MITSUBISHI ELECTRIC

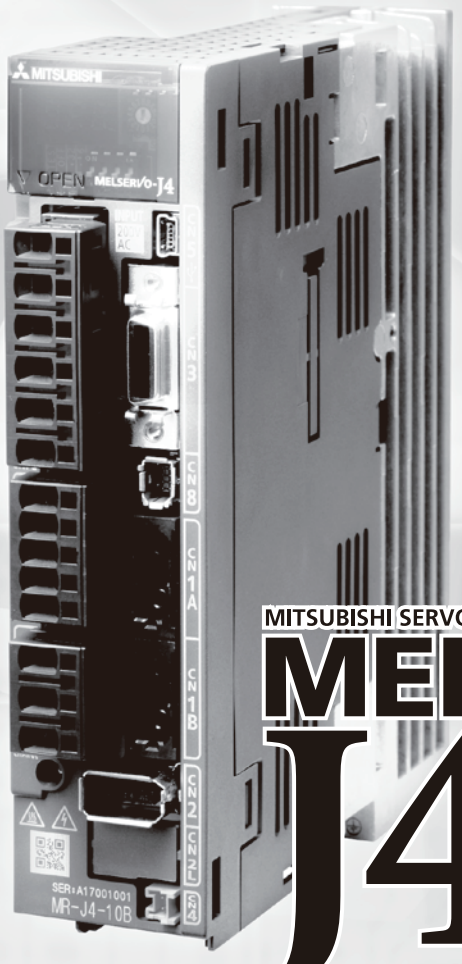
Changes for the Better

for a greener tomorrow

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. Otherwise, it 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 power supply and the main circuit power supply (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 a fire when the servo amplifier malfunctions.
- ●When using the regenerative resistor, switch power off with the alarm signal. Not doing so may cause a 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 a molded-case circuit breaker to the power supply of the servo amplifier.

3. To prevent injury, note the following

⚠ CAUTION

- ●Only the voltage specified in the Instruction Manual should be applied to each terminal. Otherwise, a burst, damage, etc. may occur.
- ●Connect cables 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, etc.

(1) Transportation and installation

⚠ CAUTION

- ●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.

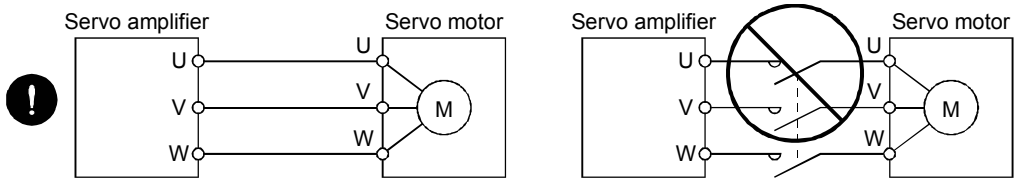
Item		Environment
Ambient temperature	Operation	0 ˚C to 55 ˚C (non-freezing)
	Storage	-20 ˚C to 65 ˚C (non-freezing)
Ambient humidity	Operation	90 %RH or less (non-condensing)
	Storage	
Ambience		Indoors (no direct sunlight) and free from corrosive gas, flammable gas, oil mist, dust, and dirt
Altitude		1000 m or less above sea level
Vibration resistance		5.9 m/s^2, 10 to 55 Hz (Each direction of X, Y, and Z)

- ●Contact your local sales office 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).

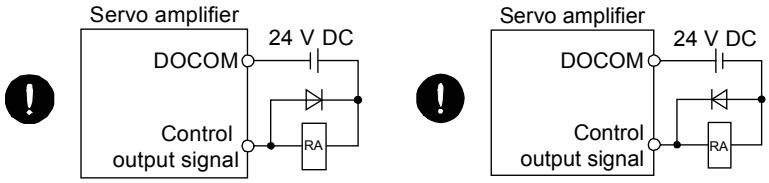
(2) Wiring

⚠ 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.



For sink output interface　　For source output interfaces

●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) Test run and 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.
●Do not close to moving parts at servo-on status.

(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.

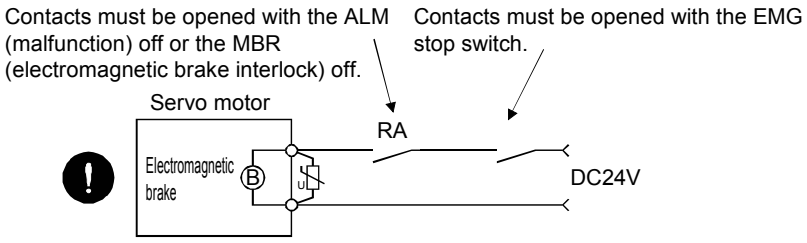
⚠ CAUTION

●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.
●Use a noise filter, etc. to minimize the influence of electromagnetic interference. Electromagnetic interference may be given to the electronic equipment used near the servo amplifier.
●Burning or breaking a servo amplifier may cause a toxic gas. 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 also by an external 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 recommend that the electrolytic capacitor be replaced every 10 years when it is used in general environment. Please contact your local sales office.

(7) General instruction

●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 ●

Please dispose a servo amplifier, battery (primary battery) and other options according to your local laws and regulations.

⚠ 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.

COMPLIANCE WITH CE MARKING

For compliance with CE marking, refer to "MELSERVO-J4 Series Instructions and Cautions for Safe Use of AC Servos" (IB(NA)0300175) which packed with the servo amplifier.

COMPLIANCE WITH UL/CSA STANDARD

For conformity of UL/CSA standard, refer to "MELSERVO-J4 Series Instructions and Cautions for Safe Use of AC Servos" (IB(NA)0300175) which packed with the servo amplifier.

COMPLIANCE WITH KC MARK

For compliance with KC mark, refer to "MELSERVO-J4 Series Instructions and Cautions for Safe Use of AC Servos" (IB(NA)0300175) which packed with the servo amplifier.

«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 No.
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) 030109
MELSERVO Servo Motor Instruction Manual (Vol. 3) (Note 1)	SH(NA) 030113
MELSERVO Linear Servo Motor Instruction Manual (Note 2)	SH(NA) 030110
MELSERVO Direct Drive Motor Instruction Manual (Note 3)	SH(NA) 030112
MELSERVO Linear Encoder Instruction Manual (Note 2, 4)	SH(NA) 030111
EMC Installation Guidelines	IB(NA) 67310

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.

MEMO

CONTENTS

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
MR-J2S Series	MR-J2S-_A_
	MR-J2S-_B_
MR-J2M Series	MR-J2M-P8A+ MR-J2M-_DU
	MR-J2M-P8B+ MR-J2M-_DU

→

Series	Servo amplifier model
MR-J4 Series	MR-J4-_A_
	MR-J4-_B_
	MR-J4-_A_
	MR-J4-_B_

2.2 Servo Motor Replacement Target Model

		Series	Servo motor model
Small capacity	Low inertia	HC Series	HC-KFS_
	Ultra-low inertia		HC-MFS_
	Flat		HC-UFS_
Medium capacity	Medium inertia		HC-SFS_
	Low inertia		HC-LFS_
	Ultra-low inertia		HC-RFS_
	Flat		HC-UFS_
Large capacity	Low inertia	HA Series	HA-LFS_

→

Series	Servo motor model
HG Series	HG-KR_
	HG-MR_
	HG-KR_
	HG-SR_
	HG-JR_
	HG-RR_
	HG-UR_
	HG-JR_

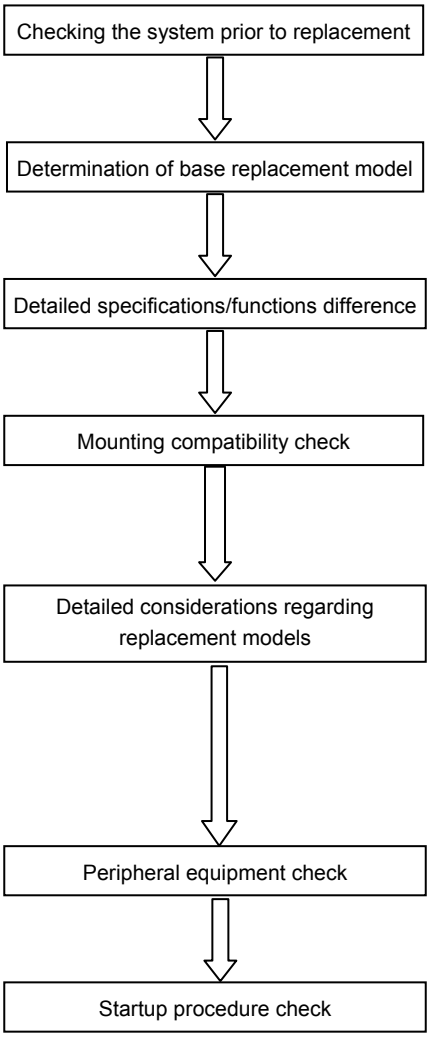
Note. For details, see "Part 6: Replacement of Motor".

3 FLOW OF REPLACEMENT

3.1 Summary

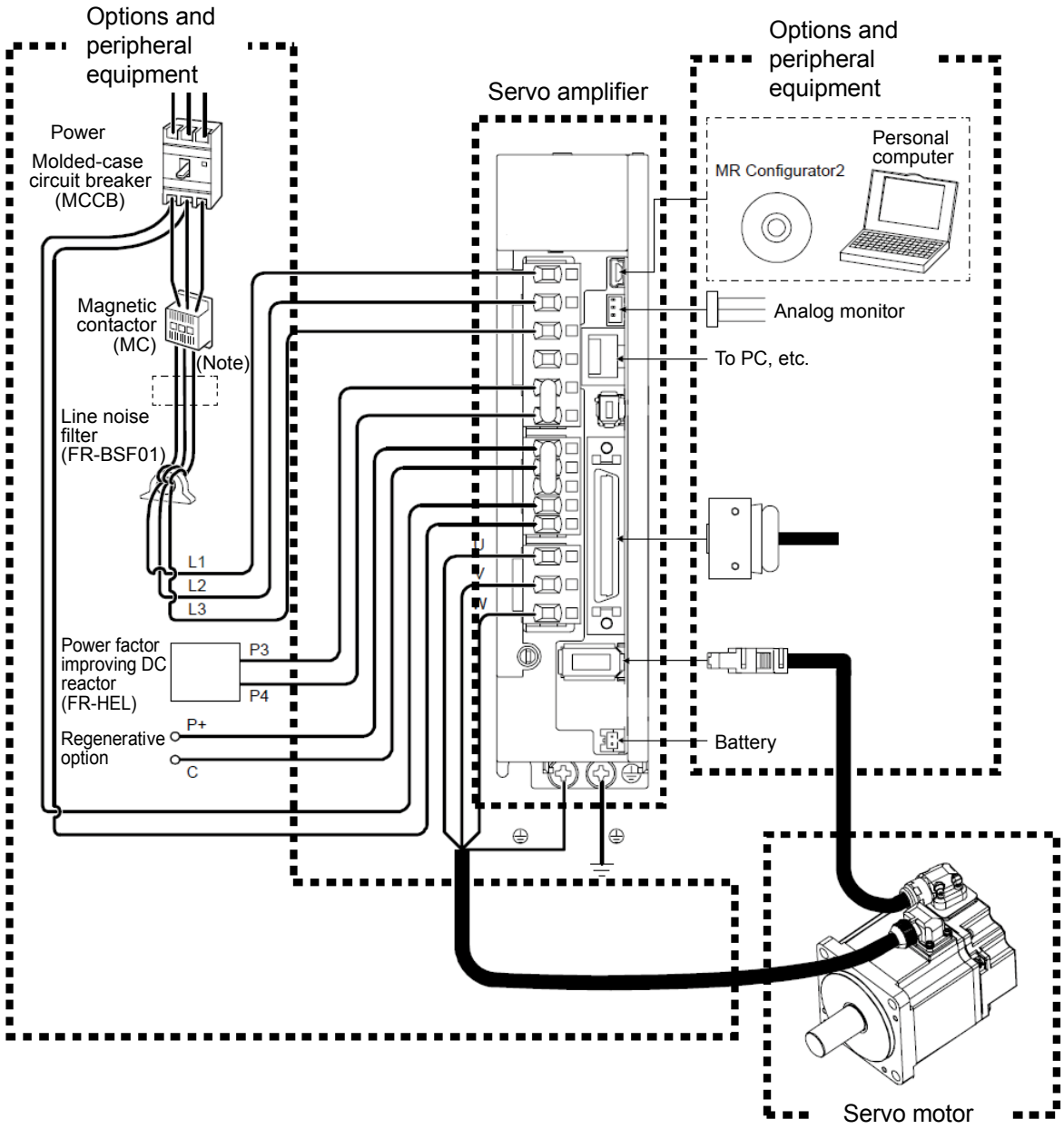
This section describes the flow of replacement when replacing a system using the MR-J2S/MR-J2M series with a system using the MR-J4 series.

