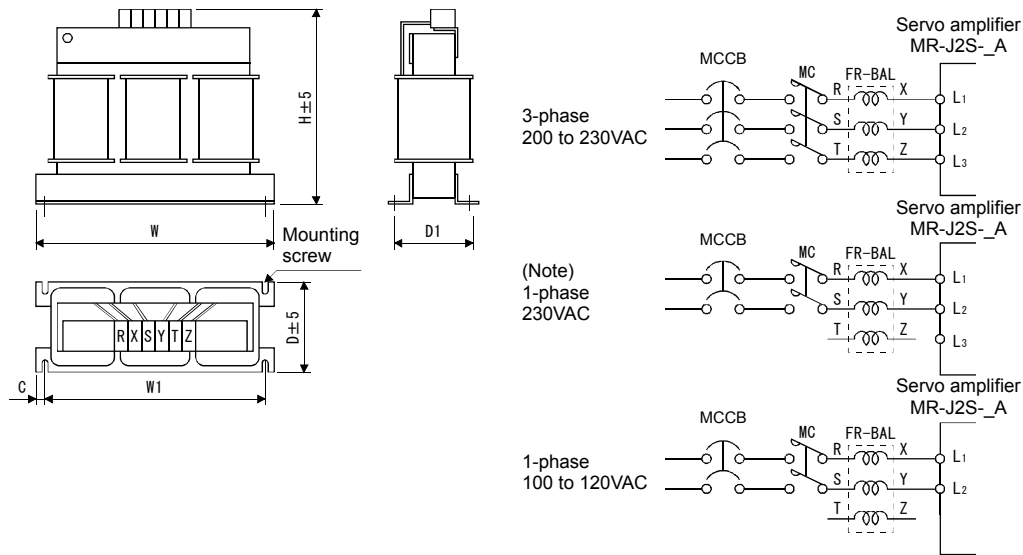


Part 9: Review on Replacement of Optional Peripheral Equipment

7. POWER FACTOR IMPROVING AC REACTOR/POWER FACTOR IMPROVING DC REACTOR

7.1 MR-J2S-Series Power Factor Improving AC Reactor (200 V/100 V class)

The input power factor is improved to about 90%. For use with a 1-phase power supply, it may be slightly lower than 90%.



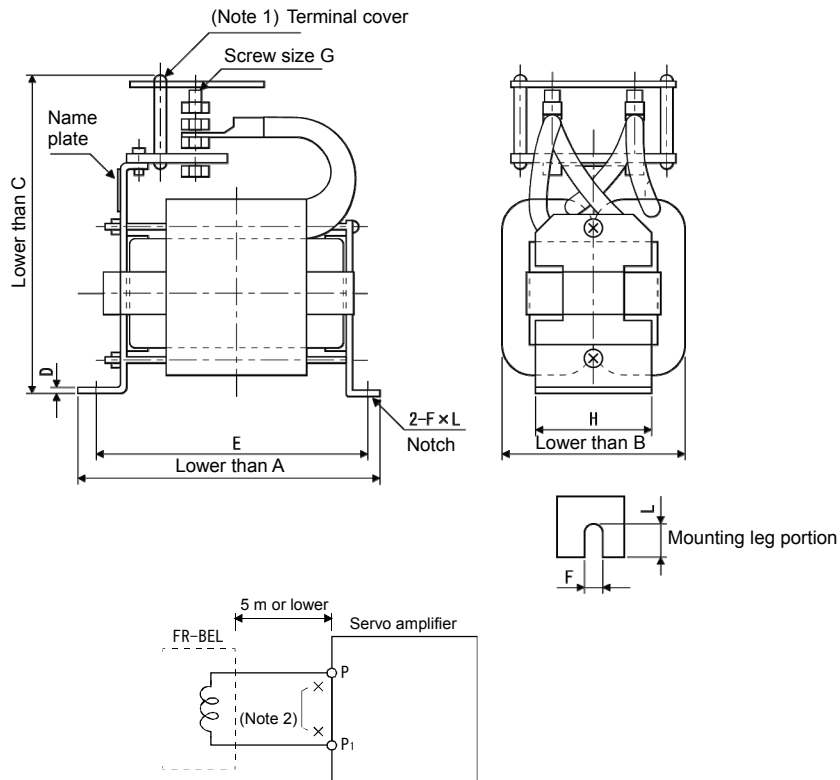
Note. For 1-phase 230VAC, connect the power supply to L1/L2. Leave L3 open.

Servo amplifier	Power factor improving reactor	Dimensions [mm]						Mounting screw Size	Terminal screw Size	Mass [kg]
		W	W1	H	D	D1	C			
MR-J2S-10_(1)	FR-BAL-0.4K	135	120	115	59	45 ⁰ _{-2.5}	7.5	M4	M3.5	2.0
MR-J2S-20_										
MR-J2S-40_	FR-BAL-0.75K	135	120	115	69	57 ⁰ _{-2.5}	7.5	M4	M3.5	2.8
MR-J2S-20_1										
MR-J2S-60_	FR-BAL-1.5K	160	145	140	71	55 ⁰ _{-2.5}	7.5	M4	M3.5	3.7
MR-J2S-70_										
MR-J2S-40_1										
MR-J2S-100_	FR-BAL-2.2K	160	145	140	91	75 ⁰ _{-2.5}	7.5	M4	M3.5	5.6
MR-J2S-200_	FR-BAL-3.7K	220	200	192	90	70 ⁰ _{-2.5}	10	M5	M4	8.5
MR-J2S-350_	FR-BAL-7.5K	220	200	194	120	100 ⁰ _{-2.5}	10	M5	M5	14.5
MR-J2S-500_	FR-BAL-11K	280	255	220	135	100 ⁰ _{-2.5}	12.5	M6	M6	19
MR-J2S-700_	FR-BAL-15K	295	270	275	133	110 ⁰ _{-2.5}	12.5	M6	M6	27
MR-J2S-11K_										
MR-J2S-15K_	FR-BAL-22K	290	240	301	199	170±5	25	M8	M8	35
MR-J2S-22K_	FR-BAL-30K	290	240	301	219	190±5	25	M8	M8	43

Part 9: Review on Replacement of Optional Peripheral Equipment

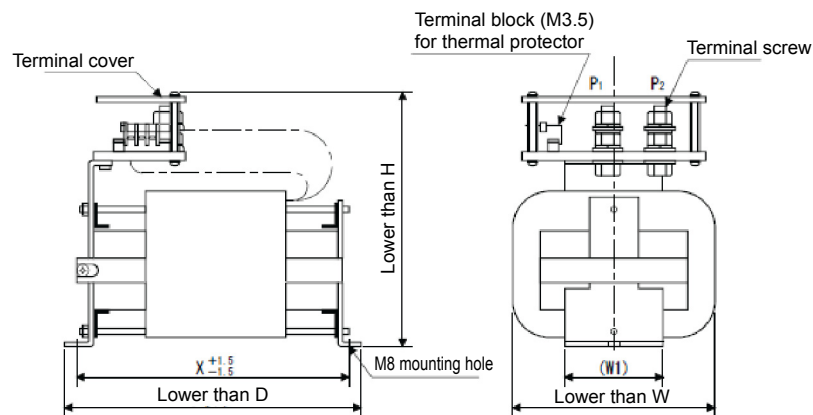
7.2 MR-JS2-Series Power Factor Improving DC Reactor (200 V class)

The input power factor is improved to about 95%.



- Note 1. Since the terminal cover is supplied, attach it after connecting a wire.
 Note 2. When using a power factor improving DC reactor, remove the short-circuit bar between P₁ and P.

Servo amplifier	Power factor improving DC reactor	Dimensions [mm]									Mounting screw Size	Mass [kg]	Electric wire [mm ²]
		A	B	C	D	E	F	L	G	H			
MR-J2S-11K_	FR-BEL-15K	170	93	170	2.3	155	6	14	M8	56	M5	3.8	22(AWG4)
MR-J2S-15K_	FR-BEL-22K	185	119	182	2.6	165	7	15	M8	70	M6	5.4	30(AWG2)
MR-J2S-22K_	FR-BEL-30K	185	119	201	2.6	165	7	15	M8	70	M6	6.7	60(AWG1/0)

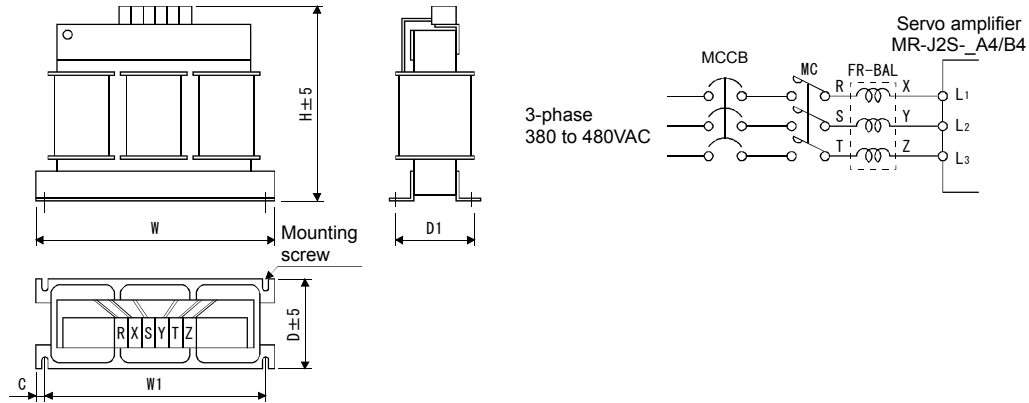


Servo amplifier	Power factor improving DC reactor	Dimensions [mm]					Mounting screw Size	Mass [kg]
		W	D	H	W1	X		
MR-J2S-30K_	MR-DCL30K	135	255	215	80	232	M12	9.5
MR-J2S-37K_	MR-DCL37K	135	255	215	80	232	M12	9.5

Part 9: Review on Replacement of Optional Peripheral Equipment

7.3 MR-JS2-Series Power Factor Improving AC Reactor (400V class)

The input power factor is improved to about 90%.

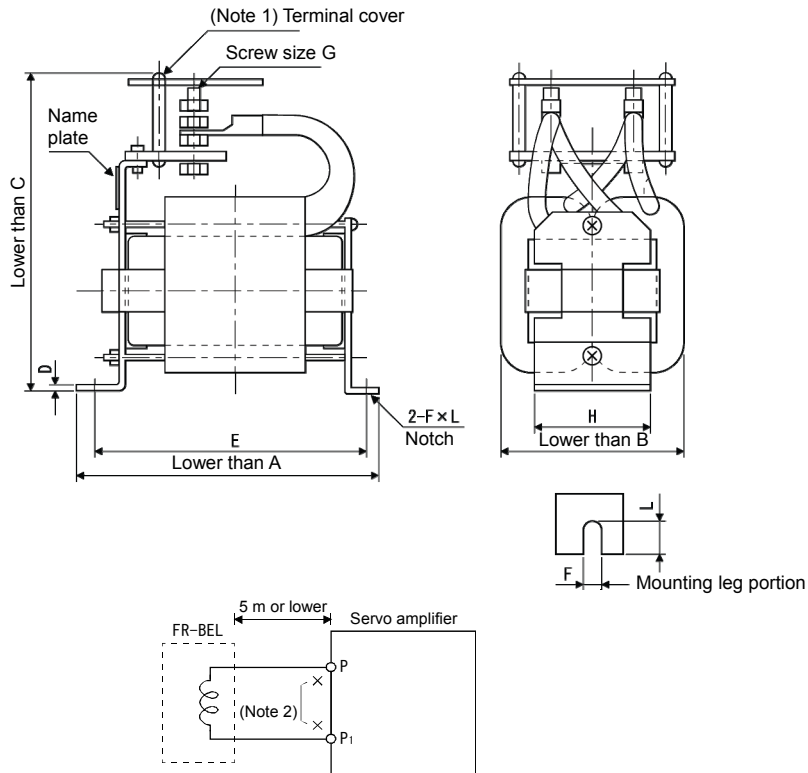


Servo amplifier	Power factor improving reactor	Dimensions [mm]						Mounting screw Size	Terminal screw Size	Mass [kg]
		W	W1	H	D	D1	C			
MR-J2S-60_4	FR-BAL-H1.5K	160	145	140	87	70 ⁰ _{-2.5}	7.5	M4	M3.5	5.3
MR-J2S-100_4	FR-BAL-H2.2K	160	145	140	91	75 ⁰ _{-2.5}	7.5	M4	M3.5	5.9
MR-J2S-200_4	FR-BAL-H3.7K	220	200	190	90	70 ⁰ _{-2.5}	10	M5	M3.5	8.5
MR-J2S-350_4	FR-BAL-H7.5K	220	200	192	120	100 ±5	10	M5	M4	14
MR-J2S-500_4	FR-BAL-H11K	280	255	226	130	100 ±5	12.5	M6	M5	18.5
MR-J2S-700_4	FR-BAL-H15K	295	270	244	130	110 ±5	12.5	M6	M5	27
MR-J2S-11K_4	FR-BAL-H15K	295	270	244	130	110 ±5	12.5	M6	M5	27
MR-J2S-15K_4	FR-BAL-H22K	290	240	269	199	170 ±5	25	M8	M8	Approx. 35
MR-J2S-22K_4	FR-BAL-H30K	290	240	290	219	190 ±5	25	M8	M8	Approx. 43

Part 9: Review on Replacement of Optional Peripheral Equipment

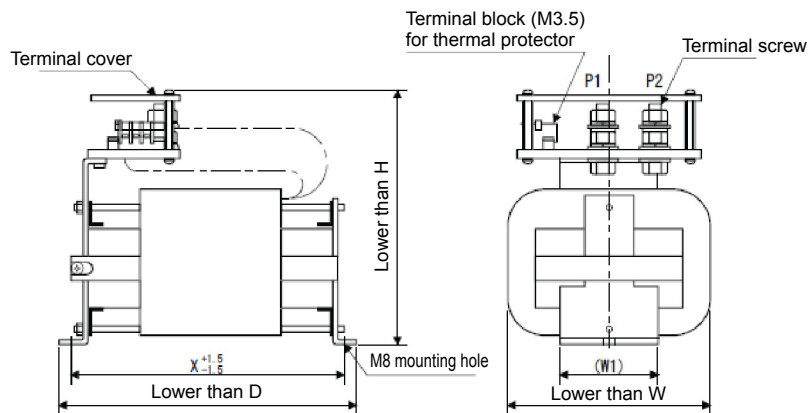
7.4 MR-JS2-Series Power Factor Improving DC Reactor (400V class)

The input power factor is improved to about 95%.



- Note 1. Since the terminal cover is supplied, attach it after connecting a wire.
 Note 2. When using a power factor improving DC reactor, remove the short-circuit bar between P₁ and P.

Servo amplifier	Power factor improving DC reactor	Dimensions [mm]									Mounting screw Size	Mass [kg]	Electric wire [mm ²]
		A	B	C	D	E	F	L	G	H			
MR-J2S-11K_4	FR-BEL-H15K	170	93	160	2.3	155	6	14	M6	56	M5	3.7	8(AWG8)
MR-J2S-15K_4	FR-BEL-H22K	185	119	171	2.6	165	7	15	M6	70	M6	5.0	22(AWG4)
MR-J2S-22K_4	FR-BEL-H30K	185	119	189	2.6	165	7	15	M6	70	M6	6.7	



SERVO AMPLIFIER	Power factor improving DC reactor	Dimensions [mm]					Mounting screw Size	Mass [kg]
		W	D	H	W1	X		
MR-J2S-30K_4	MR-DCL30K-4	135	205	200	75	175	M8	6.5
MR-J2S-37K_4	MR-DCL37K-4	135	225	200	80	197	M8	7
MR-J2S-45K_4	MR-DCL45K-4	135	240	200	80	212	M8	7.5
MR-J2S-55K_4	MR-DCL55K-4	135	260	215	80	232	M8	9.5

Part 9: Review on Replacement of Optional Peripheral Equipment

7.5 MR-J4-Series Power Factor Improving DC Reactor (200 V class)

The following shows the advantages of using power factor improving DC reactor.

- It improves the power factor by increasing the form factor of the servo amplifier's input current.
- It decreases the power supply capacity.
- The input power factor is improved to about 85%.
- As compared to the power factor improving AC reactor (FR-HAL), it decreases the loss.

When using the power factor improving DC reactor to the servo amplifier, remove the short bar across P3 and P4. If it remains connected, the effect of the power factor improving DC reactor is not produced.

When used, the power factor improving DC reactor generates heat. To release heat, therefore, leave a 10 cm or more clearance at each of the top and bottom, and a 5 cm or more clearance on each side.

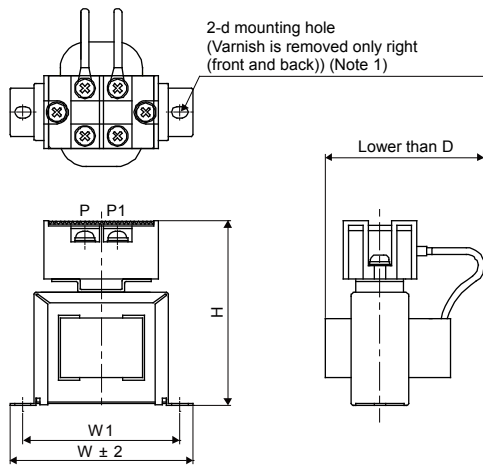


Fig. 7.1

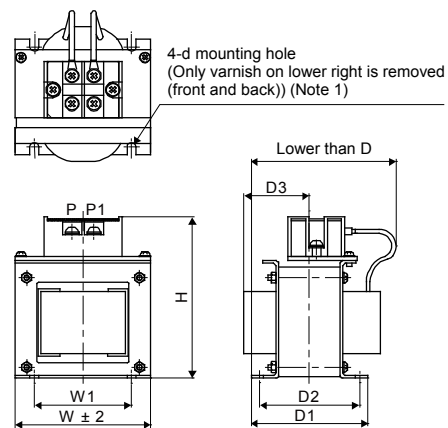


Fig. 7.2

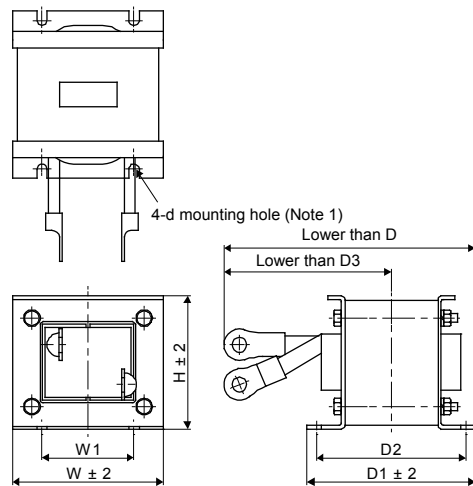


Fig. 7.3

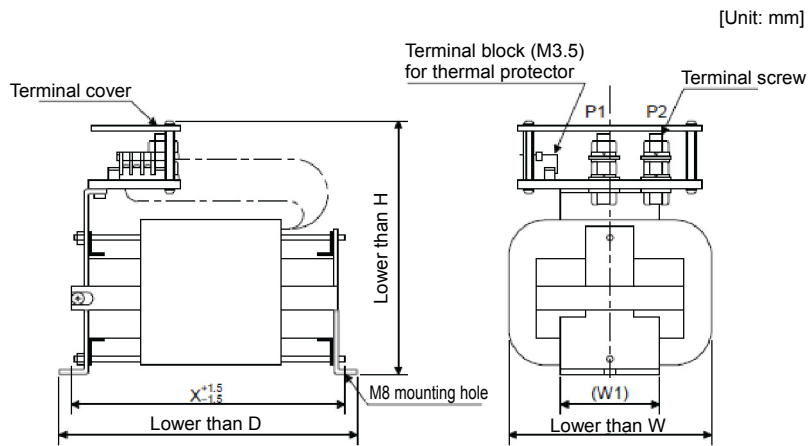
Note 1. Use this for grounding.

Note 2. When using the power factor improving DC reactor, remove the short bar across P3 and P4.

Part 9: Review on Replacement of Optional Peripheral Equipment

Servo amplifier	Power factor improving DC reactor	Exterior figure	Dimensions [mm]							Terminal size	Mass [kg]	Cable [mm ²] (Note 2)	
			W	W1	H	D (Note 1)	D1	D2	D3				d
MR-J4-10_ MR-J4-20_	FR-HEL-0.4K	Fig. 7.1	70	60	71	61		21		M4	M4	0.4	2 (AWG 14)
MR-J4-40_	FR-HEL-0.75K		85	74	81	61		21		M4	M4	0.5	
MR-J4-60_ MR-J4-70_	FR-HEL-1.5K		85	74	81	70		30		M4	M4	0.8	
MR-J4-100_	FR-HEL-2.2K		85	74	81	70		30		M4	M4	0.9	
MR-J4-200_	FR-HEL-3.7K	Fig. 7.2	77	55	92	82	66	57	37	M4	M4	1.5	3.5 (AWG 12)
MR-J4-350_	FR-HEL-7.5K		86	60	113	98	81	72	43	M4	M5	2.5	
MR-J4-500_	FR-HEL-11K		105	64	133	112	92	79	47	M6	M6	3.3	
MR-J4-700_	FR-HEL-15K		105	64	133	115	97	84	48.5	M6	M6	4.1	
MR-J4-11K_	FR-HEL-15K		105	64	133	115	97	84	48.5	M6	M6	4.1	
MR-J4-15K_	FR-HEL-22K	Fig. 7.3	105	64	93	175	117	104	115 (Note 1)	M6	M10	5.6	22 (AWG 4)
MR-J4-22K_	FR-HEL-30K		114	72	100	200	125	101	135 (Note 1)	M6	M10	7.8	38 (AWG 2)

- Note 1. These are maximum dimensions. The dimension varies depending on the input/output lines.
 Note 2. Selection conditions of wire size are as follows.
 Electric wire type: 600 V grade heat-resistant polyvinyl chloride insulated wire (HIV wire)
 Wiring condition: In-air, one-row wiring



Servo amplifier	Power factor improving DC reactor	Dimensions [mm]					Mounting screw Size	Mass [kg]
		W	D	H	W1	X		
MR-J4-30K_	MR-DCL30K	135	255	215	80	232	M12	9.5
MR-J4-37K_	MR-DCL37K	135	255	215	80	232	M12	9.5

Part 9: Review on Replacement of Optional Peripheral Equipment

7.6 MR-J4-Series Power Factor Improving AC Reactor (200 V/100 V class)

The following shows the advantages of using power factor improving AC reactor.

- It improves the power factor by increasing the form factor of the servo amplifier's input current.
- It decreases the power supply capacity.
- The input power factor is improved to about 80%.

When using power factor improving reactors for two servo amplifiers or more, make sure to connect a power factor improving reactor to each servo amplifier. If using only one power factor improving reactor, enough improvement effect of phase factor cannot be obtained unless all servo amplifiers are operated.

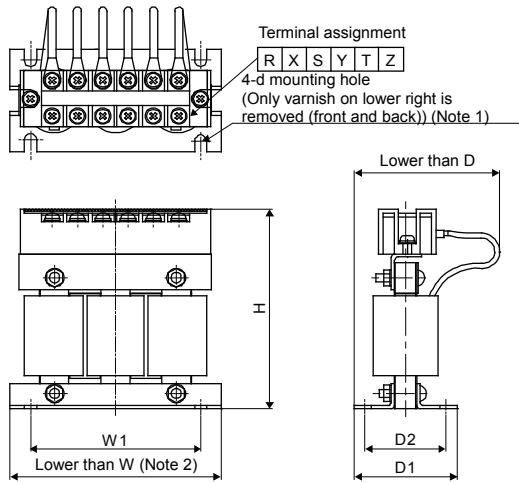
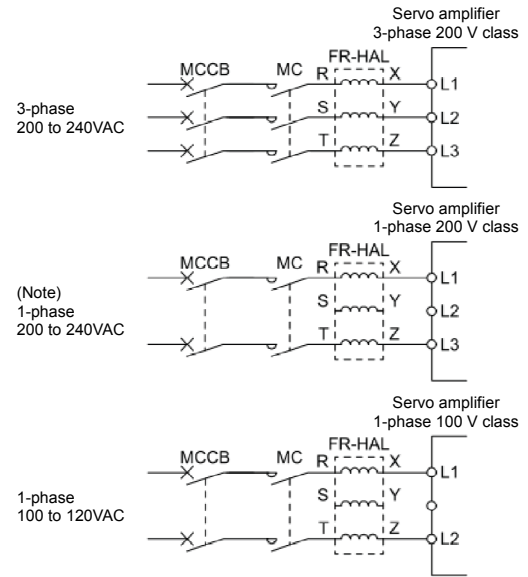


Fig. 7.4



- Note 1. Use this for grounding.
 Note 2. $W \pm 2$ is applicable for FR-HAL-0.4K to FR-HAL-1.5K.

- Note. For 1-phase 200VAC to 240VAC, connect the power supply to L1 and L3. Leave L2 open.

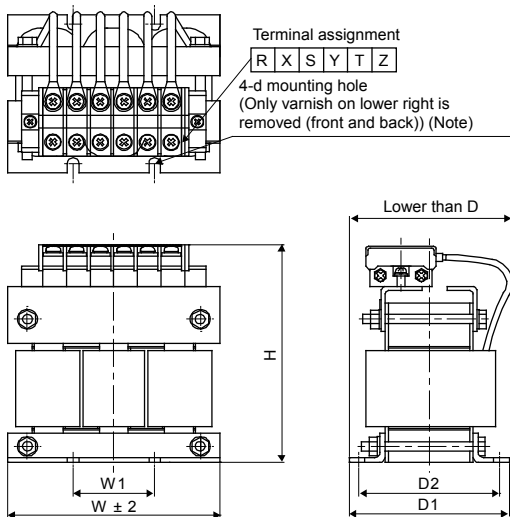


Figure 7.5

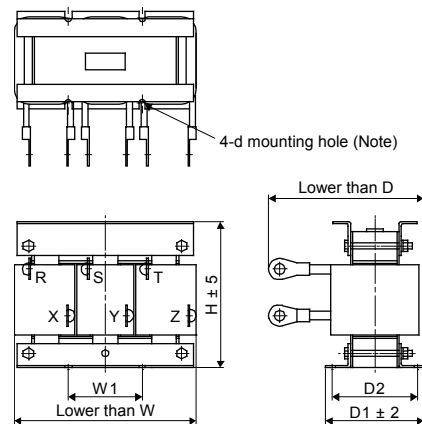


Fig. 7.6

- Note. Use this for grounding.

- Note. Use this for grounding.

Part 9: Review on Replacement of Optional Peripheral Equipment

Servo amplifier	Power factor improving AC reactor	Exterior figure	Dimensions [mm]							Terminal size	Mass [kg]
			W	W1	H	D (Note)	D1	D2	d		
MR-J4-10_, MR-J4-20_	FR-HAL-0.4K	Fig. 7.4	104	84	99	72	51	40	M5	M4	0.6
MR-J4-40_	FR-HAL-0.75K		104	84	99	74	56	44	M5	M4	0.8
MR-J4-60_, MR-J4-70_	FR-HAL-1.5K		104	84	99	77	61	50	M5	M4	1.1
MR-J4-100_	FR-HAL-2.2K		115 (Note)	40	115	77	71	57	M6	M4	1.5
MR-J4-200_	FR-HAL-3.7K		115 (Note)	40	115	83	81	67	M6	M4	2.2
MR-J4-350_	FR-HAL-7.5K	Fig. 7.5	130	50	135	100	98	86	M6	M5	4.2
MR-J4-500_	FR-HAL-11K		160	75	164	111	109	92	M6	M6	5.2
MR-J4-700_	FR-HAL-15K		160	75	167	126	124	107	M6	M6	7.0
MR-J4-11K_	FR-HAL-15K		160	75	167	126	124	107	M6	M6	7.0
MR-J4-15K_	FR-HAL-22K		185 (Note)	75	150	158	100	87	M6	M8	9.0
MR-J4-22K_	FR-HAL-30K	Fig. 7.6	185 (Note)	75	150	168	100	87	M6	M10	9.7

Note. These are maximum dimensions. The dimension varies depending on the input/output lines.

Part 9: Review on Replacement of Optional Peripheral Equipment

7.7 MR-J4-Series Power Factor Improving DC Reactor (400V class)

The following shows the advantages of using power factor improving DC reactor.

- It improves the power factor by increasing the form factor of the servo amplifier's input current.
- It decreases the power supply capacity.
- The input power factor is improved to about 85%.
- As compared to the power factor improving AC reactor (FR-HAL-H), it decreases the loss.

When using the power factor improving DC reactor to the servo amplifier, remove the short bar across P3 and P4. If it remains connected, the effect of the power factor improving DC reactor is not produced.

When used, the power factor improving DC reactor generates heat. To release heat, therefore, leave a 10 cm or more clearance at each of the top and bottom, and a 5 cm or more clearance on each side.

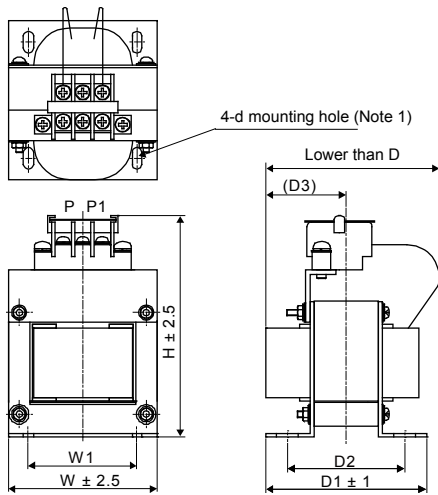


Fig. 7.7

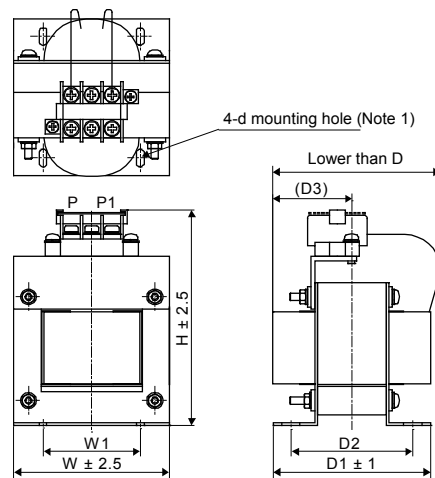


Fig. 7.8

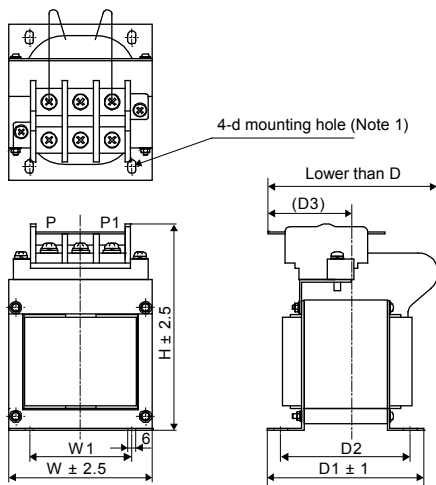
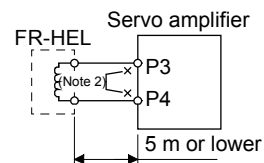


Fig. 7.9



Note 1. Use this for grounding.

Note 2. When using the power factor improving DC reactor, remove the short bar across P3 and P4.

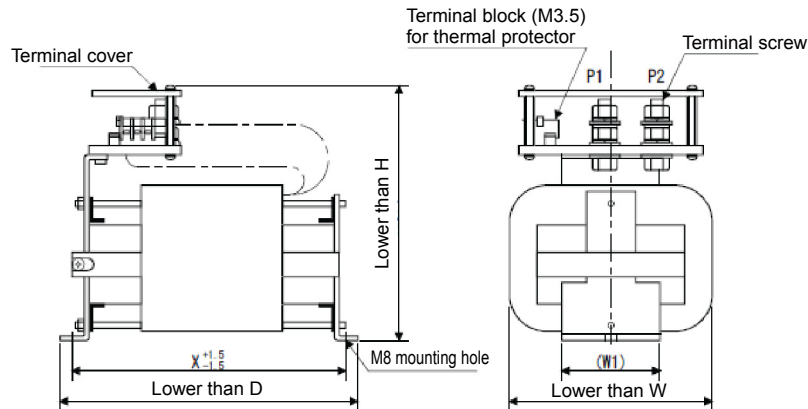
Part 9: Review on Replacement of Optional Peripheral Equipment

Servo amplifier	Power factor improving DC reactor	Exterior figure	Dimensions [mm]								Terminal size	Mass [kg]	Cable [mm ²] (Note)
			W	W1	H	D	D1	D2	D3	d			
MR-J4-60_4	FR-HEL-H1.5K	Fig. 7.7	66	50	100	80	74	54	37	M4	M3.5	1.0	2 (AWG 14)
MR-J4-100_4	FR-HEL-H2.2K		76	50	110	80	74	54	37	M4	M3.5	1.3	2 (AWG 14)
MR-J4-200_4	FR-HEL-H3.7K	Fig. 7.8	86	55	120	95	89	69	45	M4	M4	2.3	2 (AWG 14)
MR-J4-350_4	FR-HEL-H7.5K		96	60	128	105	100	80	50	M5	M4	3.5	2 (AWG 14)
MR-J4-500_4	FR-HEL-H11K	Fig. 7.9	105	75	137	110	105	85	53	M5	M5	4.5	3.5 (AWG 12)
MR-J4-700_4	FR-HEL-H15K		105	75	152	125	115	95	62	M5	M6	5.0	5.5 (AWG 10)
MR-J4-11K_4			133	90	178	120	95	75	53	M5	M6	6.0	8 (AWG 8)
MR-J4-15K_4	FR-HEL-H22K		133	90	178	120	100	80	56	M5	M6	6.5	8 (AWG 8)
MR-J4-22K_4	FR-HEL-H30K		133	90	178	120	100	80	56	M5	M6	6.5	14 (AWG 6)

Note. Selection conditions of wire size are as follows.

Electric wire type: 600 V grade heat-resistant polyvinyl chloride insulated wire (HIV wire)

Wiring condition: In-air, one-row wiring



Servo amplifier	Power factor improving DC reactor	Dimensions [mm]					Mounting screw Size	Mass [kg]
		W	D	H	W1	X		
MR-J4-30K_4	MR-DCL30K-4	135	205	200	75	175	M8	6.5
MR-J4-37K_4	MR-DCL37K-4	135	225	200	80	197	M8	7
MR-J4-45K_4	MR-DCL45K-4	135	240	200	80	212	M8	7.5
MR-J4-55K_4	MR-DCL55K-4	135	260	215	80	232	M8	9.5

Part 9: Review on Replacement of Optional Peripheral Equipment

7.8 MR-J4-Series Power Factor Improving AC Reactor (400V class)

The following shows the advantages of using power factor improving AC reactor.

- It improves the power factor by increasing the form factor of the servo amplifier's input current.
- It decreases the power supply capacity.
- The input power factor is improved to about 80%.

When using power factor improving reactors for two servo amplifiers or more, make sure to connect a power factor improving reactor to each servo amplifier. If using only one power factor improving reactor, enough improvement effect of phase factor cannot be obtained unless all servo amplifiers are operated.

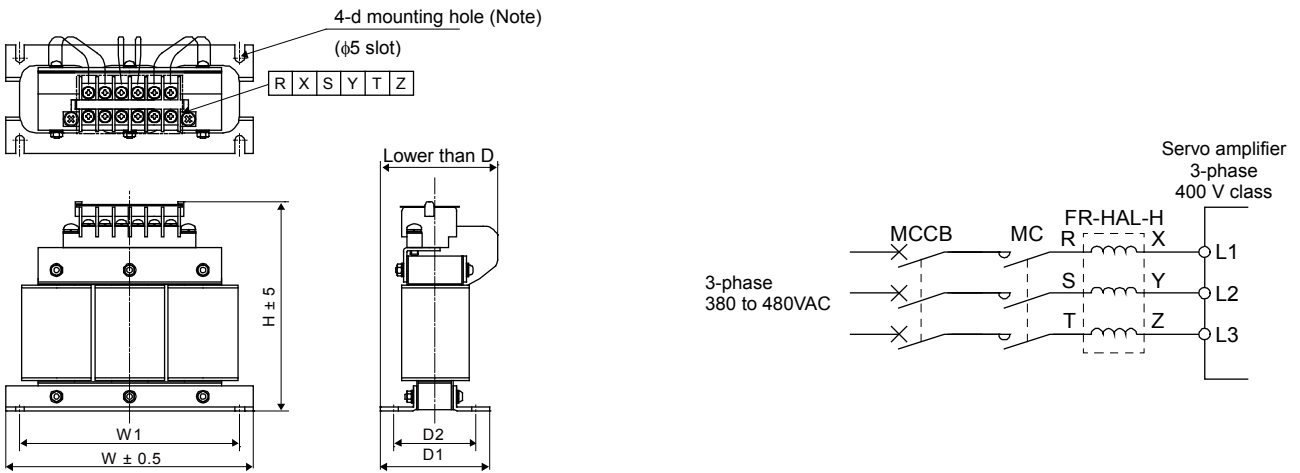


Fig. 7.10

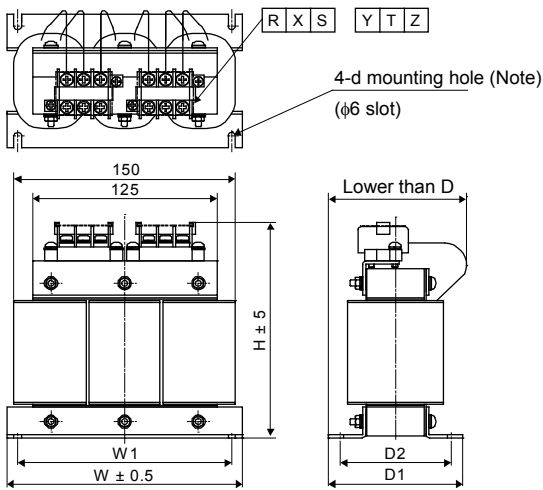


Fig. 7.11

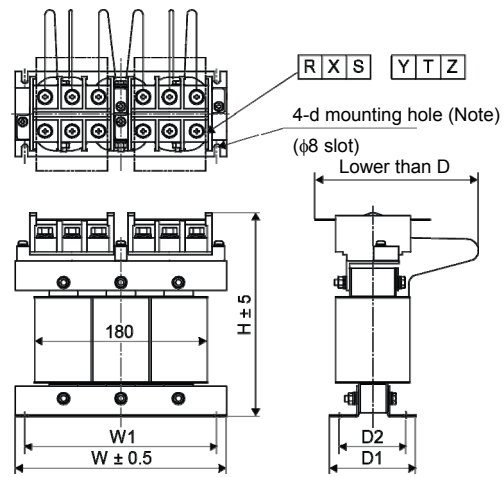


Fig. 7.12

Note. Use this for grounding.

Part 9: Review on Replacement of Optional Peripheral Equipment

Servo amplifier	Power factor improving AC reactor	Exterior figure	Dimensions [mm]							Terminal size	Mass [kg]
			W	W1	H	D (Note)	D1	D2	d		
MR-J4-60_4	FR-HAL-H1.5K	Fig. 7.10	135	120	115	59	59.6	45	M4	M3.5	1.5
MR-J4-100_4	FR-HAL-H2.2K		135	120	115	59	59.6	45	M4	M3.5	1.5
MR-J4-200_4	FR-HAL-H3.7K		135	120	115	69	70.6	57	M4	M3.5	2.5
MR-J4-350_4	FR-HAL-H7.5K	Fig. 7.11	160	145	142	91	91	75	M4	M4	5.0
MR-J4-500_4	FR-HAL-H11K		160	145	146	91	91	75	M4	M5	6.0
MR-J4-700_4 • MR-J4-11K_4	FR-HAL-H15K	Fig. 7.12	220	200	195	105	90	70	M5	M5	9.0
MR-J4-15K_4	FR-HAL-H22K		220	200	215	170	90	70	M5	M8	9.5
MR-J4-22K_4	FR-HAL-H30K		220	200	215	170	96	75	M5	M8	11

Note. These are maximum dimensions. The dimension varies depending on the input/output lines.

Part 9: Review on Replacement of Optional Peripheral Equipment

8. MR CONFIGURATOR

8.1 MR-J2S-Series MR Configurator (Setup Software)

MR Configurator (setup software MRZJW3-SETUP161) uses the communication function of the servo amplifier to change parameter setting values, display graphs, and perform test operations, etc., on the personal computer.

MR Configurator (setup software MRZJW3-SETUP161) can be downloaded from the Mitsubishi Electric FA site (www.MitsubishiElectric.co.jp/fa/).

8.1.1 Specifications

Item	Description
Communication signal	RS-232C
Baud rate [bps]	57600/38400/19200/9600
Monitor	Display all, high-speed display, graph display (Minimum resolution changes with the processing speed of the personal computer.)
Alarm	Display, history, amplifier data
Diagnosis	DI/DO display, display of the reason for no rotation, power ON cumulative display, software No. display, motor information display, tuning data display, ABS data display, VC automatic offset display, axis name setting
Parameter	Parameter list, turning, change list, detailed information
Test operation	JOG operation, positioning operation, motor-less operation, DO forced output, and program operation
Advanced function	Machine analyzer gain search, machine simulation
File operation	Data read, save, print
Others	Automatic operation, station number setting, help display

8.2 MR-J4-Series MR Configurator2

MR Configurator2 (SW1DNC-MRC2-E) uses the communication function of the servo amplifier to perform parameter setting changes, graph display, test operation, etc. on a personal computer.

8.2.1 Specifications

Item	Description
Project	Create/read/save/delete project, system setting, and print
Parameter	Parameter setting, amplifier axis name setting, parameter converter (Note 1)
Positioning data (Note 6)	Point table, program, indirect addressing
Monitor	Display all, I/O monitor, graph, and ABS data display
Diagnostics	Alarm display, alarm onset data display, drive recorder, display of the reason for no rotation, system configuration, life diagnosis, machine diagnosis, fully closed loop diagnosis (Note 2), linear diagnosis (Note 3)
Test operation	JOG operation (Note 4), positioning operation, motor-less operation (Note 5), DO forced output, and program operation, Test operation event information, single-step feed (Note 6)
Adjustment	One-touch tuning, tuning, and machine analyzer
Others	Servo assistant, parameter setting range update, help display, connection to MITSUBISHI ELECTRIC FA Global Website

- Note
1. This function is available only in standard control mode.
 2. This function is available only in fully closed loop control mode.
 3. This function is available only in linear servo motor control mode.
 4. This function is available in standard control mode, fully closed loop control mode, and DD motor control mode.
 5. This function is available only in standard control mode. This function will be available in fully closed loop control mode, linear servo motor control mode, DD motor control mode in the future.
 6. This function is available only for MR-J4A-RJ.

Part 9: Review on Replacement of Optional Peripheral Equipment

8.3 System Requirements

8.3.1 Components

To use this software, the following components are required in addition to the servo amplifier and servo motor.

Equipment	(Note 1) Description
(Note 2, 3, 4, 5, 7) Personal computer	OS Microsoft® Windows® 8 Enterprise, Microsoft® Windows® 8.1 Enterprise Microsoft® Windows® 8 Pro, Microsoft® Windows® 8.1 Pro Microsoft® Windows® 8, Microsoft® Windows® 8.1 Microsoft® Windows® 7 Enterprise Microsoft® Windows® 7 Ultimate Microsoft® Windows® 7 Professional Microsoft® Windows® 7 Home Premium Microsoft® Windows® 7 Starter Microsoft® Windows Vista® Enterprise Microsoft® Windows Vista® Ultimate Microsoft® Windows Vista® Business Microsoft® Windows Vista® Home Premium Microsoft® Windows Vista® Home Basic Microsoft® Windows® XP Professional [Service Pack 2/3] Microsoft® Windows® XP Home Edition [Service Pack 2/3]
	CPU Desktop personal computer: Intel® Celeron® processor, 2.8 GHz or more recommended Notebook personal computer: Intel® Pentium® M processor, 1.7 GHz or more recommended
	Memory 512 MB or more (for 32-bit OS) and 1 GB or more (for 64-bit OS)
	Hard Disk 1 GB or more of free space
	Communication Interface USB port (Note 6).
Browser	Windows® Internet Explorer® 4.0 or later (Note 1)
Display	One whose resolution is 1024 × 768 or more and that can provide a high color (16 bit) display. Connectable with the above personal computer.
Keyboard	Connectable with the above personal computer.
Mouse	Connectable with the above personal computers.
Printer	Connectable with the above personal computer.
USB cable	MR-J3USBCBL3M

Note 1. Microsoft, Windows, Internet Explorer, and Windows Vista are registered trademarks or trademarks of Microsoft Corporation in the United States and other countries.

Celeron, Pentium is the registered trademarks of Intel Corporation.

2. On some personal computers, MR Configurator2 may not run properly.

3. When Microsoft® Windows®7, Microsoft® Windows Vista®, or Microsoft® Windows® XP is used, the following functions cannot be used.

- Windows Program Compatibility mode
- Fast User Switching
- Remote Desktop
- Large Fonts Mode (Display property advanced setting)
- DPI settings other than 96 DPI (Display property advanced setting)

For 64-bit operating system, this software is compatible with Windows® 7.

4. When Windows® 7 or later is used, the following functions cannot be used.

- Windows XP Mode
- Windows touch

5. When using this software with Windows Vista® or later, log in as a user having USER authority or higher.

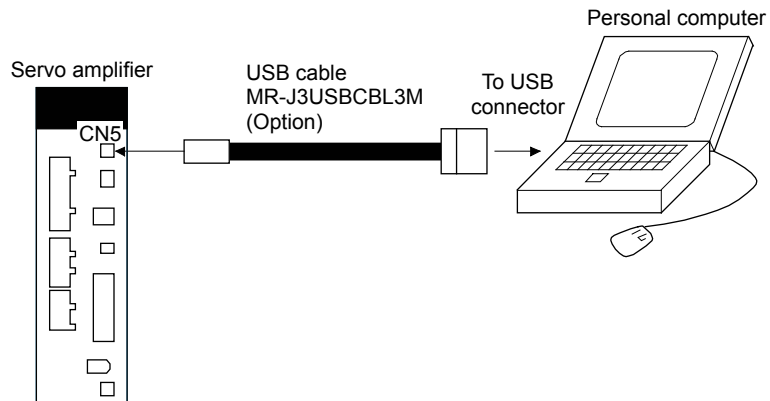
6. RS-422 connection will be available in the future.

7. When Windows® 8 is used, the following functions cannot be used.

- Hyper-V
- Modern UI style

Part 9: Review on Replacement of Optional Peripheral Equipment

8.3.2 Connection with servo amplifier



8.3.3 Points to note for use of the USB communication function

To prevent an electric shock or malfunction of the servo amplifier, follow the instructions below.

(1) Connection of the power supply of a personal computer

Connect the power supply of a personal computer following the procedure below.

(a) When using a personal computer with AC power

1) When using a personal computer whose power plug has three pins or a grounding wire, use a grounded outlet or ground the grounding wire.

2) When using a personal computer whose power plug has two pins and no grounding wire, connect the personal computer to the servo amplifier following the procedure below.

a) Remove the power plug of the personal computer from the AC outlet.

b) Verify that the power plug has been removed from the AC outlet, and then connect the servo amplifier to other devices.

c) Insert the power plug of the personal computer into the AC outlet.

(b) When using a battery-driven personal computer, use the computer as is.

(2) Connection to other devices by use of the servo amplifier communication function

When the servo amplifier becomes charged due to connection to the personal computer and the charged servo amplifier is connected to other devices, the servo amplifier or the connected devices may be damaged. Connect the servo amplifier to other devices following the procedure below.

(a) Turn off the power of the devices connected to the servo amplifier.

(b) Turn off the power of the servo amplifier connected to the personal computer, and then verify that the charge lamp is not lit.

(c) Connect the servo amplifier to the devices.


(d) Turn on the servo amplifier and the devices connected to it.


Part 10
Startup Procedure Manual

Part 10: Startup Procedure Manual

Part 10: Startup Procedure Manual

1. STARTUP

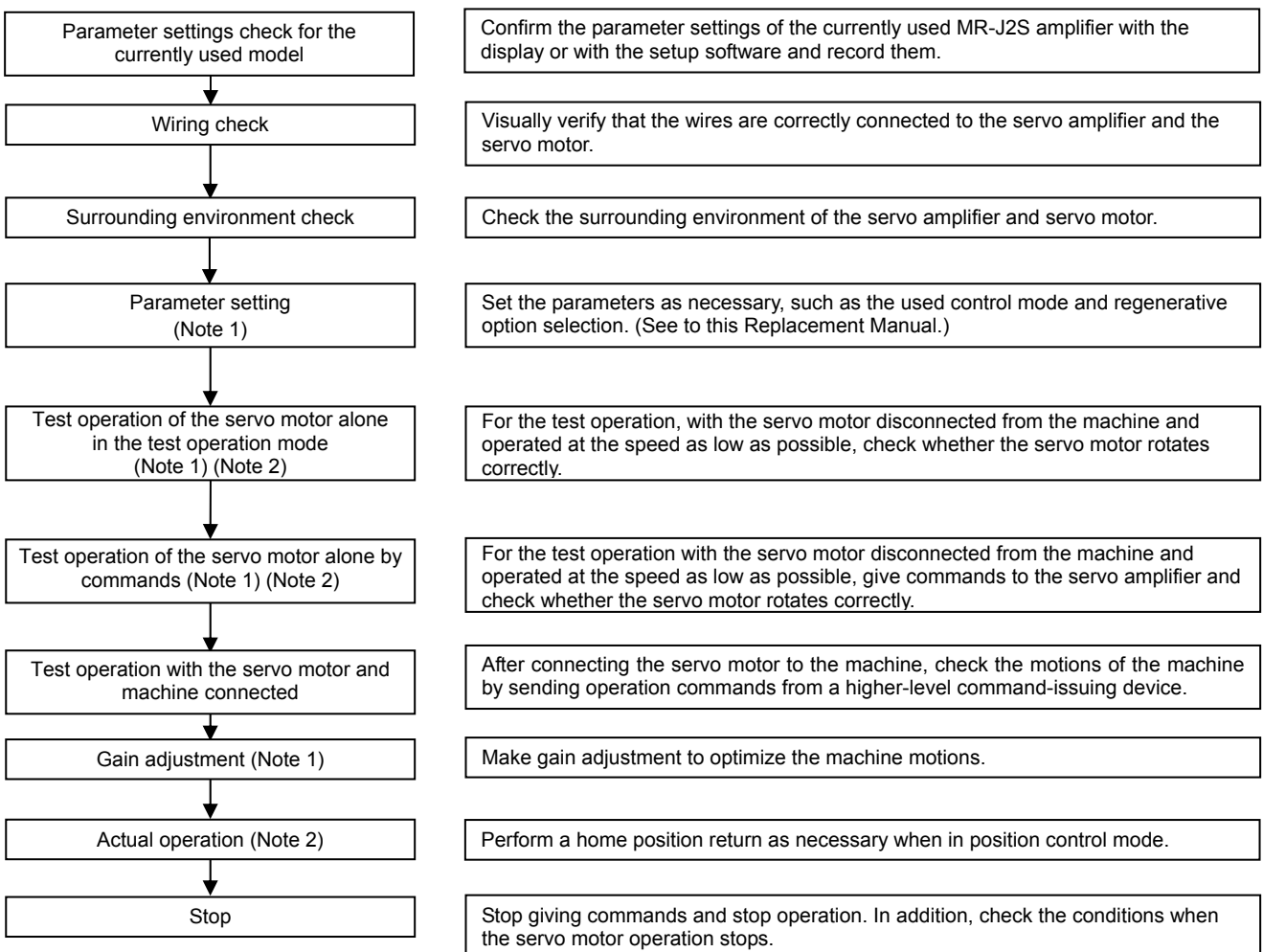
	<p>WARNING • Do not operate the switches with wet hands. Otherwise, it may cause an electric shock.</p>
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	<p>CAUTION</p> <ul style="list-style-type: none"> • Before starting operation, check the parameters. Improper settings may cause some machines to operate unexpectedly. • The servo amplifier heat sink, regenerative resistor, servo motor, etc., may be hot while power is on or for some time after power-off. Take safety measures, example, provide covers to avoid accidentally touching the parts (cables, etc.) by hand. Otherwise, it may cause a burn injury and parts damaged. • During operation, never touch the rotor of the servo motor. Otherwise, it may cause injury.
---	---

1.1 Switching power on for the first time

When switching power on for the first time, follow this section to make a startup.

1.1.1 Startup procedure



Note 1. For details about the settings for each servo amplifier and its test operation, see the applicable Servo Amplifier Instruction Manual. If the gain of the existing servo amplifier is extremely high, there may be slight differences in characteristics upon primary replacement. Make sure to set the gain again.

Note 2. When turning on the power supply, also turn on the 24VDC power supply for the external interface. Otherwise, AL. E6.1 occurs.

[Appendix 1]
Summary of MR-J4_B_-RJ020

+MR-J4-T20

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

1. SUMMARY

This [Appendix 1] describes the "MR-J4_B_-RJ020" servo amplifier that supports the SSCNET conversion unit for MR-J2S-B and "MR-J4-T20" SSCNET conversion unit for MR-J2S-B.

Ensure to use the MR-J4-T20 with the MR-J4_B_-RJ020.

Combining MR-J4_B_-RJ020 with MR-J4-T20 makes it possible to connect MR-J4_B_-RJ020 with SSCNET for MR-J2S-B

The MR-J4_B_-RJ020 servo amplifier is equipped with "J2S compatible mode (factory default)" and "J4 mode" as the operation mode. "J2S compatible mode" is the operation mode compatible with the conventional features of the MR-J2S-B series.

When using in the J4 mode, see "[Appendix 1]11 MODE SWITCHING METHOD".

1.1 Features

1.1.1 Servo amplifier connectable to SSCNET compatible controller



MELSERVO-J4 series servo amplifier connectable to SSCNET connected to MR-J2S_B_

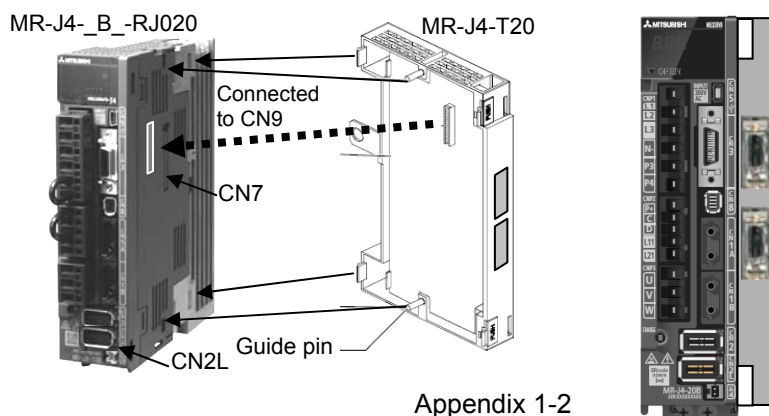
Using the SSCNET conversion unit for MR-J2S-B, the MR-J4_B_ servo amplifier can be connected to the SSCNET compatible servo system controller for MR-J2S-B.

- The MR-J4_B_-RJ020 servo amplifier combined with the MR-J4-T20 SSCNET conversion unit can be connected to the SSCNET compatible servo system controller for MR-J2S-B.
- The MR-J4-compatible HG series servo motor can be driven.
- One SSCNET conversion unit is required per amplifier.
- New features of MR-J4 cannot be used because the amplifier operates in J2S mode.
- No changes to the program or the parameters are required because the amplifier is recognized as MR-J2S by the controller.

MR-J4_B_-RJ020 servo amplifier that supports the SSCNET conversion unit for MR-J2S-B
MR-J4-T20 SSCNET conversion unit for MR-J2S-B

1.1.2 SSCNET conversion unit "MR-J4-T20"

- Connect the conversion unit to connector CN9 on the side of MR-J4_B_-RJ020.
- The mounting method for guide pins, etc., is the same as that for optional J3 units such as MR-J3-D01.
- Two SSCNET connectors are provided on the SSCNET conversion unit.



[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

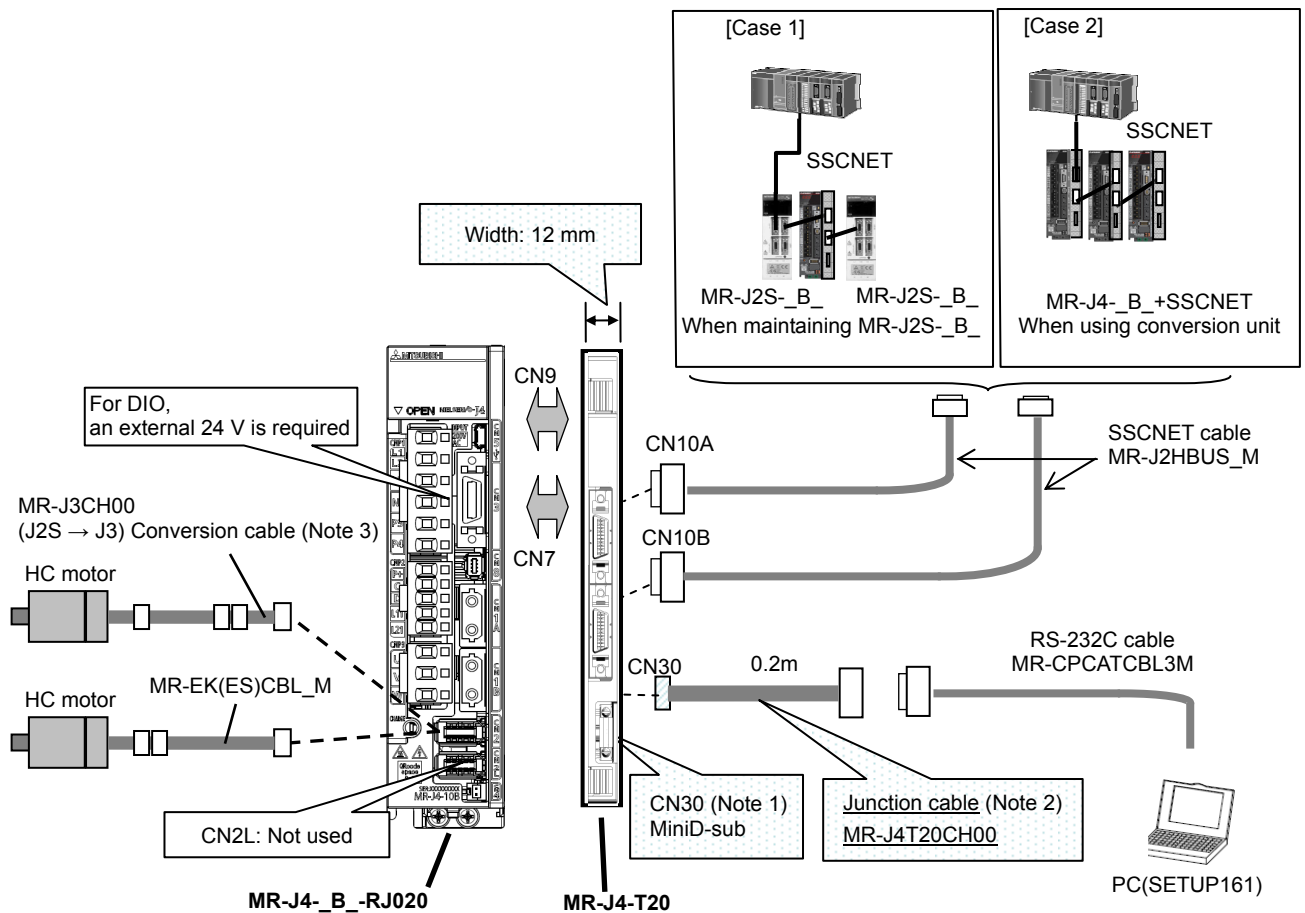
2. DIFFERENCES BETWEEN MR-J2S-_B_ AND MR-J4-_B_-RJ020

2.1 Function Comparison Table

		MR-J2S-_B_	MR-J4-_B_-RJ020 MR-J4-T20	Remarks
System	Standard	○	○	
	Full.	Special specification	7kW or less: ○ 11kW to 22kW: × 30kW to 55kW: ×	
	Lin.	Special specification	×	
	DDM	×	×	
Supported network		SSCNET	SSCNET	
Supported motors		MR-J2S catalog motor MR-J2S optional motor	HG motor (Operates as 17 bits) HC-KFS motor HC-MFS motor HC-LFS motor HC-SFS motor HC-RFS motor HC-UFS motor HA-LFS motor	For details, see "[Appendix 1] Chapter 7" of this document.
I/O power supply		Internal 24 V	External 24 V	An external power supply (24 V 100 mA) is required for DIO.
Battery		MR-BAT / A6BAT	MR-BAT6V1SET	
Serial communication		Half pitch 20 pins	miniD-Sub	Using conversion cable. MR-J4T20CH00
MR-J2S control function	Auto Tuning	○	○	Gain compatibility provided.
	Model applicable control	○	○	
	Machine resonance suppression filter	○	○	
	Machine analyzer	○	○	

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

3. SYSTEM CONFIGURATION

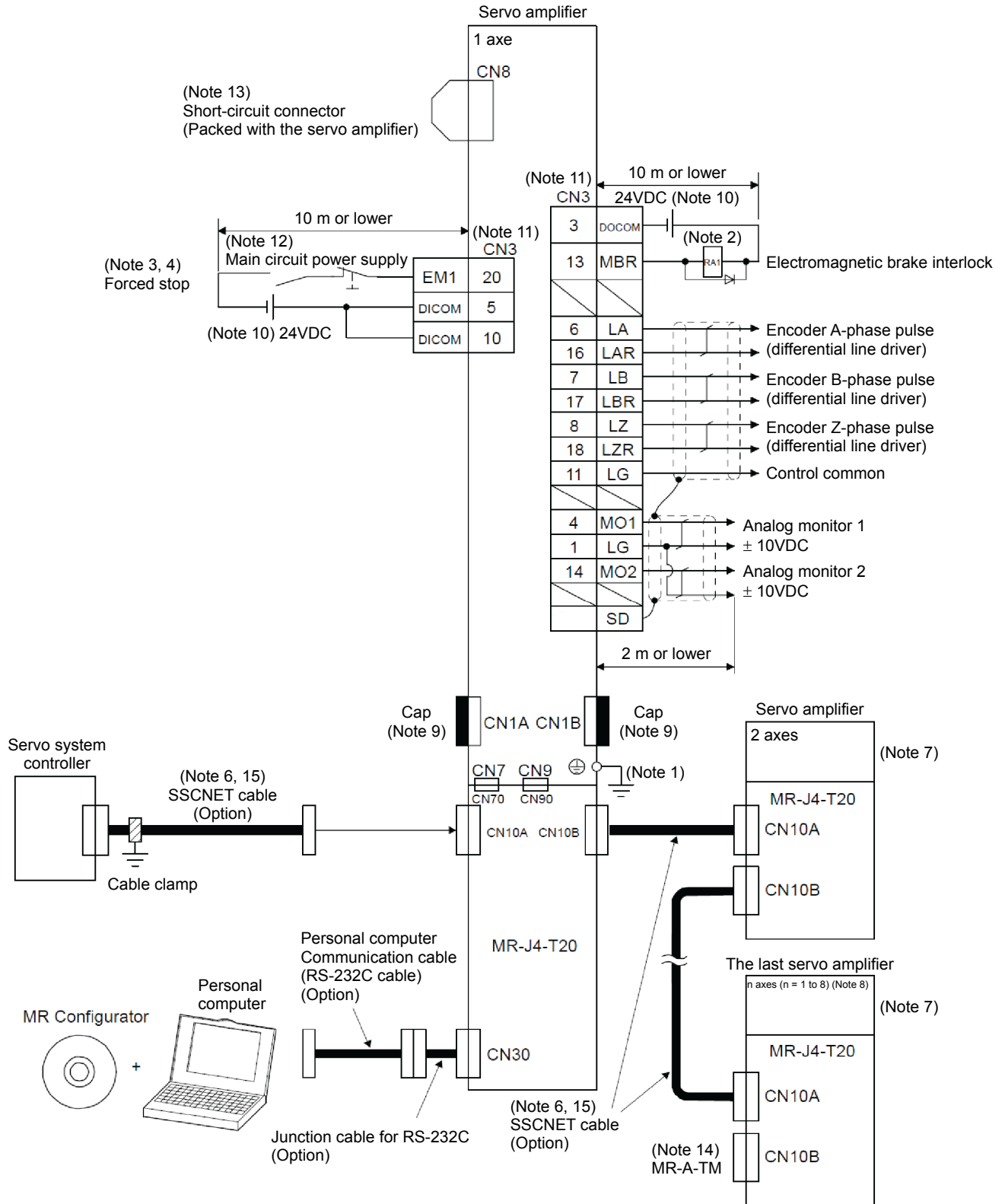


- Note 1. While the SSCNET connector CN10A and CN10B use the same D-sub connector as MR-J2SB, the RS-232C connector uses a mini D-sub connector. Therefore, the MR-J4T20CH00 junction cable is used to connect to a conventional cable (MR-CPCATCBL3M).
- Note 2. DIO (DI: one point; DO: one point; ABZ output; Monitor output) uses CN3 of MR-J4. RS-232C is connected using CN30 of MR-J4-T20.
- Note 3. Use MR-J3CH00 or SC-J2SJ4ENC03M (manufactured by Mitsubishi Electric System & Service Co., Ltd.).
- Note 4. The application "MR-J4(W)-B Change mode" through USB communication function of the servo amplifier is necessary for using the MR-J4_B_-RJ020 in J4/J3 convertible mode.
It is not necessary when using MR-J4_B_-RJ020 in J2S compatible mode.
The application "MR-J4(W)-B change mode" is available with MR Configurator2 Version 1.27D and later.

POINT
<ul style="list-style-type: none"> For large capacity of 30 kW or more, the position of PN terminal is different, so also change the converter unit when replacing MR-J2S-B.

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

4. I/O SIGNAL CONNECTION EXAMPLE



[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

- Note
1. To prevent electric shock, always connect the protective earth (PE) (\oplus) terminal (marked) of the servo amplifier to the protective earth (PE) of the cabinet.
 2. Do not mistake the diode direction. If connected the other way round, the servo amplifier will malfunction and no signal will be output. Also, the protection circuits of EM1 (forced stop), etc., may not operate.
 3. If the controller does not have the emergency stop function, make sure to install the forced stop switch (contact B).
 4. At the time of operation, make sure to turn on EM1 (forced stop). (Normally closed contact)
 5. Use the MRZJW3-SETUP161.
 6. The SSCNET cable varies according to the controller or servo amplifier that is connected in front and back. Use the following table as a guide for choosing the SSCNET cable.

		MR-J4-_B(4)-RJ020 + MR-J4-T20
CD75M		MR-J2HBUS_M
A1SD75M		MR-J2HBUS_M-A
Motion Controller	Q172CPU(N)	Q172J2BCBL_M(-B)
	Q173CPU(N)	Q173J2B_CBL_M
	A171SHCPU (N), A172SHCPU (N), A173UHCPU, A273UHCPU	MR-J2HBUS_M-A
	MR-J2S-_B_ · MR-J2-03B5 MR-J4-_B(4)-RJ020 + MR-J4-T20	MR-J2HBUS_M

7. The second and subsequent connections of servo amplifier are omitted.
8. Up to 8 axes (n= 1 to 8) can be connected.
9. The CN1 and the CN1B cannot be used in J2S compatible mode. Make sure to cap the CN1A and the CN1B connectors.
10. Supply 24VDC \pm 10% from an external power supply for the interface. Capacity of these power supplies should be 100 mA in total. For convenience, the power supply of 24VDC for input signals and output signals are stated separately, it can be configured by one.
11. A signal with the same name is connected inside the servo amplifier.
12. In order to prevent unexpected restarting of the servo amplifier, configure the circuit so that EM1 is also turned off when the main circuit power supply is turned off.
13. The STO functions cannot be used in J2S compatible mode. Make sure to install the short-circuit connector supplied with the servo amplifier.
14. Make sure to install the terminal connector (MR-A-TN) on the CN10B of the final servo amplifier.
15. Use the SSCNET cable with the total extension of 30 m or less. It is recommended to use cable clamps and data line filters (3 to 4 connected in series) near the connector pullout of the controller to enhance noise immunity.
16. When using the external dynamic brake with the servo amplifier of 11 kW or more, enable DB (Dynamic brake interlock) by setting [Pr.2] to "_1_".

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

5. PARAMETERS

See the MELSERVO-J4 series MR-J4-_B_-RJ020 MR-J4-T20 servo amplifier Instruction Manual.

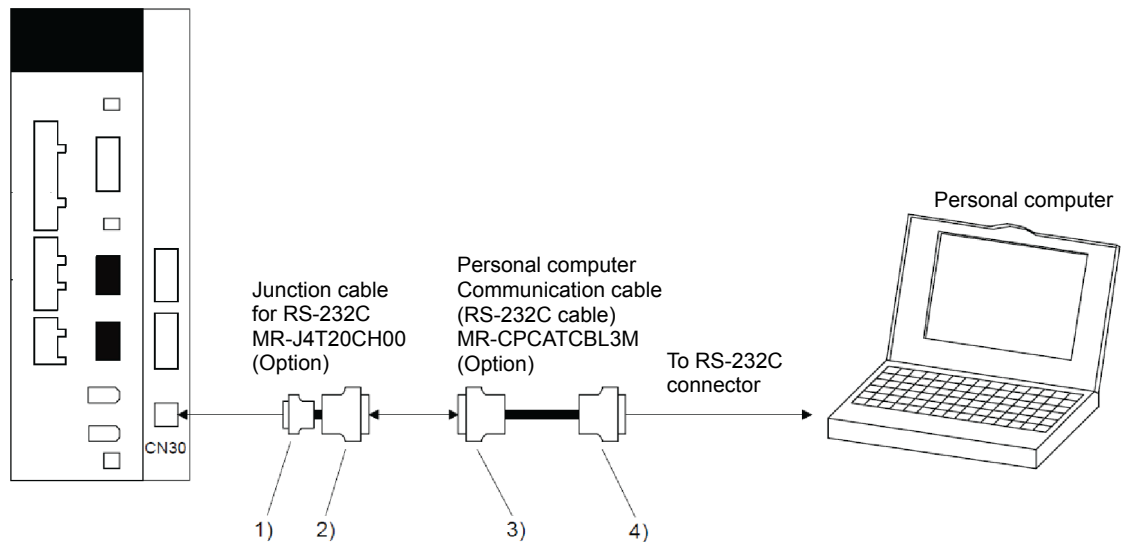
[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

6. RS-232C COMMUNICATION CABLE

This section indicates the cable connecting the MR-J4-T20 and a personal computer through RS-232C communication. The RS-232C communication cable consists of the following two cables.

Cable model	Cable length	Product name
MR-J4T20CH00	0.2 m	Junction cable for RS-232C
MR-CPCATCBL3M	3 m	Personal computer communication cable (RS-232C cable)

(1) Connection of MR-J4-T20 to a personal computer



(2) MR-J4T20CH00

(a) Cable specifications

Cable model	1) MR-J4-T20 side connector	2) Junction connector
MR-J4T20CH00	<p>Connector: HDR-E14MG1+ Connector case: HDR-E14LPA5 (Honda Tsushin Kogyo)</p> <p>View seen from wiring side. (Note) Note. Do not connect anything to the pins shown as .</p>	<p>Connector: 10220-0200EL Connector case: 10320-E2W0-008 (3M)</p> <p>View seen from wiring side. (Note) Note. Do not connect anything to the pins shown as .</p>

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

7. LIST OF SERVO MOTOR COMBINATIONS AND S/W VERSIONS FOR HC SERIES AND HA SERIES

Servo motor series name	Servo motor model	Servo amplifier model	Corresponding S/W version for RJ020
HC-KFS series	HC-KFS053	MR-J4-10B-RJ020	A0 or later
	HC-KFS13	MR-J4-10B-RJ020	A0 or later
	HC-KFS23	MR-J4-20B-RJ020	A0 or later
	HC-KFS43	MR-J4-40B-RJ020	A0 or later
	HC-KFS73	MR-J4-70B-RJ020	A0 or later
HC-KFS high-speed rotation series	HC-KFS46	MR-J4-70B-RJ020	A0 or later
	HC-KFS410	MR-J4-70B-RJ020	A0 or later
HC-MFS series	HC-MFS053	MR-J4-10B-RJ020	A0 or later
	HC-MFS13	MR-J4-10B-RJ020	A0 or later
	HC-MFS23	MR-J4-20B-RJ020	A0 or later
	HC-MFS43	MR-J4-40B-RJ020	A0 or later
	HC-MFS73	MR-J4-70B-RJ020	A0 or later
HC-LFS series	HC-LFS52	MR-J4-60B-RJ020	A0 or later
	HC-LFS102	MR-J4-100B-RJ020	A0 or later
	HC-LFS152	MR-J4-200B-RJ020	A0 or later
	HC-LFS202	MR-J4-350B-RJ020	A0 or later
	HC-LFS302	MR-J4-500B-RJ020	A0 or later
HC-SFS 1000r/min series	HC-SFS81	MR-J4-100B-RJ020	A0 or later
	HC-SFS121	MR-J4-200B-RJ020	A0 or later
	HC-SFS201	MR-J4-200B-RJ020	A0 or later
	HC-SFS301	MR-J4-350B-RJ020	A0 or later
HC-SFS 2000r/min series	HC-SFS52	MR-J4-60B-RJ020	A0 or later
	HC-SFS102	MR-J4-100B-RJ020	A0 or later
	HC-SFS152	MR-J4-200B-RJ020	A0 or later
	HC-SFS202	MR-J4-200B-RJ020	A0 or later
	HC-SFS352	MR-J4-350B-RJ020	A0 or later
	HC-SFS502	MR-J4-500B-RJ020	A0 or later
	HC-SFS702	MR-J4-700B-RJ020	A0 or later
	HC-SFS524	MR-J4-60B4-RJ020	A0 or later
	HC-SFS1024	MR-J4-100B4-RJ020	A0 or later
	HC-SFS1524	MR-J4-200B4-RJ020	A0 or later
	HC-SFS2024	MR-J4-200B4-RJ020	A0 or later
	HC-SFS3524	MR-J4-350B4-RJ020	A0 or later
	HC-SFS5024	MR-J4-500B4-RJ020	A0 or later
HC-SFS7024	MR-J4-700B4-RJ020	A0 or later	
HC-SFS 3000r/min series	HC-SFS53	MR-J4-60B-RJ020	A0 or later
	HC-SFS103	MR-J4-100B-RJ020	A0 or later
	HC-SFS153	MR-J4-200B-RJ020	A0 or later
	HC-SFS203	MR-J4-200B-RJ020	A0 or later
	HC-SFS353	MR-J4-350B-RJ020	A0 or later
HC-RFS series	HC-RFS103	MR-J4-200B-RJ020	A0 or later
	HC-RFS153	MR-J4-200B-RJ020	A0 or later
	HC-RFS203	MR-J4-350B-RJ020	A0 or later
	HC-RFS353	MR-J4-500B-RJ020	A1 or later
	HC-RFS503	MR-J4-500B-RJ020	A0 or later

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

Servo motor series name	Servo motor model	Servo amplifier model	Corresponding S/W version for RJ020
HA-LFS 1000r/min series	HA-LFS601	MR-J4-700B-RJ020	(Note 1)
	HA-LFS801	MR-J4-11KB-RJ020	(Note 1)
	HA-LFS12K1	MR-J4-11KB-RJ020	(Note 1)
	HA-LFS15K1	MR-J4-15KB-RJ020	(Note 1)
	HA-LFS20K1	MR-J4-22KB-RJ020	(Note 1)
	HA-LFS25K1	MR-J4-22KB-RJ020	(Note 1)
	HA-LFS6014	MR-J4-700B4-RJ020	(Note 1)
	HA-LFS8014	MR-J4-11KB4-RJ020	(Note 1)
	HA-LFS12K14	MR-J4-11KB4-RJ020	(Note 1)
	HA-LFS15K14	MR-J4-15KB4-RJ020	(Note 1)
HA-LFS20K14	MR-J4-22KB4-RJ020	(Note 1)	
HA-LFS 1500r/min series	HA-LFS701M	MR-J4-700B-RJ020	(Note 1)
	HA-LFS11K1M	MR-J4-11KB-RJ020	(Note 1)
	HA-LFS15K1M	MR-J4-15KB-RJ020	(Note 1)
	HA-LFS22K1M	MR-J4-22KB-RJ020	(Note 1)
	HA-LFS701M4	MR-J4-700B4-RJ020	(Note 1)
	HA-LFS11K1M4	MR-J4-11KB4-RJ020	(Note 1)
	HA-LFS15K1M4	MR-J4-15KB4-RJ020	(Note 1)
HA-LFS22K1M4	MR-J4-22KB4-RJ020	(Note 1)	
HA-LFS 2000r/min series	HA-LFS502	MR-J4-500B-RJ020	A0 or later
	HA-LFS702	MR-J4-700B-RJ020	A0 or later
	HA-LFS11K2	MR-J4-11KB-RJ020	A1 or later
	HA-LFS15K2	MR-J4-15KB-RJ020	A1 or later
	HA-LFS22K2	MR-J4-22KB-RJ020	A1 or later
	HA-LFS11K24	MR-J4-11KB4-RJ020	(Note 1)
	HA-LFS15K24	MR-J4-15KB4-RJ020	(Note 1)
HA-LFS22K24	MR-J4-22KB4-RJ020	(Note 1)	
HC-UFS 2000r/min series	HC-UFS72	MR-J4-70B-RJ020	A1 or later
	HC-UFS152	MR-J4-200B-RJ020	A1 or later
	HC-UFS202	MR-J4-350B-RJ020	A1 or later
	HC-UFS352	MR-J4-500B-RJ020	A1 or later
	HC-UFS502	MR-J4-500B-RJ020	A1 or later
HC-UFS 3000r/min series	HC-UFS13	MR-J4-10B-RJ020	A0 or later
	HC-UFS23	MR-J4-20B-RJ020	A0 or later
	HC-UFS43	MR-J4-40B-RJ020	A0 or later
	HC-UFS73	MR-J4-70B-RJ020	A0 or later

Note 1. Please contact your local sales office if using these servo motors.

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

Servo motor series name	Servo motor model	Converter Module name	Servo amplifier model	Corresponding S/W version for RJ020
HA-LFS 1000 r/min series	HA-LFS30K1	MR-CR55K	MR-J4-DU30KB-RJ020	(Note 1)
	HA-LFS37K1		MR-J4-DU37KB-RJ020	(Note 1)
	HA-LFS25K14	MR-CR55K4	MR-J4-DU30KB4-RJ020	(Note 1)
	HA-LFS30K14		MR-J4-DU30KB4-RJ020	(Note 1)
	HA-LFS37K14		MR-J4-DU37KB4-RJ020	(Note 1)
HA-LFS 1500 r/min series	HA-LFS30K1M	MR-CR55K	MR-J4-DU30KB-RJ020	(Note 1)
	HA-LFS37K1M		MR-J4-DU37KB-RJ020	(Note 1)
	HA-LFS30K1M4	MR-CR55K4	MR-J4-DU30KB4-RJ020	(Note 1)
	HA-LFS37K1M4		MR-J4-DU37KB4-RJ020	(Note 1)
	HA-LFS45K1M4		MR-J4-DU45KB4-RJ020	(Note 1)
	HA-LFS55K1M4		MR-J4-DU55KB4-RJ020	(Note 1)
HA-LFS 2000 r/min series	HA-LFS30K2	MR-CR55K	MR-J4-DU30KB-RJ020	A4 or later
	HA-LFS37K2		MR-J4-DU37KB-RJ020	A4 or later
	HA-LFS30K24	MR-CR55K4	MR-J4-DU30KB4-RJ020	A4 or later
	HA-LFS37K24		MR-J4-DU37KB4-RJ020	A4 or later
	HA-LFS45K24		MR-J4-DU45KB4-RJ020	A4 or later
	HA-LFS55K24		MR-J4-DU55KB4-RJ020	A4 or later

Note 1. Please contact your local sales office if using these servo motors.

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

8. SAFETY PRECAUTIONS

8.1 Replacing MR-J2S-_B_ Servo Amplifier with MR-J4-_B_-RJ020 Servo Amplifier

Note the following when replacing the MR-J2S-_B_ servo amplifier with the MR-J4-_B_-RJ020 servo amplifier.

- (1) The capacity of mounting holes differs. For compatibility of mounting holes, see "[Appendix 1] 10.1 Comparison of Dimensions".
- (2) The dimensions of the MR-J4-_B_-RJ020 servo amplifier combined with MR-J4-T20 may be larger than the MR-J2S-_B_ servo amplifier. See "[Appendix 1] 10.1 Comparison of Dimensions".
- (3) The wire size may differ from that of the MR-J2S-_B_ servo amplifier. See "Part 9: Review on Replacement of Optional Peripheral Equipment 4. Wire Size".
- (4) If the HG series servo motor is used in J2S compatible mode, the encoder resolution per rotation of the servo motor is not 4194304 pulses/rev (22 bit) but becomes 131072 pulses/rev (17 bit).
- (5) When using the HG series servo motor at the maximum torque, set the torque limit to 500% on the servo system controller. When setting the maximum torque in test operation mode, change the setting of [Pr.10 Forward rotation torque limit] and [Pr.10 Reverse torque limit] to 500 %.
- (7) Operation without motor through MR Configurator cannot be used. When operating motor, set [Pr. 24] to "_ 1 _ _".
- (8) When using [Pr. 13 Position control gain 1] of the MR-J4-_B_-RJ020 servo amplifier and the MR-J2S-_B_ servo amplifier together in interpolation mode, etc., check the droop pulses of each shaft and readjust the gain as necessary.
- (9) The MR-J4-_B_-RJ020 servo amplifier does not support adaptive vibration control.
- (10) The connector for SSCNET cable connection cannot supply power to the encoder. When using with the absolute position sensor detection system, make sure to connect the battery to the CN4 connector of the MR-J4-_B_-RJ020 servo amplifier.
- (11) In this [Appendix 1], it only describes the encoder cable and the regenerative option for connecting the HC series and the HA series servo motors to the MR-J4-_B_-RJ020 servo amplifier. For details of the options for the servo amplifier, refer to Chapter 11 of the "MR-J4-_B_-RJ020 MR-J4-T20 Servo Amplifier Instruction Manual". For options for the HC series and the HA series servo motors, refer to "MR-J2S-_B_ Servo Amplifier Instruction Manual (SH (Name) 030001)" and "Servo Amplifier Instruction Manual (SH (Name) 3180)".

POINT
<ul style="list-style-type: none">● When using motors of the HA and the HC series together, "regeneration option" and "external dynamic brake unit" can be used with the products used in MR-J2S-B. To change to the HG series motor, change "regeneration option" and "external dynamic brake unit" after referring to the instruction manual for MR-J4-B.● For single-phase 200VAC to 240VAC, connect the power supply to L1 and L3. The connection destination is different from that of the MR-J2S series servo amplifier. When replacing the MR-J2S with the MR-J4, make sure that the connection destination is correct.

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

- The initializing time (the time taken from power-on to reception of servo-on) after power-on of the MR-J2S-_B_ servo amplifier and MR-J4-_B_-RJ020 servo amplifier becomes as follows.
 - MR-J2S-_B_: (up to 3 s)
 - MR-J4-_B_-RJ020: (up to 4 s)
 Therefore, note the following when replacing the MR-J2S-_B_ servo amplifier with the MR-J4-_B_-RJ020 servo amplifier.
 - When using the electromagnetic brake to prevent a drop in a vertical lift application or the like with an external timer to adjust the brake release time, the lift may drop due to a longer servo-lock time. Adjust the brake release time as necessary or use MBR (electromagnetic brake interlock).
 - The time taken from power-on to operation of the servo motor may become longer.
- The signal arrays of the connectors for CN3 differ between the MR-J4-_B_-RJ020 and the MR-J2S-_B_. Refer to the table below.

 Note

CN3 connector Pin number	Abbreviation		Note when replacing from the MR-J2S-_B_
	MR-J2S-_B_	MR-J4-_B_-RJ020	
2	RXD		For manufacturer setting. Do not connect anything to these. Connect the RXD to the CN30 connector (13 pin) of the MR-J4-T20.
3	SG	DOCOM	An external 24VDC power supply is required for the interface. Change the wiring as necessary.
5	COM	DICOM	
10	VDD	DICOM	
12	TXD		For manufacturer setting. Do not connect anything to these. Connect the TXD to the CN30 connector (14 pin) of the MR-J4-T20.

- The electronic dynamic brake operates in the initial state for the HG series servo motors with a 600 W or smaller capacity. The time constant "τ" for the electronic dynamic brake will be shorter than that for normal dynamic brake. Therefore, coasting distance will be shorter than in normal dynamic brake. To set the electronic dynamic brake, refer to [Pr. 39] and [Pr. 56].

POINT

- When the power is turned on, voltage, analog monitor output voltage and output signal may become unstable.

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

8.2 Differences with the MR-J2S Series

(1) Differences with the MR-J2S Series

Item		MR-J2S series	MR-J4-_B_-RJ020 + MR-J4-T20 series
1	Dynamic brake	Built-in (0.1kW to 7kW) External (11kW to 55kW)	Built-in (0.1kW to 7kW) External (11kW to 55kW) Coasting distance is different.
2	Control circuit power	(100 V class) Single-phase 100VAC to 120VAC (200 V class) Single-phase 200VAC to 230VAC (400 V class) 24VDC (up to 7 kW) Single-phase 380VAC to 480VAC (11 kW to 55kW)	(100 V class) Single-phase 100VAC to 120VAC (200 V class) Single-phase 200VAC to 240VAC (400 V class) Single-phase 380VAC to 480VAC
3	Main circuit power	(100 V class) Single-phase 100VAC to 120VAC (200 V class) Single-phase 230V 3-phase 200VAC to 230VAC (1 kW to 750W) 3-phase 200VAC to 230VAC (1 kW to 37kW) (400 V class) 3-phase 380VAC to 480VAC	(100 V class) Single-phase 100VAC to 120VAC (200 V class) Single-phase/3-phase 200VAC to 240VAC (to 750 W) 3-phase 200VAC to 240 VAC (1 kW to 37kW) (400 V class) 3-phase 380VAC to 480VAC
4	24VDC power	Built-in	External supply required
5	Auto Tuning	Real-time auto tuning: 15 steps	Real-time auto tuning: 40 steps One-touch tuning
6	Control mode	SSCNET interface • Position control mode • Speed control mode	SSCNET III/H interface • Position control mode • Speed control mode • Torque control mode
7	The number of DIO points (excluding EM1)	SSCNET interface DI: 0 points; DO:2 points	SSCNET III/H interface DI: 3 points; DO: 3 points
8	DIO interface	Input: Sink/source Output: Sink	Input: Sink/source Output: Sink/ source
9	Analog input/output	SSCNET interface (Output) 10-bit or equivalent × 2 ch	SSCNET III/H interface (Output) 10-bit or equivalent × 2 ch
10	Parameter setting method	MR Configurator (SETUP161)	MR Configurator (SETUP161)
11	Setup software communication function	RS-232C	RS-232C (CN30 connector)

Item		MR-J2S series	MR-J4-_B_-RJ020 + MR-J4-T20 series
12	Servo motor (Encoder resolution)	HC series (17-bit ABS) HA series (17-bit ABS)	HG series (17-bit ABS)
13	Motor maximum torque	HC-KFS 300%	HG-KR 350% (model with a gear: 300%)
		HC-MFS 300%	HG-MR 300%
		HC-SFS 300%	HG-SR 300%
		HA-LFS 250%,300%	HG-JR 300%
		HC-RFS 250%	HG-RR 250%
		HC-UFS 300%	HG-UR 300%
14	LED display	(MR-J2S-_B_) 7-segment 2-digit	(MR-J4-_B_) 7-segment 3-digit
15	Notch filter	Specified	Specified
16	Tough drive	Unprovided	Unprovided
17	Drive recorder	Unprovided	Unprovided
18	Forced stop	EM1 (DB stop)	Select EM1 (DB stop)/ EM2 (deceleration to a stop)
Note	Functions with difference are shown with shading .		

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

(2) Startup in the absolute position detection system

[AL. 25 Absolute position erased] occurs when switching the power on for the first time, but that is not a malfunction. When an alarm occurs, the alarm can be canceled by shutting off the power after leaving the power on for a few minutes with the alarm being issued. If power is switched on with the servo motor operated at the speed of 500 r/min or higher, position mismatch may occur due to external force. Power must therefore be switched on when the servo motor is stopped.

POINT
<ul style="list-style-type: none"> • There are two kinds of batteries to use when configuring absolute position detection system: one is the MR-BAT6V1SET battery and the other is the MR-BAT6V1BJ battery for battery extension cable. When using the MR-BAT6V1BJ battery for battery extension cable, it has the following features compared to the MR-BAT6V1SET battery. <ul style="list-style-type: none"> • The encoder cable can be removed from the servo amplifier. • The battery can be replaced with the control circuit power supply turned off. • When the encoder loses the absolute position data, make sure to operate after setting the home position. The encoder loses the absolute position data in the following cases. It may also lose the absolute position data when the battery is used outside the specified range. <p>When the MR-BAT6V1SET battery is used</p> <ul style="list-style-type: none"> • Removed the encoder cable. • Replaced the battery with the control circuit power switched off. <p>When the battery for the MR-BAT6V1BJ battery extension cable is used</p> <ul style="list-style-type: none"> • Removed the connector and the cable between the servo motor and the battery. • The battery for the MR-BAT6V1BJ battery extension cable only supports the HG series servo motor. • The connector for the SSCNET cable connection cannot supply power to the encoder. When using with the absolute position sensor detection system, make sure to connect the battery to the CN4 connector of the servo amplifier.