3.2 Flow of Replacement



- Checking the system prior to replacement • • • Check the components of the system prior to replacement.
  : See "3.3.1 Checking the system prior to replacement" in this document.
- Determination of base replacement model • • • Determine the base replacement model for the servo amplifier/servo motor model used for the system prior to replacement.
  : See "3.3.2 Determination of base replacement model" in this document.
- Detailed specifications/functions difference • • • Determine the base replacement model and check the impact according to the "specification/function" of the replacement model.
  : Check "Part 5: Common Reference Material" in this document.
- Mounting compatibility check • • • Check the compatibility and the installation differences in the "Mounting compatibility" items in the list of base replacement models.
  : Check "Part 5: Common Reference Material, 2. SERVO AMPLIFIER DIMENSIONS / INSTALLATION DIFFERENCES", and "Part 6: Replacement of Motor" in this document.
- Detailed considerations regarding replacement models • • • Determine the replacement strategy and perform detailed designing.
  : Check "Part 2: Replacement of MR-J2S-_A_ with MR-J4-_A_", "Part 3: Replacement of MR-J2S-_B_ with MR-J4-_B_", "Part 4: Replacement of MR-J2M with MR-J4", and "Part 6: Replacement of Motor" in this document.
- Peripheral equipment check • • • Check the peripheral equipment that comes with the replacement.
  : Check "Part 7: Replacement of Optional Peripheral Equipment" in this document.
- Startup procedure check • • • Check the startup procedure.
  : Check "Part 8: Startup Procedure Manual" in this document.

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



Note. The power factor improving AC reactor can also be used. In this case, the power factor improving DC reactor cannot be used. When not using the power factor improving DC reactor, short P3 and P4.

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 4, Section 3.3 Part 5, Section 1.2.2
	Terminal block	Terminal block shape, location, and method of drawing out wires are different.	Part 5, 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 5, 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 5, 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 4, Section 3.5 Part 5, 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.	Part 5, Chapter 2
	Interface 24 V DC power supply	For MR-J4, an external 24 V DC power supply is required for the interface.	Part 5, Section 1.2.5
	Dynamic brake coasting distance	The servo motor has a different dynamic brake coasting distance.	Part 5, 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 5, 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 5, 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
Options and peripheral equipment	Molded-case circuit breaker Fuse	Those for MR-J2S may not be usable. Select those for MR-J4.	Part 7, Section 4.3
	Magnetic contactor	Those for MR-J2S may not be usable. Select those for MR-J4.	Part 7, Section 4.3
	Power factor improving AC reactor	Those for MR-J2S may not be usable. FR-HAL is recommended.	Part 7, Section 7.1 Part 7, Section 7.3 Part 7, Section 7.6 Part 7, Section 7.8
	Power factor improving DC reactor	Those for MR-J2S may not be usable. FR-HEL is recommended.	Part 7, Section 7.2 Part 7, Section 7.4 Part 7 ,Section 7.5 Part 7, Section 7.7
	Regenerative option	Some regenerative options cannot be used for MR-J4.	Part 7, Chapter 1
	MR Configurator	MR Configurator cannot be used for MR-J4. Use MR Configurator2.	Part 7, Chapter 8
	Battery	Use MR-BAT6V1SET for MR-J4.	Part 5, Chapter 4 Part 7, Chapter 5
	Encoder cable	Replace the encoder cable because the shape of the CN2 connector is different. (Note)	Part 5, Section 1.2.2 Part 7, 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 7, Chapter 4
	Dynamic brakes	Some dynamic brakes cannot be used for MR-J4.	Part 7, Chapter 2
	EMC filter	The recommended EMC filter is different.	Part 7, Chapter 6
	Heat sink outside mounting attachment	It will not be available with MR-J4.	Part 5, Chapter 2

Changes	Check items	Impact	Reference document/items
Servo motor	Dimensions	The total length may be different.	Part 6, Section 2.1 Part 6, Section 2.2 Part 6, Section 2.3
	Mounting compatibility	Some servo motors have no mounting compatibility.	Part 6, Chapter 1
	Connector	The power connector, encoder connector, and electromagnetic brake connector are different form one another in shape.	Part 6, Section 2.6
	Reducer	The HG motor has no G2-type reducer for high precision applications. In addition, the actual reduction ratio of the G1-type reducer of the HC motor is different from that of the G1-type reducer of the HG motor.	Part 6, Section 1.1 Part 6, Section 2.3 Part 6, Section 2.4
	Moment of inertia	The moment of inertia of the HC/HA motor is different from that of the HG motor.	Part 6, Section 2.5
	Recommended load to motor inertia ratio	The recommended range of the recommended load to motor inertia ratio for the servo motor differs between the HC/HA motor and the HG motor.	Part 6, Section 2.5
	Torque characteristics	The torque characteristics of the HC/HA motor are different from those of the HG motor.	Part 6, Section 2.7
	Maximum speed	The maximum speed of the HC/HA motor is different from that of the HG motor.	Servo Motor Instruction Manual (Vol. 3)
	Thermal sensor	For HG-JR22K1M(4), a thermistor is used instead of a thermal sensor.	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/A173UHCPU series with the Q series

Note. Use the renewal tool if using an existing encoder cable (including options).
(See "[Appendix 2] Introduction to Renewal Tool".)
Contact your local sales office if using an existing encoder cable when replacing an HA-LFS motor of 11 kW or more with an HG-JR motor, contact your local sales office.

3.3 Replacement Procedure

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) A1SD75P(D)	MR-J2S-_A_ MR-J2M-_A_	→	(1) MR-J2S series "Part 2: Replacement of MR-J2S-_A_ with MR-J4-_A_" (2) MR-J2M series "Part 4: Replacement of MR-J2M with MR-J4"	Positioning control
Controller from another company	Controller from another company	MR-J2S-_A_ MR-J2M-_A_	→		
No controller connected	No controller	MR-J2S-_A_ MR-J2M-_A_	→		Speed, torque limit
SSCNET Positioning module	QD75M A1SD75M	MR-J2S-_B_ MR-J2M-_B_	→	(1) MR-J2S series "Part 3: Replacement of MR-J2S-_B_ with MR-J4-_B_" (2) MR-J2M series "Part 4: Replacement of MR-J2M with MR-J4"	Positioning control
SSCNET Motion controller	Q17_CPUN A17_SHCPU A273UHCPU	MR-J2S-_B_ MR-J2M-_B_	→		Positioning control

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)	Mounting compatibility (○: Compatible)	Precautions
200 VAC General-purpose interface	MR-J2S-10A	MR-J4-10A	○	See "Part 5: 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)	
	MR-J2S-350A	MR-J4-350A	(Note)	
	MR-J2S-500A	MR-J4-500A	(Note)	
	MR-J2S-700A	MR-J4-700A	(Note)	
	MR-J2S-11KA	MR-J4-11KA	(Note)	
	MR-J2S-15KA	MR-J4-15KA	(Note)	
	MR-J2S-22KA	MR-J4-22KA	(Note)	
200 VAC 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)	
	MR-J2S-350B	MR-J4-350B	(Note)	
	MR-J2S-500B	MR-J4-500B	(Note)	
	MR-J2S-700B	MR-J4-700B	(Note)	
	MR-J2S-11KB	MR-J4-11KB	(Note)	
	MR-J2S-15KB	MR-J4-15KB	(Note)	
	MR-J2S-22KB	MR-J4-22KB	(Note)	

Note. 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.

Series	Model	Replacement model (example)	Mounting compatibility (○: Compatible)	Precautions
AC400 V General-purpose interface	MR-J2S-60A4	MR-J4-60A4	(Note)	See "Part 5: 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)	
AC400 V 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)	

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.)

(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)	Mounting compatibility (○: Interchangeable)	Precautions
	Base unit	Interface unit	Drive Unit			
200 VAC general-purpose Interface	MR-J2M-BU_	MR-J2M-P8A	MR-J2M-10DU	MR-J4-10A	(Note)	See "Part 5: Common Reference Material".
			MR-J2M-20DU	MR-J4-20A	(Note)	
			MR-J2M-40DU	MR-J4-40A	(Note)	
			MR-J2M-70DU	MR-J4-70A	(Note)	
200 VAC 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 5: Common Reference Material" for the mounting hole dimensions.

(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 6: Replacement of Motor".

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

(a) 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

(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

3.3.3 Mounting compatibility check

Check "Part 5: Common Reference Material" and "Part 6: Replacement of Motor".

3.3.4 Detailed considerations regarding replacement models

Check "Part 2: Replacement of MR-J2S-_A_ with MR-J4-_A_", "Part 3: Replacement of MR-J2S-_B_ with MR-J4-_B_", and "Part 4: Replacement of MR-J2M with MR-J4".

3.3.5 Peripheral equipment check

See "Part 7: Replacement of Optional Peripheral Equipment" in this document.

3.3.6 Startup procedure check

See "Part 8: 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) Servo Amplifier Instruction Manual

(2) MELSERVO-J4 Series MR-J4-_B(-RJ) Servo Amplifier Instruction Manual

(3) MELSERVO-J4 Series MR-J4-_A4(-RJ) and MR-J4-_B4(-RJ) Servo Amplifier Instruction Manual

(4) MELSERVO Servo Motor Instruction Manual (Vol. 3)

(5) MELSERVO-J4 Series MR-J4-_B-RJ020＋MR-J4-T20 Servo Amplifier Instruction Manual

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

4.5 MITSUBISHI ELECTRIC FA Global Website

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

MEMO

Part2
Replacement of MR-J2S-_A_ with MR-J4-_A_

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

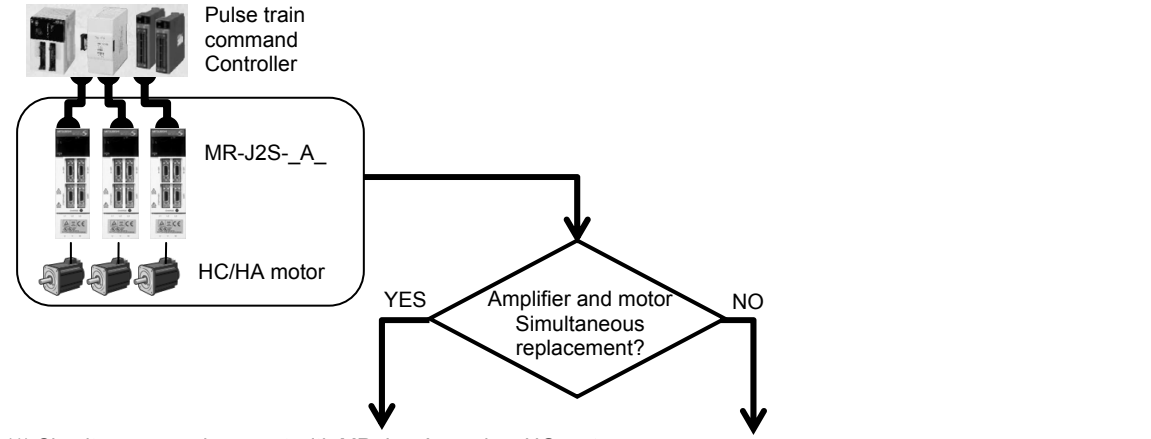
1 SUMMARY

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 Consideration of 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.

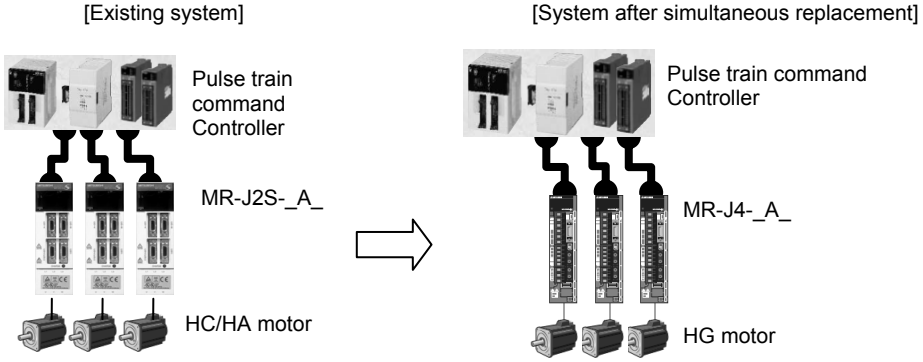


Note. Separate repair means replacement.

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 5: Common Reference Material".)



(2) Separate repair of servo amplifier

POINT

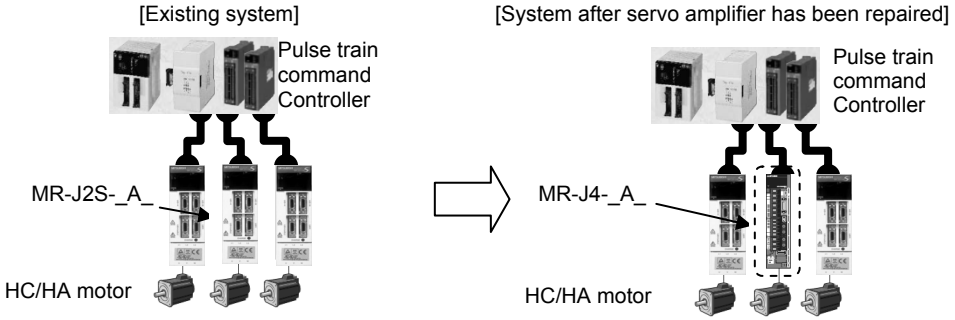
- An HG motor cannot be driven by MR-J2S-_A_. When a servo motor is replaced with an HG motor, servo amplifier also needs to be replaced with MR-J4-_A_ simultaneously.
- When an "HC/HA motor" shown below is used, "Simultaneous replacement with MR-J4-_A_ and an HG motor" is recommended. When an HG motor is adopted, the capacity of the servo amplifier needs to be changed.

Existing model		Model with which to replace existing model simultaneously	
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)
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 5: Common Reference Material".

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 5: Common Reference Material".)



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 document/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	(Note1)	MR-J4-_A_ Servo Amplifier Instruction Manual Section 3.6.1 (1)
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)	←	(Note2)	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 2ch	←	○	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	←	○	MR-J4-_A_ Servo Amplifier Instruction Manual, Chapter 4
Button	Four 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 24 V DC power supply	Installed.	Not installed.	×	Part 5, Section 1.2.4
Initializing time	1 to 2 s	2.5 to 3.5 s	×	Part 5, Section 1.2.7
Z-phase pulse width	At low speed: About 0.5 ms At high speed: About 900 μs	At low speed: About 0.5 ms At high speed: About 400 μs	×	Part 5, 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.

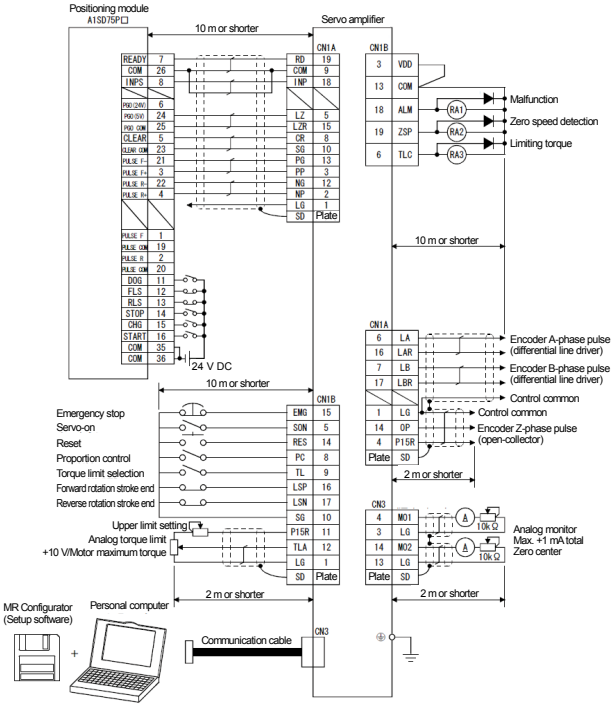
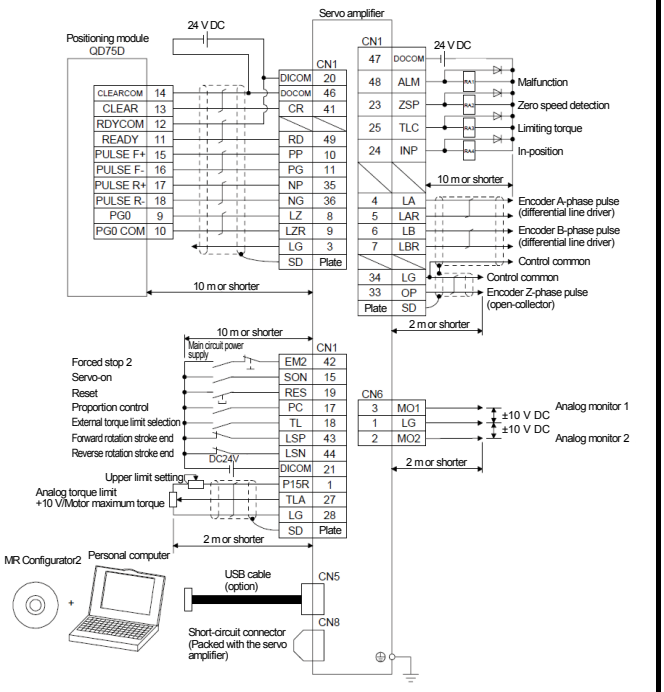
3.2 Function List

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		○ [Parameter No. 1]	○ [Pr. PA03]	MR-J4-_A_ Servo Amplifier Instruction Manual, Chapter 12
Gain switching function		○ [Parameter No. 65]	○ [Pr. PB26]	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 7.2
Advanced vibration suppression control II		×	○	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 7.1.5
Adaptive vibration suppression control		○ [Parameter No. 60]	× (Note)	-
Adaptive filter II		×	○ [Pr. PB01]	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 7.1.2
Low-pass filter		○ [Parameter No. 60]	○ [Pr. PB23]	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 7.1.4
Machine analyzer function		○	○	-
Machine simulation		○	×	-
Gain search function		○	○ (One-touch tuning)	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 6.2
Robust filter		×	○ [Pr. PE41]	-
Slight vibration suppression control		○ [Parameter No. 20]	○ [Pr. PB24]	-
Auto tuning		○ [Parameter No. 2]	○ [Pr. PB08]	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 6.3
Brake unit		○	○	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 11.3
Power regenerative converter		○	○	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 11.4
Regenerative option		○ [Parameter No. 0]	○ [Pr. PA02]	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 11.2
Torque limit		○ [Parameter No. 28, 76]	○ [Pr. PA11], [Pr. PA12], [Pr. PC35]	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 3.6.1 (5)
Alarm history clear		○ [Parameter No. 16]	○ [Pr. PC18]	-
Output signal selection (device settings)		○ [Parameter No. 49]	○ [Pr. PD23] to [Pr. PD28]	-
Output signal (DO) forced output		○	○	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 4.5.8
Test operation mode	JOG operation	○	○	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 4.5.9
	Positioning operation	○ Requires the MR Configurator.	○ Requires the MR Configurator2.	
	Motor-less operation	○	○ [Pr. PC60]	
	Machine analyzer operation	○ Requires the MR Configurator.	○ Requires the MR Configurator2.	
Analog monitor output		○ [Parameter No. 17]	○ [Pr. PC14], [Pr. PC15]	MR-J4-_A_ Servo Amplifier Instruction Manual Appendix 7
Setup software		MR Configurator	MR Configurator2	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 11.7
Linear servo system		×	○	MR-J4-_A_ Servo Amplifier Instruction Manual, Chapter 15
Direct drive servo system		×	○	MR-J4-_A_ Servo Amplifier Instruction Manual, Chapter 16
Fully closed loop system		×	○	MR-J4-_A_ Servo Amplifier Instruction Manual, Chapter 17
STO function		×	○	MR-J4-_A_ Servo Amplifier Instruction Manual, Chapter 13

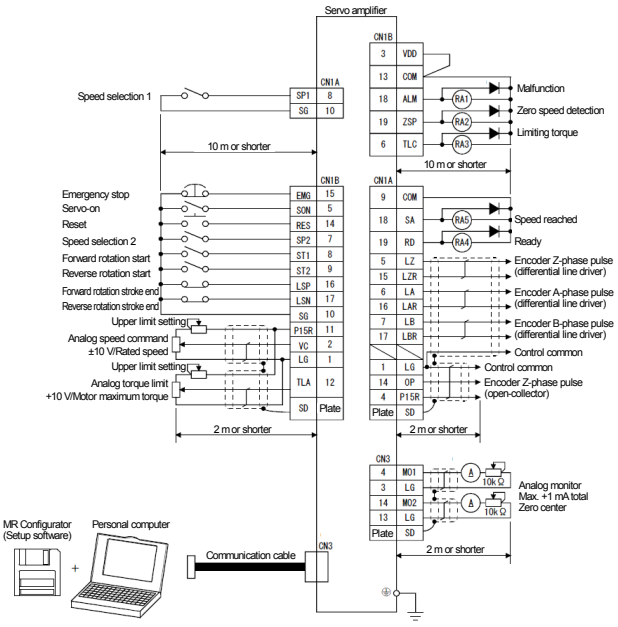
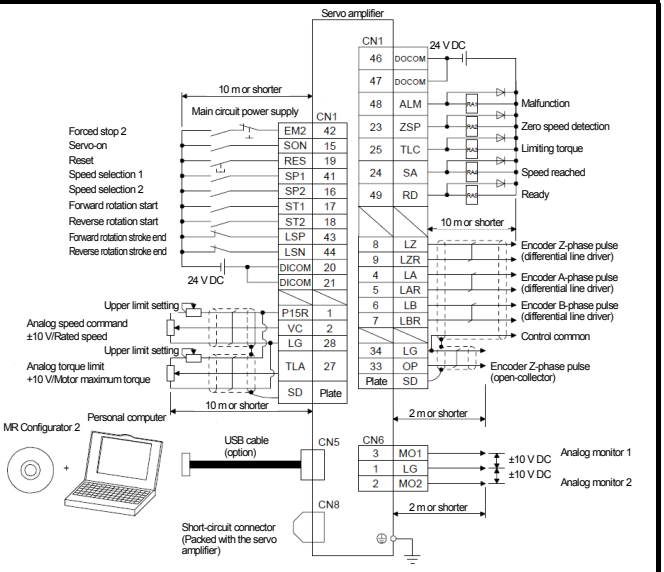
Note. This function is provided by advanced vibration suppression control II.

3.3 Comparison of Standard Connection Diagrams

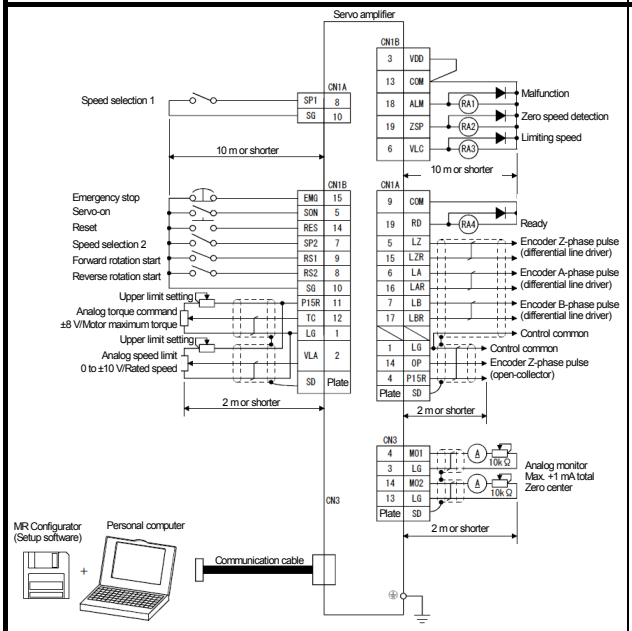
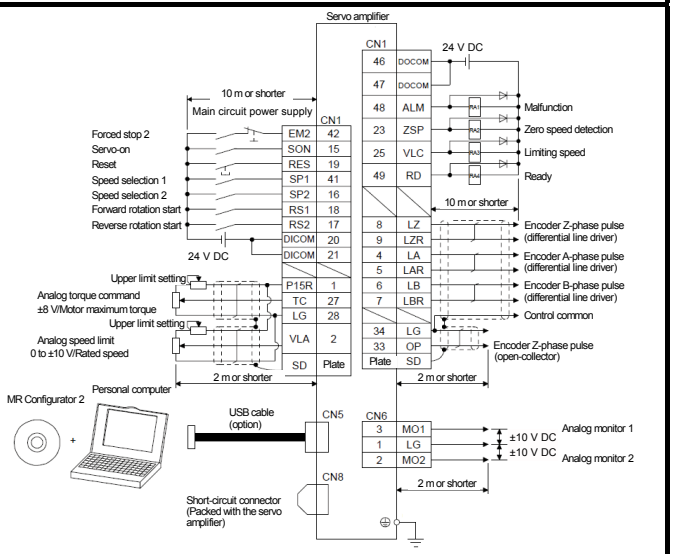
(1) Position control mode

MR-J2S-_A_	MR-J4-_A_
Example of connection to A1SD75P_  For 11 to 22 kW, the connector for the analog monitor is CN4. (See Section 3.4 (2) (c).)	Example of connection to QD75D 

(2) Speed control mode

MR-J2S-_A_	MR-J4-_A_
 For 11 to 22 kW, the connector for the analog monitor is CN4. (See Section 3.4 (2) (c).)	