(3) MR-BAT6V1SET battery specifications

See the following table for items that differ from when using an HG series servo motor.

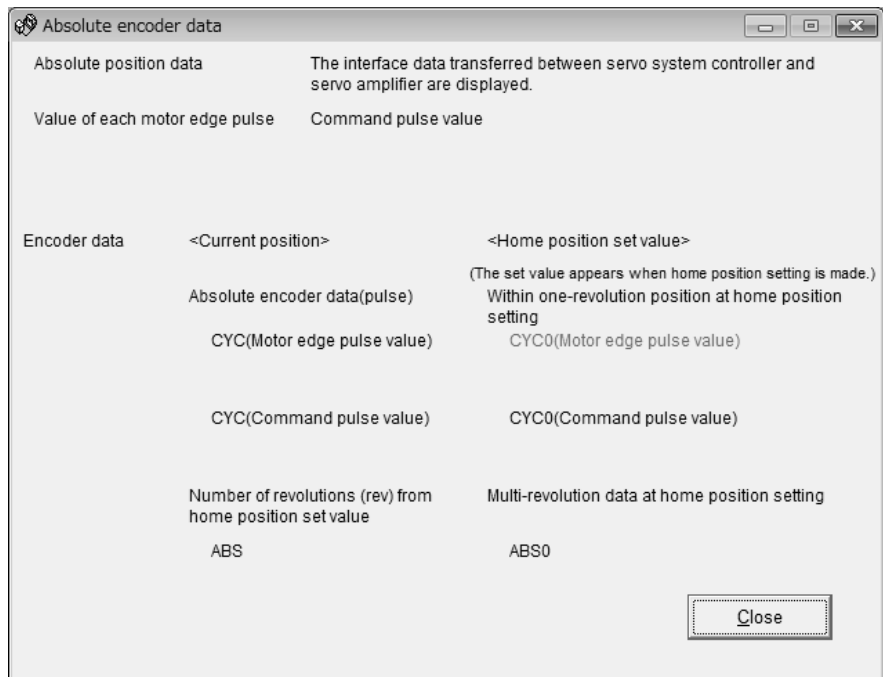
Item	Description
Maximum speed at power failure [r/min]	500
Battery backup time	Approximately 10,000 h (equipment power supply: off; ambient temperature: 20°C)

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

(4) Confirmation of absolute position detection

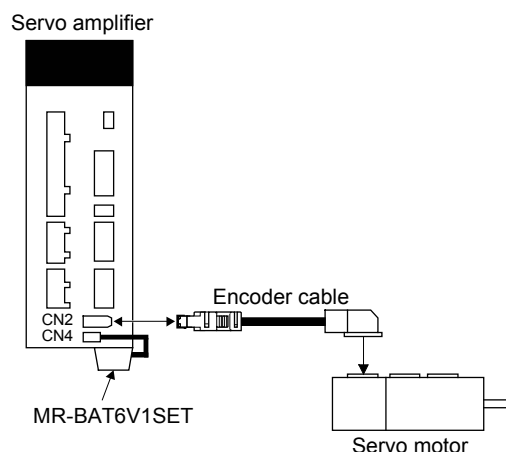
POINT
<ul style="list-style-type: none"> When using the MR Configurator with the MR-J4-_B_-RJ020 servo amplifier, select "Setup" - "System settings" and set the "Model selection" to "MR-J2S-B".

The absolute position data can be confirmed from the MR Configurator.
 Select "Diagnosis" - "Display ABS data" and open the absolute position data display screen.



(5) Connection of battery

Connect the battery as shown in the following diagram.



(6) Gain adjustment

When using [Pr. 13 Position control gain 1] of the MR-J4-_B_-RJ020 servo amplifier and the MR-J2S-_B_ servo amplifier together in interpolation mode, etc., check the accumulated pulses of each axis and readjust the gain as necessary.

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

9. Alarm

9.1 Alarm/Warning List

When an error occurs during operation, an alarm or a warning is displayed. When an alarm or a warning occurs, take the proper action as described in the MR-J4-_B_-RJ020 MR-J4-T20 Instruction Manual. After removing the cause of the alarm, the alarm can be canceled using any of the methods marked with ○ in the alarm reset column in the table below. (The shaded parts indicate the differences.)

	Number	Name	Stop method (Note 6)	Reset alarm		
				Power-off to power-on	Reset an error	Reset the CPU
Alarm	10	Undervoltage	EDB	○	○	○
	12. (Note 5)	Memory error 1	DB	○		
	13	Clock error	DB	○		
	15	Memory error 2	DB	○		
	16	Encoder error 1	DB	○		
	17	Board error	DB	○		
	19.	Memory error 3	DB	○		
	1A	Motor combination error	DB	○		
	20	Encoder error 2	EDB	○		
	24	Main circuit error	DB	○	○	○
	25	Loss of absolute position	DB	○ (Note 2)		
	30	Regenerative error	DB	○ (Note 1)	○ (Note 1)	○ (Note 1)
	31	Overspeed	EDB	○	○	○
	32	Overcurrent	DB	○	○ (Note 4)	○ (Note 4)
	33	Overvoltage	EDB	○	○	○
	34	CRC error	EDB	○	○	○
	35	Command frequency error	EDB	○	○	○
	36	Transfer error	EDB	○	○	○
	37	Parameter error	DB	○		○ (Note 4)
	3E. 2	Mode change error	DB	○		○ (Note 3)
	45	Main circuit element overheat	EDB	○ (Note 1)	○ (Note 1, 4)	○ (Note 1, 4)
	46	Servo motor overheat	DB	○ (Note 1)	○ (Note 1)	○ (Note 1)
	50	Overload 1	EDB	○ (Note 1)	○ (Note 1)	○ (Note 1)
	51	Overload 2	DB	○ (Note 1)	○ (Note 1)	○ (Note 1)
	52	Error excessive	EDB	○	○	○
	8E	Serial communication error	EDB	○	○	○
888	Watchdog	DB	○			
Warning	92	Battery disconnection warning		Warnings are automatically canceled when the cause is removed.		
	96	Home position setting error warning				
	9F	Battery warning				
	E0	Excessive regeneration alarm				
	E1	Overload alarm				
	E3	Absolute position counter alarm				
	E4	Parameter alarm				
	E6	Servo forced stop warning	EDB (Note 7)			
	E7	Controller emergency stop warning	EDB			
	E9	Main circuit off warning	DB			
EE	SSCNET error warning					

- Note
1. After the cause of the alarm is removed, leave it to cool for about 30 minutes.
 2. To confirm connection to the servo system controller, the alarm may not be reset if the power is not turned on twice or more.
 3. It is only reset when mode is set correctly.
 4. Alarm factors may not be removed depending on the cause of the alarm.
 5. Numerical figures after a decimal point may not be displayed.
 6. There are two stop methods of DB and EDB.
DB: Stop with a dynamic brake
EDB: Stop with an electronic dynamic brake (Only available for the specific servo motor)
See the following table for specific servo motors. The stop method other than the specific servo motor is DB.

Series	Servo motor
HG-KR	HG-KR053/HG-KR13/HG-KR23/HG-KR43
HG-MR	HG-MR053/HG-MR13/HG-MR23/HG-MR43
HG-SR	HG-SR51/HG-SR52

7. When STO1 or STO2 is turned off (the CN8 short-circuit connector is disconnected), the stop method is DB.

Display	Name	Description	Cause	Action
3E.2	Mode change error	The operating mode setting does not match the actual operating mode.	Switched on with the MR-J4-T20 removed.	1. Connect the MR-J4-T20 and restart the servo amplifier. 2. With the application of "MR-J4(W)-B Change mode" supplied with the MR Configurator2, change to "J2S Compatibility Mode".

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

10. DIMENSIONS

10.1 Comparison of Dimensions

The following table shows the combined dimensions of the servo amplifier and options.

① shows the amount of increased unit width compared with MR-J2S-_B_. For the sections of the table showing "None", the unit's width is smaller compared with MR-J2S. No interference occurs as the installation intervals for all units do not exceed 10 mm.

② shows permissible installation intervals for units whose width increases. Even when using the conversion unit, it is recommended to keep the interval between the units 10 mm or more.

Dimensions

Unit MR-J4-_RJ020	MR-J4-_B_-RJ020 MR-J4-T20 combined dimensions width × height × length	MR-J2S-_B_ width × height × length	(1) Unit width increase	(2) Permissible installation interval (Note 1)	Mounting hole Compatibility (Note 3)
10B/20B	52 × 168 × 135	50 × 168 × 135	2 mm (Note 2)	8mm	○
40B/60B	52 × 168 × 170	70 × 168 × 135	None		○
70B/100B	72 × 168 × 185	70 × 168 × 190	2 mm (Note 2)	8mm	△
200B/350B	97 × 168 × 195	90 × 168 × 195	7mm (Note 2)	3mm	△
500B	107 × 250 × 200	130 × 250 × 200	None		△
700B	174 × 300 × 200	180 × 350 × 200	None		△
11KB/15KB	220 × 400 × 260	260 × 400 × 260	None		△
22KB	260 × 400 × 260	350 × 400 × 260	None		△
DU30KB/DU37KB	300 × 380 × 300	450 × 500 × 300	(Note 4)	(Note 4)	△
60B4/100B4	72 × 168 × 195	90 × 168 × 195	None		△
200B4	97 × 168 × 195	90 × 168 × 195	7mm (Note 2)	3mm	△
350B4	107 × 250 × 200	130 × 250 × 200	None		△
500B4	132 × 250 × 200	130 × 250 × 200	2 mm (Note 2)	8mm	△
700B4	174 × 300 × 200	180 × 350 × 200	None		△
11KB4/15KB4	220 × 400 × 260	260 × 400 × 260	None		△
22KB4	260 × 400 × 260	350 × 400 × 260	None		△
DU30KB4	240 × 380 × 300	380 × 500 × 300	(Note 4)	(Note 4)	△
DU37KB4	240 × 380 × 300	450 × 500 × 300	(Note 4)	(Note 4)	△
DU45KB4/DU55KB4	300 × 380 × 300	450 × 500 × 300	(Note 4)	(Note 4)	△

- Note 1. These are the installation intervals on the right side. All backslash areas are 10 mm or more, as in MR-J4.
2. Though the unit itself is wider than MR-J2S, it poses no problem because it fits within the 10 mm installation interval.
3. "△" indicates that the mounting holes are different.
4. Replacement of large capacity of 30 kW or more requires change of the converter unit.
For comparison of dimensions, see "1.4 Installation" in "Part 5: Review on Replacement of MR-J2S-30kW or more with MR-J4-_DU_".

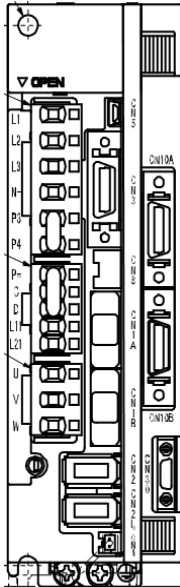
[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

10.2 Dimensions

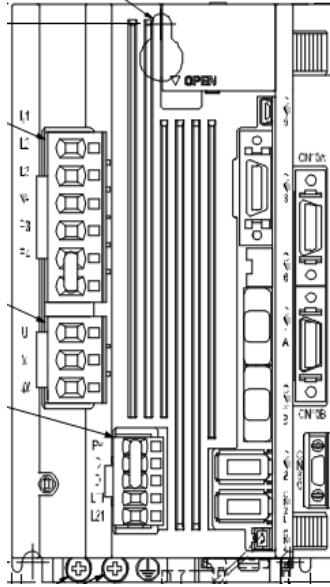
These are external views when 100 W, 3.5 kW, and 5 kW servo amplifiers are combined with MR-J4-T20. The views from the bottom show the increases in width from that of the MR-J4 standard model. (For dimensions when the servo amplifier in different capacities is combined with the MR-J4-T20, see "[Appendix 1] 10.2.3 Dimensions (MR-J4-_B_-RJ020 + MR-J4-T20)".

10.2.1 Servo amplifier

MR-J4-10B-RJ020
MR-J4-T20



MR-J4-350B-RJ020
MR-J4-T20



MR-J4-500B-RJ020, MR-J4-T20

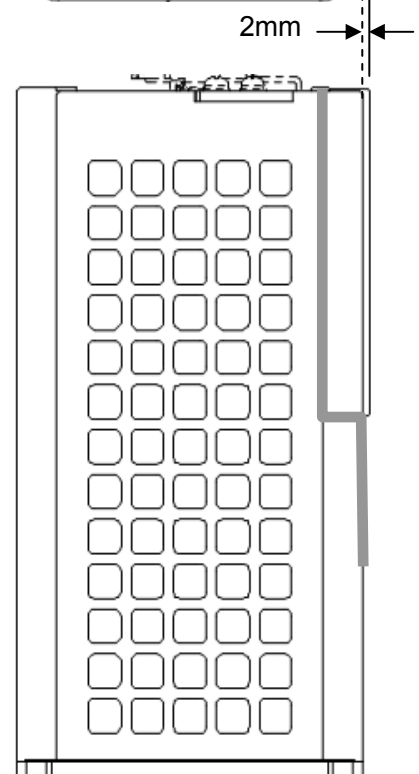
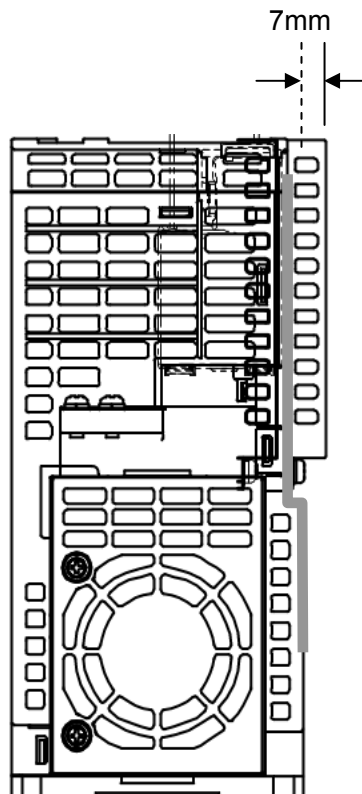
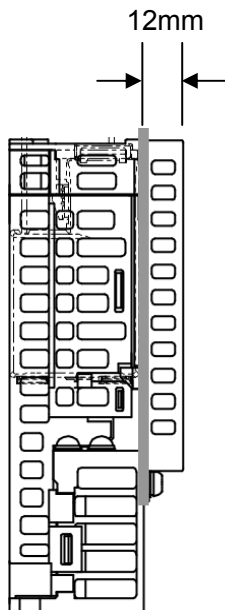
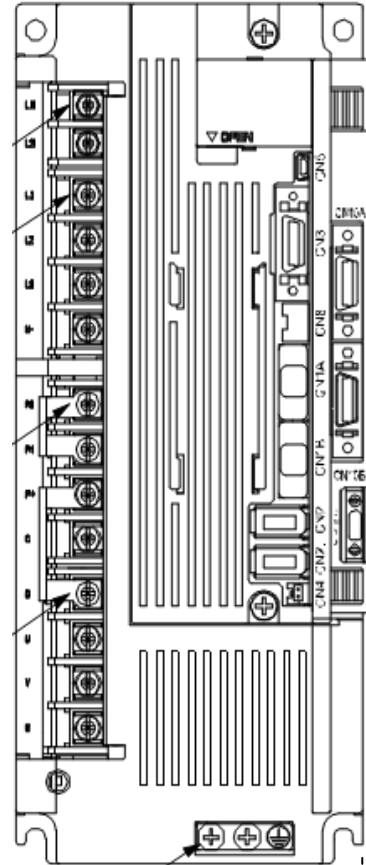


Fig. 1. Dimensions
Appendix 1-19

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

10.2.2 Dimensions (MR-J4-T20)

The dimensions of MR-J4-T20 are shown below.

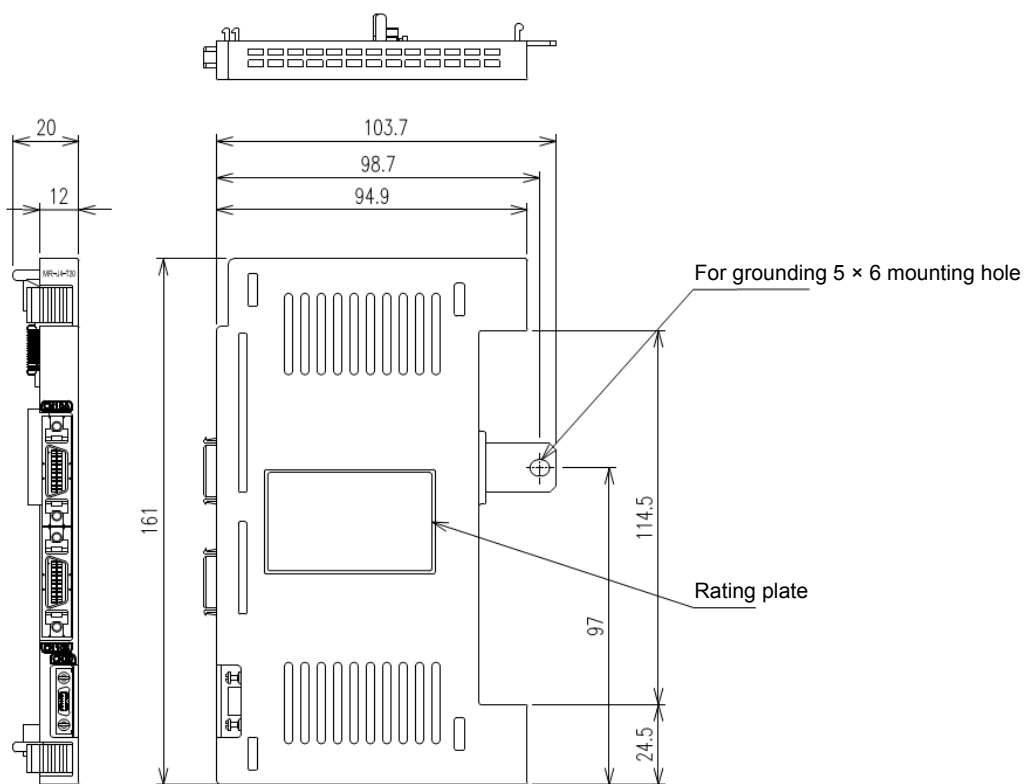


Fig. 2. Dimensions (MR-J4-T20)

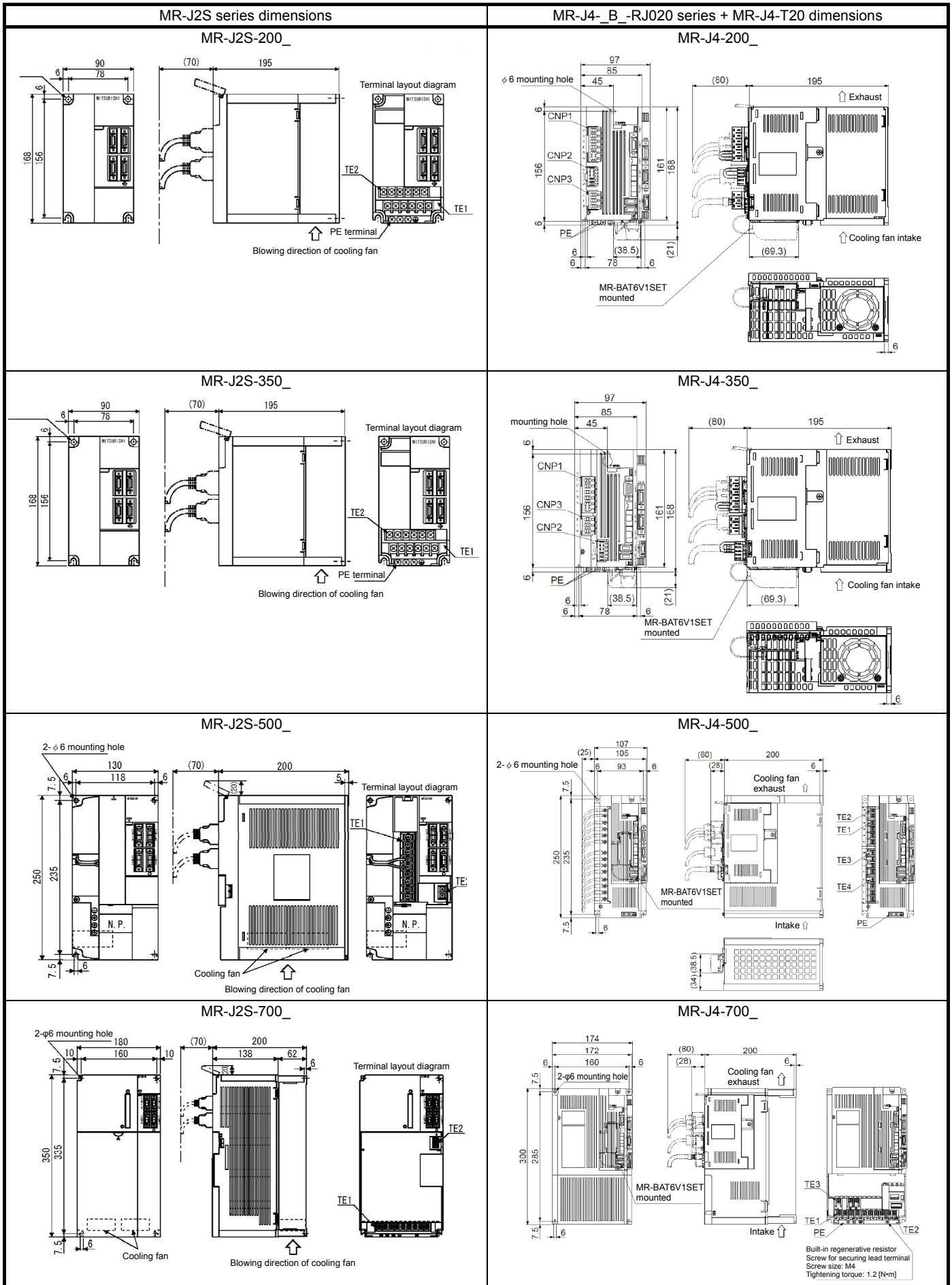
[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

10.2.3 Dimensions (MR-J4_B_-RJ020 + MR-J4-T20)

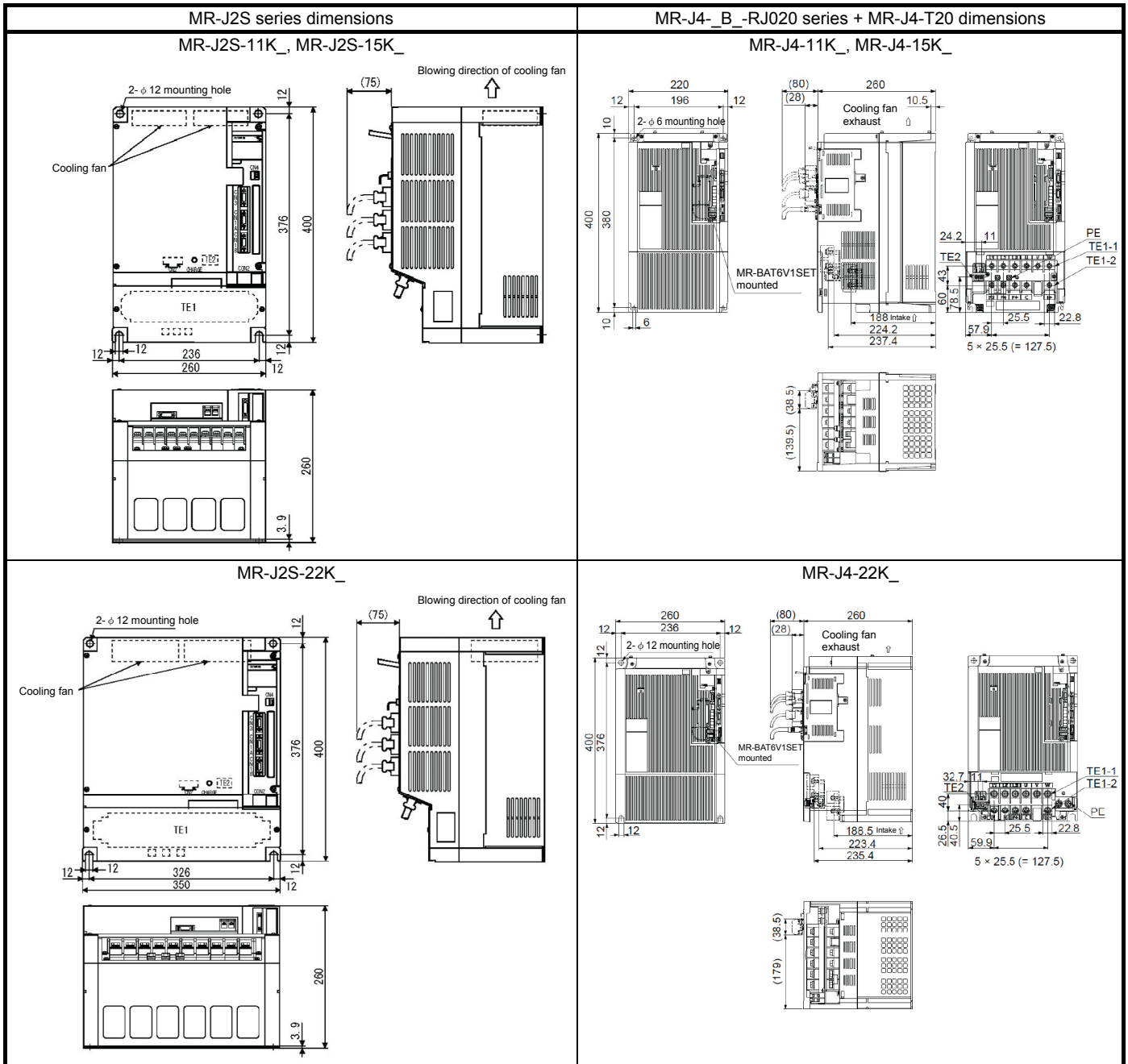
Comparison of 200 V class / 100 V class dimensions

MR-J2S series dimensions				MR-J4_B_-RJ020 series + MR-J4-T20 dimensions																																																			
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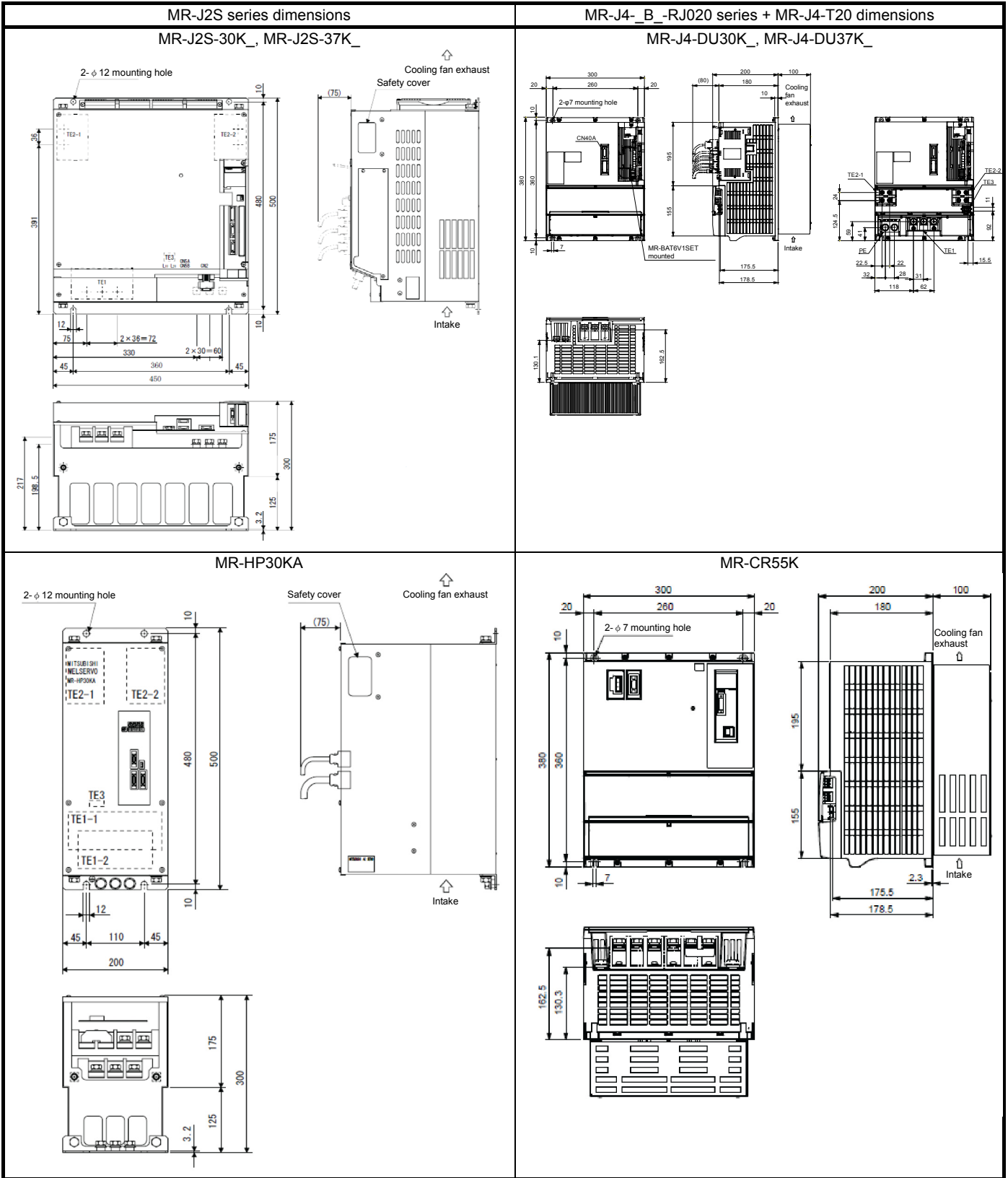
[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20



[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

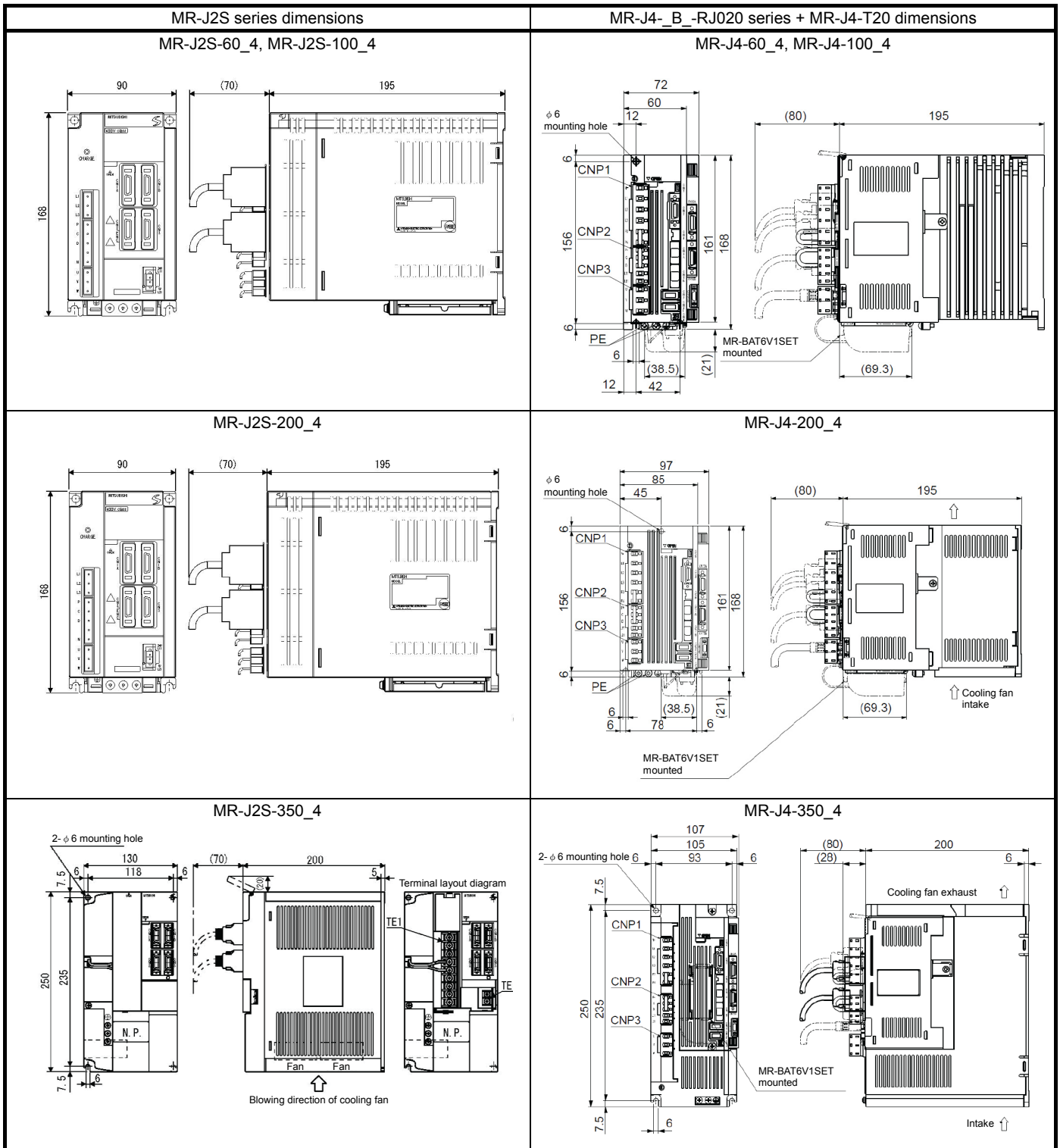


[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

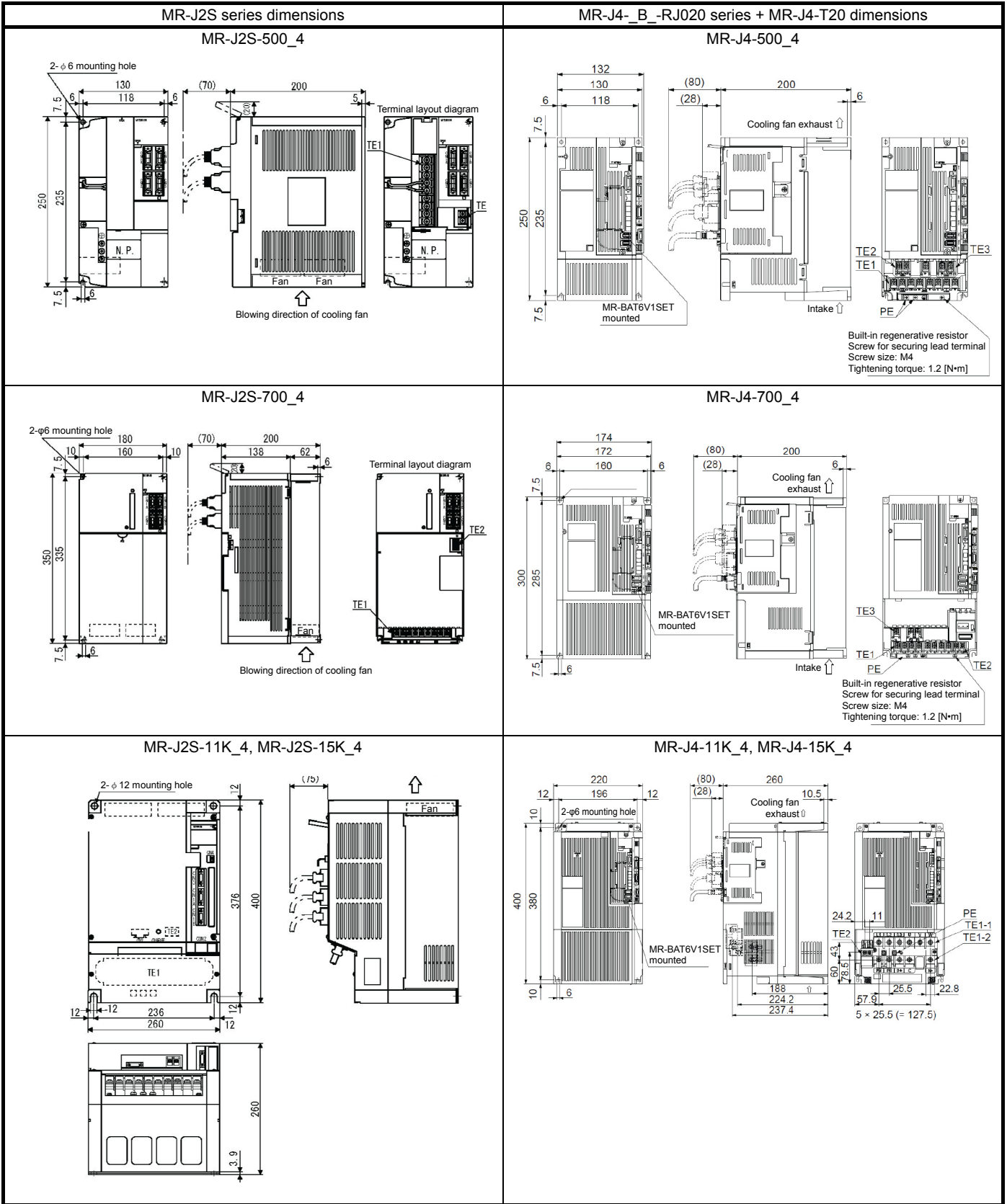


[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

Comparison of 400 V class dimensions



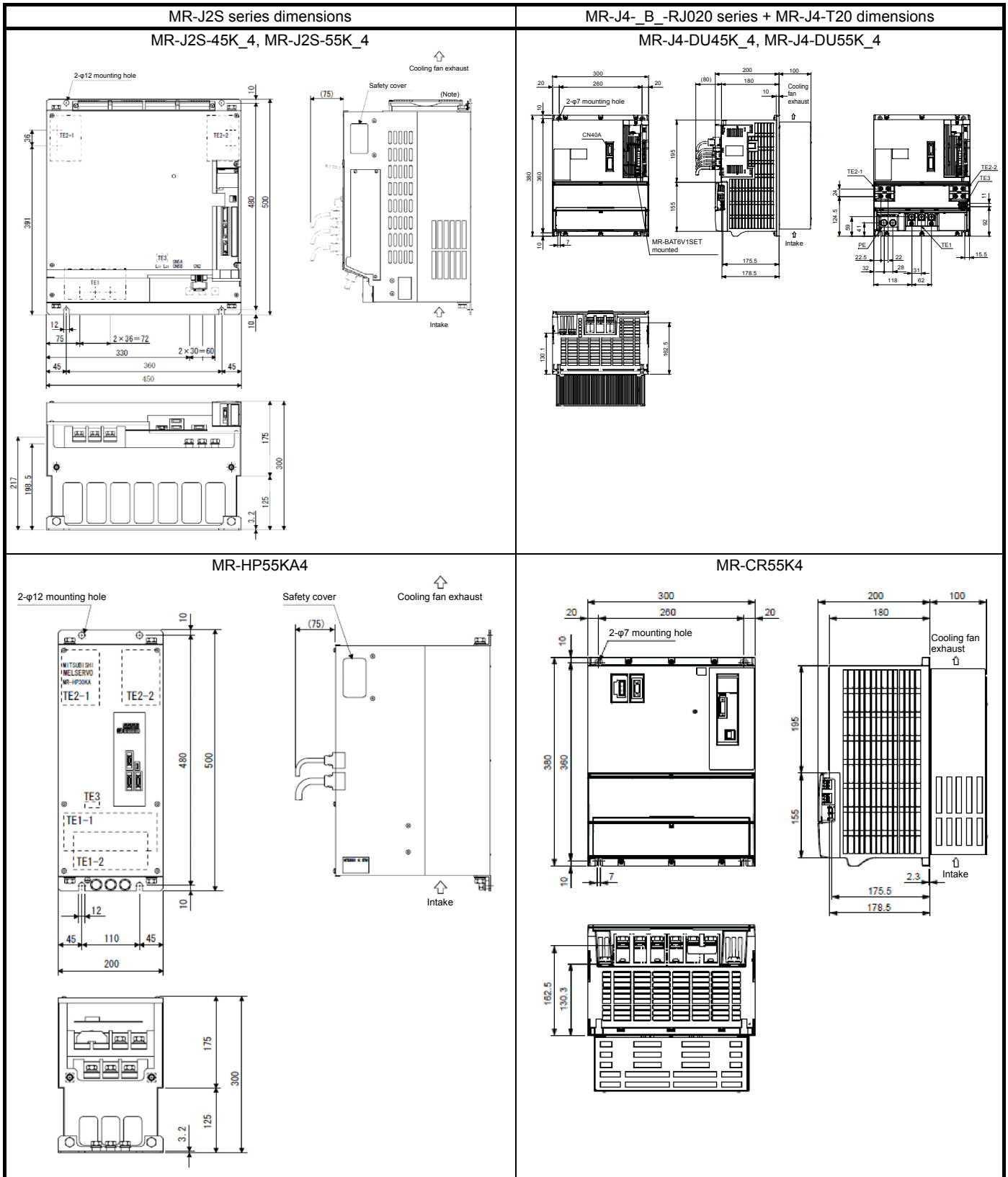
[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20



[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20



[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

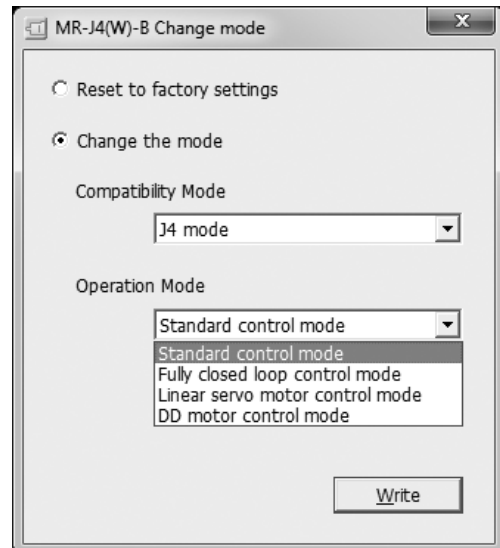
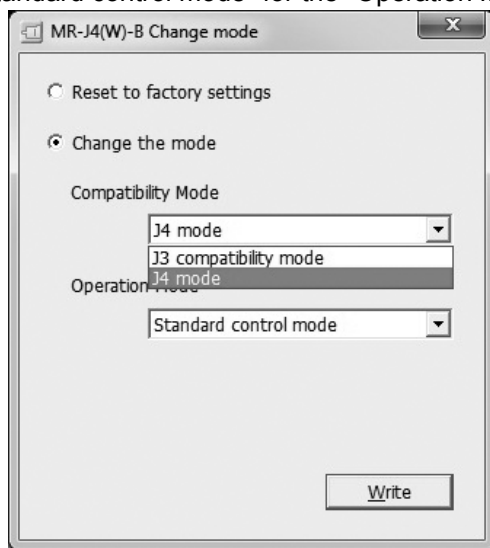


11. MODE SWITCHING METHOD

POINT		
<ul style="list-style-type: none"> There are function limits for the MRJ4-_B servo amplifier when using the MRJ4-_B_-RJ020 servo amplifier in J4 mode. Regarding other functions, they are the same as for the MRJ4-_B servo amplifier. 		
Function	Availability	
	MR-J4-B	MR-J4-_B_-RJ020
CN2L connector	None	Yes (Not available)
Linear servo system	Compatible	Not available
Direct drive servo system	Compatible	Not available
Fully closed loop system	Compatible	Not available

11.1 Mode Switching Method from J2S Compatibility Mode to J4 Mode

- Turn on the servo amplifier with the MR-J4-T20 removed.
- Run the application of "MR-J4(W)-B Change mode" and verify that "J2S Compatibility Mode" is not displayed in "Compatibility Mode". If displayed, try again from (1) of this section.
- Select "Change the mode" and then choose "J4 mode". Do not choose any control mode other than "Standard control mode" for the "Operation Mode".

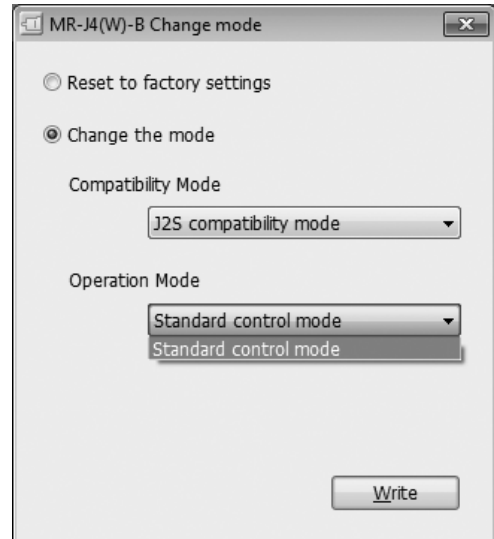
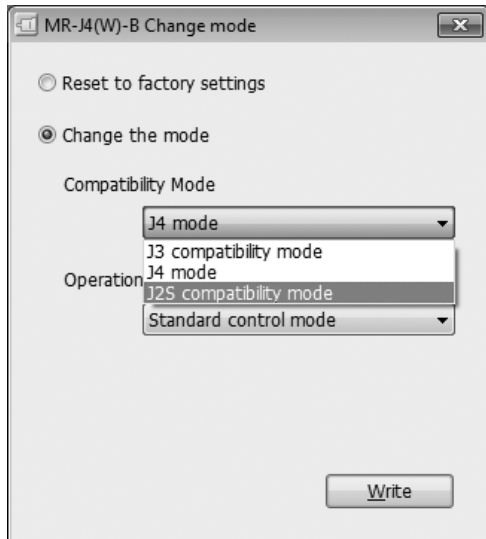


- Click the "Write (W)" button.
- By cycling the power supply of the servo amplifier, the mode will switch to J4 mode.

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

11.2 Mode Switching Method from J4 Mode to J2S Compatibility Mode

- (1) Turn on the servo amplifier with MR-J4-T20 mounted.
- (2) Run the application of "MR-J4(W)-B Change mode" and verify that "J2S Compatibility mode" is displayed in "Compatibility Mode". If not, try again from (1) of this section.
- (3) Select "Switch mode" and then choose "J2S compatibility mode". Only standard control mode can be selected for the operation mode.



- (4) Click the "Write" button.
- (5) By cycling the power supply of the servo amplifier, the mode will switch to J2S compatibility mode.

POINT

- For details about parameters, see the Instruction Manual.

12. OPTIONS AND PERIPHERAL EQUIPMENT

! WARNING

- Before connecting options or peripheral equipment, turn off the power and wait for 15 minutes or more until the charge lamp turns off. Then, confirm that the voltage between P+ and N- is safe with a voltage tester and others. Otherwise, an electric shock may occur. In addition, when confirming whether the charge lamp is off or not, always check from the front of the servo amplifier.

! CAUTION

- Do not use peripheral equipment or options other than those specified in this document as a malfunction and fire could result.

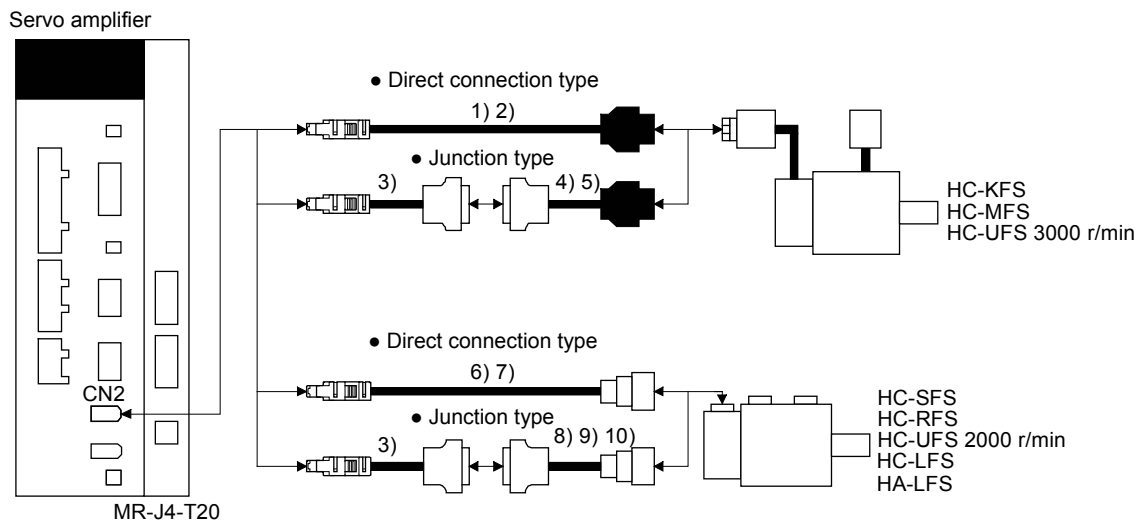
This chapter only describes the encode cable and regenerative option for connecting the HC series and the HA series servo motor to the MR-J4-_B_-RJ020 servo amplifier. For details of the options for the servo amplifier, refer to Chapter 11 of the "MR-J4-_B_-RJ020 MR-J4-T20 Servo Amplifier Instruction Manual". For options for the HC series and the HA series servo motors, refer to "MR-J2S-_B Servo Amplifier Instruction Manual (SH (Name) 030001)" and "Servo Amplifier Instruction Manual (SH (Name) 3180)".

POINT

- Protection grades shown on the cable and the connector indicate dust and waterproof level when the connector and the cable are installed on the servo motor. If protection grades of the cable, the connector and the servo motor are different, all the protection grades are dependent on the lower grades.







For the cable and the connector used for this servo, purchase options described in this section.

12.1 Encoder Cable Combination



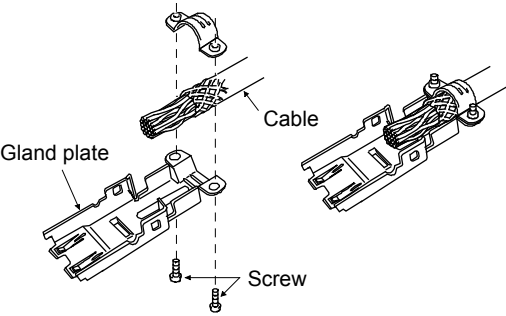
[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

12.2 Encoder Cable List

Num ber	Product name	Model	Description	Application	
1)	Encoder cable	MR-EKCBL_M-L Cable length: 20, 30 m	 For details, refer to section 12.3 (1).	IP20	
2)	Encoder cable	MR-EKCBL_M-H Cable length: 20, 30, 40, 50 m		IP20 Long bending life	
3)	Encoder cable	MR-J3CH00 Cable length: 0.2 m	 For details, refer to section 12.3 (2).	IP20	
4)	Encoder cable	MR-JCCBL_M-L Cable length: 2, 5, 10, 20, 30 m	Connector: 10120-3000PE Shell kit: 10320-52F0-008 (3M or equivalent)	Housing: 1-172161-9 Connector pin: 170359-1 (Tyco electronics or equivalent) Cable clamp: MTI-0002 (TOA ELECTRIC INDUSTRIAL CO., LTD.)	IP20
5)	Encoder cable	MR-JCCBL_M-H Cable length: 2, 5, 10, 20, 30, 40, 50 m		IP20 Long bending life	
6)	Encoder cable	MR-ESCBL_M-L Cable length: 2, 5, 10, 20, 30 m	 For details, refer to section 12.3 (3).	IP20	
7)	Encoder cable	MR-ESCBL_M-H Cable length: 2, 5, 10, 20, 30, 40, 50 m		IP20 Long bending life	
8)	Encoder cable	MR-JHSCBL_M-L Cable length: 2, 5, 10, 20, 30 m	Connector: 10120-3000PE Shell kit: 10320-52F0-008 (3M or equivalent)	Plug: D/MS3106B20-29S Cable clamp: D/MS3057-12A (DDK Ltd.)	IP20
9)	Encoder cable	MR-JHSCBL_M-H Cable length: 2, 5, 10, 20, 30, 40, 50 m		IP20 Long bending life	
10)	Encoder cable	MR-ENCBL_M-H Cable length: 2, 5, 10, 20, 30, 40, 50 m	Connector: 10120-3000PE Shell kit: 10320-52F0-008 (3M or equivalent)	Plug: D/MS3106A20-29S(D190) Cable clamp: CE3057-12A-3-D Back shell: CE02-20BS-S-D (DDK Ltd.)	IP65 Long bending life
					

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

12.3 Details on encoder cable

POINT
<ul style="list-style-type: none"> To wire the connector on the CN2 side, securely connect the external conductor of the shield cable to the gland plate and install it to the connector shell.  <ul style="list-style-type: none"> The following encoder cables are a four wire system. MR-EKCBL30M-L MR-EKCBL30M-H MR-EKCBL40M-H MR-EKCBL50M-H MR-ESCBL30M-L MR-ESCBL30M-H MR-ESCBL40M-H MR-ESCBL50M-H When using these encoder cables, set [Pr. 23] to "_ 1 _" and select "four wires system". Incorrect setting will cause [AL.16 Encoder Error 1].

(1) MR-EKCBL_M-

These cables are encoder cables for the HC-KFS, HC-MFS and HC-UFS 3000 r/min servo motors.

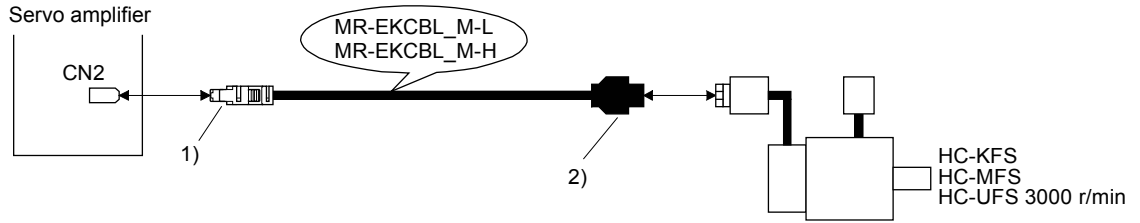
The numbers in the cable length field of the table indicate the symbol filling the underline "_" in the cable model. The cables of the lengths with the symbols are available.

Cable model	Cable length				Protection degree	Bending life	Application
	20 m	30 m	40 m	50 m			
MR-EKCBL_M-L	20	(Note) 30	/	/	IP20	Standard	For the HC-KFS, HC-MFS and HC-UFS 3000 r/min servo motors
MR-EKCBL_M-H	20	(Note) 30	(Note) 40	(Note) 50	IP20	Long bending life	

Note. Four wire system cable

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

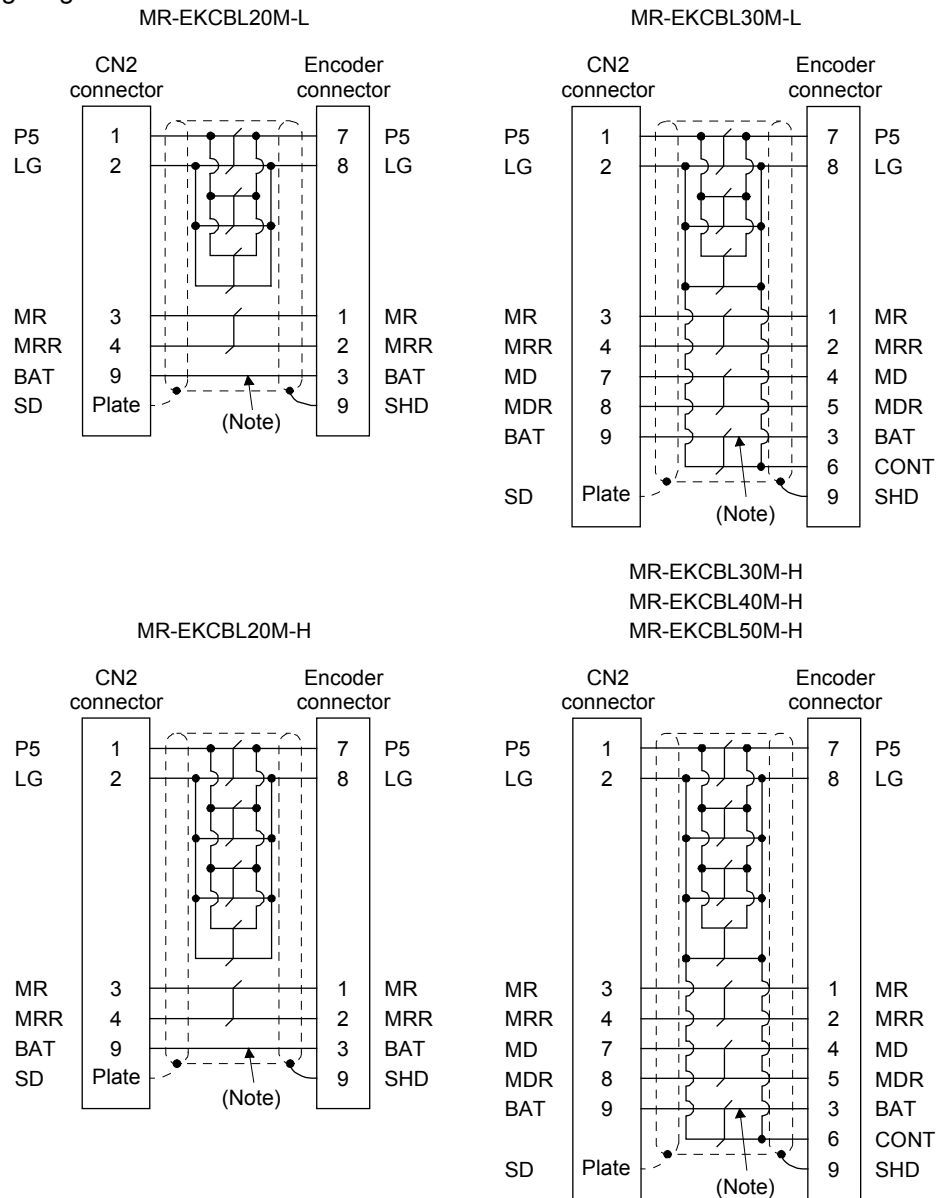
(a) Servo amplifier/servo motor connection



Cable model	1) CN2 connector	2) Encoder connector
MR-EKCBL_M-L	Receptacle: 36210-0100PL Shell kit: 36310-3200-008 (3M)	Housing: 1-172161-9 Connector pin: 170359-1 Crimping tool: 91529-1 (Tyco electronics or equivalent) Cable clamp: MTI-0002 (TOA ELECTRIC INDUSTRIAL CO., LTD.)
MR-EKCBL_M-H	Connector set: 54599-1019 (Molex)	
	<p>View seen from wiring side. (Note)</p>	<p>View seen from wiring side.</p>
<p>Note. Do not connect anything to the pins shown as . Especially 10 pin is for manufacturer adjustment. Connection to other pins will cause the servo amplifier to operate abnormally.</p>		

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

(b) Cable internal wiring diagram



Note. When using the absolute position detection system, make sure to connect. When using the incremental system, it is not necessary to wire.

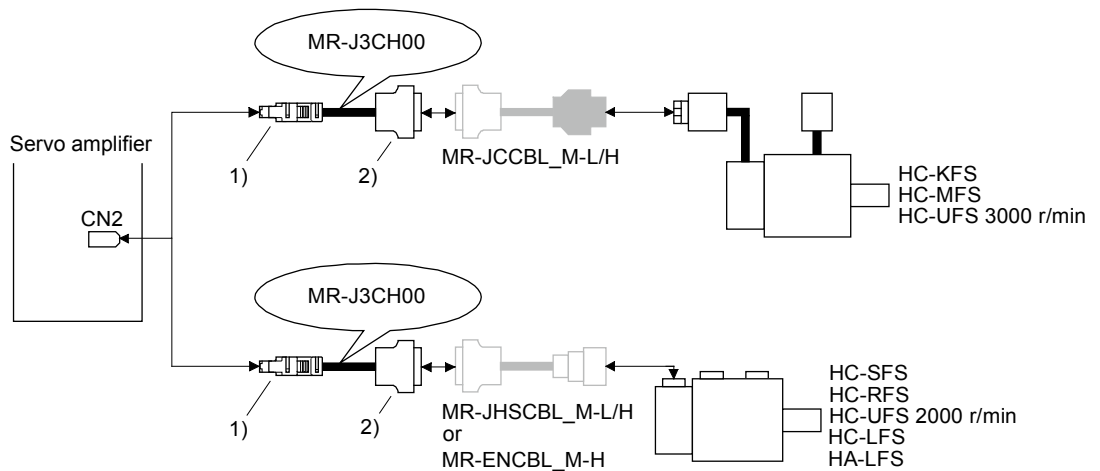
[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

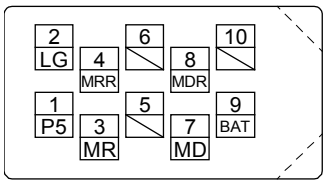
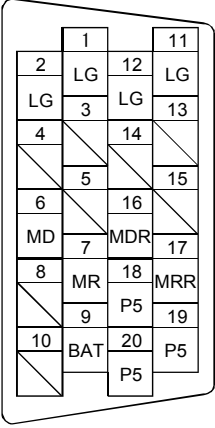
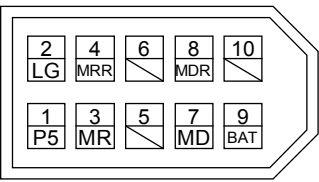


(2) MR-J3CH00 (or SC-J2SJ4ENC03M (manufactured by Mitsubishi Electric System & Service Co., Ltd.))
 The servo amplifier and the servo motor cannot be connect only using this cable. Use it with following encoder cable.

- MR-JCCBL_M-L
- MR-JCCBL_M-H
- MR-JHSCBL_M-L
- MR-JHSCBL_M-H
- MR-ENCBL_M-H

Cable model	Cable length	Protection degree	Bending life	Application
MR-J3CH00	0.2 m	IP20	Standard	For the HC-KFS, HC-MFS series and HC-UFS 3000 r/min servo motors Use with the MR-JCCBL_M-L/H.
				For the HC-SFS, HC-RFS, HC-LFS, HA-LFS series and HC-UFS 2000 r/min servo motors Use with the MR-JHCBL_M-L/H or MR-ENCBL_M-H.

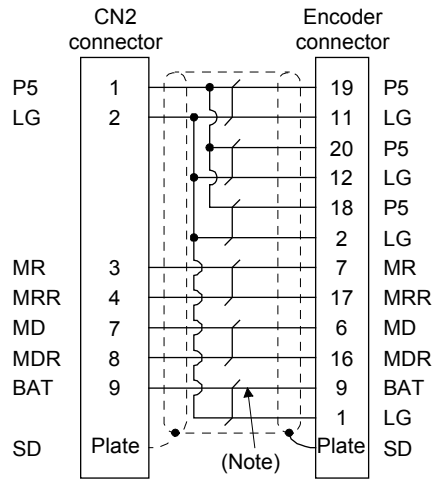
(a) Servo amplifier/servo motor connection



Cable model	1) CN2 connector	2) Relay connector
MR-J3CH00	Receptacle: 36210-0100PL Shell kit: 36310-3200-008 (3M)  View seen from wiring side. (Note)	Connector: 10220-0200EL Shell kit: 10320-E2W0-008 (3M)  View seen from wiring side. (Note)
	Connector set: 54599-1019 (Molex)  View seen from wiring side. (Note)	
	Note. Do not connect anything to the pins shown as  Especially 10 pin is for manufacturer adjustment. Connection to other pins will cause the servo amplifier to operate abnormally.	Note. Do not connect anything to the pins shown as  .

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

(b) Cable internal wiring diagram



Note. When using the absolute position detection system, make sure to connect. When using the incremental system, it is not necessary to wire.

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

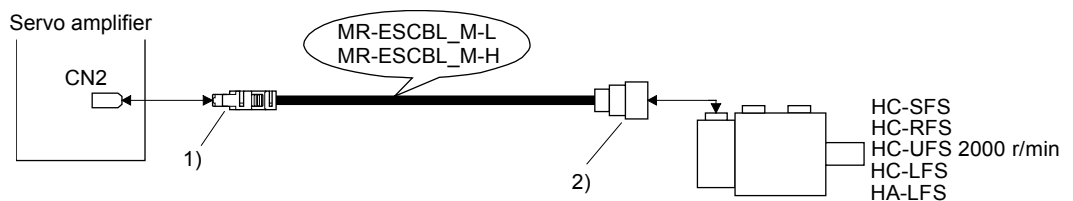
(3) MR-ESCBL_M-

These cables are encoder cables for the HC-SFS, HC-RFS, HC-LFS, HA-LFS series and the 2000 r/min servo motors. The numbers in the cable length field of the table indicate the symbol filling the underline "_" in the cable model. The cables of the lengths with the symbols are available.

Cable model	Cable length							Protection degree	Bending life	Application
	2 m	5 m	10 m	20 m	30 m	40 m	50 m			
MR-ESCBL_M-L	2	5	10	20	(Note) 30			IP20	Standard	For the HC-SFS, HC-RFS, HC-LFS, HA-LFS series and HC-UFS 2000 r/min servo motors
MR-ESCBL_M-H	2	5	10	20	(Note) 30	(Note) 40	(Note) 50	IP20	Long bending life	

Note. Four wire cable

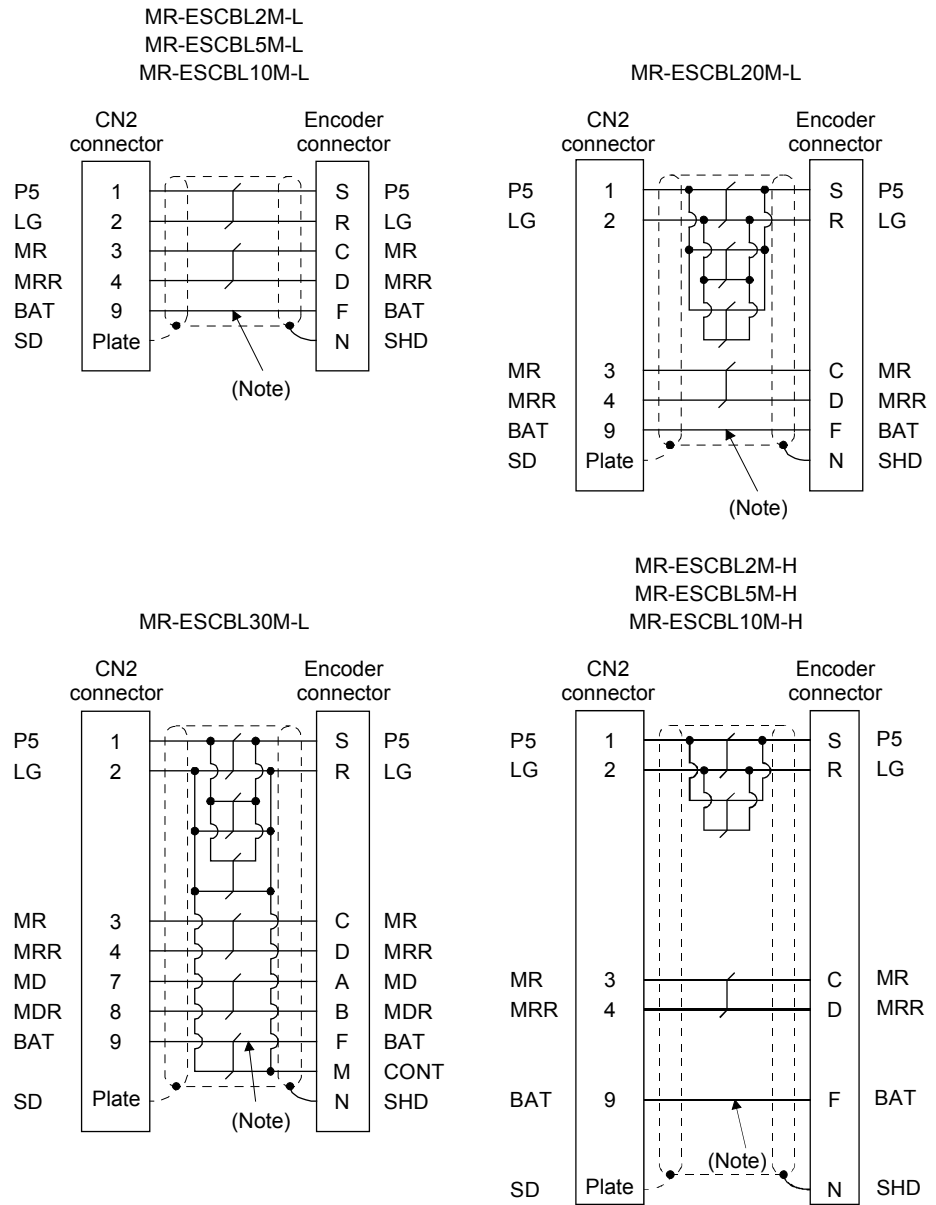
(a) Servo amplifier/servo motor connection



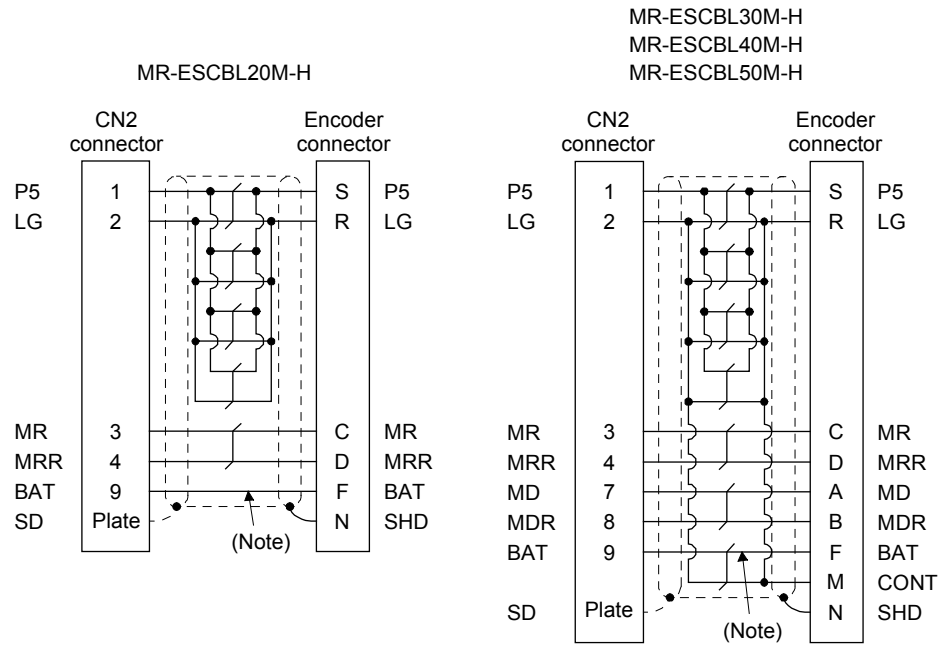
Cable model	1) CN2 connector		2) Encoder connector																																								
MR-ESCBL_M-L	Receptacle: 36210-0100PL Shell kit: 36310-3200-008 (3M)	Connector set: 54599-1019 (Molex)	Plug: D/MS3106B20-29S Cable clamp: D/MS3057-12A (DDK Ltd.)																																								
	<p>View seen from wiring side. (Note)</p>	or <p>View seen from wiring side. (Note)</p>	<p>View seen from wiring side. (Note)</p>																																								
MR-ESCBL_M-H	Note. Do not connect anything to the pins shown as . Especially 10 pin is for manufacturer adjustment. Connection to other pins will cause the servo amplifier to operate abnormally.		<table border="1"> <thead> <tr> <th>Pin</th> <th>Signal</th> <th>Pin</th> <th>Signal</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>MD</td> <td>K</td> <td></td> </tr> <tr> <td>B</td> <td>MDR</td> <td>L</td> <td></td> </tr> <tr> <td>C</td> <td>MR</td> <td>M</td> <td>CONT</td> </tr> <tr> <td>D</td> <td>MRR</td> <td>N</td> <td>SHD</td> </tr> <tr> <td>E</td> <td></td> <td>P</td> <td></td> </tr> <tr> <td>F</td> <td>BAT</td> <td>R</td> <td>LG</td> </tr> <tr> <td>G</td> <td></td> <td>S</td> <td>P5</td> </tr> <tr> <td>H</td> <td></td> <td>T</td> <td></td> </tr> <tr> <td>J</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Note. Do not connect anything to the pins shown as .</p>	Pin	Signal	Pin	Signal	A	MD	K		B	MDR	L		C	MR	M	CONT	D	MRR	N	SHD	E		P		F	BAT	R	LG	G		S	P5	H		T		J			
Pin	Signal	Pin	Signal																																								
A	MD	K																																									
B	MDR	L																																									
C	MR	M	CONT																																								
D	MRR	N	SHD																																								
E		P																																									
F	BAT	R	LG																																								
G		S	P5																																								
H		T																																									
J																																											

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

(b) Cable internal wiring diagram



[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20



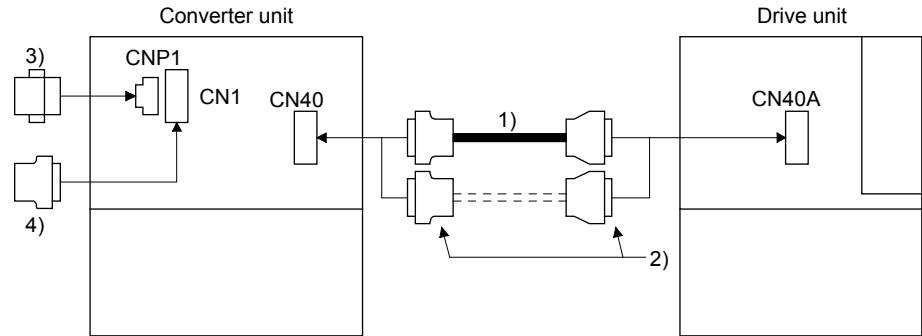
Note. When using the absolute position detection system, make sure to connect. When using the incremental system, it is not necessary to wire.

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

12.4 Large Capacity Servo Cable Connector Set

12.4.1 Cable connector set combination

When using the MR-J4-DU_B_-RJ020, cables and connector sets other than those shown below are the same as the MR-J4-_-(-RJ). Refer to Section 11.1 in "MR-J4-_-A_-(-RJ) Servo Amplifier Instruction Manual".



Number	Product name	Model	Description		Application
1)	Protection coordination cable	MR-J3CDL05M (Refer to Section 12.4.2.)	Connector: 10120-3000PE Shell kit: 10320-52F0-008 (3M or equivalent)	Connector: PCR-S20FS+ Case: PCR-LS20LA1 (HONDA TSUSHIN KOGYO CO., LTD.)	
2)	Connector set	MR-J2CN1-A (Refer to section 12.4.2.)	Connector: 10120-3000PE Shell kit: 10320-52F0-008 (3M or equivalent)	Connector: PCR-S20FS+ Shell kit: PCR-LS20LA1 (HONDA TSUSHIN KOGYO CO., LTD.)	
3)	Electromagnetic contactor wiring connector		Connector on the converter unit (Phoenix Contact) Socket: GFKC 2,5/ 2-STF-7,62		Supplied with the converter unit.
4)	Digital input/output connector		Connector on the converter unit (DDK Ltd.) Connector: 17JE23090-02(D8A)K11-CG		

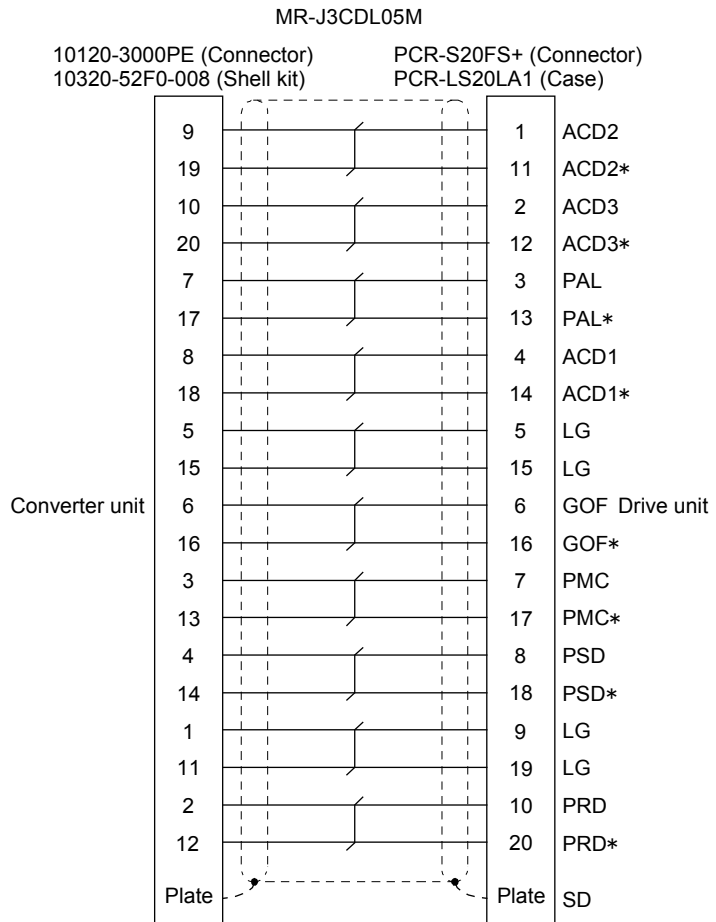
[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

12.4.2 MR-J3CDL05M (0.5 m) Protection Coordination Cable

! Note • When manufacturing a protection coordination cable, be careful not to wire improperly. Otherwise, it may cause unexpected motion.

This cable is intended to connect the converter unit and the drive unit.

(1) Internal wiring diagram



[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

12.5 Regenerative Options



Note

- Regenerative options and servo amplifier must not be set in combination other than the specified combination. Doing so could cause a fire.

12.5.1 Regenerative option combinations

(1) Combination when using the HA or HC motor and regenerative power (200/100 V class)

List of regenerative options

Servo amplifier model MR-J4-	Built-in regenerative resistor [W]	Permissible regenerative power of regenerative option [W] MR-RB								
		032 [40Ω]	12 [40Ω]	30 [13Ω]	3N [9Ω]	31 [6.7Ω]	32 [40Ω]	(Note 1) 50 [13Ω]	(Note 1) 5N [9Ω]	(Note 1) 51 [6.7Ω]
10_(1)-RJ020		30								
20_(1)-RJ020	10	30	100							
40_(1)-RJ020	10	30	100							
60_-RJ020	10	30	100							
70_-RJ020	20	30	100							
100_-RJ020	20	30	100					300		
200_-RJ020	100			300					500	
350_-RJ020	100			300					500	
500_-RJ020	130			300					500	
700_-RJ020	170					300				500
11K_-RJ020										
15K_-RJ020										
22K_-RJ020										
30K_-RJ020										
37K_-RJ020										

Servo amplifier model MR-J4-	Built-in regenerative resistor [W]	(Note 2) MR-J2S standard accessories [External]	Permissible regenerative power of regenerative option [W] MR-RB							
			(Note 2) 5R [3.2Ω]	(Note 2) 65 [8Ω]	(Note 2) 66 [5Ω]	(Note 2) 67 [4Ω]	(Note 2) 9F [3Ω]	(Note 2) 9T [2.5Ω]	139 [1.3Ω]	(Note 3) 137 [1.3Ω]
10_(1)-RJ020										
20_(1)-RJ020	10									
40_(1)-RJ020	10									
60_-RJ020	10									
70_-RJ020	20									
100_-RJ020	20									
200_-RJ020	100									
350_-RJ020	100									
500_-RJ020	130									
700_-RJ020	170									
11K_-RJ020		GRZG400-2 Ω × 4 500 (800)		500 (800)						
15K_-RJ020		GRZG400-1 Ω × 5 850 (1300)			850 (1300)					
22K_-RJ020		GRZG400-0.8 Ω × 5 850 (1300)				850 (1300)				
30K_-RJ020									1300	3900
37K_-RJ020									1300	3900

- Note 1. Always install a cooling fan.
 2. The values in the parentheses are applied to when a cooling fan is installed.
 3. The value of MR-RB137 is the combined resistance of three units.

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

(2) Combination when using the HG motor and regenerative power (200/100 V class)

List of regenerative options

Servo amplifier model MR-J4-	Built-in regenerative resistor [W]	Permissible regenerative power of regenerative option [W] MR-RB								
		032 [40Ω]	12 [40Ω]	30 [13Ω]	3N [9Ω]	31 [6.7Ω]	32 [40Ω]	(Note 1) 50 [13Ω]	(Note 1) 5N [9Ω]	(Note 1) 51 [6.7Ω]
10_-RJ020		30								
20_-RJ020	10	30	100							
40_-RJ020	10	30	100							
60_-RJ020	10	30	100							
70_-RJ020	20	30	100				300			
100_-RJ020	20	30	100				300			
200_-RJ020	100			300				500		
350_-RJ020	100				300				500	
500_-RJ020	130					300				500
700_-RJ020	170					300				500
11K_-RJ020										
15K_-RJ020										
22K_-RJ020										
DU30K_-RJ020										
DU37K_-RJ020										

Servo amplifier model MR-J4-	Built-in regenerative resistor [W]	(Note 2) Standard accessories [External]	Permissible regenerative power of regenerative option [W] MR-RB								
			(Note 2) 5R [3.2Ω]	(Note 2) 65 [8Ω]	(Note 2) 66 [5Ω]	(Note 2) 67 [4Ω]	(Note 2) 9F [3Ω]	(Note 2) 9T [2.5Ω]	139 [1.3 Ω]	(Note 5) 137 [1.3 Ω]	
10_-RJ020											
20_-RJ020	10										
40_-RJ020	10										
60_-RJ020	10										
70_-RJ020	20										
100_-RJ020	20										
200_-RJ020	100										
350_-RJ020	100										
500_-RJ020	130										
700_-RJ020	170										
11K_-RJ020		GRZG400-0.8 Ω × 4 500 (800)	500 (800)								
15K_-RJ020		GRZG400-0.6 Ω × 5 850 (1300)					850 (1300)				
22K_-RJ020		GRZG400-0.5 Ω × 5 850 (1300)						850 (1300)			
DU30K_-RJ020										1300	3900
DU37K_-RJ020										1300	3900

- Note 1. Always install a cooling fan.
 2. The values in the parentheses are applied to when a cooling fan is installed.
 3. When using a combination with an MR-J4 servo amplifier other than the standard one, contact your local sales office.
 4. A backslash cell in the list shows a combination changed from "MR-J2S series".
 5. The value of MR-RB137 is the combined resistance of three units connected in parallel.

Parameter settings (PA02 for MR-J4) may be required depending on the regenerative option model. Refer to the Instruction Manual for details.

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

(3) Combination when using the HA or HC motor and regenerative power (400V class)

List of regenerative options

Servo amplifier model MR-J4-	Built-in regenerative resistor [W]	Permissible regenerative power of regenerative option [W]										MR-RB	
		1H-4 [82 Ω]	1L-4 [270 Ω]	(Note 1) 3M-4 [120 Ω]	(Note 1) 3H-4 [80 Ω]	(Note 1) 3G-4 [47 Ω]	(Note 1) 34-4 [26 Ω]	(Note 1) 3U-4 [22 Ω]	(Note 1) 5H-4 [80 Ω]	(Note 1) 5G-4 [47 Ω]	(Note 1) 54-4 [26 Ω]	(Note 1) 5U-4 [22 Ω]	
60_4-RJ020	15 (Note 4)	100	100	300									
100_4-RJ020	15 (Note 4)	100		300									
200_4-RJ020	100				300					500			
350_4-RJ020	100					300					500		
500_4-RJ020	130					300					500		
700_4-RJ020	170						300					500	
11K_4-RJ020													
15K_4-RJ020													
22K_4-RJ020													
30K_4-RJ020													
37K_4-RJ020													
45K_4-RJ020													
55K_4-RJ020													

Servo amplifier model MR-J4-	Built-in regenerative resistor [W]	(Note 2) MR-J2S standard accessories [External]	Permissible regenerative power of regenerative option [W]				MR-RB		
			(Note 2) 5K-4 [10 Ω]	(Note 2) 6B-4 [20 Ω]	(Note 2) 60-4 [12.5 Ω]	(Note 2) 6K-4 [10 Ω]	136-4 [5 Ω]	(Note 3) 138-4 [5 Ω]	
60_4-RJ020	15 (Note 4)								
100_4-RJ020	15 (Note 4)								
200_4-RJ020	100								
350_4-RJ020	100								
500_4-RJ020	130								
700_4-RJ020	170								
11K_4-RJ020		GRZG400-5 Ω × 4 500 (800)		500 (800)					
15K_4-RJ020		GRZG400-2.5 Ω × 5 850 (1300)			850 (1300)				
22K_4-RJ020		GRZG400-2 Ω × 5 850 (1300)				850 (1300)			
30K_4-RJ020							1300	3900	
37K_4-RJ020							1300	3900	
45K_4-RJ020							1300	3900	
55K_4-RJ020							1300	3900	

Note 1. Always install a cooling fan.

2. The values in the parentheses are applied to when a cooling fan is installed.

3. The value of MR-RB138-4 is the combined resistance of three units.

4. The capacity of the built-in regenerative resistor is small for the MR-J2S servo amplifier.
Consider based on regenerative load ratio.

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

(4) Combination when using the HG motor and regenerative power (400V class)

List of regenerative options

Servo amplifier model MR-J4-	Built-in regenerative resistor [W]	Permissible regenerative power of regenerative option [W] MR-RB										
		1H-4 [82 Ω]	1L-4 [270 Ω]	(Note 1) 3M-4 [120 Ω]	(Note 1) 3H-4 [80 Ω]	(Note 1) 3G-4 [47 Ω]	(Note 1) 34-4 [26 Ω]	(Note 1) 3U-4 [22 Ω]	(Note 1) 5H-4 [80 Ω]	(Note 1) 5G-4 [47 Ω]	(Note 1) 54-4 [26 Ω]	(Note 1) 5U-4 [22 Ω]
60_4-RJ020	15 (Note 5)	100		300								
100_4-RJ020	15 (Note 5)	100		300								
200_4-RJ020	100					300					500	
350_4-RJ020	100					300					500	
500_4-RJ020	130						300					500
700_4-RJ020	170							500				500
11K_4-RJ020												
15K_4-RJ020												
22K_4-RJ020												
30K_4-RJ020												
37K_4-RJ020												
45K_4-RJ020												
55K_4-RJ020												

Servo amplifier model MR-J4-	Built-in regenerative resistor [W]	(Note 2) Standard accessories [External]	Permissible regenerative power of regenerative option [W] MR-RB						
			(Note 2) 5K-4 [10 Ω]	(Note 2) 6B-4 [20 Ω]	(Note 2) 60-4 [12.5 Ω]	(Note 2) 6K-4 [10 Ω]	137-4 [4 Ω]	(Note 4) 13V-4 [4 Ω]	
60_4-RJ020	15 (Note 5)								
100_4-RJ020	15 (Note 5)								
200_4-RJ020	100								
350_4-RJ020	100								
500_4-RJ020	130								
700_4-RJ020	170								
11K_4-RJ020		GRZG400-2.5 Ω × 4 500 (800)	500 (800)						
15K_4-RJ020		GRZG400-2 Ω × 5 850 (1300)					850 (1300)		
22K_4-RJ020		GRZG400-2 Ω × 5 850 (1300)					850 (1300)		
30K_4-RJ020								1300	3900
37K_4-RJ020								1300	3900
45K_4-RJ020								1300	3900
55K_4-RJ020								1300	3900

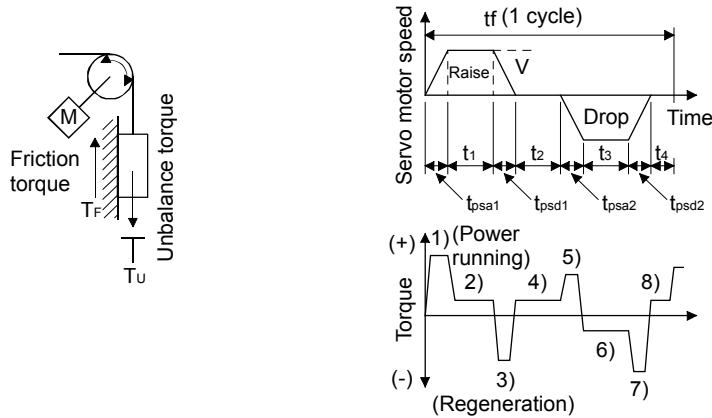
- Note 1. Always install a cooling fan.
2. The values in the parentheses are applied to when a cooling fan is installed.
- Changed items are shown with backslashes
 - Parameter settings (PA02 for MR-J4) may be required depending on the regenerative option model. Refer to the Instruction Manual for details.
3. When using a combination with an MR-J4 servo amplifier other than the standard one, contact your local sales office.
4. The value of MR-RB137 is the combined resistance of three units connected in parallel.
5. The capacity of the built-in regenerative resistor is small for the MR-J2S servo amplifier. Consider based on regenerative load ratio.

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

12.5.2 Regenerative option selection

Select by the following method when regeneration is continuously generated on the vertical axis or when a regenerative option is selected in detail.

(1) Calculation of regenerative energy



Formula to calculate torque and energy during operation

Regenerative power	Torque T [N·m] imposed on servo motor	Energy E [J]
1)	$T_1 = \frac{(J_L/\eta + J_M) \cdot V}{9.55 \cdot 10^4} \cdot \frac{1}{t_{psa1}} + T_U + T_F$	$E_1 = \frac{0.1047}{2} \cdot V \cdot T_1 \cdot t_{psa1}$
2)	$T_2 = T_U + T_F$	$E_2 = 0.1047 \cdot V \cdot T_2 \cdot t_1$
3)	$T_3 = \frac{-(J_L \cdot \eta + J_M) \cdot V}{9.55 \cdot 10^4} \cdot \frac{1}{t_{psa2}} + T_U + T_F$	$E_3 = \frac{0.1047}{2} \cdot V \cdot T_3 \cdot t_{psa2}$
4), 8)	$T_4, T_8 = T_U$	$E_4, E_8 \geq 0$ (no regeneration)
5)	$T_5 = \frac{(J_L/\eta + J_M) \cdot V}{9.55 \cdot 10^4} \cdot \frac{1}{t_{psd2}} - T_U + T_F$	$E_5 = \frac{0.1047}{2} \cdot V \cdot T_5 \cdot t_{psd2}$
6)	$T_6 = -T_U + T_F$	$E_6 = 0.1047 \cdot V \cdot T_6 \cdot t_3$
7)	$T_7 = \frac{-(J_L \cdot \eta + J_M) \cdot V}{9.55 \cdot 10^4} \cdot \frac{1}{t_{psd2}} - T_U + T_F$	$E_7 = \frac{0.1047}{2} \cdot V \cdot T_7 \cdot t_{psd2}$

Determine the absolute value (Es) of the total sum of negative energy from the calculation results 1) to 8).