(3) Torque control mode

MR-J2S-_A_	MR-J4-_A_
	

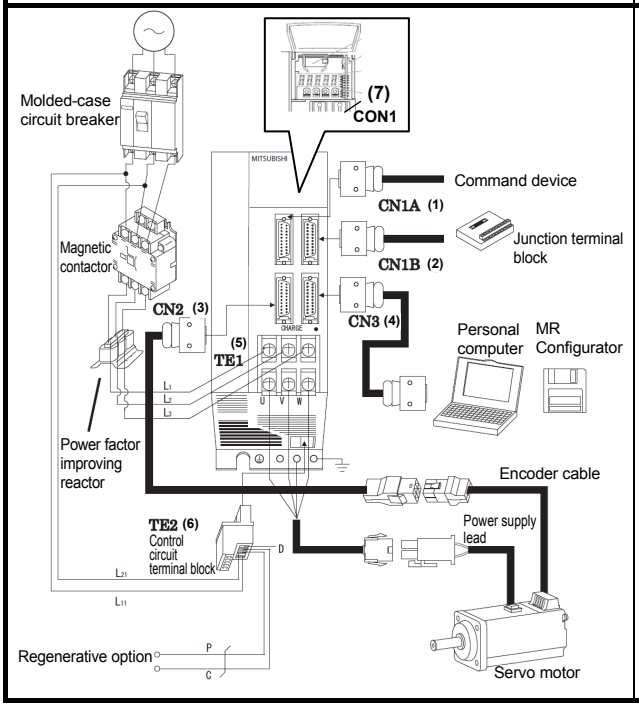
For 11 to 22 kW, the connector for the analog monitor is CN4. (See Section 3.4 (2) (c).)

3.4 List of Corresponding Connectors and Terminal Blocks

(1) Connector comparison table

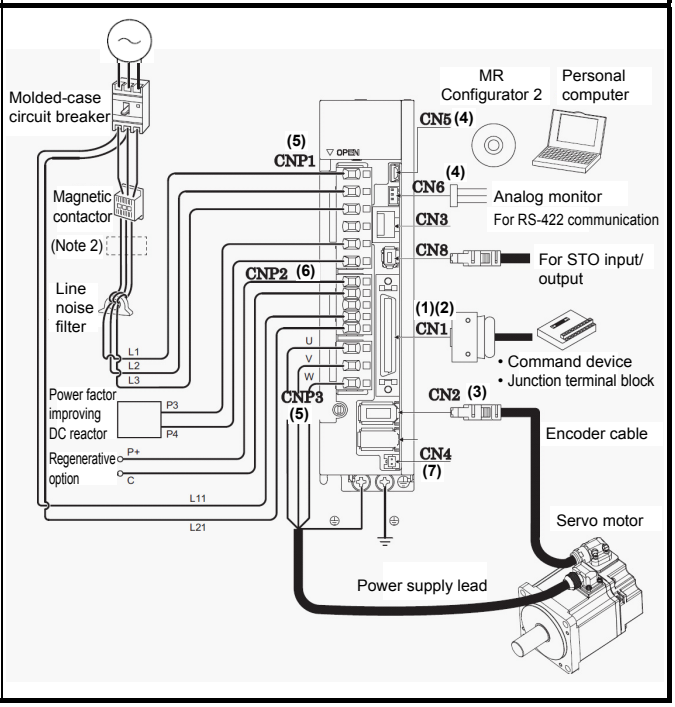
An example of connections with the peripheral equipment is shown below. For details on signals, see each servo amplifier instruction manual.

MR-J2S-_A_



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

MR-J4-_A_



Note 1. The above configuration example is applied to MR-J4-200A or a system with less capacity.
2. A 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_	Precautions
(1)	I/O signal connector CN1A			I/O signal connector CN1	Must fabricate 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	PC connection		USB communication connector CN5	Must switch to USB cable (option).
		Analog monitor	→	Analog monitor connector CN6	Must switch to monitor cable (option).
(5)	Main circuit terminal block TE1	Input power supply		Main circuit power connector CNP1	Must switch to power connector (enclosed with amplifier).
		Servo motor power supply		Servo motor power connector CNP3	
(6)	Control circuit terminal block TE2			Control circuit power connector CNP2	
(7)	Battery connector CON1			Battery connector CN4	Must fabricate a new battery.

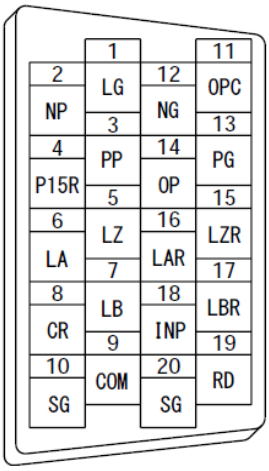
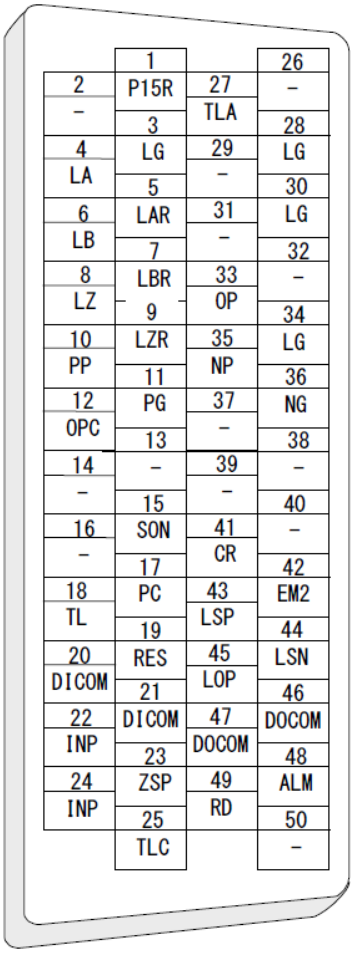
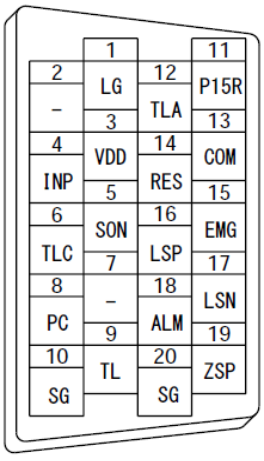
When not using the STO function in MR-J4-_A_, attach the short-circuit connector supplied with the servo amplifier to CN8 (STO input signal connector).

The configuration of the main circuit terminal block differs depending on the capacity. See "Part 5: Common Reference Material".

(2) Comparison of signals

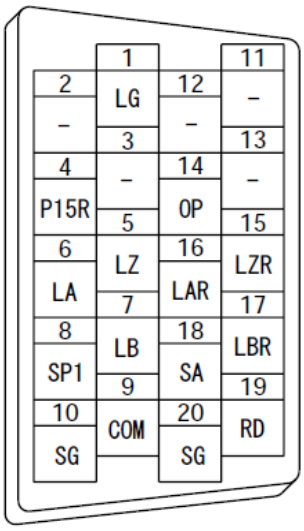
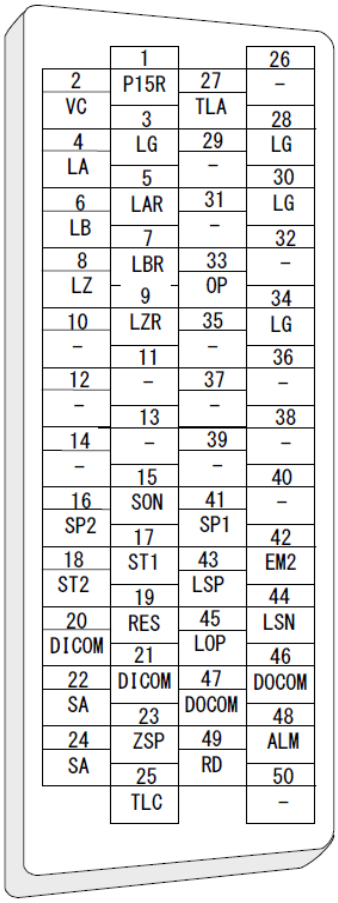
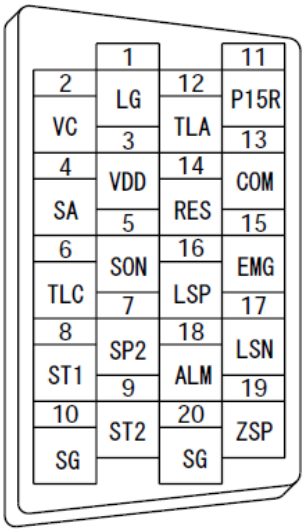
(a) CN1A/CN1B

1) Position control mode

MR-J2S-_A_		Signal abbreviation (Note)	MR-J4-_A_	
Connector pin assignment	Connector pin No.		Connector pin No.	Connector pin assignment
CN1A  	CN1A-1	LG	CN1-3 CN1-28	CN1 
	CN1A-2	NP	CN1-35	
	CN1A-3	PP	CN1-10	
	CN1A-4	P15R	CN1-1	
	CN1A-5	LZ	CN1-8	
	CN1A-6	LA	CN1-4	
	CN1A-7	LB	CN1-6	
	CN1A-8	CR	CN1-41	
	CN1A-9	COM (DICOM)	CN1-20	
	CN1A-10	SG (DOCOM)	CN1-46	
	CN1A-11	OPC	CN1-12	
	CN1A-12	NG	CN1-36	
	CN1A-13	PG	CN1-11	
	CN1A-14	OP	CN1-33	
	CN1A-15	LZR	CN1-9	
	CN1A-16	LAR	CN1-5	
	CN1A-17	LBR	CN1-7	
	CN1A-18	INP	CN1-24	
	CN1A-19	RD	CN1-49	
	CN1A-20	SG (DOCOM)	CN1-47	
CN1B  	CN1B-1	LG	CN1-30 CN1-34	
	CN1B-2	-	-	
	CN1B-3	VDD	-	
	CN1B-4	INP	CN1-22	
	CN1B-5	SON	CN1-15	
	CN1B-6	TLC	CN1-25	
	CN1B-7	-	CN1-16	
	CN1B-8	PC	CN1-17	
	CN1B-9	TL	CN1-18	
	CN1B-10	SG (DOCOM)	CN1-46	
	CN1B-11	P15R	CN1-1	
	CN1B-12	TLA	CN1-27	
	CN1B-13	COM (DICOM)	CN1-21	
	CN1B-14	RES	CN1-19	
	CN1B-15	EMG (EM2)	CN1-42	
	CN1B-16	LSP	CN1-43	
	CN1B-17	LSN	CN1-44	
	CN1B-18	ALM	CN1-48	
	CN1B-19	ZSP	CN1-23	
	CN1B-20	SG (DOCOM)	CN1-47	

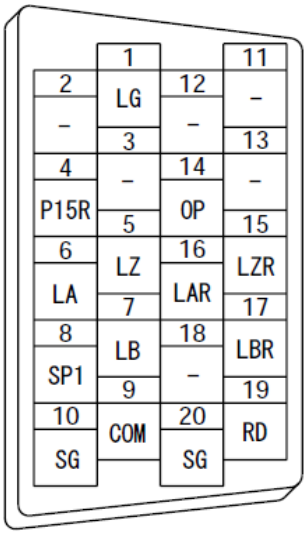
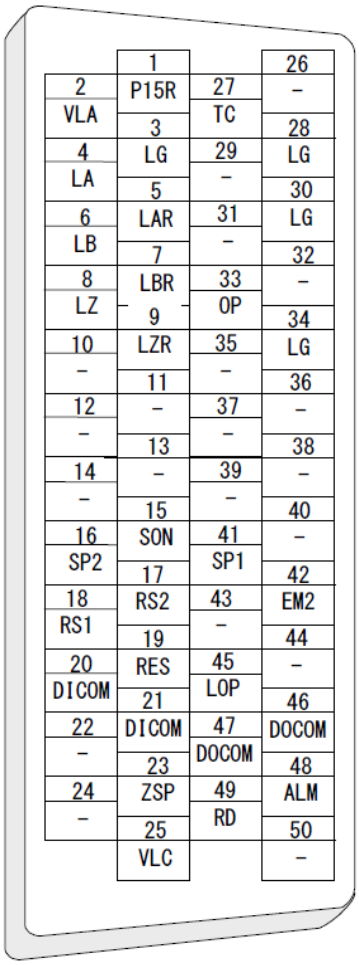
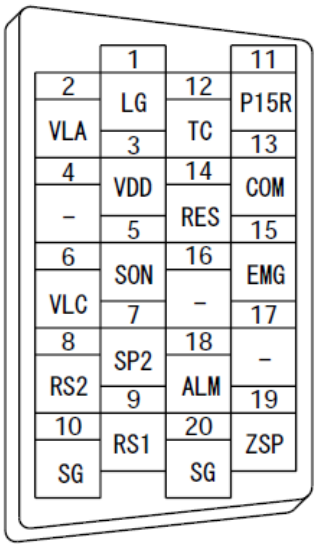
Note. Signal abbreviations in parentheses are for MR-J4-_A_.

2) Speed control mode

MR-J2S-_A_		Signal abbreviation (Note)	MR-J4-_A_	
Connector pin assignment	Connector pin No.		Connector pin No.	Connector pin assignment
CN1A  	CN1A-1	LG	CN1-3 CN1-28	CN1 
	CN1A-2	-	-	
	CN1A-3	-	-	
	CN1A-4	P15R	CN1-1	
	CN1A-5	LZ	CN1-8	
	CN1A-6	LA	CN1-4	
	CN1A-7	LB	CN1-6	
	CN1A-8	SP1	CN1-41	
	CN1A-9	COM (DICOM)	CN1-20	
	CN1A-10	SG (DOCOM)	CN1-46	
	CN1A-11	-	-	
	CN1A-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	SA	CN1-24	
	CN1A-19	RD	CN1-49	
	CN1A-20	SG (DOCOM)	CN1-47	
CN1B  	CN1B-1	LG	CN1-30 CN1-34	
	CN1B-2	VC	CN1-2	
	CN1B-3	VDD	-	
	CN1B-4	SA	CN1-22	
	CN1B-5	SON	CN1-15	
	CN1B-6	TLC	CN1-25	
	CN1B-7	SP2	CN1-16	
	CN1B-8	ST1	CN1-17	
	CN1B-9	ST2	CN1-18	
	CN1B-10	SG (DOCOM)	CN1-46	
	CN1B-11	P15R	CN1-1	
	CN1B-12	TLA	CN1-27	
	CN1B-13	COM (DICOM)	CN1-21	
	CN1B-14	RES	CN1-19	
	CN1B-15	EMG (EM2)	CN1-42 (Note)	
	CN1B-16	LSP	CN1-43	
	CN1B-17	LSN	CN1-44	
	CN1B-18	ALM	CN1-48	
	CN1B-19	ZSP	CN1-23	
	CN1B-20	SG (DOCOM)	CN1-47	

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

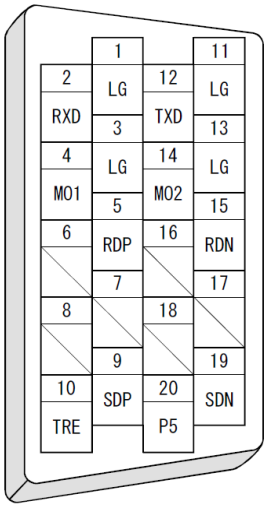
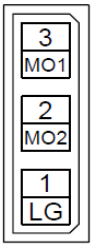
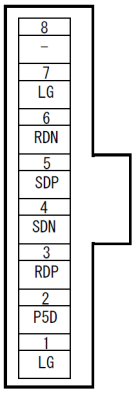
3) Torque control mode

MR-J2S-_A_		Signal abbreviation (Note)	MR-J4-_A_	
Connector pin assignment	Connector pin No.		Connector pin No.	Connector pin assignment
CN1A  	CN1A-1	LG	CN1-3 CN1-28	CN1 
	CN1A-2	-	-	
	CN1A-3	-	-	
	CN1A-4	P15R	CN1-1	
	CN1A-5	LZ	CN1-8	
	CN1A-6	LA	CN1-4	
	CN1A-7	LB	CN1-6	
	CN1A-8	SP1	CN1-41	
	CN1A-9	COM (DICOM)	CN1-20	
	CN1A-10	SG (DOCOM)	CN1-46	
	CN1A-11	-	-	
	CN1A-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	-	CN1-24	
	CN1A-19	RD	CN1-49	
	CN1A-20	SG (DOCOM)	CN1-47	
CN1B  	CN1B-1	LG	CN1-30 CN1-34	
	CN1B-2	VLA	CN1-2	
	CN1B-3	VDD	-	
	CN1B-4	-	-	
	CN1B-5	SON	CN1-15	
	CN1B-6	VLC	CN1-25	
	CN1B-7	SP2	CN1-16	
	CN1B-8	RS2	CN1-17	
	CN1B-9	RS1	CN1-18	
	CN1B-10	SG (DOCOM)	CN1-46	
	CN1B-11	P15R	CN1-1	
	CN1B-12	TC	CN1-27	
	CN1B-13	COM (DICOM)	CN1-21	
	CN1B-14	RES	CN1-19	
	CN1B-15	EMG (EM2)	CN1-42 (Note)	
	CN1B-16	-	-	
	CN1B-17	-	-	
	CN1B-18	ALM	CN1-48	
	CN1B-19	ZSP	CN1-23	
	CN1B-20	SG (DOCOM)	CN1-47	

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

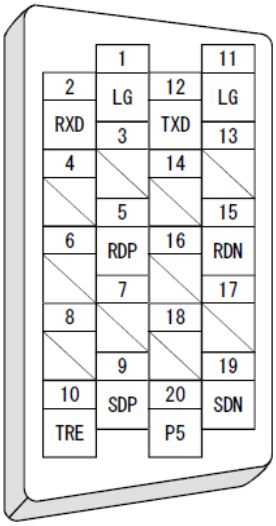
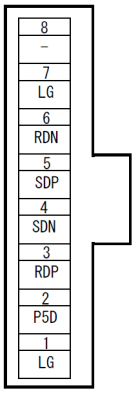
(b) CN3

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 	CN3-3	LG	CN6-1	CN6 
	CN3-4	MO1	CN6-2	
	CN3-14	MO2	CN6-3	
	CN3-13	LG	-	
	CN3-1	LG	CN3-1	CN3 
	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	-	

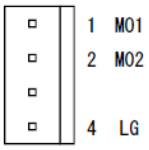
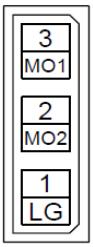
Note. Signal abbreviations in parentheses are for MR-J4-_A_.

2) For 11 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 	CN3-1	LG	CN3-1	CN3 
	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_.

(c) CN4 (11 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 	CN4-1	MO1	CN6-3	CN6 
	CN4-2	MO2	CN6-2	
	CN4-4	LG	CN6-1	

3.5 Comparison of Peripheral Equipment

POINT
● See "Part 7: Replacement of Optional Peripheral Equipment".

3.6 Comparison of Parameters

⚠CAUTION
- 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 5: 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 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 the minimum number of parameters that need to be set for simultaneous replacement. Depending on the settings of the currently used existing 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 No.	Name	Initial value	Setting value	Description
PA04	Function selection A-1	2 0 0 0 h	0 0 0 0 h	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 pulses	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 0 h	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 value is for when the output pulse setting of an existing HC-KFS motor (encoder resolution: 131072 pulses/rev) is "Dividing ratio: 1/4".

(2) Position control mode

Parameter No.	Name	Initial value	Setting value	Description
PA01	Operation mode	1 0 0 0 h	_ _ _ 0 h	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: $\frac{CMX}{CDV} = \frac{\text{Replacement servo motor Encoder resolution}}{\text{Servo motor for MR-J2S Encoder resolution}} \cdot \frac{\text{Former CMX}}{\text{Former CDV}} = \frac{4194304}{131072} \cdot \frac{8}{1} = \frac{256}{1}$ 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 0 h	_ x _ _h	Command input pulse train filter selection Selecting proper filter enables to enhance noise immunity. 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 No.	Name	Initial value	Setting value	Description
PA01	Operation mode	1 0 0 0 h	_ _ _ 2 h	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 No.	Name	Initial value	Setting value	Description
PA01	Operation mode	1 0 0 0 h	_ _ _ 4 h	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.

3.6.2 Parameter comparison list

POINT

- Manufacturer setting parameters are not described here.

MR-J2S-_A_ parameters						MR-J4-_A_ parameters				
No.	Symbol	Parameter name		Initial value	Customer setting value	No.	Symbol	Parameter name	Initial value	Customer setting value
0	*STY	Control mode, Regenerative option selection	Control mode	0000 h		PA01	*STY	Operation mode	1000 h	
			Regenerative option			PA02	*REG	Regenerative option	0000 h	
1	*OP1	Function selection 1	Input signal filter	0002 h		PD29	*DIF	Input filter setting	0004 h	
			Electromagnetic brake interlock selection			PD24	*DO2	Output device selection2 (electromagnetic brake interlock selection)	000Ch	
			Dynamic brake interlock selection (11 kW or more)			PD23	*DO1	Output device selection 1	0004 h	
						PD25	*DO3	Output device selection 3	0004 h	
						PD26	*DO4	Output device selection 4	0007 h	
						PD28	*DO6	Output device selection 6	0002 h	
			Absolute position detection system selection			PA03	*ABS	Absolute position detection system selection	0000 h	
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)	0001 h	
						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	0001 h	
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	0001 h	
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		PB08	PG2	Position loop gain (Note)	37.0	
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		0000 h		PC21	*SOP	RS-422 communication function selection	0000 h	
17	MOD	Analog monitor output		0100 h		PC14	MOD1	Analog monitor 1 output	0000 h	
						PC15	MOD2	Analog monitor 2 output	0001 h	
18	*DMD	Status display selection		0000 h		PC36	*DMD	Status display selection	0000 h	
19	*BLK	Parameter writing inhibit		0000 h		PA19	*BLK	Parameter writing inhibit	00AA h	
20	*OP2	Function selection 2	Restart after instantaneous power failure selection	0000 h				No corresponding parameter		
			Servo-lock upon stop selection			PC23	*COP2	Servo-lock selection at speed control stop	0000 h	
			Slight vibration suppression control			PB24	*MVS	Slight vibration suppression control selection	0000 h	
21	*OP3	Function selection 3 (command pulse selection)		0000 h		PA13	*PLSS	Command pulse input form	0100 h	
22	*OP4	Function selection 4	LSP, LSN stop selection	0000 h		PD30	*DOP1	Function selection D-1 (LSP, LSN stop selection)	0000 h	
			VC, VLA voltage averaging			PC23	*COP2	Function selection C-2 (VC, VLA voltage averaging)	0000 h	
23	FFC	Feed forward gain		0		PB04	FFC	Feed forward gain (Note)	0	

MR-J2S-_A_ parameters					MR-J4-_A_ parameters				
No.	Symbol	Parameter name	Initial value	Customer setting value	No.	Symbol	Parameter name	Initial value	Customer setting value
24	ZSP	Zero speed	50		PC17	ZSP	Zero speed	50	
25	VCM	Analog speed command - Maximum speed / Analog speed limit - Maximum speed	0		PC12	VCM	Analog speed command - Maximum speed / Analog speed limit - Maximum speed	0	
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	0000 h	
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 / Analog speed limit offset	Differs depending on servo amplifier		PC37	VCO	Analog speed command offset	Differs depending on servo amplifier	
30	TLO	Analog torque command offset / Analog torque limit offset	0		PC38	TPO	Analog torque command offset / Analog torque limit offset	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	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	0000 h		PD01	*DIA1	Input signal automatic on selection 1	0000 h	
42	*DI1	Input signal selection 1 (LOP assignment): Pin CN1B-5	0003 h		PD03	*DI1L	Input device selection 1L	0202 h	
		Pin CN1B-14			PD04	*DI1H	Input device selection 1H	0002 h	
		Pin CN1A-8			PD11	*DI5L	Input device selection 5L	0303 h	
		Pin CN1B-7			PD12	*DI5H	Input device selection 5H	0003 h	
		Pin CN1B-8			PD13	*DI6L	Input device selection 6L	2006 h	
		Pin CN1B-9			PD14	*DI6H	Input device selection 6H	0020 h	
					PD05	*DI2L	Input device selection 2L	2100 h	
					PD06	*DI2H	Input device selection 2H	0021 h	
					PD07	*DI3L	Input device selection 3L	0704 h	
					PD08	*DI3H	Input device selection 3H	0007 h	
					PD09	*DI4L	Input device selection 4L	0805 h	
					PD10	*DI4H	Input device selection 4H	0008 h	
		CR selection			PD32	*DOP3	CR selection	0000 h	
43	*DI2	Input signal selection 2 (CN1B-5)	0111 h		PD03	*DI1L	Input device selection 1L	0202 h	
					PD04	*DI1H	Input device selection 1H	0002 h	
44	*DI3	Input signal selection 3 (CN1B-14)	0222 h		PD11	*DI5L	Input device selection 5L	0303 h	
					PD12	*DI5H	Input device selection 5H	0003 h	
45	*DI4	Input signal selection 4 (CN1A-8)	0665 h		PD13	*DI6L	Input device selection 6L	2006 h	
					PD14	*DI6H	Input device selection 6H	0020 h	
46	*DI5	Input signal selection 5 (CN1B-7)	0770 h		PD05	*DI2L	Input device selection 2L	2100 h	
					PD06	*DI2H	Input device selection 2H	0021 h	
47	*DI6	Input signal selection 6 (CN1B-8)	0883 h		PD07	*DI3L	Input device selection 3L	0704 h	
					PD08	*DI3H	Input device selection 3H	0007 h	