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

(2) Loss of the servo motor and the servo amplifier during regeneration

The efficiency of the servo motor and the servo amplifier during regeneration is shown below.

Servo amplifier	Motor inverse efficiency [%]	C charge [J]
MR-J4-10B-RJ020	55	9
MR-J4-20B-RJ020	70	9
MR-J4-40B-RJ020	85	11
MR-J4-60B-RJ020	85	11
MR-J4-70B-RJ020	80	18
MR-J4-100B-RJ020	80	18
MR-J4-200B-RJ020	85	36
MR-J4-350B-RJ020	85	40
MR-J4-500B-RJ020	90	45
MR-J4-700B-RJ020	90	70
MR-J4-11KB-RJ020	90	120
MR-J4-15KB-RJ020	90	170
MR-J4-22KB-RJ020	90	250

Servo amplifier	Motor inverse efficiency [%]	C charge [J]
MR-J4-60B4-RJ020	85	12
MR-J4-100B4-RJ020	80	12
MR-J4-200B4-RJ020	85	25
MR-J4-350B4-RJ020	85	43
MR-J4-500B4-RJ020	90	45
MR-J4-700B4-RJ020	90	70
MR-J4-11KB4-RJ020	90	120
MR-J4-15KB4-RJ020	90	170
MR-J4-22KB4-RJ020	90	250
MR-J4-10B1-RJ020	55	4
MR-J4-20B1-RJ020	75	4
MR-J4-40B1-RJ020	85	10

Converter unit	Drive unit	Motor inverse efficiency [%]	C charge [J]
MR-CR55K	MR-J4-DU30KB-RJ020	90	450
	MR-J4-DU37KB-RJ020	90	450
MR-CR55K-4	MR-J4-DU30KB4-RJ020	90	450
	MR-J4-DU37KB4-RJ020	90	450
	MR-J4-DU45KB4-RJ020	90	450
	MR-J4-DU55KB4-RJ020	90	450

Inverse efficiency (η): Efficiency including part of the servo motor and the servo amplifier when generating the rated (regenerative) torque at the rated rotation speed. Provide a greater allowance by about 10% as the efficiency varies depending on the rotation speed or generating torque.

C charge (E_c): Energy which charges the electrolytic capacitor within the servo amplifier.

Energy consumed by the regenerative option can be calculated from the value of the total of regenerative energy multiplied by inverse efficiency from which C charge is subtracted.

$$ER [J] = \eta \cdot E_s - E_c$$

For energy consumption of regenerative option, select the desired option by calculating based on one operating cycle t_f [s].

$$PR [W] = ER/t_f$$

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

12.5.3 Parameter setting

[Setting for 22kW or less]

Set [Pr. 2] adjusting to the regenerative option to be used.

[Pr. 2]

0	0		
---	---	--	--

- 00: The regenerative option is not used
 - For servo amplifier of 100W, regenerative resistor is not used.
 - For servo amplifier of 0.2 kW to 7 kW, built-in regenerative resistor is used.
 - The supplied regenerative resistor or regenerative option is used in the servo amplifier at 11 kW to 22 kW.
- 01: FR-RC/FR-RC-H/FR-CV/FR-CV-H/FR-BU2/FR-BU2-H
- 05: MR-RB32
- 08: MR-RB30
- 09: MR-RB50 (Cooling fan is needed)
- 0B: MR-RB31
- 0C: MR-RB51 (Cooling fan is needed)
- 0E: When increasing the capabilities by using a cooling fan to cool the supplied regeneration resistor with the servo amplifier of 11 kW to 22 kW.
- 10: MR-RB032
- 11: MR-RB12
- 13: MR-RB5E
- 14: MR-RB5E (Cooling fan is needed)
- 17: MR-RB9F
- 18: MR-RB9F (Cooling fan is needed)
- 20: MR-RB3N
- 21: MR-RB5N (Cooling fan is needed)
- 23: MR-RB5R
- 24: 24: MR-RB5R (Cooling fan is needed)
- 25: MR-RB9P
- 26: MR-RB9P (Cooling fan is needed)
- 27: MR-RB9T
- 28: MR-RB9T (Cooling fan is needed)
- 80: MR-RB3H-4 (Cooling fan is needed)
- 81: MR-RB5H-4 (Cooling fan is needed)
- 82: MR-RB3G-4 (Cooling fan is needed)
- 83: MR-RB5G-4 (Cooling fan is needed)
- 84: MR-RB34-4 (Cooling fan is needed)
- 85: MR-RB54-4 (Cooling fan is needed)
- 86: MR-RB1L-4
- 87: MR-RB3M-4 (Cooling fan is needed)
- 90: MR-RB1H-4
- 94: MR-RB5K-4
- 95: MR-RB5K-4 (Cooling fan is needed)
- 96: MR-RB6B-4
- 97: MR-RB6B-4 (Cooling fan is needed)
- 98: MR-RB6K-4
- 99: MR-RB6K-4 (Cooling fan is needed)
- 9A: MR-RB60-4
- 9B: MR-RB60-4 (Cooling fan is needed)
- 9C: MR-RB3U-4 (Cooling fan is needed)
- 9D: MR-RB5U-4 (Cooling fan is needed)

[Setting for 30kW or more]

POINT
<ul style="list-style-type: none"> • Regenerative options cannot be connected to the drive unit. [Pr. PA02] in the drive unit must be set to "___0 0" (do not use regenerative options) or "___01". Setting other than the above will cause [AL. 37 Parameter error].

Set [Pr. PA01] for the converter unit, adjusting to the regenerative option to be used.

[Pr. PA01]

0	0		
---	---	--	--

- Regenerative option selection
- 00: Not used
- 01: MR-RB139
- 02: MR-RB137 (3 units)
- 11: MR-RB136-4
- 12: MR-RB138-4 (3 units)
- 13: MR-RB137-4
- 14: MR-RB13V-4 (3 units)

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

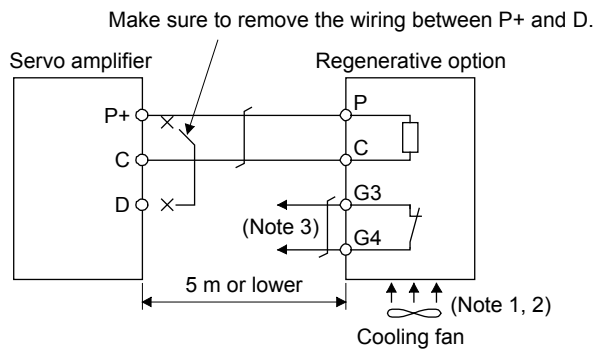
12.5.4 Connecting regenerative options

POINT
<ul style="list-style-type: none"> • When using MR-RB50, MR-RB51, MR-RB3M-4, MR-RB3G-4, MR-RB5G-4, MR-RB34-4, MR-RB54-4, MR-RB3H-4 and MR-RB5H-4, cooling using the cooling fan is required. You should provide the cooling fan. • Refer to Chapter 6 of this document for wire sizes used for wiring.

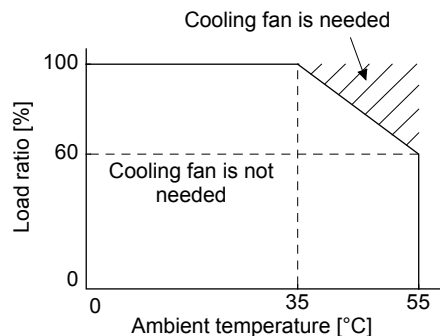
Regenerative options may be heated to 100°C or more above the ambient temperature. Carefully determine the position of the radiation, installation position, wiring path, etc. Use flame-retardant wire for wiring or apply flame retardant treatment by avoiding contact between the wires and the regenerative option. Be sure to use twisted wires when connecting to the servo amplifier and keep the wiring distance to no longer than 5 m.

(1) MR-J4-500B-RJ020 or less / MR-J4-350B4-RJ020 or less

Be sure to remove wiring between P+ and D and then install the regenerative option between P+ and C. The G3 and the G4 terminals are thermal sensors. Abnormal overheating of the regenerative option causes the contact between G3 and G4 to open.



- Note 1. When using MR-RB50, MR-RB3M-4, MR-RB3G-4, MR-RB5G-4, MR-RB3H-4 and MR-RB5H-4, perform forced cooling using the cooling fan (1.0 m³/min or more, 92 mm square).
- Note 2. Provide forced cooling for MR-RB30, MR-RB31 and MR-RB32 using the cooling fan (1.0 m³/min or more, 92 mm square) when the ambient temperature of the regenerative option is 55 °C and regenerative load ratio exceeds 60%. When the ambient temperature is at or below 35 °C, the cooling fan is not required. (In the figure below, it is necessary to cool with the cooling fan required when the ambient temperature and load ratio are within the shaded area.)



3. Configure sequence of shutting off the electromagnetic contactor when abnormal heating is caused.

Specifications for contact between G3 and G4:

Maximum voltage: 120VAC/DC

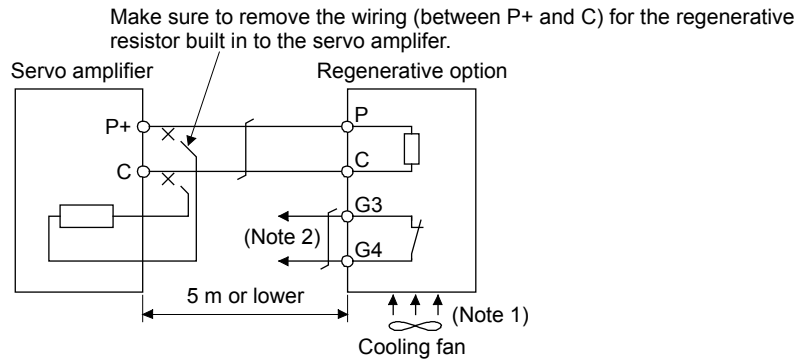
Maximum current: 0.5 A/4.8VDC

Maximum capacity: 2.4 VA

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

(2) MR-J4-700B-RJ020/MR-J4-500B4-RJ020/MR-J4-700B4-RJ020

Remove the wiring (between P+ and C) for the regenerative resistor built into the servo amplifier and install the regenerative option between P+ and C. The G3 and the G4 terminals are thermal sensors. Abnormal overheating of the regenerative option causes the contact between G3 and G4 to open.



- Note 1. When using MR-RB51, MR-RB34-4, MR-RB54-4, MR-RB3G-4 and MR-RB5G-4, perform forced cooling using the cooling fan (1.0 m³/min or more, 92 mm square).
- Note 2. Configure sequence of shutting off the electromagnetic contactor when abnormal heating is caused.

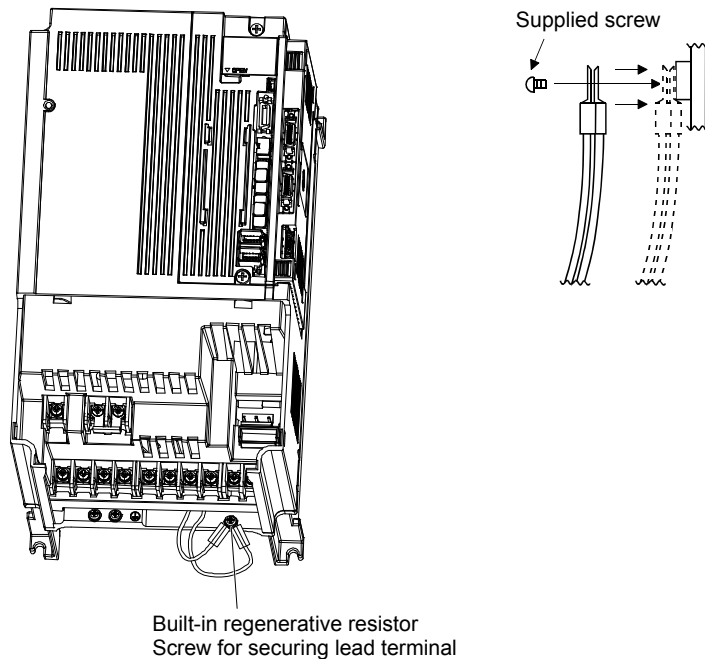
Specifications for contacts between G3 and G4

Maximum voltage: 120VAC/DC

Maximum current: 0.5 A/4.8VDC

Maximum capacity: 2.4 VA

When you use the regenerative option, remove the wiring (between P+ and C) for the regenerative resistor built into the servo amplifier, place back to back as shown in the diagram below and secure to the frame using the supplied screw.



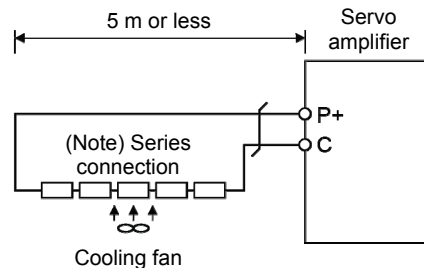
[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

- (3) MR-J4-11KB-RJ020 to MR-J4-22KB-RJ020 and MR-J4-11KB4-RJ020 to MR-J4-22KB4-RJ020 (when the regenerative resistor that comes standard with the servo amplifier is used.)

Note

- Since the regenerative resistor that comes with the servo amplifier of 11kW to 22kW has no protective cover, be careful of the following items.
- The surface of the part is a resistor and it becomes very hot. Touching it could cause burns.
- The capacitor of the servo amplifier is charged for a while even after power is disconnected. Touching it may cause electric shock.

When you use regenerative resistors that come standard with the servo amplifier, be sure to connect the specified number (4 or 5 pcs.) in series. Parallel connection or use of regenerative resistors less than the specified number could failure of the servo amplifier and/or burnout of regenerative resistors. When regenerative resistors are installed side-by-side, keep a distance of 70 mm or more between resistors. Cooling the resistors with cooling fans (1.0 m³/min or more, 92 mm square x 2 pcs.) enhances regenerative power. In this case, set [Pr. 2] to " _ _ 0 E".



Note. The number of series connections varies depending on the type of resistors. Thermal sensors are not built into the supplied regenerative resistors. In the case of a failure of the regenerative circuit, the possible cause is abnormal overheating of resistors. Therefore, you should install thermal sensors near resistors and install the protection circuit that shuts off the main circuit power in the case of abnormal overheating. The detection level of the thermal sensor varies depending on the method used for installing resistors. Install thermal sensors in optimal locations according to your design standard or use regenerative options with built-in thermal sensors (MR-RB5E, MR-RB5R, MR-RB9P, MR-RB9F, MR-RB9T, MR-RB5K-4, MR-RB6B-4, MR-RB60-4 or MR-RB6K-4) .

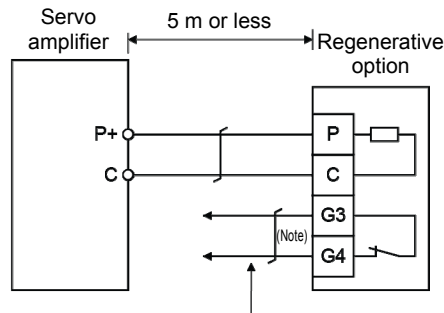
Servo amplifier	Regenerative resistor	Regenerative power [W]		Resistance value [Ω]	Number
		During normal use	During cooling		
MR-J4-11KB-RJ020	GRZG400-0.8Ω	500	800	3.2	4
MR-J4-15KB-RJ020	GRZG400-0.6Ω	850	1300	3	5
MR-J4-22KB-RJ020	GRZG400-0.5Ω			2.5	
MR-J4-11KB4-RJ020	GRZG400-2.5Ω	500	800	10	4
MR-J4-15KB4-RJ020	GRZG400-2Ω	850	1300	10	5
MR-J4-22KB4-RJ020					

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

(4) MR-J4-11KB-RZ020 to MR-J4-22KB-RZ020 and MR-J4-11KB4-RZ020 to MR-J4-22KB4-RZ020 (when regenerative options are used.)

MR-J4-11KB-RZ020 to MR-J4-22KB-RZ020 and MR-J4-11KB4-RZ020 to MR-J4-22KB4-RZ020 do not come with regenerative resistors. When you use these servo amplifiers, be sure to use MR-RB5E, MR-RB5R, MR-RB9P, MR-RB9F, MR-RB9T, MR-RB5K-4, MR-RB6B-4, MR-RB60-4 or MR-RB6K-4.

Cooling with a cooling fan enhances regenerative power. The G3 and the G4 terminals are thermal sensors. Abnormal overheating of the regenerative option causes the contact between G3 and G4 to open.



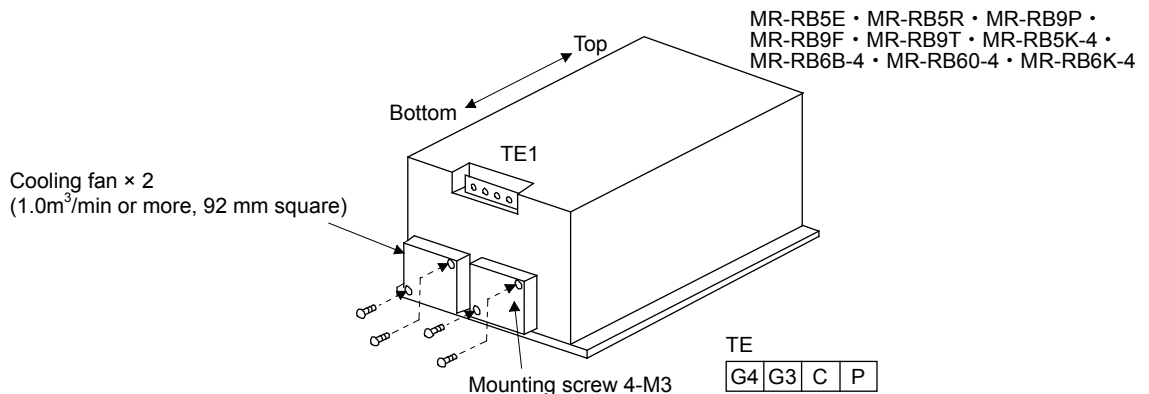
When the thermal sensor is activated, configure to shut off the main circuit power.

Note. Specifications for contacts between G3 and G4

- Maximum voltage: 120VAC/DC
- Maximum current: 0.5 A/4.8VDC
- Maximum capacity: 2.4 VA

Servo amplifier	Regenerative options	Resistance value [Ω]	Regenerative power [W]	
			Without cooling fan	With cooling fan
MR-J4-11KB-RZ020	MR-RB5E	6	500	800
	MR-RB5R	3.2		
MR-J4-15KB-RZ020	MR-RB9P	4.5	850	1300
	MR-RB9F	3		
MR-J4-22KB-RZ020	MR-RB9T	2.5	850	1300
MR-J4-11KB4-RZ020	MR-RB5K-4	10	500	800
	MR-RB6B-4	20		
MR-J4-15KB4-RZ020	MR-RB60-4	12.5	850	1300
	MR-RB6K-4	10		
MR-J4-22KB4-RZ020				

When you use a cooling fan, install it in the mounting hole at the bottom of the regenerative option.



[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

(5) MR-CR55K_(when regenerative options are used)

Make sure to supply power (shown in the following table) to the cooling fan.

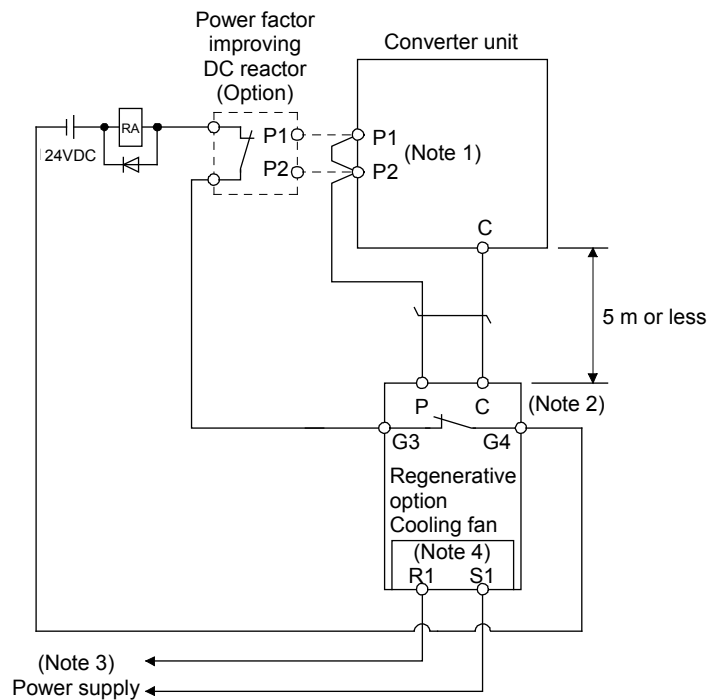
Table: Appendix 1 Cooling Fan

Item	200 V class	400 V class
Model	MR-RB137/MR-RB139	MR-RB137-4/MR-RB13V-4
Voltage/Frequency	Single-phase 198VAC to 242VAC, 50 Hz/60 Hz	Single-phase 380VAC to 480VAC, 50 Hz/60 Hz
Consumed power [W]	20 (50 Hz)/18 (60 Hz)	20 (50 Hz)/18 (60 Hz)

Regenerative options may be heated to 100°C or more above the ambient temperature. Carefully determine the position of the radiation, installation position, wiring path, etc. Use flame-retardant wire for wiring or apply flame retardant treatment by avoiding contact between the wires and the regenerative option. The G3 and the G4 terminals are thermal protectors. Abnormal overheating of the regenerative option causes the contact between G3 and G4 to open.

Be sure to use twisted wires when connecting to the converter unit and keep the wiring distance to no longer than 5m.

1) MR-RB139/MR-RB137-4

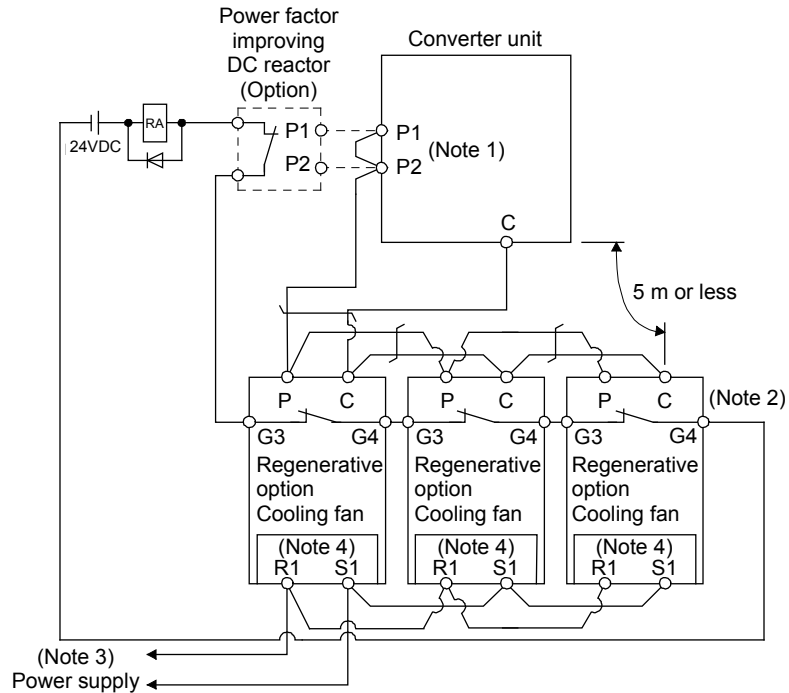


- Note 1. When using the power factor improving DC reactor, remove the short bar across P3 and P4.
- Note 2. Specifications for contacts between G3 and G4
 Maximum voltage: 120VAC/DC
 Maximum current: 0.5 A/4.8VDC
 Maximum capacity 2.4 VA
- Note 3. For the power specifications for the cooling fan, refer to the table in Appendix 1.
- Note 4. For MR-RB137-4, "R1" becomes "R400" and "S1" becomes "S400".

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

2) MR-RB137/MR-RB13V-4

POINT
<ul style="list-style-type: none"> For MR-RB137 and MR-RB13V-4, three units are required for each converter unit. For MR-RB137 and MR-RB13V-4, purchase three units.



- Note 1. When using the power factor improving DC reactor, remove the short bar across P3 and P4.
- Note 2. Specifications for contact between G3 and G4
 Maximum voltage: 120VAC/DC
 Maximum current: 0.5 A/4.8VDC
 Maximum capacity: 2.4 VA
- Note 3. For the power specifications for the cooling fan, refer to the table in Appendix 1.
- Note 4. For MR-RB13V-4, "R1" becomes "R400" and "S1" becomes "S400".

12.6 External Dynamic Brake

The list of external dynamic brakes with a large capacity of 30kW or more (combination) is shown below.

Name	Compatible				
	MR-J4-B		MR-J2S-B	MR-J4-B-RJ020	
	HG motor Drive	HA, HC motor Drive	HA, HC motor Drive	HG motor Drive	HA, HC motor Drive
DBU-37K	Not available	Compatible	Compatible	Not available	Compatible
DBU-37K-R1	Compatible	Not available	Not available	Compatible	Not available
DBU-55K-4	Not available	Compatible	Compatible	Not available	Compatible
DBU-55K-4-R5	Compatible	Not available	Not available	Compatible	Not available

For details, see "Part 5: Review on Replacement of MR-J2S-30kW or More with MR-J4-_DU_".

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

13. SETTING PARAMETERS ADDED ON MR-J4-_B_-RJ020 SERVO AMPLIFIER

This section explains the procedure for setting parameters added on the MR-J4-_B_-RJ020 servo amplifier from the motion controller (in J2S Compatibility Mode).

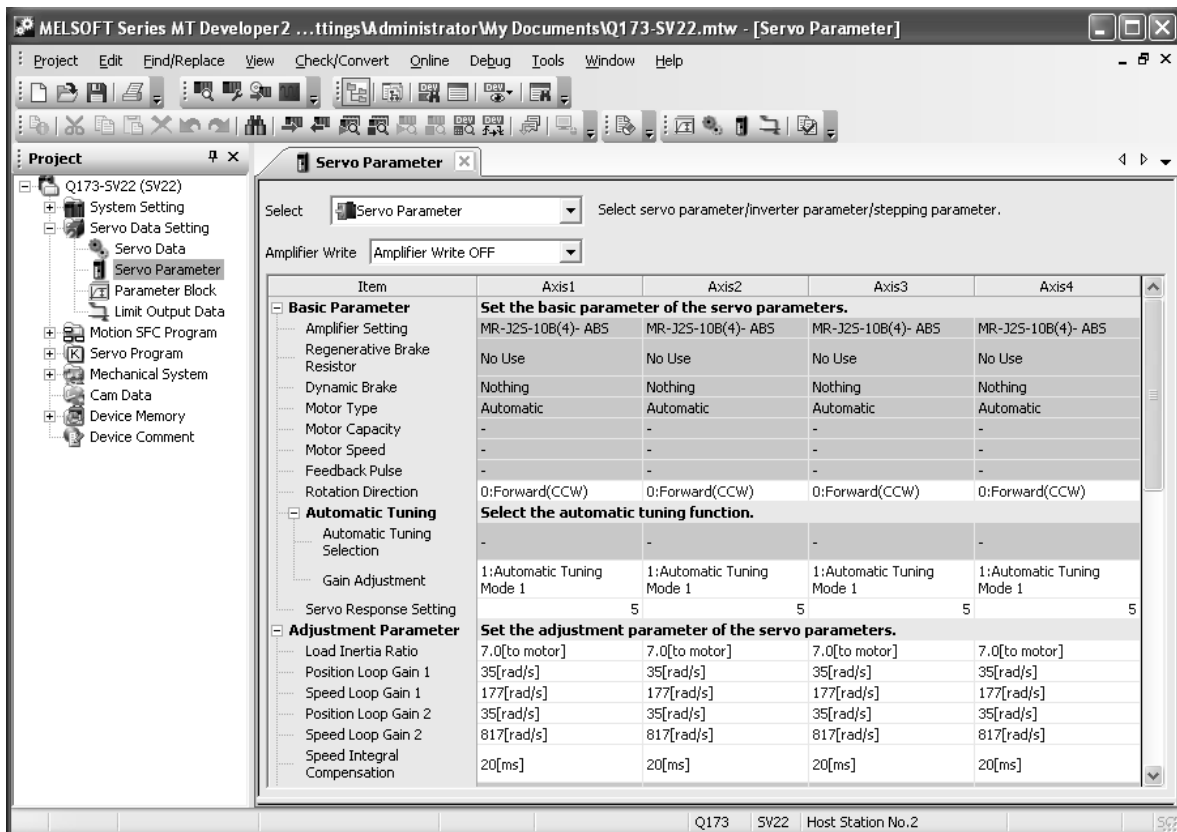
13.1 Combination of Motion Controller and Peripheral Software

Series	Motion controller model	Motion controller peripheral software
Q series	Q172CPU(N) Q173CPU(N)	MELSOFT MT Works2 (SW1DNC-MTW2-J) MT Developer (SW6RNC-GSV)
A series	A171SHCPU(N) A172SHCPU(N) A173UHCPU A273UHCPU	SW3RNC-GSV

13.2 Parameter Setting Procedure

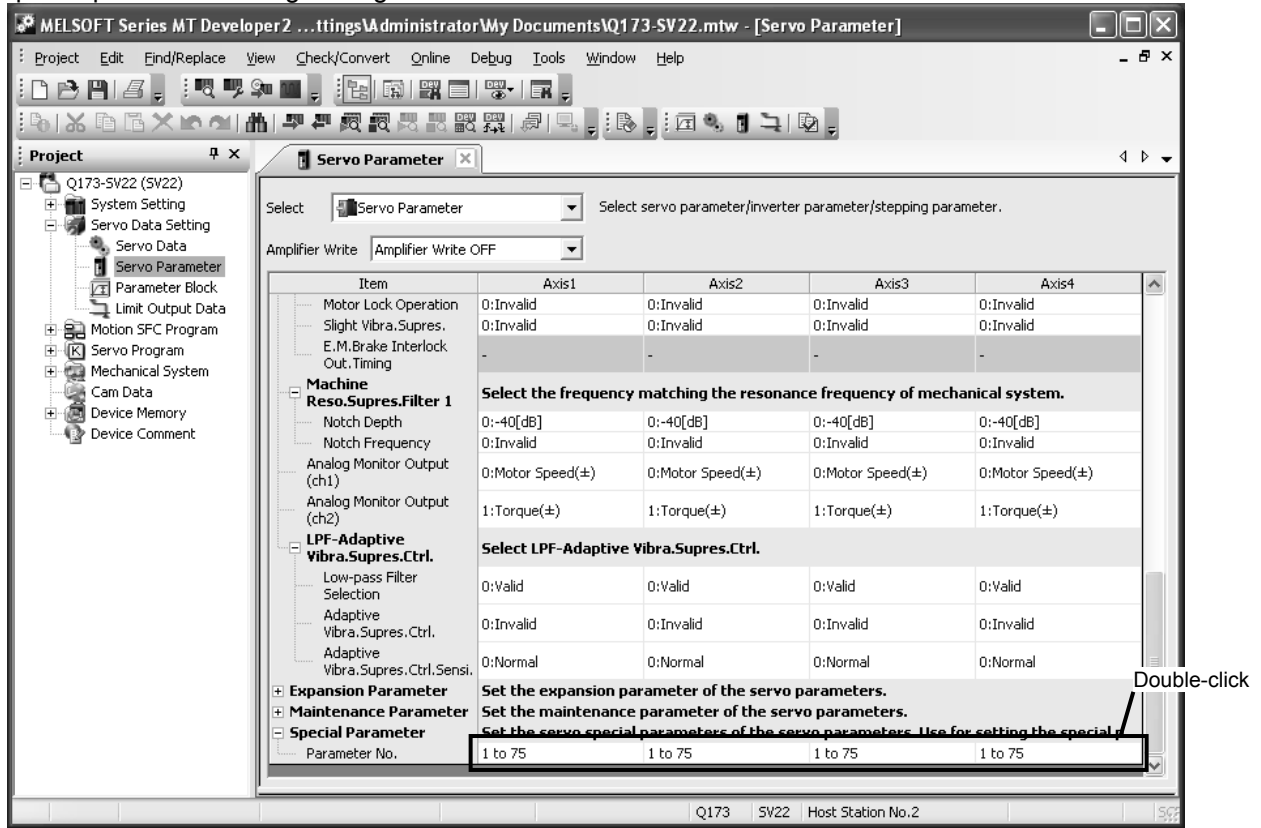
13.2.1 For MELSOFT MT Works2

(1) Display the "Servo parameter" window.

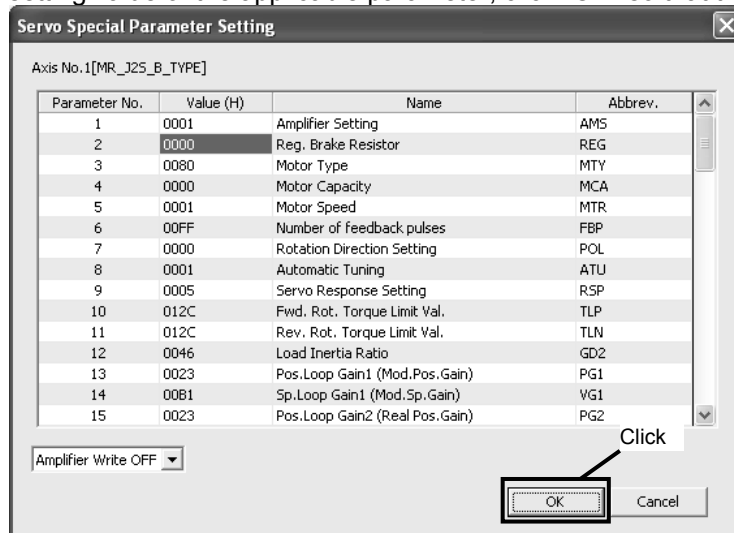


[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

- (2) Double-click the setting field "1 to 75" under special parameters "Parameter No." and display the "Servo special parameter setting" dialog.



- (3) Change the parameter setting value.
After changing the setting value of the applicable parameter, click "OK" so that the setting value is reflected.

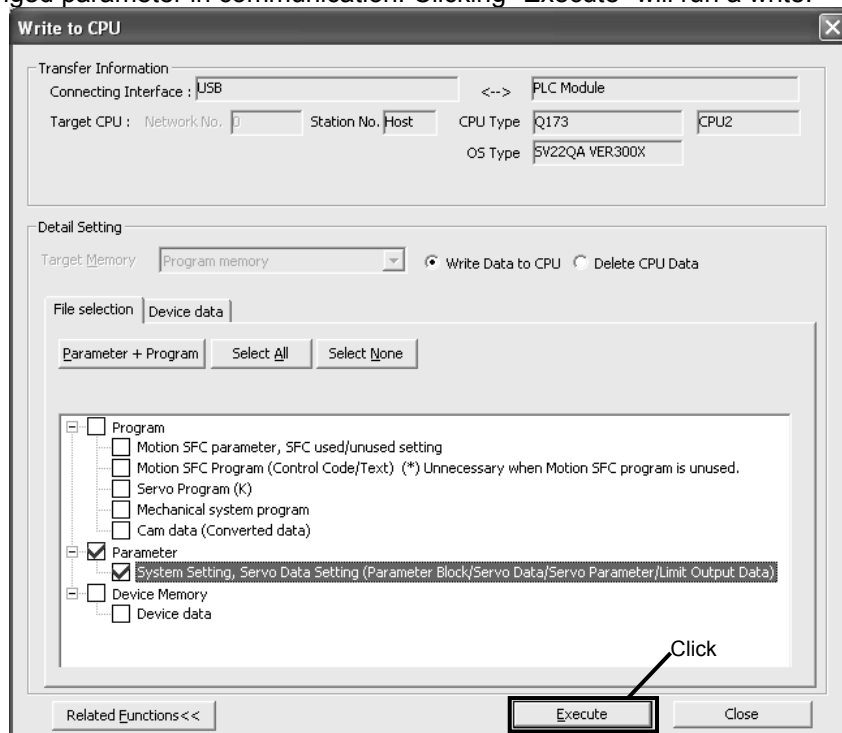


Examples of changes of parameter setting values are shown below.

- (a) Change of [Pr. 2 regenerative resistor] (hexadecimal parameter)
To change the setting value to "0020", enter "0020" as it is.
- (b) Change of [Pr. 12 load inertia moment ratio relative to the servo motor (load inertia ratio) (decimal parameter)
To change the setting value to "7.0", enter "0046" which is the value resulted from converting "70" to the hexadecimal number.
- (c) Change of [Pr.39 Electronic dynamic brake operating time] (decimal parameter)
To change the setting value to "10000", enter "2710" which is the value resulted from converting "10000" to the hexadecimal number.

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

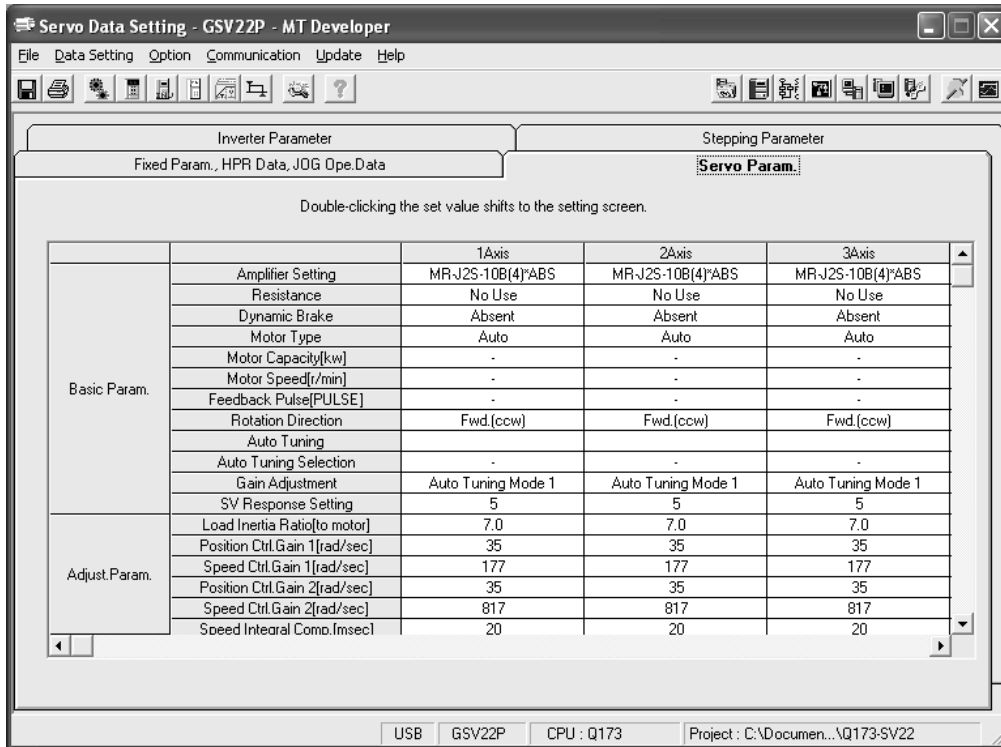
(4) Write the changed parameter in communication. Clicking "Execute" will run a write.



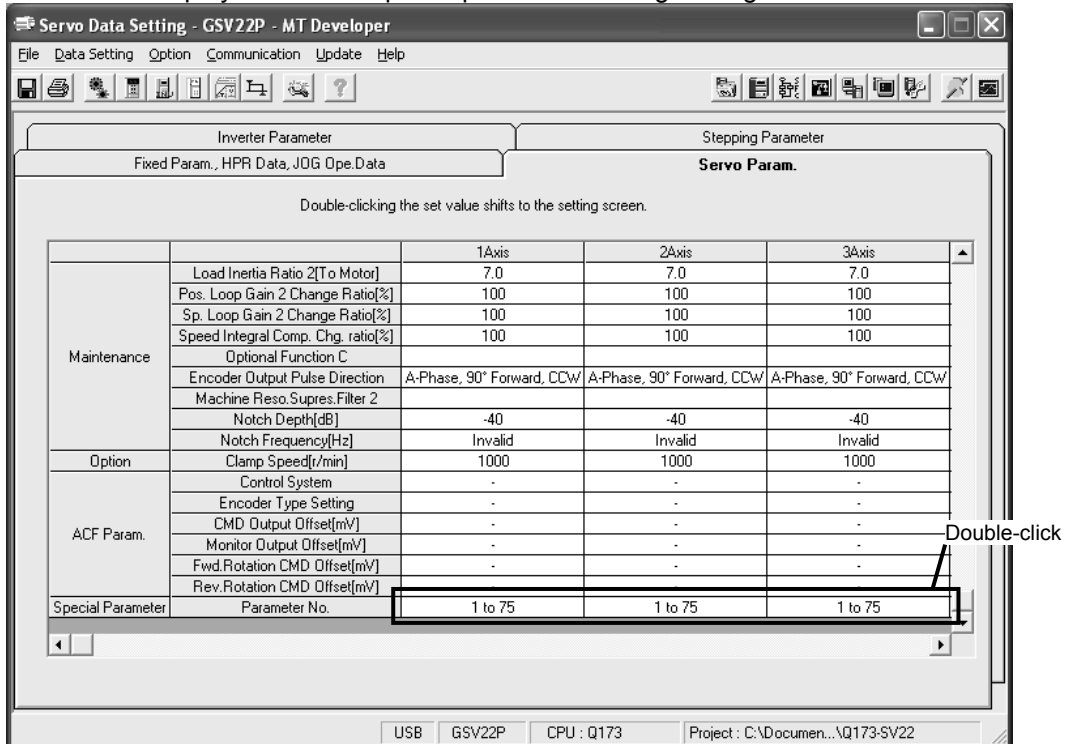
[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

13.2.2 For MT Developer (software version 00W or later)

(1) Display the "Servo data setting" window.



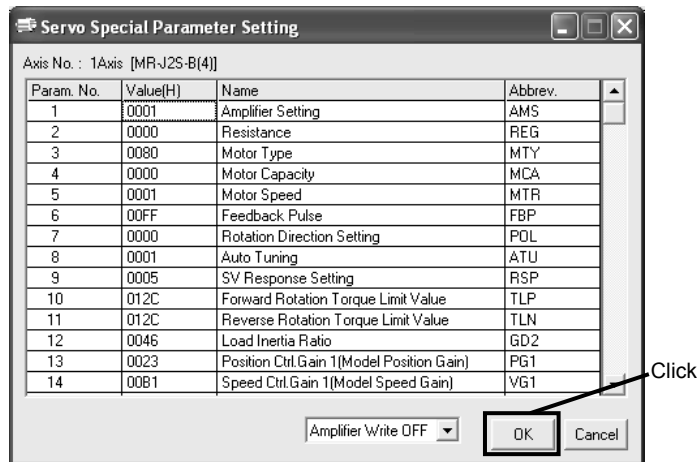
(2) Double-click the setting field "1 to 75" under special parameters "Parameter No." in the "Servo parameter" tab and display the "Servo special parameter setting" dialog.



[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

(3) Change the parameter setting value.

After changing the setting value of the applicable parameter, click "OK" so that the setting value is reflected.



Examples of changes of parameter setting values are shown below.

(a) Change of [Pr. 2 regenerative resistor] (hexadecimal parameter)

To change the setting value to "0020", enter "0020" as it is.

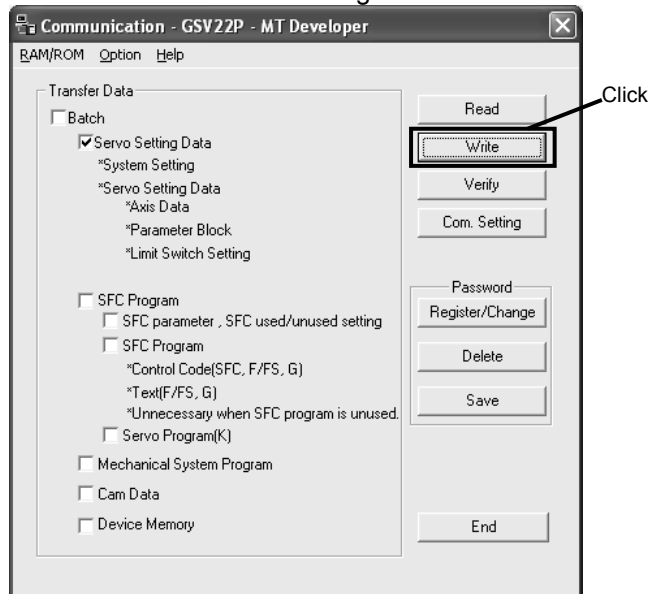
(b) Change of [Pr. 12 load inertia moment ratio relative to the servo motor (load inertia ratio) (decimal parameter)

To change the setting value to "7.0", enter "0046" which is the value resulted from converting "70" to the hexadecimal number.

(c) Change of [Pr.39 Electronic dynamic brake operating time] (decimal parameter)

To change the setting value to "10000", enter "2710" which is the value resulted from converting "10000" to the hexadecimal number.

(4) Write the changed parameter in communication. Clicking "Write" will run a write.



[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

13.2.3 For MT Developer (software version 00V or earlier) or SW3RNC-GSV

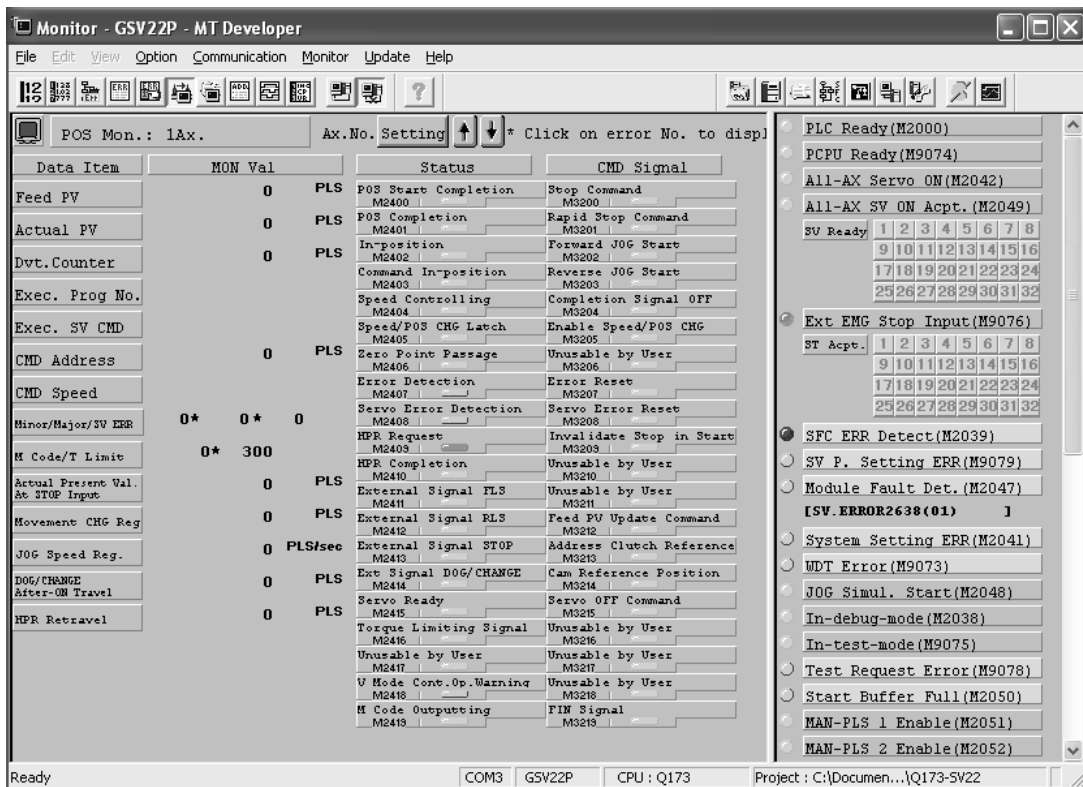
POINT

- Perform the steps during communication with the servo controller and the servo amplifier.

(1) Setting procedure

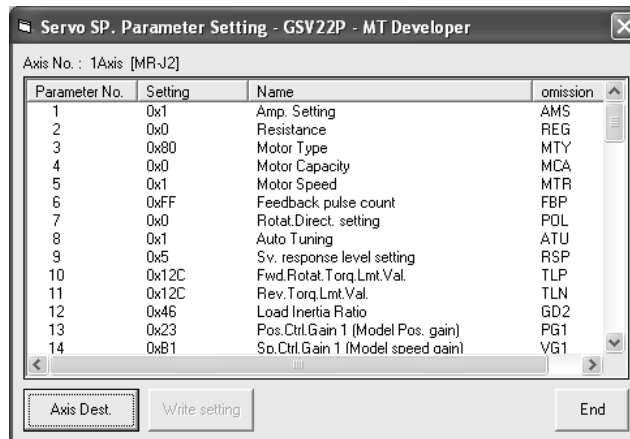
(a) Display the monitor screen.

Set the monitor to a stooped state of monitor using the positioning monitor.



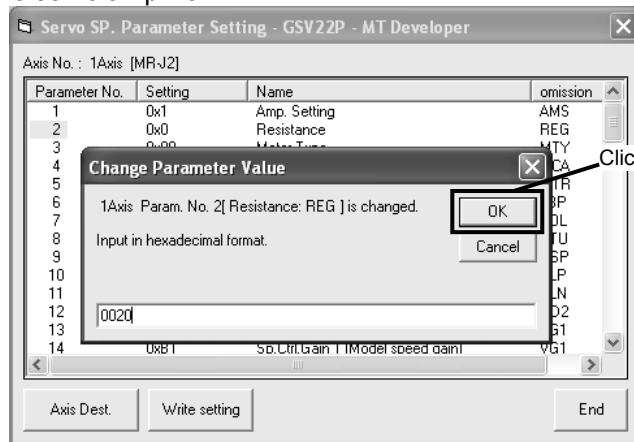
(b) With the monitor screen displayed, use the shortcut keys

"Ctrl" + "Shift" + "Alt" + "O" on the keyboard to display the "Servo special parameter setting" dialog.



(3) Change the parameter setting value.

After changing the setting value of the applicable parameter, click "OK" to write the setting value to the motion controller and the servo amplifier.



Examples of changes of parameter setting values are shown below.

(a) Change of [Pr. 2 regenerative resistor] (hexadecimal parameter)

To change the setting value to "0020", enter "0020" as it is.

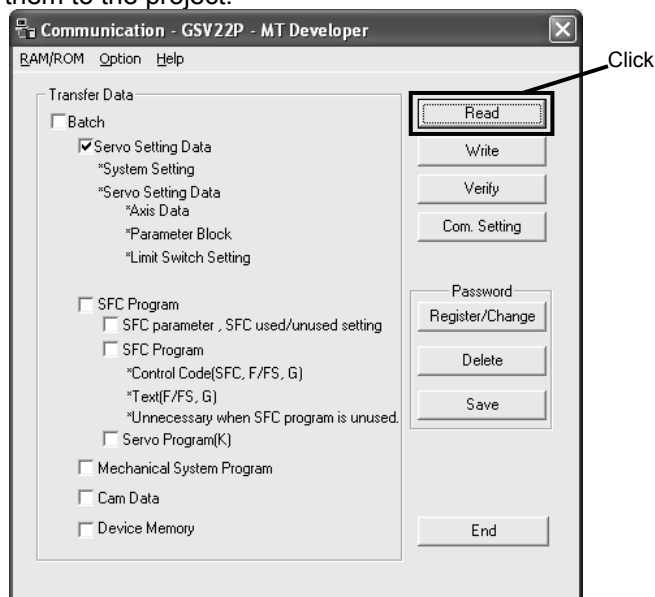
(b) Change of [Pr. 12 load inertia moment ratio relative to the servo motor (load inertia ratio) (decimal parameter)]

To change the setting value to "7.0", enter "0046" which is the value resulted from converting "70" to the hexadecimal number.

(c) Change of [Pr.39 Electronic dynamic brake operating time] (decimal parameter)

To change the setting value to "10000", enter "2710" which is the value resulted from converting "10000" to the hexadecimal number.

(4) Since the parameter values changed in (3) are not reflected in the project, read the servo parameters in communication and save them to the project.



[Appendix 2] Introduction to Renewal Tool

Mitsubishi Electric System & Service Co., Ltd. provides the related services.
For details, please see the following address.

 **Mitsubishi Electric System & Service Co., Ltd.**

<http://www.melsc.co.jp/business/>

OVERSEAS SERVICE SUPPORT SECTION

Email: osb.webmaster@melsc.jp

[Appendix 2] Introduction to Renewal Tool

[Appendix 2] Introduction to Renewal Tool

1 SUMMARY

The MR-J2S renewal tool is a tool to replace the presently used MR-J2S servo amplifier with the MR-J4 servo amplifier. The company is prepared to provide a renewal kit compatible with the existing mounting dimensions and terminal block cables, and a conversion cable compatible with the existing cables.

1.1 Compatible Models

Type	Former model	Replacement
General-purpose interface (Hereinafter referred to as A type)	MR-J2S-_A	MR-J4-_A
	MR-J2S-_A1	MR-J4-_A1
	MR-J2S-_A4	MR-J4-_A4
SSCNET Interface (Hereinafter referred to as B type)	MR-J2S-_B	MR-J4-_B-RJ020 + MR-J4-T20
	MR-J2S-_B1	MR-J4-_B1-RJ020 + MR-J4-T20
	MR-J2S-_B4	MR-J4-_B4-RJ020 + MR-J4-T20
Built-in positioning function (Hereinafter referred to as CP type)	MR-J2S-_CP	MR-J4-_A-RJ
	MR-J2S-_CP1	MR-J4-_A1-RJ

1.2 Features

- It is possible to operate the exiting MR-J2S servo motor with the MR-J4 servo amplifier.
- Wiring work can be shortened because the existing cables can be connected as they are (except for some models).
- The renewal kit can be mounted using the existing mounting holes.
- The existing space can be effectively used by adopting the sliding mechanism for the renewal kit. (For some models)
- By utilizing the renewal tool, it is possible to replace by proceeding in stages from primary replacement to secondary replacement.

Primary replacement: Replace the servo amplifier only.

Secondary replacement: Replace the servo motor after replacement of the servo amplifier.

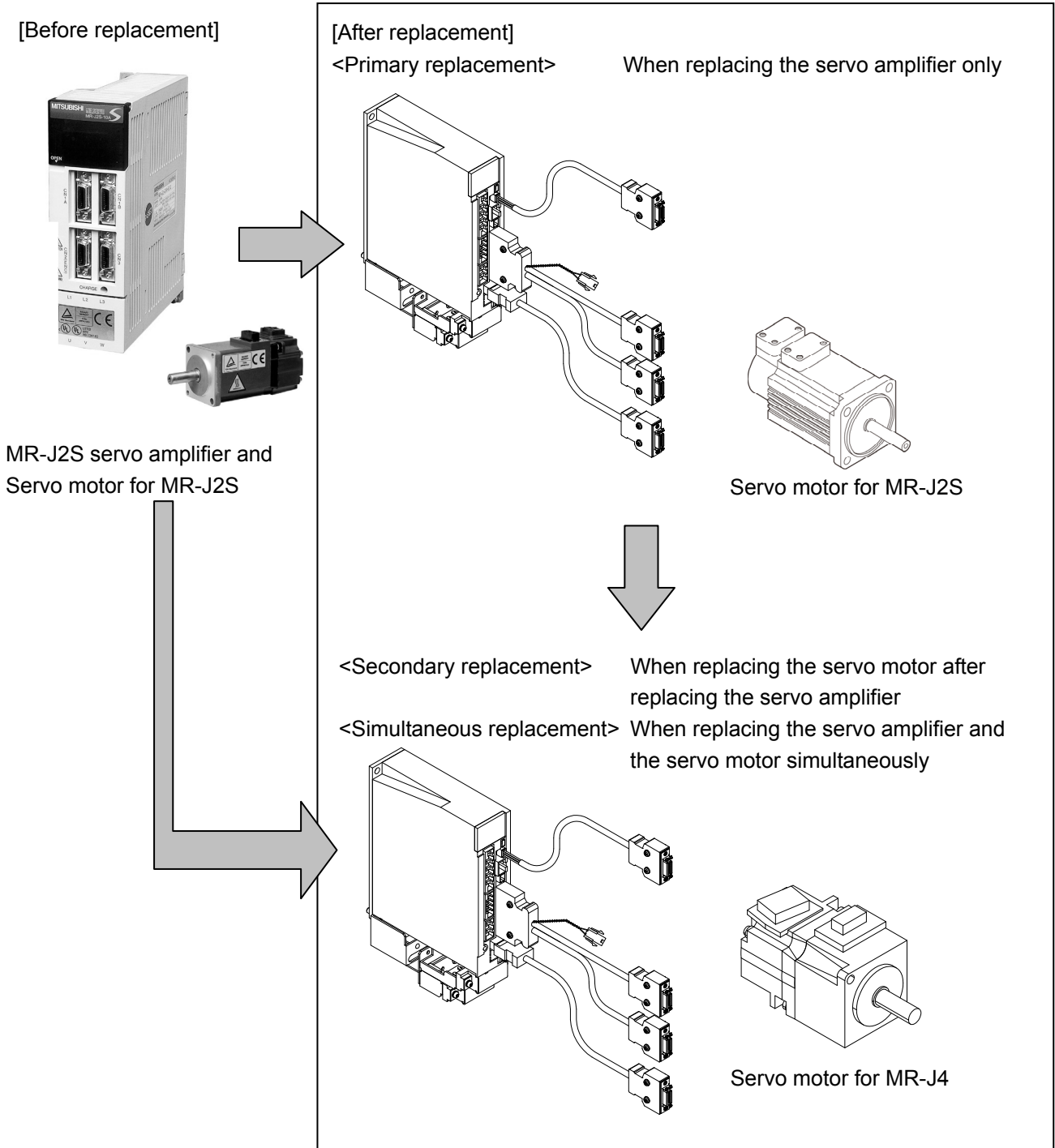
Simultaneous replacement: Replace the servo amplifier and the servo motor simultaneously.

* It is not possible to replace the servo motor only.

* A separate 24VDC power supply (current capacity: 80 mA or more) for the interface is required when the internal 24VDC power supply for the interface is used for the MR-J2S servo amplifier. Must be provided by the customer. (Not included with the renewal tool.)

[Appendix 2] Introduction to Renewal Tool

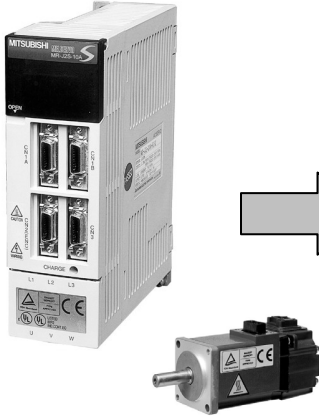
1.2.1 MR-J2S-_A_ renewal tool MR-J2S-_CP_ renewal tool



[Appendix 2] Introduction to Renewal Tool

1.2.2 MR-J2S-_B_ renewal tool

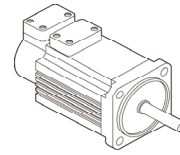
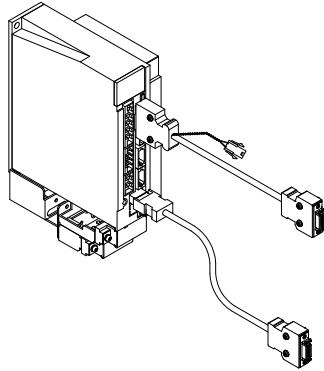
[Before replacement]



[After replacement]

<Primary replacement>

When replacing the servo amplifier only



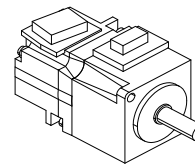
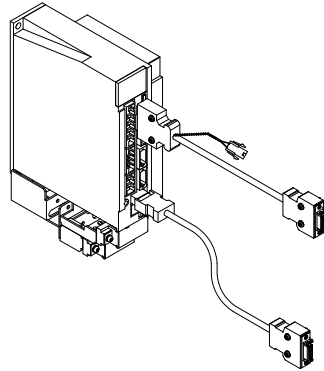
Servo motor for MR-J2S

<Secondary replacement>

When replacing the servo motor after replacing the servo amplifier

<Simultaneous replacement>

When replacing the servo amplifier and the servo motor simultaneously



Servo motor for MR-J4

[Appendix 2] Introduction to Renewal Tool

(1) Common items

*When the renewal tool is used.

Item	MR-J2S series	MR-J4 series	When the renewal tool is used	Compatibility (*)	Remarks	
Servo amplifier	Dynamic brakes	Built-in (0.1 to 7 kW) External (11 to 55 kW)	Built-in (0.1 to 7 kW) External (11 to 55 kW) * Coasting distance is different.		△ (Note 2)	
	Internal regenerative resistor	Built-in (0.2 to 7 kW) External (11 to 55 kW)	Built-in (0.2 to 7 kW) External (11 to 55 kW)		△ (Note 3)	
	control circuit power supply	24VDC ±15% 1-phase 100 to 120VAC 1-phase 200 to 230VAC 1-phase 380 to 480VAC	1-phase 100 to 120VAC 1-phase 200 to 240VAC 1-phase 380 to 480VAC		△ (Note 18)	
	Main circuit power supply	1-phase 100 to 120VAC 1-phase/3-phase 200 to 230VAC 1-phase/3-phase 380 to 480VAC	1-phase 100 to 120VAC 1-phase/3-phase 200 to 240VAC 1-phase/3-phase 380 to 480VAC		○	
	Interface 24VDC power supply	Built-in	External supply required	External supply required	×	(Note 4)
	Control circuit power/ regenerative resistor terminal connection method	For 200 V: 0.1 to 1 kW: Plug-in type connector 2 kW or more: Terminal block For 400V: 0.6 to 2kW: Plug-in type connector 3.5 kW or more: Terminal block	For 200 V: 0.1 to 3.5 kW: Plug-in type connector 5 kW or more: Terminal block For 400V: 0.6 to 3.5 kW: Plug-in type connector 5 kW or more: Terminal block	For 200 V: With terminal block conversion	△	(Note 19)
	Main circuit power supply terminal connection method	For 200 V: Terminal block For 400 V: 0.6 to 2 kW: Plug-in type connector 3.5 kW or more: Terminal block	For 200 V: 0.1 to 3.5 kW: Plug-in type connector 5 kW or more: Terminal block For 400 V: 0.6 to 3.5 kW: Plug-in type connector 5 kW or more: Terminal block	For 200 V: With terminal block conversion (other than of 5 kW)	△	(Note 19)
	Auto tuning	Real-time auto tuning: 15 steps	Real-time auto tuning: 40 steps One-touch tuning		○	
	Advanced vibration suppression control II	Unprovided	Provided		○	
	Adaptive filter	Provided (I)	Provided (II: with improved function)		○	
	Notch filter	Provided (2 pcs.)	Provided (5 pcs.)		○	
	Tough drive function	Unprovided	Provided		○	
	Drive recorder function	Unprovided	Provided		○	
	Restart after instantaneous power failure	Supported	None		×	(Note 5)
	Cooling method	Self cooling (0.1 to 1 kW) Strong cooling (2 to 22 kW)	Self cooling (0.1 to 0.6 kW) Strong cooling (0.7 to 22 kW)		○	(Note 6)
	Heatsink Outside mounting attachment	MR-JACN_ (11 to 22 kW) MR-ACN_ (30 to 55 kW)	MR-J4ACN_ (11, 15 kW) MR-J3ACN (22 kW) 30 to 55 kW: Unprovided		×	(Note 21)

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

See Appendix page 2-10 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(2) A type

*When the renewal tool is used.

Item	MR-J2S series	MR-J4 series	When the renewal tool is used	Compatibility (*)	Remarks		
Servo amplifier	Capacity range	0.1 to 0.4 kW (100 V) 0.1 to 37 kW (200 V) 0.6 to 55 kW (400V)	0.1 to 0.4 kW (100 V) 0.1 to 37 kW (200 V) 0.6 to 55 kW (400V)	0.1 to 0.4 kW (100 V) 0.1 to 37 kW (200 V) 0.6 to 55 kW (400V)	○	(Note 1)	
	Control mode	<ul style="list-style-type: none"> Position control mode (pulse command) Speed control mode (analog command) Torque control mode (analog command) 	<ul style="list-style-type: none"> Position control mode (pulse command) Speed control mode (analog command) Torque control mode (analog command) 		○		
	Control signal/ Encoder signal/ Monitor signal Connector	7 kW or less	Control signal (CN1A, CN1B) 2 pcs. Encoder signal (CN2), 1 unit Monitor signal (CN3), 1 unit	Control signal (CN1), 1 unit Encoder signal (CN2), 1 unit Monitor signal (CN6), 1 unit *Different connector shape	With conversion cable Compatible	○	
		11 to 55 kW	Control signal (CN1A, CN1B) 2 pcs. Encoder signal (CN2), 1 pc. Communication connector (CN3) 1 pc. Monitor signal (CN4), 1 pc.				
	Maximum input pulse	Differential pulse 500 kpps Open-collector 200 kpps Command pulse: Sink	Differential pulse 4 Mpps Open-collector 200 kpps Command pulse: Sink		○		
	Command pulse logic setting	Forward/reverse rotation pulse train Signed pulse train A-phase/B-phase pulse train	Forward/reverse rotation pulse train Signed pulse train A-phase/B-phase pulse train		○	(Note 7)	

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

See Appendix page 2-10 for important points to note.

[Appendix 2] Introduction to Renewal Tool

Continued from previous page

*When the renewal tool is used.

Item	MR-J2S series	MR-J4 series	When the renewal tool is used	Compatibility (*)	Remarks	
Servo amplifier	DI signal	8 points	9 points		○	
		SON reception time After power-up, 2 s at maximum	SON reception time After power-up, 3.5 s at maximum		△	(Note 8)
		Forced stop: EM1 (DB stop)	Forced stop: EM1 (DB stop) / Possible to select EM2 (deceleration stop)		△	(Note 9)
	DO signal	6 points	6 points		○	
		ALM: After power-up, the output is on in 1 s at most	ALM: ALM: After power-up, the output is on in 3.5 s at most		△	(Note 10) (Note 18)
		Alarm code output ACD0 (Pin CN1A-19), 1st digit ACD1 (Pin CN1A-18), 2nd digit ACD2 (Pin CN1B-19), 3rd digit	Alarm code output ACD0 (Pin CN1-24), 1st digit ACD1 (Pin CN1-23), 2nd digit ACD2 (Pin CN1-22), 3rd digit	Unsupported	×	(Note 11)
	DIO Interface	Input: Sink/source Output: Sink	Input/Output: Sink/source		○	
	Encoder Pulse output	ABZ-phase (differential) Z-phase (open-collector)	ABZ-phase (differential) Z-phase (open-collector)		○	(Note 12)
	Absolute position detection system	PC → ABS transfer mode TL → ABS request	PC → ABS transfer mode TL → ABS request		○	
	Parameter Setting method	MR Configurator (SETUP161) Communication method: RS-232 Push-button	MR Configurator2 Communication method: USB Push-button		△	(Note 13)
RS-422/232 Communication function	RS-422/232 serial communication function	RS-422 serial communication function	Unsupported	×	(Note 14)	
Analog monitor input	Input: 2 ch; 10-bit torque; 14-bit speed or equivalent	Input: 2 ch; 10-bit torque; 14-bit speed or equivalent		○		
Analog monitor output	2 ch (0 to ±10 V); 10-bit resolution or equivalent [Monitor signal] • Servo motor speed (±8 V/max. speed) • Torque (±8 V/max. torque) • Current command (±8 V/max. current command) • Command pulse frequency (±10 V/500 kpps) • Droop pulses (±10 V/128 pulses) • Droop pulses (±10 V/2048 pulses) • Droop pulses (±10 V/8192 pulses) • Droop pulses (±10 V/32768 pulses) • Droop pulses (±10 V/131072 pulses) • Bus voltage (+8 V/400 V)	2 ch (0 to ±10 V); 10-bit resolution or equivalent [Monitor signal] • Servo motor speed (±8 V/max. speed) • Torque (±8/max. torque) • Current command (±8 V/max. current command) • Command pulse frequency (±10 V/4 Mpps) • Droop pulses (±10 V/100 pulses) • Droop pulses (±10 V/1000 pulses) • Droop pulses (±10 V/10000 pulses) • Droop pulses (±10 V/100000 pulses) • Feedback position (±10 V/1 Mpulse) • Feedback position (±10 V/10 Mpulse) • Feedback position (±10 V/100 Mpulse) • Bus voltage (+8 V/400 V) • Speed command 2 (±8 V/max. speed) • Encoder inside temperature (±10 V/128°C)		△	(Note 15) (Note 16)	

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

See Appendix page 2-10 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(3) B type

*When the renewal tool is used.

Item	MR-J2S series		MR-J4 series	When the renewal tool is used	Compatibility (*)	Remarks
Capacity range	0.1 to 0.4 kW (100V) 0.1 to 37 kW (200 V) 0.6 to 55 kW (400V)		0.1 to 0.4 kW (100V) 0.1 to 37 kW (200 V) 0.6 to 55 kW (400V)	0.1 to 0.4 kW (100V) 0.1 to 37 kW (200 V) 0.6 to 55 kW (400V)	○	(Note 1)
Control mode	<ul style="list-style-type: none"> Position control mode Speed control mode 		<ul style="list-style-type: none"> Position control mode Speed control mode Torque control mode 		○	
Network	SSCNET		SSCNET (When the MR-J4-T20 SSCNET conversion unit is used.)		○	
Control signal/ Encoder signal/ Monitor signal Connector	7 kW or less	For SSCNET (CN1A, CN1B) 2 pcs. Encoder signal (CN2), 1 unit Monitor signal (CN3), 1 unit	MR-J4-_B-RJ020 amplifier • Encoder signal (CN2), 1 unit • Monitor signal (CN3), 1 unit MR-J4-T20 unit • For SSCNET (CN10A, CN10B) 2 pcs. *Different connector shape	With conversion cable	○	
	11 to 55 kW	For SSCNET (CN1A, CN1B) 2 pcs. Encoder signal (CN2), 1 unit Communication connector (CN3) 1 pc. Monitor signal (CN4), 1 unit Control signal (CON2), 1 unit				
DI signal	0 points		3 points		○	
	SON reception time After power-up, 3 s at maximum		SON reception time After power-up, 4 s at maximum		△	(Note 8)
	Forced stop: EM1 (DB stop)		Forced stop: EM1 (DB stop) / Possible to select EM2 (deceleration stop)		○	(Note 9)
DO signal	2 points		3 points		○	
DIO Interface	Input: Sink/source Output: Sink		Input/Output: Sink/source		○	
Encoder Pulse output	ABZ-phase (differential)		ABZ-phase (differential)		○	(Note 12)
Parameter Setting method	MR Configurator (SETUP161) Communication method: RS-232		MR Configurator (SETUP161) Communication method: RS-232 (When the MR-J4-T20 SSCNET conversion unit is used.) *A separate junction cable is necessary.		○	(Note 17)
Analog monitor output	2 ch (0 to ±10 V); 10-bit resolution or equivalent [Monitor signal] • Servo motor speed (±8 V/max. speed) • Torque (±8 V/max. torque) • Current command (±8 V/max. current command) • Speed command (±8 V/max. speed) • Droop pulses (±10 V/128 pulses) • Droop pulses (±10 V/2048 pulses) • Droop pulses (±10 V/8192 pulses) • Droop pulses (±10 V/32768 pulses) • Droop pulses (±10 V/131072 pulses) • Bus voltage (+8 V/400 V)		2 ch (0 to ±10 V); 10-bit resolution or equivalent [Monitor signal] • Servo motor speed (±8 V/max. speed) • Torque (±8 V/max. torque) • Current command (±8 V/max. current command) • Speed command (±8 V/max. speed) • Droop pulses (±10 V/128 pulses) • Droop pulses (±10 V/2048 pulses) • Droop pulses (±10 V/8192 pulses) • Droop pulses (±10 V/32768 pulses) • Droop pulses (±10 V/131072 pulses) • Bus voltage (+8 V/400 V)		○	

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

See Appendix page 2-10 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(4) CP type

*When the renewal tool is used.

Item	MR-J2S series	MR-J4 series	When the renewal tool is used	Compatibility (*)	Remarks
Capacity range	0.1 to 0.4 kW (100 V) 0.1 to 7 kW (200 V)	0.1 to 0.4 kW (100 V) 0.1 to 7 kW (200 V)	0.1 to 0.4 kW (100V) 0.1 to 7 kW (200 V)	○	(Note 1)
Control mode	• Built-in positioning function	• Built-in positioning function • Position control mode (pulse command) • Speed control mode (analog command) • Torque control mode (analog command)		○	
Control signal/ Encoder signal/ Monitor signal Connector	Control signal (CN1A, CN1B), 2 unit Encoder signal (CN2), 1 unit Monitor signal (CN3), 1 unit	Control signal (CN1), 1 unit Encoder signal (CN2), 1 unit Monitor signal (CN6), 1 unit *Different connector shape	With conversion cable Compatible	○	
Manual pulse generator Maximum input pulse	Open collector 200 kpps	Open collector 200 kpps		○	
DI signal	8 points	11 points		○	
	SON reception time After power-up, 2 s at maximum	SON reception time After power-up, 5 s at maximum		△	(Note 8)
	Forced stop: EM1 (DB stop)	Forced stop: EM1 (DB stop) / Possible to select EM2 (deceleration stop)		△	(Note 9)
DO signal	5 points	8 points		○	
	ALM: After power-up, the output is on in 1 s at most	ALM: ALM: After power-up, the output is on in 5 s at most		△	(Note 10) (Note 18)
	Alarm code output ACD0 (Pin CN1A-19), 1st digit ACD1 (Pin CN1A-18), 2nd digit ACD2 (Pin CN1B-19) 3rd digit	Alarm code output ACD0 (Pin CN1-24), 1st digit ACD1 (Pin CN1-23), 2nd digit ACD2 (Pin CN1-22), 3rd digit	Unsupported	×	(Note 11)
DI/DO combination	1 points	0 points		○	
DIO Interface	Input: Sink/source Output: Sink	Input/Output: Sink/source		○	
Number of internal speed commands	7 points	7 points		○	
Encoder Pulse output	ABZ-phase (differential) Z-phase (open-collector)	ABZ-phase (differential) Z-phase (open-collector)		○	(Note 12)
Parameter Setting method	MR Configurator (SETUP161) Communication method: RS-232 Push-button	MR Configurator2 Communication method: USB Push-button		△	(Note 13)
RS-422/232 Communication function	RS-422/232 serial communication function	RS-422 serial communication function	Unsupported	×	(Note 14)
Number of internal speed commands	7 points	7 points		○	
Point table	up to 31	up to 255		○	
Absolute speed encoder System	Set by the parameter No2	Set by the parameter PA03	Unsupported	○	
Analog monitor input	Input: 2 ch; 10-bit torque; 10-bit override or equivalent	Input: 2 ch; 10-bit torque; 10-bit override or equivalent		○	
Analog monitor output	2 ch (0 to ±10 V); 10-bit resolution or equivalent [Monitor signal] • Servo motor speed (±8 V/max. speed) • Torque (±8 V/max. torque) • Current command (±8 V/max. current command) • Speed command (±8 V/max. speed) • Droop pulses (±10 V/128 pulses) • Droop pulses (±10 V/2048 pulses) • Droop pulses (±10 V/8192 pulses) • Droop pulses (±10 V/32768 pulses) • Droop pulses (±10 V/131072 pulses) • Bus voltage (+8 V/400 V)	2 ch (0 to ±10 V); 10-bit resolution or equivalent [Monitor signal] • Servo motor speed (±8 V/max. speed) • Torque (±8 V/max. torque) • Current command (±8 V/max. current command) • Speed command (±8 V/max. speed) • Droop pulses (±10 V/100 pulses) • Droop pulses (±10 V/1000 pulses) • Droop pulses (±10 V/10000 pulses) • Droop pulses (±10 V/100000 pulses) • Bus voltage (+8 V/400 V)		×	(Note 15) (Note 16)

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

See Appendix page 2-10 for important points to note.

[Appendix 2] Introduction to Renewal Tool

<Precautions>

- Note 1. The renewal tool is compatible with the following capacity:
- A, B types: 0.1 to 0.4 kW (100 V), 0.1 to 37 kW (200 V) and 0.6 to 55 kW (400 V)
 - CP types : 0.1 to 0.4 kW (100 V) and 0.1 to 7 kW (200 V)
2. Note that the coasting distance is different between the MR-J2S servo amplifier and the MR-J4 servo amplifier.
When DB assignment function is used for a servo amplifier of 11 kW or more, set the parameter as follows.
 For A types, set PD27 as "0006".
 For B types, set PD08 as "0006".
3. When replacing, some models cannot use the existing regenerative option. Provide regenerative options as necessary by reselecting the capacity, including calculating the regenerative ability again. See Chapter 7.
4. **A separate 24VDC power supply (current capacity: 80 mA or more) for the interface is required** when the internal 24VDC power supply for the interface is used for the MR-J2S servo amplifier. **Must be provided by the customer. (Not included with the renewal tool.)**
5. There is no restart function in the MR-J4 servo amplifier during momentary power interruption. When replacing, if undervoltage (AL 10.1 or AL 10.2) is generated by instantaneous power failure, reset the alarm (turn off the power once) and restart.
6. Please note that if the renewal kit is used, it is necessary to remove the renewal kit when replacing the servo amplifier cooling fan.
7. When replacing, it is necessary to adjust the command pulse train logic setting between the positioning module and the servo amplifier. For details, see Part 2 Section 3.7.
8. This is the time between power-on and servo-on reception. Due to different reception times, sometimes review of the external sequence is necessary upon replacement.
9. When replacing to the MR-J2S servo amplifier, it is necessary to set the parameters to EM1 (DB stop) (at the time of shipment of the MR-J4 servo, the parameter is set to EM2 (deceleration stop)). For details about parameter settings, see Part 2 for A types, Part 3 for B types, and Part 4 for CP types.
 For CP types, it is not able to change the assignment of the forced stop signal (CN1-42 pin) by the parameter in the MR-J4 amplifier. When the assignment of the EMG signal in the existing MR-J2S amplifier has been changed, the existing wiring change becomes necessary.
10. This is the time until alarm signal output. Due to different reception times, sometimes review of the external sequence is necessary upon replacement. See Part 7 for details.
11. Note that the renewal tool is **not compatible with alarm code output**.
12. Upon replacement, it is necessary to set the parameter for the encoder output pulses.
 For details about parameter setting, see Part 2 for A types, and Part 3 for B types, and Part 4 for CP types.
13. When replacing, a separate communication cable (USB cable: MR-J3USBCBL3M) is required to connect between the servo amplifier and the personal computer.
14. The renewal tool is **not compatible with RS-422/232 serial communication functions**.
15. Please note that the command pulse frequency and the droop pulse output unit are different.
16. Due to differences in motor maximum speed, for secondary and simultaneous replacement the output value of the monitor (motor speed) is different from that of the existing amplifier.
 Note that it is required to change the program when using monitor output with existing equipment.
17. In order to connect between the SSCNET conversion unit (model: MR-J4-T20) and the personal computer, both the existing communication cable (model: MR-CPCATCBL3M) and the junction cable for RS232C (model: MR-J4T20CH00) are required.
18. Please note that the control power supply of the 400 V amplifier (7 kW or less) between J2S and J4 are different.
19. Not included with the renewal tool for 400 V. Please note that it is required to be laid again when the terminal size etc. are different.
20. When replacing a converter unit, a new cable for CN1 is required to be laid.
21. A renewal kit and mounting attachment are not compatible with a heat sink outside mounting attachment of the MR-J2S amplifier

(5) Encoder*When the renewal tool is used.

Item		MR-J2S series	MR-J4 series	When the renewal tool is used	Compatibility (*)	Remarks
Encoder	Connector	1 pcs.	1 pc, different connector shape	With conversion cable	○	
	Communication method	Serial communication	Serial communication		○	
	Resolution	131072 pulse/rev	4194304 pulse/rev		△	(Note 1)

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

<Precautions>

- Note 1. Similar operation is possible using parameter settings.
 For details about parameter settings, see Part 2 for A types, Part 3 for B types, and Part 4 for CP types.
 For the MR-J4-_B-RJ020 servo amplifier, if the HG series servo motor is used, the encoder resolution per rotation of the servo motor is not 4194304 pulses/rev but becomes 131072 pulses/rev.

[Appendix 2] Introduction to Renewal Tool

(6) Servo motor

*When the renewal tool is used.

Item	MR-J2S series	MR-J4 series	When the renewal tool is used	Compatibility (*)	Remarks
Servo motor Connector (power supply/brake)	HC-KFS	HG-KR (different connector shape)	With conversion cable	○	
	HC-MFS	HG-MR (different connector shape)		○	
	HC-SFS	HG-SR (different connector shape)		△	(Note 1)
	HC-RFS	HG-RR		○	
	HC-LFS	HG-JR (different connector shape)		△	(Note 1)
	HC-UFS(B)2000r/min	HG-UR		○	
	HC-UFS(B)3000r/min	HG-KR (different connector shape)		○	
	HA-LFS (7 kW or less)	HG-SR (different connector shape)		○	
	HA-LFS (11 kW or more)	HG-JR (different connector shape)		△	(Note 2) (Note 3) (Note 4)

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

<Precautions>

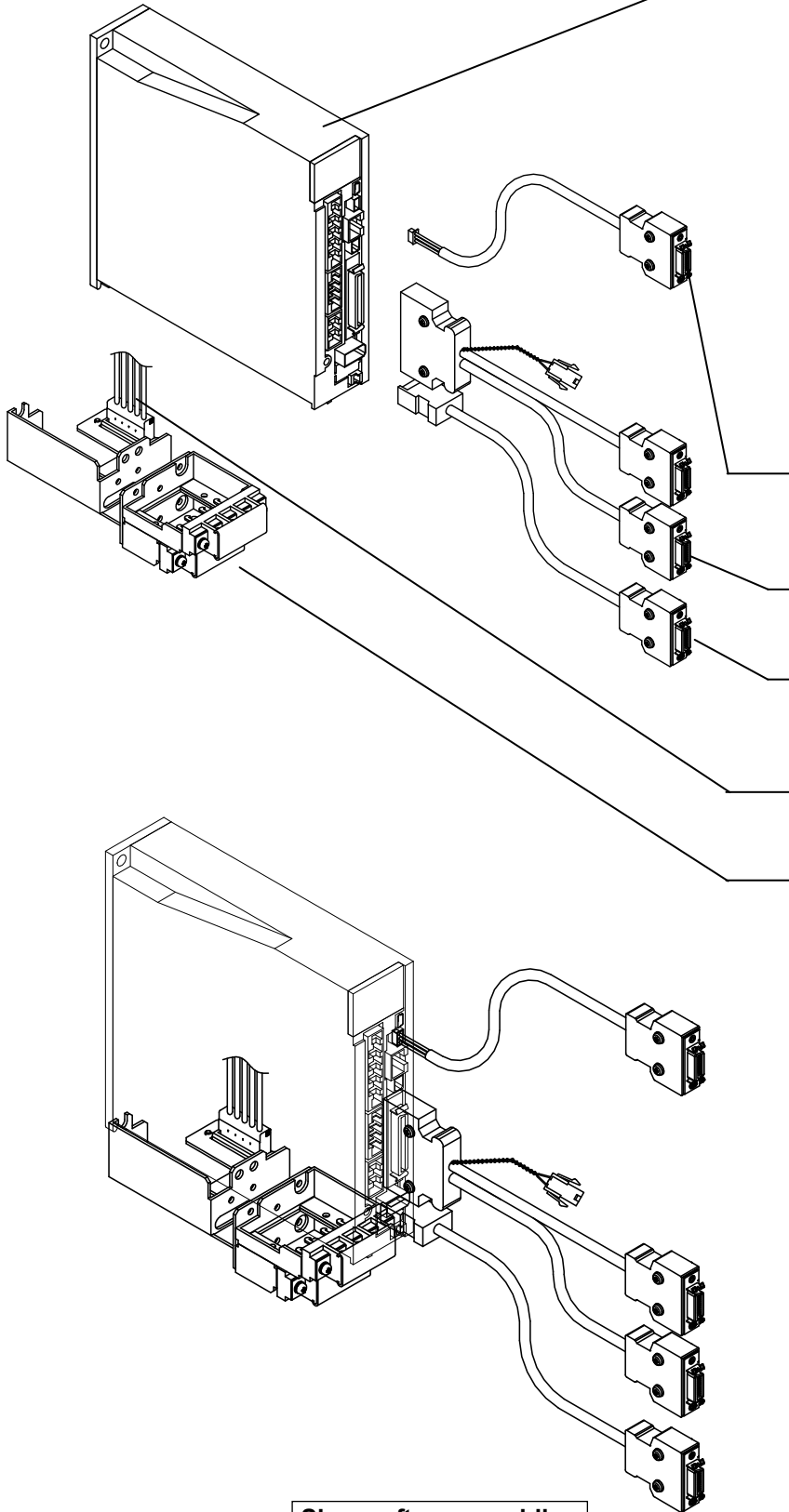
- Note
1. Laying a new electromagnetic brake cable is required when performing a secondary replacement or simultaneous replacement of a motor with brake.
 2. If the HA-LFS motor is replaced with the HG-JR motor, it is necessary to change the crimp terminal of the existing power supply cable.
See Part 8 for details.
 3. If the existing motor is replaced with the HG-JR11K1M motor or JR15K1M motor, the replacement motor will not have a cooling fan and thermal terminal block. Because the existing wiring becomes unnecessary, terminate the cables and insulate as needed.
 4. Laying a new encoder cable is required when performing a replacement of a following motor. Contact a sales representative if a new cable required.
 - HG-JR22K1M(4)
 - HG-JR30K1M(4)
 - HG-JR37K1M(4)
 - HG-JR45K1M4
 - HG-JR55K1M4
 - HG-JR15K1(4)
 - HG-JR20K1(4)
 - HG-JR25K1(4)
 - HG-JR30K1(4)
 - HG-JR37K1(4)

[Appendix 2] Introduction to Renewal Tool

1.3 Renewal Tool Product Names

(1) For A and CP types

(Example) Primary replacement (SC-J2S(CP)J4KT02K)



Name
Servo amplifier (MR-J4- A_ (-RJ) (Note 1))

Note 1. **For primary replacement, the software version of the amplifier differs depending on the corresponding motor.** See "Part 7: Common Reference Material" in this document.

Name
Renewal kit (SC-J2S(CP)J4KT_K)
Monitor conversion cable (Note 2) The MR-J2S monitor signal is changed for MR-J4.
Control signal conversion cable The MR-J2S encoder signal is changed for MR-J4.
Encoder conversion cable The MR-J2S encoder signal is changed for MR-J4.
Control power supply conversion terminal block (Note 3) Connects to the existing control power supply and regenerative option.
Main circuit power supply conversion terminal block (Note 3) Connects to the existing main circuit power supply and servo motor power supply.

Note 2. The monitor conversion cable compatible with an amplifier capacity of 11kW to 55 kW has a different shape.