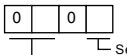
MR-J2S-_A_ parameters						MR-J4-_A_ parameters				
No.	Symbol	Parameter name		Initial value	Customer setting value	No.	Symbol	Parameter name	Initial value	Customer setting value
48	*DI7	Input signal selection 7 (CN1B-9)		0994 h		PD09	*DI4L	Input device selection 4L	0805 h	
						PD10	*DI4H	Input device selection 4H	0008 h	
49	*DO1	Output signal selection 1	Alarm code	0000 h		PD34	DOP5	Function selection D-5	0000 h	
		WNG (warning) output setting	Pin CN1A-19			PD28	*DO6	Output device selection 6	0002 h	
			Pin CN1B-18					No corresponding parameter		
			Pin CN1A-18			PD25	*DO3	Output device selection 3	0004 h	
			Pin CN1B-19			PD24	*DO2	Output device selection 2	000Ch	
			Pin CN1B-6			PD26	*DO4	Output device selection 4	0007 h	
		BWNG (battery warning) output setting	Pin CN1A-19			PD28	*DO6	Output device selection 6	0002 h	
			Pin CN1B-18					No corresponding parameter		
			Pin CN1A-18			PD25	*DO3	Output device selection 3	0004 h	
			Pin CN1B-19			PD24	*DO2	Output device selection 2	000Ch	
			Pin CN1B-6			PD26	*DO4	Output device selection 4	0007 h	
51	*OP6	Function selection 6	Operation selectionat Reset ON	0000 h		PD30	*DOP1	Function selection D-1	0000 h	
53	*OP8	Function selection 8		0000 h				No corresponding parameter		
54	*OP9	Function selection 9	Servo motor rotation direction selection	0000 h		PA14	*POL	Servo motor rotation direction selection	0	
			Encoder pulse phase, setting selection			PC19	*ENRS	Encoder output pulse selection	0000 h	
55	*OPA	Function selection A	Position command acceleration/ deceleration time constant control selection	0000 h		PB25	*BOP1	Function selection B-1	0000 h	
56	SIC	Serial communication time-out selection		0				No corresponding parameter		
58	NH1	Machine resonance suppression filter 1	Notch frequency selection	0000 h		PB01	FILT	Adaptive tuning mode (adaptive filter II)	0000 h	
						PB13	NH1	Machine resonance suppression filter 1	4500	
			Notch depth selection			PB14	NHQ1	Notch shape selection 1	0000 h	
59	NH2	Machine resonance suppression filter 2	Notch frequency selection	0000 h		PB15	NH2	Machine resonance suppression filter 2	4500	
			Notch depth			PB16	NHQ2	Notch shape selection 2	0000 h	
60	LPF	Low-pass filter/ Adaptive vibration suppression control	Low-pass filter selection	0000 h		PB18	LPF	Low-pass filter setting	3141	
						PB23	VFBF	Low-pass filter selection	0000 h	
			Adaptive vibration suppression control level selection			PB01	FILT	Adaptive tuning mode (adaptive filter II)	0000 h	
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		0000 h		PB26	*CDP	Gain switching function	0000 h	
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	

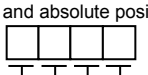
Note. Parameters related to gain adjustment are different from those for the MR-J2S-_A_ servo amplifier. For gain adjustment, see MR-J4_A_ Servo Amplifier Instruction Manual.

3.6.3 Comparison of parameter details

POINT

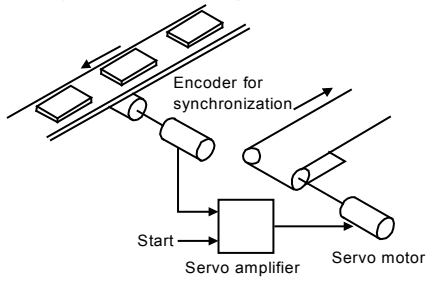
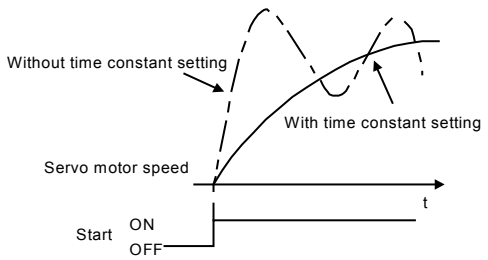
- The symbols in the control mode column mean the following control modes:
  P: Position control mode
  S: Speed control mode
  T: Torque control mode

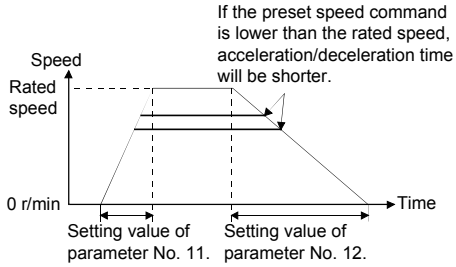
<table>
<tr><th colspan="3">MR-J2S-_A_</th><th colspan="3">MR-J4-_A_</th><th rowspan="2">Control mode</th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th></tr>
<tr><td>0</td><td>Control mode and regenerative option selection
Used to select a control mode and a regenerative option.
 
Selection of control mode
0: Position
1: Position and speed
2: Speed
3: Speed and torque
4: Torque
5: Torque and position
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.
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 k to 22 kW
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.) .
POINT
• 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.</td><td>0000 h</td><td>PA01</td><td>Operation mode
Select a control mode.
See the comparison table below for the setting method.
Control mode setting comparison table
MR-J2S-_A_ No. 0: _ _ 0 0 → MR-J4-_A_ PA01: 1 0 0 0
_ _ 0 1 → 1 0 0 1
_ _ 0 2 → 1 0 0 2
_ _ 0 3 → 1 0 0 3
_ _ 0 4 → 1 0 0 4
_ _ 0 5 → 1 0 0 5</td><td>1000 h</td><td>P
S
T</td></tr>
<tr><td></td><td></td><td></td><td>PA02</td><td>Regenerative option
Used to select the regenerative option.
See the comparison table below for the setting method.
Regenerative option setting comparison table
MR-J2S-_A_ No. 0: 0 0 _ _ → MR-J4-_A_ PA02: 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</td><td>0000 h</td><td></td></tr>
</table>

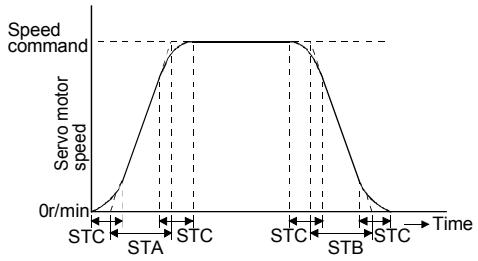
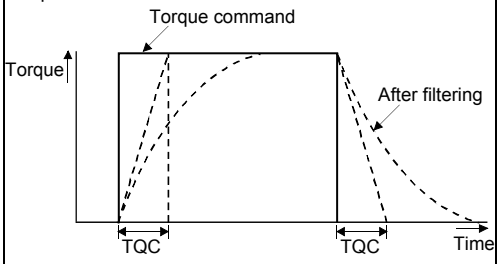
<table>
<tr><th colspan="3">MR-J2S-_A_</th><th colspan="3">MR-J4-_A_</th><th rowspan="2">Control mode</th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th></tr>
<tr><td>1</td><td>Function selection 1
Select a value for the input filter, pin CN1B-19 function, and absolute position detection system.
 
Input filter
If external input signal causes chattering due to noise, etc., input filter is used to suppress it.
0: None
1: 1.777 [ms]
2: 3.555 [ms]
3: 5.333 [ms]
CN1B-pin 19's function selection
0: Zero speed detection(ZSP)
1: Electromagnetic brake interlock (MBR)
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.
Absolute position detection system selection
0: Used in incremental system
1: Used in absolute position detection system</td><td>0002 h</td><td>PD29</td><td>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.
Input filter setting comparison table
MR-J2S-_A_ → MR-J4-_A_
No. 1 → PD29
_ _ _ 0 → 0 0 0 0
_ _ _ 1 → 0 0 0 2
_ _ _ 2 → 0 0 0 4
_ _ _ 3 → 0 0 0 4</td><td>0004 h</td><td>P
S
T</td></tr>
<tr><td></td><td></td><td></td><td>PD24</td><td>Output device selection 2 (electromagnetic brake interlock selection)
Any output device can be assigned to the CN1-23 pin.
See the comparison table below for the setting method.
Output device setting comparison table
MR-J2S-_A_ → MR-J4-_A_
No. 1 → PD24
_ _ 0 _ → 0 0 0 C
_ _ 1 _ → 0 0 0 5</td><td>000Ch</td><td></td></tr>
<tr><td></td><td></td><td></td><td>PD23
PD25
PD26
PD28</td><td>Device selection
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".</td><td>0004 h
0004 h
0007 h
0002 h</td><td></td></tr>
<tr><td></td><td></td><td></td><td>PA03</td><td>Absolute position detection system selection
When using the absolute position detection system, set ”_ _ _ 1”.</td><td>0000 h</td><td></td></tr>
</table>

<table>
<tr><th colspan="3">MR-J2S-_A_</th><th colspan="3">MR-J4-_A_</th><th rowspan="2">Control mode</th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th></tr>
<tr><td>2</td><td>Auto tuning
Select a response level, etc., when performing auto tuning.
0 [ ] 0 [ ]
Response level setting
<table>
<tr><th>Setting value</th><th>Response</th><th>Guideline for machine resonance frequency</th></tr>
<tr><td>1</td><td rowspan="6">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>35Hz</td></tr>
<tr><td>6</td><td>45Hz</td></tr>
<tr><td>7</td><td rowspan="6">Middle response</td><td>55Hz</td></tr>
<tr><td>8</td><td>70Hz</td></tr>
<tr><td>9</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 rowspan="3">High response</td><td>200Hz</td></tr>
<tr><td>E</td><td>240Hz</td></tr>
<tr><td>F</td><td>300Hz</td></tr>
</table>
Gain adjustment mode setting
<table>
<tr><th>Setting value</th><th>Gain adjustment mode</th><th>Adjustment</th></tr>
<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 manually simply.</td></tr>
</table>
</td><td>7 kW or less: 0105 h

11 kW or more: 0102 h</td><td>PA09</td><td>Auto tuning response
Set a response of the auto tuning.
See the comparison table below for the setting method.
Response level comparison table
<table>
<tr><th>MR-J2S-_A_
No. 2</th><th></th><th>MR-J4-_A_
PA09</th></tr>
<tr><td>_ _ 0 1</td><td rowspan="15">→</td><td>8 or 9</td></tr>
<tr><td>_ _ 0 2</td><td>11</td></tr>
<tr><td>_ _ 0 3</td><td>13</td></tr>
<tr><td>_ _ 0 4</td><td>14</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>23</td></tr>
<tr><td>_ _ 0 A</td><td>25</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>32</td></tr>
<tr><td>_ _ 0 F</td><td>33 or 34</td></tr>
</table>
</td><td>16</td><td>P
S</td></tr>
<tr><td></td><td></td><td></td><td>PA08</td><td>Auto tuning mode
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 adjustment, see MR-J4-_A_ Servo Amplifier Instruction Manual, Chapter 6.</td><td>0001 h</td><td></td></tr>
<tr><td>3</td><td>Electronic gear numerator (command pulse multiplication numerator)
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.</td><td>1</td><td>PA21</td><td>Electronic gear selection
Use the initial value when replacing.</td><td>0001 h</td><td>P</td></tr>
<tr><td></td><td></td><td></td><td>PA06</td><td>Electronic gear numerator (command pulse multiplication numerator)
Used to set a multiplier for the command pulse.</td><td>1</td><td></td></tr>
<tr><td>4</td><td>Electronic gear denominator (command pulse multiplication denominator)
Used to set a value for the electronic gear denominator.</td><td>1</td><td>PA21</td><td>Electronic gear selection
Use the initial value when replacing.</td><td>0001h</td><td>P</td></tr>
<tr><td></td><td></td><td></td><td>PA07</td><td>Electronic gear denominator (command pulse multiplication denominator)
Used to set a multiplier for the command pulse.</td><td>1</td><td></td></tr>
</table>

MR-J2S-_A_			MR-J4-_A_			Control mode
No.	Name and function	Initial value	No.	Name and function	Initial value	
5	In-position range Used to set the range where INP (positioning completion) is output by the command pulse unit before an electronic gear is calculated. 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. $\frac{100[\mu m]\times10^{-6}}{10[mm]\times10^{-3}} \times 131072[pulse/rev] \times \frac{125}{16384} \fallingdotseq 10$	100	PA10	In-position range Used to set an in-position range per command pulse unit. Set the same value as for MR-J2S-_A_.	100	P
6	Position loop gain 1 This is used to set the gain of the position loop. Increase the gain to improve track ability in response to the position command. When auto tuning mode 1 or 2 is selected, the auto tuning result is automatically used.	7 kW or less: 35 11 kW or more: 19	PB08	Position loop gain Used to adjust the gain of the position loop. When auto tuning 1 is selected, the auto tuning result is automatically used for this parameter.	37.0	P
7	Position command acceleration/deceleration time constant (position smoothing) This is used to set the constant of a primary delay to the position command. The control method can be selected from Primary delay and Linear acceleration/deceleration in parameter No. 55. 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. POINT ● 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. (Example) When a command is given from a synchronizing encoder, synchronous operation will start smoothly even if it start during line operation.  	3	PB03	Position command acceleration/deceleration time constant (position smoothing) This is used to set the constant of a primary delay to the position command. Set the same value as for MR-J2S-_A_.	0	P

MR-J2S-_A_			MR-J4-_A_			Control mode
No.	Name and function	Initial value	No.	Name and function	Initial value	
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	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.  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.	0	PC01	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_.	0	S T
12	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.	0	PC02	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_.	0	S T

MR-J2S-_A_			MR-J4-_A_			Control mode
No.	Name and function	Initial value	No.	Name and function	Initial value	
13	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.  STA: Acceleration time constant (parameter No. 11) STB: Deceleration time constant (parameter No. 12) STC: S-pattern acceleration/deceleration time constant (parameter No. 13) 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. 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. (Example) When STA, STB, and STC are set to 20000, 5000, and 200, respectively, the actual arc part time is as follows. At time of acceleration: 100[ms] { Because of $\frac{2000000}{20000}$=100[ms]< 200[ms], it is limited to 100 [ms]. } At time of deceleration: 200[ms] { Because of $\frac{2000000}{5000}$=400[ms]> 200[ms], it becomes 200 [ms] as designed.] }	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-_A_.	0	S T
14	Torque command time constant This is used to set the constant of a primary delay to the torque command.  TQC: Torque command time constant	0	PC04	Torque command time constant This is used to set the constant of a primary delay to the torque command. Set the same value as for MR-J2S-_A_.	0	T
15	Station number setting Specifies the station No. of serial 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	PC20	Station number setting Used to set the station No. of the servo amplifier. Setting range: 0 to 31	0	P S T

MR-J2S-_A_			MR-J4-_A_			Control mode
No.	Name and function	Initial value	No.	Name and function	Initial value	
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. □□□□ Selection of serial communication baud rate 0: 9600 [bps] 1: 19200 [bps] 2: 38400 [bps] 3: 57600 [bps] 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). Serial communication selection 0: Use RS-232C 1: Use RS-422 Serial communication response delayed time 0: Disabled 1: Enabled,reply sent after delay time of 800μs or more.	0000 h	PC21	RS-422 communication function selection Used to select the communication speed. Adjust the speed to that of the transmitting side (master station). [Pr.PC21] □□□□ Serial communication baud rate 0: 9600 [bps] 3: 57600 [bps] 1: 19200 [bps] 4: 115200 [bps] 2: 38400 [bps]	0000 h	P S T
17	Analog monitor output Used to select the signals output to analog monitor 1 (MO1) and analog monitor 2 (MO2). 0 □ 0 □	0100 h	PC14	Output to analog monitor 1 See the comparison table below for the setting method.	0000 h	P S T
			PC15	Output to analog monitor 2 See the comparison table below for the setting method.	0001 h	

MR-J2S-_A_	
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	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 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)
0005	Command pulse frequency (±10 V / 4 Mpps) (Note 1)
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)

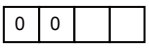
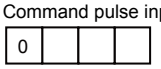
Note 1. Units used for MR-J2S-_A_ are different from those for MR-J4-_A_. Note that the input range of existing equipment needs to be adjusted.

2. Set “0008” or ”0009”. When setting the value, note that the input range of existing equipment needs to be adjusted.

3. "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.

<table>
<tr><th colspan="3">MR-J2S-_A_</th><th colspan="3">MR-J4-_A_</th><th>Control mode</th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th><th></th></tr>
<tr><td>18</td><td>Status display selection
This is used to select a status display shown at power-on.
0 0 _ _
Status display selection at power-on
0: Cumulative feedback pulse
1: Servo motor speed
2: Droop pulses
3: Cumulative command pulses
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.
Status display at power-on in corresponding control mode
0: Depends on the control mode
<table><tr><th>Control mode</th><th>Status display at power-on</th></tr><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></table>
1: Depends on the first digit setting of the parameter</td><td>0000 h</td><td>PC36</td><td>Status display selection
Status display selection at power-on
See the comparison table below for the setting method.</td><td>0000 h</td><td>P
S
T</td></tr>
<tr><td colspan="3"></td><td colspan="3">Status display selection comparison table
(1) Status display selection at power-on
<table><tr><th>MR-J2S-_A_
No. 18</th><th></th><th>MR-J4-_A_
PC36</th><th>Display definition</th></tr><tr><td>0 0 _ 0</td><td rowspan="16">→</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></table>
Note 1. It is for the 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.
(2) Status display at power-on in each control mode
<table><tr><th>MR-J2S-_A_
No. 18</th><th></th><th>MR-J4-_A_
PC36</th><th>Display definition</th></tr><tr><td>0 0 0 _</td><td rowspan="2">→</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></table></td></tr>
</table>

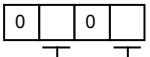
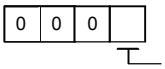
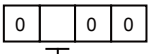
MR-J2S-_A_			MR-J4-_A_			Control mode
No.	Name and function	Initial value	No.	Name and function	Initial value	
19	Parameter writing inhibit Used to select the reference range and writing range of parameters.	0000 h	PA19	Parameter writing inhibit Used to select the reference range and writing range of parameters by changing a setting value. Use with the initial value as is. ("00AA": Values from PA to PF can be read and written.)	00AA h	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. [0 | | |] 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 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. 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	0000 h		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. [0 | 0 | 0 |] 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. Set the same value as for MR-J2S-_A_.	0000 h	S
			PB24	Slight vibration suppression control selection 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_.	0000 h	P

<table>
<tr><th colspan="3">MR-J2S-_A_</th><th colspan="3">MR-J4-_A_</th><th rowspan="2">Control mode</th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th></tr>
<tr><td>21</td><td>Function selection 3 (command pulse selection)
Used to select the input form of pulse train input signals.
 
</td><td>0000 h</td><td>PA13</td><td>Command pulse input form
 

See the comparison table below for the setting method.

Command pulse setting comparison table
<table><tr><th>MR-J2S-_A_</th><th></th><th colspan="2">MR-J4-_A_</th></tr><tr><th>No. 21</th><th></th><th colspan="2">PA13 (Note 1)</th></tr><tr><th></th><th></th><th>Differential input</th><th>Open-collector input</th></tr><tr><td>0 0 0 0</td><td rowspan="6">→</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></table>
Note 1. Make sure to set a pulse train input filter. If it is not set, position mismatch will occur.
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.

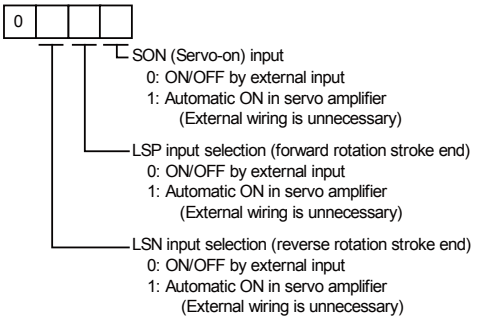
See "3.7 Important Points for Replacement (Command Pulse Logic Settings)".</td><td>0100 h</td><td>P</td></tr>
</table>

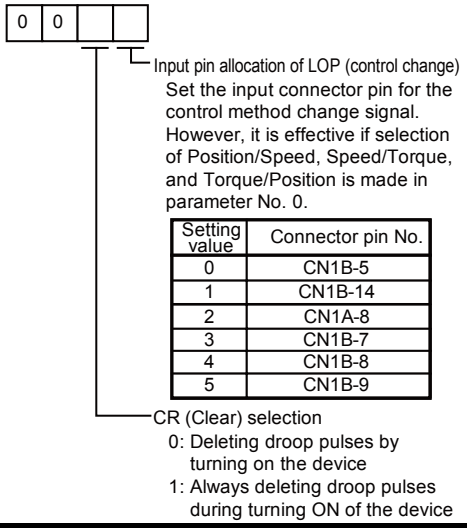
<table>
<tr><th colspan="3">MR-J2S-_A_</th><th colspan="3">MR-J4-_A_</th><th rowspan="2">Control mode</th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th></tr>
<tr><td>22</td><td>Function selection 4
Used to select a stop method when LSP (Forward rotation stroke end) and LSN (Reverse rotation stroke end) are turned off, and to select VC/VLA voltage averaging.
 
Stop method when LSP (forward rotation stroke end) and LSN (reverse rotation stroke end) are effective
0: Quick stop
1: Slow stop
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.
<table><tr><th>Setting value</th><th>Filtering time [ms]</th></tr><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></table></td><td>0000 h</td><td>PD30</td><td>Function selection D-1
 
Stop method when LSP (forward rotation stroke end) and LSN (reverse rotation stroke end) are turned OFF
0: Quick stop
1: Slow stop
Set the same value as for MR-J2S-_A_.</td><td>0000 h</td><td>P
S</td></tr>
<tr><td></td><td></td><td></td><td>PC23</td><td>Function selection C-2
 
VC/VLA voltage averaging selection
<table><tr><th>Setting value</th><th>Filtering time [ms]</th></tr><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></table>Set the same value as for MR-J2S-_A_.</td><td>0000 h</td><td>S
T</td></tr>
<tr><td>23</td><td>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.</td><td>0</td><td>PB04</td><td>Feed forward gain
Set the feed forward gain.
Set the same value as for MR-J2S-_A_.</td><td>0</td><td>P</td></tr>
<tr><td>24</td><td>Zero speed
Used to set the output range of ZSP (Zero speed detection).</td><td>50</td><td>PC17</td><td>Zero speed
Used to set the output range of ZSP (Zero speed detection).
Set the same value as for MR-J2S-_A_.</td><td>50</td><td>P
S
T</td></tr>
<tr><td>25</td><td>Analog speed command - Maximum speed
Used to set the speed at the maximum input voltage (10 V) of VC (Analog speed command).
When "0" is set, the speed will reach the rated speed of the connected servo motor.</td><td>0</td><td>PC12</td><td>Analog speed command - Maximum speed
Set the value according to the following method.
(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"
(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_.</td><td>0</td><td>S</td></tr>
<tr><td></td><td>Analog speed limit - Maximum speed
Used to set the speed at the maximum input voltage (10 V) of VLA (Analog speed limit).
When "0" is set, the speed will reach the rated speed of the connected servo motor.</td><td>0</td><td></td><td>Analog speed limit - Maximum speed
Set the value in the same way as above.</td><td></td><td>T</td></tr>
</table>

<table>
<tr><th colspan="3">MR-J2S-_A_</th><th colspan="3">MR-J4-_A_</th><th rowspan="2">Control mode</th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th></tr>
<tr><td>26</td><td>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 is +8 V,
Maximum torque × $\frac{50}{100}$ is output.</td><td>100</td><td>PC13</td><td>Analog torque command maximum output
Set the same value as for MR-J2S-_A_.</td><td>100.0</td><td>T</td></tr>
<tr><td>27</td><td>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.
● 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]
For instance, when "8" is set, the actual output A- and B-phase pulses are as follows.
A-phase/B-phase output pulse= $\frac{131072}{8} \cdot \frac{1}{4}$ = 4096 [pulse]</td><td>4000</td><td>PA15</td><td>Encoder output pulses
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.
Encoder output pulse setting comparison table
(1) For primary replacement
<table><tr><th colspan="2">MR-J2S-_A_</th><th></th><th colspan="2">MR-J4-_A_</th></tr><tr><th>No. 54</th><th>No. 27 (Note 1)</th><th></th><th>PC19</th><th>PA15 (Note 2)</th></tr><tr><td>1 _ _ _</td><td>N</td><td rowspan="2">→</td><td>0 _ 1 _</td><td>N</td></tr><tr><td>0 _ _ _</td><td>N</td><td>0 _ 0 _</td><td>N</td></tr></table>Note 1. N = J2S setting value.
2. Set the same value as for J2S in MR-J4-_A_ PA15.
(2) For secondary/simultaneous replacement
<table><tr><th colspan="2">MR-J2S-_A_</th><th></th><th colspan="2">MR-J4-_A</th></tr><tr><th>No. 54</th><th>No. 27 (Note 1)</th><th></th><th>PC19</th><th>PA15</th></tr><tr><td>1 _ _ _</td><td>N</td><td rowspan="2">→</td><td>0 _1 _</td><td>N × 32 (Note 2)</td></tr><tr><td>0 _ _ _</td><td>N</td><td>0 _0 _</td><td>N</td></tr></table>Note 1. N = J2S setting value.
2. For dividing ratio settings, set a value 32 x the MR-J2S-_A_ setting value for MR-J4-_A_ PA15.</td><td>4000</td><td>P
S
T</td></tr>
<tr><td></td><td></td><td></td><td>PC19</td><td>Encoder output pulse selection
See the comparison table above for the setting method.</td><td>0000 h</td><td></td></tr>
<tr><td>28</td><td>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.
<table><tr><th>(Note) TL</th><th>Torque limit</th></tr><tr><td>0</td><td>Internal torque limit 1 (Parameter No. 28)</td></tr><tr><td>1</td><td>Analog torque limit < Internal torque limit 1
: Analog torque limit
Analog torque limit > Internal torque limit 1
: Internal torque limit 1</td></tr></table>Note. 0: OFF
1: ON
When torque is output in analog monitor output, this setting value will be the maximum output voltage (+8 V).</td><td>100</td><td>PA11</td><td>Forward rotation torque limit
You can limit the torque generated by the servo motor.
Set the same value as for MR-J2S-_A_.</td><td>100.0</td><td>P
S
T</td></tr>
<tr><td></td><td></td><td></td><td>PA12</td><td>Reverse rotation torque limit
You can limit the torque generated by the servo motor.
Set the same value as for MR-J2S-_A_.</td><td>100.0</td><td></td></tr>
</table>