Note 3. There is no conversion terminal block in the following model:

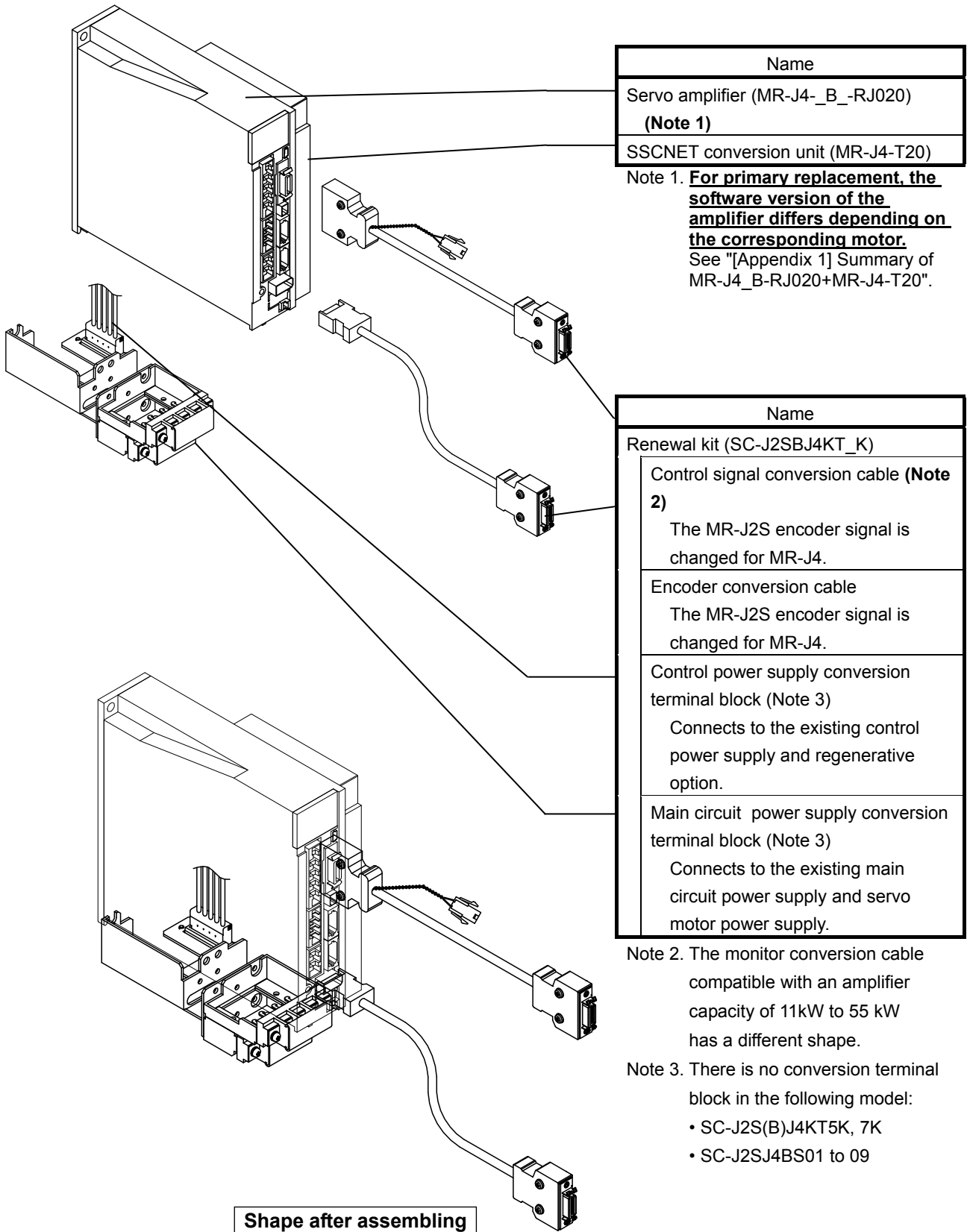
- SC-J2S(CP)J4KT5K, 7K
- SC-J2SJ4BS01 to 09

Shape after assembling

[Appendix 2] Introduction to Renewal Tool

(2) For B types

(Example) Primary replacement (SC-J2SBJ4KT02K)



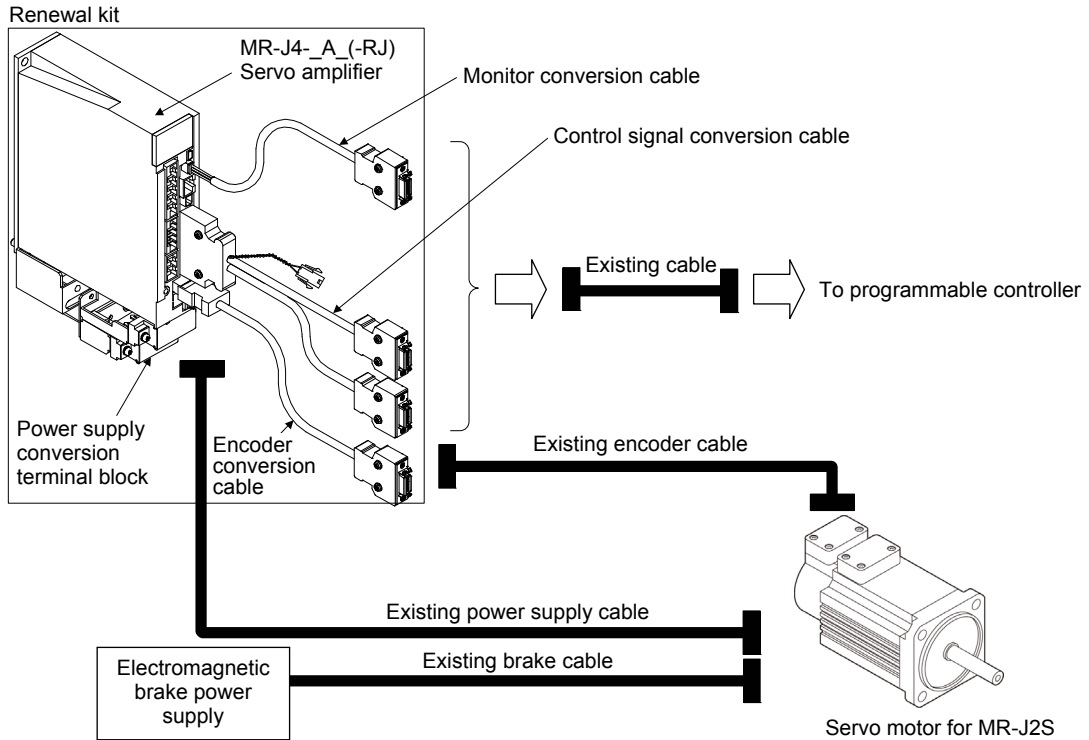
[Appendix 2] Introduction to Renewal Tool

1.4 Renewal Tool Configuration

(1) For A and CP types

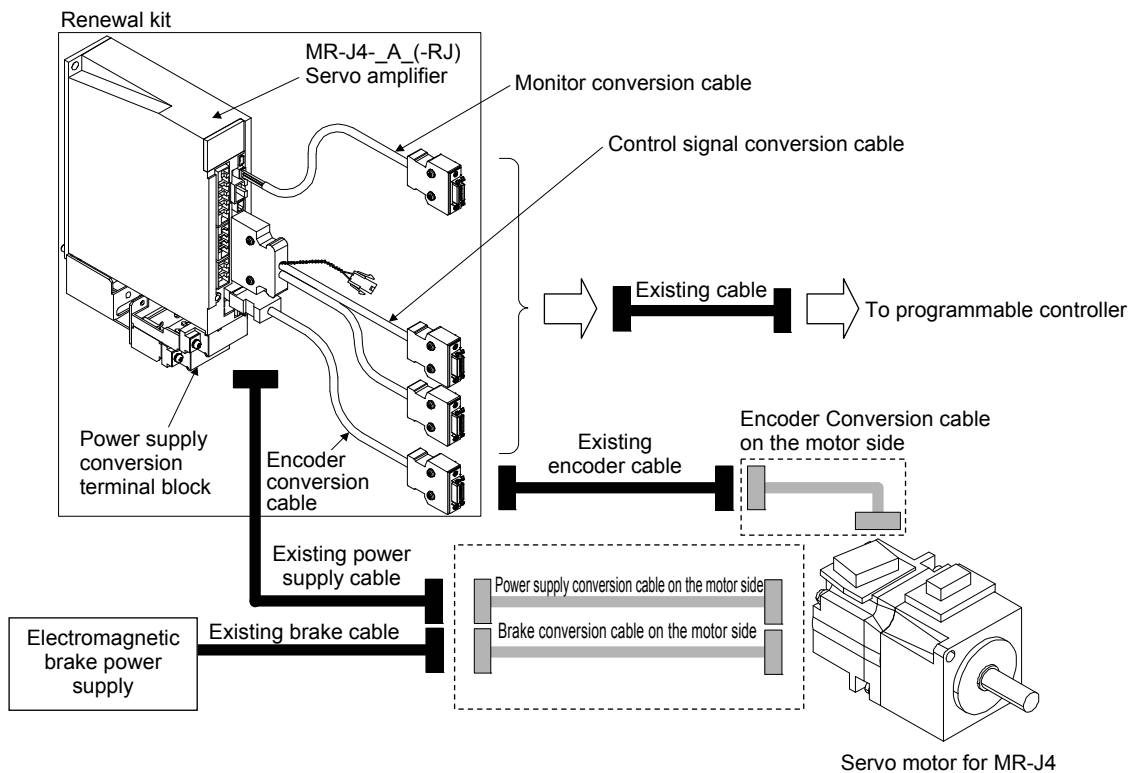
1) Primary replacement:

When replacing the servo amplifier only



2) Secondary replacement: When replacing the servo motor after replacing the servo amplifier

Simultaneous replacement: When replacing the servo amplifier and the servo motor simultaneously

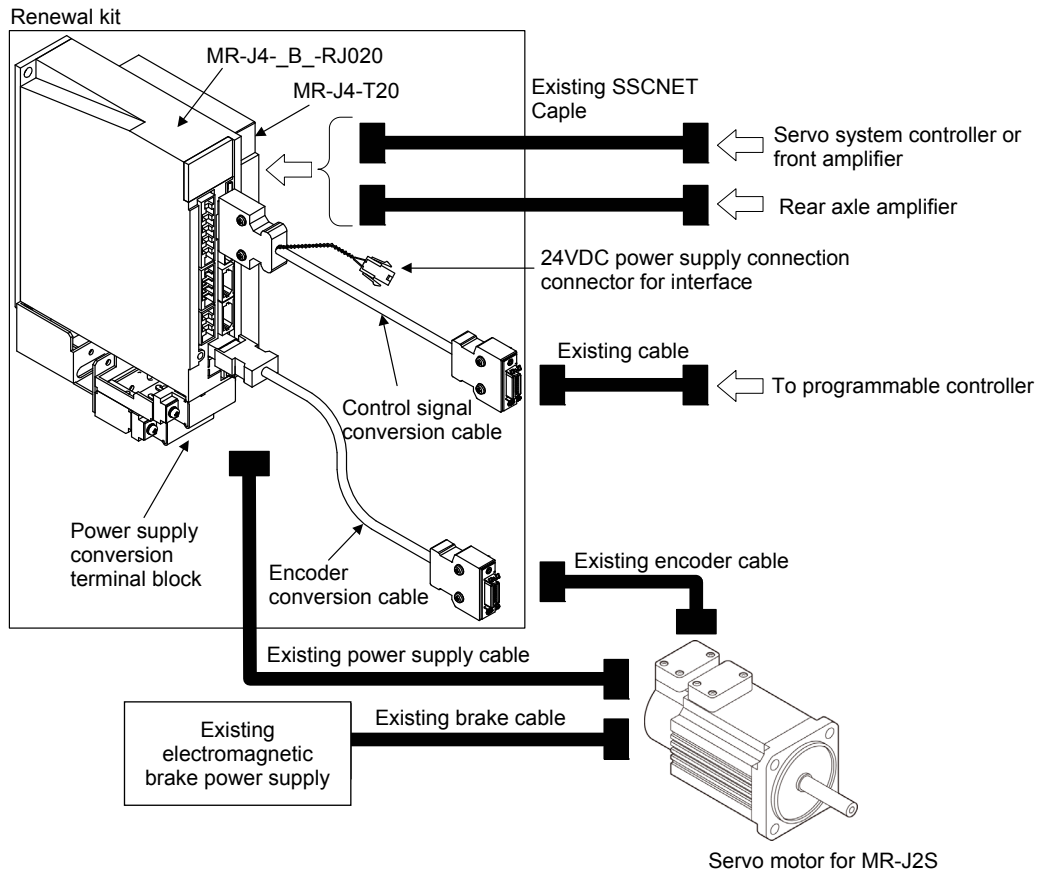


[Appendix 2] Introduction to Renewal Tool

(2) For B types

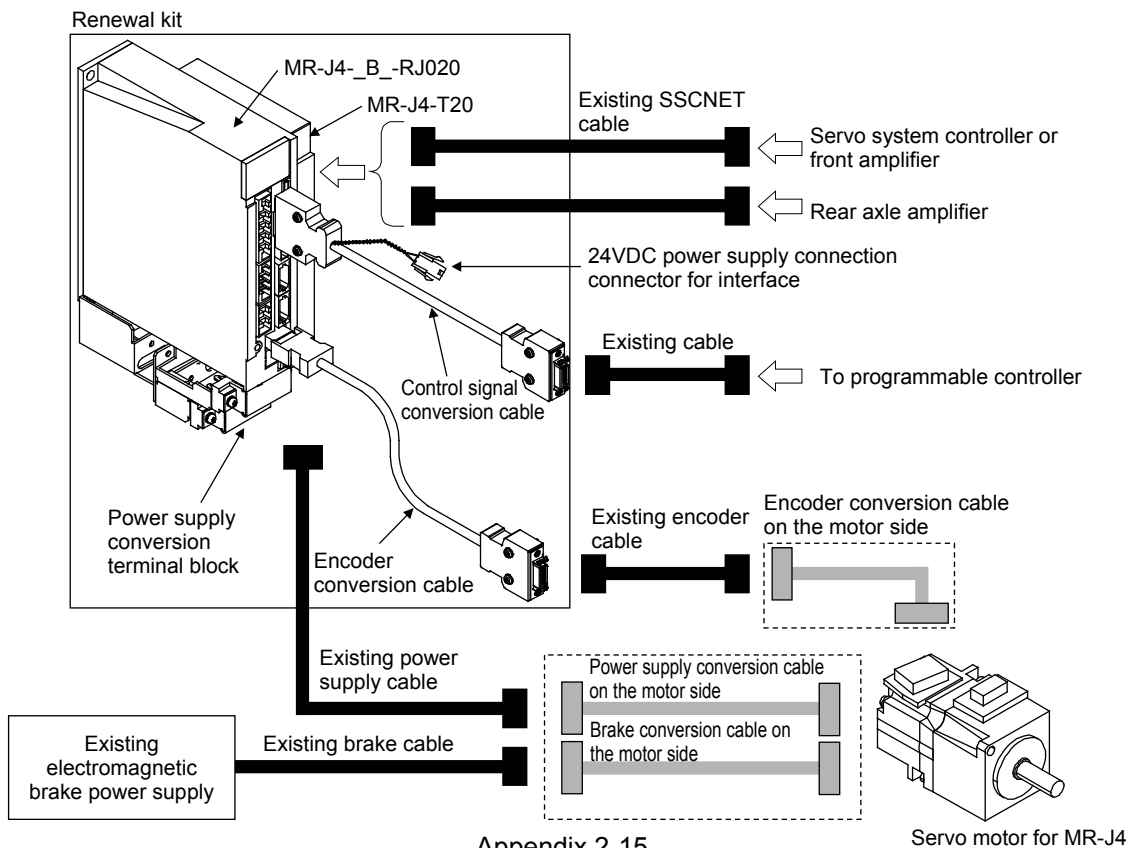
1) Primary replacement:

When replacing the servo amplifier only



2) Secondary replacement: When replacing the servo motor after replacing the servo amplifier

Simultaneous replacement: When replacing the servo amplifier and the servo motor simultaneously



[Appendix 2] Introduction to Renewal Tool

2 RENEWAL TOOL PRODUCT LIST

(1) For A types

No.	Product name	Model	Application	Replacement method
1	Renewal kit	SC-J2SJ4KT02K	MR-J4-_A_servo amplifier capacity: For 100 W, 200 W	Used for primary replacement and simultaneous replacement.
2		SC-J2SJ4KT06K	MR-J4-_A_servo amplifier capacity: For 400 W, 600 W	
3		SC-J2SJ4KT1K	MR-J4-_A_servo amplifier capacity: For 700 W, 1 kW	
4		SC-J2SJ4KT3K	MR-J4-_A_servo amplifier capacity: For 2 kW, 3.5 kW	
5		SC-J2SJ4KT5K	MR-J4-_A_servo amplifier capacity: For 5 kW	
6		SC-J2SJ4KT7K	MR-J4-_A_servo amplifier capacity: For 7 kW	
7		SC-J2SJ4KT15K	MR-J4-_A_servo amplifier capacity: For 11 kW, 15 kW	
8		SC-J2SJ4KT22K	MR-J4-_A_servo amplifier capacity: For 22 kW	
9	Amplifier side conversion cable set	SC-J2SJ4CSET-01 (for 7 kW or less)	Control signal conversion cable (SC-J2SJ4CTC03M)	
10			SC-J2SJ4CSET-02 (for 11 kW or more)	
				Monitor conversion cable (SC-J2SJ4MOC03M)
				24VDC connector cable (SC-J2SJ4CTPWC5M)
	Control signal conversion cable (SC-J2SJ4CTC03M)			
			Encoder conversion cable (SC-J2SJ4ENC03M)	
			Monitor conversion cable (SC-J2SJ4MO2C03M)	
			24VDC connector cable (SC-J2SJ4CTPWC5M)	

(2) For B types

No.	Product name	Model	Application	Replacement method
1	Renewal. kit	SC-J2SBJ4KT02K	MR-J4-_B_-RJ020 servo amplifier capacity: For 100 W, 200 W	Used for primary replacement and simultaneous replacement.
2		SC-J2SBJ4KT06K	MR-J4-_B_-RJ020 servo amplifier capacity: For 400 W, 600 W	
3		SC-J2SBJ4KT1K	MR-J4-_B_-RJ020 amplifier capacity: For 700 W, 1 kW	
4		SC-J2SBJ4KT3K	MR-J4-_B_-RJ020 servo amplifier capacity: For 2 kW, 3.5 kW	
5		SC-J2SBJ4KT5K	MR-J4-_B_-RJ020 servo amplifier capacity: For 5 kW	
6		SC-J2SBJ4KT7K	MR-J4-_B_-RJ020 servo amplifier capacity: For 7 kW	
7		SC-J2SBJ4KT15K	MR-J4-_B_-RJ020 servo amplifier capacity: For 11 kW, 15 kW	
8		SC-J2SBJ4KT22K	MR-J4-_B_-RJ020 servo amplifier capacity: For 22 kW	
9	Amplifier side conversion cable set	SC-J2SBJ4CSET-01 (for 7 kW or less)	Control signal conversion cable (SC-J2SBJ4CT1C03M)	
10			SC-J2SBJ4CSET-02 (for 11 kW or more)	
				24VDC connector cable (SC-J2SJ4CTPWC5M)
				Control signal conversion cable (SC-J2SBJ4CT2C03M)
	Encoder conversion cable (SC-J2SJ4ENC03M)			
			24VDC connector cable (SC-J2SJ4CTPWC5M)	

(3) For CP Types

No.	Product name	Model	Application	Replacement method
1	Renewal. kit	SC-J2SCPJ4KT02K	MR-J4-_A_-RJ servo amplifier capacity: For 100 W, 200 W	Used for primary replacement and simultaneous replacement.
2		SC-J2SCPJ4KT06K	MR-J4-_A_-RJ servo amplifier capacity: For 400 W, 600 W	
3		SC-J2SCPJ4KT1K	MR-J4-_A_-RJ servo amplifier capacity: For 700 W, 1 kW	
4		SC-J2SCPJ4KT3K	MR-J4-_A_-RJ servo amplifier capacity: For 2 kW, 3.5 kW	
5		SC-J2SCPJ4KT5K	MR-J4-_A_-RJ servo amplifier capacity: For 5 kW	
6		SC-J2SCPJ4KT7K	MR-J4-_A_-RJ servo amplifier capacity: For 7 kW	
7	Amplifier side conversion cable set	SC-J2SCPJ4CSET-01	Control signal conversion cable (SC-J2SCPJ4CTC03M)	
			Encoder conversion cable (SC-J2SJ4ENC03M)	
			Monitor conversion cable (SC-J2SJ4MOC03M)	
			24VDC connector cable (SC-J2SJ4CTPWC5M)	

[Appendix 2] Introduction to Renewal Tool

(4) Common (Motor side conversion cable)

No.	Product name	Model	Application	Replacement method
1	Power supply conversion Cable	SC-J2SJ4PW1C03M-A1	For HC-KFS, HC-MFS → HG-KR, HG-MR, Anti-load-side	Used for secondary replacement and simultaneous replacement.
2		SC-J2SJ4PW1C03M-A2	For HC-KFS, HC-MFS → HG-KR, HG-MR, Anti-load side	
3		SC-J2SJ4PWBK1C03M-A1	For HC-KFS, HC-MFS → HG-KR, HG-MR, Anti-load-side (With brake)	
4		SC-J2SJ4PWBK1C03M-A2	For HC-KFS, HC-MFS → HG-KR, HG-MR, Anti-load side (With brake)	
5		SC-SAJ3PW2KC1M-S2	For HC-SFS → HG-SR	
6		SC-HAJ3PW1C1M		
7		SC-J2SJ4PW2C1M	For HC-RFS203 with reducer → HG-SR202 with reducer	
8		SC-J2SJ4PW3C1M-■	For HA-LFS11K1M/15K1M → HG-JR11K1M/15K1M	
9	Encoder Conversion cable	SC-HAJ3ENM1C03M-A1	For HC-KFS, HC-MFS → HG-KR, HG-MR, Anti-load-side	
10		SC-HAJ3ENM1C03M-A2	For HC-KFS, HC-MFS → HG-KR, HG-MR, Anti-load side	
11		SC-HAJ3ENM3C1M	For HC-SFS → HG-SR	
12	Brake conversion Cable	SC-BKC1CBL1M-L	For HC-SFS → HG-SR	
13	Cooling fan Conversion cable	SC-J2SJ4FAN1C1M	For HA-LFS → HG-JR	

(5) Mounting attachment (Note 1, 2)

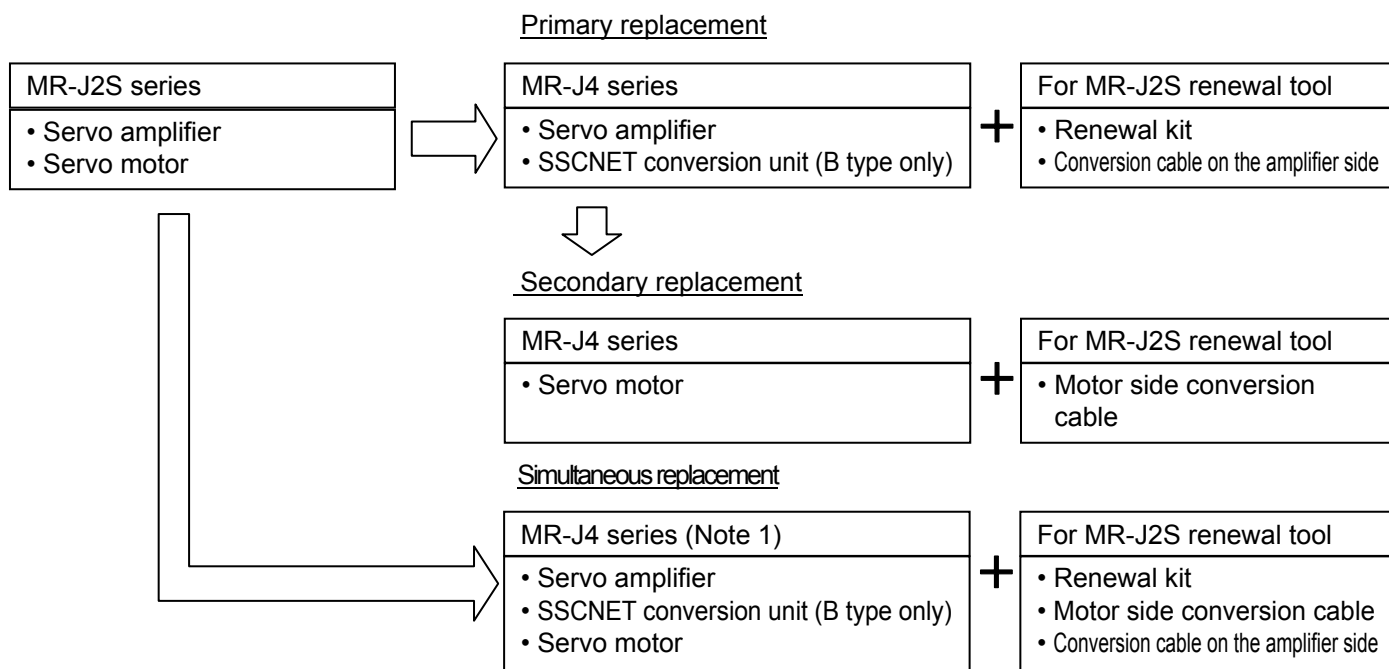
No.	Product name	Model	Application	Replacement method
1	Mounting attachment	SC-J2SJ4BS01	MR-J4-_A servo amplifier capacity: For 700 W, 1 kW	Used for primary replacement and simultaneous replacement.
2			MR-J4-_B-RJ020 amplifier capacity: For 700 W, 1 kW	
3		SC-J2SJ4BS02	MR-J4-_A4 servo amplifier capacity: For 600 W, 1 kW	
4			MR-J4-_B4- RJ020 servo amplifier capacity: For 600 W, 1 kW	
5			MR-J4-_A servo amplifier capacity: For 2 kW, 3.5 kW	
6		SC-J2SJ4BS03	MR-J4-_B4-RJ020 servo amplifier capacity: For 2 kW, 3.5 kW	
7			MR-J4-_A4 servo amplifier capacity: For 2 kW	
8		SC-J2SJ4BS04	MR-J4-_B4-RJ020 servo amplifier capacity: For 2 kW	
9			MR-J4-_A servo amplifier capacity: For 5 kW	
10		SC-J2SJ4BS05	MR-J4-_B-RJ020 servo amplifier capacity: For 5 kW	
11			MR-J4-_A4 servo amplifier For 3.5 kW	
12		SC-J2SJ4BS06	MR-J4-_B4-RJ020 servo amplifier For 3.5 kW	
13			MR-J4-_A servo amplifier capacity: For 7 kW	
14		SC-J2SJ4BS07	MR-J4-_B-RJ020 servo amplifier capacity: For 7 kW	
15			MR-J4-_A4 servo amplifier capacity: For 7 kW	
	MR-J4-_B4-RJ020 servo amplifier capacity: For 7 kW			
	SC-J2SJ4BS08	MR-J4-_A servo amplifier capacity: For 11 kW, 15 kW		
		MR-J4-_B-RJ020 servo amplifier capacity: For 11 kW, 15 kW		
	SC-J2SJ4BS09	MR-J4-_A4 servo amplifier capacity: For 11 kW, 15 kW		
		MR-J4-_B4-RJ020 servo amplifier capacity: For 11 kW, 15 kW		
		MR-J4-_A servo amplifier capacity: For 22 kW		
	SC-J2SJ4BS07	MR-J4-_B-RJ020 servo amplifier capacity: For 22 kW		
		MR-J4-_A4 servo amplifier capacity: For 22 kW		
	SC-J2SJ4BS08	MR-J4-_B4-RJ020 servo amplifier capacity: For 22 kW		
		MR-J4-_A4 servo amplifier capacity: For 30 kW		
	SC-J2SJ4BS09	MR-J4-_B4-RJ020 servo amplifier capacity: For 30 kW		
		MR-J4-_A servo amplifier capacity: For 30 kW, 37 kW		
	SC-J2SJ4BS09	MR-J4-_B-RJ020 servo amplifier capacity: For 30 kW, 37 kW		
		MR-J4-_A4 servo amplifier capacity: For 37 kW, 45 kW, 55 kW		
		MR-J4-_B4-RJ020 servo amplifier capacity: For 37 kW, 45 kW, 55 kW		

- Note 1. When replacing an amplifier of 400 V class, a mounting attachment compatible with its amplifier capacity is required to be purchased. Even when replacing an amplifier of 200 V/100 V class, if a conversion terminal block is not required, a mounting attachment also is available.
2. A conversion cable on the amplifier side is not supplied with the mounting attachment and required to be purchased separately.
3. Since the MR-J2S-500_4 amplifier and the MR-J4-500_4 amplifier have mounting compatibility, no mounting attachment is supplied with them.

[Appendix 2] Introduction to Renewal Tool

3 BASIC CONFIGURATION

[Before replacement]



Note 1. MR-J4 series servo amplifier and servo motor are required to be purchased separately.

3.1 Important Points to Note When Replacing

- (1) Please note that replacement may not be possible when multiple units are set in a line due to the clearance between the servo amplifiers, the model, and the number of units. (See Chapter 8 of this Appendix regarding the dimensions)
- (2) Depending on the condition of the existing setup, sometimes noise reduction techniques are necessary when replacing.
- (3) When using the existing cables, please consider the remaining life of the cables. If deterioration is significant, replacing with a new cable is recommended.
- (4) Because the conversion cable does not have a long bending life, fix the cable when using.
- (5) Contact us if using an encoder cable longer than 50 m with long distance wiring. (For secondary and simultaneous replacement) Contact us when replacing with an HG-KR or MR motor if the existing encoder cable is longer than 30 m.
- (6) No oil seal is attached to the standard type MR-J4 servo motor. Take care when selecting if the existing MR-J2S servo motor has an attached oil seal. Contact a sales representative if a servo motor with an oil seal is required.
- (7) Depending on machine conditions (inertia, load, etc.), there is a possibility of insufficient servo amplifier capacity after replacement. Carefully consider the capacity in relation to the replacement.
- (8) Although use of dynamic brake resistance standardly equipped to the replacement MR-J4 servo amplifier is possible, take care because the coasting distance differs depending on the characteristics of the dynamic brake. In addition, do not use dynamic braking at high frequencies.
- (9) Check Part 9 of this document for important points to note when using optional or peripheral equipment.
- (10) Contact a sales representative if the existing MR-J2S servo amplifier or servo motor is a special product.
- (11) Although the motor model of the MR-J2S-series motor may not be displayed properly with MR Configurator2, this is normal. Do not use the MR Configurator2 advanced functions (machine analyzer, gain search, machine simulation, etc.) because they do not work accurately.

[Appendix 2] Introduction to Renewal Tool

3.2 Selection of Products

3.2.1 Replacement selection flow



CAUTION

- Because some existing HC-KFS46, HC-KFS410, HC-RFS, HC-LFS and HA-LFS series motors differ in primary replacement amplifiers and secondary/simultaneous replacement amplifiers, the selection method may differ from the following flow.

(1) Replacement selection flow

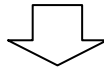
(For existing motors other than HC-KFS46, HC-KFS410, HC-RFS, HC-LFS and HA-LFS series)

1) Primary replacement menu

Check the combination of the existing models.



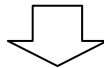
Select the primary replacement model servo amplifier from column 2 of the replacement combination list in Section 4.1 to 4.5.



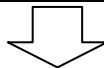
Select the renewal kit from column 3 of the replacement combination list in Section 4.1 to 4.5.

2) Secondary replacement menu

Check the combination of the existing servo motor model or of the existing models.



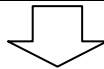
Select the secondary replacement models from column 2 and 4 of the replacement combination list in Section 4.1 to 4.5.



Select the renewal kit from column 3 and the motor side conversion cable from column 5 of the replacement combination list in Section 4.1 to 4.5.

3) Simultaneous replacement menu

Check the combination of the existing models.



Select the simultaneous replacement models from column 2 and 4 of the replacement combination list in Section 4.1 to 4.5.



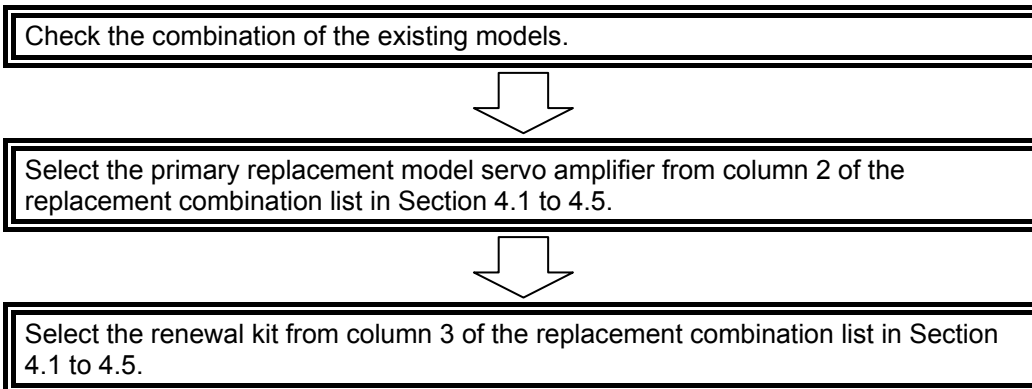
Select the renewal kit from column 3 and the motor side conversion cable from column 5 of the replacement combination list in Section 4.1 to 4.5.

[Appendix 2] Introduction to Renewal Tool

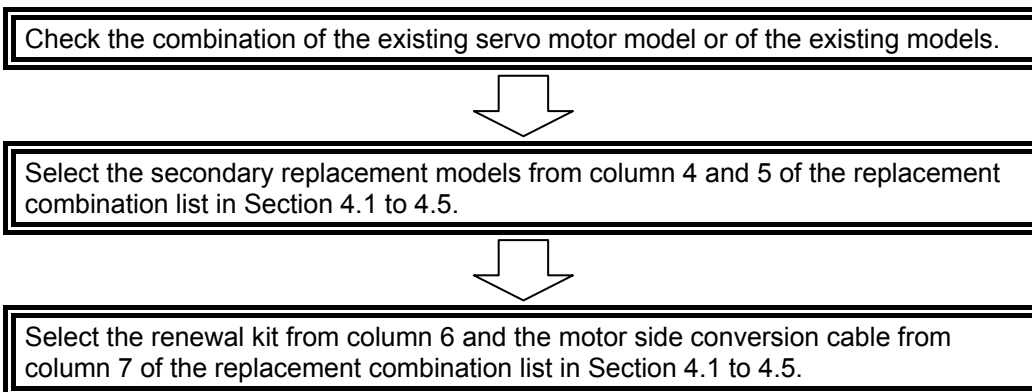
(2) Replacement selection flow

(For existing HC-KFS46, HC-KFS410, HC-RFS, HC-LFS and HA-LFS series motors)

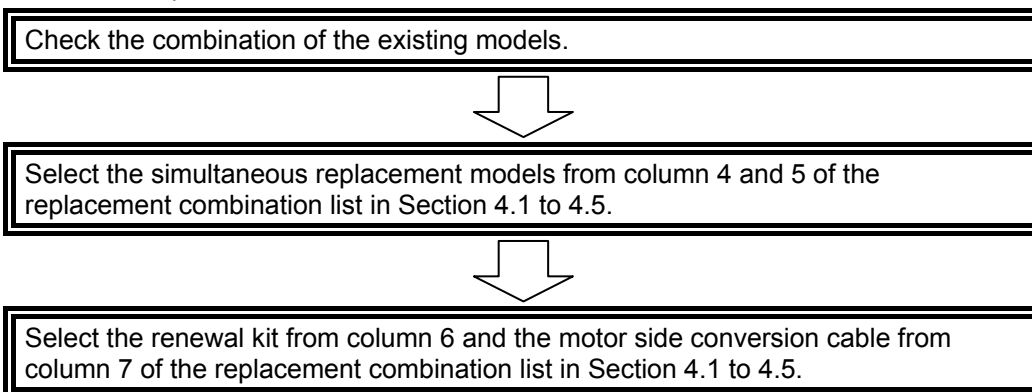
1) Primary replacement menu



2) Secondary replacement menu



3) Simultaneous replacement menu



[Appendix 2] Introduction to Renewal Tool

4 REPLACEMENT COMBINATION LIST

4.1 A Type Replacement Combination List (200 V Class)

(1) Existing HC-KFS motor series (standard/with brake, G1, G2 reducer)

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)		(3)		(4)		(5)		
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)		Secondary replacement/simultaneous replacement models						
Servo Amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo motor model (Note 1)	Compati- bility	Motor side conversion cable model				
						Power supply conversion cable	Encoder conversion cable	Brake conversion cable		
[Small capacity/low inertia HC-KFS series, standard/with brake] ((B) represents models with brake)										
MR-J2S-10A(1)	HC-KFS053(B)	MR-J4-10A(1)	SC-J2SJ4KT02K	HG-KR053(B)	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.		
	HC-KFS13(B)			HG-KR13(B)						
	MR-J2S-20A(1)	HC-KFS23(B)		MR-J4-20A(1)					HG-KR23(B)	
	MR-J2S-40A(1)	HC-KFS43(B)		MR-J4-40A(1)					SC-J2SJ4KT06K	HG-KR43(B)
MR-J2S-70A	HC-KFS73(B)	MR-J4-70A	SC-J2SJ4KT1K	HG-KR73(B)						
[Small capacity/low inertia HC-KFS series with general reducer (G1)] ((B) represents models with brake)										
MR-J2S-10A(1)	HC-KFS053(B)G1 1/5	MR-J4-10A(1)	SC-J2SJ4KT02K	HG-KR053(B)G1 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.		
	HC-KFS053(B)G1 1/12			HG-KR053(B)G1 1/12						
	HC-KFS053(B)G1 1/20			HG-KR053(B)G1 1/20						
	HC-KFS13(B)G1 1/5			HG-KR13(B)G1 1/5						
	HC-KFS13(B)G1 1/12			HG-KR13(B)G1 1/12						
MR-J2S-20A(1)	HC-KFS23(B)G1 1/5	MR-J4-20A(1)	SC-J2SJ4KT06K	HG-KR23(B)G1 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.		
MR-J2S-20A(1)	HC-KFS23(B)G1 1/12			HG-KR23(B)G1 1/12 (Note 2)						
MR-J2S-20A(1)	HC-KFS23(B)G1 1/20			HG-KR23(B)G1 1/20 (Note 2)						
MR-J2S-40A(1)	HC-KFS43(B)G1 1/5	MR-J4-40A(1)	SC-J2SJ4KT06K	HG-KR43(B)G1 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.		
	MR-J2S-40A(1)			HC-KFS43(B)G1 1/12					HG-KR43(B)G1 1/12 (Note 2)	
	MR-J2S-40A(1)			HC-KFS43(B)G1 1/20					HG-KR43(B)G1 1/20 (Note 2)	
MR-J2S-70A	HC-KFS73(B)G1 1/5	MR-J4-70A	SC-J2SJ4KT1K	HG-KR73(B)G1 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.		
	MR-J2S-70A			HC-KFS73(B)G1 1/12					HG-KR73(B)G1 1/12 (Note 2)	
	MR-J2S-70A			HC-KFS73(B)G1 1/20					HG-KR73(B)G1 1/20	
[Small capacity/low inertia HC-KFS series with high-precision reducer (G2)] ((B) represents models with brake)										
MR-J2S-10A(1)	HC-KFS053(B)G2 1/5	MR-J4-10A(1)	SC-J2SJ4KT02K	HG-KR053(B)G2 1/5	× (Note 3) (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.		
	HC-KFS053(B)G2 1/9			HG-KR053(B)G2 1/9						
	HC-KFS053(B)G2 1/20			HG-KR053(B)G2 1/20						
	HC-KFS053(B)G2 1/29			HG-KR053(B)G2 1/29						
	HC-KFS13(B)G2 1/5			HG-KR13(B)G2 1/5						
	HC-KFS13(B)G2 1/9			HG-KR13(B)G2 1/9						
	HC-KFS13(B)G2 1/20			HG-KR13(B)G2 1/20						
MR-J2S-20A(1)	HC-KFS23(B)G2 1/5	MR-J4-20A(1)	SC-J2SJ4KT06K	HG-KR23(B)G2 1/5	× (Note 3) (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.		
MR-J2S-20A(1)	HC-KFS23(B)G2 1/9			HG-KR23(B)G2 1/9						
MR-J2S-20A(1)	HC-KFS23(B)G2 1/20			HG-KR23(B)G2 1/20						
MR-J2S-20A(1)	HC-KFS23(B)G2 1/29			HG-KR23(B)G2 1/29						
MR-J2S-40A(1)	HC-KFS43(B)G2 1/5	MR-J4-40A(1)	SC-J2SJ4KT06K	HG-KR43(B)G2 1/5	× (Note 3) (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.		
	MR-J2S-40A(1)			HC-KFS43(B)G2 1/9					HG-KR43(B)G2 1/9	
	MR-J2S-40A(1)			HC-KFS43(B)G2 1/20					HG-KR43(B)G2 1/20	
MR-J2S-70A	HC-KFS73(B)G2 1/5	MR-J4-70A	SC-J2SJ4KT1K	HG-KR73(B)G2 1/5	× (Note 3) (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.		
	MR-J2S-70A			HC-KFS73(B)G2 1/9					HG-KR73(B)G2 1/9	
	MR-J2S-70A			HC-KFS73(B)G2 1/20					HG-KR73(B)G2 1/20	
MR-J2S-70A	HC-KFS73(B)G2 1/29			HG-KR73(B)G2 1/29						

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(2) Existing HC-KFS motor series (G5, G7 reducer)

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)			
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)		Secondary replacement/simultaneous replacement models				
Servo Amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo motor model (Note 1)	Compati bility	Motor side conversion cable model		
						Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Small capacity/low inertia HC-KFS series with high-precision reducer, flange output type (G5)] ((B) represents models with brake)								
MR-J2S- 10A(1)	HC-KFS053(B)G5 1/5	MR-J4-10A(1)	SC-J2SJ4KT02K	HG-KR053(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-KFS053(B)G5 1/11			HG-KR053(B)G5 1/11				
	HC-KFS053(B)G5 1/21			HG-KR053(B)G5 1/21				
	HC-KFS053(B)G5 1/33			HG-KR053(B)G5 1/33				
	HC-KFS053(B)G5 1/45			HG-KR053(B)G5 1/45				
	HC-KFS13(B)G5 1/5			HG-KR13(B)G5 1/5				
	HC-KFS13(B)G5 1/11			HG-KR13(B)G5 1/11				
	HC-KFS13(B)G5 1/21			HG-KR13(B)G5 1/21				
MR-J2S- 20A(1)	HC-KFS23(B)G5 1/5	MR-J4-20A(1)	SC-J2SJ4KT02K	HG-KR23(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-KFS23(B)G5 1/11			HG-KR23(B)G5 1/11				
	HC-KFS23(B)G5 1/21			HG-KR23(B)G5 1/21				
	HC-KFS23(B)G5 1/33			HG-KR23(B)G5 1/33				
MR-J2S- 40A(1)	HC-KFS43(B)G5 1/5	MR-J4-40A(1)	SC-J2SJ4KT06K	HG-KR43(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-KFS43(B)G5 1/11			HG-KR43(B)G5 1/11				
	HC-KFS43(B)G5 1/21			HG-KR43(B)G5 1/21				
	HC-KFS43(B)G5 1/33			HG-KR43(B)G5 1/33				
MR-J2S- 70A	HC-KFS73(B)G5 1/5	MR-J4-70A	SC-J2SJ4KT1K	HG-KR73(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-KFS73(B)G5 1/11			HG-KR73(B)G5 1/11				
	HC-KFS73(B)G5 1/21			HG-KR73(B)G5 1/21				
	HC-KFS73(B)G5 1/33			HG-KR73(B)G5 1/33				
[Small capacity/low inertia HC-KFS series with high-precision reducer, shaft output type (G7)] ((B) represents models with brake)								
MR-J2S- 10A(1)	HC-KFS053(B)G7 1/5	MR-J4-10A(1)	SC-J2SJ4KT02K	HG-KR053(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-KFS053(B)G7 1/11			HG-KR053(B)G7 1/11				
	HC-KFS053(B)G7 1/21			HG-KR053(B)G7 1/21				
	HC-KFS053(B)G7 1/33			HG-KR053(B)G7 1/33				
	HC-KFS053(B)G7 1/45			HG-KR053(B)G7 1/45				
	HC-KFS13(B)G7 1/5			HG-KR13(B)G7 1/5				
	HC-KFS13(B)G7 1/11			HG-KR13(B)G7 1/11				
	HC-KFS13(B)G7 1/21			HG-KR13(B)G7 1/21				
MR-J2S- 20A(1)	HC-KFS23(B)G7 1/5	MR-J4-20A(1)	SC-J2SJ4KT02K	HG-KR23(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-KFS23(B)G7 1/11			HG-KR23(B)G7 1/11				
	HC-KFS23(B)G7 1/21			HG-KR23(B)G7 1/21				
	HC-KFS23(B)G7 1/33			HG-KR23(B)G7 1/33				
MR-J2S- 40A(1)	HC-KFS43(B)G7 1/5	MR-J4-40A(1)	SC-J2SJ4KT06K	HG-KR43(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-KFS43(B)G7 1/11			HG-KR43(B)G7 1/11				
	HC-KFS43(B)G7 1/21			HG-KR43(B)G7 1/21				
	HC-KFS43(B)G7 1/33			HG-KR43(B)G7 1/33				
MR-J2S- 70A	HC-KFS73(B)G7 1/5	MR-J4-70A	SC-J2SJ4KT1K	HG-KR73(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-KFS73(B)G7 1/11			HG-KR73(B)G7 1/11				
	HC-KFS73(B)G7 1/21			HG-KR73(B)G7 1/21				
	HC-KFS73(B)G7 1/33			HG-KR73(B)G7 1/33				

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(3) Existing HC-KFS46, KFS410 motor

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)	(6)	(7)			
Existing model (Note 13)		Primary replacement model (Note 5)		Secondary replacement/simultaneous replacement models						
Servo Amplifier model	Servo motor model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo amplifier model (Note 1)	Servo motor model (Note 1)	Compatibil ity	Renewalkit model	Motor side conversion cable model		
								Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Small capacity/low inertia HC-KFS series, standard/with brake] (B) represents models with brake										
MR-J2S- 70A	HC-KFS46	MR-J4-70A (Note 10)	SC- J2SJ4KT1K	MR-J4-40A (Note 10)	HG-KR43	Δ (Note 4) (Note 15)	(Note 11)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC- HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-KFS410									

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(4) Existing HC-MFS motor series (standard/with brake, G1, G2 reducer)

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)				
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)		Secondary replacement/simultaneous replacement models					
Servo Amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo motor model (Note 1)	Motor side conversion cable model				
					Compati- bility	Power supply conversion cable	Encoder conversion cable	Brake conversion cable	
[Small capacity/ultra-low inertia HC-MFS series, standard/with brake] ((B) represents models with brake)									
MR-J2S-10A(1)	HC-MFS053(B) HC-MFS13(B)	MR-J4-10A(1)	SC- J2SJ4KT02K	HG-MR053(B) HG-MR13(B)	O	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M-■	Built in to power supply conversion cable.	
MR-J2S-20A(1)	HC-MFS23(B)	MR-J4-20A(1)		HG-MR23(B)					
MR-J2S-40A(1)	HC-MFS43(B)	MR-J4-40A(1)		SC- J2SJ4KT06K					HG-MR43(B)
MR-J2S-70A	HC-MFS73(B)	MR-J4-70A		SC- J2SJ4KT1K					HG-MR73(B)
[Small capacity/ultra-low inertia HC-MFS series with general reducer (G1)] ((B) represents models with brake)									
MR-J2S-10A(1)	HC-MFS053(B)G1 1/5	MR-J4-10A(1)	SC- J2SJ4KT02K	HG-KR053(B)G1 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M-■	Built in to power supply conversion cable.	
	HC-MFS053(B)G1 1/12			HG-KR053(B)G1 1/12					
	HC-MFS053(B)G1 1/20			HG-KR053(B)G1 1/20					
	HC-MFS13(B)G1 1/5			HG-KR13(B)G1 1/5					
	HC-MFS13(B)G1 1/12			HG-KR13(B)G1 1/12					
MR-J2S-20A(1)	HC-MFS23(B)G1 1/5	MR-J4-20A(1)	SC- J2SJ4KT06K	HG-KR23 (B) G1 1/12 (Note 2)	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M-■	Built in to power supply conversion cable.	
	HC-MFS23(B)G1 1/12			HG-KR23 (B) G1 1/20 (Note 2)					
	HC-MFS23(B)G1 1/20			HG-KR23 (B) G1 1/20 (Note 2)					
MR-J2S-40A(1)	HC-MFS43(B)G1 1/5	MR-J4-40A(1)	SC- J2SJ4KT06K	HG-KR43(B)G1 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M-■	Built in to power supply conversion cable.	
	HC-MFS43(B)G1 1/12			HG-KR43 (B) G1 1/12 (Note 2)					
	HC-MFS43(B)G1 1/20			HG-KR43 (B) G1 1/20 (Note 2)					
MR-J2S-70A	HC-MFS73(B)G1 1/5	MR-J4-70A	SC- J2SJ4KT1K	HG-KR73(B)G1 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M-■	Built in to power supply conversion cable.	
	HC-MFS73(B)G1 1/12			HG-KR73 (B) G1 1/12 (Note 2)					
	HC-MFS73(B)G1 1/20			HG-KR73(B)G1 1/20					
[Small capacity/ultra-low inertia HC-MFS series with high-precision reducer (G2)] ((B) represents models with brake)									
MR-J2S-10A(1)	HC-MFS053(B)G2 1/5	MR-J4-10A(1)	SC- J2SJ4KT02K	HG-KR053(B)G7 1/5	× (Note 3) (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M-■	Built in to power supply conversion cable.	
	HC-MFS053(B)G2 1/9			HG-KR053(B)G7 1/11					
	HC-MFS053(B)G2 1/20			HG-KR053(B)G7 1/21					
	HC-MFS053(B)G2 1/29			HG-KR053(B)G7 1/33					
	HC-MFS13(B)G2 1/5			HG-KR13(B)G7 1/5					
	HC-MFS13(B)G2 1/9			HG-KR13(B)G7 1/11					
	HC-MFS13(B)G2 1/20			HG-KR13(B)G7 1/21					
MR-J2S-20A(1)	HC-MFS23(B)G2 1/5	MR-J4-20A(1)	SC- J2SJ4KT06K	HG-KR23(B)G7 1/5	× (Note 3) (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M-■	Built in to power supply conversion cable.	
	HC-MFS23(B)G2 1/9			HG-KR23(B)G7 1/11					
	HC-MFS23(B)G2 1/20			HG-KR23(B)G7 1/21					
	HC-MFS23(B)G2 1/29			HG-KR23(B)G7 1/33					
MR-J2S-40A(1)	HC-MFS43(B)G2 1/5	MR-J4-40A(1)	SC- J2SJ4KT06K	HG-KR43(B)G7 1/5	× (Note 3) (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M-■	Built in to power supply conversion cable.	
	HC-MFS43(B)G2 1/9			HG-KR43(B)G7 1/11					
	HC-MFS43(B)G2 1/20			HG-KR43(B)G7 1/21					
	HC-MFS43(B)G2 1/29			HG-KR43(B)G7 1/33					
MR-J2S-70A	HC-MFS73(B)G2 1/5	MR-J4-70A	SC- J2SJ4KT1K	HG-KR73(B)G7 1/5	× (Note 3) (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M-■	Built in to power supply conversion cable.	
	HC-MFS73(B)G2 1/9			HG-KR73(B)G7 1/11					
	HC-MFS73(B)G2 1/20			HG-KR73(B)G7 1/21					
	HC-MFS73(B)G2 1/29			HG-KR73(B)G7 1/33					

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(5) Existing HC-MFS motor series (G5, G7 reducer)

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)		(5)		
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)		Secondary replacement/simultaneous replacement models				
Servo Amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo motor model (Note 1)	Motor side conversion cable model			
					Compati bility	Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Small capacity/ultra-low inertia HC-MFS series with high-precision reducer, flange output type (G5)] ((B) represents models with brake)								
MR-J2S- 10A(1)	HC-MFS053(B)G5 1/5	MR-J4-10A(1)	SC- J2SJ4KT02K	HG-KR053(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-MFS053(B)G5 1/11			HG-KR053(B)G5 1/11				
	HC-MFS053(B)G5 1/21			HG-KR053(B)G5 1/21				
	HC-MFS053(B)G5 1/33			HG-KR053(B)G5 1/33				
	HC-MFS053(B)G5 1/45			HG-KR053(B)G5 1/45				
	HC-MFS13(B)G5 1/5			HG-KR13(B)G5 1/5				
	HC-MFS13(B)G5 1/11			HG-KR13(B)G5 1/11				
	HC-MFS13(B)G5 1/21			HG-KR13(B)G5 1/21				
	HC-MFS13(B)G5 1/33			HG-KR13(B)G5 1/33				
HC-MFS13(B)G5 1/45	HG-KR13(B)G5 1/45							
MR-J2S- 20A(1)	HC-MFS23(B)G5 1/5	MR-J4-20A(1)	SC- J2SJ4KT06K	HG-KR23(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-MFS23(B)G5 1/11			HG-KR23(B)G5 1/11				
	HC-MFS23(B)G5 1/21			HG-KR23(B)G5 1/21				
	HC-MFS23(B)G5 1/33			HG-KR23(B)G5 1/33				
HC-MFS23(B)G5 1/45	HG-KR23(B)G5 1/45							
MR-J2S- 40A(1)	HC-MFS43(B)G5 1/5	MR-J4-40A(1)	SC- J2SJ4KT06K	HG-KR43(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-MFS43(B)G5 1/11			HG-KR43(B)G5 1/11				
	HC-MFS43(B)G5 1/21			HG-KR43(B)G5 1/21				
	HC-MFS43(B)G5 1/33			HG-KR43(B)G5 1/33				
HC-MFS43(B)G5 1/45	HG-KR43(B)G5 1/45							
MR-J2S- 70A	HC-MFS73(B)G5 1/5	MR-J4-70A	SC- J2SJ4KT1K	HG-KR73(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-MFS73(B)G5 1/11			HG-KR73(B)G5 1/11				
	HC-MFS73(B)G5 1/21			HG-KR73(B)G5 1/21				
	HC-MFS73(B)G5 1/33			HG-KR73(B)G5 1/33				
	HC-MFS73(B)G5 1/45			HG-KR73(B)G5 1/45				
[Small capacity/low inertia HC-MFS series with high-precision reducer, shaft output type (G7)] ((B) represents models with brake)								
MR-J2S- 10A(1)	HC-MFS053(B)G7 1/5	MR-J4-10A(1)	SC- J2SJ4KT02K	HG-KR053(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-MFS053(B)G7 1/11			HG-KR053(B)G7 1/11				
	HC-MFS053(B)G7 1/21			HG-KR053(B)G7 1/21				
	HC-MFS053(B)G7 1/33			HG-KR053(B)G7 1/33				
	HC-MFS053(B)G7 1/45			HG-KR053(B)G7 1/45				
	HC-MFS13(B)G7 1/5			HG-KR13(B)G7 1/5				
	HC-MFS13(B)G7 1/11			HG-KR13(B)G7 1/11				
	HC-MFS13(B)G7 1/21			HG-KR13(B)G7 1/21				
	HC-MFS13(B)G7 1/33			HG-KR13(B)G7 1/33				
HC-MFS13(B)G7 1/45	HG-KR13(B)G7 1/45							
MR-J2S- 20A(1)	HC-MFS23(B)G7 1/5	MR-J4-20A(1)	SC- J2SJ4KT06K	HG-KR23(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-MFS23(B)G7 1/11			HG-KR23(B)G7 1/11				
	HC-MFS23(B)G7 1/21			HG-KR23(B)G7 1/21				
	HC-MFS23(B)G7 1/33			HG-KR23(B)G7 1/33				
HC-MFS23(B)G7 1/45	HG-KR23(B)G7 1/45							
MR-J2S- 40A(1)	HC-MFS43(B)G7 1/5	MR-J4-40A(1)	SC- J2SJ4KT06K	HG-KR43(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-MFS43(B)G7 1/11			HG-KR43(B)G7 1/11				
	HC-MFS43(B)G7 1/21			HG-KR43(B)G7 1/21				
	HC-MFS43(B)G7 1/33			HG-KR43(B)G7 1/33				
HC-MFS43(B)G7 1/45	HG-KR43(B)G7 1/45							
MR-J2S- 70A	HC-MFS73(B)G7 1/5	MR-J4-70A	SC- J2SJ4KT1K	HG-KR73(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-MFS73(B)G7 1/11			HG-KR73(B)G7 1/11				
	HC-MFS73(B)G7 1/21			HG-KR73(B)G7 1/21				
	HC-MFS73(B)G7 1/33			HG-KR73(B)G7 1/33				
	HC-MFS73(B)G7 1/45			HG-KR73(B)G7 1/45				

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(6) Existing HC-SFS motor series (standard/with brake, G2 reducer)

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)											
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)		Secondary replacement/simultaneous replacement models												
Servo Amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo motor model (Note 1)	Motor side conversion cable model											
					Compatibil ity	Power supply conversion cable	Encoder conversion cable	Brake conversion cable								
[Medium capacity/medium inertia HC-SFS series, standard/with brake] ((B) represents models with brake)																
MR-J2S-60A	HC-SFS52(B) HC-SFS53(B)	MR-J4-60A	SC- J2SJ4KT06K	HG-SR52(B)	△ (Note 6)	SC- SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)								
MR-J2S-100A	HC-SFS81(B) HC-SFS102(B) HC-SFS103(B)	MR-J4-100A	SC- J2SJ4KT1K	HG-SR81(B) HG-SR102(B)												
	MR-J2S-200A			HC-SFS121(B) HC-SFS152(B) HC-SFS153(B) HC-SFS201(B) HC-SFS202(B) HC-SFS203(B)		SC- J2SJ4KT3K			HG-SR121(B) HG-SR152(B) HG-SR201(B) HG-SR202(B)							
				MR-J2S-350A					HC-SFS301(B) HC-SFS352(B) HC-SFS353(B)	MR-J4-350A	HG-SR301(B) HG-SR352(B)					
MR-J2S-500A		HC-SFS502(B)	MR-J4-500A						SC- J2SJ4KT5K		HG-SR502(B)					
MR-J2S-700A		HC-SFS702(B)	MR-J4-700A						SC- J2SJ4KT7K		HG-SR702(B)					
[Medium capacity/medium inertia HC-SFS series with high-precision reducer (G2)] ((B) represents models with brake)																
MR-J2S-60A	HC-SFS52(B)G2 1/5 HC-SFS52(B)G2 1/9 HC-SFS52(B)G2 1/20 HC-SFS52(B)G2 1/29 HC-SFS52(B)G2 1/45	MR-J4-60A	SC- J2SJ4KT06K	HG-SR52(B)G7 1/5 HG-SR52(B)G7 1/11 HG-SR52(B)G7 1/21 HG-SR52(B)G7 1/33 HG-SR52(B)G7 1/45		× (Note 3) (Note 6)			SC- SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)					
	MR-J2S-100A			HC-SFS102(B)G2 1/5 HC-SFS102(B)G2 1/9 HC-SFS102(B)G2 1/20 HC-SFS102(B)G2 1/29 HC-SFS102(B)G2 1/45								MR-J4-100A	SC- J2SJ4KT1K	HG-SR102(B)G7 1/5 HG-SR102(B)G7 1/11 HG-SR102(B)G7 1/21 HG-SR102(B)G7 1/33 HG-SR102(B)G7 1/45		
				MR-J2S-200A										HC-SFS152(B)G2 1/5 HC-SFS152(B)G2 1/9 HC-SFS152(B)G2 1/20 HC-SFS152(B)G2 1/29 HC-SFS152(B)G2 1/45 HC-SFS202(B)G2 1/5 HC-SFS202(B)G2 1/9 HC-SFS202(B)G2 1/20 HC-SFS202(B)G2 1/29 HC-SFS202(B)G2 1/45	MR-J4-200A	SC- J2SJ4KT3K
					MR-J2S-350A		HC-SFS352(B)G2 1/5 HC-SFS352(B)G2 1/9 HC-SFS352(B)G2 1/20	MR-J4-350A						HG-SR352(B)G7 1/5 HG-SR352(B)G7 1/11 HG-SR352(B)G7 1/21		
							MR-J2S-500A							HC-SFS502(B)G2 1/5 HC-SFS502(B)G2 1/9		
MR-J2S-700A		HC-SFS702(B)G2 1/5	MR-J4-700A				SC- J2SJ4KT7K		HG-SR702(B)G7 1/5							
					Existing cable can be used.											

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(7) Existing HC-SFS motor series (G1 reducer)

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)			
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)		Secondary replacement/simultaneous replacement models				
Servo Amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo motor model (Note 1)	Motor side conversion cable model			
					Compatibil ity	Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Medium capacity/medium inertia HC-SFS series with general reducer (G1)] ((B) represents models with brake, (H) represents foot-mounting)								
MR-J2S-60A	HC-SFS52(B)G1(H) 1/6	MR-J4-60A	SC-J2SJ4KT06K	HG-SR52(B)G1(H) 1/6	△ (Note 6)	SC-SAJ3PW2KC1M-S2		
	HC-SFS52(B)G1(H) 1/11			HG-SR52(B)G1(H) 1/11				
	HC-SFS52(B)G1(H) 1/17			HG-SR52(B)G1(H) 1/17				
	HC-SFS52(B)G1(H) 1/29			HG-SR52(B)G1(H) 1/29				
	HC-SFS52(B)G1(H) 1/35			HG-SR52(B)G1(H) 1/35				
	HC-SFS52(B)G1(H) 1/43			HG-SR52(B)G1(H) 1/43				
HC-SFS52(B)G1(H) 1/59	HG-SR52(B)G1(H) 1/59							
MR-J2S-100A	HC-SFS102(B)G1(H) 1/6	MR-J4-100A	SC-J2SJ4KT1K	HG-SR102(B)G1(H) 1/6				
	HC-SFS102(B)G1(H) 1/11			HG-SR102(B)G1(H) 1/11				
	HC-SFS102(B)G1(H) 1/17			HG-SR102(B)G1(H) 1/17				
	HC-SFS102(B)G1(H) 1/29			HG-SR102(B)G1(H) 1/29				
	HC-SFS102(B)G1(H) 1/35			HG-SR102(B)G1(H) 1/35				
	HC-SFS102(B)G1(H) 1/43			HG-SR102(B)G1(H) 1/43				
HC-SFS102(B)G1(H) 1/59	HG-SR102(B)G1(H) 1/59							
MR-J2S-200A	HC-SFS152(B)G1(H) 1/6	MR-J4-200A	SC-J2SJ4KT3K	HG-SR152(B)G1(H) 1/6		SC-HAJ3ENM3C1M	(Note 7)	
	HC-SFS152(B)G1(H) 1/11			HG-SR152(B)G1(H) 1/11				
	HC-SFS152(B)G1(H) 1/17			HG-SR152(B)G1(H) 1/17				
	HC-SFS152(B)G1(H) 1/29			HG-SR152(B)G1(H) 1/29				
	HC-SFS152(B)G1(H) 1/35			HG-SR152(B)G1(H) 1/35				
	HC-SFS152(B)G1(H) 1/43			HG-SR152(B)G1(H) 1/43				
	HC-SFS152(B)G1(H) 1/59			HG-SR152(B)G1(H) 1/59				
	HC-SFS202(B)G1(H) 1/6			HG-SR202(B)G1(H) 1/6				
	HC-SFS202(B)G1(H) 1/11			HG-SR202(B)G1(H) 1/11				
	HC-SFS202(B)G1(H) 1/17			HG-SR202(B)G1(H) 1/17				
	HC-SFS202(B)G1(H) 1/29			HG-SR202(B)G1(H) 1/29				
	HC-SFS202(B)G1(H) 1/35			HG-SR202(B)G1(H) 1/35				
	HC-SFS202(B)G1(H) 1/43			HG-SR202(B)G1(H) 1/43				
	HC-SFS202(B)G1(H) 1/59			HG-SR202(B)G1(H) 1/59				
MR-J2S-350A	HC-SFS352(B)G1(H) 1/6	MR-J4-350A		HG-SR352(B)G1(H) 1/6		SC-HAJ3PW1C1M		
	HC-SFS352(B)G1(H) 1/11			HG-SR352(B)G1(H) 1/11				
	HC-SFS352(B)G1(H) 1/17			HG-SR352(B)G1(H) 1/17				
	HC-SFS352(B)G1(H) 1/29			HG-SR352(B)G1(H) 1/29				
	HC-SFS352(B)G1(H) 1/35			HG-SR352(B)G1(H) 1/35				
	HC-SFS352(B)G1(H) 1/43			HG-SR352(B)G1(H) 1/43				
HC-SFS352(B)G1(H) 1/59	HG-SR352(B)G1(H) 1/59							
MR-J2S-500A	HC-SFS502(B)G1(H) 1/11	MR-J4-500A	SC-J2SJ4KT5K	HG-SR502(B)G1(H) 1/11				
	HC-SFS502(B)G1(H) 1/17			HG-SR502(B)G1(H) 1/17				
	HC-SFS502(B)G1(H) 1/29			HG-SR502(B)G1(H) 1/29				
	HC-SFS502(B)G1(H) 1/35			HG-SR502(B)G1(H) 1/35				
MR-J2S-700A	HC-SFS702(B)G1(H) 1/11	MR-J4-700A	SC-J2SJ4KT7K	HG-SR702(B)G1(H) 1/11				Existing cable can be used.
	HC-SFS702(B)G1(H) 1/17			HG-SR702(B)G1(H) 1/17				
	HC-SFS702(B)G1(H) 1/29			HG-SR702(B)G1(H) 1/29				
	HC-SFS702(B)G1(H) 1/35			HG-SR702(B)G1(H) 1/35				
HC-SFS702(B)G1(H) 1/43	HG-SR702(B)G1(H) 1/43							

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(8) Existing HC-SFS motor series (G5, G7 reducer)

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)			
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)		Secondary replacement/simultaneous replacement models				
Servo Amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo motor model (Note 1)	Motor side conversion cable model			
					Compatibil ity	Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Medium capacity/medium inertia HC-SFS series with high-precision reducer, flange output type (G5)] ((B) represents models with brake)								
MR-J2S-60A	HC-SFS52(B)G5 1/5	MR-J4-60A	SC-J2SJ4KT06K	HG-SR52(B)G5 1/5	△ (Note 6)	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)
	HC-SFS52(B)G5 1/11			HG-SR52(B)G5 1/11				
	HC-SFS52(B)G5 1/21			HG-SR52(B)G5 1/21				
	HC-SFS52(B)G5 1/33			HG-SR52(B)G5 1/33				
	HC-SFS52(B)G5 1/45			HG-SR52(B)G5 1/45				
MR-J2S-100A	HC-SFS102(B)G5 1/5	MR-J4-100A	SC-J2SJ4KT1K	HG-SR102(B)G5 1/5				
	HC-SFS102(B)G5 1/11			HG-SR102(B)G5 1/11				
	HC-SFS102(B)G5 1/21			HG-SR102(B)G5 1/21				
	HC-SFS102(B)G5 1/33			HG-SR102(B)G5 1/33				
	HC-SFS102(B)G5 1/45			HG-SR102(B)G5 1/45				
MR-J2S-200A	HC-SFS152(B)G5 1/5	MR-J4-200A	SC-J2SJ4KT3K	HG-SR152(B)G5 1/5				
	HC-SFS152(B)G5 1/11			HG-SR152(B)G5 1/11				
	HC-SFS152(B)G5 1/21			HG-SR152(B)G5 1/21				
	HC-SFS152(B)G5 1/33			HG-SR152(B)G5 1/33				
	HC-SFS152(B)G5 1/45			HG-SR152(B)G5 1/45				
	HC-SFS202(B)G5 1/5			HG-SR202(B)G5 1/5				
	HC-SFS202(B)G5 1/11			HG-SR202(B)G5 1/11				
	HC-SFS202(B)G5 1/21			HG-SR202(B)G5 1/21				
MR-J2S-350A	HC-SFS352(B)G5 1/5	MR-J4-350A	SC-J2SJ4KT5K	HG-SR352(B)G5 1/5				
	HC-SFS352(B)G5 1/11			HG-SR352(B)G5 1/11				
	HC-SFS352(B)G5 1/21			HG-SR352(B)G5 1/21				
MR-J2S-500A	HC-SFS502(B)G5 1/5	MR-J4-500A	SC-J2SJ4KT7K	HG-SR502(B)G5 1/5				
	HC-SFS502(B)G5 1/11			HG-SR502(B)G5 1/11				
MR-J2S-700A	HC-SFS702(B)G5 1/5	MR-J4-700A	SC-J2SJ4KT7K	HG-SR702(B)G5 1/5	Existing cable can be used.			
[Medium capacity/medium inertia HC-SFS series with high-precision reducer, shaft output type (G7)] ((B) represents models with brake)								
MR-J2S-60A	HC-SFS52(B)G7 1/5	MR-J4-60A	SC-J2SJ4KT06K	HG-SR52(B)G7 1/5	△ (Note 6)	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)
	HC-SFS52(B)G7 1/11			HG-SR52(B)G7 1/11				
	HC-SFS52(B)G7 1/21			HG-SR52(B)G7 1/21				
	HC-SFS52(B)G7 1/33			HG-SR52(B)G7 1/33				
	HC-SFS52(B)G7 1/45			HG-SR52(B)G7 1/45				
MR-J2S-100A	HC-SFS102(B)G7 1/5	MR-J4-100A	SC-J2SJ4KT1K	HG-SR102(B)G7 1/5				
	HC-SFS102(B)G7 1/11			HG-SR102(B)G7 1/11				
	HC-SFS102(B)G7 1/21			HG-SR102(B)G7 1/21				
	HC-SFS102(B)G7 1/33			HG-SR102(B)G7 1/33				
	HC-SFS102(B)G7 1/45			HG-SR102(B)G7 1/45				
MR-J2S-200A	HC-SFS152(B)G7 1/5	MR-J4-200A	SC-J2SJ4KT3K	HG-SR152(B)G7 1/5				
	HC-SFS152(B)G7 1/11			HG-SR152(B)G7 1/11				
	HC-SFS152(B)G7 1/21			HG-SR152(B)G7 1/21				
	HC-SFS152(B)G7 1/33			HG-SR152(B)G7 1/33				
	HC-SFS152(B)G7 1/45			HG-SR152(B)G7 1/45				
	HC-SFS202(B)G7 1/5			HG-SR202(B)G7 1/5				
	HC-SFS202(B)G7 1/11			HG-SR202(B)G7 1/11				
	HC-SFS202(B)G7 1/21			HG-SR202(B)G7 1/21				
MR-J2S-350A	HC-SFS352(B)G7 1/5	MR-J4-350A	SC-J2SJ4KT5K	HG-SR352(B)G7 1/5				
	HC-SFS352(B)G7 1/11			HG-SR352(B)G7 1/11				
	HC-SFS352(B)G7 1/21			HG-SR352(B)G7 1/21				
MR-J2S-500A	HC-SFS502(B)G7 1/5	MR-J4-500A	SC-J2SJ4KT7K	HG-SR502(B)G7 1/5				
	HC-SFS502(B)G7 1/11			HG-SR502(B)G7 1/11				
MR-J2S-700A	HC-SFS702(B)G7 1/5	MR-J4-700A	SC-J2SJ4KT7K	HG-SR702(B)G7 1/5	Existing cable can be used.			

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(9) Existing HC-RFS motor series (standard/with brake, G2 reducer)

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)		(3)	(4)	(5)		(6)	(7)		
Existing model (Note 13)		Primary replacement model (Note 5)		Secondary replacement/simultaneous replacement models							
Servo Amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo amplifier model (Note 1)	Servo motor model (Note 1)	Compati- bility	Renewal kit model	Motor side conversion cable			
								Power supply conversion cable	Encoder conversion cable	Brake conversion cable	
[Medium capacity/ultra-low inertia HC-RFS series, standard/with brake] ((B) represents models with brake)											
MR-J2S-200A	HC-RFS103(B)	MR-J4-200A	SC-J2SJ4KT3K	MR-J4-200A	HG-RR103(B)	○	SC-J2SJ4KT3K	Existing cable can be used.	SC-HAJ3ENM3C1M	Existing cable can be used.	
	HC-RFS153(B)				HG-RR153(B)						
MR-J2S-350A	HC-RFS203(B)	MR-J4-350A		MR-J4-350A	HG-RR203(B)						
MR-J2S-500A	HC-RFS353(B)	MR-J4-500A	SC-J2SJ4KT5K	MR-J4-500A	HG-RR353(B)	○	SC-J2SJ4KT5K	Existing cable can be used.	SC-HAJ3ENM3C1M	Existing cable can be used.	
	HC-RFS503(B)				HG-RR503(B)						
[Medium capacity/ultra-low inertia HC-RFS series with high-precision reducer (G2)] ((B) represents models with brake)											
MR-J2S-200A	HC-RFS103(B)G2 1/5	MR-J4-200A (Note 10)	SC-J2SJ4KT3K	MR-J4-100A (Note 10)	HG-SR102(B)G7 1/5	× (Note 3) (Note 4)	(Note 11)	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)	
	HC-RFS103(B)G2 1/9				HG-SR102(B)G7 1/11						
	HC-RFS103(B)G2 1/20				HG-SR102(B)G7 1/21						
	HC-RFS103(B)G2 1/29				HG-SR102(B)G7 1/33						
	HC-RFS103(B)G2 1/45				HG-SR102(B)G7 1/45						
	HC-RFS153(B)G2 1/5	MR-J4-200A		MR-J4-200A	HG-SR152(B)G7 1/5						
	HC-RFS153(B)G2 1/9				HG-SR152(B)G7 1/11						
	HC-RFS153(B)G2 1/20				HG-SR152(B)G7 1/21						
	HC-RFS153(B)G2 1/29				HG-SR152(B)G7 1/33						
	HC-RFS153(B)G2 1/45				HG-SR152(B)G7 1/45						
MR-J2S-350A	HC-RFS203(B)G2 1/5	MR-J4-350A (Note 10)	MR-J4-200A (Note 10)	HG-SR202(B)G7 1/5							
	HC-RFS203(B)G2 1/9			HG-SR202(B)G7 1/11							
	HC-RFS203(B)G2 1/20			HG-SR202(B)G7 1/21							
	HC-RFS203(B)G2 1/29			HG-SR202(B)G7 1/33							
HC-RFS203(B)G2 1/45	HG-SR202(B)G7 1/45										
MR-J2S-500A	HC-RFS353(B)G2 1/5	MR-J4-500A (Note 10)	SC-J2SJ4KT5K	MR-J4-350A (Note 10)	HG-SR352(B)G7 1/5	○	(Note 11)	SC-HAJ3PW1C1M	SC-HAJ3ENM3C1M	(Note 7)	
	HC-RFS353(B)G2 1/9				HG-SR352(B)G7 1/11						
	HC-RFS353(B)G2 1/20				HG-SR352(B)G7 1/21						
	HC-RFS503(B)G2 1/5	MR-J4-500A		MR-J4-500A	HG-SR502(B)G7 1/5						
	HC-RFS503(B)G2 1/9				HG-SR502(B)G7 1/11						
	HC-RFS503(B)G2 1/20										

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(10) Existing HC-RFS motor series (G5, G7 reducer)

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)	(6)	(7)			
Existing model (Note 13)		Primary replacement model (Note 5)		Secondary replacement/simultaneous replacement models						
Servo amplifier model	Servo motor Model	Servo amplifier Model (Note 1, 12)	Renewal kit model	Servo amplifier model (Note 1)	Servo motor model (Note 1)	Compati bility	Renewal kit model	Motor side conversion cable		
								Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Medium capacity/ultra-low inertia HC-RFS series with high-precision reducer, flange output type (G5)] ((B) represents models with brake)										
MR-J2S-200A	HC-RFS103(B)G5 1/5	MR-J4-200A (Note 10)	SC-J2SJ4KT3K	MR-J4-100A (Note 10)	HG-SR102(B)G5 1/5	× (Note 3) (Note 4)	(Note 11)	SC-SAJ3PW2KC1M-S2		
	HC-RFS103(B)G5 1/11				HG-SR102(B)G5 1/11					
	HC-RFS103(B)G5 1/21				HG-SR102(B)G5 1/21					
	HC-RFS103(B)G5 1/33				HG-SR102(B)G5 1/33					
	HC-RFS103(B)G5 1/45	MR-J4-200A		HG-SR152(B)G5 1/5						
	HC-RFS153(B)G5 1/5			HG-SR152(B)G5 1/5						
	HC-RFS153(B)G5 1/11			HG-SR152(B)G5 1/11						
	HC-RFS153(B)G5 1/21			HG-SR152(B)G5 1/21						
HC-RFS153(B)G5 1/33		HG-SR152(B)G5 1/33								
HC-RFS153(B)G5 1/45		HG-SR152(B)G5 1/45								
MR-J2S-350A	HC-RFS203(B)G5 1/5	MR-J4-350A (Note 10)	MR-J4-200A (Note 10)	HG-SR202(B)G5 1/5			SC-J2SJ4PW2C1M			
	HC-RFS203(B)G5 1/11			HG-SR202(B)G5 1/11						
	HC-RFS203(B)G5 1/21			HG-SR202(B)G5 1/21						
	HC-RFS203(B)G5 1/33			HG-SR202(B)G5 1/33						
HC-RFS203(B)G5 1/45		HG-SR202(B)G5 1/45								
MR-J2S-500A	HC-RFS353(B)G5 1/5	MR-J4-500A (Note 10)	SC-J2SJ4KT5K	MR-J4-350A (Note 10)	HG-SR352(B)G5 1/5	× (Note 3) (Note 4)	(Note 11)	SC-HAJ3PW1C1M		
	HC-RFS353(B)G5 1/11				HG-SR352(B)G5 1/11					
	HC-RFS353(B)G5 1/21	MR-J4-500A		HG-SR352(B)G5 1/21						
	HC-RFS353(B)G5 1/33			HG-SR502(B)G5 1/5						
	HC-RFS503(B)G5 1/5			HG-SR502(B)G5 1/5						
	HC-RFS503(B)G5 1/11			HG-SR502(B)G5 1/11						
HC-RFS503(B)G5 1/21		HG-SR502(B)G5 1/21								
[Medium capacity/ultra-low inertia HC-RFS series with high-precision reducer, flange output type (G7)] ((B) represents models with brake)										
MR-J2S-200A	HC-RFS103(B)G7 1/5	MR-J4-200A (Note 10)	SC-J2SJ4KT3K	MR-J4-100A (Note 10)	HG-SR102(B)G7 1/5	× (Note 3) (Note 4)	(Note 11)	SC-SAJ3PW2KC1M-S2		
	HC-RFS103(B)G7 1/11				HG-SR102(B)G7 1/11					
	HC-RFS103(B)G7 1/21				HG-SR102(B)G7 1/21					
	HC-RFS103(B)G7 1/33				HG-SR102(B)G7 1/33					
	HC-RFS103(B)G7 1/45	MR-J4-200A		HG-SR152(B)G7 1/5						
	HC-RFS153(B)G7 1/5			HG-SR152(B)G7 1/5						
	HC-RFS153(B)G7 1/11			HG-SR152(B)G7 1/11						
	HC-RFS153(B)G7 1/21			HG-SR152(B)G7 1/21						
HC-RFS153(B)G7 1/33		HG-SR152(B)G7 1/33								
HC-RFS153(B)G7 1/45		HG-SR152(B)G7 1/45								
MR-J2S-350A	HC-RFS203(B)G7 1/5	MR-J4-350A (Note 10)	MR-J4-200A (Note 10)	HG-SR202(B)G7 1/5			SC-J2SJ4PW2C1M			
	HC-RFS203(B)G7 1/11			HG-SR202(B)G7 1/11						
	HC-RFS203(B)G7 1/21			HG-SR202(B)G7 1/21						
	HC-RFS203(B)G7 1/33			HG-SR202(B)G7 1/33						
HC-RFS203(B)G7 1/45		HG-SR202(B)G7 1/45								
MR-J2S-500A	HC-RFS353(B)G7 1/5	MR-J4-500A (Note 10)	SC-J2SJ4KT5K	MR-J4-350A (Note 10)	HG-SR352(B)G7 1/5	× (Note 3) (Note 4)	(Note 11)	SC-HAJ3PW1C1M		
	HC-RFS353(B)G7 1/11				HG-SR352(B)G7 1/11					
	HC-RFS353(B)G7 1/21	MR-J4-500A		HG-SR352(B)G7 1/21						
	HC-RFS353(B)G7 1/33			HG-SR502(B)G7 1/5						
	HC-RFS503(B)G7 1/5			HG-SR502(B)G7 1/5						
	HC-RFS503(B)G7 1/11			HG-SR502(B)G7 1/11						
HC-RFS503(B)G7 1/21		HG-SR502(B)G7 1/21								

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(11) Existing HC-UFS motor series

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)			
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)		Secondary replacement/simultaneous replacement models				
Servo amplifier model	Servo motor model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo motor model (Note 1)	Compati- bility	Motor side conversion cable model		
						Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Medium capacity/flat type HC-UFS series, standard/with brake] ((B) represents models with brake)								
MR-J2S-70A	HC-UFS72(B)	MR-J4-70A	SC-J2SJ4KT1K	HG-UR72(B)	○	Existing cable can be used.	SC- HAJ3ENM3C1M	Existing cable can be used.
MR-J2S-200A	HC-UFS152(B)	MR-J4-200A	SC-J2SJ4KT3K	HG-UR152(B)				
MR-J2S-350A	HC-UFS202(B)	MR-J4-350A	SC-J2SJ4KT3K	HG-UR202(B)				
MR-J2S-500A	HC-UFS352(B)	MR-J4-500A	SC-J2SJ4KT5K	HG-UR352(B)				
	HC-UFS502(B)			HG-UR502(B)				
Small capacity/flat type HC-UFS series, standard/with brake] ((B) represents models with brake)								
MR-J2S-10A(1)	HC-UFS13(B)	MR-J4-10A(1)	SC-J2SJ4KT02K	HG-KR13(B)	× (Note 3)	Without brake: SC-J2SJ4PW1C03M-■ With brake: SC-J2SJ4PWBK1C03M-■	SC- HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
MR-J2S-20A(1)	HC-UFS23(B)	MR-J4-20A(1)		HG-KR23(B)				
MR-J2S-40A(1)	HC-UFS43(B)	MR-J4-40A(1)	SC-J2SJ4KT06K	HG-KR43(B)				
MR-J2S-70A	HC-UFS73(B)	MR-J4-70A	SC-J2SJ4KT1K	HG-KR73(B)				

See Appendix page 2-65 for important points to note.

(12) Existing HC-LFS motor series

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)	(6)	(7)			
Existing model (Note 13)		Primary replacement model (Note 5)		Secondary replacement/simultaneous replacement models						
Servo amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo amplifier model (Note 1)	Servo motor model (Note 1)	Compati- bility	Renewal kit model	Motor side conversion cable model		
								Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Medium capacity/low inertia HC-LFS series, standard/with brake] ((B) represents models with brake)										
MR-J2S-60A	HC-LFS52(B)	MR-J4-60A (Note 10)	SC-J2SJ4KT06K	MR-J4-70A (Note 10)	HG- JR73(B)	× (Note 3)	(Note 11)	SC- SAJ3PW2KC1M- S2	SC- HAJ3ENM3C1M	(Note 7)
MR-J2S-100A	HC-LFS102(B)	MR-J4-100A (Note 10)	SC-J2SJ4KT1K	MR-J4-200A (Note 10)	HG- JR153(B)					
MR-J2S-200A	HC-LFS152(B)	MR-J4-200A (Note 10)	SC-J2SJ4KT3K	MR-J4-350A (Note 10)	HG- JR353(B)					
MR-J2S-350A	HC-LFS202(B)	MR-J4-350A		MR-J4-350A						
MR-J2S-500A	HC-LFS302(B)	MR-J4-500A	SC-J2SJ4KT5K	MR-J4-500A	HG- JR503(B)					

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(13) Existing HA-LFS motor series

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)	(6)	(7)					
Existing model (Note 13)		Primary replacement model (Note 5)		Secondary replacement/simultaneous replacement models								
Servo amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo amplifier model (Note 1)	Servo motor model (Note 1)	Compat ibility	Motor side conversion cable model					
							Renewal kit model	Power supply conversion Cable	Encoder Conversion cable	Brake/Conversion cable for the cooling fan		
[Medium/large capacity/low inertia HA-LFS 1000r/min series, standard/with brake] ((B) represents models with brake)												
MR-J2S-700A	HA-LFS601(B)	(Note 16)		MR-J4-700A	HG-JR601(B) (Note 4)	× (Note 3)	SC-J2S-J4KT7K	SC-J2S-J4PW3C1M -■	Existing cable can be used.	• Existing brake cable can be used. • Cooling fan cable (Note 9)		
MR-J2S-11KA	HA-LFS801(B) HA-LFS12K1(B)			MR-J4-11KA	HG-JR801(B) (Note 4) HG-JR12K1(B) (Note 4)		SC-J2S-J4KT15K					
MR-J2S-15KA	HA-LFS15K1			MR-J4-15KA	HG-JR15K1		SC-J2S-J4KT22K					
MR-J2S-22KA	HA-LFS20K1			MR-J4-22KA	HG-JR20K1			(Note 8)				
MR-J2S-30KA	HA-LFS25K1 HA-LFS30K1			MR-J4-30DU-A (Note 20)	HG-JR25K1 HG-JR30K1 (Note 4)		SC-J2S-J4BS09 (Note 18)		(Note 17)	• Cooling fan conversion cable SC-J2S-J4FAN1C1M		
	MR-J2S-37KA			HA-LFS37K1	MR-J4-37DU-A (Note 20)			HG-JR37K1				
[Medium/large capacity/low inertia HA-LFS 1500r/min series, standard/with brake] ((B) represents models with brake)												
MR-J2S-700A	HA-LFS701M(B)			(Note 16)			MR-J4-700A	HG-JR701M(B) (Note 4)	× (Note 3)	SC-J2S-J4KT7K	SC-J2S-J4PW3C1M -■	Existing cable can be used.
MR-J2S-11KA	HA-LFS11K1M(B)	MR-J4-11KA	HG-JR11K1M(B)			SC-J2S-J4KT15K						
MR-J2S-15KA	HA-LFS15K1M(B)	MR-J4-15KA	HG-JR15K1M(B) (Note 4)			SC-J2S-J4KT22K						
MR-J2S-22KA	HA-LFS22K1M	MR-J4-22KA	HG-JR22K1M				(Note 8)					
MR-J2S-30KA	HA-LFS30K1M	MR-J4-30DU-A (Note 20)	HG-JR30K1M			SC-J2S-J4BS09 (Note 18)		(Note 17)		• Cooling fan conversion cable SC-J2S-J4FAN1C1M		
MR-J2S-37KA	HA-LFS37K1M	MR-J4-37DU-A (Note 20)	HG-JR37K1M									
[Medium/large capacity/low inertia HA-LFS 2000r/min series, standard/with brake] ((B) represents models with brake)												
MR-J2S-500A	HA-LFS502	MR-J4-500A	SC-J2S-J4KT5K	MR-J4-500A	HG-SR502	× (Note 3)	SC-J2S-J4KT5K	SC-HAJ3PW1C1M	SC-HAJ3ENM3C1M			
MR-J2S-700A	HA-LFS702	MR-J4-700A	SC-J2S-J4KT7K	MR-J4-700A	HG-SR702		SC-J2S-J4KT7K	Existing cable can be used.				
MR-J2S-11KA	HA-LFS11K2(B)	MR-J4-11KA	SC-J2S-J4KT15K	MR-J4-11KA	HG-JR11K1M(B) (Note 4)		SC-J2S-J4KT15K	SC-J2S-J4PW3C1M -■	Existing cable can be used.	• Existing brake cable can be used. • Cooling fan cable (Note 9)		
MR-J2S-15KA	HA-LFS15K2(B)	MR-J4-15KA (Note 10)	SC-J2S-J4KT15K	MR-J4-15KA (Note 10)	HG-JR11K1M(B)		(Note 11)					
MR-J2S-22KA	HA-LFS22K2(B)	MR-J4-22KA (Note 10)	SC-J2S-J4KT22K	MR-J4-15KA (Note 10)	HG-JR15K1M(B)			SC-J2S-J4BS09 (Note 18)	(Note 8)	(Note 17)	• Cooling fan conversion cable SC-J2S-J4FAN1C1M	
MR-J2S-30KA	HA-LFS30K2	MR-J4-30DU-A (Note 10, 20)	SC-J2S-J4BS09 (Note 18)	MR-J4-22KA (Note 10)	HG-JR22K1M							
MR-J2S-37KA	HA-LFS37K2	MR-J4-37DU-A (Note 10, 20)		MR-J4-30DU-A (Note 10, 20)	HG-JR30K1M							

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

4.2 B Type Replacement Combination List (200 V Class)

(1) Existing HC-KFS motor series (standard/with brake, G1, G2 reducer)

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)			(3)	(4)		(5)		
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)			Renewal kit model	Secondary replacement/simultaneous replacement models		Motor side conversion cable model		
Servo Amplifier model	Servo motor Model	Servo Amplifier model (Note 1, 12)	SSSCNET conversion unit model (Note 1)	Renewal kit model	Servo motor model (Note 1)	Comp atibility	Power supply conversion cable	Encoder conversion cable	Brake conversion cable	
[Small capacity/low inertia HC-KFS series, standard/with brake] ((B) represents models with brake)										
MR-J2S-10B(1)	HC-KFS053(B)	MR-J4-10B(1)-RJ020		SC-J2SBJ4KT02K	HG-KR053(B)	△ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.	
	HC-KFS13(B)				HG-KR13(B)					
MR-J2S-20B(1)	HC-KFS23(B)	MR-J4-20B(1)-RJ020	MR-J4-T20	SC-J2SBJ4KT06K	HG-KR23(B)					
MR-J2S-40B(1)	HC-KFS43(B)	MR-J4-40B(1)-RJ020			HG-KR43(B)					
MR-J2S-70B	HC-KFS73(B)	MR-J4-70B-RJ020		SC-J2SBJ4KT1K	HG-KR73(B)					
[Small capacity/low inertia HC-KFS series with general reducer (G1)] ((B) represents models with brake)										
MR-J2S-10B(1)	HC-KFS053(B)G1 1/5	MR-J4-10B(1)-RJ020		SC-J2SBJ4KT02K	HG-KR053(B)G1 1/5	△ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.	
	HC-KFS053(B)G1 1/12				HG-KR053(B)G1 1/12					
	HC-KFS053(B)G1 1/20				HG-KR053(B)G1 1/20					
	HC-KFS13(B)G1 1/5				HG-KR13(B)G1 1/5					
	HC-KFS13(B)G1 1/12				HG-KR13(B)G1 1/12					
HC-KFS13(B)G1 1/20	HG-KR13(B)G1 1/20									
MR-J2S-20B(1)	HC-KFS23(B)G1 1/5	MR-J4-20B(1)-RJ020	MR-J4-T20	SC-J2SBJ4KT06K	HG-KR23(B)G1 1/5					
	HC-KFS23(B)G1 1/12				HG-KR23(B)G1 1/12 (Note 2)					
	HC-KFS23(B)G1 1/20				HG-KR23(B)G1 1/20 (Note 2)					
MR-J2S-40B(1)	HC-KFS43(B)G1 1/5	MR-J4-40B(1)-RJ020		SC-J2SBJ4KT06K	HG-KR43(B)G1 1/5					
	HC-KFS43(B)G1 1/12				HG-KR43(B)G1 1/12 (Note 2)					
	HC-KFS43(B)G1 1/20				HG-KR43(B)G1 1/20 (Note 2)					
MR-J2S-70B	HC-KFS73(B)G1 1/5	MR-J4-70B-RJ020		SC-J2SBJ4KT1K	HG-KR73(B)G1 1/5					
	HC-KFS73(B)G1 1/12				HG-KR73(B)G1 1/12 (Note 2)					
	HC-KFS73(B)G1 1/20				HG-KR73(B)G1 1/20					
[Small capacity/low inertia HC-KFS series with high-precision reducer (G2)] ((B) represents models with brake)										
MR-J2S-10B(1)	HC-KFS053(B)G2 1/5	MR-J4-10B(1)-RJ020		SC-J2SBJ4KT02K	HG-KR053(B)G2 1/5	× (Note 3) (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.	
	HC-KFS053(B)G2 1/9				HG-KR053(B)G2 1/9					
	HC-KFS053(B)G2 1/20				HG-KR053(B)G2 1/20					
	HC-KFS053(B)G2 1/29				HG-KR053(B)G2 1/29					
	HC-KFS13(B)G2 1/5				HG-KR13(B)G2 1/5					
	HC-KFS13(B)G2 1/9				HG-KR13(B)G2 1/9					
MR-J2S-20B(1)	HC-KFS23(B)G2 1/5	MR-J4-20B(1)-RJ020	MR-J4-T20	SC-J2SBJ4KT06K	HG-KR23(B)G2 1/5					
	HC-KFS23(B)G2 1/9				HG-KR23(B)G2 1/9					
	HC-KFS23(B)G2 1/20				HG-KR23(B)G2 1/20					
MR-J2S-40B(1)	HC-KFS43(B)G2 1/5	MR-J4-40B(1)-RJ020		SC-J2SBJ4KT06K	HG-KR43(B)G2 1/5					
	HC-KFS43(B)G2 1/9				HG-KR43(B)G2 1/9					
	HC-KFS43(B)G2 1/20				HG-KR43(B)G2 1/20					
MR-J2S-70B	HC-KFS73(B)G2 1/5	MR-J4-70B-RJ020		SC-J2SBJ4KT1K	HG-KR73(B)G2 1/5					
	HC-KFS73(B)G2 1/9				HG-KR73(B)G2 1/9					
	HC-KFS73(B)G2 1/20				HG-KR73(B)G2 1/20					

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(2) Existing HC-KFS motor series (G5, G7 reducer)

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)				
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)		Secondary replacement/simultaneous replacement models					
Servo Amplifier model	Servo motor Model	Servo Amplifier model (Note 1, 12)	SSSCNET conversion unit model (Note 1)	Renewal kit model	Servo motor model (Note 1)	Motor side conversion cable model			
						Compatibility	Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Small capacity/low inertia HC-KFS series with high-precision reducer, flange output type (G5)] ((B) represents models with brake)									
MR-J2S-10B(1)	HC-KFS053(B)G5 1/5	MR-J4-10B(1)-RJ020	MR-J4-T20	SC-J2SBJ4KT02K	HG-KR053(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- With brake: SC-J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-KFS053(B)G5 1/11				HG-KR053(B)G5 1/11				
	HC-KFS053(B)G5 1/21				HG-KR053(B)G5 1/21				
	HC-KFS053(B)G5 1/33				HG-KR053(B)G5 1/33				
	HC-KFS053(B)G5 1/45				HG-KR053(B)G5 1/45				
	HC-KFS13(B)G5 1/5				HG-KR13(B)G5 1/5				
	HC-KFS13(B)G5 1/11				HG-KR13(B)G5 1/11				
	HC-KFS13(B)G5 1/21				HG-KR13(B)G5 1/21				
	HC-KFS13(B)G5 1/33				HG-KR13(B)G5 1/33				
MR-J2S-20B(1)	HC-KFS23(B)G5 1/5	MR-J4-20B(1)-RJ020	MR-J4-T20	SC-J2SBJ4KT02K	HG-KR23(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- With brake: SC-J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-KFS23(B)G5 1/11				HG-KR23(B)G5 1/11				
	HC-KFS23(B)G5 1/21				HG-KR23(B)G5 1/21				
	HC-KFS23(B)G5 1/33				HG-KR23(B)G5 1/33				
MR-J2S-40B(1)	HC-KFS43(B)G5 1/5	MR-J4-40B(1)-RJ020	MR-J4-T20	SC-J2SBJ4KT06K	HG-KR43(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- With brake: SC-J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-KFS43(B)G5 1/11				HG-KR43(B)G5 1/11				
	HC-KFS43(B)G5 1/21				HG-KR43(B)G5 1/21				
	HC-KFS43(B)G5 1/33				HG-KR43(B)G5 1/33				
MR-J2S-70B	HC-KFS73(B)G5 1/5	MR-J4-70B-RJ020	MR-J4-T20	SC-J2SBJ4KT1K	HG-KR73(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- With brake: SC-J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-KFS73(B)G5 1/11				HG-KR73(B)G5 1/11				
	HC-KFS73(B)G5 1/21				HG-KR73(B)G5 1/21				
	HC-KFS73(B)G5 1/33				HG-KR73(B)G5 1/33				
[Small capacity/low inertia HC-KFS series with high-precision reducer, shaft output type (G7)] ((B) represents models with brake)									
MR-J2S-10B(1)	HC-KFS053(B)G7 1/5	MR-J4-10B(1)-RJ020	MR-J4-T20	SC-J2SBJ4KT02K	HG-KR053(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- With brake: SC-J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-KFS053(B)G7 1/11				HG-KR053(B)G7 1/11				
	HC-KFS053(B)G7 1/21				HG-KR053(B)G7 1/21				
	HC-KFS053(B)G7 1/33				HG-KR053(B)G7 1/33				
	HC-KFS053(B)G7 1/45				HG-KR053(B)G7 1/45				
	HC-KFS13(B)G7 1/5				HG-KR13(B)G7 1/5				
	HC-KFS13(B)G7 1/11				HG-KR13(B)G7 1/11				
	HC-KFS13(B)G7 1/21				HG-KR13(B)G7 1/21				
	HC-KFS13(B)G7 1/33				HG-KR13(B)G7 1/33				
MR-J2S-20B(1)	HC-KFS23(B)G7 1/5	MR-J4-20B(1)-RJ020	MR-J4-T20	SC-J2SBJ4KT02K	HG-KR23(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- With brake: SC-J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-KFS23(B)G7 1/11				HG-KR23(B)G7 1/11				
	HC-KFS23(B)G7 1/21				HG-KR23(B)G7 1/21				
	HC-KFS23(B)G7 1/33				HG-KR23(B)G7 1/33				
MR-J2S-40B(1)	HC-KFS43(B)G7 1/5	MR-J4-40B(1)-RJ020	MR-J4-T20	SC-J2SBJ4KT06K	HG-KR43(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- With brake: SC-J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-KFS43(B)G7 1/11				HG-KR43(B)G7 1/11				
	HC-KFS43(B)G7 1/21				HG-KR43(B)G7 1/21				
	HC-KFS43(B)G7 1/33				HG-KR43(B)G7 1/33				
MR-J2S-70B	HC-KFS73(B)G7 1/5	MR-J4-70B-RJ020	MR-J4-T20	SC-J2SBJ4KT1K	HG-KR73(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- With brake: SC-J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-KFS73(B)G7 1/11				HG-KR73(B)G7 1/11				
	HC-KFS73(B)G7 1/21				HG-KR73(B)G7 1/21				
	HC-KFS73(B)G7 1/33				HG-KR73(B)G7 1/33				

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(3) Existing HC-KFS46, KFS410 motor

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)			(3)	(4)		(5)	(6)	(7)		
Existing model (Note 13)		Primary replacement model (Note 5)			Secondary replacement/simultaneous replacement models							
Servo Amplifier model	Servo Motor Model	Servo Amplifier model (Note 1, 12)	SSCNET Conversion unit Model (Note 1)	Renewal kit model	Servo Amplifier model (Note 1)	SSCNET Conversion unit model (Note 1)	Servo Motor Model (Note 1)	Compati- bility	Renewal kit model	Motor side conversion cable model		
										Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Small capacity/low inertia HC-KFS series, standard/with brake] ((B) represents models with brake)												
MR-J2S-70B	HC-KFS46	MR-J4-70B-RJ020 (Note 10)	MR-J4-T20	SC-J2SBJ4KT1K	MR-J4-40B-RJ020 (Note 10)	MR-J4-T20	HG-KR43	Δ (Note 4) (Note 15)	(Note 11)	Without brake: SC-J2SJ4PW1C03M-■		
	HC-KFS410									With brake: SC-J2SJ4PWBK1C03M-■		SC-HAJ3ENM1C03M-■

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(4) Existing HC-MFS motor series (standard/with brake, G1, G2 reducer)

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)		(3)	(4)		(5)			
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)			Secondary replacement/simultaneous replacement models					
Servo Amplifier model	Servo motor Model	Servo Amplifier model (Note 1, 12)	SSCNET conversion unit model (Note 1)	Renewal kit model	Servo motor model (Note 1)	Compati- bili- ty	Motor side conversion cable model			
							Power supply conversion cable	Encoder conversion cable	Brake conversion cable	
[Small capacity/ultra-low inertia HC-MFS series, standard/with brake] ((B) represents models with brake)										
MR-J2S-10B(1)	HC-MFS053(B)	MR-J4-10B(1)-RJ020			SC-J2SBJ4KT02K	O	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.	
	HC-MFS13(B)									HG-MR053(B)
	HC-MFS23(B)									HG-MR13(B)
	HC-MFS43(B)									HG-MR23(B)
MR-J2S-20B(1)	HC-MFS23(B)	MR-J4-20B(1)-RJ020	MR-J4-T20		SC-J2SBJ4KT06K					
MR-J2S-40B(1)	HC-MFS43(B)	MR-J4-40B(1)-RJ020			SC-J2SBJ4KT06K					
MR-J2S-70B	HC-MFS73(B)	MR-J4-70B-RJ020			SC-J2SBJ4KT1K					
[Small capacity/ultra-low inertia HC-MFS series with general reducer (G1)] ((B) represents models with brake)										
MR-J2S-10B(1)	HC-MFS053(B)G1 1/5	MR-J4-10B(1)-RJ020	MR-J4-T20		SC-J2SBJ4KT02K	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.	
	HC-MFS053(B)G1 1/12									HG-KR053(B)G1 1/5
	HC-MFS053(B)G1 1/20									HG-KR053(B)G1 1/12
	HC-MFS13(B)G1 1/5									HG-KR053(B)G1 1/20
	HC-MFS13(B)G1 1/12									HG-KR13(B)G1 1/5
MR-J2S-20B(1)	HC-MFS23(B)G1 1/5	MR-J4-20B(1)-RJ020			SC-J2SBJ4KT02K					
	HC-MFS23(B)G1 1/12									
	HC-MFS23(B)G1 1/20									
MR-J2S-40B(1)	HC-MFS43(B)G1 1/5	MR-J4-40B(1)-RJ020			SC-J2SBJ4KT06K					
	HC-MFS43(B)G1 1/12									
	HC-MFS43(B)G1 1/20									
MR-J2S-70B	HC-MFS73(B)G1 1/5	MR-J4-70B-RJ020			SC-J2SBJ4KT1K					
	HC-MFS73(B)G1 1/12									
	HC-MFS73(B)G1 1/20									
[Small capacity/ultra-low inertia HC-MFS series with high-precision reducer (G2)] ((B) represents models with brake)										
MR-J2S-10B(1)	HC-MFS053(B)G2 1/5	MR-J4-10B(1)-RJ020	MR-J4-T20		SC-J2SBJ4KT02K	× (Note 3) (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.	
	HC-MFS053(B)G2 1/9									HG-KR053(B)G7 1/5
	HC-MFS053(B)G2 1/20									HG-KR053(B)G7 1/11
	HC-MFS053(B)G2 1/29									HG-KR053(B)G7 1/21
	HC-MFS13(B)G2 1/5									HG-KR053(B)G7 1/33
	HC-MFS13(B)G2 1/9									HG-KR13(B)G7 1/5
	HC-MFS13(B)G2 1/20									HG-KR13(B)G7 1/11
MR-J2S-20B(1)	HC-MFS23(B)G2 1/5	MR-J4-20B(1)-RJ020			SC-J2SBJ4KT02K					
	HC-MFS23(B)G2 1/9									
	HC-MFS23(B)G2 1/20									
	HC-MFS23(B)G2 1/29									
MR-J2S-40B(1)	HC-MFS43(B)G2 1/5	MR-J4-40B(1)-RJ020			SC-J2SBJ4KT06K					
	HC-MFS43(B)G2 1/9									
	HC-MFS43(B)G2 1/20									
	HC-MFS43(B)G2 1/29									
MR-J2S-70B	HC-MFS73(B)G2 1/5	MR-J4-70B-RJ020			SC-J2SBJ4KT1K					
	HC-MFS73(B)G2 1/9									
	HC-MFS73(B)G2 1/20									
	HC-MFS73(B)G2 1/29									

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(5) Existing HC-MFS motor series (G5, G7 reducer)

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)		(3)	(4)	(5)			
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)			Secondary replacement/simultaneous replacement models				
Servo Amplifier model	Servo motor Model	Servo Amplifier model (Note 1, 12)	SSCNET conversion unit model (Note 1)	Renewal kit model	Servo motor model (Note 1)	Motor side conversion cable model			
						Comp atibility	Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Small capacity/ultra-low inertia HC-MFS series with high-precision reducer, flange output type (G5)] ((B) represents models with brake)									
MR-J2S-10B(1)	HC-MFS053(B)G5 1/5	MR-J4-10B(1)-RJ020			HG-KR053(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-MFS053(B)G5 1/11				HG-KR053(B)G5 1/11				
	HC-MFS053(B)G5 1/21				HG-KR053(B)G5 1/21				
	HC-MFS053(B)G5 1/33				HG-KR053(B)G5 1/33				
	HC-MFS053(B)G5 1/45				HG-KR053(B)G5 1/45				
	HC-MFS13(B)G5 1/5				HG-KR13(B)G5 1/5				
	HC-MFS13(B)G5 1/11				HG-KR13(B)G5 1/11				
	HC-MFS13(B)G5 1/21				HG-KR13(B)G5 1/21				
	HC-MFS13(B)G5 1/33				HG-KR13(B)G5 1/33				
HC-MFS13(B)G5 1/45	HG-KR13(B)G5 1/45								
MR-J2S-20B(1)	HC-MFS23(B)G5 1/5	MR-J4-20B(1)-RJ020	MR-J4-T20		HG-KR23(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-MFS23(B)G5 1/11				HG-KR23(B)G5 1/11				
	HC-MFS23(B)G5 1/21				HG-KR23(B)G5 1/21				
	HC-MFS23(B)G5 1/33				HG-KR23(B)G5 1/33				
HC-MFS23(B)G5 1/45	HG-KR23(B)G5 1/45								
MR-J2S-40B(1)	HC-MFS43(B)G5 1/5	MR-J4-40B(1)-RJ020			HG-KR43(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-MFS43(B)G5 1/11				HG-KR43(B)G5 1/11				
	HC-MFS43(B)G5 1/21				HG-KR43(B)G5 1/21				
	HC-MFS43(B)G5 1/33				HG-KR43(B)G5 1/33				
HC-MFS43(B)G5 1/45	HG-KR43(B)G5 1/45								
MR-J2S-70B	HC-MFS73(B)G5 1/5	MR-J4-70B-RJ020			HG-KR73(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-MFS73(B)G5 1/11				HG-KR73(B)G5 1/11				
	HC-MFS73(B)G5 1/21				HG-KR73(B)G5 1/21				
	HC-MFS73(B)G5 1/33				HG-KR73(B)G5 1/33				
HC-MFS73(B)G5 1/45	HG-KR73(B)G5 1/45								
[Small capacity/ultra-low inertia HC-MFS series with high-precision reducer, shaft output type (G7)] ((B) represents models with brake)									
MR-J2S-10B(1)	HC-MFS053(B)G7 1/5	MR-J4-10B(1)-RJ020			HG-KR053(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-MFS053(B)G7 1/11				HG-KR053(B)G7 1/11				
	HC-MFS053(B)G7 1/21				HG-KR053(B)G7 1/21				
	HC-MFS053(B)G7 1/33				HG-KR053(B)G7 1/33				
	HC-MFS053(B)G7 1/45				HG-KR053(B)G7 1/45				
	HC-MFS13(B)G7 1/5				HG-KR13(B)G7 1/5				
	HC-MFS13(B)G7 1/11				HG-KR13(B)G7 1/11				
	HC-MFS13(B)G7 1/21				HG-KR13(B)G7 1/21				
	HC-MFS13(B)G7 1/33				HG-KR13(B)G7 1/33				
HC-MFS13(B)G7 1/45	HG-KR13(B)G7 1/45								
MR-J2S-20B(1)	HC-MFS23(B)G7 1/5	MR-J4-20B(1)-RJ020	MR-J4-T20		HG-KR23(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-MFS23(B)G7 1/11				HG-KR23(B)G7 1/11				
	HC-MFS23(B)G7 1/21				HG-KR23(B)G7 1/21				
	HC-MFS23(B)G7 1/33				HG-KR23(B)G7 1/33				
HC-MFS23(B)G7 1/45	HG-KR23(B)G7 1/45								
MR-J2S-40B(1)	HC-MFS43(B)G7 1/5	MR-J4-40B(1)-RJ020			HG-KR43(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-MFS43(B)G7 1/11				HG-KR43(B)G7 1/11				
	HC-MFS43(B)G7 1/21				HG-KR43(B)G7 1/21				
	HC-MFS43(B)G7 1/33				HG-KR43(B)G7 1/33				
HC-MFS43(B)G7 1/45	HG-KR43(B)G7 1/45								
MR-J2S-70B	HC-MFS73(B)G7 1/5	MR-J4-70B-RJ020			HG-KR73(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-MFS73(B)G7 1/11				HG-KR73(B)G7 1/11				
	HC-MFS73(B)G7 1/21				HG-KR73(B)G7 1/21				
	HC-MFS73(B)G7 1/33				HG-KR73(B)G7 1/33				
HC-MFS73(B)G7 1/45	HG-KR73(B)G7 1/45								

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(6) Existing HC-SFS motor series (standard/with brake, G2 reducer)

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)		(3)	(4)	(5)										
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)			Secondary replacement/simultaneous replacement models											
Servo Amplifier model	Servo motor Model	Servo Amplifier model (Note 1, 12)	SSCNET conversion unit model (Note 1)	Renewal kit model	Servo motor model (Note 1)	Motor side conversion cable model										
						Compati bility	Power supply conversion cable	Encoder conversion cable	Brake conversion cable							
[Medium capacity/medium inertia HC-SFS series, standard/with brake] ((B) represents models with brake)																
MR-J2S-60B	HC-SFS52(B) HC-SFS53(B)	MR-J4-60B-RJ020	MR-J4-T20	SC-J2SBJ4KT06K	HG-SR52(B)	Δ (Note 6)	SC-SAJ3PW2KC1M-S2 SC-HAJ3PW1C1M SC-SAJ3PW2KC1M-S2 SC-HAJ3PW1C1M	SC-HAJ3ENM3C1M	(Note 7)							
MR-J2S-100B	HC-SFS81(B) HC-SFS102(B) HC-SFS103(B)	MR-J4-100B-RJ020		SC-J2SBJ4KT1K	HG-SR81(B) HG-SR102(B)											
MR-J2S-200B	HC-SFS121(B) HC-SFS152(B) HC-SFS153(B) HC-SFS201(B) HC-SFS202(B) HC-SFS203(B)	MR-J4-200B-RJ020		SC-J2SBJ4KT3K	HG-SR121(B) HG-SR152(B) HG-SR201(B) HG-SR202(B)											
	MR-J2S-350B				HC-SFS301(B) HC-SFS352(B) HC-SFS353(B)					MR-J4-350B-RJ020	HG-SR301(B) HG-SR352(B)					
	MR-J2S-500B				HC-SFS502(B)					MR-J4-500B-RJ020	SC-J2SBJ4KT5K	HG-SR502(B)				
	MR-J2S-700B				HC-SFS702(B)					MR-J4-700B-RJ020	SC-J2SBJ4KT7K	HG-SR702(B)				
[Medium capacity/medium inertia HC-SFS series with high-precision reducer (G2)] ((B) represents models with brake)																
MR-J2S-60B	HC-SFS52(B)G2 1/5 HC-SFS52(B)G2 1/9 HC-SFS52(B)G2 1/20 HC-SFS52(B)G2 1/29 HC-SFS52(B)G2 1/45	MR-J4-60B-RJ020		MR-J4-T20	SC-J2SBJ4KT06K					HG-SR52(B)G7 1/5 HG-SR52(B)G7 1/11 HG-SR52(B)G7 1/21 HG-SR52(B)G7 1/33 HG-SR52(B)G7 1/45	× (Note 3) (Note 6)	SC-SAJ3PW2KC1M-S2 SC-HAJ3PW1C1M	SC-HAJ3ENM3C1M	(Note 7)		
	MR-J2S-100B				HC-SFS102(B)G2 1/5 HC-SFS102(B)G2 1/9 HC-SFS102(B)G2 1/20 HC-SFS102(B)G2 1/29 HC-SFS102(B)G2 1/45					MR-J4-100B-RJ020					SC-J2SBJ4KT1K	HG-SR102(B)G7 1/5 HG-SR102(B)G7 1/11 HG-SR102(B)G7 1/21 HG-SR102(B)G7 1/33 HG-SR102(B)G7 1/45
					MR-J2S-200B										HC-SFS152(B)G2 1/5 HC-SFS152(B)G2 1/9 HC-SFS152(B)G2 1/20 HC-SFS152(B)G2 1/29 HC-SFS152(B)G2 1/45 HC-SFS202(B)G2 1/5 HC-SFS202(B)G2 1/9 HC-SFS202(B)G2 1/20 HC-SFS202(B)G2 1/29 HC-SFS202(B)G2 1/45	MR-J4-200B-RJ020
			MR-J2S-350B			HC-SFS352(B)G2 1/5 HC-SFS352(B)G2 1/9 HC-SFS352(B)G2 1/20	MR-J4-350B-RJ020	HG-SR352(B)G7 1/5 HG-SR352(B)G7 1/11 HG-SR352(B)G7 1/21								
MR-J2S-500B		HC-SFS502(B)G2 1/5 HC-SFS502(B)G2 1/9				MR-J4-500B-RJ020		SC-J2SBJ4KT5K	HG-SR502(B)G7 1/5 HG-SR502(B)G7 1/11							
MR-J2S-700B	HC-SFS702(B)G2 1/5	MR-J4-700B-RJ020	SC-J2SBJ4KT7K			HG-SR702(B)G7 1/5	Existing cable can be used.									

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(7) Existing HC-SFS motor series (G1 reducer)

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)		(3)	(4)		(5)			
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)			Secondary replacement/simultaneous replacement models					
Servo Amplifier model	Servo motor Model	Servo Amplifier model (Note 1, 12)	SSCNET conversion unit model (Note 1)	Renewal kit model	Servo motor model (Note 1)	Comp atibility	Motor side conversion cable model			
							Power supply conversion cable	Encoder conversion cable	Brake conversion cable	
[Medium capacity/medium inertia HC-SFS series with general reducer (G1)] ((B) represents models with brake, (H) represents foot-mounting)										
MR-J2S-60B	HC-SFS52(B)G1(H) 1/6	MR-J4-60B-RJ020			SC-J2SBJ4KT06K					HG-SR52(B)G1(H) 1/6
	HC-SFS52(B)G1(H) 1/11									HG-SR52(B)G1(H) 1/11
	HC-SFS52(B)G1(H) 1/17									HG-SR52(B)G1(H) 1/17
	HC-SFS52(B)G1(H) 1/29									HG-SR52(B)G1(H) 1/29
	HC-SFS52(B)G1(H) 1/35									HG-SR52(B)G1(H) 1/35
	HC-SFS52(B)G1(H) 1/43									HG-SR52(B)G1(H) 1/43
	HC-SFS52(B)G1(H) 1/59			HG-SR52(B)G1(H) 1/59						
MR-J2S-100B	HC-SFS102(B)G1(H) 1/6	MR-J4-100B-RJ020			SC-J2SBJ4KT1K					HG-SR102(B)G1(H) 1/6
	HC-SFS102(B)G1(H) 1/11									HG-SR102(B)G1(H) 1/11
	HC-SFS102(B)G1(H) 1/17									HG-SR102(B)G1(H) 1/17
	HC-SFS102(B)G1(H) 1/29									HG-SR102(B)G1(H) 1/29
	HC-SFS102(B)G1(H) 1/35									HG-SR102(B)G1(H) 1/35
	HC-SFS102(B)G1(H) 1/43									HG-SR102(B)G1(H) 1/43
	HC-SFS102(B)G1(H) 1/59			HG-SR102(B)G1(H) 1/59						
MR-J2S-200B	HC-SFS152(B)G1(H) 1/6	MR-J4-200B-RJ020	MR-J4-T20		SC-J2SBJ4KT3K		Δ (Note 6)			HG-SR152(B)G1(H) 1/6
	HC-SFS152(B)G1(H) 1/11									HG-SR152(B)G1(H) 1/11
	HC-SFS152(B)G1(H) 1/17									HG-SR152(B)G1(H) 1/17
	HC-SFS152(B)G1(H) 1/29									HG-SR152(B)G1(H) 1/29
	HC-SFS152(B)G1(H) 1/35									HG-SR152(B)G1(H) 1/35
	HC-SFS152(B)G1(H) 1/43									HG-SR152(B)G1(H) 1/43
	HC-SFS152(B)G1(H) 1/59									HG-SR152(B)G1(H) 1/59
	HC-SFS202(B)G1(H) 1/6									HG-SR202(B)G1(H) 1/6
	HC-SFS202(B)G1(H) 1/11									HG-SR202(B)G1(H) 1/11
	HC-SFS202(B)G1(H) 1/17									HG-SR202(B)G1(H) 1/17
	HC-SFS202(B)G1(H) 1/29									HG-SR202(B)G1(H) 1/29
	HC-SFS202(B)G1(H) 1/35									HG-SR202(B)G1(H) 1/35
	HC-SFS202(B)G1(H) 1/43									HG-SR202(B)G1(H) 1/43
	HC-SFS202(B)G1(H) 1/59									HG-SR202(B)G1(H) 1/59
MR-J2S-350B	HC-SFS352(B)G1(H) 1/6	MR-J4-350B-RJ020								HG-SR352(B)G1(H) 1/6
	HC-SFS352(B)G1(H) 1/11									HG-SR352(B)G1(H) 1/11
	HC-SFS352(B)G1(H) 1/17									HG-SR352(B)G1(H) 1/17
	HC-SFS352(B)G1(H) 1/29									HG-SR352(B)G1(H) 1/29
	HC-SFS352(B)G1(H) 1/35									HG-SR352(B)G1(H) 1/35
	HC-SFS352(B)G1(H) 1/43									HG-SR352(B)G1(H) 1/43
	HC-SFS352(B)G1(H) 1/59			HG-SR352(B)G1(H) 1/59						
MR-J2S-500B	HC-SFS502(B)G1(H) 1/11	MR-J4-500B-RJ020			SC-J2SBJ4KT5K					HG-SR502(B)G1(H) 1/11
	HC-SFS502(B)G1(H) 1/17									HG-SR502(B)G1(H) 1/17
	HC-SFS502(B)G1(H) 1/29									HG-SR502(B)G1(H) 1/29
	HC-SFS502(B)G1(H) 1/35									HG-SR502(B)G1(H) 1/35
	HC-SFS502(B)G1(H) 1/43			HG-SR502(B)G1(H) 1/43						
MR-J2S-700B	HC-SFS702(B)G1(H) 1/11	MR-J4-700B-RJ020			SC-J2SBJ4KT7K					HG-SR702(B)G1(H) 1/11
	HC-SFS702(B)G1(H) 1/17									HG-SR702(B)G1(H) 1/17
	HC-SFS702(B)G1(H) 1/29									HG-SR702(B)G1(H) 1/29
	HC-SFS702(B)G1(H) 1/35									HG-SR702(B)G1(H) 1/35
	HC-SFS702(B)G1(H) 1/43			HG-SR702(B)G1(H) 1/43						

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(8) Existing HC-SFS motor series (G5, G7 reducer)

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)		(3)	(4)	(5)				
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)			Secondary replacement/simultaneous replacement models					
Servo Amplifier model	Servo motor Model	Servo Amplifier model (Note 1, 12)	SSCNET conversion unit model (Note 1)	Renewal kit model	Servo motor model (Note 1)	Motor side conversion cable model				
						Comp atibility	Power supply conversion cable	Encoder conversion cable	Brake conversion cable	
[Medium capacity/medium inertia HC-SFS series with high-precision reducer, flange output type (G5)] ((B) represents models with brake)										
MR-J2S-60B	HC-SFS52(B)G5 1/5	MR-J4-60B-RJ020			SC-J2SBJ4KT06K	HG-SR52(B)G5 1/5	Δ (Note 6)	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)
	HC-SFS52(B)G5 1/11					HG-SR52(B)G5 1/11				
	HC-SFS52(B)G5 1/21					HG-SR52(B)G5 1/21				
	HC-SFS52(B)G5 1/33					HG-SR52(B)G5 1/33				
HC-SFS52(B)G5 1/45	HG-SR52(B)G5 1/45									
MR-J2S-100B	HC-SFS102(B)G5 1/5	MR-J4-100B-RJ020			SC-J2SBJ4KT1K	HG-SR102(B)G5 1/5				
	HC-SFS102(B)G5 1/11					HG-SR102(B)G5 1/11				
	HC-SFS102(B)G5 1/21					HG-SR102(B)G5 1/21				
	HC-SFS102(B)G5 1/33					HG-SR102(B)G5 1/33				
HC-SFS102(B)G5 1/45	HG-SR102(B)G5 1/45									
MR-J2S-200B	HC-SFS152(B)G5 1/5	MR-J4-200B-RJ020			SC-J2SBJ4KT3K	HG-SR152(B)G5 1/5				
	HC-SFS152(B)G5 1/11					HG-SR152(B)G5 1/11				
	HC-SFS152(B)G5 1/21					HG-SR152(B)G5 1/21				
	HC-SFS152(B)G5 1/33					HG-SR152(B)G5 1/33				
	HC-SFS152(B)G5 1/45					HG-SR152(B)G5 1/45				
	HC-SFS202(B)G5 1/5					HG-SR202(B)G5 1/5				
	HC-SFS202(B)G5 1/11					HG-SR202(B)G5 1/11				
	HC-SFS202(B)G5 1/21					HG-SR202(B)G5 1/21				
HC-SFS202(B)G5 1/33	HG-SR202(B)G5 1/33									
HC-SFS202(B)G5 1/45	HG-SR202(B)G5 1/45									
MR-J2S-350B	HC-SFS352(B)G5 1/5	MR-J4-350B-RJ020			SC-J2SBJ4KT5K	HG-SR352(B)G5 1/5				
	HC-SFS352(B)G5 1/11					HG-SR352(B)G5 1/11				
	HC-SFS352(B)G5 1/21					HG-SR352(B)G5 1/21				
MR-J2S-500B	HC-SFS502(B)G5 1/5	MR-J4-500B-RJ020			SC-J2SBJ4KT7K	HG-SR502(B)G5 1/5				
	HC-SFS502(B)G5 1/11					HG-SR502(B)G5 1/11				
MR-J2S-700B	HC-SFS702(B)G5 1/5	MR-J4-700B-RJ020				HG-SR702(B)G5 1/5				Existing cable can be used.
[Medium capacity/medium inertia HC-SFS series with high-precision reducer, shaft output type (G7)] ((B) represents models with brake)										
MR-J2S-60B	HC-SFS52(B)G7 1/5	MR-J4-60B-RJ020			SC-J2SBJ4KT06K	HG-SR52(B)G7 1/5	Δ (Note 6)	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)
	HC-SFS52(B)G7 1/11					HG-SR52(B)G7 1/11				
	HC-SFS52(B)G7 1/21					HG-SR52(B)G7 1/21				
	HC-SFS52(B)G7 1/33					HG-SR52(B)G7 1/33				
HC-SFS52(B)G7 1/45	HG-SR52(B)G7 1/45									
MR-J2S-100B	HC-SFS102(B)G7 1/5	MR-J4-100B-RJ020			SC-J2SBJ4KT1K	HG-SR102(B)G7 1/5				
	HC-SFS102(B)G7 1/11					HG-SR102(B)G7 1/11				
	HC-SFS102(B)G7 1/21					HG-SR102(B)G7 1/21				
	HC-SFS102(B)G7 1/33					HG-SR102(B)G7 1/33				
HC-SFS102(B)G7 1/45	HG-SR102(B)G7 1/45									
MR-J2S-200B	HC-SFS152(B)G7 1/5	MR-J4-200B-RJ020			SC-J2SBJ4KT3K	HG-SR152(B)G7 1/5				
	HC-SFS152(B)G7 1/11					HG-SR152(B)G7 1/11				
	HC-SFS152(B)G7 1/21					HG-SR152(B)G7 1/21				
	HC-SFS152(B)G7 1/33					HG-SR152(B)G7 1/33				
	HC-SFS152(B)G7 1/45					HG-SR152(B)G7 1/45				
	HC-SFS202(B)G7 1/5					HG-SR202(B)G7 1/5				
	HC-SFS202(B)G7 1/11					HG-SR202(B)G7 1/11				
	HC-SFS202(B)G7 1/21					HG-SR202(B)G7 1/21				
HC-SFS202(B)G7 1/33	HG-SR202(B)G7 1/33									
HC-SFS202(B)G7 1/45	HG-SR202(B)G7 1/45									
MR-J2S-350B	HC-SFS352(B)G7 1/5	MR-J4-350B-RJ020			SC-J2SBJ4KT5K	HG-SR352(B)G7 1/5				
	HC-SFS352(B)G7 1/11					HG-SR352(B)G7 1/11				
	HC-SFS352(B)G7 1/21					HG-SR352(B)G7 1/21				
MR-J2S-500B	HC-SFS502(B)G7 1/5	MR-J4-500B-RJ020			SC-J2SBJ4KT7K	HG-SR502(B)G7 1/5				
	HC-SFS502(B)G7 1/11					HG-SR502(B)G7 1/11				
MR-J2S-700B	HC-SFS702(B)G7 1/5	MR-J4-700B-RJ020				HG-SR702(B)G7 1/5				Existing cable can be used.

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(9) Existing HC-RFS motor series (standard/with brake, G2 reducer)

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)		(3)	(4)		(5)		(6)	(7)		
Existing model (Note 13)		Primary replacement model (Note 5)			Secondary replacement/simultaneous replacement models							
Servo Amplifier model	Servo Motor Model	Servo Amplifier model (Note 1, 12)	SSCNET conversion unit model (Note 1)	Renewal kit model	Servo Amplifier model (Note 1)	SSCNET Conversion unit Model (Note 1)	Servo motor model (Note 1)	Compati bility	Renewal kit model	Motor side conversion cable		
										Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Medium capacity/ultra-low inertia HC-RFS series, standard/with brake] ((B) represents models with brake)												
MR-J2S-200B	HC-RFS103(B)	MR-J4-200B-RJ020		SC-J2SBJ4KT3K	MR-J4-200B-RJ020	MR-J4-T20	HG-RR103(B)	○	SC-J2SBJ4KT3K	Existing cable can be used.	SC-HAJ3ENM3C1M	Existing cable can be used.
	HC-RFS153(B)						HG-RR153(B)					
MR-J2S-350B	HC-RFS203(B)	MR-J4-350B-RJ020			MR-J4-350B-RJ020		HG-RR203(B)					
MR-J2S-500B	HC-RFS353(B)	MR-J4-500B-RJ020		SC-J2SBJ4KT5K	MR-J4-500B-RJ020		HG-RR353(B)		SC-J2SBJ4KT5K			
	HC-RFS503(B)						HG-RR503(B)					
[Medium capacity/ultra-low inertia HC-RFS series with high-precision reducer (G2)] ((B) represents models with brake)												
MR-J2S-200B	HC-RFS103(B)G2 1/5	MR-J4-200B-RJ020 (Note 10)		SC-J2SBJ4KT3K	MR-J4-100B-RJ020 (Note 10)	MR-J4-T20	HG-SR102(B)G7 1/5	× (Note 3) (Note 4)	SC-J2SBJ4KT3K	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)
	HC-RFS103(B)G2 1/9						HG-SR102(B)G7 1/11					
	HC-RFS103(B)G2 1/20						HG-SR102(B)G7 1/21					
	HC-RFS103(B)G2 1/29						HG-SR102(B)G7 1/33					
	HC-RFS103(B)G2 1/45						HG-SR102(B)G7 1/45					
	HC-RFS153(B)G2 1/5						HG-SR152(B)G7 1/5					
	HC-RFS153(B)G2 1/9						HG-SR152(B)G7 1/11					
	HC-RFS153(B)G2 1/20						HG-SR152(B)G7 1/21					
MR-J2S-350B	HC-RFS203(B)G2 1/5	MR-J4-350B-RJ020 (Note 10)			MR-J4-200B-RJ020 (Note 10)		HG-SR202(B)G7 1/5			SC-J2S4PW2C1M		
	HC-RFS203(B)G2 1/9						HG-SR202(B)G7 1/11					
	HC-RFS203(B)G2 1/20						HG-SR202(B)G7 1/21					
	HC-RFS203(B)G2 1/29						HG-SR202(B)G7 1/33					
MR-J2S-500B	HC-RFS353(B)G2 1/5	MR-J4-500B-RJ020 (Note 10)		SC-J2SBJ4KT5K	MR-J4-350B-RJ020 (Note 10)		HG-SR352(B)G7 1/5			SC-HAJ3PW1C1M		
	HC-RFS353(B)G2 1/9						HG-SR352(B)G7 1/11					
	HC-RFS353(B)G2 1/20						HG-SR352(B)G7 1/21					
	HC-RFS353(B)G2 1/29						HG-SR502(B)G7 1/5					
	HC-RFS503(B)G2 1/5						HG-SR502(B)G7 1/11					
	HC-RFS503(B)G2 1/9											

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(10) Existing HC-RFS motor series (G5, G7 reducer)

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)		(3)	(4)		(5)		(6)	(7)		
Existing model (Note 13)		Primary replacement model (Note 5)			Secondary replacement/simultaneous replacement models							
Servo amplifier model	Servo Motor Model	Servo Amplifier model (Note 1, 12)	SSCNET conversion unit model (Note 1)	Renewal kit model	Servo Amplifier model (Note 1)	SSCNET Conversion unit Model (Note 1)	Servo motor model (Note 1)	Compati bility	Renewal kit model	Motor side conversion cable		
										Power supply conversion cable	Encoder conversion cable	Brake conversi on cable
[Medium capacity/ultra-low inertia HC-RFS series with high-precision reducer, flange output type (G5)] ((B) represents models with brake)												
MR-J2S-200B	HC-RFS103(B)G5 1/5	MR-J4-200B-RJ020 (Note 10)			MR-J4-100B-RJ020 (Note 10)		HG-SR102(B)G5 1/5	× (Note 3) (Note 4)	(Note 11)	SC-SAJ3PW2KC1M-S2		
	HC-RFS103(B)G5 1/11						HG-SR102(B)G5 1/11					
	HC-RFS103(B)G5 1/21						HG-SR102(B)G5 1/21					
	HC-RFS103(B)G5 1/33						HG-SR102(B)G5 1/33					
	HC-RFS103(B)G5 1/45						HG-SR102(B)G5 1/45					
	HC-RFS153(B)G5 1/5						HG-SR152(B)G5 1/5					
	HC-RFS153(B)G5 1/11						HG-SR152(B)G5 1/11					
	HC-RFS153(B)G5 1/21						HG-SR152(B)G5 1/21					
	HC-RFS153(B)G5 1/33						HG-SR152(B)G5 1/33					
MR-J2S-350B	HC-RFS203(B)G5 1/5	MR-J4-350B-RJ020 (Note 10)	MR-J4-T20		MR-J4-200B-RJ020 (Note 10)	MR-J4-T20	HG-SR202(B)G5 1/5	× (Note 3) (Note 4)	SC-J2SBJ4KT3K	SC-J2SBJ4PW2C1M	SC-HAJ3ENM3C1M (Note 7)	
	HC-RFS203(B)G5 1/11						HG-SR202(B)G5 1/11					
	HC-RFS203(B)G5 1/21						HG-SR202(B)G5 1/21					
	HC-RFS203(B)G5 1/33						HG-SR202(B)G5 1/33					
	HC-RFS203(B)G5 1/45						HG-SR202(B)G5 1/45					
	HC-RFS353(B)G5 1/5						HG-SR352(B)G5 1/5					
	HC-RFS353(B)G5 1/11						HG-SR352(B)G5 1/11					
	HC-RFS353(B)G5 1/21						HG-SR352(B)G5 1/21					
	HC-RFS353(B)G5 1/33						HG-SR352(B)G5 1/33					
MR-J2S-500B	HC-RFS503(B)G5 1/5	MR-J4-500B-RJ020 (Note 10)			MR-J4-500B-RJ020 (Note 10)	MR-J4-500B-RJ020	HG-SR502(B)G5 1/5	× (Note 3) (Note 4)	(Note 11)	SC-HAJ3PW1C1M		
	HC-RFS503(B)G5 1/11						HG-SR502(B)G5 1/11					
	HC-RFS503(B)G5 1/21						HG-SR502(B)G5 1/21					
	HC-RFS503(B)G5 1/33						HG-SR502(B)G5 1/33					
	HC-RFS503(B)G5 1/45						HG-SR502(B)G5 1/45					
	HC-RFS503(B)G5 1/11						HG-SR502(B)G5 1/11					
[Medium capacity/ultra-low inertia HC-RFS series with high-precision reducer, flange output type (G7)] ((B) represents models with brake)												
MR-J2S-200B	HC-RFS103(B)G7 1/5	MR-J4-200B-RJ020 (Note 10)			MR-J4-100B-RJ020 (Note 10)		HG-SR102(B)G7 1/5	× (Note 3) (Note 4)	(Note 11)	SC-SAJ3PW2KC1M-S2		
	HC-RFS103(B)G7 1/11						HG-SR102(B)G7 1/11					
	HC-RFS103(B)G7 1/21						HG-SR102(B)G7 1/21					
	HC-RFS103(B)G7 1/33						HG-SR102(B)G7 1/33					
	HC-RFS103(B)G7 1/45						HG-SR102(B)G7 1/45					
	HC-RFS153(B)G7 1/5						HG-SR152(B)G7 1/5					
	HC-RFS153(B)G7 1/11						HG-SR152(B)G7 1/11					
	HC-RFS153(B)G7 1/21						HG-SR152(B)G7 1/21					
	HC-RFS153(B)G7 1/33						HG-SR152(B)G7 1/33					
MR-J2S-350B	HC-RFS203(B)G7 1/5	MR-J4-350B-RJ020 (Note 10)	MR-J4-T20		MR-J4-200B-RJ020 (Note 10)	MR-J4-T20	HG-SR202(B)G7 1/5	× (Note 3) (Note 4)	SC-J2SBJ4KT3K	SC-J2SBJ4PW2C1M	SC-HAJ3ENM3C1M (Note 7)	
	HC-RFS203(B)G7 1/11						HG-SR202(B)G7 1/11					
	HC-RFS203(B)G7 1/21						HG-SR202(B)G7 1/21					
	HC-RFS203(B)G7 1/33						HG-SR202(B)G7 1/33					
	HC-RFS203(B)G7 1/45						HG-SR202(B)G7 1/45					
	HC-RFS353(B)G7 1/5						HG-SR352(B)G7 1/5					
	HC-RFS353(B)G7 1/11						HG-SR352(B)G7 1/11					
	HC-RFS353(B)G7 1/21						HG-SR352(B)G7 1/21					
	HC-RFS353(B)G7 1/33						HG-SR352(B)G7 1/33					
MR-J2S-500B	HC-RFS503(B)G7 1/5	MR-J4-500B-RJ020 (Note 10)			MR-J4-500B-RJ020 (Note 10)	MR-J4-500B-RJ020	HG-SR502(B)G7 1/5	× (Note 3) (Note 4)	(Note 11)	SC-HAJ3PW1C1M		
	HC-RFS503(B)G7 1/11						HG-SR502(B)G7 1/11					
	HC-RFS503(B)G7 1/21						HG-SR502(B)G7 1/21					
	HC-RFS503(B)G7 1/33						HG-SR502(B)G7 1/33					
	HC-RFS503(B)G7 1/45						HG-SR502(B)G7 1/45					
	HC-RFS503(B)G7 1/11						HG-SR502(B)G7 1/11					

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(11) Existing HC-UFS motor series

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)		(3)	(4)		(5)		
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)			Secondary replacement/simultaneous replacement models				
Servo Amplifier model	Servo motor model	Servo Amplifier model (Note 1, 12)	SSCNET conversion unit model (Note 1)	Renewal kit model	Servo motor model (Note 1)	Compati bility	Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Medium capacity/flat type HC-UFS series, standard/with brake] ((B) represents models with brake)									
MR-J2S-70B	HC-UFS72(B)	MR-J4-70B-RJ020	MR-J4-T20	SC-J2SBJ4KT1K	HG-UR72(B)	○	Existing cable can be used.	SC-HAJ3ENM3C1M	Existing cable can be used.
MR-J2S-200B	HC-UFS152(B)	MR-J4-200B-RJ020		SC-J2SBJ4KT3K	HG-UR152(B)				
MR-J2S-350B	HC-UFS202(B)	MR-J4-350B-RJ020		SC-J2SBJ4KT5K	HG-UR202(B)				
MR-J2S-500B	HC-UFS352(B) HC-UFS502(B)	MR-J4-500B-RJ020			HG-UR352(B) HG-UR502(B)				
[Small capacity/flat type HC-UFS series, standard/with brake] ((B) represents models with brake)									
MR-J2S-10B(1)	HC-UFS13(B)	MR-J4-10B(1)-RJ020	MR-J4-T20	SC-J2SBJ4KT02K	HG-KR13(B)	× (Note 3)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
MR-J2S-20B(1)	HC-UFS23(B)	MR-J4-20B(1)-RJ020		SC-J2SBJ4KT06K	HG-KR23(B)				
MR-J2S-40B(1)	HC-UFS43(B)	MR-J4-40B(1)-RJ020		SC-J2SBJ4KT1K	HG-KR43(B)				
MR-J2S-70B	HC-UFS73(B)	MR-J4-70B-RJ020			HG-KR73(B)				

See Appendix page 2-65 for important points to note.

(12) Existing HC-LFS motor series

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)		(3)	(4)		(5)	(6)	(7)			
Existing model (Note 13)		Primary replacement model (Note 5)			Secondary replacement/simultaneous replacement models							
Servo Amplifier model	Servo Motor Model	Servo Amplifier model (Note 1, 12)	SSCNET conversion unit model (Note 1)	Renewal kit model	Servo Amplifier model (Note 1)	SSCNET conversion unit model (Note 1)	Servo Motor Model (Note 1)	Compati bility	Renewal kit model	Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Medium capacity/low inertia HC-LFS series, standard/with brake] ((B) represents models with brake)												
MR-J2S-60B	HC-LFS52(B)	MR-J4-60B-RJ020 (Note 10)	MR-J4-T20	SC-J2SBJ4KT06K	MR-J4-70B-RJ020 (Note 10)	MR-J4-T20	HG-JR73(B)	× (Note 3)	(Note 11)	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)
MR-J2S-100B	HC-LFS102(B)	MR-J4-100B-RJ020 (Note 10)		SC-J2SBJ4KT1K	MR-J4-200B-RJ020 (Note 10)		HG-JR153(B)					
MR-J2S-200B	HC-LFS152(B)	MR-J4-200B-RJ020 (Note 10)		SC-J2SBJ4KT3K	MR-J4-350B-RJ020 (Note 10)		HG-JR353(B)					
MR-J2S-350B	HC-LFS202(B)	MR-J4-350B-RJ020		SC-J2SBJ4KT5K	MR-J4-500B-RJ020		HG-JR503(B)					
MR-J2S-500B	HC-LFS302(B)	MR-J4-500B-RJ020					SC-J2SBJ4KT5K					

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(13) Existing HA-LFS motor series

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)			(3)		(4)		(5)		(6)		(7)	
Existing model (Note 13)		Primary replacement model (Note 5)			Secondary replacement/simultaneous replacement models									
Servo amplifier model	Servo motor Model	Servo Amplifier model (Note 1, 12)	SSCNET Conversion unit Model (Note 1)	Renewal kit model	Servo amplifier model (Note 1)	SSCNET Conversion unit Model (Note 1)	Servo motor model (Note 1)	Compat- ibility	Motor side conversion cable model					
									Renewal kit model	Power supply conversion Cable	Encoder Conversion cable	Brake/Conversion cable for the cooling fan		
[Medium/large capacity/low inertia HA-LFS 1000r/min series, standard/with brake] ((B) represents models with brake)														
MR-J2S-700B	HA-LFS601(B)	(Note 16)			MR-J4-700B-RJ020	MR-J4-T20	HG-JR601(B) (Note 4)	× (Note 3)	SC-J2SBJ4KT7K	SC-J2SJ4PW3C1M- ■	Existing cable can be used			• Existing brake cable can be used. • Cooling fan cable (Note 9)
MR-J2S-11KB	HA-LFS801(B) HA-LFS12K1(B)				MR-J4-11KB-RJ020		HG-JR801(B) (Note 4) HG-JR12K1(B) (Note 4)		SC-J2SBJ4KT15K					
MR-J2S-15KB	HA-LFS15K1				MR-J4-15KB-RJ020		HG-JR15K1		SC-J2SBJ4KT22K					
MR-J2S-22KB	HA-LFS20K1				MR-J4-22KB-RJ020		HG-JR20K1							
MR-J2S-30KB	HA-LFS25K1 HA-LFS30K1				MR-J4-30DU-B-RJ020 (Note 20)		HG-JR25K1 HG-JR30K1 (Note 4)							
MR-J2S-37KB	HA-LFS37K1				MR-J4-37DU-B-RJ020 (Note 20)		HG-JR37K1							
[Medium/large capacity/low inertia HA-LFS 1500r/min series, standard/with brake] ((B) represents models with brake)														
MR-J2S-700B	HA-LFS701M(B)	(Note 16)			MR-J4-700B-RJ020	MR-J4-T20	HG-JR701M(B) (Note 4)	× (Note 3)	SC-J2SBJ4KT7K	SC-J2SJ4PW3C1M- ■	Existing cable can be used			• Existing brake cable can be used. • Cooling fan cable (Note 9)
MR-J2S-11KB	HA-LFS11K1M(B)				MR-J4-11KB-RJ020		HG-JR11K1M(B)		SC-J2SBJ4KT15K					
MR-J2S-15KB	HA-LFS15K1M(B)				MR-J4-15KB-RJ020		HG-JR15K1M(B) (Note 4)							
MR-J2S-22KB	HA-LFS22K1M				MR-J4-22KB-RJ020		HG-JR22K1M		SC-J2SBJ4KT22K					
MR-J2S-30KB	HA-LFS30K1M				MR-J4-30DU-B-RJ020 (Note 20)		HG-JR30K1M							
MR-J2S-37KB	HA-LFS37K1M				MR-J4-37DU-B-RJ020 (Note 20)		HG-JR37K1M							
[Medium/large capacity/low inertia HA-LFS 2000r/min series, standard/with brake] ((B) represents models with brake)														
MR-J2S-500B	HA-LFS502	MR-J4-500B-RJ020	SC-J2SBJ4KT5K	MR-J4-500B-RJ020	HG-SR502	MR-J4-T20	× (Note 3)	SC-J2SBJ4KT5K	SC-HAJ3PW1C1M	SC-HAJ3ENM3C1M				
MR-J2S-700B	HA-LFS702	MR-J4-700B-RJ020	SC-J2SBJ4KT7K	MR-J4-700B-RJ020	HG-SR702			SC-J2SBJ4KT7K	Existing cable can be used					
MR-J2S-11KB	HA-LFS11K2(B)	MR-J4-11KB-RJ020	SC-J2SBJ4KT15K	MR-J4-11KB-RJ020	HG-JR11K1M(B) (Note 4)			SC-J2SBJ4KT15K	SC-J2SJ4PW3C1M- ■					
MR-J2S-15KB	HA-LFS15K2(B)	MR-J4-15KB-RJ020 (Note 10)	SC-J2SBJ4KT15K	MR-J4-11KB-RJ020 (Note 10)	HG-JR11K1M(B)									
MR-J2S-22KB	HA-LFS22K2(B)	MR-J4-22KB-RJ020 (Note 10)	SC-J2SBJ4KT22K	MR-J4-15KB-RJ020 (Note 10)	HG-JR15K1M(B)			(Note 11)						
MR-J2S-30KB	HA-LFS30K2	MR-J4-30DU-B-RJ020 (Note 10, 20)	SC-J2SJ4BS09 (Note 18)	MR-J4-22KB-RJ020 (Note 10)	HG-JR22K1M									
MR-J2S-37KB	HA-LFS37K2	MR-J4-37DU-B-RJ020 (Note 10, 20)		MR-J4-30DU-B-RJ020 (Note 10, 20)	HG-JR30K1M									

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

4.3 CP Type Replacement Combination List (200 V Class)

(1) Existing HC-KFS motor series (standard/with brake, G1, G2 reducer)

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)		(5)			
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)		Secondary replacement/simultaneous replacement models					
Servo Amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo motor model (Note 1)	Compati bility	Motor side conversion cable model			
						Power supply conversion cable	Encoder conversion cable	Brake conversion cable	
[Small capacity/low inertia HC-KFS series, standard/with brake] ((B) represents models with brake)									
MR-J2S- 10CP(1)	HC-KFS053(B)	MR-J4- 10A(1)-RJ	SC-J2SCP J4KT02K	HG-KR053(B)	△ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.	
	HC-KFS13(B)			HG-KR13(B)					
	MR-J2S- 20CP(1)	HC-KFS23(B)		MR-J4- 20A(1)-RJ					HG-KR23(B)
	MR-J2S- 40CP(1)	HC-KFS43(B)		MR-J4- 40A(1)-RJ					HG-KR43(B)
MR-J2S- 70CP	HC-KFS73(B)	MR-J4-70A -RJ	SC-J2SCP J4KT1K	HG-KR73(B)					
[Small capacity/low inertia HC-KFS series with general reducer (G1)] ((B) represents models with brake)									
MR-J2S- 10CP(1)	HC-KFS053(B)G1 1/5	MR-J4- 10A(1)-RJ	SC-J2SCP J4KT02K	HG-KR053(B)G1 1/5	△ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.	
	HC-KFS053(B)G1 1/12			HG-KR053(B)G1 1/12					
	HC-KFS053(B)G1 1/20			HG-KR053(B)G1 1/20					
	HC-KFS13(B)G1 1/5			HG-KR13(B)G1 1/5					
	HC-KFS13(B)G1 1/12			HG-KR13(B)G1 1/12					
MR-J2S- 20CP(1)	HC-KFS23(B)G1 1/5	MR-J4- 20A(1)-RJ	SC-J2SCP J4KT06K	HG-KR23(B)G1 1/5	△ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.	
	HC-KFS23(B)G1 1/12			HG-KR23(B)G1 1/12 (Note 2)					
	HC-KFS23(B)G1 1/20			HG-KR23(B)G1 1/20 (Note 2)					
MR-J2S- 40CP(1)	HC-KFS43(B)G1 1/5	MR-J4- 40A(1)-RJ	SC-J2SCP J4KT06K	HG-KR43(B)G1 1/5	△ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.	
	HC-KFS43(B)G1 1/12			HG-KR43(B)G1 1/12 (Note 2)					
	HC-KFS43(B)G1 1/20			HG-KR43(B)G1 1/20 (Note 2)					
MR-J2S- 70A	HC-KFS73(B)G1 1/5	MR-J4-70A -RJ	SC-J2SCP J4KT1K	HG-KR73(B)G1 1/5	△ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.	
	HC-KFS73(B)G1 1/12			HG-KR73(B)G1 1/12 (Note 2)					
	HC-KFS73(B)G1 1/20			HG-KR73(B)G1 1/20					
[Small capacity/low inertia HC-KFS series with high-precision reducer (G2)] ((B) represents models with brake)									
MR-J2S- 10CP(1)	HC-KFS053(B)G2 1/5	MR-J4- 10A(1)-RJ	SC-J2SCP J4KT02K	HG-KR053(B)G2 1/5	× (Note 3) (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.	
	HC-KFS053(B)G2 1/9			HG-KR053(B)G2 1/9					
	HC-KFS053(B)G2 1/20			HG-KR053(B)G2 1/20					
	HC-KFS053(B)G2 1/29			HG-KR053(B)G2 1/29					
	HC-KFS13(B)G2 1/5			HG-KR13(B)G2 1/5					
	HC-KFS13(B)G2 1/9			HG-KR13(B)G2 1/9					
MR-J2S- 20CP(1)	HC-KFS23(B)G2 1/5	MR-J4- 20A(1)-RJ	SC-J2SCP J4KT06K	HG-KR23(B)G2 1/5	× (Note 3) (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.	
	HC-KFS23(B)G2 1/9			HG-KR23(B)G2 1/9					
	HC-KFS23(B)G2 1/20			HG-KR23(B)G2 1/20					
	HC-KFS23(B)G2 1/29			HG-KR23(B)G2 1/29					
MR-J2S- 40CP(1)	HC-KFS43(B)G2 1/5	MR-J4- 40A(1)-RJ	SC-J2SCP J4KT06K	HG-KR43(B)G2 1/5	× (Note 3) (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.	
	HC-KFS43(B)G2 1/9			HG-KR43(B)G2 1/9					
	HC-KFS43(B)G2 1/20			HG-KR43(B)G2 1/20					
MR-J2S- 70CP	HC-KFS73(B)G2 1/5	MR-J4-70A -RJ	SC-J2SCP J4KT1K	HG-KR73(B)G2 1/5	× (Note 3) (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.	
	HC-KFS73(B)G2 1/9			HG-KR73(B)G2 1/9					
	HC-KFS73(B)G2 1/20			HG-KR73(B)G2 1/20					
	HC-KFS73(B)G2 1/29			HG-KR73(B)G2 1/29					

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(2) Existing HC-KFS motor series (G5, G7 reducer)

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)		(5)		
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)		Secondary replacement/simultaneous replacement models				
Servo amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo motor model (Note 1)	Compati- bility	Motor side conversion cable model		
						Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Small capacity/low inertia HC-KFS series with high-precision reducer, flange output type (G5)] ((B) represents models with brake)								
MR-J2S- 10CP(1)	HC-KFS053(B)G5 1/5	MR-J4- 10A(1)-RJ	SC-J2SCP J4KT02K	HG-KR053(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-KFS053(B)G5 1/11			HG-KR053(B)G5 1/11				
	HC-KFS053(B)G5 1/21			HG-KR053(B)G5 1/21				
	HC-KFS053(B)G5 1/33			HG-KR053(B)G5 1/33				
	HC-KFS053(B)G5 1/45			HG-KR053(B)G5 1/45				
	HC-KFS13(B)G5 1/5			HG-KR13(B)G5 1/5				
	HC-KFS13(B)G5 1/11			HG-KR13(B)G5 1/11				
	HC-KFS13(B)G5 1/21			HG-KR13(B)G5 1/21				
MR-J2S- 20CP(1)	HC-KFS23(B)G5 1/5	MR-J4- 20A(1)-RJ	SC-J2SCP J4KT06K	HG-KR23(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-KFS23(B)G5 1/11			HG-KR23(B)G5 1/11				
	HC-KFS23(B)G5 1/21			HG-KR23(B)G5 1/21				
	HC-KFS23(B)G5 1/33			HG-KR23(B)G5 1/33				
MR-J2S- 40CP(1)	HC-KFS43(B)G5 1/5	MR-J4- 40A(1)-RJ	SC-J2SCP J4KT06K	HG-KR43(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-KFS43(B)G5 1/11			HG-KR43(B)G5 1/11				
	HC-KFS43(B)G5 1/21			HG-KR43(B)G5 1/21				
	HC-KFS43(B)G5 1/33			HG-KR43(B)G5 1/33				
MR-J2S- 70CP	HC-KFS73(B)G5 1/5	MR-J4-70A- RJ	SC-J2SCP J4KT1K	HG-KR73(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-KFS73(B)G5 1/11			HG-KR73(B)G5 1/11				
	HC-KFS73(B)G5 1/21			HG-KR73(B)G5 1/21				
	HC-KFS73(B)G5 1/33			HG-KR73(B)G5 1/33				
[Small capacity/low inertia HC-KFS series with high-precision reducer, shaft output type (G7)] ((B) represents models with brake)								
MR-J2S- 10CP(1)	HC-KFS053(B)G7 1/5	MR-J4- 10A(1)-RJ	SC-J2SCP J4KT02K	HG-KR053(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-KFS053(B)G7 1/11			HG-KR053(B)G7 1/11				
	HC-KFS053(B)G7 1/21			HG-KR053(B)G7 1/21				
	HC-KFS053(B)G7 1/33			HG-KR053(B)G7 1/33				
	HC-KFS053(B)G7 1/45			HG-KR053(B)G7 1/45				
	HC-KFS13(B)G7 1/5			HG-KR13(B)G7 1/5				
	HC-KFS13(B)G7 1/11			HG-KR13(B)G7 1/11				
	HC-KFS13(B)G7 1/21			HG-KR13(B)G7 1/21				
MR-J2S- 20CP(1)	HC-KFS23(B)G7 1/5	MR-J4- 20A(1)-RJ	SC-J2SCP J4KT06K	HG-KR23(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-KFS23(B)G7 1/11			HG-KR23(B)G7 1/11				
	HC-KFS23(B)G7 1/21			HG-KR23(B)G7 1/21				
	HC-KFS23(B)G7 1/33			HG-KR23(B)G7 1/33				
MR-J2S- 40CP(1)	HC-KFS43(B)G7 1/5	MR-J4- 40A(1)-RJ	SC-J2SCP J4KT06K	HG-KR43(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-KFS43(B)G7 1/11			HG-KR43(B)G7 1/11				
	HC-KFS43(B)G7 1/21			HG-KR43(B)G7 1/21				
	HC-KFS43(B)G7 1/33			HG-KR43(B)G7 1/33				
MR-J2S- 70CP	HC-KFS73(B)G7 1/5	MR-J4-70A -RJ	SC-J2SCP J4KT1K	HG-KR73(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC- J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M- ■	Built in to power supply conversion cable.
	HC-KFS73(B)G7 1/11			HG-KR73(B)G7 1/11				
	HC-KFS73(B)G7 1/21			HG-KR73(B)G7 1/21				
	HC-KFS73(B)G7 1/33			HG-KR73(B)G7 1/33				

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(3) Existing HC-KFS46, KFS410 motor

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)	(6)	(7)			
Existing model (Note 13)		Primary replacement model (Note 5)		Secondary replacement/simultaneous replacement models						
Servo Amplifier model	Servo motor model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo amplifier model (Note 1)	Servo motor model (Note 1)	Compatibil- ity	Renewal kit model	Motor side conversion cable model		
								Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Small capacity/low inertia HC-KFS series, standard/with brake] (B) represents models with brake										
MR-J2S-70CP	HC-KFS46	MR-J4-70A-RJ (Note 10)	SC-J2SCP J4KT1K	MR-J4-40A-RJ (Note 10)	HG-KR43	Δ (Note 4) (Note 15)	(Note 11)	Without brake: SC-J2SJ4PW1C03M- ■	SC- HAJ3ENM1C03M -■	Built in to power supply conversion cable.
	HC-KFS410							With brake: SC-J2SJ4PWBK1C03M- ■		

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(4) Existing HC-MFS motor series (standard/with brake, G1, G2 reducer)

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)				
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)		Secondary replacement/simultaneous replacement models					
Servo Amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo motor model (Note 1)	Motor side conversion cable model				
					Compatibility	Power supply conversion cable	Encoder conversion cable	Brake conversion cable	
[Small capacity/ultra-low inertia HC-MFS series, standard/with brake] ((B) represents models with brake)									
MR-J2S-10CP(1)	HC-MFS053(B)	MR-J4-10A(1)-RJ	SC-J2SCP J4KT02K	HG-MR053(B)	○	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.	
	HC-MFS13(B)			HG-MR13(B)					
	MR-J2S-20CP(1)	HC-MFS23(B)		MR-J4-20A(1)-RJ					HG-MR23(B)
	MR-J2S-40CP(1)	HC-MFS43(B)		MR-J4-40A(1)-RJ					HG-MR43(B)
MR-J2S-70CP	HC-MFS73(B)	MR-J4-70A-RJ	SC-J2SCP J4KT1K	HG-MR73(B)					
[Small capacity/ultra-low inertia HC-MFS series with general reducer (G1)] ((B) represents models with brake)									
MR-J2S-10CP(1)	HC-MFS053(B)G1 1/5	MR-J4-10A(1)-RJ	SC-J2SCP J4KT02K	HG-KR053(B)G1 1/5	△ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.	
	HC-MFS053(B)G1 1/12			HG-KR053(B)G1 1/12					
	HC-MFS053(B)G1 1/20			HG-KR053(B)G1 1/20					
	HC-MFS13(B)G1 1/5			HG-KR13(B)G1 1/5					
	HC-MFS13(B)G1 1/12			HG-KR13(B)G1 1/12					
MR-J2S-20CP(1)	HC-MFS23(B)G1 1/5	MR-J4-20A(1)-RJ	SC-J2SCP J4KT06K	HG-KR23(B)G1 1/5					
MR-J2S-40CP(1)	HC-MFS43(B)G1 1/5	MR-J4-40A(1)-RJ	SC-J2SCP J4KT06K	HG-KR23(B)G1 1/12 (Note 2)					
	HC-MFS23(B)G1 1/20			HG-KR23(B)G1 1/20 (Note 2)					
	HC-MFS43(B)G1 1/12			HG-KR43(B)G1 1/5					
MR-J2S-70CP	HC-MFS73(B)G1 1/5	MR-J4-70A-RJ	SC-J2SCP J4KT1K	HG-KR43(B)G1 1/12 (Note 2)					
	HC-MFS73(B)G1 1/12			HG-KR43(B)G1 1/20 (Note 2)					
	HC-MFS73(B)G1 1/20			HG-KR73(B)G1 1/5					
	HC-MFS73(B)G1 1/12			HG-KR73(B)G1 1/12 (Note 2)					
	HC-MFS73(B)G1 1/20			HG-KR73(B)G1 1/20					
[Small capacity/ultra-low inertia HC-MFS series with high-precision reducer (G2)] ((B) represents models with brake)									
MR-J2S-10CP(1)	HC-MFS053(B)G2 1/5	MR-J4-10A(1)-RJ	SC-J2SCP J4KT02K	HG-KR053(B)G7 1/5	× (Note 3) (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.	
	HC-MFS053(B)G2 1/9			HG-KR053(B)G7 1/11					
	HC-MFS053(B)G2 1/20			HG-KR053(B)G7 1/21					
	HC-MFS053(B)G2 1/29			HG-KR053(B)G7 1/33					
	HC-MFS13(B)G2 1/5			HG-KR13(B)G7 1/5					
	HC-MFS13(B)G2 1/9			HG-KR13(B)G7 1/11					
	HC-MFS13(B)G2 1/20			HG-KR13(B)G7 1/21					
MR-J2S-20CP(1)	HC-MFS23(B)G2 1/5	MR-J4-20A(1)-RJ	SC-J2SCP J4KT06K	HG-KR13(B)G7 1/33					
	HC-MFS23(B)G2 1/9			HG-KR23(B)G7 1/5					
	HC-MFS23(B)G2 1/20			HG-KR23(B)G7 1/11					
MR-J2S-40CP(1)	HC-MFS43(B)G2 1/5	MR-J4-40A(1)-RJ	SC-J2SCP J4KT06K	HG-KR23(B)G7 1/21					
	HC-MFS43(B)G2 1/9			HG-KR23(B)G7 1/33					
	HC-MFS43(B)G2 1/20			HG-KR43(B)G7 1/5					
MR-J2S-70CP	HC-MFS73(B)G2 1/5	MR-J4-70A-RJ	SC-J2SCP J4KT1K	HG-KR43(B)G7 1/11					
	HC-MFS73(B)G2 1/9			HG-KR43(B)G7 1/21					
	HC-MFS73(B)G2 1/20			HG-KR43(B)G7 1/33					
	HC-MFS73(B)G2 1/29			HG-KR73(B)G7 1/5					
	HC-MFS73(B)G2 1/9			HG-KR73(B)G7 1/11					
	HC-MFS73(B)G2 1/20			HG-KR73(B)G7 1/21					
	HC-MFS73(B)G2 1/29			HG-KR73(B)G7 1/33					

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(5) Existing HC-MFS motor series (G5, G7 reducer)

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)			
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)		Secondary replacement/simultaneous replacement models				
Servo Amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo motor model (Note 1)	Motor side conversion cable model			
					Compatibility	Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Small capacity/ultra-low inertia HC-MFS series with high-precision reducer, flange output type (G5)] ((B) represents models with brake)								
MR-J2S-10CP(1)	HC-MFS053(B)G5 1/5	MR-J4-10A(1) -RJ	SC-J2SCP J4KT02K	HG-KR053(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-MFS053(B)G5 1/11			HG-KR053(B)G5 1/11				
	HC-MFS053(B)G5 1/21			HG-KR053(B)G5 1/21				
	HC-MFS053(B)G5 1/33			HG-KR053(B)G5 1/33				
	HC-MFS053(B)G5 1/45			HG-KR053(B)G5 1/45				
	HC-MFS13(B)G5 1/5			HG-KR13(B)G5 1/5				
	HC-MFS13(B)G5 1/11			HG-KR13(B)G5 1/11				
	HC-MFS13(B)G5 1/21			HG-KR13(B)G5 1/21				
MR-J2S-20CP(1)	HC-MFS23(B)G5 1/5	MR-J4-20A(1) -RJ	SC-J2SCP J4KT06K	HG-KR23(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-MFS23(B)G5 1/11			HG-KR23(B)G5 1/11				
	HC-MFS23(B)G5 1/21			HG-KR23(B)G5 1/21				
	HC-MFS23(B)G5 1/33			HG-KR23(B)G5 1/33				
MR-J2S-40CP(1)	HC-MFS43(B)G5 1/5	MR-J4-40A(1) -RJ	SC-J2SCP J4KT06K	HG-KR43(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-MFS43(B)G5 1/11			HG-KR43(B)G5 1/11				
	HC-MFS43(B)G5 1/21			HG-KR43(B)G5 1/21				
	HC-MFS43(B)G5 1/33			HG-KR43(B)G5 1/33				
MR-J2S-70CP	HC-MFS73(B)G5 1/5	MR-J4-70A -RJ	SC-J2SCP J4KT1K	HG-KR73(B)G5 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-MFS73(B)G5 1/11			HG-KR73(B)G5 1/11				
	HC-MFS73(B)G5 1/21			HG-KR73(B)G5 1/21				
	HC-MFS73(B)G5 1/33			HG-KR73(B)G5 1/33				
[Small capacity/low inertia HC-MFS series with high-precision reducer, shaft output type (G7)] ((B) represents models with brake)								
MR-J2S-10CP(1)	HC-MFS053(B)G7 1/5	MR-J4-10A(1) -RJ	SC-J2SCP J4KT02K	HG-KR053(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-MFS053(B)G7 1/11			HG-KR053(B)G7 1/11				
	HC-MFS053(B)G7 1/21			HG-KR053(B)G7 1/21				
	HC-MFS053(B)G7 1/33			HG-KR053(B)G7 1/33				
	HC-MFS053(B)G7 1/45			HG-KR053(B)G7 1/45				
	HC-MFS13(B)G7 1/5			HG-KR13(B)G7 1/5				
	HC-MFS13(B)G7 1/11			HG-KR13(B)G7 1/11				
	HC-MFS13(B)G7 1/21			HG-KR13(B)G7 1/21				
MR-J2S-20CP(1)	HC-MFS23(B)G7 1/5	MR-J4-20A(1) -RJ	SC-J2SCP J4KT06K	HG-KR23(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-MFS23(B)G7 1/11			HG-KR23(B)G7 1/11				
	HC-MFS23(B)G7 1/21			HG-KR23(B)G7 1/21				
	HC-MFS23(B)G7 1/33			HG-KR23(B)G7 1/33				
MR-J2S-40CP(1)	HC-MFS43(B)G7 1/5	MR-J4-40A(1) -RJ	SC-J2SCP J4KT06K	HG-KR43(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-MFS43(B)G7 1/11			HG-KR43(B)G7 1/11				
	HC-MFS43(B)G7 1/21			HG-KR43(B)G7 1/21				
	HC-MFS43(B)G7 1/33			HG-KR43(B)G7 1/33				
MR-J2S-70CP	HC-MFS73(B)G7 1/5	MR-J4-70A -RJ	SC-J2SCP J4KT1K	HG-KR73(B)G7 1/5	Δ (Note 4)	Without brake: SC-J2SJ4PW1C03M- ■ With brake: SC-J2SJ4PWBK1C03M- ■	SC- HAJ3ENM1C03M-■	Built in to power supply conversion cable.
	HC-MFS73(B)G7 1/11			HG-KR73(B)G7 1/11				
	HC-MFS73(B)G7 1/21			HG-KR73(B)G7 1/21				
	HC-MFS73(B)G7 1/33			HG-KR73(B)G7 1/33				

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(6) Existing HC-SFS motor series (standard/with brake, G2 reducer)

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)											
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)		Secondary replacement/simultaneous replacement models												
Servo Amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo motor model (Note 1)	Motor side conversion cable model											
					Compatibility	Power supply conversion cable	Encoder conversion cable	Brake conversion cable								
[Medium capacity/medium inertia HC-SFS series, standard/with brake] ((B) represents models with brake)																
MR-J2S-60CP	HC-SFS52(B) HC-SFS53(B)	MR-J4-60A -RJ	SC-J2SCP J4KT06K	HG-SR52(B)	△ (Note 6)	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)								
MR-J2S-100CP	HC-SFS81(B) HC-SFS102(B) HC-SFS103(B)	MR-J4-100A -RJ	SC-J2SCP J4KT1K	HG-SR81(B) HG-SR102(B)												
	MR-J2S-200CP			HC-SFS121(B) HC-SFS152(B) HC-SFS153(B) HC-SFS201(B) HC-SFS202(B) HC-SFS203(B)		MR-J4-200A -RJ			SC-J2SCP J4KT3K	HG-SR121(B) HG-SR152(B) HG-SR201(B) HG-SR202(B)						
				MR-J2S-350CP						HC-SFS301(B) HC-SFS352(B) HC-SFS353(B)	MR-J4-350A -RJ	HG-SR301(B) HG-SR352(B)				
MR-J2S-500CP		HC-SFS502(B)	MR-J4-500A -RJ							SC-J2SCP J4KT5K		HG-SR502(B)				
MR-J2S-700CP		HC-SFS702(B)	MR-J4-700A -RJ	SC-J2SCP J4KT7K						HG-SR702(B)	Existing cable can be used.					
[Medium capacity/medium inertia HC-SFS series with high-precision reducer (G2)] ((B) represents models with brake)																
MR-J2S-60CP	HC-SFS52(B)G2 1/5 HC-SFS52(B)G2 1/9 HC-SFS52(B)G2 1/20 HC-SFS52(B)G2 1/29 HC-SFS52(B)G2 1/45	MR-J4-60A -RJ	SC-J2SCP J4KT06K	HG-SR52(B)G7 1/5 HG-SR52(B)G7 1/11 HG-SR52(B)G7 1/21 HG-SR52(B)G7 1/33 HG-SR52(B)G7 1/45		× (Note 3) (Note 6)			SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)					
	MR-J2S-100CP			HC-SFS102(B)G2 1/5 HC-SFS102(B)G2 1/9 HC-SFS102(B)G2 1/20 HC-SFS102(B)G2 1/29 HC-SFS102(B)G2 1/45								MR-J4-100A -RJ	SC-J2SCP J4KT1K	HG-SR102(B)G7 1/5 HG-SR102(B)G7 1/11 HG-SR102(B)G7 1/21 HG-SR102(B)G7 1/33 HG-SR102(B)G7 1/45		
				MR-J2S-200CP										HC-SFS152(B)G2 1/5 HC-SFS152(B)G2 1/9 HC-SFS152(B)G2 1/20 HC-SFS152(B)G2 1/29 HC-SFS152(B)G2 1/45 HC-SFS202(B)G2 1/5 HC-SFS202(B)G2 1/9 HC-SFS202(B)G2 1/20 HC-SFS202(B)G2 1/29 HC-SFS202(B)G2 1/45	MR-J4-200A -RJ	SC-J2SCP J4KT3K
					MR-J2S-350CP		HC-SFS352(B)G2 1/5 HC-SFS352(B)G2 1/9 HC-SFS352(B)G2 1/20	MR-J4-350A -RJ						HG-SR352(B)G7 1/5 HG-SR352(B)G7 1/11 HG-SR352(B)G7 1/21		
							MR-J2S-500CP							HC-SFS502(B)G2 1/5 HC-SFS502(B)G2 1/9		
MR-J2S-700CP	HC-SFS702(B)G2 1/5	MR-J4-700A -RJ	SC-J2SCP J4KT7K				HG-SR702(B)G7 1/5		Existing cable can be used.							

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(7) Existing HC-SFS motor series (G1 reducer)

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)		
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)		Secondary replacement/simultaneous replacement models			
Servo Amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo motor model (Note 1)	Motor side conversion cable model		
					Compatibility	Power supply conversion cable	Encoder conversion cable
[Medium capacity/medium inertia HC-SFS series with general reducer (G1)] ((B) represents models with brake, (H) represents foot-mounting)							
MR-J2S-60CP	HC-SFS52(B)G1(H) 1/6	MR-J4-60A-RJ	SC-J2SCP J4KT06K	HG-SR52(B)G1(H) 1/6	Δ (Note 6)	SC-SAJ3PW2KC1M-S2	
	HC-SFS52(B)G1(H) 1/11			HG-SR52(B)G1(H) 1/11			
	HC-SFS52(B)G1(H) 1/17			HG-SR52(B)G1(H) 1/17			
	HC-SFS52(B)G1(H) 1/29			HG-SR52(B)G1(H) 1/29			
	HC-SFS52(B)G1(H) 1/35			HG-SR52(B)G1(H) 1/35			
	HC-SFS52(B)G1(H) 1/43			HG-SR52(B)G1(H) 1/43			
	HC-SFS52(B)G1(H) 1/59			HG-SR52(B)G1(H) 1/59			
MR-J2S-100CP	HC-SFS102(B)G1(H) 1/6	MR-J4-100A-RJ	SC-J2SCP J4KT1K	HG-SR102(B)G1(H) 1/6			
	HC-SFS102(B)G1(H) 1/11			HG-SR102(B)G1(H) 1/11			
	HC-SFS102(B)G1(H) 1/17			HG-SR102(B)G1(H) 1/17			
	HC-SFS102(B)G1(H) 1/29			HG-SR102(B)G1(H) 1/29			
	HC-SFS102(B)G1(H) 1/35			HG-SR102(B)G1(H) 1/35			
	HC-SFS102(B)G1(H) 1/43			HG-SR102(B)G1(H) 1/43			
	HC-SFS102(B)G1(H) 1/59			HG-SR102(B)G1(H) 1/59			
MR-J2S-200CP	HC-SFS152(B)G1(H) 1/6	MR-J4-200A-RJ	SC-J2SCP J4KT3K	HG-SR152(B)G1(H) 1/6	Δ (Note 6)	SC-HAJ3ENM3C1M	(Note 7)
	HC-SFS152(B)G1(H) 1/11			HG-SR152(B)G1(H) 1/11			
	HC-SFS152(B)G1(H) 1/17			HG-SR152(B)G1(H) 1/17			
	HC-SFS152(B)G1(H) 1/29			HG-SR152(B)G1(H) 1/29			
	HC-SFS152(B)G1(H) 1/35			HG-SR152(B)G1(H) 1/35			
	HC-SFS152(B)G1(H) 1/43			HG-SR152(B)G1(H) 1/43			
	HC-SFS152(B)G1(H) 1/59			HG-SR152(B)G1(H) 1/59			
	HC-SFS202(B)G1(H) 1/6			HG-SR202(B)G1(H) 1/6			
	HC-SFS202(B)G1(H) 1/11			HG-SR202(B)G1(H) 1/11			
	HC-SFS202(B)G1(H) 1/17			HG-SR202(B)G1(H) 1/17			
	HC-SFS202(B)G1(H) 1/29			HG-SR202(B)G1(H) 1/29			
	HC-SFS202(B)G1(H) 1/35			HG-SR202(B)G1(H) 1/35			
	HC-SFS202(B)G1(H) 1/43			HG-SR202(B)G1(H) 1/43			
	HC-SFS202(B)G1(H) 1/59			HG-SR202(B)G1(H) 1/59			
MR-J2S-350CP	HC-SFS352(B)G1(H) 1/6	MR-J4-350A-RJ		HG-SR352(B)G1(H) 1/6		SC-HAJ3PW1C1M	
	HC-SFS352(B)G1(H) 1/11			HG-SR352(B)G1(H) 1/11			
	HC-SFS352(B)G1(H) 1/17			HG-SR352(B)G1(H) 1/17			
	HC-SFS352(B)G1(H) 1/29			HG-SR352(B)G1(H) 1/29			
	HC-SFS352(B)G1(H) 1/35			HG-SR352(B)G1(H) 1/35			
	HC-SFS352(B)G1(H) 1/43			HG-SR352(B)G1(H) 1/43			
	HC-SFS352(B)G1(H) 1/59			HG-SR352(B)G1(H) 1/59			
MR-J2S-500CP	HC-SFS502(B)G1(H) 1/11	MR-J4-500A-RJ	SC-J2SCP J4KT5K	HG-SR502(B)G1(H) 1/11			
	HC-SFS502(B)G1(H) 1/17			HG-SR502(B)G1(H) 1/17			
	HC-SFS502(B)G1(H) 1/29			HG-SR502(B)G1(H) 1/29			
	HC-SFS502(B)G1(H) 1/35			HG-SR502(B)G1(H) 1/35			
	HC-SFS502(B)G1(H) 1/43			HG-SR502(B)G1(H) 1/43			
MR-J2S-700CP	HC-SFS702(B)G1(H) 1/11	MR-J4-700A-RJ	SC-J2SCP J4KT7K	HG-SR702(B)G1(H) 1/11	Existing cable can be used.		
	HC-SFS702(B)G1(H) 1/17			HG-SR702(B)G1(H) 1/17			
	HC-SFS702(B)G1(H) 1/29			HG-SR702(B)G1(H) 1/29			
	HC-SFS702(B)G1(H) 1/35			HG-SR702(B)G1(H) 1/35			
	HC-SFS702(B)G1(H) 1/43			HG-SR702(B)G1(H) 1/43			

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(8) Existing HC-SFS motor series (G5, G7 reducer)

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)			
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)		Secondary replacement/simultaneous replacement models				
Servo Amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo motor model (Note 1)	Motor side conversion cable model			
					Compatibility	Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Medium capacity/medium inertia HC-SFS series with high-precision reducer, flange output type (G5)] ((B) represents models with brake)								
MR-J2S-60CP	HC-SFS52(B)G5 1/5	MR-J4-60A-RJ	SC-J2SCP J4KT06K	HG-SR52(B)G5 1/5	△ (Note 6)	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)
	HC-SFS52(B)G5 1/11			HG-SR52(B)G5 1/11				
	HC-SFS52(B)G5 1/21			HG-SR52(B)G5 1/21				
	HC-SFS52(B)G5 1/33			HG-SR52(B)G5 1/33				
HC-SFS52(B)G5 1/45	HG-SR52(B)G5 1/45							
MR-J2S-100CP	HC-SFS102(B)G5 1/5	MR-J4-100A-RJ	SC-J2SCP J4KT1K	HG-SR102(B)G5 1/5				
	HC-SFS102(B)G5 1/11			HG-SR102(B)G5 1/11				
	HC-SFS102(B)G5 1/21			HG-SR102(B)G5 1/21				
	HC-SFS102(B)G5 1/33			HG-SR102(B)G5 1/33				
HC-SFS102(B)G5 1/45	HG-SR102(B)G5 1/45							
MR-J2S-200CP	HC-SFS152(B)G5 1/5	MR-J4-200A-RJ	SC-J2SCP J4KT3K	HG-SR152(B)G5 1/5				
	HC-SFS152(B)G5 1/11			HG-SR152(B)G5 1/11				
	HC-SFS152(B)G5 1/21			HG-SR152(B)G5 1/21				
	HC-SFS152(B)G5 1/33			HG-SR152(B)G5 1/33				
	HC-SFS152(B)G5 1/45			HG-SR152(B)G5 1/45				
	HC-SFS202(B)G5 1/5			HG-SR202(B)G5 1/5				
	HC-SFS202(B)G5 1/11			HG-SR202(B)G5 1/11				
HC-SFS202(B)G5 1/21	HG-SR202(B)G5 1/21							
HC-SFS202(B)G5 1/33	HG-SR202(B)G5 1/33							
HC-SFS202(B)G5 1/45	HG-SR202(B)G5 1/45							
MR-J2S-350CP	HC-SFS352(B)G5 1/5	MR-J4-350A-RJ	SC-J2SCP J4KT5K	HG-SR352(B)G5 1/5				
	HC-SFS352(B)G5 1/11			HG-SR352(B)G5 1/11				
	HC-SFS352(B)G5 1/21			HG-SR352(B)G5 1/21				
MR-J2S-500CP	HC-SFS502(B)G5 1/5	MR-J4-500A-RJ	SC-J2SCP J4KT7K	HG-SR502(B)G5 1/5				
	HC-SFS502(B)G5 1/11			HG-SR502(B)G5 1/11				
MR-J2S-700CP	HC-SFS702(B)G5 1/5	MR-J4-700A-RJ	SC-J2SCP J4KT7K	HG-SR702(B)G5 1/5		Existing cable can be used.		
[Medium capacity/medium inertia HC-SFS series with high-precision reducer, shaft output type (G7)] ((B) represents models with brake)								
MR-J2S-60CP	HC-SFS52(B)G7 1/5	MR-J4-60A-RJ	SC-J2SCP J4KT06K	HG-SR52(B)G7 1/5	△ (Note 6)	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)
	HC-SFS52(B)G7 1/11			HG-SR52(B)G7 1/11				
	HC-SFS52(B)G7 1/21			HG-SR52(B)G7 1/21				
	HC-SFS52(B)G7 1/33			HG-SR52(B)G7 1/33				
HC-SFS52(B)G7 1/45	HG-SR52(B)G7 1/45							
MR-J2S-100CP	HC-SFS102(B)G7 1/5	MR-J4-100A-RJ	SC-J2SCP J4KT1K	HG-SR102(B)G7 1/5				
	HC-SFS102(B)G7 1/11			HG-SR102(B)G7 1/11				
	HC-SFS102(B)G7 1/21			HG-SR102(B)G7 1/21				
	HC-SFS102(B)G7 1/33			HG-SR102(B)G7 1/33				
HC-SFS102(B)G7 1/45	HG-SR102(B)G7 1/45							
MR-J2S-200CP	HC-SFS152(B)G7 1/5	MR-J4-200A-RJ	SC-J2SCP J4KT3K	HG-SR152(B)G7 1/5				
	HC-SFS152(B)G7 1/11			HG-SR152(B)G7 1/11				
	HC-SFS152(B)G7 1/21			HG-SR152(B)G7 1/21				
	HC-SFS152(B)G7 1/33			HG-SR152(B)G7 1/33				
	HC-SFS152(B)G7 1/45			HG-SR152(B)G7 1/45				
	HC-SFS202(B)G7 1/5			HG-SR202(B)G7 1/5				
	HC-SFS202(B)G7 1/11			HG-SR202(B)G7 1/11				
HC-SFS202(B)G7 1/21	HG-SR202(B)G7 1/21							
HC-SFS202(B)G7 1/33	HG-SR202(B)G7 1/33							
HC-SFS202(B)G7 1/45	HG-SR202(B)G7 1/45							
MR-J2S-350CP	HC-SFS352(B)G7 1/5	MR-J4-350A-RJ	SC-J2SCP J4KT5K	HG-SR352(B)G7 1/5				
	HC-SFS352(B)G7 1/11			HG-SR352(B)G7 1/11				
	HC-SFS352(B)G7 1/21			HG-SR352(B)G7 1/21				
MR-J2S-500CP	HC-SFS502(B)G7 1/5	MR-J4-500A-RJ	SC-J2SCP J4KT7K	HG-SR502(B)G7 1/5				
	HC-SFS502(B)G7 1/11			HG-SR502(B)G7 1/11				
MR-J2S-700CP	HC-SFS702(B)G7 1/5	MR-J4-700A-RJ	SC-J2SCP J4KT7K	HG-SR702(B)G7 1/5		Existing cable can be used.		

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(9) Existing HC-RFS motor series (standard/with brake, G2 reducer)

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)		(3)	(4)	(5)		(6)	(7)				
Existing model (Note 13)		Primary replacement model (Note 5)		Secondary replacement/simultaneous replacement models									
Servo Amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo amplifier model (Note 1)	Servo motor model (Note 1)	Compati bility	Renewal kit model	Motor side conversion cable					
								Power supply conversion cable	Encoder conversion cable	Brake conversion cable			
[Medium capacity/ultra-low inertia HC-RFS series, standard/with brake] ((B) represents models with brake)													
MR-J2S-200CP	HC-RFS103(B)	MR-J4-200A -RJ	SC-J2SCP J4KT3K	MR-J4-200A -RJ	HG-RR103(B)	○	SC-J2SJ4KT3K	Existing cable can be used.	SC-HAJ3ENM3C1M	Existing cable can be used.			
	HC-RFS153(B)				HG-RR153(B)								
MR-J2S-350CP	HC-RFS203(B)	MR-J4-350A -RJ		MR-J4-350A -RJ	HG-RR203(B)								
MR-J2S-500CP	HC-RFS353(B)	MR-J4-500A -RJ	SC-J2SCP J4KT5K	MR-J4-500A -RJ	HG-RR353(B)	○	SC-J2SJ4KT5K	Existing cable can be used.	SC-HAJ3ENM3C1M	Existing cable can be used.			
	HC-RFS503(B)				HG-RR503(B)								
[Medium capacity/ultra-low inertia HC-RFS series with high-precision reducer (G2)] ((B) represents models with brake)													
MR-J2S-200CP	HC-RFS103(B)G2 1/5	MR-J4-200A -RJ (Note 10)	SC-J2SCP J4KT3K	MR-J4-100A -RJ (Note 10)	HG-SR102(B)G7 1/5	○	(Note 11)	SC-SAJ3PW2KC1M-S2					
	HC-RFS103(B)G2 1/9				HG-SR102(B)G7 1/11								
	HC-RFS103(B)G2 1/20				HG-SR102(B)G7 1/21								
	HC-RFS103(B)G2 1/29				HG-SR102(B)G7 1/33								
	HC-RFS103(B)G2 1/45				HG-SR102(B)G7 1/45								
	HC-RFS153(B)G2 1/5	MR-J4-200A -RJ	SC-J2SCP J4KT3K	MR-J4-200A -RJ	HG-SR152(B)G7 1/5		× (Note 3) (Note 4)	SC-J2SJ4KT3K	SC-SAJ3PW2KC1M-S2				
	HC-RFS153(B)G2 1/9				HG-SR152(B)G7 1/11								
	HC-RFS153(B)G2 1/20				HG-SR152(B)G7 1/21								
	HC-RFS153(B)G2 1/29				HG-SR152(B)G7 1/33								
	HC-RFS153(B)G2 1/45				HG-SR152(B)G7 1/45								
MR-J2S-350CP	HC-RFS203(B)G2 1/5	MR-J4-350A -RJ (Note 10)	SC-J2SCP J4KT3K	MR-J4-200A -RJ (Note 10)	HG-SR202(B)G7 1/5	○		SC-J2SJ4KT3K	SC-SAJ3PW2KC1M-S2				
	HC-RFS203(B)G2 1/9				HG-SR202(B)G7 1/11								
	HC-RFS203(B)G2 1/20				HG-SR202(B)G7 1/21								
	HC-RFS203(B)G2 1/29				HG-SR202(B)G7 1/33								
	HC-RFS203(B)G2 1/45				HG-SR202(B)G7 1/45								
MR-J2S-500CP	HC-RFS353(B)G2 1/5	MR-J4-500A -RJ (Note 10)	SC-J2SCP J4KT5K	MR-J4-350A -RJ (Note 10)	HG-SR352(B)G7 1/5		○	(Note 11)	SC-HAJ3PW1C1M				
	HC-RFS353(B)G2 1/9				HG-SR352(B)G7 1/11								
	HC-RFS353(B)G2 1/20				HG-SR352(B)G7 1/21								
	HC-RFS503(B)G2 1/5	MR-J4-500A -RJ	SC-J2SCP J4KT5K	MR-J4-500A -RJ	HG-SR502(B)G7 1/5			○	SC-J2SJ4KT5K	SC-HAJ3PW1C1M			
	HC-RFS503(B)G2 1/9				HG-SR502(B)G7 1/11								
	HC-RFS503(B)G2 1/20				HG-SR502(B)G7 1/11								

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(10) Existing HC-RFS motor series (G5, G7 reducer)

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)		(6)	(7)		
Existing model (Note 13)		Primary replacement model (Note 5)		Secondary replacement/simultaneous replacement models						
Servo amplifier model	Servo motor Model	Servo amplifier Model (Note 1, 12)	Renewal kit model	Servo amplifier model (Note 1)	Servo motor model (Note 1)	Compati bility	Renewal kit model	Motor side conversion cable		
								Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Medium capacity/ultra-low inertia HC-RFS series with high-precision reducer, flange output type (G5)] ((B) represents models with brake)										
MR-J2S-200CP	HC-RFS103(B)G5 1/5	MR-J4-200A -RJ (Note 10)	SC-J2SCP J4KT3K	MR-J4-100A -RJ (Note 10)	HG-SR102(B)G5 1/5	× (Note 3) (Note 4)	(Note 11)	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)
	HC-RFS103(B)G5 1/11				HG-SR102(B)G5 1/11					
	HC-RFS103(B)G5 1/21				HG-SR102(B)G5 1/21					
	HC-RFS103(B)G5 1/33				HG-SR102(B)G5 1/33					
	HC-RFS103(B)G5 1/45	HG-SR102(B)G5 1/45								
	HC-RFS153(B)G5 1/5	MR-J4-200A -RJ		HG-SR152(B)G5 1/5						
	HC-RFS153(B)G5 1/11			HG-SR152(B)G5 1/11						
	HC-RFS153(B)G5 1/21			HG-SR152(B)G5 1/21						
HC-RFS153(B)G5 1/33	HG-SR152(B)G5 1/33									
HC-RFS153(B)G5 1/45	HG-SR152(B)G5 1/45									
MR-J2S-350CP	HC-RFS203(B)G5 1/5	MR-J4-350A -RJ (Note 10)	MR-J4-200A -RJ (Note 10)	HG-SR202(B)G5 1/5						
	HC-RFS203(B)G5 1/11			HG-SR202(B)G5 1/11						
	HC-RFS203(B)G5 1/21			HG-SR202(B)G5 1/21						
	HC-RFS203(B)G5 1/33			HG-SR202(B)G5 1/33						
HC-RFS203(B)G5 1/45	HG-SR202(B)G5 1/45									
MR-J2S-500CP	HC-RFS353(B)G5 1/5	MR-J4-500A -RJ (Note 10)	SC-J2SCP J4KT5K	MR-J4-350A -RJ (Note 10)	HG-SR352(B)G5 1/5	× (Note 3) (Note 4)	(Note 11)	SC-HAJ3PW1C1M	SC-HAJ3ENM3C1M	(Note 7)
	HC-RFS353(B)G5 1/11				HG-SR352(B)G5 1/11					
	HC-RFS353(B)G5 1/21				HG-SR352(B)G5 1/21					
	HC-RFS503(B)G5 1/5	MR-J4-500A -RJ		HG-SR502(B)G5 1/5						
	HC-RFS503(B)G5 1/11			HG-SR502(B)G5 1/11						
	HC-RFS503(B)G5 1/21			HG-SR502(B)G5 1/21						
[Medium capacity/ultra-low inertia HC-RFS series with high-precision reducer, flange output type (G7)] ((B) represents models with brake)										
MR-J2S-200CP	HC-RFS103(B)G7 1/5	MR-J4-200A -RJ (Note 10)	SC-J2SCP J4KT3K	MR-J4-100A -RJ (Note 10)	HG-SR102(B)G7 1/5	× (Note 3) (Note 4)	(Note 11)	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)
	HC-RFS103(B)G7 1/11				HG-SR102(B)G7 1/11					
	HC-RFS103(B)G7 1/21				HG-SR102(B)G7 1/21					
	HC-RFS103(B)G7 1/33				HG-SR102(B)G7 1/33					
	HC-RFS103(B)G7 1/45	HG-SR102(B)G7 1/45								
	HC-RFS153(B)G7 1/5	MR-J4-200A -RJ		HG-SR152(B)G7 1/5						
	HC-RFS153(B)G7 1/11			HG-SR152(B)G7 1/11						
	HC-RFS153(B)G7 1/21			HG-SR152(B)G7 1/21						
HC-RFS153(B)G7 1/33	HG-SR152(B)G7 1/33									
HC-RFS153(B)G7 1/45	HG-SR152(B)G7 1/45									
MR-J2S-350CP	HC-RFS203(B)G7 1/5	MR-J4-350A -RJ (Note 10)	MR-J4-200A -RJ (Note 10)	HG-SR202(B)G7 1/5						
	HC-RFS203(B)G7 1/11			HG-SR202(B)G7 1/11						
	HC-RFS203(B)G7 1/21			HG-SR202(B)G7 1/21						
	HC-RFS203(B)G7 1/33			HG-SR202(B)G7 1/33						
HC-RFS203(B)G7 1/45	HG-SR202(B)G7 1/45									
MR-J2S-500CP	HC-RFS353(B)G7 1/5	MR-J4-500A -RJ (Note 10)	SC-J2SCP J4KT5K	MR-J4-350A -RJ (Note 10)	HG-SR352(B)G7 1/5	× (Note 3) (Note 4)	(Note 11)	SC-HAJ3PW1C1M	SC-HAJ3ENM3C1M	(Note 7)
	HC-RFS353(B)G7 1/11				HG-SR352(B)G7 1/11					
	HC-RFS353(B)G7 1/21				HG-SR352(B)G7 1/21					
	HC-RFS503(B)G7 1/5	MR-J4-500A -RJ		HG-SR502(B)G7 1/5						
	HC-RFS503(B)G7 1/11			HG-SR502(B)G7 1/11						
	HC-RFS503(B)G7 1/21			HG-SR502(B)G7 1/21						

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(11) Existing HC-UFS motor series

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)			
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)		Secondary replacement/simultaneous replacement models				
Servo amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo motor model (Note 1)	Motor side conversion cable model			
					Compati bility	Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Medium capacity/flat type HC-UFS series, standard/with brake] ((B) represents models with brake)								
MR-J2S-70CP	HC-UFS72(B)	MR-J4-70A-RJ	SC-J2SCP J4KT1K	HG-UR72(B)	○	Existing cable can be used.	SC-HAJ3ENM3C1M	Existing cable can be used.
MR-J2S-200CP	HC-UFS152(B)	MR-J4-200A-RJ	SC-J2SCP J4KT3K	HG-UR152(B)				
MR-J2S-350CP	HC-UFS202(B)	MR-J4-350A-RJ	SC-J2SCP J4KT5K	HG-UR202(B)				
MR-J2S-500CP	HC-UFS352(B) HC-UFS502(B)	MR-J4-500A-RJ	SC-J2SCP J4KT5K	HG-UR352(B) HG-UR502(B)				
Small capacity/flat type HC-UFS series, standard/with brake] ((B) represents models with brake)								
MR-J2S-10CP(1)	HC-UFS13(B)	MR-J4-10A(1)-RJ	SC-J2SCP J4KT02K	HG-KR13(B)	× (Note 3)	Without brake: SC-J2SJ4PW1C03M-■ With brake: SC-J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.
MR-J2S-20CP(1)	HC-UFS23(B)	MR-J4-20A(1)-RJ	SC-J2SCP J4KT06K	HG-KR23(B)				
MR-J2S-40CP(1)	HC-UFS43(B)	MR-J4-40A(1)-RJ	SC-J2SCP J4KT06K	HG-KR43(B)				
MR-J2S-70CP	HC-UFS73(B)	MR-J4-70A-RJ	SC-J2SCP J4KT1K	HG-KR73(B)				

See Appendix page 2-65 for important points to note.

(12) Existing HC-LFS motor series

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)	(6)	(7)			
Existing model (Note 13)		Primary replacement model (Note 5)		Secondary replacement/simultaneous replacement models						
Servo amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo amplifier model (Note 1)	Servo motor model (Note 1)	Motor side conversion cable model				
						Compati bility	Renewal kit model	Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Medium capacity/low inertia HC-LFS series, standard/with brake] ((B) represents models with brake)										
MR-J2S-60CP	HC-LFS52(B)	MR-J4-60A-RJ (Note 10)	SC-J2SCP J4KT06K	MR-J4-70A-RJ (Note 10)	HG-JR73(B)	× (Note 3)	(Note 11)	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)
MR-J2S-100CP	HC-LFS102(B)	MR-J4-100A-RJ (Note 10)	SC-J2SCP J4KT1K	MR-J4-200A-RJ (Note 10)	HG-JR153(B)					
MR-J2S-200CP	HC-LFS152(B)	MR-J4-200A-RJ (Note 10)	SC-J2SCP J4KT3K	MR-J4-350A-RJ (Note 10)	HG-JR353(B)					
MR-J2S-350CP	HC-LFS202(B)	MR-J4-350A-RJ	SC-J2SCP J4KT5K	MR-J4-350A-RJ	HG-JR503(B)					
MR-J2S-500CP	HC-LFS302(B)	MR-J4-500A-RJ	SC-J2SCP J4KT5K	MR-J4-500A-RJ	HG-JR503(B)					
								SC-J2SJ4KT5K	SC-HAJ3PW1C1M	

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(13) Existing HA-LFS motor series

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)	(6)	(7)			
Existing model (Note 13)		Primary replacement model (Note 5)		Secondary replacement/simultaneous replacement models						
Servo amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo amplifier model (Note 1)	Servo motor model (Note 1)	Motor side conversion cable model				
						Compat ibility	Renewal kit model	Power supply conversion Cable	Encoder Conversion cable	Brake/Conversion cable for the cooling fan
[Medium/large capacity/low inertia HA-LFS 1000r/min series, standard/with brake] ((B) represents models with brake)										
MR-J2S-700CP	HA-LFS601(B)	(Note 16)		MR-J4-700A-RJ	HG-JR601(B) (Note 4)	×	SC-J2SCP J4KT7K	SC-J2SJ4PW3C1M -■	Existing cable can be used.	<ul style="list-style-type: none"> Existing brake cable can be used. Cooling fan cable (Note 9)
[Medium/large capacity/low inertia HA-LFS 1500r/min series, standard/with brake] ((B) represents models with brake)										
MR-J2S-700CP	HA-LFS701M(B)	(Note 16)		MR-J4-700A-RJ	HG-JR701M(B) (Note 4)	×	SC-J2SCP J4KT7K	SC-J2SJ4PW3C1M -■	Existing cable can be used.	<ul style="list-style-type: none"> Existing brake cable can be used. Cooling fan cable (Note 9)
[Medium/large capacity/low inertia HA-LFS 2000r/min series, standard/with brake] ((B) represents models with brake)										
MR-J2S-500CP	HA-LFS502	MR-J4-500A-RJ	SC-J2SCP J4KT5K	MR-J4-500A-RJ	HG-SR502	×	SC-J2SCP J4KT5K	SC-HAJ3PW1C1M	SC-HAJ3ENM3C1M	
MR-J2S-700CP	HA-LFS702	MR-J4-700A-RJ	SC-J2SCP J4KT7K	MR-J4-700A-RJ	HG-SR702		(Note 3)	SC-J2SCP J4KT7K		

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

4.4 A Type Replacement Combination List (400 V Class)

(1) Existing HC-SFS motor series (standard/with brake, G2 reducer)

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)		(5)		
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)		Secondary replacement/simultaneous replacement models				
Servo amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo motor model (Note 1)	Compatibility	Motor side conversion cable model		
						Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Medium capacity/medium inertia HC-SFS series, standard/with brake] ((B) represents models with brake)								
MR-J2S-60A4	HC-SFS524(B)	MR-J4-60A4	SC-J2SJ4BS02 (Note 18)	HG-SR524(B)	△ (Note 6)	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)
MR-J2S-100A4	HC-SFS1024(B)	MR-J4-100A4		HG-SR1024(B)				
MR-J2S-200A4	HC-SFS1524(B)	MR-J4-200A4	SC-J2SJ4BS03 (Note 18)	HG-SR1524(B)				
	HC-SFS2024(B)			HG-SR2024(B)				
MR-J2S-350A4	HC-SFS3524(B)	MR-J4-350A4	SC-J2SJ4BS04 (Note 18)	HG-SR3524(B)		SC-HAJ3PW1C1M		
MR-J2S-500A4	HC-SFS5024(B)	MR-J4-500A4	(Note 19)	HG-SR5024(B)				
MR-J2S-700A4	HC-SFS7024(B)	MR-J4-700A4	SC-J2SJ4BS05 (Note 18)	HG-SR7024(B)				
[Medium capacity/medium inertia HC-SFS series with high-precision reducer (G2)] ((B) represents models with brake)								
MR-J2S-60A4	HC-SFS524(B)G2 1/5	MR-J4-60A4	SC-J2SJ4BS02 (Note 18)	HG-SR524(B)G7 1/5	× (Note 3) (Note 6)	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)
	HC-SFS524(B)G2 1/9			HG-SR524(B)G7 1/11				
	HC-SFS524(B)G2 1/20			HG-SR524(B)G7 1/21				
	HC-SFS524(B)G2 1/29			HG-SR524(B)G7 1/33				
MR-J2S-100A4	HC-SFS1024(B)G2 1/5	MR-J4-100A4	SC-J2SJ4BS02 (Note 18)	HG-SR1024(B)G7 1/45				
	HC-SFS1024(B)G2 1/9			HG-SR1024(B)G7 1/11				
	HC-SFS1024(B)G2 1/20			HG-SR1024(B)G7 1/21				
	HC-SFS1024(B)G2 1/29			HG-SR1024(B)G7 1/33				
MR-J2S-200A4	HC-SFS1024(B)G2 1/45	MR-J4-200A4	SC-J2SJ4BS03 (Note 18)	HG-SR1024(B)G7 1/45				
	HC-SFS1524(B)G2 1/5			HG-SR1524(B)G7 1/5				
	HC-SFS1524(B)G2 1/9			HG-SR1524(B)G7 1/11				
	HC-SFS1524(B)G2 1/20			HG-SR1524(B)G7 1/21				
	HC-SFS1524(B)G2 1/29			HG-SR1524(B)G7 1/33				
	HC-SFS1524(B)G2 1/45			HG-SR1524(B)G7 1/45				
	HC-SFS2024(B)G2 1/5			HG-SR2024(B)G7 1/5				
	HC-SFS2024(B)G2 1/9			HG-SR2024(B)G7 1/11				
MR-J2S-350A4	HC-SFS2024(B)G2 1/20	MR-J4-350A4	SC-J2SJ4BS04 (Note 18)	HG-SR2024(B)G7 1/21				
	HC-SFS3524(B)G2 1/5			HG-SR3524(B)G7 1/5				
	HC-SFS3524(B)G2 1/9			HG-SR3524(B)G7 1/11				
MR-J2S-500A4	HC-SFS3524(B)G2 1/20	MR-J4-500A4	(Note 19)	HG-SR3524(B)G7 1/21				
	HC-SFS5024(B)G2 1/5			HG-SR5024(B)G7 1/5				
MR-J2S-700A4	HC-SFS5024(B)G2 1/9	MR-J4-700A4	SC-J2SJ4BS05 (Note 18)	HG-SR5024(B)G7 1/11				
	HC-SFS7024(B)G2 1/5			HG-SR7024(B)G7 1/5	Existing cable can be used.			

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(2) Existing HC-SFS motor series (G1 reducer)

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)		
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)		Secondary replacement/simultaneous replacement models			
Servo amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo motor model (Note 1)	Motor side conversion cable model		
					Compatibility	Power supply conversion cable	Encoder conversion cable
[Medium capacity/medium inertia HC-SFS series with general reducer (G1)] ((B) represents models with brake, (H) represents foot-mounting)							
MR-J2S-60A4	HC-SFS524(B)G1(H) 1/6	MR-J4-60A4	SC-J2SJ4BS02 (Note 18)	HG-SR524(B)G1(H) 1/6	Δ (Note 6)	SC-SAJ3PW2KC1M-S2	
	HC-SFS524(B)G1(H) 1/11			HG-SR524(B)G1(H) 1/11			
	HC-SFS524(B)G1(H) 1/17			HG-SR524(B)G1(H) 1/17			
	HC-SFS524(B)G1(H) 1/29			HG-SR524(B)G1(H) 1/29			
	HC-SFS524(B)G1(H) 1/35			HG-SR524(B)G1(H) 1/35			
	HC-SFS524(B)G1(H) 1/43			HG-SR524(B)G1(H) 1/43			
MR-J2S-100A4	HC-SFS1024(B)G1(H) 1/6	MR-J4-100A4	SC-J2SJ4BS02 (Note 18)	HG-SR1024(B)G1(H) 1/6	SC-SAJ3PW2KC1M-S2		
	HC-SFS1024(B)G1(H) 1/11			HG-SR1024(B)G1(H) 1/11			
	HC-SFS1024(B)G1(H) 1/17			HG-SR1024(B)G1(H) 1/17			
	HC-SFS1024(B)G1(H) 1/29			HG-SR1024(B)G1(H) 1/29			
	HC-SFS1024(B)G1(H) 1/35			HG-SR1024(B)G1(H) 1/35			
	HC-SFS1024(B)G1(H) 1/43			HG-SR1024(B)G1(H) 1/43			
MR-J2S-200A4	HC-SFS1524(B)G1(H) 1/6	MR-J4-200A4	SC-J2SJ4BS03 (Note 18)	HG-SR1524(B)G1(H) 1/6	Δ (Note 6)	SC-HAJ3ENM3C1M	(Note 7)
	HC-SFS1524(B)G1(H) 1/11			HG-SR1524(B)G1(H) 1/11			
	HC-SFS1524(B)G1(H) 1/17			HG-SR1524(B)G1(H) 1/17			
	HC-SFS1524(B)G1(H) 1/29			HG-SR1524(B)G1(H) 1/29			
	HC-SFS1524(B)G1(H) 1/35			HG-SR1524(B)G1(H) 1/35			
	HC-SFS1524(B)G1(H) 1/43			HG-SR1524(B)G1(H) 1/43			
	HC-SFS1524(B)G1(H) 1/59			HG-SR1524(B)G1(H) 1/59			
	HC-SFS2024(B)G1(H) 1/6			HG-SR2024(B)G1(H) 1/6			
	HC-SFS2024(B)G1(H) 1/11			HG-SR2024(B)G1(H) 1/11			
	HC-SFS2024(B)G1(H) 1/17			HG-SR2024(B)G1(H) 1/17			
	HC-SFS2024(B)G1(H) 1/29			HG-SR2024(B)G1(H) 1/29			
	HC-SFS2024(B)G1(H) 1/35			HG-SR2024(B)G1(H) 1/35			
	HC-SFS2024(B)G1(H) 1/43			HG-SR2024(B)G1(H) 1/43			
	HC-SFS2024(B)G1(H) 1/59			HG-SR2024(B)G1(H) 1/59			
MR-J2S-350A4	HC-SFS3524(B)G1(H) 1/6	MR-J4-350A4	SC-J2SJ4BS04 (Note 18)	HG-SR3524(B)G1(H) 1/6	SC-HAJ3PW1C1M		
	HC-SFS3524(B)G1(H) 1/11			HG-SR3524(B)G1(H) 1/11			
	HC-SFS3524(B)G1(H) 1/17			HG-SR3524(B)G1(H) 1/17			
	HC-SFS3524(B)G1(H) 1/29			HG-SR3524(B)G1(H) 1/29			
	HC-SFS3524(B)G1(H) 1/35			HG-SR3524(B)G1(H) 1/35			
	HC-SFS3524(B)G1(H) 1/43			HG-SR3524(B)G1(H) 1/43			
MR-J2S-500A4	HC-SFS5024(B)G1(H) 1/11	MR-J4-500A4	(Note 19)	HG-SR5024(B)G1(H) 1/11			
	HC-SFS5024(B)G1(H) 1/17			HG-SR5024(B)G1(H) 1/17			
	HC-SFS5024(B)G1(H) 1/29			HG-SR5024(B)G1(H) 1/29			
	HC-SFS5024(B)G1(H) 1/35			HG-SR5024(B)G1(H) 1/35			
MR-J2S-700A4	HC-SFS7024(B)G1(H) 1/11	MR-J4-700A4	SC-J2SJ4BS05 (Note 18)	HG-SR7024(B)G1(H) 1/11	Existing cable can be used.		
	HC-SFS7024(B)G1(H) 1/17			HG-SR7024(B)G1(H) 1/17			
	HC-SFS7024(B)G1(H) 1/29			HG-SR7024(B)G1(H) 1/29			
	HC-SFS7024(B)G1(H) 1/35			HG-SR7024(B)G1(H) 1/35			
	HC-SFS7024(B)G1(H) 1/43			HG-SR7024(B)G1(H) 1/43			

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(3) Existing HC-SFS motor series (G5, G7 reducer)

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)			
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)		Secondary replacement/simultaneous replacement models				
Servo amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo motor model (Note 1)	Compatibility	Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Medium capacity/medium inertia HC-SFS series with high-precision reducer, flange output type (G5)] ((B) represents models with brake)								
MR-J2S-60A4	HC-SFS524(B)G5 1/5	MR-J4-60A4	SC-J2SJ4BS02 (Note 18)	HG-SR524(B)G5 1/5	△ (Note 6)	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)
	HC-SFS524(B)G5 1/11			HG-SR524(B)G5 1/11				
	HC-SFS524(B)G5 1/21			HG-SR524(B)G5 1/21				
	HC-SFS524(B)G5 1/33			HG-SR524(B)G5 1/33				
HC-SFS524(B)G5 1/45	HG-SR524(B)G5 1/45							
MR-J2S-100A4	HC-SFS1024(B)G5 1/5	MR-J4-100A4	SC-J2SJ4BS02 (Note 18)	HG-SR1024(B)G5 1/5				
	HC-SFS1024(B)G5 1/11			HG-SR1024(B)G5 1/11				
	HC-SFS1024(B)G5 1/21			HG-SR1024(B)G5 1/21				
	HC-SFS1024(B)G5 1/33			HG-SR1024(B)G5 1/33				
HC-SFS1024(B)G5 1/45	HG-SR1024(B)G5 1/45							
MR-J2S-200A4	HC-SFS1524(B)G5 1/5	MR-J4-200A4	SC-J2SJ4BS03 (Note 18)	HG-SR1524(B)G5 1/5				
	HC-SFS1524(B)G5 1/11			HG-SR1524(B)G5 1/11				
	HC-SFS1524(B)G5 1/21			HG-SR1524(B)G5 1/21				
	HC-SFS1524(B)G5 1/33			HG-SR1524(B)G5 1/33				
	HC-SFS1524(B)G5 1/45			HG-SR1524(B)G5 1/45				
	HC-SFS2024(B)G5 1/5			HG-SR2024(B)G5 1/5				
	HC-SFS2024(B)G5 1/11			HG-SR2024(B)G5 1/11				
	HC-SFS2024(B)G5 1/21			HG-SR2024(B)G5 1/21				
HC-SFS2024(B)G5 1/33	HG-SR2024(B)G5 1/33							
HC-SFS2024(B)G5 1/45	HG-SR2024(B)G5 1/45							
MR-J2S-350A4	HC-SFS3524(B)G5 1/5	MR-J4-350A4	SC-J2SJ4BS04 (Note 18)	HG-SR3524(B)G5 1/5				
	HC-SFS3524(B)G5 1/11			HG-SR3524(B)G5 1/11				
	HC-SFS3524(B)G5 1/21			HG-SR3524(B)G5 1/21				
MR-J2S-500A4	HC-SFS5024(B)G5 1/5	MR-J4-500A4	(Note 19)	HG-SR5024(B)G5 1/5				
	HC-SFS5024(B)G5 1/11			HG-SR5024(B)G5 1/11				
MR-J2S-700A4	HC-SFS7024(B)G5 1/5	MR-J4-700A4	SC-J2SJ4BS05 (Note 18)	HG-SR7024(B)G5 1/5		Existing cable can be used.		
[Medium capacity/medium inertia HC-SFS series with high-precision reducer, shaft output type (G7)] ((B) represents models with brake)								
MR-J2S-60A4	HC-SFS524(B)G7 1/5	MR-J4-60A4	SC-J2SJ4BS02 (Note 18)	HG-SR524(B)G7 1/5	△ (Note 6)	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)
	HC-SFS524(B)G7 1/11			HG-SR524(B)G7 1/11				
	HC-SFS524(B)G7 1/21			HG-SR524(B)G7 1/21				
	HC-SFS524(B)G7 1/33			HG-SR524(B)G7 1/33				
HC-SFS524(B)G7 1/45	HG-SR524(B)G7 1/45							
MR-J2S-100A4	HC-SFS1024(B)G7 1/5	MR-J4-100A4	SC-J2SJ4BS02 (Note 18)	HG-SR1024(B)G7 1/5				
	HC-SFS1024(B)G7 1/11			HG-SR1024(B)G7 1/11				
	HC-SFS1024(B)G7 1/21			HG-SR1024(B)G7 1/21				
	HC-SFS1024(B)G7 1/33			HG-SR1024(B)G7 1/33				
HC-SFS1024(B)G7 1/45	HG-SR1024(B)G7 1/45							
MR-J2S-200A4	HC-SFS1524(B)G7 1/5	MR-J4-200A4	SC-J2SJ4BS03 (Note 18)	HG-SR1524(B)G7 1/5				
	HC-SFS1524(B)G7 1/11			HG-SR1524(B)G7 1/11				
	HC-SFS1524(B)G7 1/21			HG-SR1524(B)G7 1/21				
	HC-SFS1524(B)G7 1/33			HG-SR1524(B)G7 1/33				
	HC-SFS1524(B)G7 1/45			HG-SR1524(B)G7 1/45				
	HC-SFS2024(B)G7 1/5			HG-SR2024(B)G7 1/5				
	HC-SFS2024(B)G7 1/11			HG-SR2024(B)G7 1/11				
	HC-SFS2024(B)G7 1/21			HG-SR2024(B)G7 1/21				
HC-SFS2024(B)G7 1/33	HG-SR2024(B)G7 1/33							
HC-SFS2024(B)G7 1/45	HG-SR2024(B)G7 1/45							
MR-J2S-350A4	HC-SFS3524(B)G7 1/5	MR-J4-350A4	SC-J2SJ4BS04 (Note 18)	HG-SR3524(B)G7 1/5				
	HC-SFS3524(B)G7 1/11			HG-SR3524(B)G7 1/11				
	HC-SFS3524(B)G7 1/21			HG-SR3524(B)G7 1/21				
MR-J2S-500A4	HC-SFS5024(B)G7 1/5	MR-J4-500A4	(Note 19)	HG-SR5024(B)G7 1/5				
	HC-SFS5024(B)G7 1/11			HG-SR5024(B)G7 1/11				
MR-J2S-700A4	HC-SFS7024(B)G7 1/5	MR-J4-700A4	SC-J2SJ4BS05 (Note 18)	HG-SR7024(B)G7 1/5		Existing cable can be used.		

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(4) Existing HA-LFS motor series

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)	(3)	(4)	(5)	(6)	(7)			
Existing model (Note 13)		Primary replacement model (Note 5)		Secondary replacement/simultaneous replacement models						
Servo amplifier model	Servo motor Model	Servo amplifier model (Note 1, 12)	Renewal kit model	Servo amplifier model (Note 1)	Servo motor model (Note 1)	Compat- ibility	Motor side conversion cable model			
							Renewal kit model	Power supply conversion Cable	Encoder Conversion cable	Brake/Conversion cable for the cooling fan
[Medium/large capacity/low inertia HA-LFS 1000r/min series, standard/with brake] ((B) represents models with brake)										
MR-J2S-700A4	HA-LFS6014(B)	(Note 16)		MR-J4-700A4	HG-JR6014(B) (Note 4)	× (Note 3)	SC-J2SJ4BS05 (Note 18)	SC-J2SJ4PW3C1M -■	Existing cable can be used.	• Existing brake cable can be used. • Cooling fan cable (Note 9)
MR-J2S-11KA4	HA-LFS8014(B) HA-LFS12K14(B)			MR-J4-11KA4	HG-JR8014(B) (Note 4) HG-JR12K14(B) (Note 4)		SC-J2SJ4BS06 (Note 18)			
MR-J2S-15KA4	HA-LFS15K14			MR-J4-15KA4	HG-JR15K14		SC-J2SJ4BS07 (Note 18)			
MR-J2S-22KA4	HA-LFS20K14			MR-J4-22KA4	HG-JR20K14					
MR-J2S-30KA4	HA-LFS25K14 HA-LFS30K14			MR-J4-30DU-A4 (Note 21)	HG-JR25K14 HG-JR30K14 (Note 4)			SC-J2SJ4BS08 (Note 18)		
MR-J2S-37KA4	HA-LFS37K14			MR-J4-37DU-A4 (Note 21)	HG-JR37K14		SC-J2SJ4BS09 (Note 18)	(Note 8)	(Note 17)	• Cooling fan conversion cable SC-J2SJ4FAN1C1M
[Medium/large capacity/low inertia HA-LFS 1500r/min series, standard/with brake] ((B) represents models with brake)										
MR-J2S-700A4	HA-LFS701M4(B)	(Note 16)		MR-J4-700A4	HG-JR701M4(B) (Note 4)	× (Note 3)	SC-J2SJ4BS05 (Note 18)	SC-J2SJ4PW3C1M -■	Existing cable can be used.	• Existing brake cable can be used. • Cooling fan cable (Note 9)
MR-J2S-11KA4	HA-LFS11K1M4(B)			MR-J4-11KA4	HG-JR11K1M4(B)		SC-J2SJ4BS06 (Note 18)			
MR-J2S-15KA4	HA-LFS15K1M4(B)			MR-J4-15KA4	HG-JR15K1M4(B) (Note 4)		SC-J2SJ4BS07 (Note 18)			
MR-J2S-22KA4	HA-LFS22K1M4			MR-J4-22KA4	HG-JR22K1M4					
MR-J2S-30KA4	HA-LFS30K1M4			MR-J4-30DU-A4 (Note 21)	HG-JR30K1M4			SC-J2SJ4BS08 (Note 18)		
MR-J2S-37KA4	HA-LFS37K1M4			MR-J4-37DU-A4 (Note 21)	HG-JR37K1M4		SC-J2SJ4BS09 (Note 18)	(Note 8)	(Note 17)	• Cooling fan conversion cable SC-J2SJ4FAN1C1M
MR-J2S-45KA4	HA-LFS45K1M4			MR-J4-45DU-A4 (Note 21)	HG-JR45K1M4 (Note 4)					
MR-J2S-55KA4	HA-LFS50K1M4			MR-J4-55DU-A4 (Note 21)	HG-JR55K1M4					
[Medium/large capacity/low inertia HA-LFS 2000r/min series, standard/with brake] ((B) represents models with brake)										
MR-J2S-11KA4	HA-LFS11K24(B)	MR-J4-11KA4	SC-J2SJ4BS06 (Note 18)	MR-J4-11KA4	HG-JR11K1M4(B) (Note 4)	× (Note 3)	SC-J2SJ4BS06 (Note 18)	SC-J2SJ4PW3C1M -■	Existing cable can be used.	• Existing brake cable can be used. • Cooling fan cable (Note 9)
MR-J2S-15KA4	HA-LFS15K24(B)	MR-J4-15KA4 (Note 10)	SC-J2SJ4BS06 (Note 18)	MR-J4-11KA4 (Note 10)	HG-JR11K1M4(B)		(Note 11)			
MR-J2S-22KA4	HA-LFS22K24(B)	MR-J4-22KA4 (Note 10)	SC-J2SJ4BS07 (Note 18)	MR-J4-15KA4 (Note 10)	HG-JR15K1M4(B)					
MR-J2S-30KA4	HA-LFS30K24	MR-J4-30DU-A4 (Note 10, 21)	SC-J2SJ4BS08 (Note 18)	MR-J4-22KA4 (Note 10)	HG-JR22K1M4			SC-J2SJ4BS09 (Note 18)	(Note 8)	(Note 17)
MR-J2S-37KA4	HA-LFS37K24	MR-J4-37DU-A4 (Note 10, 21)	SC-J2SJ4BS09 (Note 18)	MR-J4-30DU-A4 (Note 10, 21)	HG-JR30K1M4					
MR-J2S-45KA4	HA-LFS45K24	MR-J4-45DU-A4 (Note 10, 21)		MR-J4-37DU-A4 (Note 10, 21)	HG-JR37K1M4					
MR-J2S-55KA4	HA-LFS55K24	MR-J4-55DU-A4 (Note 10, 21)		MR-J4-45DU-A4 (Note 10, 21)	HG-JR45K1M4 (Note 4)					

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

4.5 B Type Replacement Combination List (400 V Class)

(1) Existing HC-SFS motor series (standard/with brake, G2 reducer)

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)		(3)	(4)	(5)				
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)			Secondary replacement/simultaneous replacement models					
Servo Amplifier model	Servo motor Model	Servo Amplifier model (Note 1, 12)	SSCNET conversion unit model (Note 1)	Renewal kit model	Servo motor model (Note 1)	Motor side conversion cable model				
						Compat- ibility	Power supply conversion cable	Encoder conversion cable	Brake conversion cable	
[Medium capacity/medium inertia HC-SFS series, standard/with brake] ((B) represents models with brake)										
MR- J2S- 60B4	HC-SFS524(B)	MR-J4- 60B4- RJ020	MR-J4-T20	SC- J2SJ4BS02 (Note 18)	HG-SR524(B)	△ (Note 6)	SC- SAJ3PW2KC1M-S2	SC- HAJ3ENM3C1M	(Note 7)	Existing cable can be used.
MR- J2S- 100B4	HC-SFS1024(B)	MR-J4- 100B4- RJ020			HG-SR1024(B)					
MR- J2S- 200B4	HC-SFS1524(B)	MR-J4- 200B4- RJ020			HG-SR1524(B)					
	HC-SFS2024(B)				HG-SR2024(B)					
MR- J2S- 350B4	HC-SFS3524(B)	MR-J4- 350B4- RJ020			HG-SR3524(B)					
MR- J2S- 500B4	HC-SFS5024(B)	MR-J4- 500B4- RJ020			(Note 19)					
MR- J2S- 700B4	HC-SFS7024(B)	MR-J4- 700B4- RJ020	SC- J2SJ4BS05 (Note 18)	HG-SR7024(B)						
[Medium capacity/medium inertia HC-SFS series with high-precision reducer (G2)] ((B) represents models with brake)										
MR- J2S- 60B4	HC-SFS524(B)G2 1/5	MR-J4- 60B4- RJ020	MR-J4-T20	SC- J2SJ4BS02 (Note 18)	HG-SR524(B)G7 1/5	× (Note 3) (Note 6)	SC- SAJ3PW2KC1M-S2	SC- HAJ3ENM3C1M	(Note 7)	Existing cable can be used.
	HC-SFS524(B)G2 1/9				HG-SR524(B)G7 1/11					
	HC-SFS524(B)G2 1/20				HG-SR524(B)G7 1/21					
	HC-SFS524(B)G2 1/29				HG-SR524(B)G7 1/33					
HC-SFS524(B)G2 1/45	HG-SR524(B)G7 1/45									
MR- J2S- 100B4	HC-SFS1024(B)G2 1/5	MR-J4- 100B4- RJ020			HG-SR1024(B)G7 1/5					
	HC-SFS1024(B)G2 1/9		HG-SR1024(B)G7 1/11							
	HC-SFS1024(B)G2 1/20		HG-SR1024(B)G7 1/21							
	HC-SFS1024(B)G2 1/29		HG-SR1024(B)G7 1/33							
	HC-SFS1024(B)G2 1/45		HG-SR1024(B)G7 1/45							
MR- J2S- 200B4	HC-SFS1524(B)G2 1/5	MR-J4- 200B4- RJ020	SC- J2SJ4BS03 (Note 18)	HG-SR1524(B)G7 1/5						
	HC-SFS1524(B)G2 1/9		HG-SR1524(B)G7 1/11							
	HC-SFS1524(B)G2 1/20		HG-SR1524(B)G7 1/21							
	HC-SFS1524(B)G2 1/29		HG-SR1524(B)G7 1/33							
	HC-SFS1524(B)G2 1/45		HG-SR1524(B)G7 1/45							
	HC-SFS2024(B)G2 1/5		HG-SR2024(B)G7 1/5							
	HC-SFS2024(B)G2 1/9		HG-SR2024(B)G7 1/11							
	HC-SFS2024(B)G2 1/20		HG-SR2024(B)G7 1/21							
MR- J2S- 350B4	HC-SFS3524(B)G2 1/5	MR-J4- 350B4- RJ020	SC- J2SJ4BS04 (Note 18)	HG-SR3524(B)G7 1/5						
	HC-SFS3524(B)G2 1/9		HG-SR3524(B)G7 1/11							
	HC-SFS3524(B)G2 1/20		HG-SR3524(B)G7 1/21							
MR- J2S- 500B4	HC-SFS5024(B)G2 1/5	MR-J4- 500B4- RJ020	(Note 19)	HG-SR5024(B)G7 1/5						
	HC-SFS5024(B)G2 1/9		HG-SR5024(B)G7 1/11							
MR- J2S- 700B4	HC-SFS7024(B)G2 1/5	MR-J4- 700B4- RJ020	SC- J2SJ4BS05 (Note 18)	HG-SR7024(B)G7 1/5						

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(2) Existing HC-SFS motor series (G1 reducer)

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)		(3)	(4)		(5)		
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)			Secondary replacement/simultaneous replacement models				
Servo Amplifier model	Servo motor Model	Servo Amplifier model (Note 1, 12)	SSCNET conversion unit model (Note 1)	Renewal kit model	Servo motor model (Note 1)	Compati bility	Motor side conversion cable model		
							Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Medium capacity/medium inertia HC-SFS series with general reducer (G1)] ((B) represents models with brake, (H) represents foot-mounting)									
MR- J2S- 60B4	HC-SFS524(B)G1(H) 1/6	MR-J4- 60B4- RJ020			HG-SR524(B)G1(H) 1/6	△ (Note 6)	SC- SAJ3PW2KC1M-S2		
	HC-SFS524(B)G1(H) 1/11				HG-SR524(B)G1(H) 1/11				
	HC-SFS524(B)G1(H) 1/17				HG-SR524(B)G1(H) 1/17				
	HC-SFS524(B)G1(H) 1/29				HG-SR524(B)G1(H) 1/29				
	HC-SFS524(B)G1(H) 1/35				HG-SR524(B)G1(H) 1/35				
	HC-SFS524(B)G1(H) 1/43				HG-SR524(B)G1(H) 1/43				
MR- J2S- 100B4	HC-SFS1024(B)G1(H) 1/6	MR-J4- 100B4- RJ020			HG-SR1024(B)G1(H) 1/6				
	HC-SFS1024(B)G1(H) 1/11				HG-SR1024(B)G1(H) 1/11				
	HC-SFS1024(B)G1(H) 1/17				HG-SR1024(B)G1(H) 1/17				
	HC-SFS1024(B)G1(H) 1/29				HG-SR1024(B)G1(H) 1/29				
	HC-SFS1024(B)G1(H) 1/35				HG-SR1024(B)G1(H) 1/35				
	HC-SFS1024(B)G1(H) 1/43				HG-SR1024(B)G1(H) 1/43				
MR- J2S- 200B4	HC-SFS1524(B)G1(H) 1/6	MR-J4- 200B4- RJ020	MR-J4-T20		HG-SR1524(B)G1(H) 1/6	△ (Note 6)	SC-HAJ3ENM3C1M		(Note 7)
	HC-SFS1524(B)G1(H) 1/11				HG-SR1524(B)G1(H) 1/11				
	HC-SFS1524(B)G1(H) 1/17				HG-SR1524(B)G1(H) 1/17				
	HC-SFS1524(B)G1(H) 1/29				HG-SR1524(B)G1(H) 1/29				
	HC-SFS1524(B)G1(H) 1/35				HG-SR1524(B)G1(H) 1/35				
	HC-SFS1524(B)G1(H) 1/43				HG-SR1524(B)G1(H) 1/43				
	HC-SFS1524(B)G1(H) 1/59				HG-SR1524(B)G1(H) 1/59				
	HC-SFS2024(B)G1(H) 1/6				HG-SR2024(B)G1(H) 1/6				
	HC-SFS2024(B)G1(H) 1/11				HG-SR2024(B)G1(H) 1/11				
	HC-SFS2024(B)G1(H) 1/17				HG-SR2024(B)G1(H) 1/17				
	HC-SFS2024(B)G1(H) 1/29				HG-SR2024(B)G1(H) 1/29				
	HC-SFS2024(B)G1(H) 1/35				HG-SR2024(B)G1(H) 1/35				
MR- J2S- 350B4	HC-SFS3524(B)G1(H) 1/6	MR-J4- 350B4- RJ020			HG-SR3524(B)G1(H) 1/6	△ (Note 6)	SC-HAJ3PW1C1M		
	HC-SFS3524(B)G1(H) 1/11				HG-SR3524(B)G1(H) 1/11				
	HC-SFS3524(B)G1(H) 1/17				HG-SR3524(B)G1(H) 1/17				
	HC-SFS3524(B)G1(H) 1/29				HG-SR3524(B)G1(H) 1/29				
	HC-SFS3524(B)G1(H) 1/35				HG-SR3524(B)G1(H) 1/35				
	HC-SFS3524(B)G1(H) 1/43				HG-SR3524(B)G1(H) 1/43				
MR- J2S- 500B4	HC-SFS5024(B)G1(H) 1/11	MR-J4- 500B4- RJ020			HG-SR5024(B)G1(H) 1/11	△ (Note 6)			
	HC-SFS5024(B)G1(H) 1/17				HG-SR5024(B)G1(H) 1/17				
	HC-SFS5024(B)G1(H) 1/29				HG-SR5024(B)G1(H) 1/29				
	HC-SFS5024(B)G1(H) 1/35				HG-SR5024(B)G1(H) 1/35				
MR- J2S- 700B4	HC-SFS7024(B)G1(H) 1/11	MR-J4- 700B4- RJ020			HG-SR7024(B)G1(H) 1/11	△ (Note 6)			Existing cable can be used.
	HC-SFS7024(B)G1(H) 1/17				HG-SR7024(B)G1(H) 1/17				
	HC-SFS7024(B)G1(H) 1/29				HG-SR7024(B)G1(H) 1/29				
	HC-SFS7024(B)G1(H) 1/35				HG-SR7024(B)G1(H) 1/35				

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(3) Existing HC-SFS motor series (G5, G7 reducer)

O: Compatible; Δ: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)		(3)	(4)	(5)				
Existing model (Note 13)		Primary/secondary/simultaneous replacement models (Note 5, 14)			Secondary replacement/simultaneous replacement models					
Servo Amplifier model	Servo motor Model	Servo Amplifier model (Note 1, 12)	SSCNET conversion unit model (Note 1)	Renewal kit model	Servo motor model (Note 1)	Motor side conversion cable model				
						Compat- ibility	Power supply conversion cable	Encoder conversion cable	Brake conversion cable	
[Medium capacity/medium inertia HC-SFS series with high-precision reducer, flange output type (G5)] ((B) represents models with brake)										
MR- J2S- 60B4	HC-SFS524(B)G5 1/5	MR-J4- 60B4- RJ020			HG-SR524(B)G5 1/5	Δ (Note 6)	SC- SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)	
	HC-SFS524(B)G5 1/11				HG-SR524(B)G5 1/11					
	HC-SFS524(B)G5 1/21				HG-SR524(B)G5 1/21					
	HC-SFS524(B)G5 1/33				HG-SR524(B)G5 1/33					
HC-SFS524(B)G5 1/45	HG-SR524(B)G5 1/45									
MR- J2S- 100B4	HC-SFS1024(B)G5 1/5	MR-J4- 100B4- RJ020			HG-SR1024(B)G5 1/5					
	HC-SFS1024(B)G5 1/11				HG-SR1024(B)G5 1/11					
	HC-SFS1024(B)G5 1/21				HG-SR1024(B)G5 1/21					
	HC-SFS1024(B)G5 1/33				HG-SR1024(B)G5 1/33					
HC-SFS1024(B)G5 1/45	HG-SR1024(B)G5 1/45									
MR- J2S- 200B4	HC-SFS1524(B)G5 1/5	MR-J4- 200B4- RJ020			HG-SR1524(B)G5 1/5					
	HC-SFS1524(B)G5 1/11				HG-SR1524(B)G5 1/11					
	HC-SFS1524(B)G5 1/21				HG-SR1524(B)G5 1/21					
	HC-SFS1524(B)G5 1/33				HG-SR1524(B)G5 1/33					
	HC-SFS1524(B)G5 1/45				HG-SR1524(B)G5 1/45					
	HC-SFS2024(B)G5 1/5				HG-SR2024(B)G5 1/5					
	HC-SFS2024(B)G5 1/11				HG-SR2024(B)G5 1/11					
	HC-SFS2024(B)G5 1/21				HG-SR2024(B)G5 1/21					
HC-SFS2024(B)G5 1/33	HG-SR2024(B)G5 1/33									
HC-SFS2024(B)G5 1/45	HG-SR2024(B)G5 1/45									
MR- J2S- 350B4	HC-SFS3524(B)G5 1/5	MR-J4- 350B4- RJ020			HG-SR3524(B)G5 1/5					
	HC-SFS3524(B)G5 1/11				HG-SR3524(B)G5 1/11					
MR- J2S- 500B4	HC-SFS5024(B)G5 1/5	MR-J4- 500B4- RJ020			(Note 19)					
	HC-SFS5024(B)G5 1/11				HG-SR5024(B)G5 1/11					
MR- J2S- 700B4	HC-SFS7024(B)G5 1/5	MR-J4- 700B4- RJ020			SC- J2S.J4BS05 (Note 18)	HG-SR7024(B)G5 1/5				
[Medium capacity/medium inertia HC-SFS series with high-precision reducer, shaft output type (G7)] ((B) represents models with brake)										
MR- J2S- 60B4	HC-SFS524(B)G7 1/5	MR-J4- 60B4- RJ020			HG-SR524(B)G7 1/5	Δ (Note 6)	SC- SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)	
	HC-SFS524(B)G7 1/11				HG-SR524(B)G7 1/11					
	HC-SFS524(B)G7 1/21				HG-SR524(B)G7 1/21					
	HC-SFS524(B)G7 1/33				HG-SR524(B)G7 1/33					
HC-SFS524(B)G7 1/45	HG-SR524(B)G7 1/45									
MR- J2S- 100B4	HC-SFS1024(B)G7 1/5	MR-J4- 100B4- RJ020			HG-SR1024(B)G7 1/5					
	HC-SFS1024(B)G7 1/11				HG-SR1024(B)G7 1/11					
	HC-SFS1024(B)G7 1/21				HG-SR1024(B)G7 1/21					
	HC-SFS1024(B)G7 1/33				HG-SR1024(B)G7 1/33					
HC-SFS1024(B)G7 1/45	HG-SR1024(B)G7 1/45									
MR- J2S- 200B4	HC-SFS1524(B)G7 1/5	MR-J4- 200B4- RJ020			HG-SR1524(B)G7 1/5					
	HC-SFS1524(B)G7 1/11				HG-SR1524(B)G7 1/11					
	HC-SFS1524(B)G7 1/21				HG-SR1524(B)G7 1/21					
	HC-SFS1524(B)G7 1/33				HG-SR1524(B)G7 1/33					
	HC-SFS1524(B)G7 1/45				HG-SR1524(B)G7 1/45					
	HC-SFS2024(B)G7 1/5				HG-SR2024(B)G7 1/5					
	HC-SFS2024(B)G7 1/11				HG-SR2024(B)G7 1/11					
	HC-SFS2024(B)G7 1/21				HG-SR2024(B)G7 1/21					
HC-SFS2024(B)G7 1/33	HG-SR2024(B)G7 1/33									
HC-SFS2024(B)G7 1/45	HG-SR2024(B)G7 1/45									
MR- J2S- 350B4	HC-SFS3524(B)G7 1/5	MR-J4- 350B4- RJ020			HG-SR3524(B)G7 1/5					
	HC-SFS3524(B)G7 1/11				HG-SR3524(B)G7 1/11					
MR- J2S- 500B4	HC-SFS5024(B)G7 1/5	MR-J4- 500B4- RJ020			(Note 19)					
	HC-SFS5024(B)G7 1/11				HG-SR5024(B)G7 1/11					
MR- J2S- 700B4	HC-SFS7024(B)G7 1/5	MR-J4- 700B4- RJ020			SC- J2S.J4BS05 (Note 18)	HG-SR7024(B)G7 1/5				

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

(4) Existing HA-LFS motor series

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(1)		(2)			(3)		(4)		(5)		(6)		(7)			
Existing model (Note 13)		Primary replacement model (Note 5)			Secondary replacement/simultaneous replacement models											
Servo amplifier model	Servo motor Model	Servo Amplifier model (Note 1, 12)	SSCNET Conversion unit Model (Note 1)	Renewal kit model	Servo amplifier model (Note 1)	SSCNET Conversion unit Model (Note 1)	Servo motor model (Note 1)	Compat-ibility	Renewal kit model	Power supply conversion Cable	Encoder Conversion cable	Brake/Conversi-on cable for the cooling fan				
[Medium/large capacity/low inertia HA-LFS 1000r/min series, standard/with brake] ((B) represents models with brake)																
MR-J2S-700B4	HA-LFS6014(B)	(Note 16)			MR-J4-700B4-RJ020	MR-J4-T20	HG-JR6014(B) (Note 4)	× (Note 3)	SC-J2SJ4BS05 (Note 18)	SC-J2SJ4PW3C1M	Existing cable can be used		Existing brake cable can be used.			
MR-J2S-11KB4	HA-LFS8014(B) HA-LFS12K14(B)				MR-J4-11KB4-RJ020		HG-JR8014(B) (Note 4) HG-JR12K14(B) (Note 4)		SC-J2SJ4BS06 (Note 18)					Cooling fan cable (Note 9)		
MR-J2S-15KB4	HA-LFS15K14				MR-J4-15KB4-RJ020		HG-JR15K14		SC-J2SJ4BS07 (Note 18)							
MR-J2S-22KB4	HA-LFS20K14				MR-J4-22KB4-RJ020		HG-JR20K14									
MR-J2S-30KB4	HA-LFS25K14 HA-LFS30K14				MR-J4-30DU-B4-RJ020 (Note 21)		HG-JR25K14 HG-JR30K14 (Note 4)								SC-J2SJ4BS08 (Note 18)	Cooling fan conversion cable SC-J2SJ4FAN1C1M
MR-J2S-37KB4	HA-LFS37K14				MR-J4-37DU-B4-RJ020 (Note 21)		HG-JR37K14								SC-J2SJ4BS09 (Note 18)	
[Medium/large capacity/low inertia HA-LFS 1500r/min series, standard/with brake] ((B) represents models with brake)																
MR-J2S-700B4	HA-LFS701M4(B)	(Note 16)			MR-J4-700B4-RJ020	MR-J4-T20	HG-JR701M4(B) (Note 4)	× (Note 3)		SC-J2SJ4BS05 (Note 18)	SC-J2SJ4PW3C1M	Existing cable can be used		Existing brake cable can be used.		
MR-J2S-11KB4	HA-LFS11K1M4(B)				MR-J4-11KB4-RJ020		HG-JR11K1M4(B)		SC-J2SJ4BS06 (Note 18)	Cooling fan cable (Note 9)						
MR-J2S-15KB4	HA-LFS15K1M4(B)				MR-J4-15KB4-RJ020		HG-JR15K1M4(B) (Note 4)		SC-J2SJ4BS07 (Note 18)							
MR-J2S-22KB4	HA-LFS22K1M4				MR-J4-22KB4-RJ020		HG-JR22K1M4									
MR-J2S-30KB4	HA-LFS30K1M4				MR-J4-30DU-B4-RJ020 (Note 21)		HG-JR30K1M4								SC-J2SJ4BS08 (Note 18)	
MR-J2S-37KB4	HA-LFS37K1M4				MR-J4-37DU-B4-RJ020 (Note 21)		HG-JR37K1M4								SC-J2SJ4BS09 (Note 18)	Cooling fan conversion cable SC-J2SJ4FAN1C1M
MR-J2S-45KB4	HA-LFS45K1M4				MR-J4-45DU-B4-RJ020 (Note 21)		HG-JR45K1M4									
MR-J2S-55KB4	HA-LFS50K1M4				MR-J4-55DU-B4-RJ020 (Note 21)		HG-JR55K1M4									
[Medium/large capacity/low inertia HA-LFS 2000r/min series, standard/with brake] ((B) represents models with brake)																
MR-J2S-11KB4	HA-LFS11K24(B)	MR-J4-T20			MR-J4-11KB4-RJ020	MR-J4-T20	HG-JR11K1M4(B) (Note 4)	× (Note 3)	SC-J2SJ4BS06 (Note 18)	SC-J2SJ4PW3C1M	Existing cable can be used		Existing brake cable can be used.			
MR-J2S-15KB4	HA-LFS15K24(B)				MR-J4-15KB4-RJ020 (Note 10)		HG-JR11K1M4(B)		SC-J2SJ4BS06 (Note 18)					Cooling fan cable (Note 9)		
MR-J2S-22KB4	HA-LFS22K24(B)				MR-J4-22KB4-RJ020 (Note 10)		HG-JR15K1M4(B)		SC-J2SJ4BS07 (Note 18)							
MR-J2S-30KB4	HA-LFS30K24				MR-J4-30DU-B4-RJ020 (Note 10, 21)		HG-JR22K1M4								(Note 11)	
MR-J2S-37KB4	HA-LFS37K24				MR-J4-37DU-B4-RJ020 (Note 10, 21)		HG-JR30K1M4									
MR-J2S-45KB4	HA-LFS45K24				MR-J4-45DU-B4-RJ020 (Note 10, 21)		HG-JR37K1M4									SC-J2SJ4BS09 (Note 18)
MR-J2S-55KB4	HA-LFS55K24				MR-J4-55DU-B4-RJ020 (Note 10, 21)		HG-JR45K1M4									

See Appendix page 2-65 for important points to note.

[Appendix 2] Introduction to Renewal Tool

- Note
1. Purchase from Mitsubishi Electric.
 2. The actual reduction ratio is different when replacing a motor. Note that it is necessary to adjust the electronic gear after checking the actual reduction ratio of the motor. See Part 8 for details.
 3. Note that because the flange dimensions and shaft end dimensions are not compatible it is necessary to change the servo motor shaft connection portion, including the mounting portion and the coupling/pulley when replacing the motor. See Part 8 for details.
 4. Before replacing the motor, the moment of inertia is different from the motor before replacement. Take note of the load to motor inertia ratio. Review of the operation pattern is necessary depending on the existing device. See Part 8 for details.
 5. If the gain of the existing servo amplifier is extremely high, there may be slight differences in characteristics upon primary replacement. Make sure to set the gain again.
 6. Note that it is because the total length of the motor becomes shorter, the motor connector may interfere with the device side.
 7. Laying a new electromagnetic brake cable is required when performing a secondary replacement or simultaneous replacement of a motor with brake. Use a motor electromagnetic brake cable (SC-BKC1CBL_M-L or SC-BKC1CBL_M-H) made by Mitsubishi.
 8. If the motor is replaced, it is necessary to change the crimped terminal of the existing power supply cable. See Part 8 for details.
 9. There is no cooling fan in the replacement motor when the motor is replaced. Because the existing wiring becomes unnecessary, insulate as needed.
 10. Simultaneous replacement is recommended because replacing the servo amplifier again is necessary at secondary replacement.
 11. The renewal kit cannot be used for secondary or simultaneous replacement due to large differences in servo amplifier shape resulting from changes in servo amplifier capacity.
 12. The software version for primary replacement of servo amplifiers are different depending on the motor. Consult a sales representative when making an order.
 13. Contact a sales representative regarding replacement of existing models not listed.
 14. The replacement servo amplifier, SSCNET conversion unit, and renewal kit are the same for primary, secondary, and simultaneous replacement.
 15. When replacing a motor, the torque characteristics are different compared with the motor before replacement. See Part 8 for details.
 16. This is not compatible with primary replacement. Perform a simultaneous replacement of an amplifier and a motor.
 17. When performing a replacement of a motor, a new encoder cable is required to be laid. Contact a sales representative if a new cable required.
 18. A conversion cable on the amplifier side is not included in the package. Purchase the following cable set separately according to an amplifier to be used and its capacity.
 - A types (7 kW or less): SC-J2SJ4CSET-01
 - B types (11 kW or more): SC-J2SJ4CSET-02
 - B types (7 kW or less): SC-J2SBJ4CSET-01
 - B types (11 kW or more): SC-J2SBJ4CSET-02
 19. When combining, a renewal kit is not required. Purchase only a conversion cable on the amplifier side, if necessary.
 20. This amplifier is required to be used in combination with the converter unit MR-CR55K.
 21. This amplifier is required to be used in combination with the converter unit MR-CR55K4.

[Appendix 2] Introduction to Renewal Tool

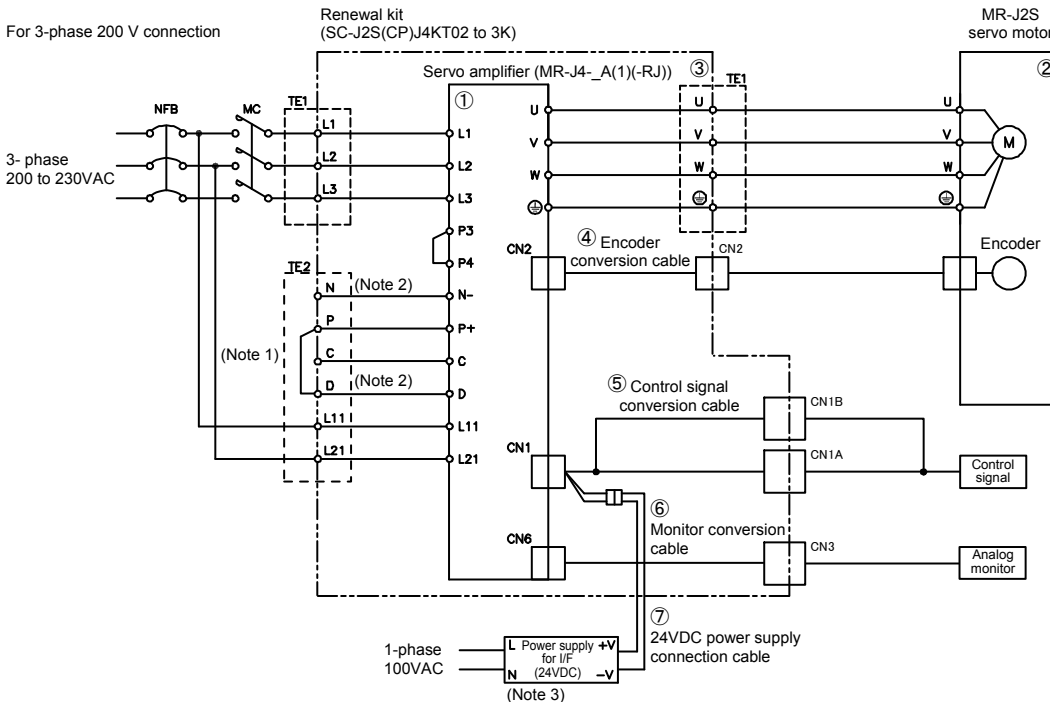
5 RENEWAL TOOL CONNECTION DIAGRAM

These diagrams are the connection diagrams for wiring the servo amplifier and servo motor when using the renewal tool.

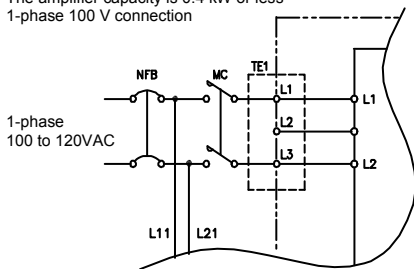
* Since a terminal block is not included with the renewal tool (mounting attachment) for 400 V, see MR-J4 Servo Amplifier Instruction Manual for the detailed connection.

5.1 SC-J2SJ4(CP)KT02K to 3K

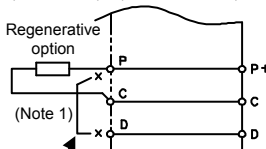
(1) Primary replacement (when replacing the servo amplifier only)



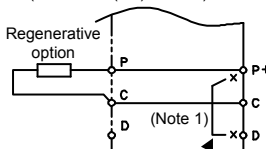
The amplifier capacity is 0.4 kW or less
1-phase 100 V connection



Connection of regenerative option
(for SC-J2S(CP)J4KT02K to 1K)



Make sure to remove the wiring for the built-in regenerative resistor.
(for SC-J2S(CP)J4KT3K)



Make sure to remove the wire
between P and D.

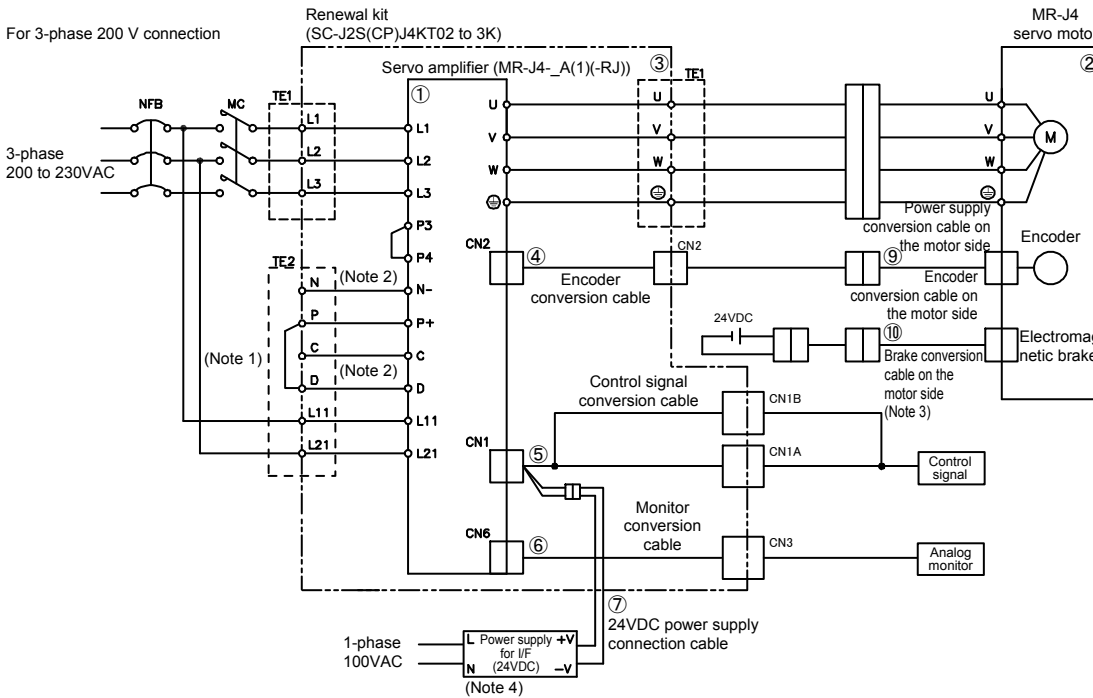
No.	Product name
①	Servo amplifier *1
②	Servo motor *1
③	Renewal kit
④	Encoder conversion cable
⑤	Control signal conversion cable
⑥	Monitor conversion cable
⑦	24VDC power supply connection cable

*1: Manufactured by Mitsubishi Electric.

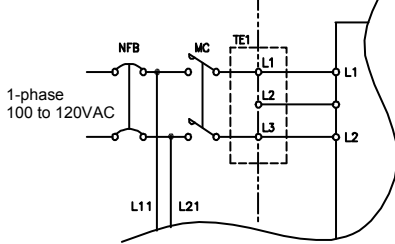
- Note 1. When using the regenerative option, make sure to remove the wiring or the short-circuit bar between P and D, connect with the wiring between the renewal kit and the servo amplifier, and mount the regenerative option between P and C. Ensure the connection destinations are correct. The servo amplifier may malfunction if the connection destinations are incorrect.
2. The N terminal of TE2 is limited to SC-J2S(CP)J4KT1K and 3K. There is no D terminal wiring for SC-J2S(CP)J4KT3K.
3. Required only when the internal power supply (24VDC) for the I/F is used in the existing MR-J2S servo amplifier. Not included with the renewal tool. Note that a separate 24VDC power supply (current capacity: 80 mA or more) is required when replacing. When connecting the 24VDC power supply, use the "24VDC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
(Electric wire colors: Red (+ side); white (- side))

[Appendix 2] Introduction to Renewal Tool

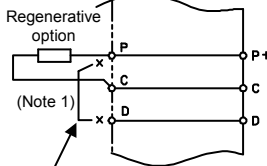
(2) Secondary replacement (when replacing the servo motor after replacing the servo amplifier) /Simultaneous replacement (when replacing the servo amplifier and the servo motor simultaneously)



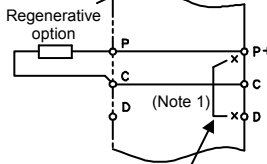
The amplifier capacity is 0.4 kW or less
1-phase 100 V connection



Connection of regenerative option
(for SC-J2S(CP)J4KT02K to 1K)



Make sure to remove the wiring for the built-in regenerative resistor.
(for SC-J2S(CP)J4KT3K)



Make sure to remove the wire between P and D.

No.	Product name	
①	Servo amplifier	*1,2
②	Servo motor	*1
③	Renewal kit	*2
④	Encoder conversion cable	*2
⑤	Control signal conversion cable	*2
⑥	Monitor conversion cable	*2
⑦	24VDC power supply connection cable	*2
⑧	Power supply conversion cable on the motor side	
⑨	Encoder conversion cable on the motor side	
⑩	Brake conversion cable on the motor side	

*1: Manufactured by Mitsubishi Electric.

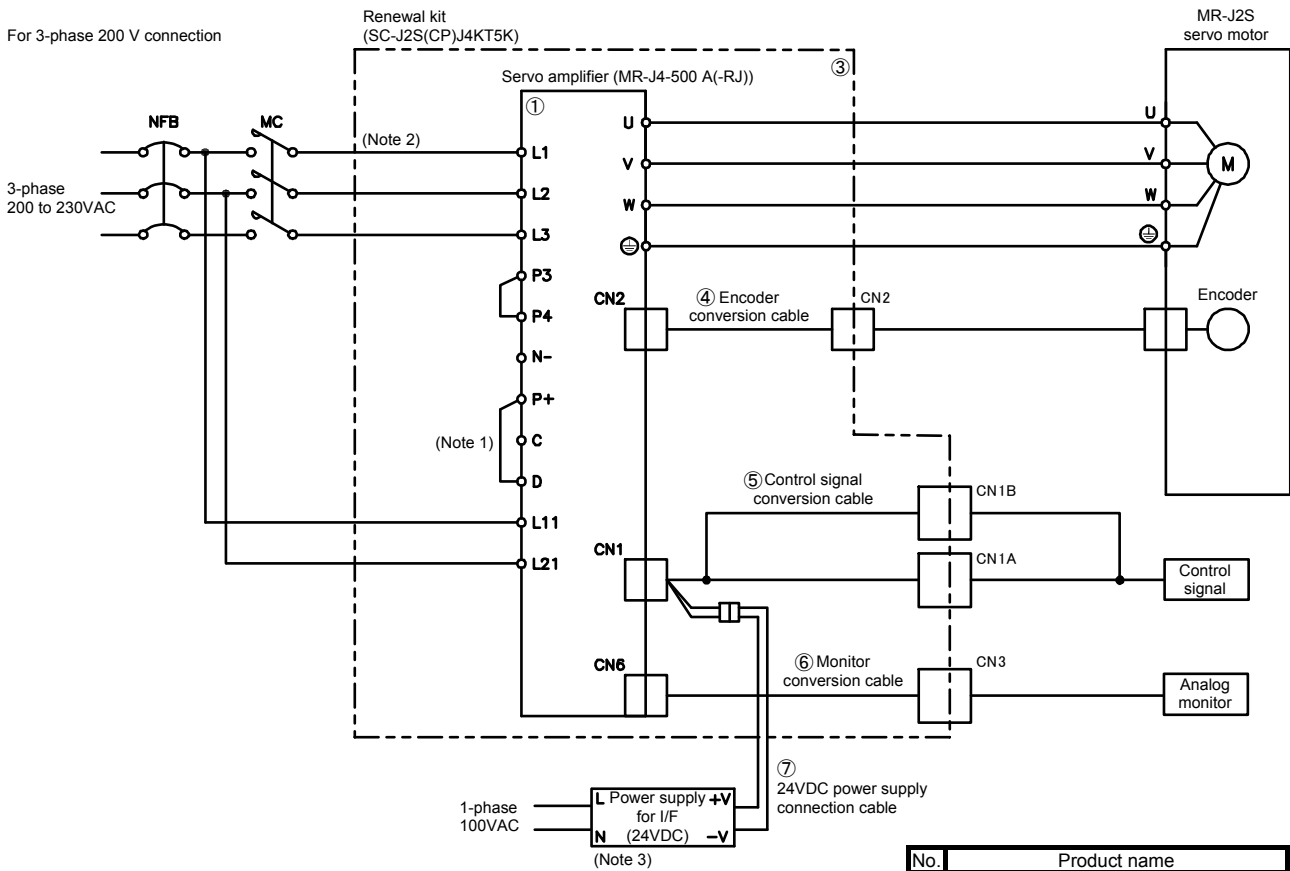
*2: For secondary replacement, replacement finished through the primary replacement

- Note 1. When using the regenerative option, make sure to remove the wiring or the short-circuit bar between P and D, connect with the wiring between the renewal kit and the servo amplifier, and mount the regenerative option between P and C. Ensure the connection destinations are correct. The servo amplifier may malfunction if the connection destinations are incorrect.
2. The N terminal of TE2 is limited to SC-J2S(CP)J4KT1K and 3K. There is no D terminal wiring for SC-J2S(CP)J4KT3K.
3. Unnecessary if electromagnetic brakes are not installed.
4. Required only when the internal power supply (24VDC) for the I/F is used in the existing MR-J2S servo amplifier. Not included with the renewal tool. Note that a separate 24VDC power supply (current capacity: 80 mA or more) is required when replacing. When connecting the 24VDC power supply, use the "24VDC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
(Electric wire colors: Red (+ side); white (- side))

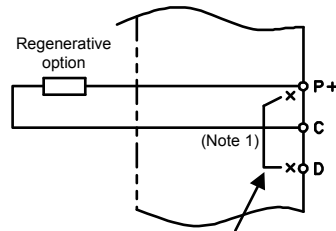
[Appendix 2] Introduction to Renewal Tool

5.2 SC-J2S(CP)J4KT5K

(1) Primary replacement (when replacing the servo amplifier only)



Connection of regenerative option (for SC-J2S(CP)J4KT5K)



Make sure to remove the short-circuit bar between P and D.

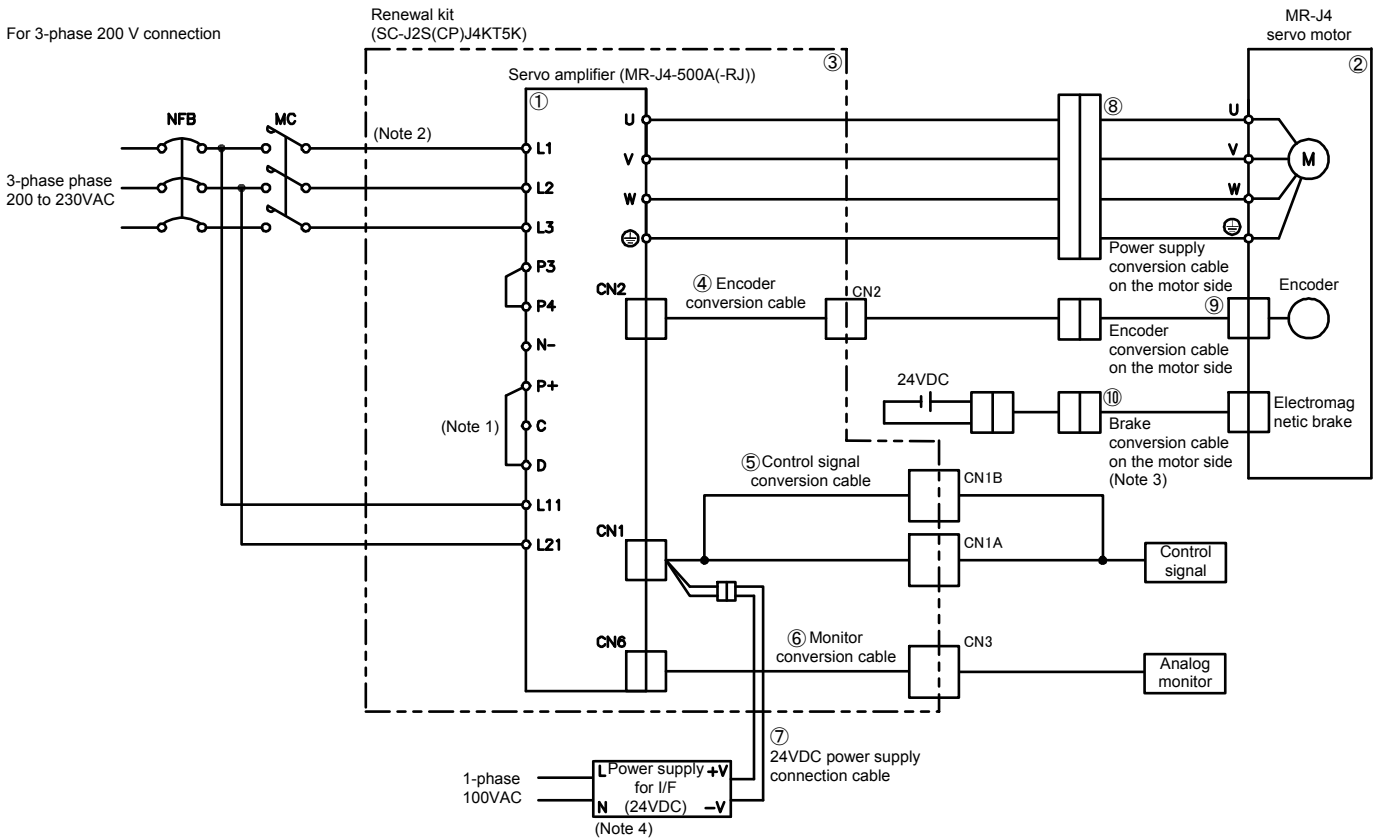
No.	Product name	
①	Servo amplifier	*1
②	Servo motor	*1
③	Renewal kit	
④	Encoder conversion cable	
⑤	Control signal conversion cable	
⑥	Monitor conversion cable	
⑦	24VDC power supply connection cable	

*1: Manufactured by Mitsubishi Electric.

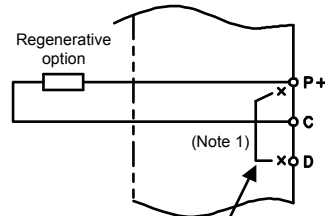
- Note 1. When using the regenerative option, make sure to remove the short-circuit bar between P+ and D, connect with the wiring between the renewal kit and the servo amplifier, and mount the regenerative option between P+ and C. Ensure the connection destinations are correct. The servo amplifier may malfunction if the connection destinations are incorrect.
2. There is no conversion terminal block in the SC-J2S(CP)J4KT5K renewal kit. Directly connect to the MR-J4 servo amplifier.
3. Required only when the internal power supply (24VDC) for the I/F is used in the existing MR-J2S servo amplifier. Not included with the renewal tool. Note that a separate 24VDC power supply (current capacity: 80 mA or more) is required when replacing. When connecting the 24VDC power supply, use the "24VDC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
(Electric wire colors: Red (+ side); white (- side))

[Appendix 2] Introduction to Renewal Tool

(2) Secondary replacement (when replacing the servo motor after replacing the servo amplifier) /Simultaneous replacement (when replacing the servo amplifier and the servo motor simultaneously)



Connection of regenerative option (for SC-J2S(CP)J4KT5K)



Make sure to remove the short-circuit bar between P and D.

No.	Product name	
①	Servo amplifier	*1,2
②	Servo motor	*1
③	Renewal kit	
④	Encoder conversion cable	*2
⑤	Control signal conversion cable	*2
⑥	Monitor conversion cable	*2
⑦	24VDC power supply connection cable	*2
⑧	Power supply conversion cable on the motor side	
⑨	Encoder conversion cable on the motor side	
⑩	Brake conversion cable on the motor side	

*1: Manufactured by Mitsubishi Electric.

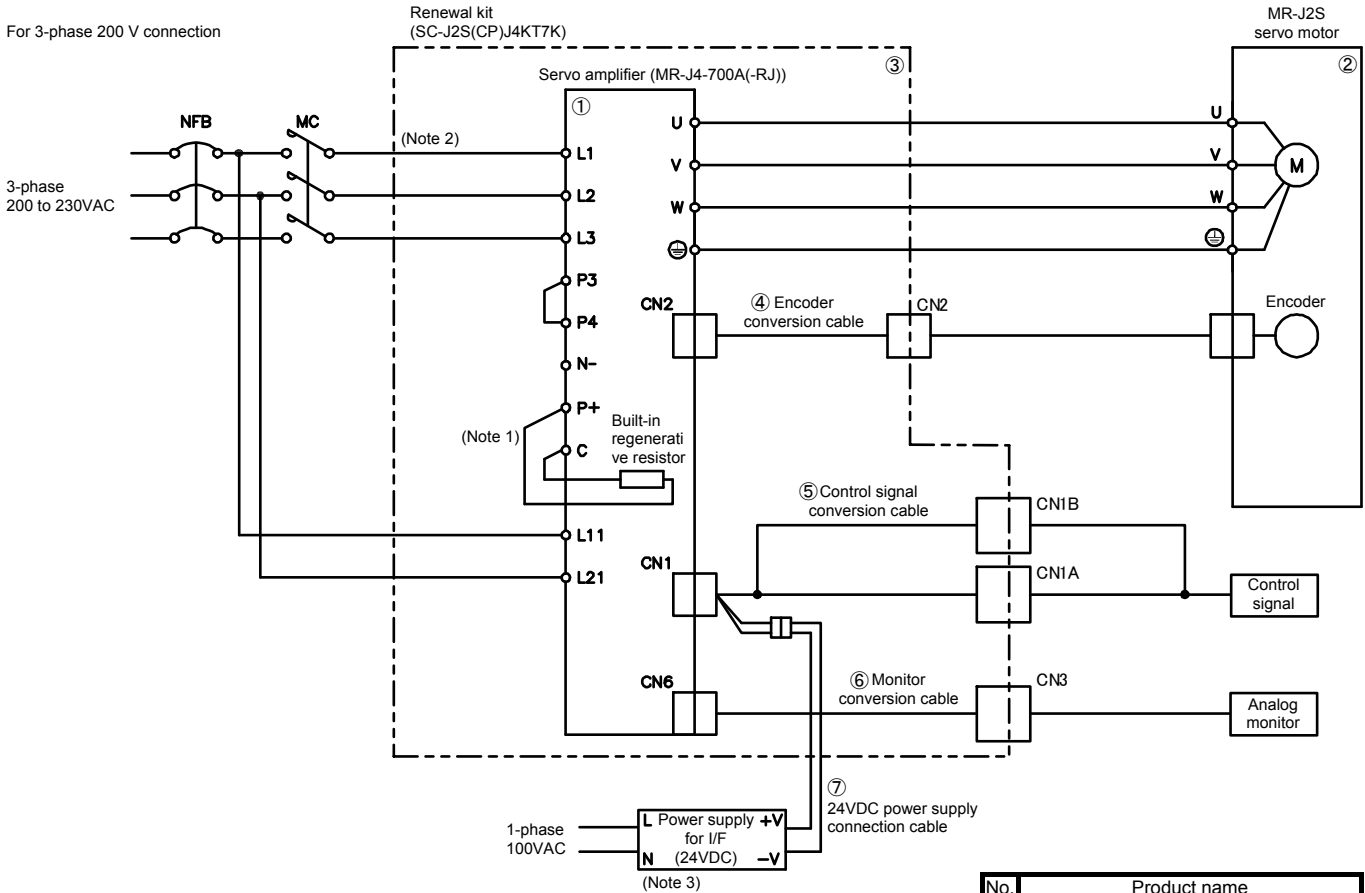
*2: For secondary replacement, replacement finished through the primary replacement

- Note 1. When using the regenerative option, make sure to remove the short-circuit bar between P+ and D, connect with the wiring between the renewal kit and the servo amplifier, and mount the regenerative option between P+ and C. Ensure the connection destinations are correct. The servo amplifier may malfunction if the connection destinations are incorrect.
2. There is no conversion terminal block in the SC-J2S(CP)J4KT5K renewal kit. Directly connect to the MR-J4 servo amplifier.
3. Unnecessary if electromagnetic brakes are not installed.
4. Required only when the internal power supply (24VDC) for the I/F is used in the existing MR-J2S servo amplifier. Not included with the renewal tool. Note that a separate 24VDC power supply (current capacity: 80 mA or more) is required when replacing. When connecting the 24VDC power supply, use the "24VDC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
(Electric wire colors: Red (+ side); white (- side))

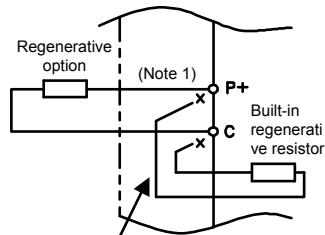
[Appendix 2] Introduction to Renewal Tool

5.3 SC-J2S(CP)J4KT7K

(1) Primary replacement (when replacing the servo amplifier only)



Connection of regenerative option (for SC-J2S(CP)J4KT7K)



Make sure to remove the wiring for the built-in regenerative resistor.

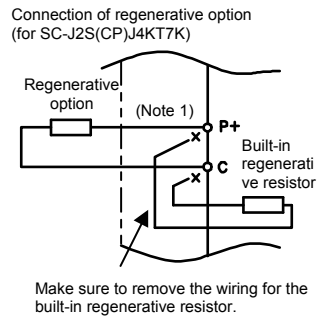
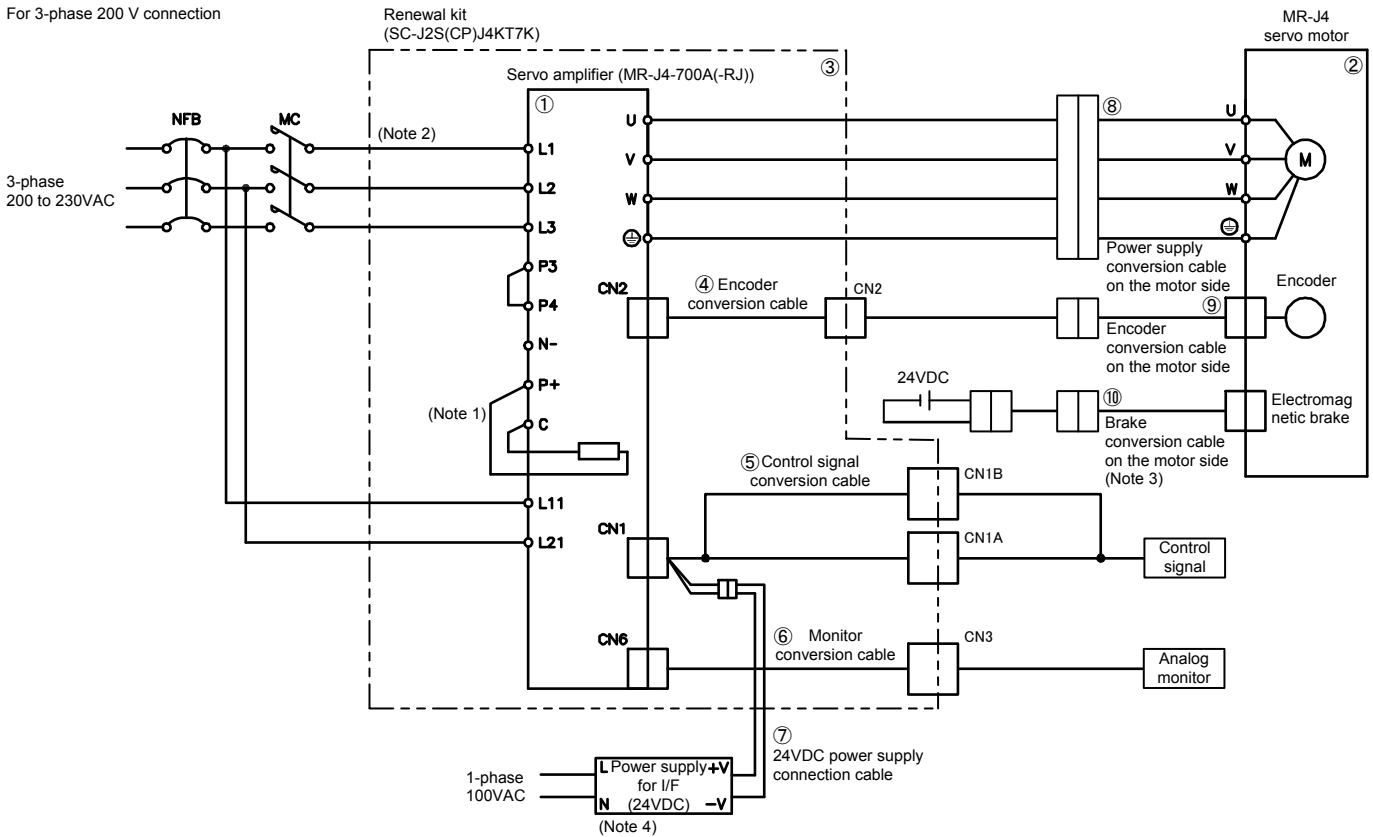
No.	Product name	
①	Servo amplifier	*1
②	Servo motor	*1
③	Renewal kit	
④	Encoder conversion cable	
⑤	Control signal conversion cable	
⑥	Monitor conversion cable	
⑦	24VDC power supply connection cable	

*1: Manufactured by Mitsubishi Electric.

- Note 1. When using the regenerative option, make sure to remove the wiring for the regenerative resistor built in to the servo amplifier, and mount the regenerative option between P+ and C. Ensure the connection destinations are correct. The servo amplifier may malfunction if the connection destinations are incorrect.
2. There is no conversion terminal block in the SC-J2S(CP)J4KT7K renewal kit. Directly connect to the MR-J4 servo amplifier.
3. Required only when the internal power supply (24VDC) for the I/F is used in the existing MR-J2S servo amplifier. Not included with the renewal tool. Note that a separate 24VDC power supply (current capacity: 80 mA or more) is required when replacing. When connecting the 24VDC power supply, use the "24VDC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
(Electric wire colors: Red (+ side); white (- side))

[Appendix 2] Introduction to Renewal Tool

(2) Secondary replacement (when replacing the servo motor after replacing the servo amplifier) /Simultaneous replacement (when replacing the servo amplifier and the servo motor simultaneously)



Make sure to remove the wiring for the built-in regenerative resistor.

No.	Product name	
①	Servo amplifier	*1,2
②	Servo motor	*1
③	Renewal kit	
④	Encoder conversion cable	*2
⑤	Control signal conversion cable	*2
⑥	Monitor conversion cable	*2
⑦	24VDC power supply connection cable	*2
⑧	Power supply conversion cable on the motor side	
⑨	Encoder conversion cable on the motor side	
⑩	Brake conversion cable on the motor side	

*1: Manufactured by Mitsubishi Electric.
*2: For secondary replacement, replacement finished through the primary replacement

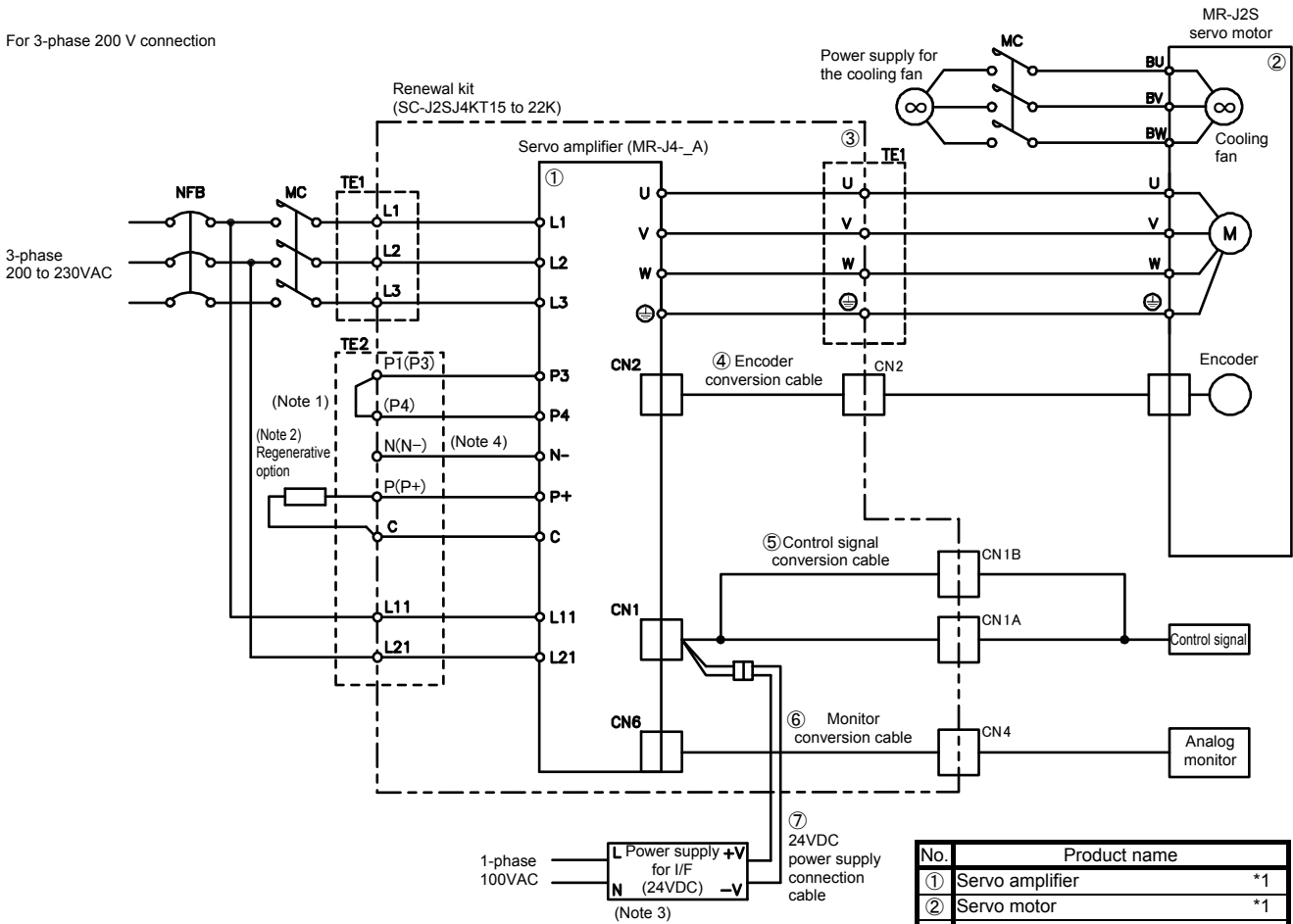
- Note 1. When using the regenerative option, make sure to remove the wiring for the regenerative resistor built in to the servo amplifier, and mount the regenerative option between P+ and C. Ensure the connection destinations are correct. The servo amplifier may malfunction if the connection destinations are incorrect.
2. There is no conversion terminal block in the SC-J2S(CP)J4KT7K renewal kit. Directly connect to the MR-J4 servo amplifier.
3. Unnecessary if electromagnetic brakes are not installed.
4. Required only when the internal power supply (24VDC) for the I/F is used in the existing MR-J2S servo amplifier. Not included with the renewal tool. Note that a separate 24VDC power supply (current capacity: 80 mA or more) is required when replacing. When connecting the 24VDC power supply, use the "24VDC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
(Electric wire colors: Red (+ side); white (- side))

[Appendix 2] Introduction to Renewal Tool

5.4 SC-J2SJ4KT15K, 22K

(1) Primary replacement (when replacing the servo amplifier only)

For 3-phase 200 V connection



No.	Product name	
①	Servo amplifier	*1
②	Servo motor	*1
③	Renewal kit	
④	Encoder conversion cable	
⑤	Control signal conversion cable	
⑥	Monitor conversion cable	
⑦	24VDC power supply connection cable	

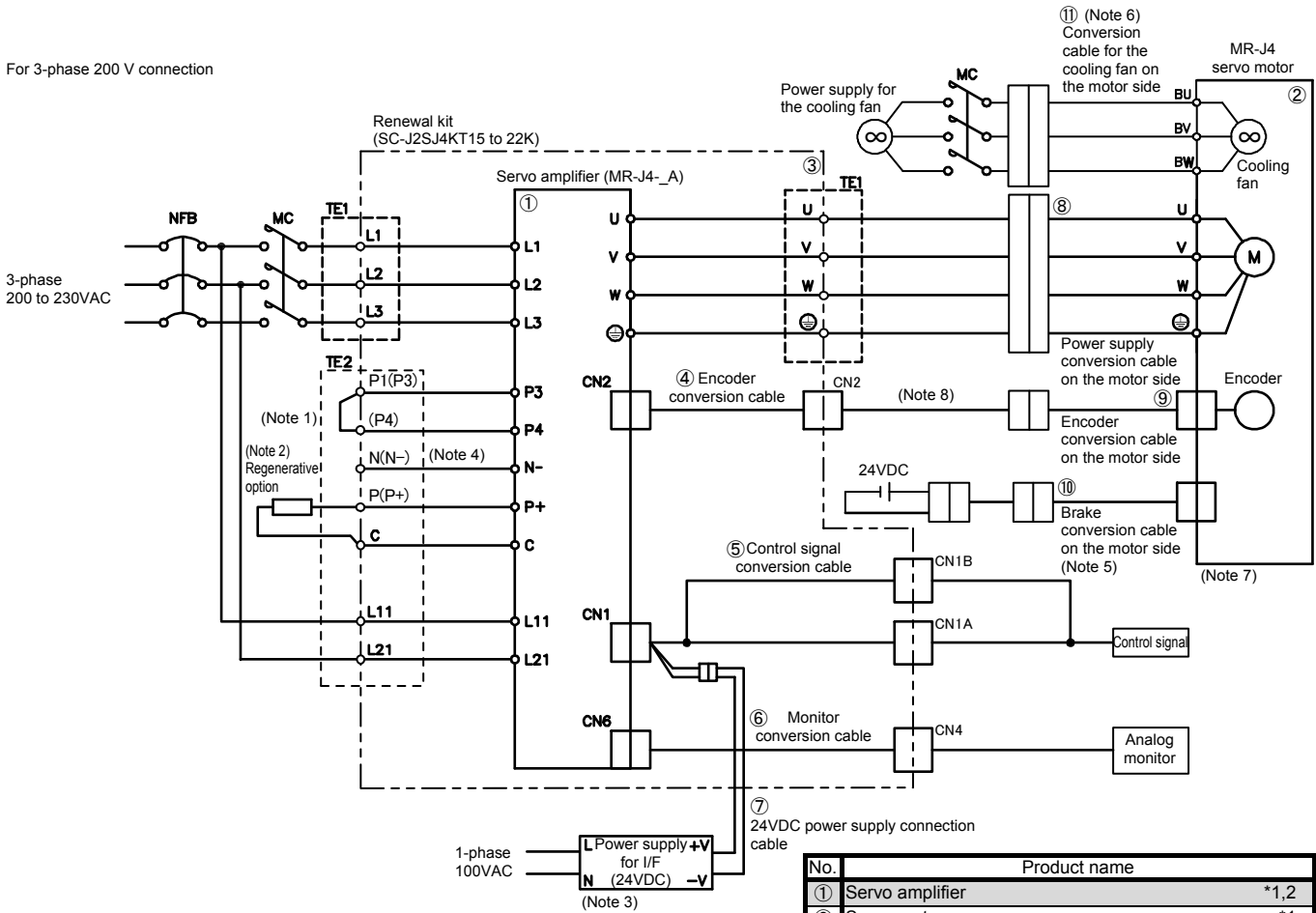
*1: Manufactured by Mitsubishi Electric.

- Note 1. Make sure to connect between P3 and P4. When using the power factor improving DC reactor, remove the short circuit bar between P3 and P4 before connection.
2. When using the regenerative option, make sure to mount the regenerative option between P+ and C. Ensure the connection destinations are correct. The servo amplifier may malfunction if the connection destinations are incorrect.
3. Required only when the internal power supply (24VDC) for the I/F is used in the existing MR-J2S-_A_ servo amplifier. Not included with the renewal tool. Note that a separate 24VDC power supply (current capacity: 80 mA or more) is required when replacing.
 When connecting the 24VDC power supply, use the "24VDC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
 (Electric wire colors: Red (+ side); white (- side))
4. When connecting a power regenerative converter (FR-RC-_K) and a brake unit (FR-BU2-_K), connect between P+ and N-. Make sure to remove the built-in regenerative resistor or the regenerative option.

[Appendix 2] Introduction to Renewal Tool

(2) Secondary replacement (when replacing the servo motor after replacing the servo amplifier) /Simultaneous replacement (when replacing the servo amplifier and the servo motor simultaneously)

For 3-phase 200 V connection



No.	Product name	
①	Servo amplifier	*1,2
②	Servo motor	*1
③	Renewal kit	
④	Encoder conversion cable	*2
⑤	Control signal conversion cable	*2
⑥	Monitor conversion cable	*2
⑦	24 VDC power supply connection cable	*2
⑧	Power supply conversion cable on the motor side	
⑨	Encoder conversion cable on the motor side	
⑩	Brake conversion cable on the motor side	
⑪	Conversion cable for the cooling fan on the motor side	

*1: Manufactured by Mitsubishi Electric.

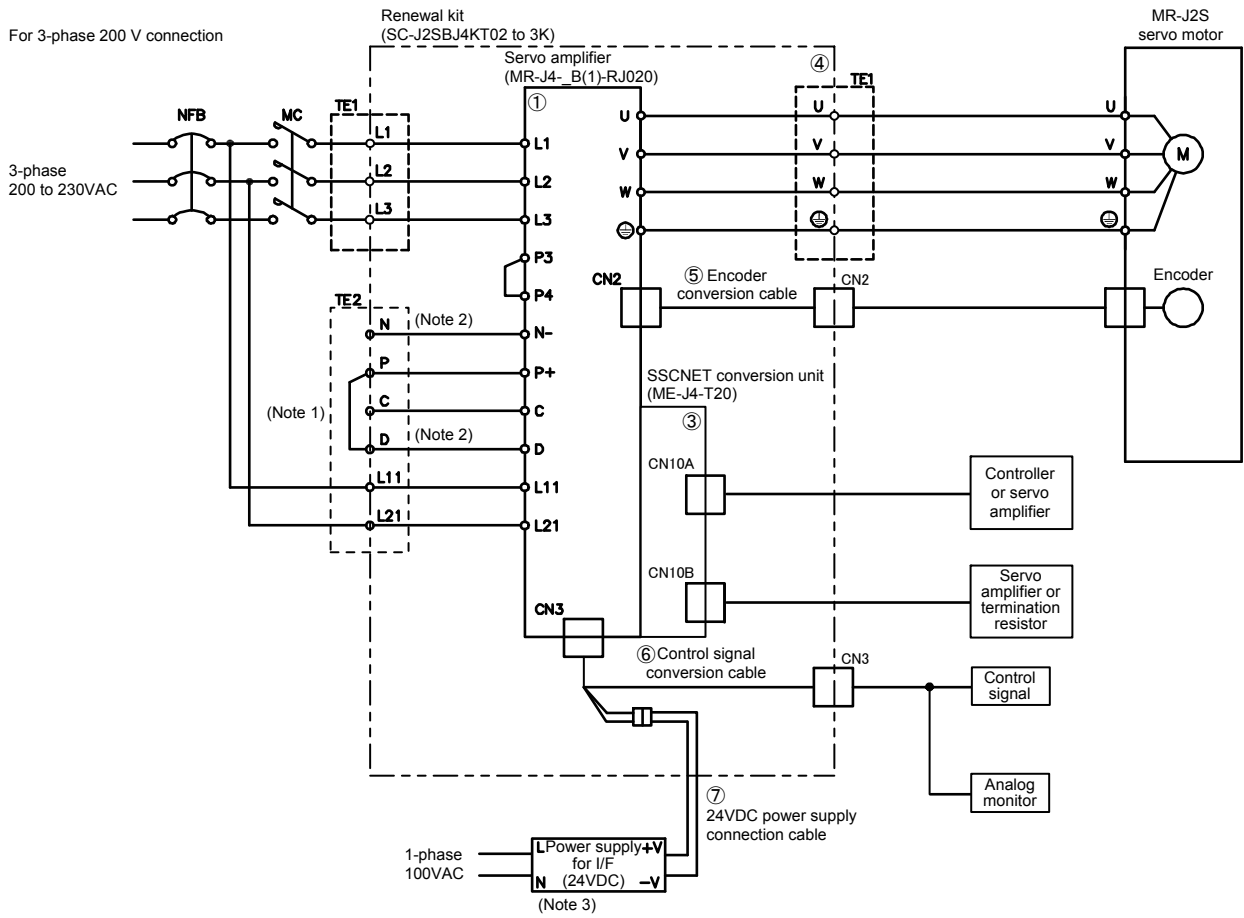
*2: For secondary replacement, replacement finished through the primary replacement

- Note 1. Make sure to connect between P3 and P4. When using the power factor improving DC reactor, remove the short circuit bar between P3 and P4 before connection.
2. When using the regenerative option, make sure to mount the regenerative option between P+ and C. Ensure the connection destinations are correct. If the connection destinations are incorrect, the servo amplifier may malfunction
3. Required only when the internal power supply (24VDC) for the I/F is used in the existing MR-J2S- _A_ servo amplifier. Not included with the renewal tool. Note that a separate 24VDC power supply (current capacity: 80 mA or more) is required when replacing.
When connecting the 24VDC power supply, use the "24VDC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
(Electric wire colors: Red (+ side); white (- side))
4. When connecting a power regenerative converter (FR-RC- _K) and a brake unit (FR-BU2- _K), connect between P+ and N-. Make sure to remove the built-in regenerative resistor or the regenerative option.
5. Unnecessary if electromagnetic brakes are not installed.
6. Required for the HG-JR22K1M motor only. There is no cooling fan for the HG-JR11K1M or HG-JR15K1M motor. Because the existing wiring becomes unnecessary, insulate as needed.
7. There is no cooling fan for the HG-JR11K1M or HG-JR15K1M motor. Because the existing wiring will become unnecessary, terminate the cables.
8. After replacing with the HG-JR22K1M, HG-JR30K1M, HG-JR37K1M, HG-JR45K1M or HG-JR55K1M motor, a new encoder cable is required to be laid. Contact a sales representative if a new cable required.
- * When using an existing encoder cable, an alarm No. AL46.3 (thermistor disconnected error) occurs.

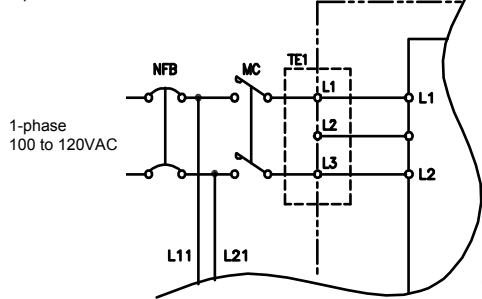
[Appendix 2] Introduction to Renewal Tool

5.5 SC-J2SBJ4KT02K to 3K

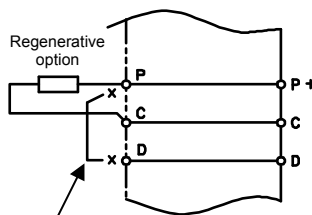
(1) Primary replacement (when replacing the servo amplifier only)



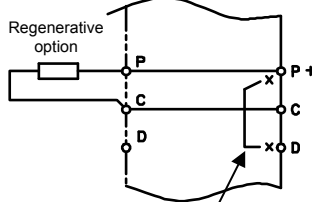
The amplifier capacity is 0.4 kW or less
1-phase 100 V connection



Connection of regenerative option
(for SC-J2SBJ4KT02K to 1K)



Make sure to remove the short-circuit bar between P and D.
(for SC-J2SBJ4KT3K)



Make sure to remove the wire between P and D.

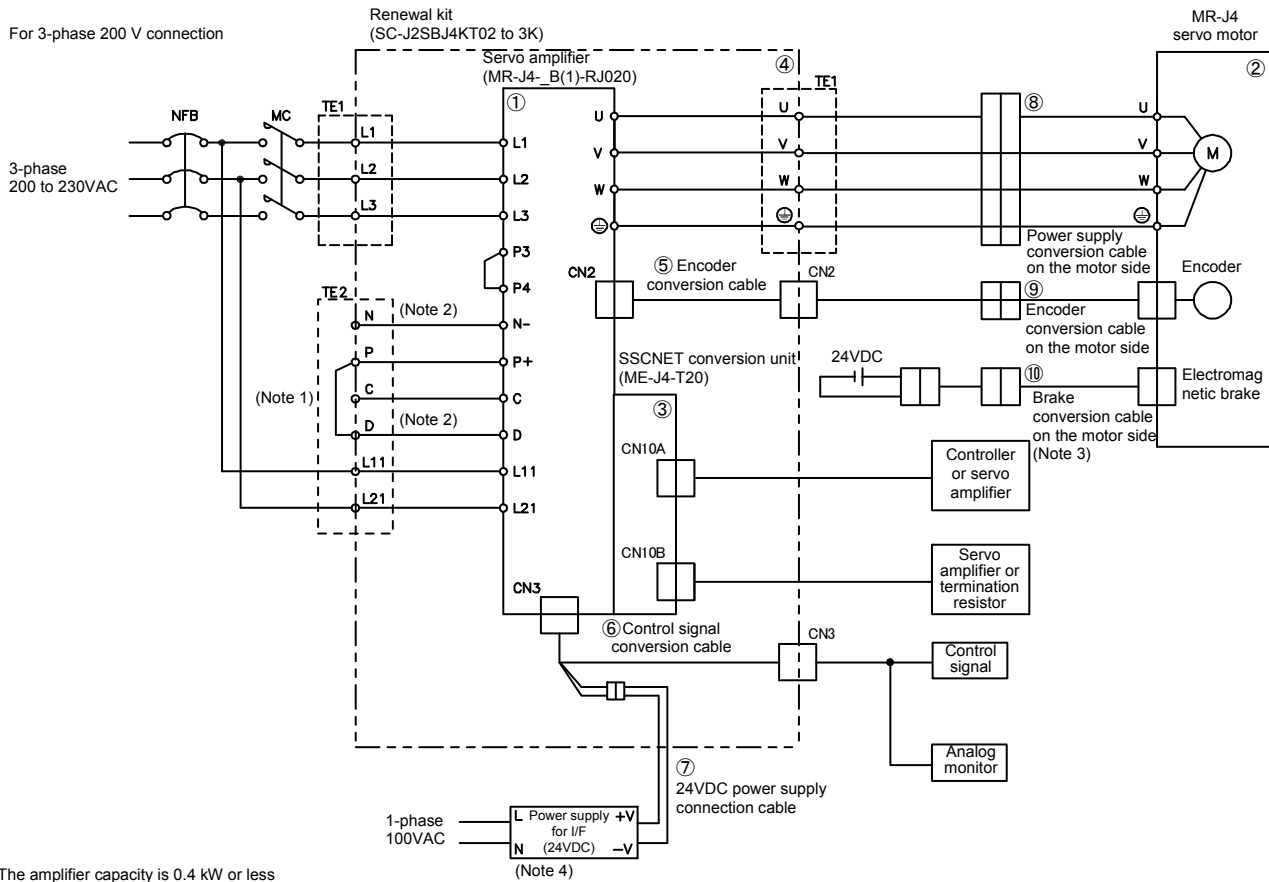
No.	Product name	
①	Servo amplifier	*1
②	Servo motor	*1
③	SSCNET conversion unit	*1
④	Renewal kit	
⑤	Encoder conversion cable	
⑥	Control signal conversion cable	
⑦	24VDC power supply connection cable	

*1: Manufactured by Mitsubishi Electric.

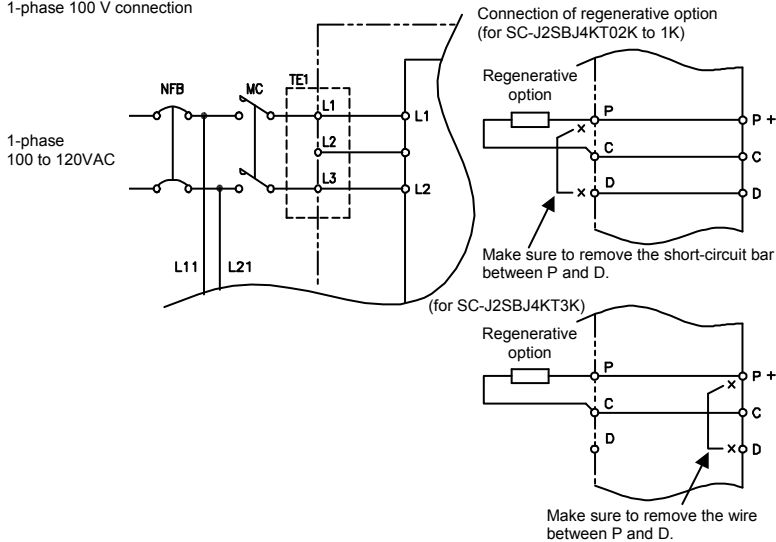
- Note 1. When using the regenerative option, make sure to remove the wiring or the short-circuit bar between P and D, connect with the wiring between the renewal kit and the servo amplifier, and mount the regenerative option between P and C. Ensure the connection destinations are correct. The servo amplifier may malfunction if the connection destinations are incorrect.
- Note 2. The N terminal of TE2 is limited to SC-J2SBJ4KT1K and 3K. There is no D terminal wiring for SC-J2SBJ4KT3K.
- Note 3. Required only when the internal power supply (24VDC) for the I/F is used in the existing MR-J2S-_B_ servo amplifier. Not included with the renewal tool. Note that a separate 24VDC power supply (current capacity: 80 mA or more) is required when replacing.
When connecting the 24VDC power supply, use the "24VDC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
(Electric wire colors: Red (+ side); white (- side))

[Appendix 2] Introduction to Renewal Tool

- (2) Secondary replacement (when replacing the servo motor after replacing the servo amplifier)
 /Simultaneous replacement (when replacing the servo amplifier and the servo motor simultaneously)



The amplifier capacity is 0.4 kW or less
 1-phase 100 V connection



No.	Product name	
①	Servo amplifier	*1,2
②	Servo motor	*1
③	SSCNET conversion unit	*1,2
④	Renewal kit	*2
⑤	Encoder conversion cable	*2
⑥	Control signal conversion cable	*2
⑦	24VDC power supply connection cable	*2
⑧	Power supply conversion cable on the motor side	
⑨	Encoder conversion cable on the motor side	
⑩	Brake conversion cable on the motor side	

*1: Manufactured by Mitsubishi Electric.

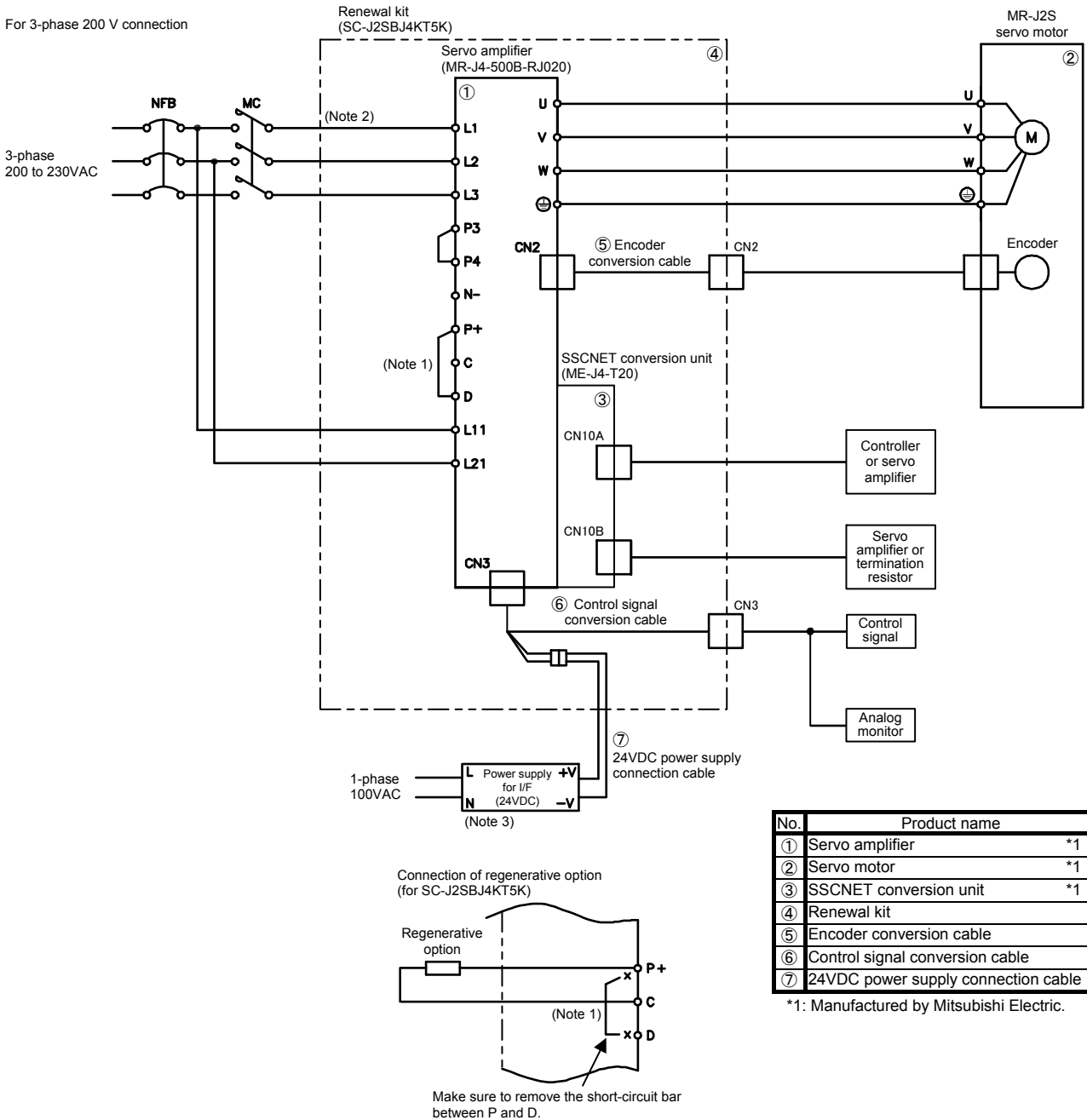
*2: For secondary replacement, replacement finished through the primary replacement

- Note 1. When using the regenerative option, make sure to remove the wiring or the short-circuit bar between P and D, connect with the wiring between the renewal kit and the servo amplifier, and mount the regenerative option between P and C. Ensure the connection destinations are correct. The servo amplifier may malfunction if the connection destinations are incorrect.
2. The N terminal of TE2 is limited to SC-J2SBJ4KT1K and 3K. There is no D terminal wiring for SC-J2SBJ4KT3K.
3. Unnecessary if electromagnetic brakes are not installed.
4. Required only when the internal power supply (24VDC) for the I/F is used in the existing MR-J2S-_B_ servo amplifier. Not included with the renewal tool. Note that a separate 24VDC power supply (current capacity: 80 mA or more) is required when replacing.
 When connecting the 24VDC power supply, use the "24VDC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
 (Electric wire colors: Red (+ side); white (- side))

[Appendix 2] Introduction to Renewal Tool

5.6 SC-J2SBJ4KT5K

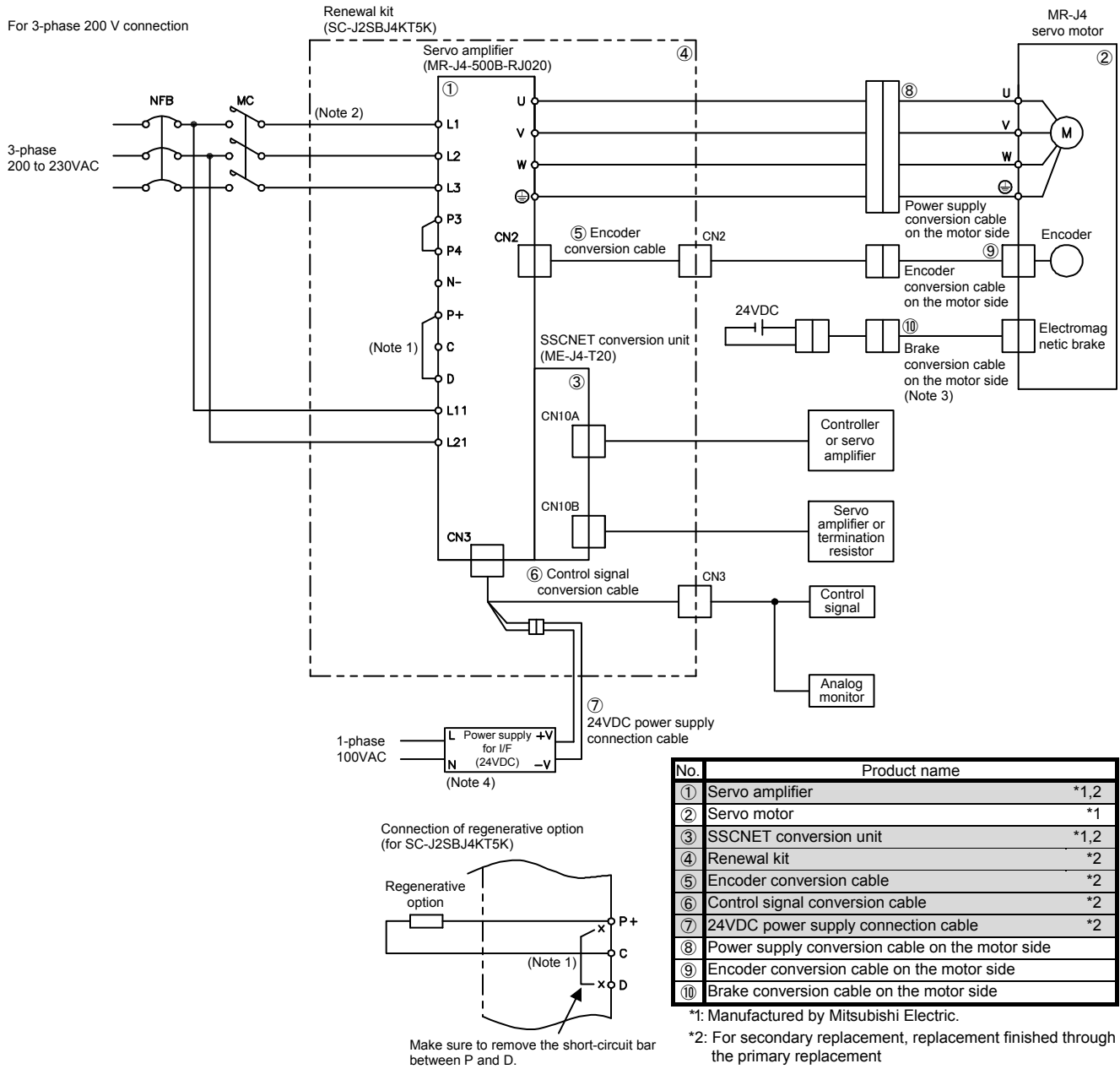
(1) Primary replacement (when replacing the servo amplifier only)



- Note 1. When using the regenerative option, make sure to remove the short-circuit bar between P+ and D, connect with the wiring between the renewal kit and the servo amplifier, and mount the regenerative option between P+ and C. Ensure the connection destinations are correct. The servo amplifier may malfunction if the connection destinations are incorrect.
2. There is no conversion terminal block in the SC-J2SBJ4KT5K renewal kit. Directly connect to the MR-J4 servo amplifier.
3. Required only when the internal power supply (24VDC) for the I/F is used in the existing MR-J2S-B servo amplifier. Not included with the renewal tool. Note that a separate 24VDC power supply (current capacity: 80 mA or more) is required when replacing.
- When connecting the 24VDC power supply, use the "24VDC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
- (Electric wire colors: Red (+ side); white (- side))

[Appendix 2] Introduction to Renewal Tool

- (2) Secondary replacement (when replacing the servo motor after replacing the servo amplifier)
/Simultaneous replacement (when replacing the servo amplifier and the servo motor simultaneously)



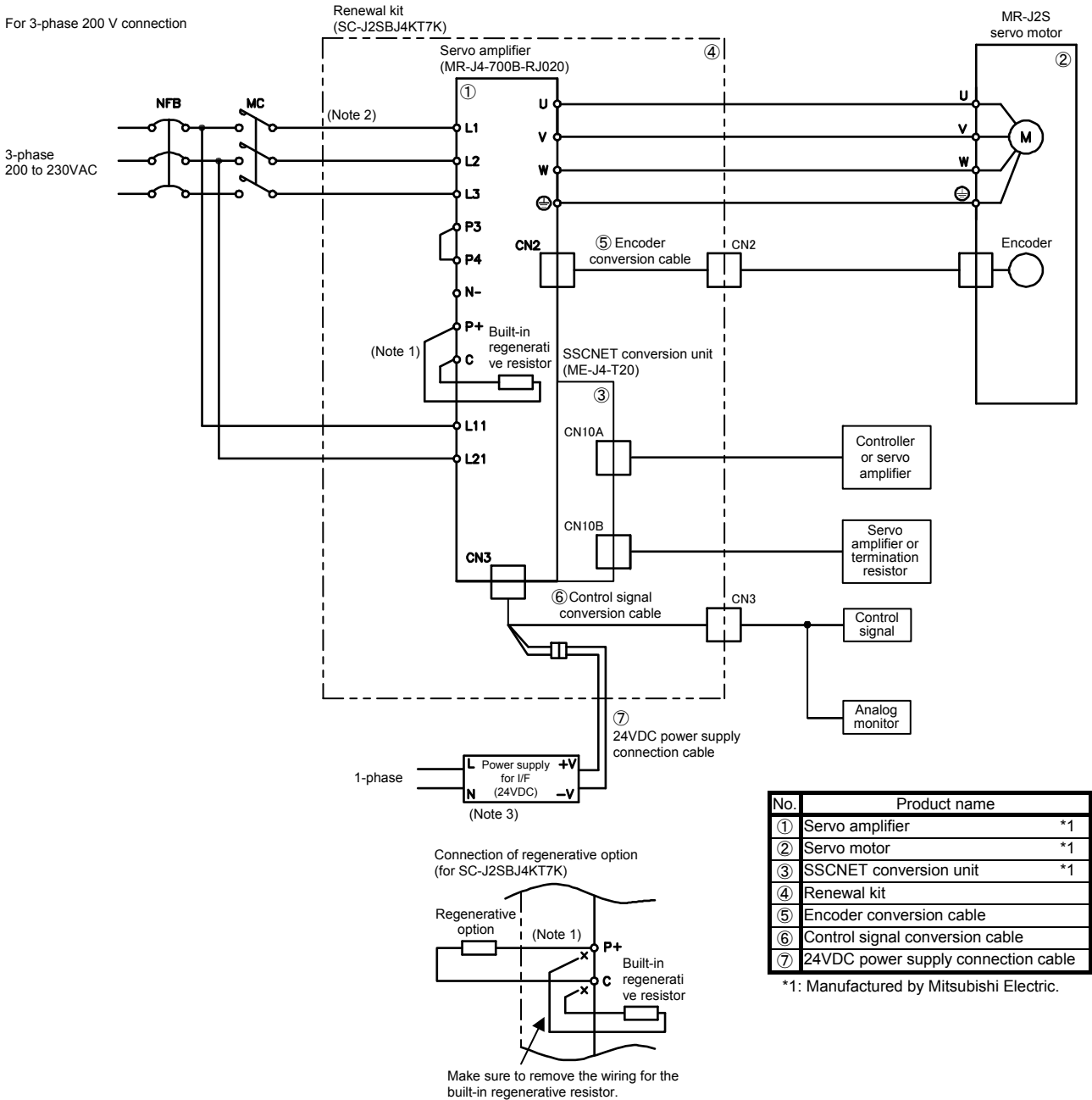
- Note 1. When using the regenerative option, make sure to remove the short-circuit bar between P+ and D, connect with the wiring between the renewal kit and the servo amplifier, and mount the regenerative option between P+ and C. Ensure the connection destinations are correct. The servo amplifier may malfunction if the connection destinations are incorrect.
2. There is no conversion terminal block in the SC-J2SBJ4KT5K renewal kit. Directly connect to the MR-J4 servo amplifier.
3. Unnecessary if electromagnetic brakes are not installed.
4. Required only when the internal power supply (24VDC) for the I/F is used in the existing MR-J2S- B _ servo amplifier. Not included with the renewal tool. Note that a separate 24VDC power supply (current capacity: 80 mA or more) is required when replacing.
When connecting the 24VDC power supply, use the "24VDC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
(Electric wire colors: Red (+ side); white (- side))

[Appendix 2] Introduction to Renewal Tool

5.7 SC-J2SBJ4KT7K

(1) Primary replacement (when replacing the servo amplifier only)

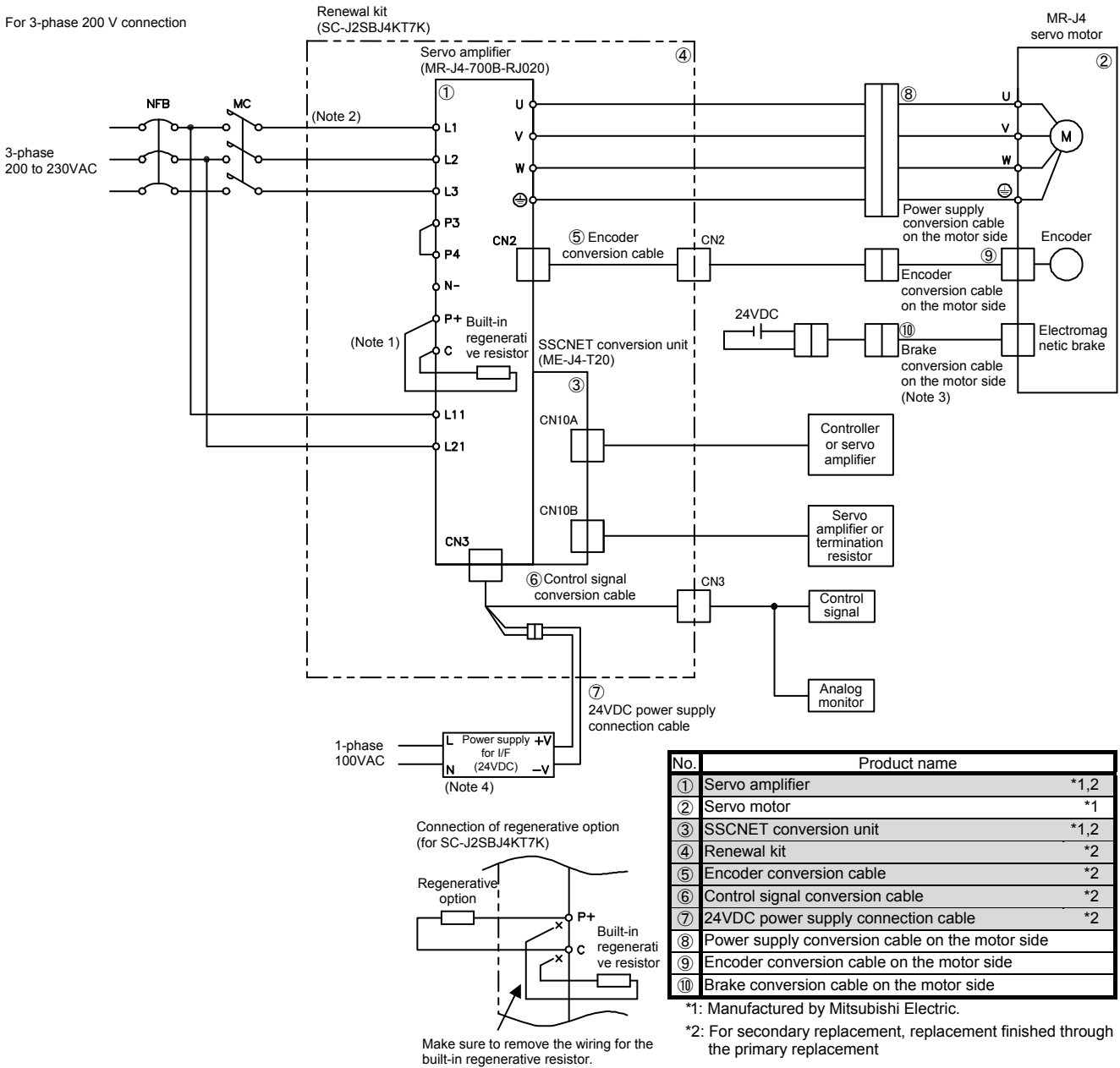
For 3-phase 200 V connection



- Note 1. When using the regenerative option, make sure to remove the wiring for the regenerative resistor built in to the servo amplifier, and mount the regenerative option between P+ and C. Ensure the connection destinations are correct. The servo amplifier may malfunction if the connection destinations are incorrect.
2. There is no conversion terminal block in the SC-J2SBJ4KT7K renewal kit. Directly connect to the MR-J4 servo amplifier.
3. Required only when the internal power supply (24VDC) for the I/F is used in the existing MR-J2S-_B_ servo amplifier. Not included with the renewal tool. Note that a separate 24VDC power supply (current capacity: 80 mA or more) is required when replacing.
- When connecting the 24VDC power supply, use the "24VDC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
- (Electric wire colors: Red (+ side); white (- side))

[Appendix 2] Introduction to Renewal Tool

- (2) Secondary replacement (when replacing the servo motor after replacing the servo amplifier)
 /Simultaneous replacement (when replacing the servo amplifier and the servo motor simultaneously)



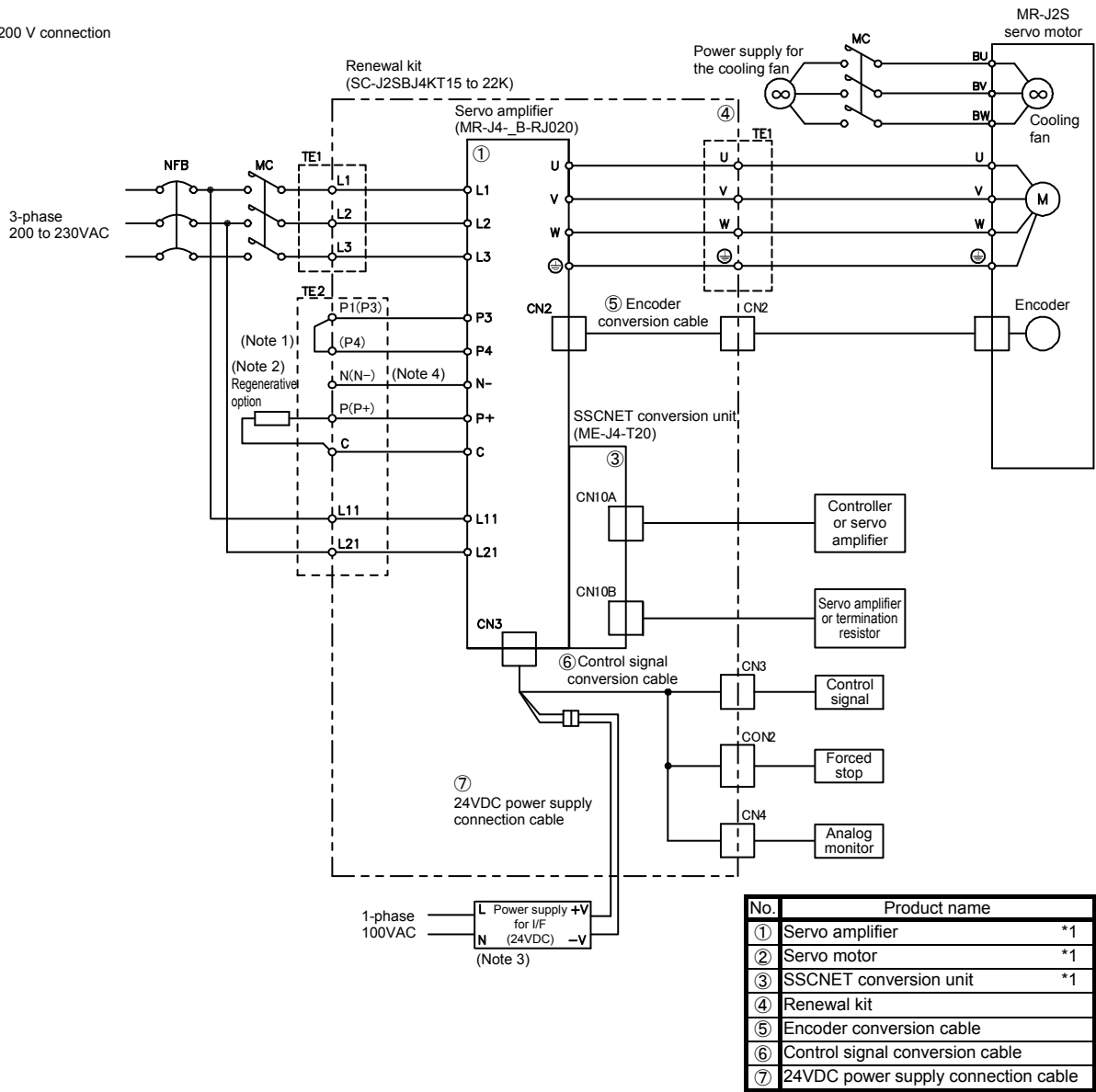
- Note 1. When using the regenerative option, make sure to remove the wiring for the regenerative resistor built in to the servo amplifier, and mount the regenerative option between P+ and C. Ensure the connection destinations are correct. The servo amplifier may malfunction if the connection destinations are incorrect.
2. There is no conversion terminal block in the SC-J2SBJ4KT7K renewal kit. Directly connect to the MR-J4 servo amplifier.
3. Unnecessary if electromagnetic brakes are not installed.
4. Required only when the internal power supply (24VDC) for the I/F is used in the existing MR-J2S-_B_ servo amplifier. Not included with the renewal tool. Note that a separate 24VDC power supply (current capacity: 80 mA or more) is required when replacing.
 When connecting the 24VDC power supply, use the "24VDC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
 (Electric wire colors: Red (+ side); white (- side))

[Appendix 2] Introduction to Renewal Tool

5.8 SC-J2SBJ4KT15K, 22K

(1) Primary replacement (when replacing the servo amplifier only)

For 3-phase 200 V connection



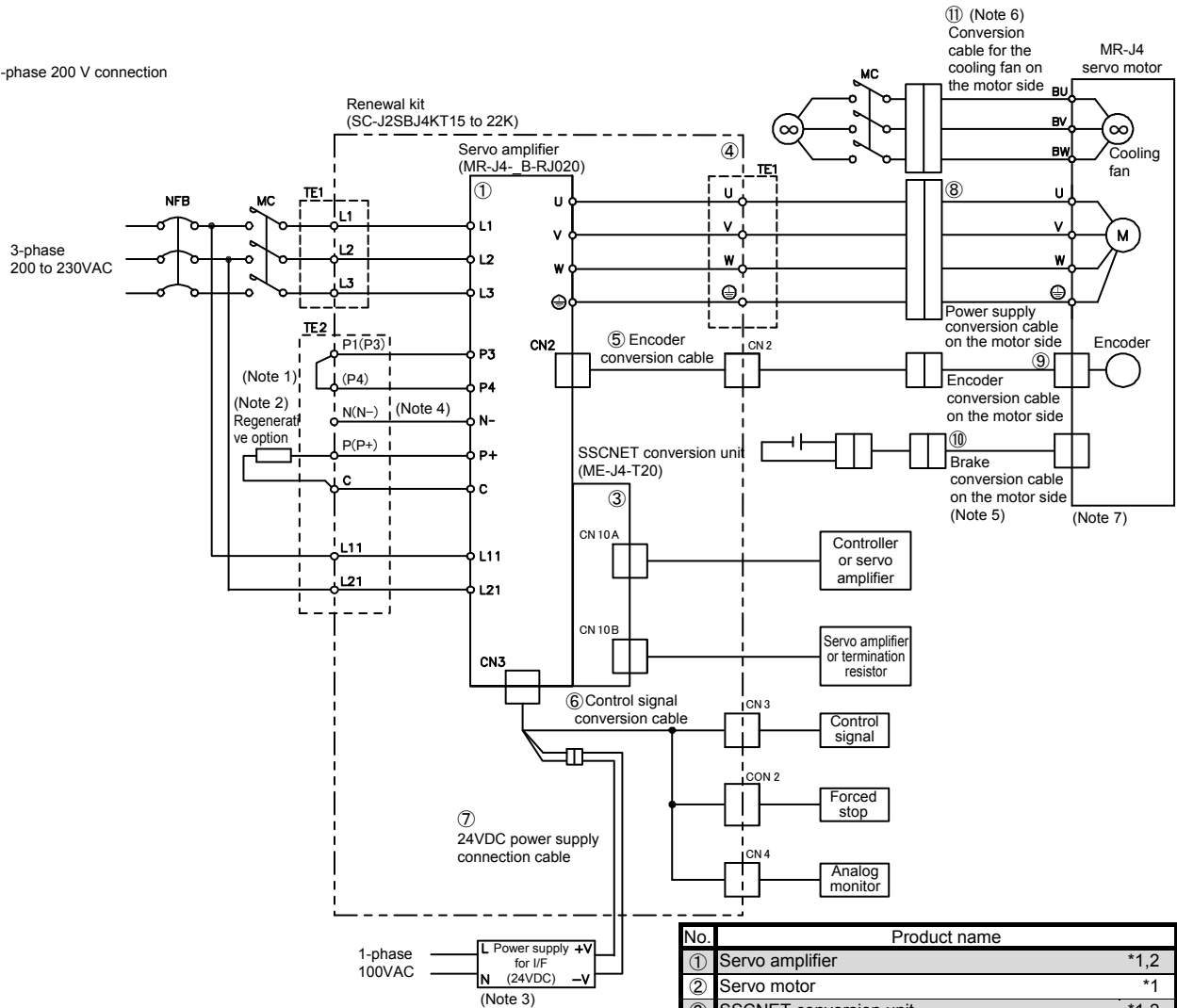
*1: Manufactured by Mitsubishi Electric.

- Note 1. Make sure to connect between P3 and P4. When using the power factor improving DC reactor, remove the short circuit bar between P3 and P4 before connection.
2. When using the regenerative option, make sure to mount the regenerative option between P+ and C. Ensure the connection destinations are correct. The servo amplifier may malfunction if the connection destinations are incorrect.
3. Required only when the internal power supply (24VDC) for the I/F is used in the existing MR-J2S-_B_ servo amplifier. Not included with the renewal tool. Note that a separate 24VDC power supply (current capacity: 80 mA or more) is required when replacing.
 When connecting the 24VDC power supply, use the "24VDC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
 (Electric wire colors: Red (+ side); white (- side))
4. When connecting a power regenerative converter (FR-RC-_K_) and a brake unit (FR-BU2-_K_), connect between P+ and N-. Make sure to remove the built-in regenerative resistor or the regenerative option.

[Appendix 2] Introduction to Renewal Tool

- (2) Secondary replacement (when replacing the servo motor after replacing the servo amplifier)
 /Simultaneous replacement (when replacing the servo amplifier and the servo motor simultaneously)

For 3-phase 200 V connection



Note 1. Make sure to connect between P3 and P4. When using the power factor improving DC reactor, remove the short circuit bar between P3 and P4 before connection.

- When using the regenerative option, make sure to mount the regenerative option between P+ and C. Ensure the connection destinations are correct. The servo amplifier may malfunction if the connection destinations are incorrect.

3. Only when the internal power supply (24VDC) for the I/F is used in the existing MR-J2S-_A servo amplifier
Yes. Not included with the renewal tool. Note that a separate 24VDC power supply (current capacity: 80 mA or more) is required when replacing.

When connecting the 24VDC power supply, use the "24VDC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.

(Electric wire colors: Red (+ side); white (- side))

- When connecting a power regenerative converter (FR-RC-_K) and a brake unit (FR-BU2-_K), connect between P+ and N-. Make sure to remove the built-in regenerative resistor or the regenerative option.
- Unnecessary if electromagnetic brakes are not installed.
- Required for the HG-JR22K1M motor only. There is no cooling fan for the HG-JR11K1M or HG-JR15K1M motor. Because the existing wiring becomes unnecessary, insulate as needed.
- There is no cooling fan for the HG-JR11K1M or HG-JR15K1M motor. Because the existing wiring will become unnecessary, terminate the cables.
- After replacing with the HG-JR22K1M, HG-JR30K1M, HG-JR37K1M, HG-JR45K1M or HG-JR55K1M motor, a new encoder cable is required to be laid. Contact a sales representative if a new cable required.

* When using an existing encoder cable, an alarm No. AL46.3 (thermistor disconnected error) occurs.

[Appendix 2] Introduction to Renewal Tool

6 SPECIFICATIONS

6.1 Standard Specifications

(1) Renewal kit specifications

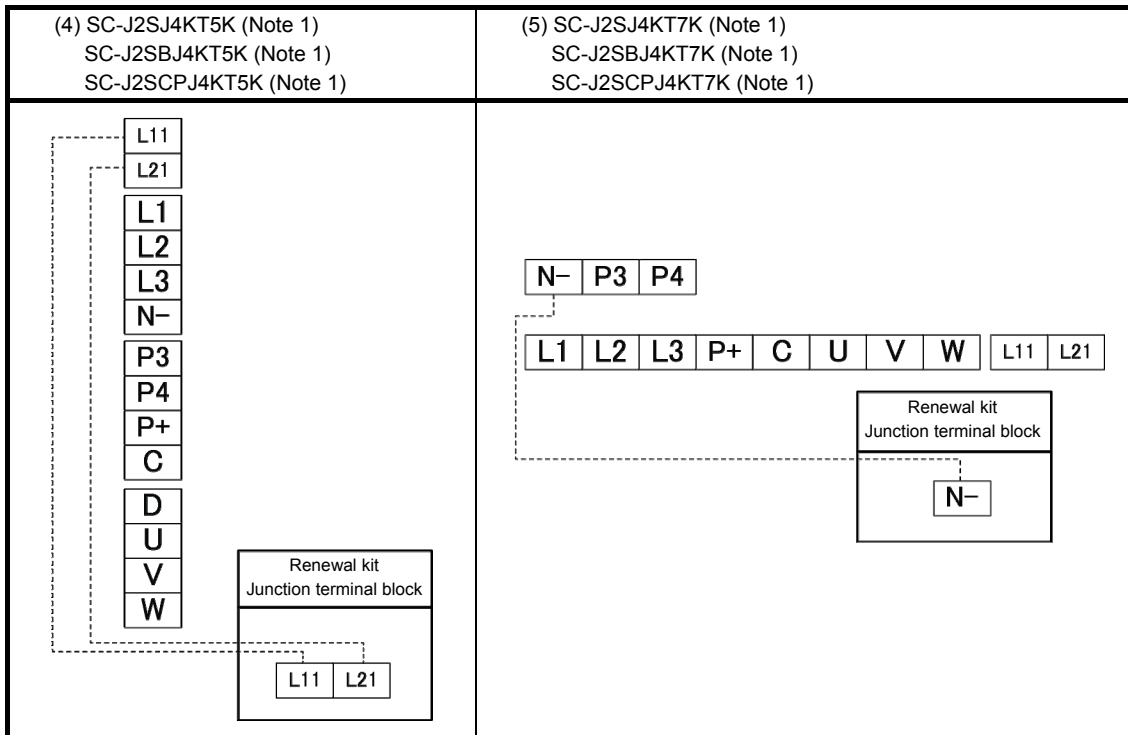
Item		Specifications	
Power supply	Voltage/Frequency (Note 1)	1-phase 100 VAC to 120 VAC, 50/60 Hz. 3-phase 200 VAC to 240 VAC, 50/60 Hz.	
	Permissible voltage fluctuation (Note 1)	1-phase 85 to 127V 3-phase 170VAC to 264VAC.	
	Permissible frequency fluctuation	Within $\pm 5\%$.	
Environment	Ambient temperature	Operation	0 to +55°C (non-freezing).
		Storage	-20 to +65°C (non-freezing).
	Ambient humidity	Operation	90% RH or less (non-condensing).
		Storage	
	Ambience		Indoors (no direct sunlight) and free from corrosive gas, flammable gas, oil mist, dust, and dirt
	Altitude		1000 m or less above sea level.
Vibration		5.9 m/s ² or less, 10 to 55 Hz (Each direction of X, Y, and Z).	

Note 1. Exclude for 400 V, since a terminal block is not included with.

6.2 Terminal Block Specifications

(1) SC-J2SJ4KT02K, 06K SC-J2SBJ4KT02K, 06K SC-J2SCPJ4KT02K, 06K	(2) SC-J2SJ4KT1K SC-J2SBJ4KT1K SC-J2SCPJ4KT1K	(3) SC-J2SJ4KT3K SC-J2SBJ4KT3K SC-J2SCPJ4KT3K																																			
<p>TE1</p> <table border="1"> <tr><td>L₁</td><td>L₂</td><td>L₃</td></tr> <tr><td>U</td><td>V</td><td>W</td></tr> </table> <p>Terminal screw: M4 Tightening torque: 1.2 [N•m]</p> <p>TE2</p> <table border="1"> <tr><td>D</td><td>C</td><td>P</td><td>L₂₁</td><td>L₁₁</td></tr> </table> <p>Plug-in connector type</p>	L ₁	L ₂	L ₃	U	V	W	D	C	P	L ₂₁	L ₁₁	<p>TE1</p> <table border="1"> <tr><td>L₁</td><td>L₂</td><td>L₃</td></tr> <tr><td>U</td><td>V</td><td>W</td></tr> </table> <p>Terminal screw: M4 Tightening torque: 1.2 [N•m]</p> <p>TE2</p> <table border="1"> <tr><td>D</td><td>C</td><td>P</td><td>L₂₁</td><td>L₁₁</td><td>N</td></tr> </table> <p>Plug-in connector type</p>	L ₁	L ₂	L ₃	U	V	W	D	C	P	L ₂₁	L ₁₁	N	<p>TE1</p> <table border="1"> <tr><td>L₁</td><td>L₂</td><td>L₃</td><td>U</td><td>V</td><td>W</td></tr> </table> <p>Terminal screw: M4 Tightening torque: 1.2 [N•m]</p> <p>TE2</p> <table border="1"> <tr><td>L₂₁</td><td>L₁₁</td><td>D</td><td>C</td><td>P</td><td>N</td></tr> </table> <p>Terminal screw: M4 Tightening torque: 1.2 [N•m]</p>	L ₁	L ₂	L ₃	U	V	W	L ₂₁	L ₁₁	D	C	P	N
L ₁	L ₂	L ₃																																			
U	V	W																																			
D	C	P	L ₂₁	L ₁₁																																	
L ₁	L ₂	L ₃																																			
U	V	W																																			
D	C	P	L ₂₁	L ₁₁	N																																
L ₁	L ₂	L ₃	U	V	W																																
L ₂₁	L ₁₁	D	C	P	N																																

[Appendix 2] Introduction to Renewal Tool



Note 1. There is no conversion terminal block for the MR-J2S-500_ and MR-J2S-700_ amplifier because the recommended wiring and screw sizes are the same as for the MR-J4 amplifier. Connect the existing wiring, except for the junction terminal block of the renewal kit mentioned above, directly to the J4 amplifier.

(6) SC-J2SJ4KT15K (Note 2) SC-J2SBJ4KT15K (Note 2)	(7) SC-J2SJ4KT22K (Note 2) SC-J2SBJ4KT22K (Note 2)												
<p>TE1-1</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>L1</td><td>L2</td><td>L3</td><td>U</td><td>V</td><td>W</td> </tr> </table> Terminal screw: M6 Tightening torque: 3.0 [N•m]	L1	L2	L3	U	V	W	<p>TE1-1</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>L1</td><td>L2</td><td>L3</td><td>U</td><td>V</td><td>W</td> </tr> </table> Terminal screw: M8 Tightening torque: 6.0 [N•m]	L1	L2	L3	U	V	W
L1	L2	L3	U	V	W								
L1	L2	L3	U	V	W								
<p>TE1-2</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>P₁(P₃)</td><td>(P₄)</td><td>P(P+)</td><td>C</td><td>/</td><td>N(N-)</td> </tr> </table> Terminal screw: M6 Tightening torque: 3.0 [N•m]	P ₁ (P ₃)	(P ₄)	P(P+)	C	/	N(N-)	<p>TE1-2</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>P₁(P₃)</td><td>(P₄)</td><td>P(P+)</td><td>C</td><td>/</td><td>N(N-)</td> </tr> </table> Terminal screw: M8 Tightening torque: 6.0 [N•m]	P ₁ (P ₃)	(P ₄)	P(P+)	C	/	N(N-)
P ₁ (P ₃)	(P ₄)	P(P+)	C	/	N(N-)								
P ₁ (P ₃)	(P ₄)	P(P+)	C	/	N(N-)								
<p>TE2</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>L₁₁</td><td>L₂₁</td> </tr> </table> Terminal screw: M4 Tightening torque: 1.2 [N•m]	L ₁₁	L ₂₁	<p>TE2</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>L₁₁</td><td>L₂₁</td> </tr> </table> Terminal screw: M4 Tightening torque: 1.2 [N•m]	L ₁₁	L ₂₁								
L ₁₁	L ₂₁												
L ₁₁	L ₂₁												
<p>PE</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td></td><td></td> </tr> </table> Terminal screw: M6 Tightening torque: 3.0 [N•m]			<p>PE</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td></td><td></td> </tr> </table> Terminal screw: M8 Tightening torque: 6.0 [N•m]										

Note 2. The renewal kits for the MR-J2S-11K_, MR-J2S-15K_ and MR-J2S-22K_ amplifiers have a different terminal position than the MR-J2S amplifier. See 3.3.1 for the wiring method.

6.3 Recommended 24VDC Power Supply Specifications for Interface

These are the recommended specifications for a 24VDC power source for interface that is required for renewal.

Make a selection according to the following specifications.

Product name	Specifications
For interface	24VDC ±10%
24VDC power	Power capacity: 80mA or more

[Appendix 2] Introduction to Renewal Tool

7 PARAMETER SETTING

7.1 List of A Type Setting Requisite Parameters

(1) For primary replacement

* The parameters shown below are a minimum number of parameters that need to be set for primary replacement. Depending on the settings of the currently used amplifier, parameters other than these may need to be set. For details, **see Part 2 Section 3.6.**

Parameter number	Setting item	Setting value	Description
* Changing required.			
PA04	Function selection A-1	0000h	Forced stop deceleration function selection To configure the same settings as those for MR-J2S, select "Forced stop deceleration function disabled (EM1)".
PC22	Function selection C-1	_ 1 _ _ h	Serial encoder selection. This setting is for communication with the encoder of MR-J2S. An incorrect setting causes encoder initial communication data error 1 (AL.20.1).
PA09	Auto Tuning Response	8	Auto tuning response setting When replacing, switch the power on after setting the value to "8". * It is necessary to make gain adjustment again when replacing. This setting value is equivalent to the slow response of MR-J2S. Perform adjustment since the gain can be too low for the slow response. For details on how to make gain adjustments, refer to Chapter 6 of the MR-J4 Servo Amplifier Instruction Manual issued by Mitsubishi Electric.
PD27	Output device selection 2 * 11 kW or more, only when using this function	0006h	Dynamic brake interlock (DB) selection When using this function for the MR-J2S servo amplifier of 11 kW or more, set the parameter. Assign a DB signal to pin CN1-48.
PD03 to 14	Input signal device selection	-	When the assignment of the Input/output signal for the existing J2S amplifier, setting is required. For details, refer to section 5.2.1.
* Position control mode only			
PA06	Electronic gear numerator (CMX) (Command input pulse multiplication numerator)	8 (Note 1)	When using an electronic gear, it is necessary to change the setting value. Set the same value as the parameter No. 3 or 4 of for the MR-J2S- A servo amplifier.
PA07	Electronic gear denominator (CDV) (Commanded pulse multiplication denominator)	1 (Note 1)	
PA21	Electronic gear selection	0001h	A setting value for the electronic gear PA06 or PA07 becomes effective.
PA13	Command pulse input form	_ 2 _ _ h	Pulse train filter selection The setting value mentioned at the left side is a command pulse train filter setting equivalent to the MR-J2S- A_ (when setting the differential line driver type). * If it is not set, position mismatch will occur. Make sure to set a filter. In addition, it is necessary to adjust the command pulse logic to the positioning module. For details, refer to section 2.6.5. * An incorrect logic setting causes the motor to not rotate. Make sure to configure the settings.
PA10	In-position range	100 (Note 2)	In-position range Used to set an in-position range per command pulse unit. Set the same value as the parameter No. 5 of for the MR-J2S- A servo amplifier.
* Speed control mode only			
PA01	Control mode	_ _ _ 2h	Select the servo amplifier control mode. Select the speed control mode.
PC12	Analog speed command - Maximum speed	3000 (Note 3)	Analog speed command - Maximum speed
* Torque control mode only			
PA01	Control mode	_ _ _ 4h	Select the servo amplifier control mode. Select the torque control mode.
PC12	Analog speed limit - Maximum speed	3000 (Note 3)	Analog speed limit - Maximum speed
PC13	Analog torque command maximum output	100	Analog torque command maximum output Set the same value as for the MR-J2S- A servo amplifier.
PA15	Encoder output pulses	4 (Note 4)	Used to set the encoder pulses (A-phase and B-phase) output by the servo amplifier.
PC19	Encoder output pulse setting selection	0 _ 1_ h (Note 4)	Encoder output pulse setting selection Used to set the encoder pulses output by the servo amplifier. The setting value at left is according to the dividing ratio setting.

Note 1. The example value shown is for when the electronic gear ratio of an existing servo amplifier is set as "8/1".

2. The example value shown is for when the in-position range of an existing servo amplifier is set as "100".

3. The example value shown is for when the amplifier setting of an existing servo amplifier is set as "3000".

4. The value is for when the output pulse setting of an existing HC-KFS motor (encoder resolution: 131072 pulses/rev) is "Dividing ratio: 1/4".

[Appendix 2] Introduction to Renewal Tool

(2) For secondary replacement

- * The parameters shown in this section are a minimum number of parameters that need to be set for secondary replacement. Depending on the settings of the currently used amplifier, parameters other than these may need to be set. For details, **see Part 2 Section 3.6**.

Parameter number	Setting item	Setting value		Description
		Before changing (Note 1)	After changing	
* Changing required.				
PC22	Function selection C-1	_ 1 _ _ h	_ 0 _ _ h	Serial encoder selection. This setting is for communication with the encoder of MR-J4. An incorrect setting causes encoder initial communication data error 1 (AL.20.1).
* Position control mode only				
PA21	Electronic gear selection	0001h	3001h	J2S electronic gear setting value compatibility mode * For PA06 or PA07, the value when performing the primary replacement is required to be maintained. Magnify the electronic gear setting value by 32 times.
PA10	In-position range	100	3200	Set the range of droop pulses occurred when outputting a positioning completion signal (INP). Set the value as magnified by 32 times of the parameter No. 5 for the MR-J2S- A servo amplifier.
* Speed control mode only				
PC12	Analog speed command - Maximum speed	0	3000	Analog speed command - Maximum speed The setting value at left is for when the HC-SFS53 motor is replaced with the HG-SR52 motor.
* Torque control mode only				
PC12	Analog speed limit - Maximum speed	0	3000	Analog speed limit - Maximum speed The setting value at left is for when the HC-SFS53 motor is replaced with the HG-SR52 motor.
* When using encoder output pulses				
PA15	Encoder output pulses	4 (Note 3)	128	Used to set the encoder pulses (A-phase and B-phase) output by the servo amplifier. An output pulse is required to be set.
PC19	Encoder output pulse setting selection	0 _ 1 _ h (Note 3)	1 _ 1 _ h	Encoder output pulse setting selection Used to set the encoder pulses output by the servo amplifier. The setting value at left is according to the dividing ratio setting.

Note 1. Setting example at primary replacement.

- The value is for when the electronic gear setting of an existing servo motor (encoder resolution: 131072 pulses/rev) is "8/1".
- The value is for when the output pulse setting of an existing HC-KFS motor (encoder resolution: 131072 pulses/rev) is "Dividing ratio: 1/4".

[Appendix 2] Introduction to Renewal Tool

(3) For simultaneous replacement

* The parameters shown below are a minimum number of parameters that need to be set for simultaneous replacement. Depending on the settings of the currently used amplifier, parameters other than these may need to be set. For details, **see Part 2 Section 3.6**.

Parameter number	Setting item	Setting value	Description
* Changing required.			
PA04	Function selection A-1	0000h	Forced stop deceleration function selection To configure the same settings as those for MR-J2S, select "Forced stop deceleration function disabled (EM1)".
PA09	Auto Tuning Response	8	Auto tuning response setting When replacing, switch the power on after setting the value to "8". * It is necessary to make gain adjustment again when replacing. This setting value is equivalent to the slow response of MR-J2S. Perform adjustment since the gain can be too low for the slow response. For details on how to make gain adjustments, refer to Chapter 6 of the MR-J4 Servo Amplifier Instruction Manual issued by Mitsubishi Electric.
PD27	Output device selection 2 * 11 kW or more, only when using this function	0006h	Dynamic brake interlock (DB) selection When using this function for the MR-J2S servo amplifier of 11 kW or more, set the parameter. Assign a DB signal to pin CN1-48.
PD03 to 14	Input signal device selection	-	When the assignment of the Input/output signal for the existing J2S amplifier, setting is required. For details, refer to section 5.2.1.
* Position control mode only			
PA06	Electronic gear numerator (CMX) (Command input pulse multiplication numerator)	8 (Note 1)	When using an electronic gear, it is necessary to change the setting value. Set the same value as the parameter No. 3 or 4 of for the MR-J2S- A servo amplifier.
PA07	Electronic gear denominator (CDV) (Commanded pulse multiplication denominator)	1 (Note 1)	
PA21	Electronic gear selection	3001h	J2S electronic gear setting value compatibility mode Magnify the electronic gear setting value by 32 times.
PA13	Command pulse input form	_ 2 _ _ h	Pulse train filter selection The setting value mentioned at the left side is a command pulse train filter setting equivalent to the MR-J2S- _ A _ (when setting the differential line driver type). * If it is not set, position mismatch will occur. Make sure to set a filter. In addition, it is necessary to adjust the command pulse logic to the positioning module. For details, refer to section 2.6.5. * An incorrect logic setting causes the motor to not rotate. Make sure to configure the settings.
PA10	In-position range	3200 (Note 2)	Set the range of droop pulses occurred when outputting a positioning completion signal (INP). Set the value as magnified by 32 times of the parameter No. 5 for the MR-J2S- A servo amplifier.
* Speed control mode only			
PA01	Control mode	_ _ _ 2h	Select the servo amplifier control mode. Select the speed control mode.
PC12	Analog speed command - Maximum speed	3000	Analog speed command - Maximum speed The setting value at left is for when the HC-SFS53 motor is replaced with the HG-SR52 motor.
* Torque control mode only			
PA01	Control mode	_ _ _ 4h	Select the servo amplifier control mode. Select the torque control mode.
PC12	Analog speed limit - Maximum speed	3000	Analog speed limit - Maximum speed The setting value at left is for when the HC-SFS53 motor is replaced with the HG-SR52 motor.
PC13	Analog torque command maximum output	100	Analog torque command maximum output Set the same value as for the MR-J2S- A servo amplifier.
* When using encoder output pulses			
PA15	Encoder output pulses	128 (Note 3)	Used to set the encoder pulses (A-phase and B-phase) output by the servo amplifier.
PC19	Encoder output pulse setting selection	0 _ 1 _ h (Note 3)	Encoder output pulse setting selection Used to set the encoder pulses output by the servo amplifier. The setting value at left is according to the dividing ratio setting.

Note 1. The example value shown is for when the electronic gear ratio of an existing servo amplifier is set as "8/1".

2. The example value shown is for when the in-position range of an existing servo amplifier is set as "100".

3. The value is for when the output pulse setting of an existing HC-KFS motor (encoder resolution: 131072 pulses/rev) is "Dividing ratio: 1/4".

[Appendix 2] Introduction to Renewal Tool

7.2 List of B Type Setting Requisite Parameters

POINT
<ul style="list-style-type: none"> No changes to the program or the parameters are required because the amplifier is recognized as MR-J2S by the controller when the MR-J4-□B-RJ020 servo amplifier is combined with the MR-J4-T20 SSCNET conversion unit. For details on how to set parameters, refer to Chapter 5 of the "MR-J4- B - RJ020 Servo Amplifier Instruction Manual (SH(NA)030124)" issued by Mitsubishi Electric.

7.3 List of CP type Setting Requisite Parameters

(1) For primary replacement

- * The parameters shown below are a minimum number of parameters that need to be set for primary replacement. Depending on the settings of the currently used amplifier, parameters other than these may need to be set. For details, **see Part 4 Section 3.6.**

Parameter number	Setting item	Setting value	Description
* Changing required.			
PA01	Control mode	___ 6h	Select the servo amplifier control mode. Select the positioning mode (point table method).
PA04	Function selection A-1	0000h	Forced stop deceleration function selection To configure the same settings as those for MR-J2S, select "Forced stop deceleration function disabled (EM1)".
PC22	Function selection C-1	_ 1 __ h	Serial encoder selection. This setting is for communication with the encoder of MR-J2S. An incorrect setting causes encoder initial communication data error 1 (AL.20.1).
PA09	Auto Tuning Response	8	Auto tuning response setting When replacing, switch the power on after setting the value to "8". * It is necessary to make gain adjustment again when replacing. This setting value is equivalent to the slow response of MR-J2S. Perform adjustment since the gain can be too low for the slow response. For details on how to make gain adjustments, refer to Chapter 6 of the MR-J4 Servo Amplifier Instruction Manual issued by Mitsubishi Electric.
PA06	Electronic gear numerator (CMX) (Command input pulse multiplication numerator)	8 (Note 1)	When using an electronic gear, it is necessary to change the setting value. Set the same value as the parameter No. 4 of for the MR-J2S- CP servo amplifier.
PA07	Electronic gear denominator (CDV) (Commanded pulse multiplication denominator)	1 (Note 1)	
PA21	Electronic gear selection	0001h	A setting value for the electronic gear PA06 or PA07 becomes effective.
PA10	In-position range	100 (Note 2)	In-position range Used to set an in-position range per command pulse unit. Set the same value as the parameter No. 6 of for the MR-J2S- CP servo amplifier.
PA15	Encoder output pulses	4 (Note 3)	Used to set the encoder pulses (A-phase and B-phase) output by the servo amplifier.
PC19	Encoder output pulse setting selection	0 _ 1 _ h (Note 3)	Encoder output pulse setting selection Used to set the encoder pulses output by the servo amplifier. The setting value at left is according to the dividing ratio setting.
PD04 to 28	Input signal device selection	-	When the assignment of the Input/output signal for the existing J2S amplifier, setting is required. For details, refer to section 5.2.3.

- Note 1. The example value shown is for when the electronic gear ratio of an existing servo amplifier is set as "8/1".
 2. The example value shown is for when the in-position range of an existing servo amplifier is set as "100".
 3. The value is for when the output pulse setting of an existing HC-KFS motor (encoder resolution: 131072 pulses/rev) is "Dividing ratio: 1/4".

[Appendix 2] Introduction to Renewal Tool

(2) For secondary replacement

- * The parameters shown in this section are a minimum number of parameters that need to be set for secondary replacement. Depending on the settings of the currently used amplifier, parameters other than these may need to be set. For details, **see Part 4 Section 3.6**.

Parameter number	Setting item	Setting value		Description
		Before changing (Note 1)	After changing	
* Changing required.				
PC22	Function selection C-1	_ 1 _ _ h	_ 0 _ _ h	Serial encoder selection. This setting is for communication with the encoder of MR-J4. An incorrect setting causes encoder initial communication data error 1 (AL.20.1).
PA21	Electronic gear selection	0001h	3001h	J2S electronic gear setting value compatibility mode * For PA06 or PA07, the value when performing the primary replacement is required to be maintained. Magnify the electronic gear setting value by 32 times.
PA10	In-position range	100	3200	Set the range of droop pulses occurred when outputting a positioning completion signal (INP). Set the value as magnified by 32 times of the parameter No. 6 for the MR-J2S- CP servo amplifier.
PA15	Encoder output pulses	4 (Note 3)	128	Used to set the encoder pulses (A-phase and B-phase) output by the servo amplifier. An output pulse is required to be set.
PC19	Encoder output pulse setting selection	0 _ 1 _ h (Note 3)	1 _ 1 _ h	Encoder output pulse setting selection Used to set the encoder pulses output by the servo amplifier. The setting value at left is according to the dividing ratio setting.

Note 1. Setting example at primary replacement.

- The value is for when the electronic gear setting of an existing servo motor (encoder resolution: 131072 pulses/rev) is "8/1".
- The value is for when the output pulse setting of an existing HC-KFS motor (encoder resolution: 131072 pulses/rev) is "Dividing ratio: 1/4".

(3) For simultaneous replacement

- * The parameters shown below are a minimum number of parameters that need to be set for simultaneous replacement. Depending on the settings of the currently used amplifier, parameters other than these may need to be set. For details, **see Part 4 Section 3.6**.

Parameter number	Setting item	Setting value	Description
* Changing required.			
PA01	Control mode	_ _ _ 6h	Select the servo amplifier control mode. Select the positioning mode (point table method).
PA04	Function selection A-1	0000h	Forced stop deceleration function selection To configure the same settings as those for MR-J2S, select "Forced stop deceleration function disabled (EM1)".
PA09	Auto Tuning Response	8	Auto tuning response setting When replacing, switch the power on after setting the value to "8". * It is necessary to make gain adjustment again when replacing. This setting value is equivalent to the slow response of MR-J2S. Perform adjustment since the gain can be too low for the slow response. For details on how to make gain adjustments, refer to Chapter 6 of the MR-J4 Servo Amplifier Instruction Manual issued by Mitsubishi Electric.
PA06	Electronic gear numerator (CMX) (Command input pulse multiplication numerator)	8 (Note 1)	When using an electronic gear, it is necessary to change the setting value. Set the same value as the parameter No. 3 or 4 of for the MR-J2S- A servo amplifier.
PA07	Electronic gear denominator (CDV) (Commanded pulse multiplication denominator)	1 (Note 1)	
PA21	Electronic gear selection	3001h	J2S electronic gear setting value compatibility mode Magnify the electronic gear setting value by 32 times.
PA10	In-position range	3200 (Note 2)	Set the range of droop pulses occurred when outputting a positioning completion signal (INP). Set the value as magnified by 32 times of the parameter No. 6 for the MR-J2S- CP servo amplifier.
PA15	Encoder output pulses	128 (Note 3)	Used to set the encoder pulses (A-phase and B-phase) output by the servo amplifier.
PC19	Encoder output pulse setting selection	0 _ 1 _ h (Note 3)	Encoder output pulse setting selection Used to set the encoder pulses output by the servo amplifier. The setting value at left is according to the dividing ratio setting.

Note 1. The example value shown is for when the electronic gear ratio of an existing servo amplifier is set as "8/1".

- The example value shown is for when the in-position range of an existing servo amplifier is set as "100".
- The value is for when the output pulse setting of an existing HC-KFS motor (encoder resolution: 131072 pulses/rev) is "Dividing ratio: 1/4".

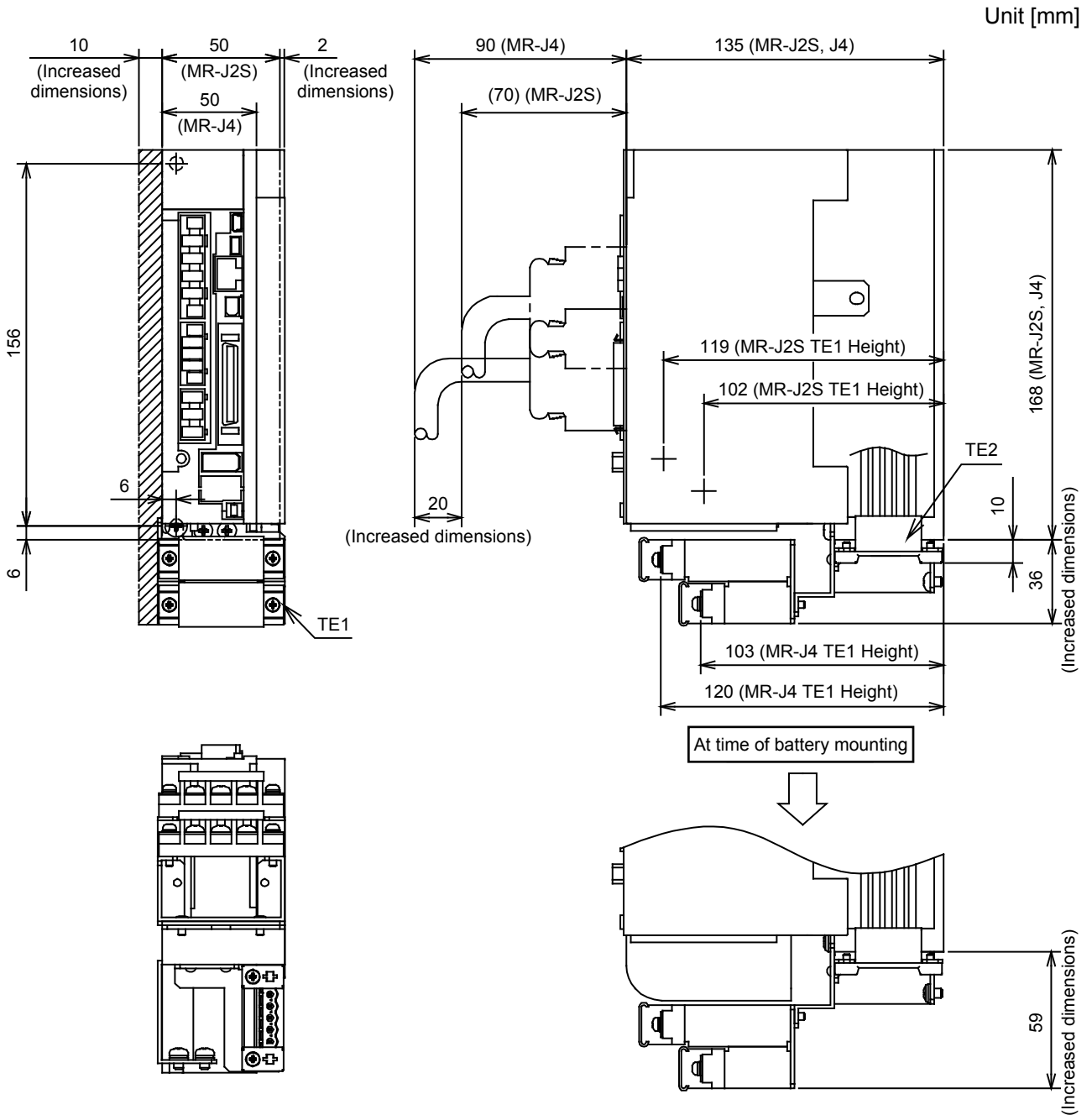
[Appendix 2] Introduction to Renewal Tool

8 DIMENSIONS

8.1 Renewal Kit

* The dimensions are the same for A, B and CP types.

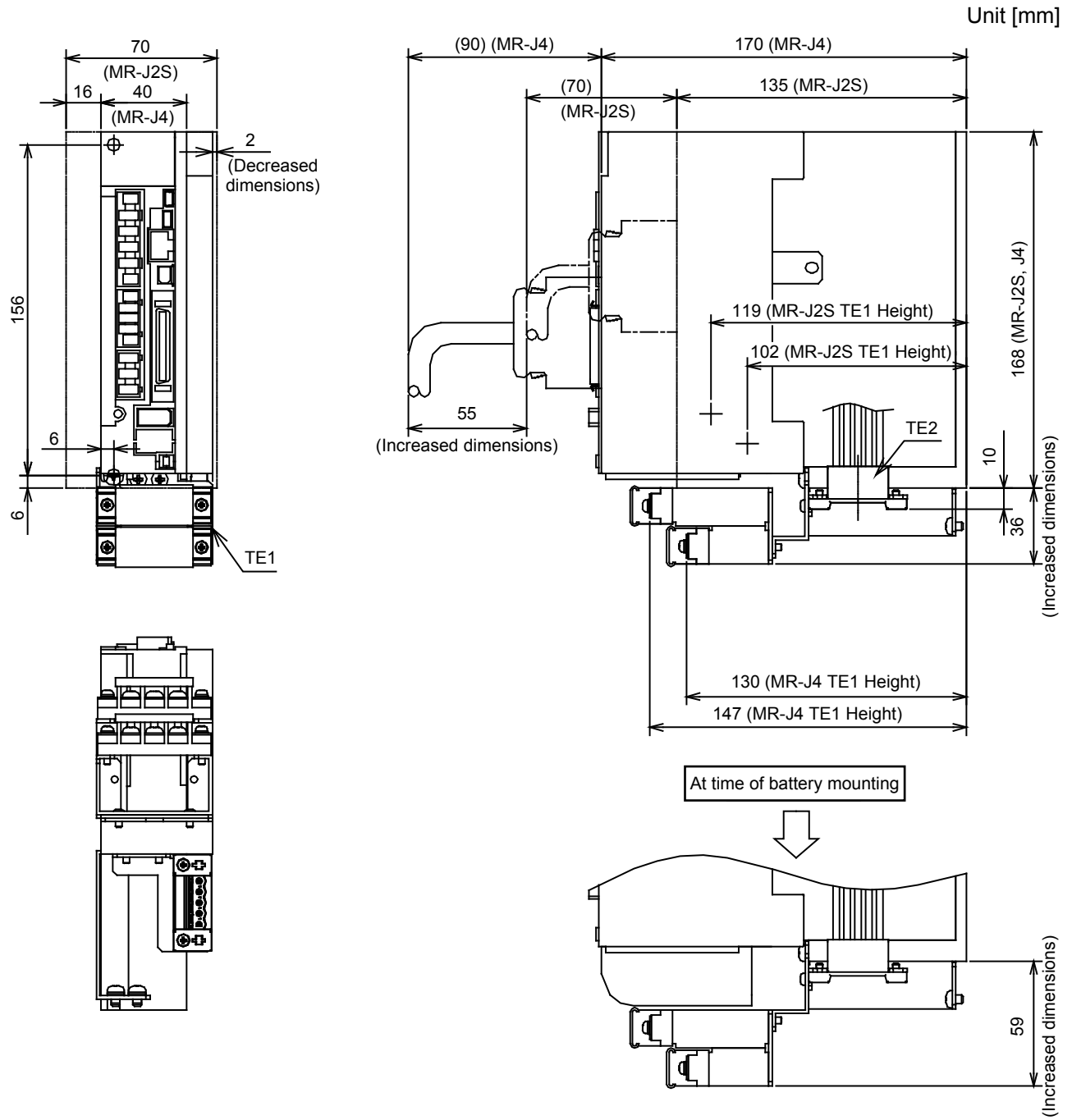
- (1) SC-J2SJ4KT02K
- SC-J2SBJ4KT02K
- SC-J2SCPJ4KT02K



Note. Wiring and other items in the renewal kit are not drawn so that mounting method can be easily seen.

[Appendix 2] Introduction to Renewal Tool

- (2) SC-J2SJ4KT06K
- SC-J2SBJ4KT06K
- SC-J2SCPJ4KT06K

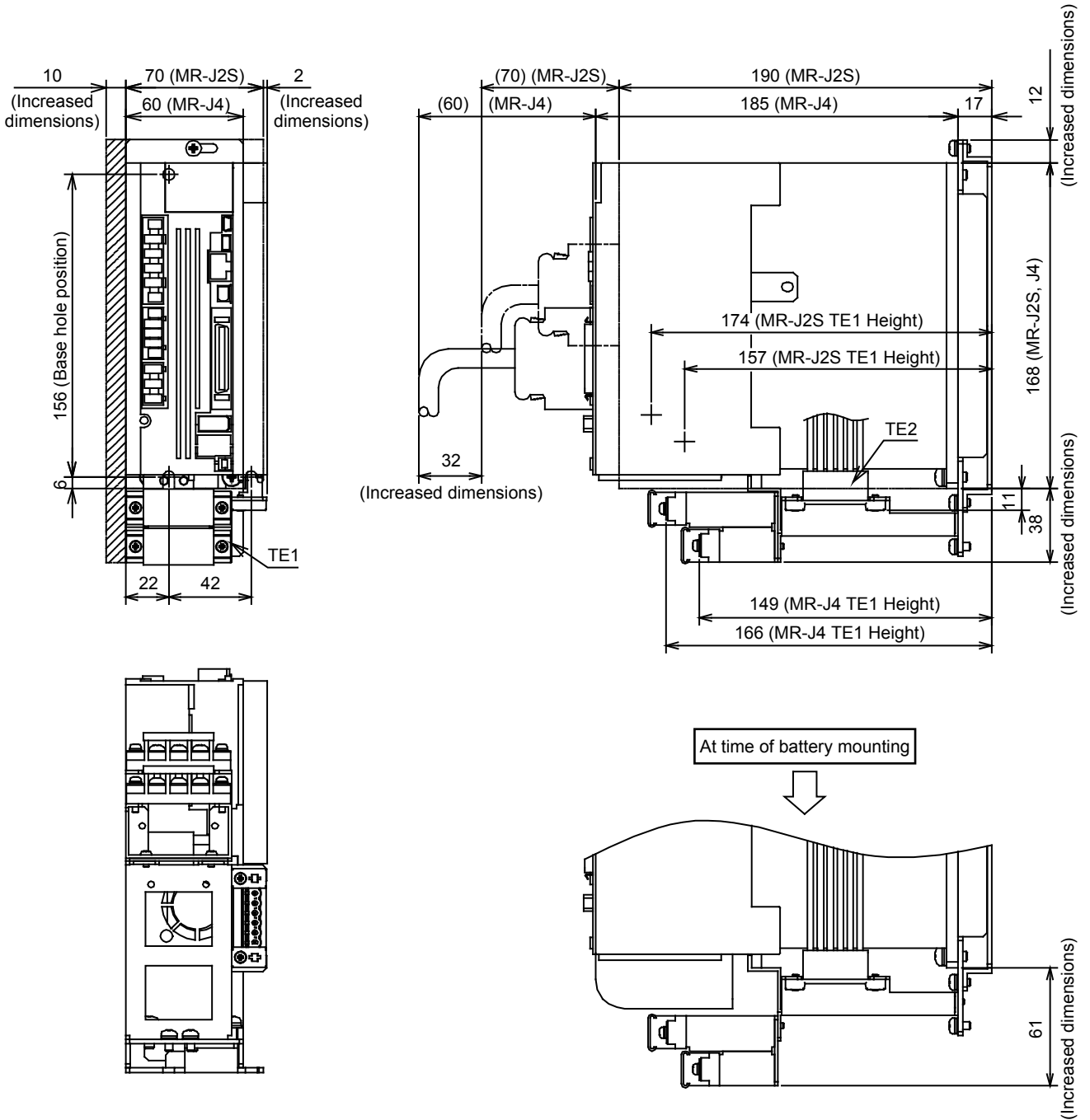


Note. Wiring and other items in the renewal kit are not drawn so that mounting method can be easily seen.

[Appendix 2] Introduction to Renewal Tool

- (3) SC-J2SJ4KT1K
- SC-J2SBJ4KT1K
- SC-J2SCPJ4KT1K

Unit [mm]

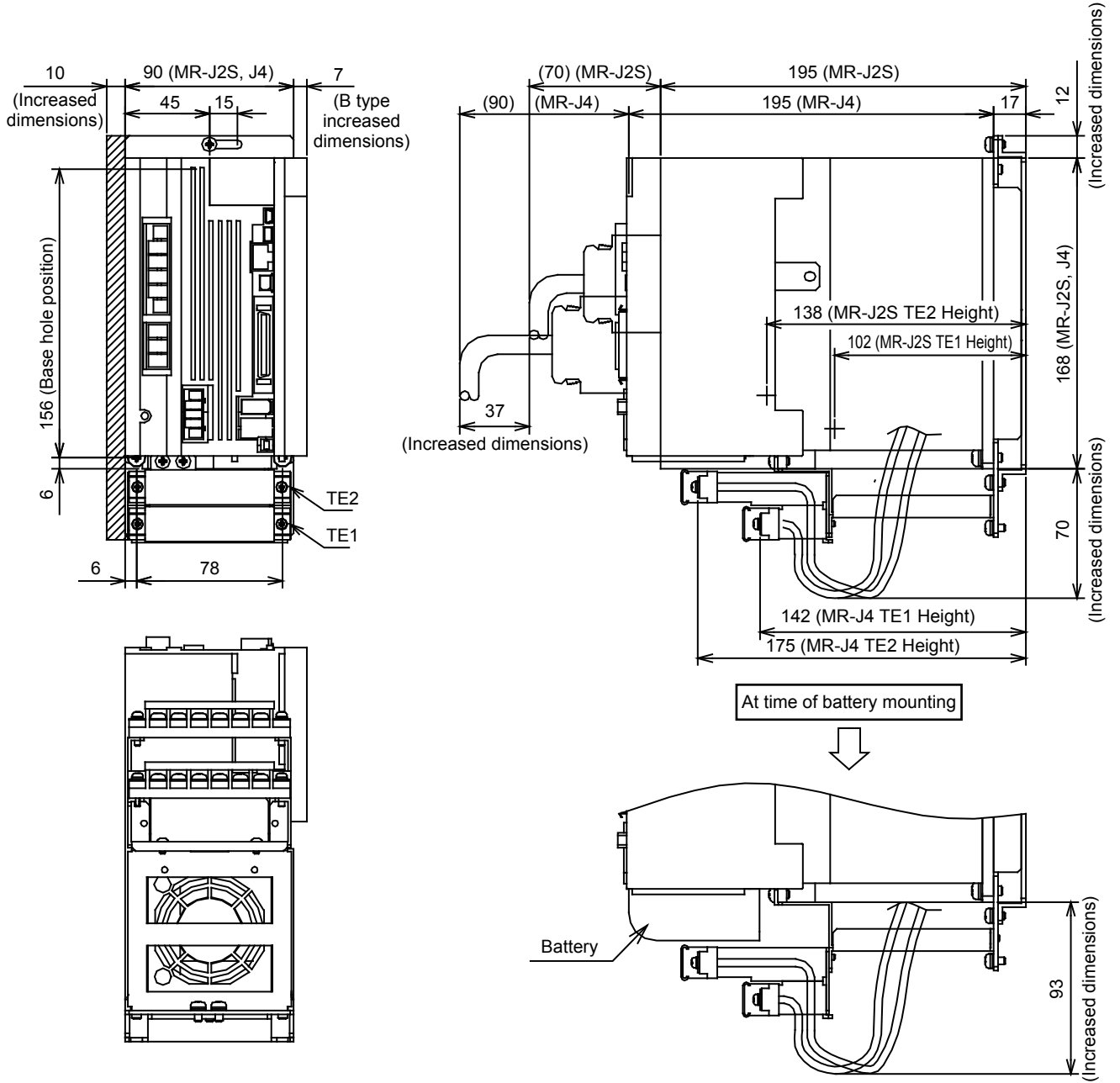


Note. Wiring and other items in the renewal kit are not drawn so that mounting method can be easily seen.

[Appendix 2] Introduction to Renewal Tool

- (4) SC-J2SJ4KT3K
- SC-J2SBJ4KT3K
- SC-J2SCPJ4KT3K

Unit [mm]

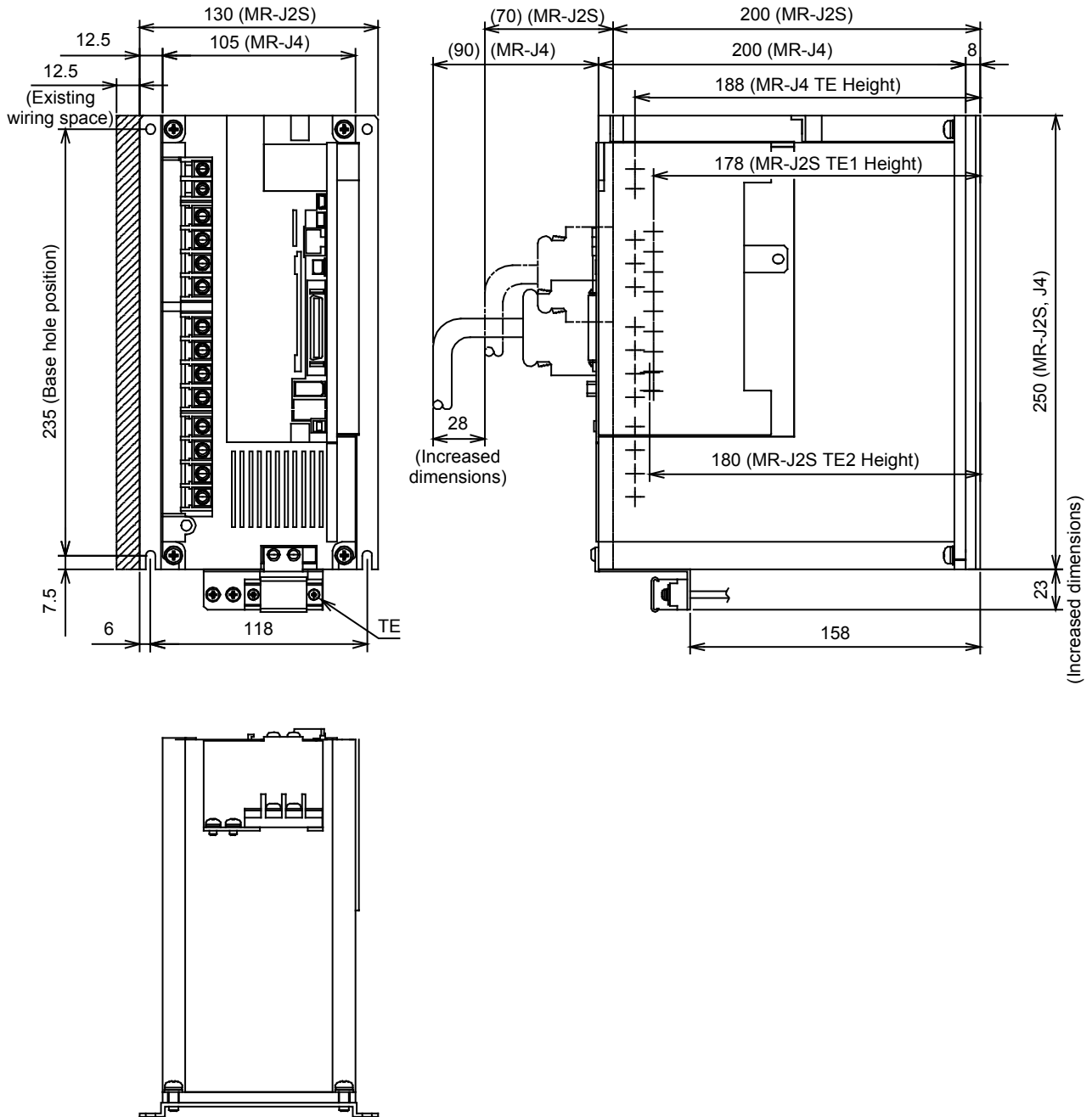


Note. Wiring and other items in the renewal kit are not drawn so that mounting method can be easily seen.

[Appendix 2] Introduction to Renewal Tool

- (5) SC-J2SJ4KT5K
- SC-J2SBJ4KT5K
- SC-J2SCPJ4KT5K

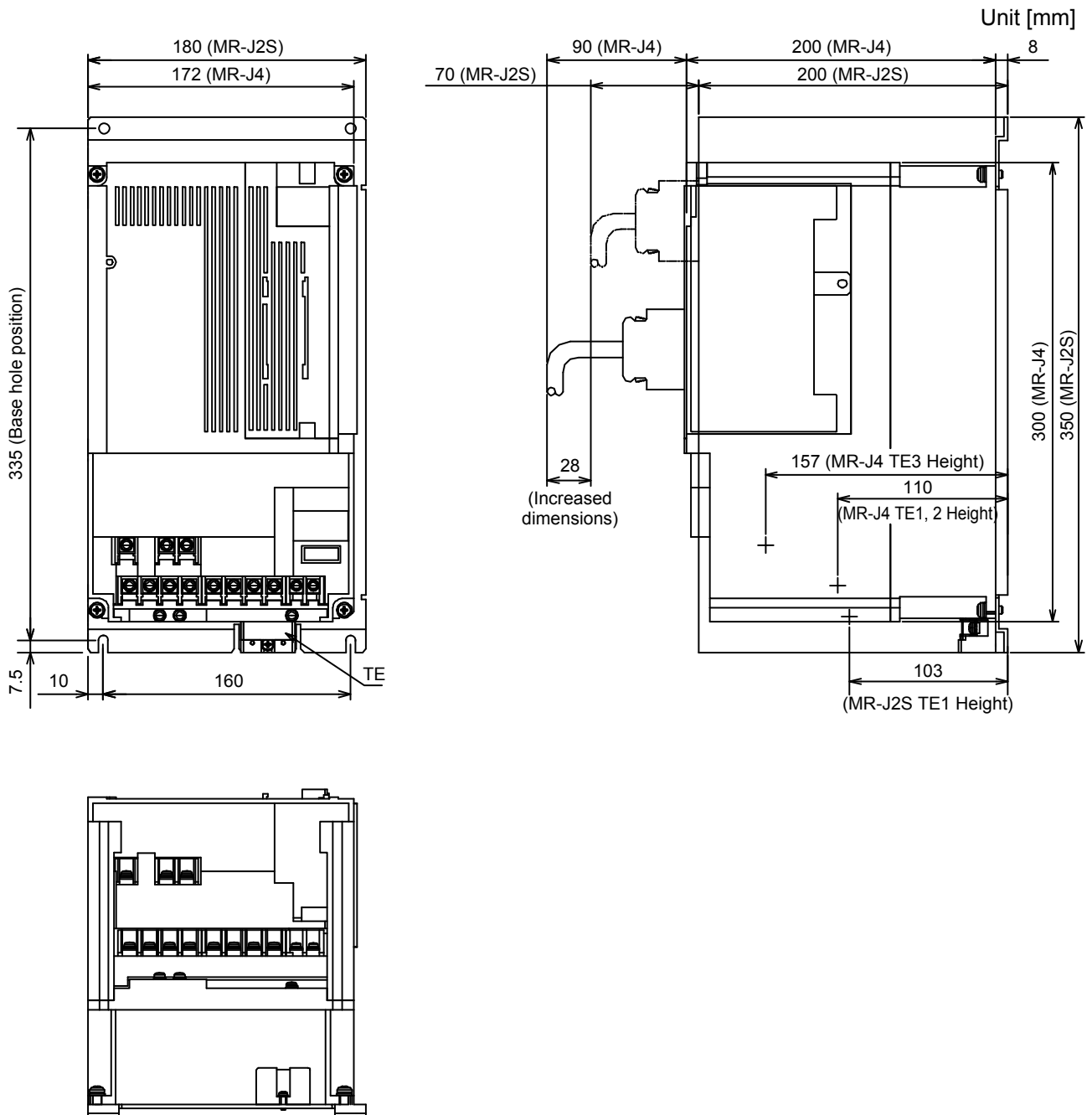
Unit [mm]



Note. Wiring and other items in the renewal kit are not drawn so that mounting method can be easily seen.

[Appendix 2] Introduction to Renewal Tool

- (6) SC-J2SJ4KT7K
- SC-J2SBJ4KT7K
- SC-J2SCPJ4KT7K

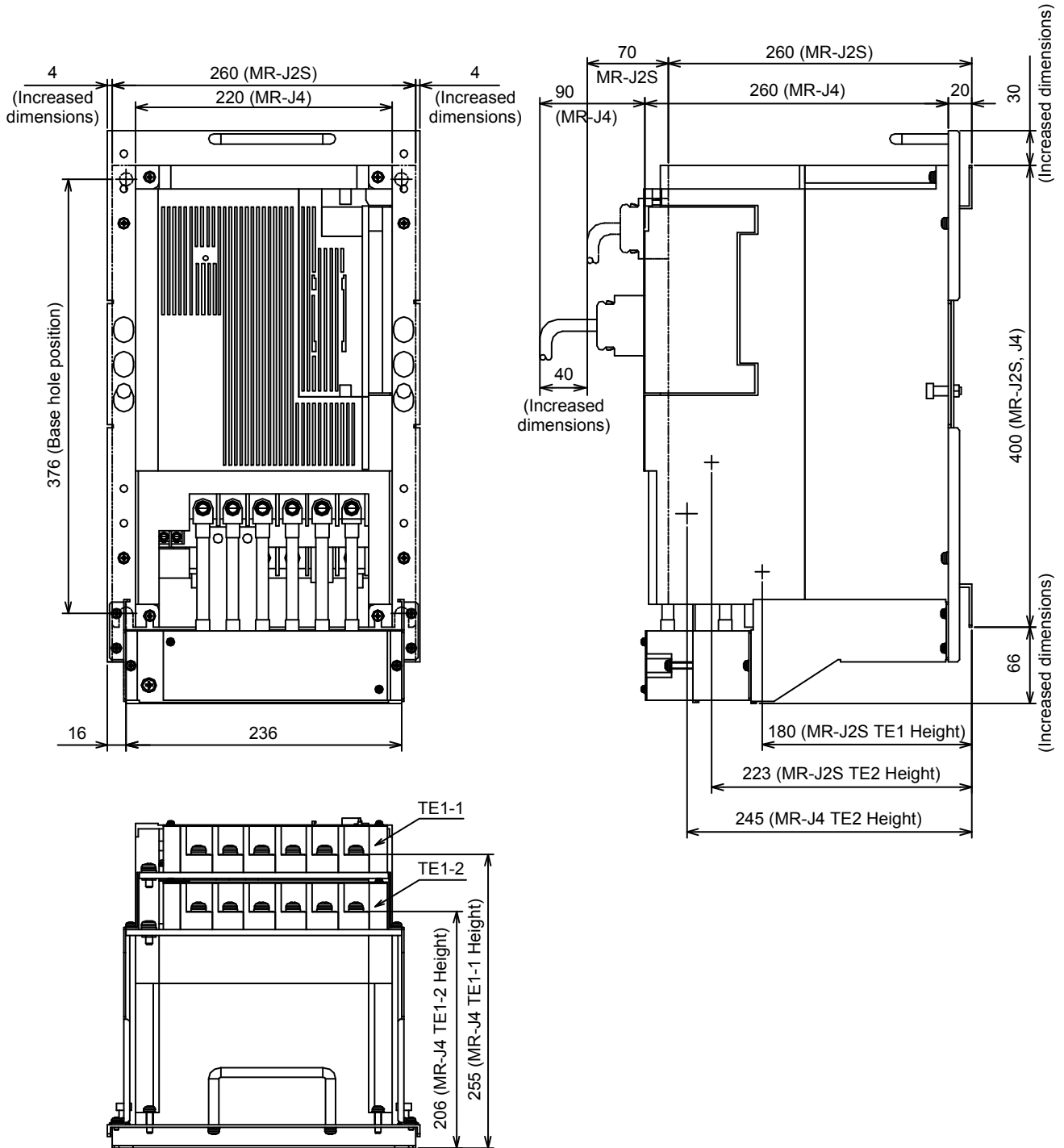


Note. Wiring and other items in the renewal kit are not drawn so that mounting method can be easily seen.

[Appendix 2] Introduction to Renewal Tool

(7) SC-J2S(B)J4KT15K

Unit [mm]

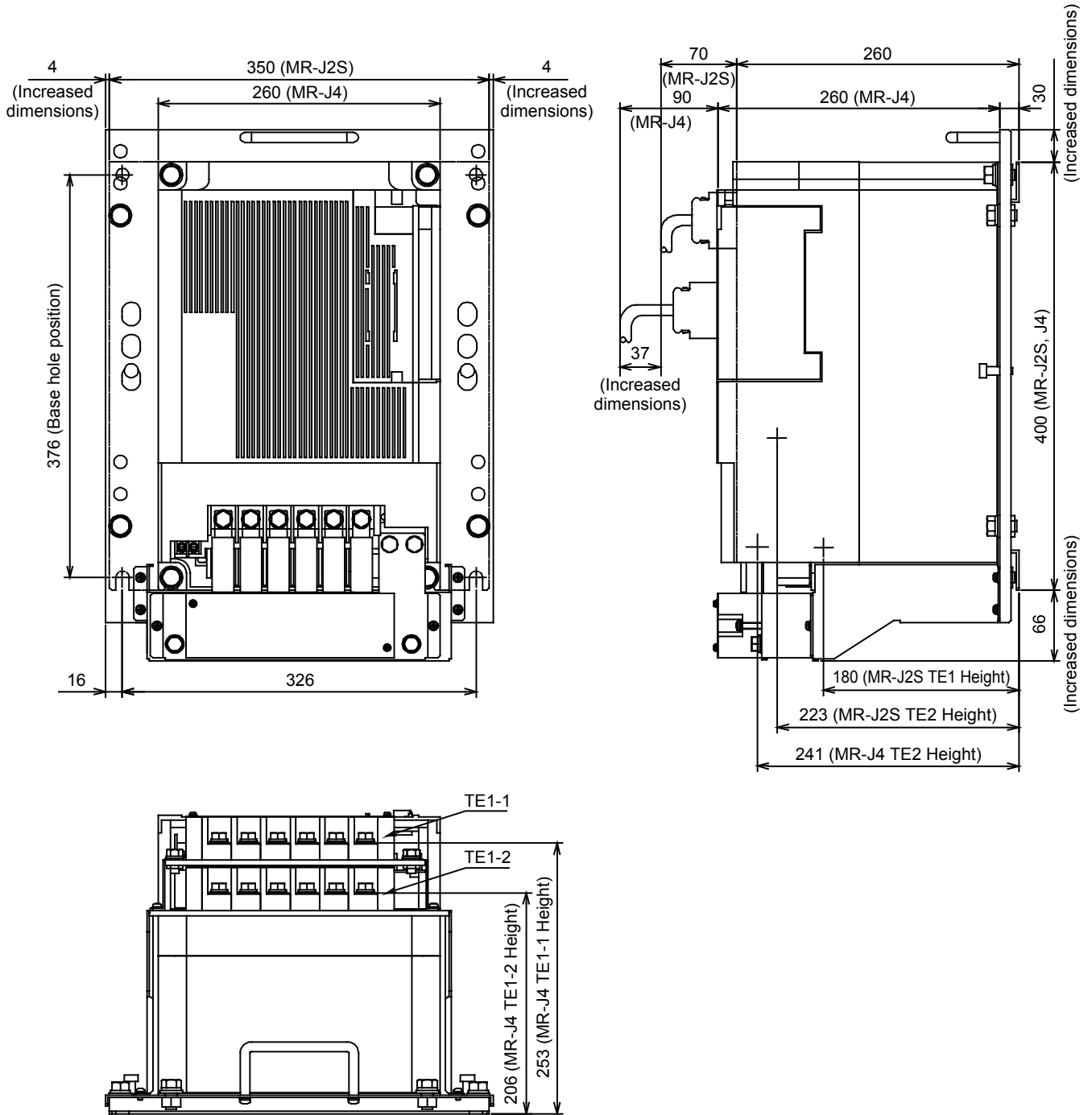


Note. A renewal kit is not compatible with a heat sink outside mounting attachment of the MR-J2S amplifier.

[Appendix 2] Introduction to Renewal Tool

(8) SC-J2S(B)J4KT22K

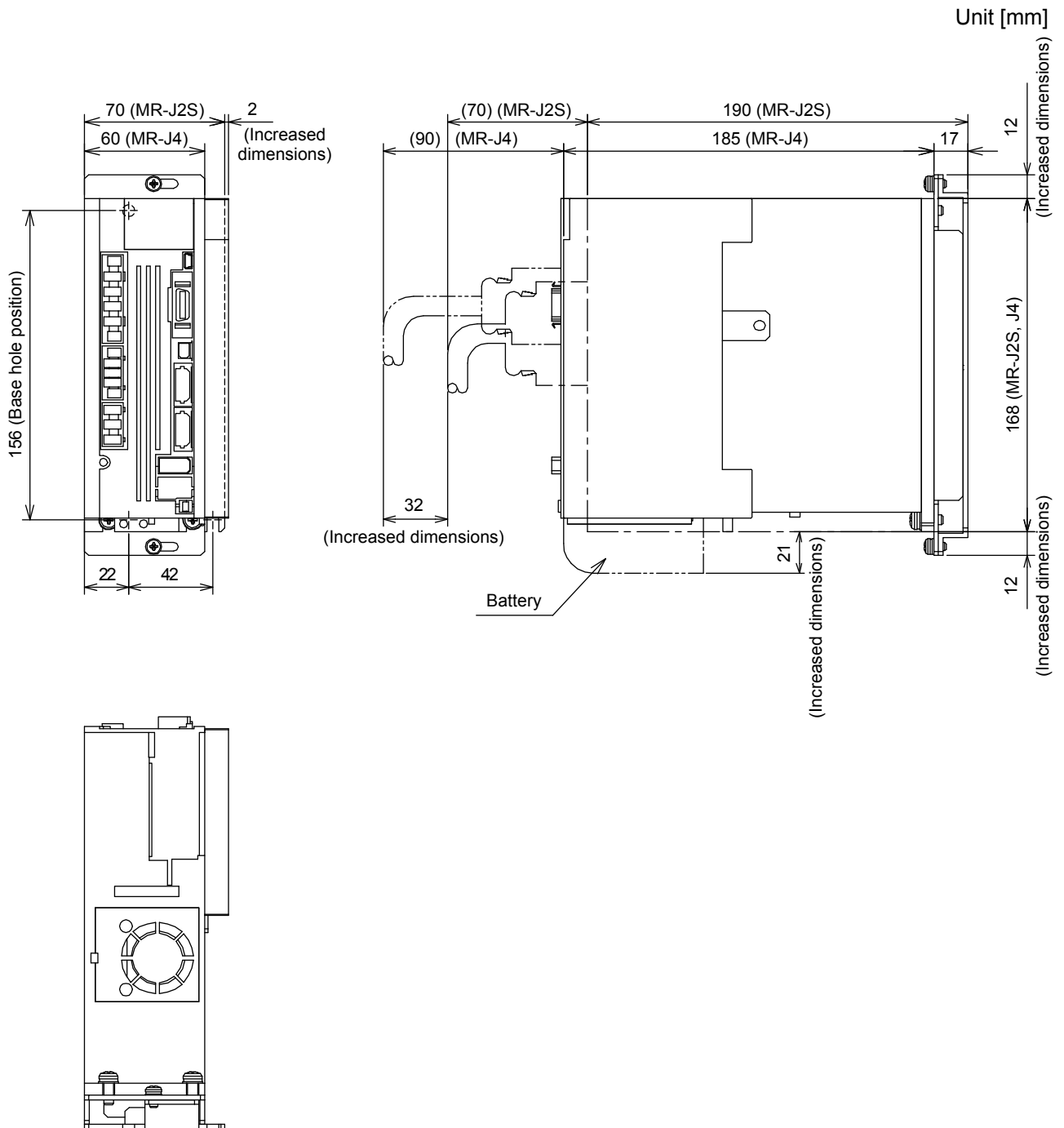
Unit [mm]



Note. A renewal kit is not compatible with a heat sink outside mounting attachment of the MR-J2S amplifier.

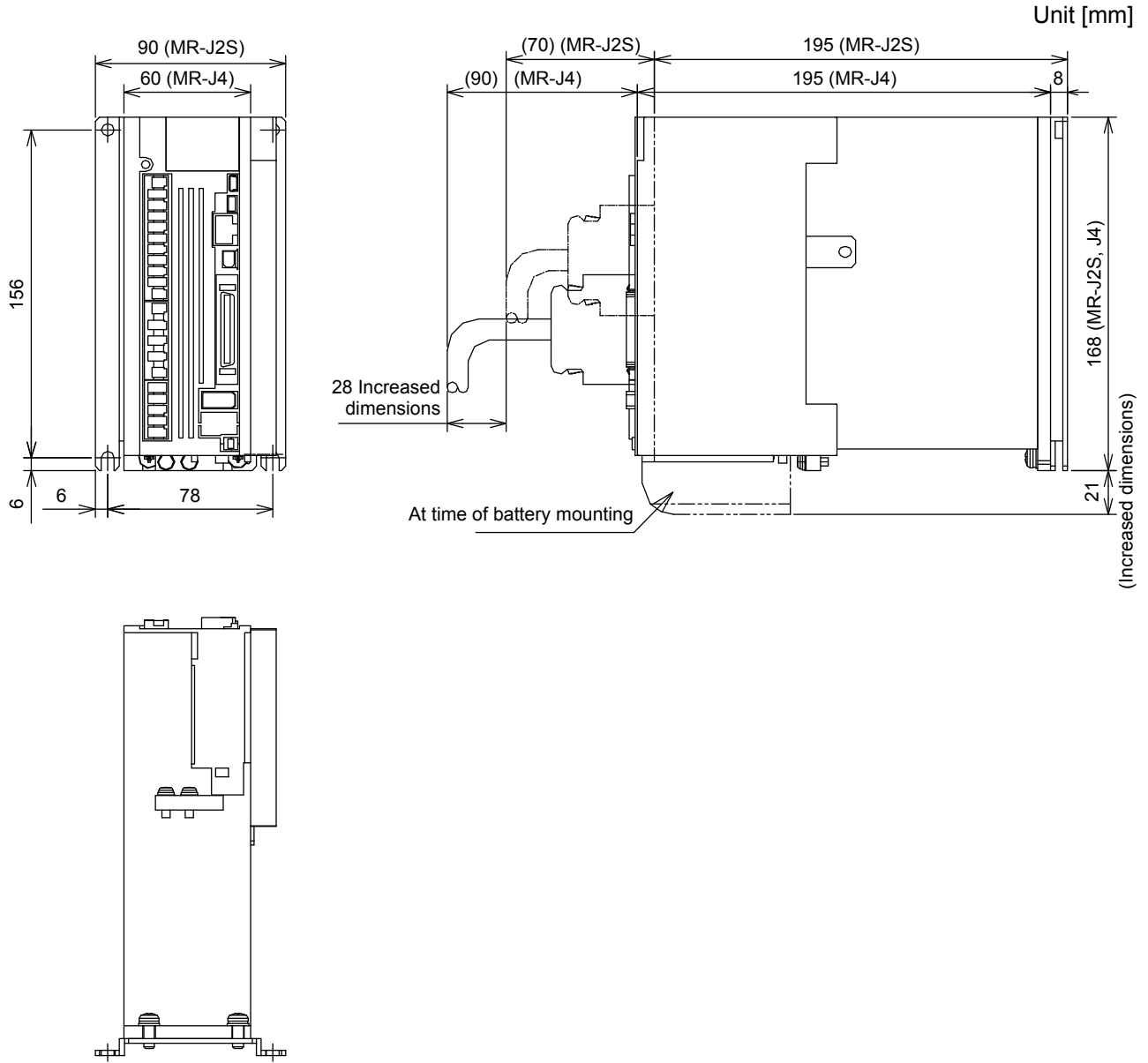
[Appendix 2] Introduction to Renewal Tool

(9) SC-J2SJ4BS01



[Appendix 2] Introduction to Renewal Tool

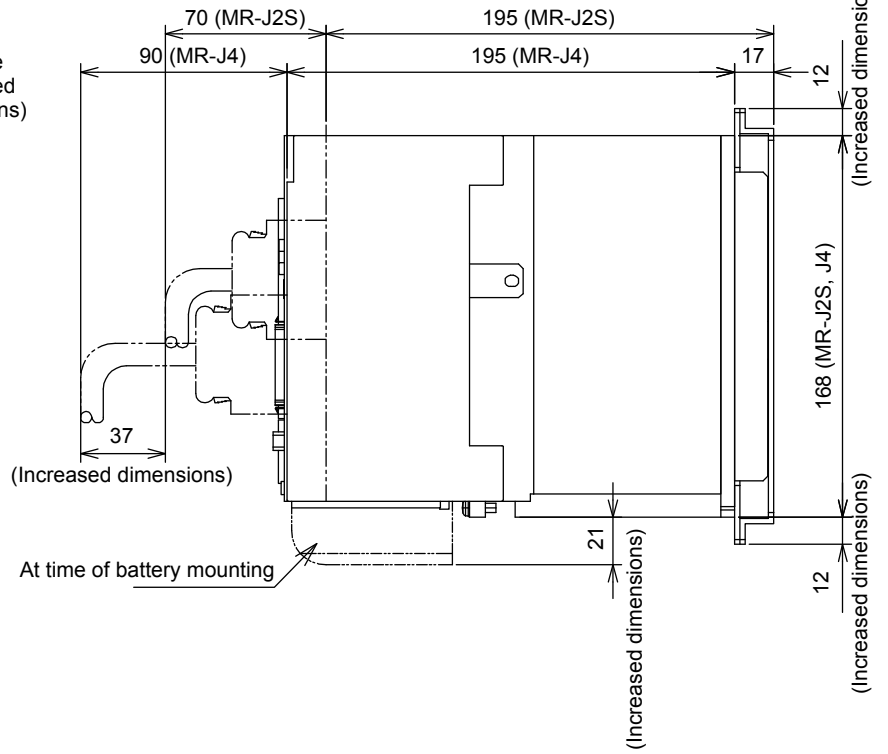
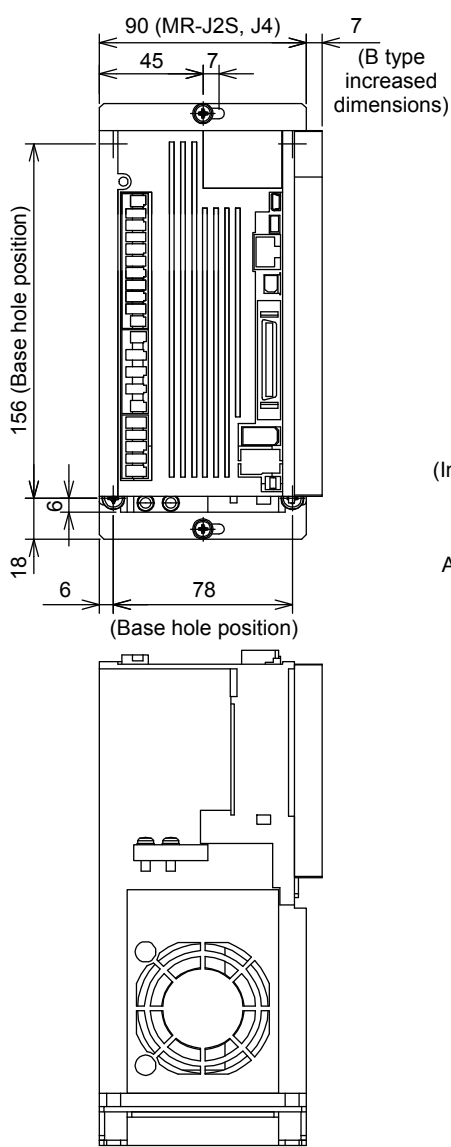
(10) SC-J2SJ4BS02



[Appendix 2] Introduction to Renewal Tool

(11) SC-J2SJ4BS03

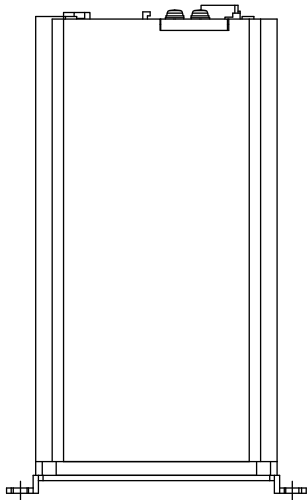
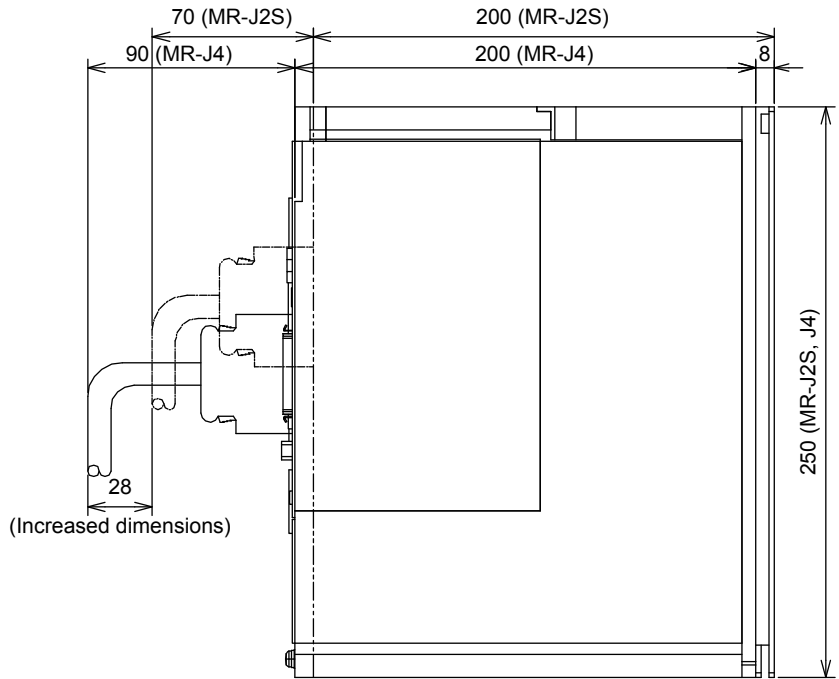
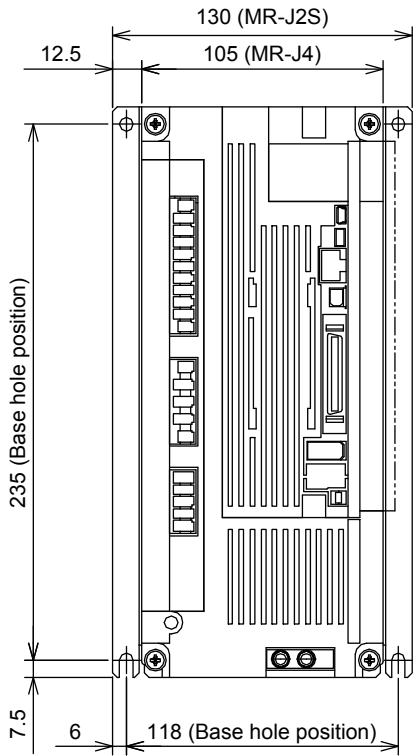
Unit [mm]



[Appendix 2] Introduction to Renewal Tool

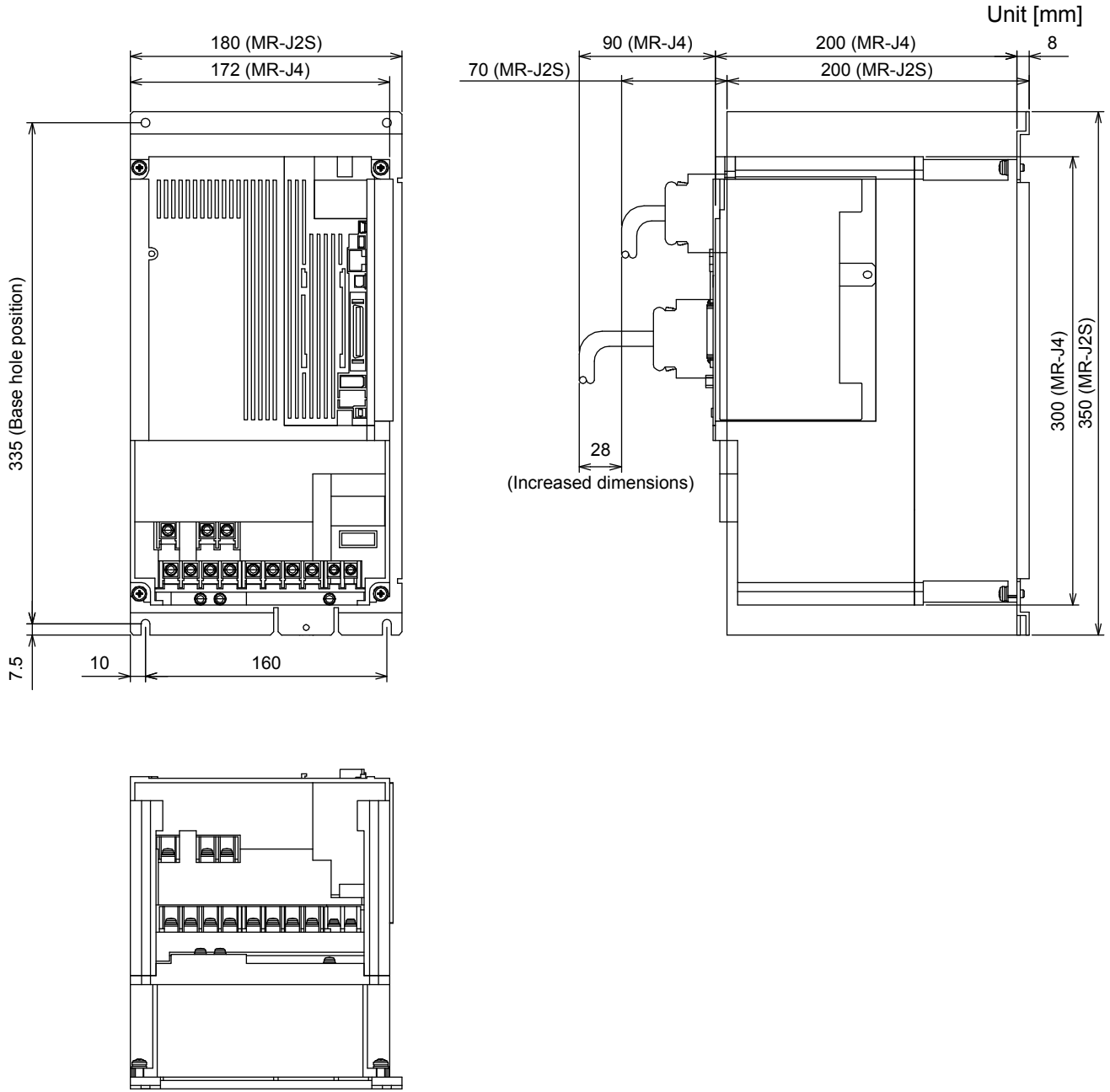
(12) SC-J2SJ4BS04

Unit [mm]



[Appendix 2] Introduction to Renewal Tool

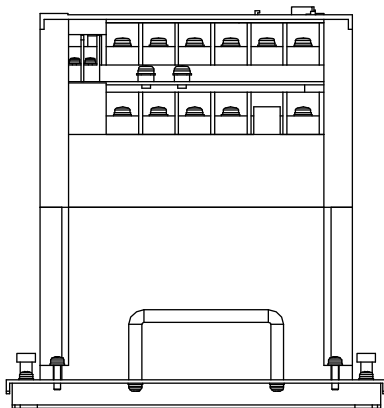
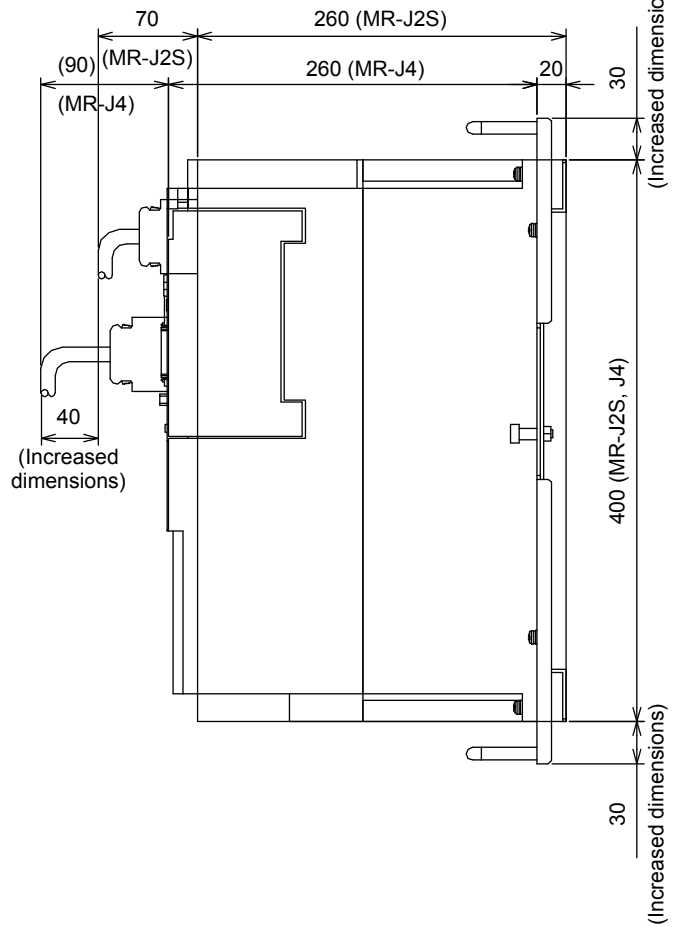
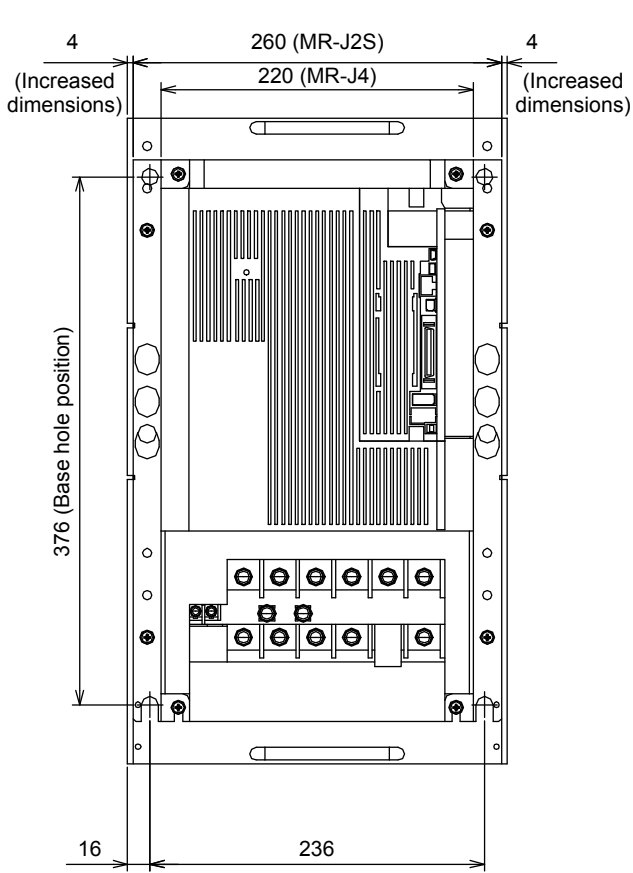
(13) SC-J2SJ4BS05



[Appendix 2] Introduction to Renewal Tool

(14) SC-J2SJ4BS06

Unit [mm]

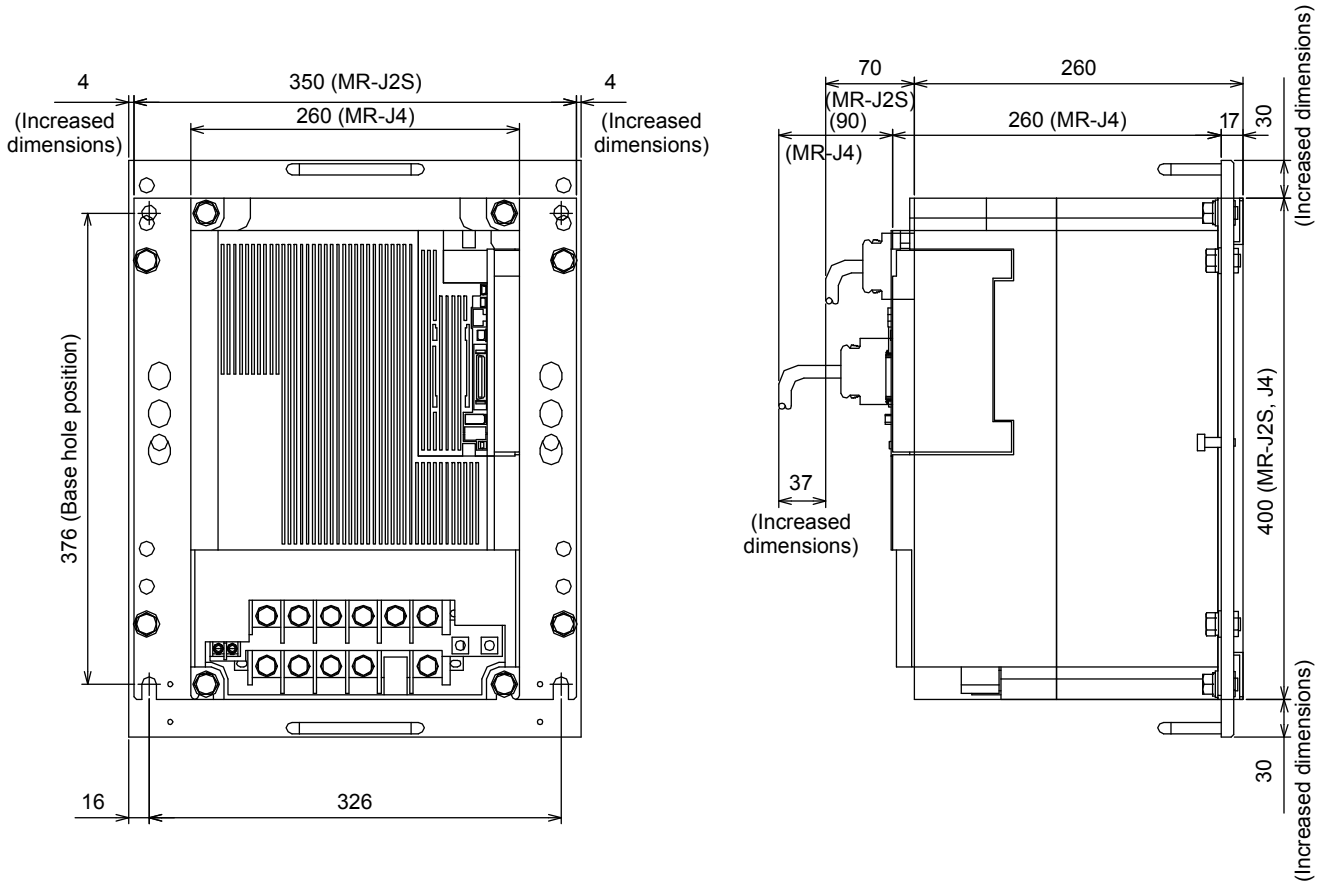


Note. A mounting attachment is not compatible with a heat sink outside mounting attachment of the MR-J2S amplifier.

[Appendix 2] Introduction to Renewal Tool

(15) SC-J2SJ4BS07

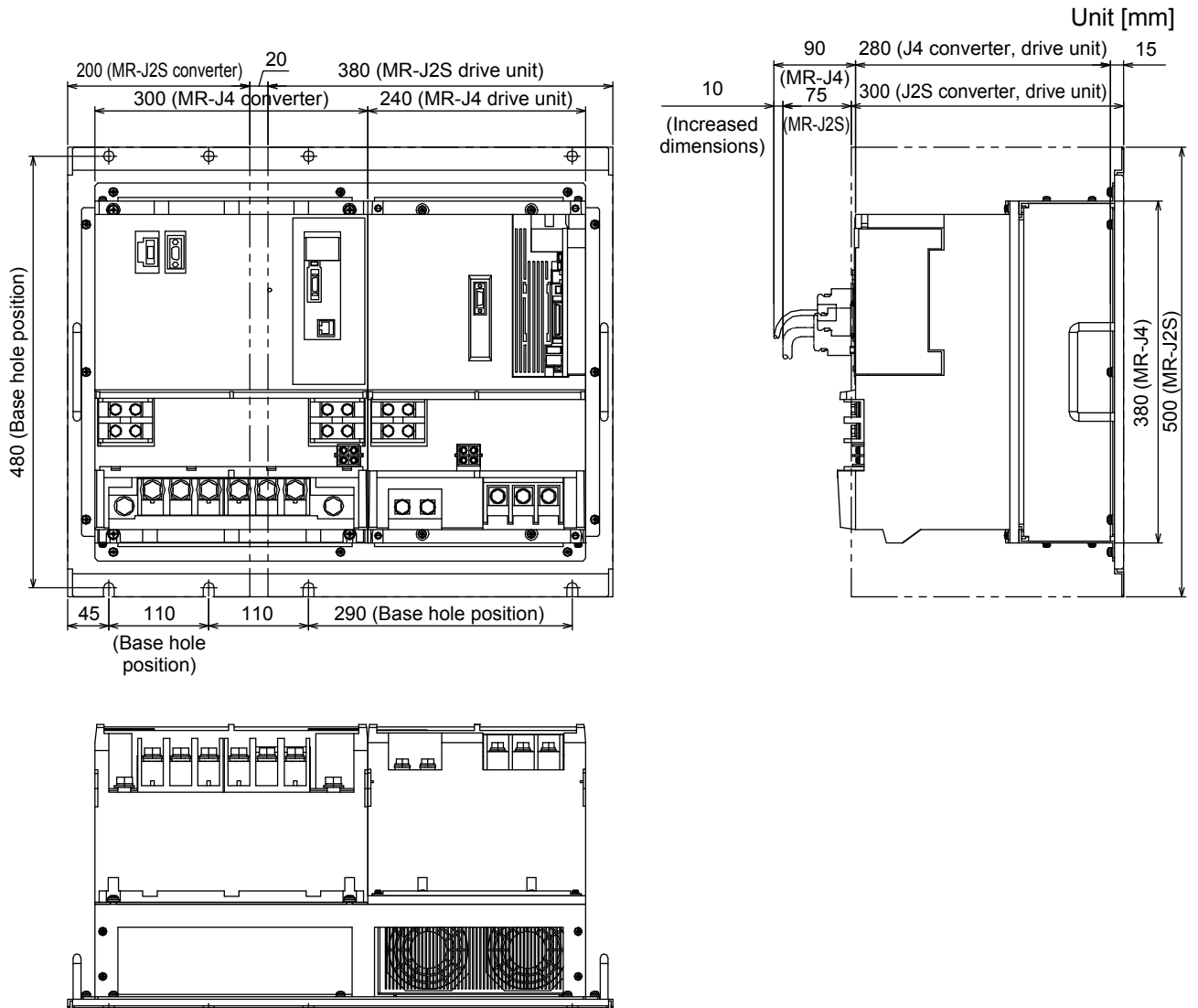
Unit [mm]



Note. A mounting attachment is not compatible with a heat sink outside mounting attachment of the MR-J2S amplifier.

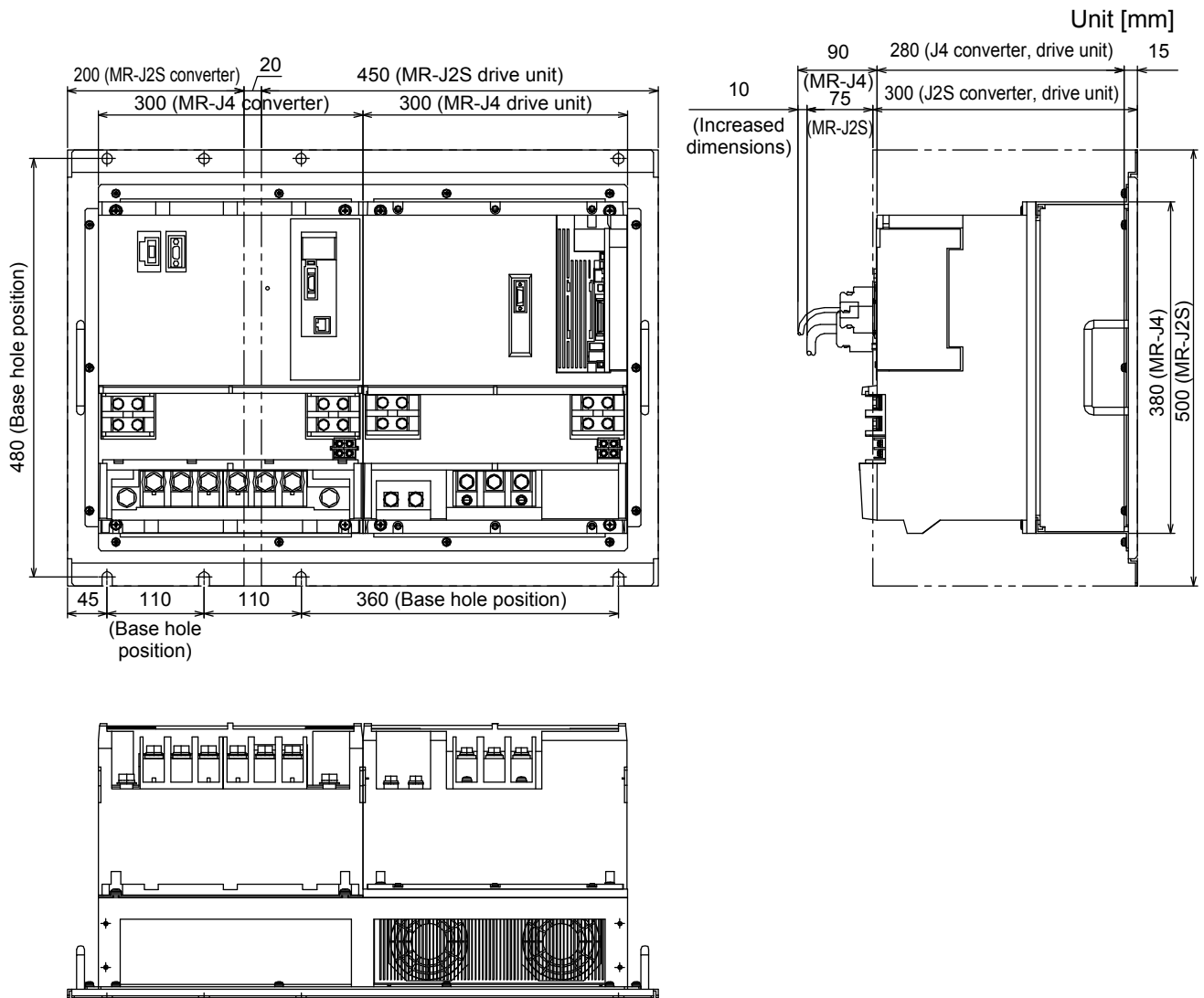
[Appendix 2] Introduction to Renewal Tool

(16) SC-J2SJ4BS08



[Appendix 2] Introduction to Renewal Tool

(17) SC-J2SJ4BS09



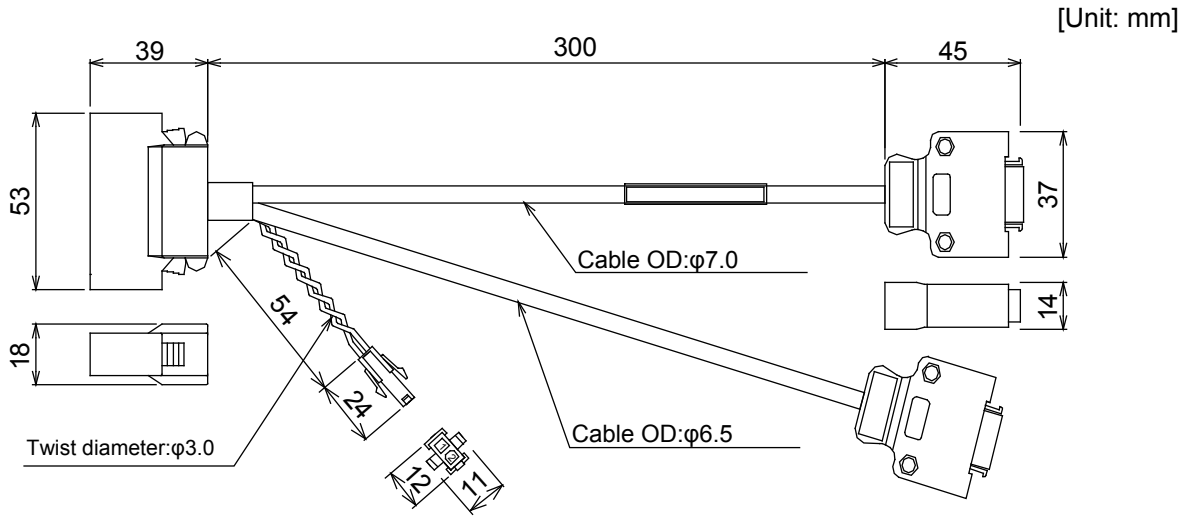
Note. A mounting attachment is not compatible with a heat sink outside mounting attachment of the MR-J2S amplifier.

[Appendix 2] Introduction to Renewal Tool

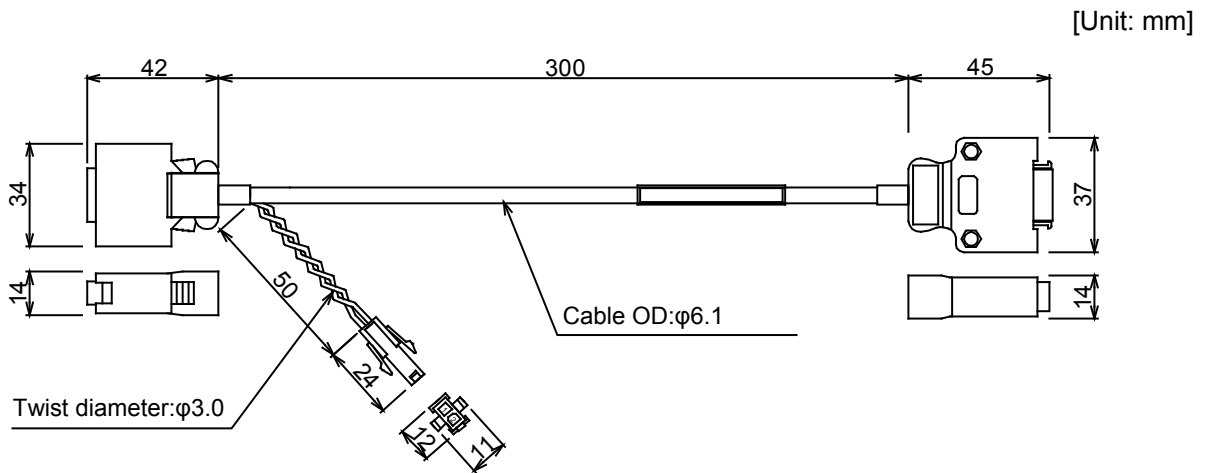
8.2 Conversion Cable

8.2.1 Conversion cable on the amplifier side

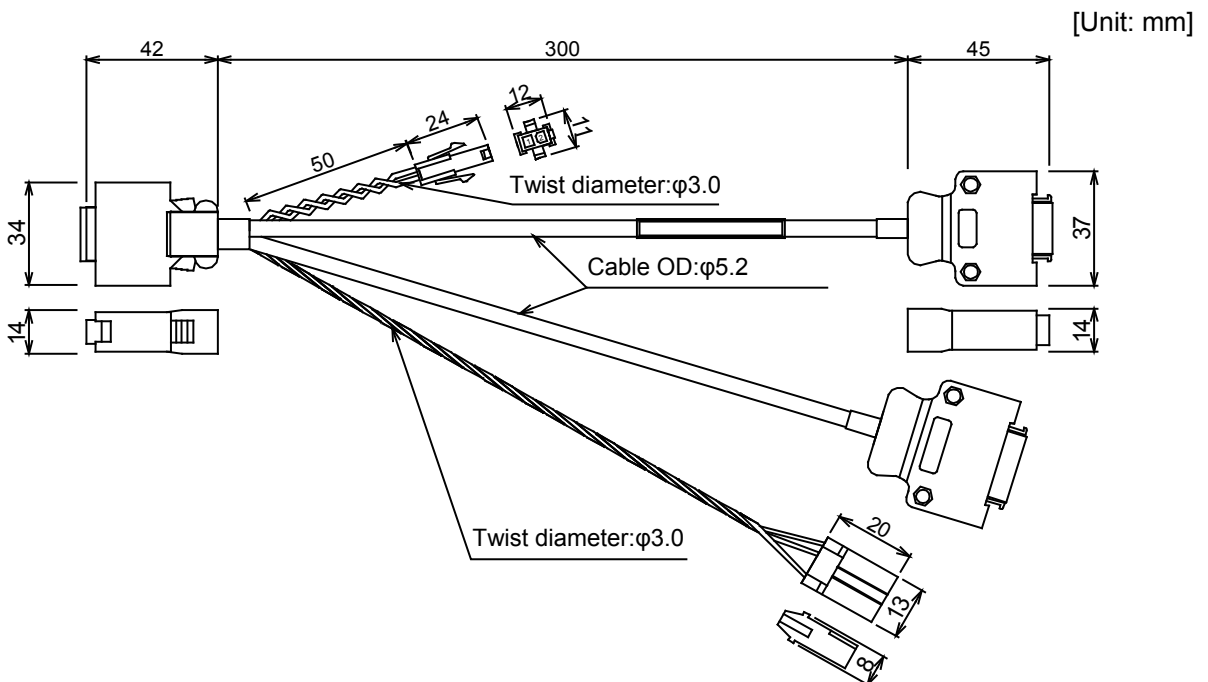
(1) SC-J2SJ4CTC03M, SC-J2SCPJ4CTC03M



(2) SC-J2SBJ4CT1C03M

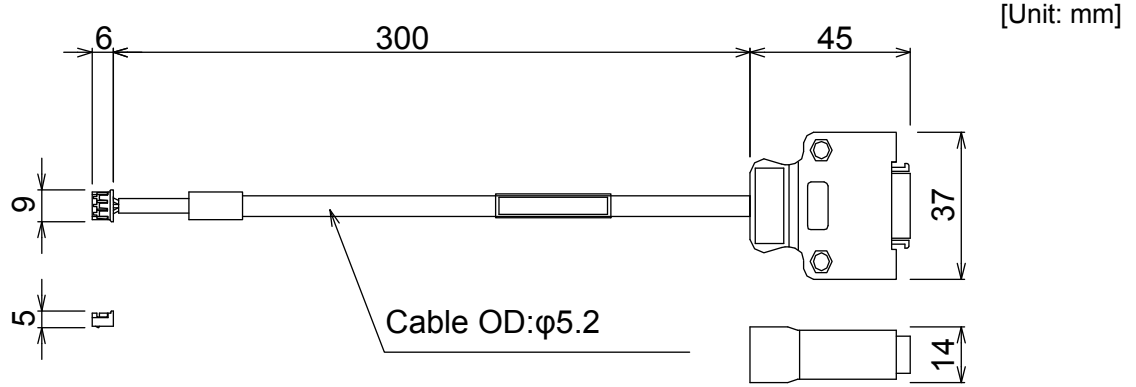


(3) SC-J2SBJ4CT2C03M

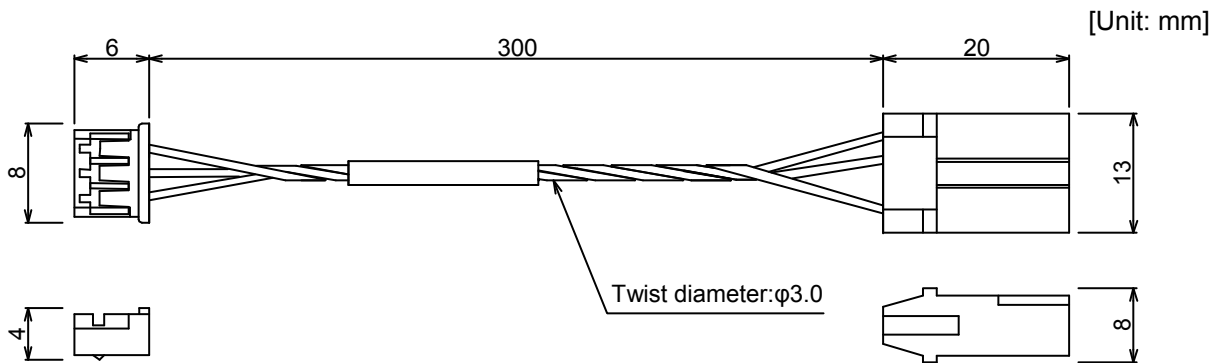


[Appendix 2] Introduction to Renewal Tool

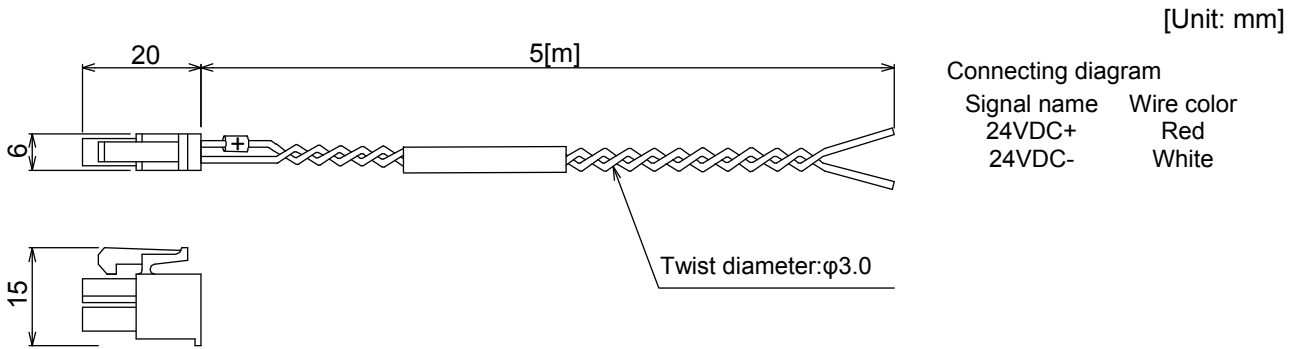
(4) SC-J2SJ4MOC03M



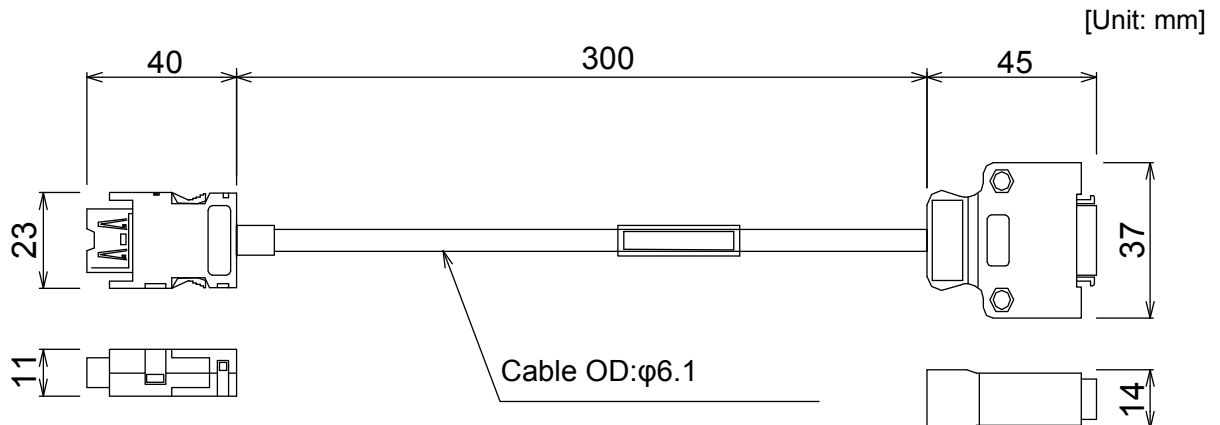
(5) SC-J2SJ4MO2C03M



(6) SC-J2SJ4CTPWC5M



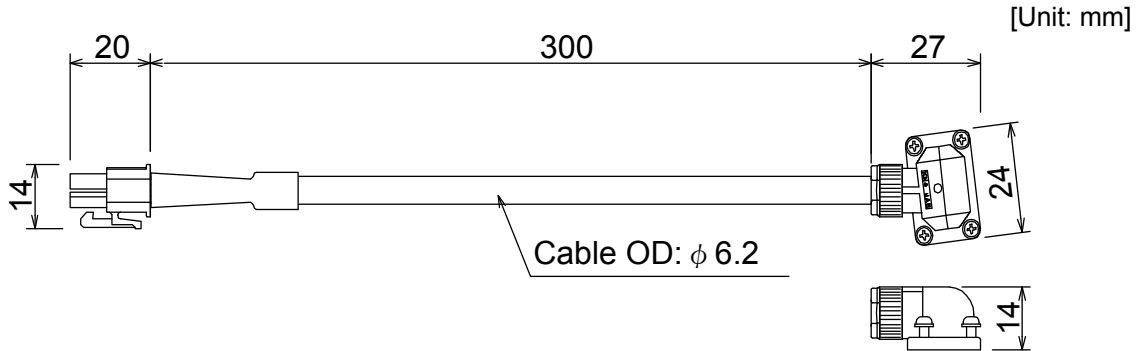
(7) SC-J2SJ4ENC03M



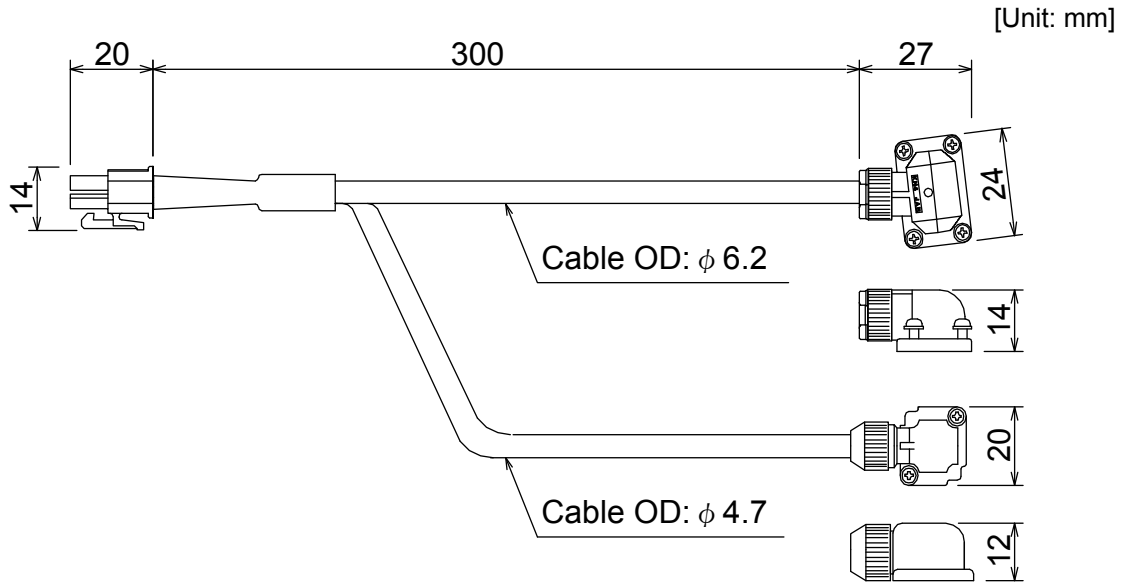
[Appendix 2] Introduction to Renewal Tool

8.2.2 Power supply conversion cable on the motor side

- (1) SC-J2SJ4PW1C03M-■
 Cable use division: A1, A2 (Note 1)



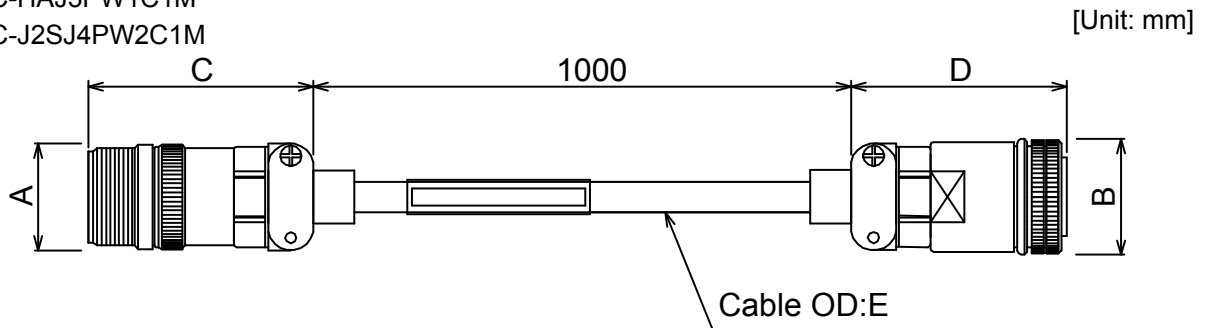
- (2) SC-J2SJ4PWBK1C03M-■
 Cable use division: A1, A2 (Note 1)



- (3) SC-SAJ3PW2KC1M-S2

- (4) SC-HAJ3PW1C1M

- (5) SC-J2SJ4PW2C1M



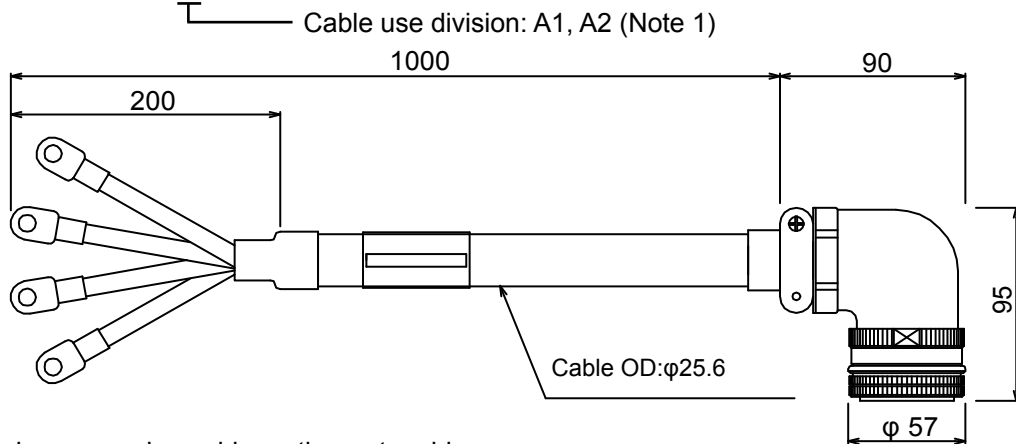
Item	Specifications		
Model	SC-SAJ3PW2KC1M-S2	SC-HAJ3PW1C1M	SC-J2SJ4PW2C1M
Connector dimensions	A	φ35	φ39
	B	φ35	φ41
	C	68	74
	D	78	77
Cable shape	E	12	14

See the next page regarding Note 1.

[Appendix 2] Introduction to Renewal Tool

(6) SC-J2SJ4PW3C1M-■

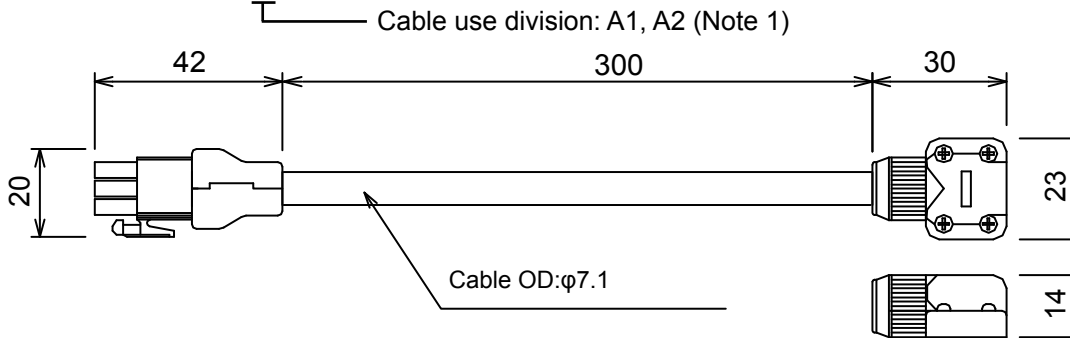
[Unit: mm]



8.2.3 Encoder conversion cable on the motor side

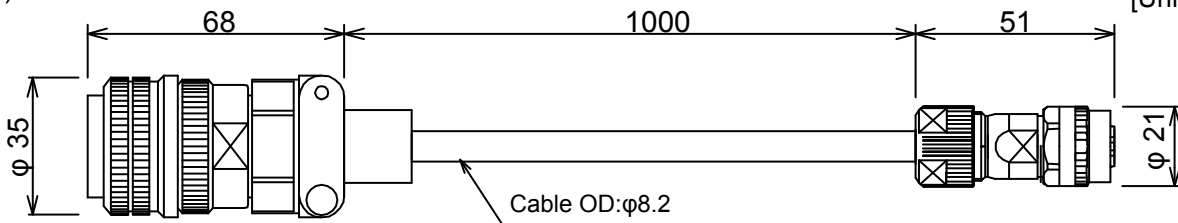
(1) SC-HAJ3ENM1C03M-■

[Unit: mm]



(2) SC-HAJ3ENM3C1M

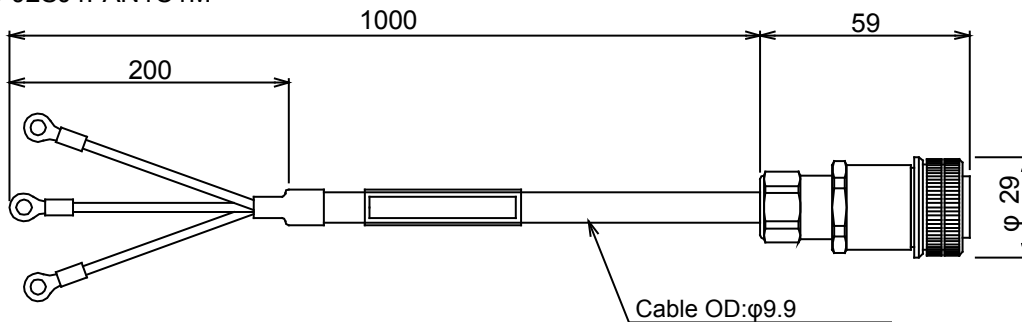
[Unit: mm]



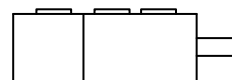
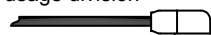
8.2.4 Conversion cable for the cooling fan on the motor side

(1) SC-J2SJ4FAN1C1M

[Unit: mm]



Note 1. Cable usage division



A1: Load-side lead

A2: Opposite to load-side lead

REVISIONS

*The installation guide number is given on the bottom left of the back cover.

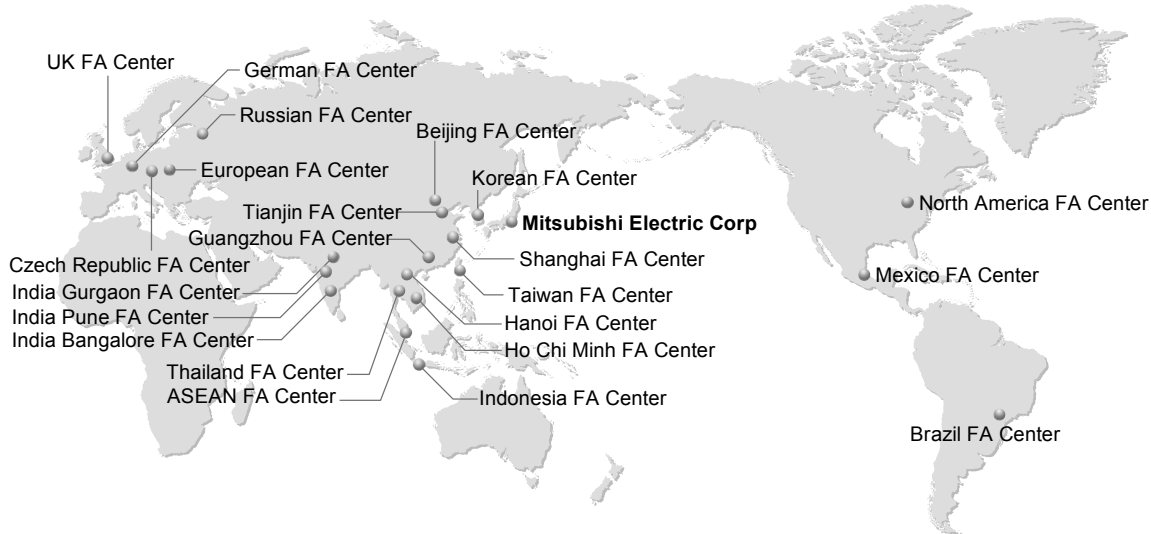
Print date	*Installation guide number	Revision description
August 2013	L(NA)03093-A	First edition
June 2015	L(NA)03093-B	<p>SAFETY INSTRUCTIONS Modified the table.</p> <p>Part 1, Section 2.1 Modified the table.</p> <p>Part 1, Section 3.2 Modified the table.</p> <p>Part 1, Section 3.3.1 Modified the table.</p> <p>Part 1, Section 3.3.2 Modified the contents.</p> <p>Part 1, Section 3.3.4 Modified the contents.</p> <p>Part 1, Section 4.2 Modified the contents.</p> <p>Part 2, Section 2.2 Modified the contents.</p> <p>Part 2, Section 3.1 Modified the table.</p> <p>Part 2, Section 3.2 Modified the table.</p> <p>Part 2, Section 3.3, (1) Modified the table.</p> <p>Part 2, Section 3.4 Modified the table.</p> <p>Part 2, Section 3.6.1 Modified the table.</p> <p>(1), (2)</p> <p>Part 2, Section 3.6.2 Modified the table.</p> <p>Part 2, Section 3.6.3 Modified the table.</p> <p>Part 3, Chapter 1 Modified the contents.</p> <p>Part 3, Section 2.1 Modified the figure.</p> <p>Part 3, Section 2.2 Modified the table.</p> <p>Part 3, Section 3.1 Modified the table.</p> <p>Part 3, Section 3.2 Modified the table.</p> <p>Part 3, Section 3.5 Modified the contents.</p> <p>Part 3, Section 3.7.3 Modified the table.</p> <p>Part 3, Section 3.8 Modified the contents.</p> <p>Part 4, Part 5 New addition</p> <p>Part 4, Section 2.2 Modified the table.</p> <p>Part 6 to 10 Modified part 4, 5, 6, 7 and 8 into part 6, 7, 8, 9 and 10 respectively.</p> <p>Part 6, Section 2.1 Modified the figure.</p> <p>Part 6, Section 3.1.1 Modified the table.</p> <p>Part 6, Section 3.3 Modified the table.</p> <p>Part 6, Section 3.5.1, (1) Modified the contents.</p> <p>Part 6, Section 4.1 Modified the figure.</p> <p>Part 6, Section 4.2 Modified the contents.</p> <p>Part 6, Section 4.5 Modified the contents.</p> <p>Part 6, Section 4.7.1 Modified the contents.</p> <p>Part 7, Section 1.1 Modified the table.</p> <p>Part 7, Section 1.2.1 Modified the table.</p> <p>Part 7, Section 1.2.2 Modified the table.</p> <p>Part 7, Section 1.2.3 Modified the contents.</p> <p>Part 7, Section 1.2.4 Modified the contents.</p> <p>Part 7, Section 1.2.5 Modified the table.</p> <p>Part 7, Section 1.2.6 Modified the contents.</p> <p>Part 7, Section 1.2.8 Modified the contents.</p> <p>Part 7, Section 1.2.9 Modified the contents.</p> <p>Part 7, Section 2.1.1 to Section 2.1.7 Reviewed Section 2.1.1 and 2.1.2 layouts, and modified them into Section 2.1.1 to 2.1.7.</p> <p>Part 7, Section 2.2 Modified the contents.</p> <p>Part 7, Section 2.3, Section 2.4 Reviewed Chapter 3 layout and modified it into Section 2.3 and 2.4.</p>

Print date	*Installation guide number	Revision description	
June 2015	L(NA)03093-B	Part 9, Section 7.8 Part 9, Section 8.1 Part 9, Section 8.2.1 Part 9, Section 8.3.1 Appendix 1 Appendix 1, Chapter 7 Appendix 1, Section 8.1 Appendix 1, Chapter 11 Appendix 2, Section 1.1 Appendix 2, Section 1.2 Appendix 2, Section 1.2.1 Appendix 2, Section 1.2.2 Appendix 2, Section 1.3 Appendix 2, Section 1.4 Appendix 2, Chapter 2 Appendix 2, Section 2, (2) Appendix 2, Chapter 3 Appendix 2, Section 3.1 Appendix 2, Section 3.2.1 Appendix 2, Chapter 4 Appendix 2, Section 4.1 Appendix 2, Section 4.2 Appendix 2, Section 4.3 Appendix 2, Chapter 5 Appendix 2, Section 5.1 Appendix 2, Section 5.2 Appendix 2, Section 5.3 Appendix 2, Section 5.4 Appendix 2, Section 5.5 Appendix 2, Section 5.6 Appendix 2, Section 5.7 Appendix 2, Section 5.8 Appendix 2, Section 6.1 Appendix 2, Section 6.2 Appendix 2, Chapter 7 Appendix 2, Section 7.2.1 Appendix 2, Chapter 8 Appendix 2, Section 8.1	Modified the contents. Modified the contents. Modified the contents. Modified the table. Revised all contents. Modified the table. Modified the contents. New addition Modified the contents. Modified the contents. Modified the figure. Modified the table. Modified the contents. Modified the contents. Modified the contents. Modified the contents. Modified the table. Modified the contents. Modified the contents. Revised all contents. Modified the contents. Modified the contents. Modified the contents. Modified the contents. Modified the contents. Modified the contents. Modified the contents. Modified the contents. Modified the contents. Modified the table. Modified the table. New addition Modified the contents. Modified former Chapter 7 into Chapter 8 due to adding the new Chapter 7. Modified the contents.

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Transition from MELSERVO-J2-Super/J2M Series to J4 Series Handbook

Safety Warning

To ensure proper use of the products listed in this catalog, please be sure to read the instruction manual prior to use.

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