MR-J2S-_A_			MR-J4-_A_			Control mode
No.	Name and function	Initial value	No.	Name and function	Initial value	
29	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	Differs depending on the servo amplifier.	PC37	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 9999 mV	Differs depending on the servo amplifier.	S
	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			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 9999 mV		T
30	Analog torque command offset Used to set the offset voltage of TC (Analog torque command). Setting range: -999 to 999 mV	0	PC38	Analog torque command offset Used to set the offset voltage of TC (Analog torque command). Setting range: -9999 to 9999 mV	0	T
	Analog torque limit offset Used to set the offset voltage of TLA (Analog torque limit). Setting range: -999 to 999 mV			Analog torque limit offset Used to set the offset voltage of TLA (Analog torque limit). Setting range: -9999 to 9999 mV		S
31	Analog monitor 1 offset Used to set the offset voltage of Analog monitor 1 (MO1). Setting range: -999 to 999 mV	0	PC39	Analog monitor 1 offset Used to set the offset voltage of MO1 (Analog monitor 1). Setting range: -9999 to 9999 mV	0	P S T
32	Analog monitor 2 offset Used to set the offset voltage of Analog monitor 2 (MO2). Setting range: -999 to 999 mV	0	PC40	Analog monitor 2 offset Used to set the offset voltage of MO2 (Analog monitor 2). Setting range: -9999 to 9999 mV	0	P S T
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	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-_A_.	0	P S T
34	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	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-_A_. When setting a value manually, set a value 0.1 x the MR-J2S-_A_ setting value.	7.00	P S

MR-J2S-_A_			MR-J4-_A_			Control mode
No.	Name and function	Initial value	No.	Name and function	Initial value	
35	Position loop gain 2 This is 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 mode 1 or 2, manual mode 1, and interpolation mode are selected, the auto tuning result is automatically used.	7 kW or less: 35 11 kW or more: 19	PB08	Position loop gain This is 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	P
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 mode 1 or 2 and manual mode 1 are selected, the auto tuning result is automatically used.	7 kW or less: 177 11 kW or more: 96		No corresponding parameter This parameter is automatically set by the servo amplifier.		P S
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 mode 1 or 2 and interpolation mode are selected, the auto tuning result is automatically used.	7 kW or less: 817 11 kW or more: 455	PB09	Speed loop gain This is used to set the gain of the speed loop. When auto tuning mode 1 is selected, the auto tuning result is automatically used.	823	P S
38	Speed integral compensation This is used to set the integral time constant of the speed loop. Decreasing the setting value will increase the response level, but vibration and noise are generated more easily. When auto tuning mode 1 or 2 and interpolation mode are selected, the auto tuning result is automatically used.	48	PB10	Speed integral compensation This is 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	P S
39	Speed differential compensation This is used to set the differential compensation. To enable the setting value, turn on PC (proportional control). Setting range: 0 to 1000	980	PB11	Speed differential compensation This is 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-_A_.	980	P S
40	For manufacturer setting Do not change this value by any means.	0				

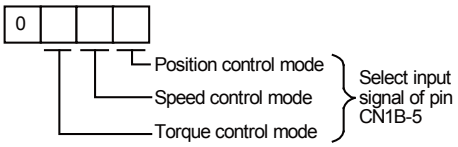
<table>
<tr><th colspan="3">MR-J2S-_A_</th><th colspan="3">MR-J4-_A_</th><th rowspan="2">Control mode</th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th></tr>
<tr><td>41</td><td>Input signal automatic ON selection
Used to set SON (servo-on), LSP (forward rotation stroke end), and LSN (reverse rotation stroke end) automatic ON.
 
</td><td>0000 h</td><td>PD01</td><td>Input signal automatic on selection 1
Used to set input devices to be turned on automatically.
See the comparison table below for the setting method.
Input signal automatic ON setting comparison table
<table><tr><th>MR-J2S-_A_
No. 41</th><th>MR-J4-_A_
PD01</th></tr><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></table>→</td><td>0000 h</td><td>P
S
T

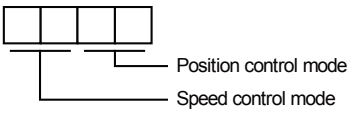
P
S</td></tr>
<tr><td>42</td><td>Input signal selection 1
Assign the input pins for the control mode switching signals and set CR (clear).
 
</td><td>0003 h</td><td></td><td>Input signal selection 1
Assign the input pins for the control mode switching signals and set CR (clear).
See the comparison table below for the setting method.</td><td></td><td></td></tr>
</table>

Input signal selection 1 setting comparison table

<table>
<tr><th colspan="2">MR-J2S-_A_</th><th colspan="5">MR-J4-_A_</th></tr>
<tr><th rowspan="2">No. 42</th><th rowspan="2">Target pin</th><th>CR selection</th><th colspan="4">LOP assignment</th></tr>
<tr><th>PD32</th><th>Target pin</th><th colspan="2">Target parameter</th><th colspan="2">Target parameter</th></tr>
<tr><th></th><th></th><th></th><th></th><th>No.</th><th>Setting value</th><th>No.</th><th>Setting value</th></tr>
<tr><td>0 0 0 0</td><td>CN1B-5</td><td rowspan="7">0 0 0 0</td><td>CN1-15</td><td>PD03</td><td rowspan="7">2 3 2 3</td><td>PD04</td><td rowspan="7">0 0 2 3</td></tr>
<tr><td>0 0 0 1</td><td>CN1B-14</td><td>CN1-19</td><td>PD11</td><td>PD12</td></tr>
<tr><td>0 0 0 2</td><td>CN1A-8</td><td>CN1-41</td><td>PD13</td><td>PD14</td></tr>
<tr><td>0 0 0 3</td><td>CN1B-7</td><td>CN1-16</td><td>PD05</td><td>PD06</td></tr>
<tr><td>0 0 0 4</td><td>CN1B-8</td><td>CN1-17</td><td>PD07</td><td>PD08</td></tr>
<tr><td>0 0 0 5</td><td>CN1B-9</td><td>CN1-18</td><td>PD09</td><td>PD10</td></tr>
<tr><td>0 0 1 0</td><td>CN1B-5</td><td rowspan="7">0 0 0 1</td><td>CN1-15</td><td>PD03</td><td rowspan="7">2 3 2 3</td><td>PD04</td><td rowspan="7">0 0 2 3</td></tr>
<tr><td>0 0 1 1</td><td>CN1B-14</td><td>CN1-19</td><td>PD11</td><td>PD12</td></tr>
<tr><td>0 0 1 2</td><td>CN1A-8</td><td>CN1-41</td><td>PD13</td><td>PD14</td></tr>
<tr><td>0 0 1 3</td><td>CN1B-7</td><td>CN1-16</td><td>PD05</td><td>PD06</td></tr>
<tr><td>0 0 1 4</td><td>CN1B-8</td><td>CN1-17</td><td>PD07</td><td>PD08</td></tr>
<tr><td>0 0 1 5</td><td>CN1B-9</td><td>CN1-18</td><td>PD09</td><td>PD10</td></tr>
</table>

→

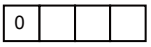
<table>
<tr><th colspan="3">MR-J2S-_A_</th><th colspan="3">MR-J4-_A_</th><th rowspan="2">Control mode</th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th></tr>
<tr><td>43</td><td>Input signal selection 2 (CN1B-5)
When LOP (control switching) is assigned to pin CN1B-5 by parameter No. 42, this parameter cannot be used.
Any input signal can be assigned to pin CN1B-5.
Note that the number of digits of a setting value and the signals that can be assigned differ depending on the control mode.
 

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.
<table><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><tr><td>0</td><td></td><td></td><td></td></tr><tr><td>1</td><td>SON</td><td>SON</td><td>SON</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>SP1</td><td>SP1</td></tr><tr><td>7</td><td></td><td>SP2</td><td>SP2</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>SP3</td><td>SP3</td></tr><tr><td>B</td><td>CM1</td><td></td><td></td></tr><tr><td>C</td><td>CM2</td><td></td><td></td></tr><tr><td>D</td><td>TL1</td><td>TL1</td><td>TL1</td></tr><tr><td>E</td><td>CDP</td><td>CDP</td><td>CDP</td></tr></table>Note. P: Position control mode
S: Speed control mode
T: Torque control mode</td><td>0111 h</td><td>PD03</td><td>Input device selection 1L
Any input device can be assigned to the CN1-15 pin. (Position control mode and speed control mode)
 

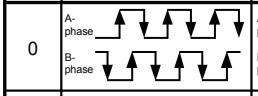
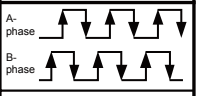
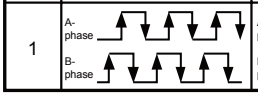
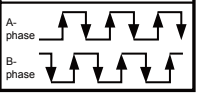
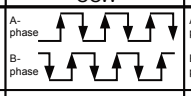
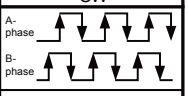
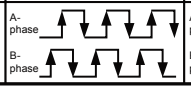
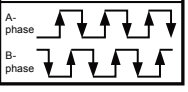
Set an input device compatible with the MR-J2S-_A_ settings.
For details on input devices, see the comparison table below.</td><td>0202 h</td><td rowspan="2">P
S
T</td></tr>
<tr><td></td><td></td><td></td><td>PD04</td><td>Input device selection 1H
Any input device can be assigned to the CN1-15 pin. (Torque control mode)
 

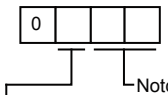
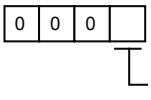
Set an input device compatible with the MR-J2S-_A_ settings.
For details on input devices, see the comparison table below.
Input device comparison table
<table><tr><th colspan="2">MR-J2S-_A_</th><th rowspan="2">→</th><th colspan="2">MR-J4-_A_</th></tr><tr><th>Setting value</th><th>Signal name</th><th>Setting value</th><th>Signal name</th></tr><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>25</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></table></td><td>0002 h</td></tr>
<tr><td>44</td><td>Input signal selection 3 (CN1B-14)
Any input signal can be assigned to pin CN1B-14.
Signals that can be assigned and the method of assigning them are the same as for input signal selection 2 (parameter No. 43).
When LOP (control switching) is assigned to pin CN1B-14 by parameter No. 42, this parameter cannot be used.</td><td>0222 h</td><td>PD11</td><td>Input device selection 5L
Any input device can be assigned to the CN1-19 pin. (Position control mode and speed control mode)
Devices that can be assigned and the method of assigning them are the same as shown in PD03 and PD04 above.</td><td>0303 h</td><td rowspan="2">P
S
T</td></tr>
<tr><td></td><td></td><td></td><td>PD12</td><td>Input device selection 5H
Any input device can be assigned to the CN1-19 pin. (Torque control mode)
Devices that can be assigned and the method of assigning them are the same as shown in PD03 and PD04 above.</td><td>0003 h</td></tr>
</table>

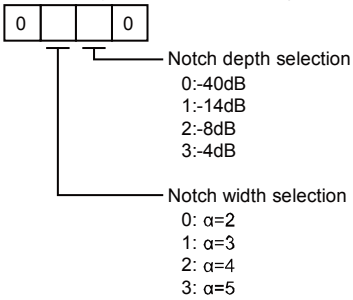
MR-J2S-_A_			MR-J4-_A_			Control mode
No.	Name and function	Initial value	No.	Name and function	Initial value	
45	Input signal selection 4 (CN1A-8) Any input signal can be assigned to pin CN1A-8. Signals that can be assigned and the method of assigning them are the same as for input signal selection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

<table>
<tr><th colspan="3">MR-J2S-_A_</th><th colspan="3">MR-J4-_A_</th><th>Control mode</th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th><th></th></tr>
<tr><td>49</td><td>Output signal selection 1
Used to select the connector pins for outputting an alarm code, WNG (warning), and BWNG (battery warning).
 
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.
• Absolute position detection system
• Signal allotment function of MBR (electromagnetic brake interlock) to pin CN1B-19
<table><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><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></table><table><tr><th colspan="3">(Note) Alarm code</th><th rowspan="2">Alarm display</th><th rowspan="2">Name</th></tr><tr><th>CN1B 19 pins</th><th>CN1A 18 pins</th><th>CN1A 19 pins</th></tr><tr><td rowspan="9">0</td><td rowspan="9">0</td><td rowspan="9">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 rowspan="2">0</td><td rowspan="2">0</td><td rowspan="2">1</td><td>AL.30</td><td>Regenerative error</td></tr><tr><td>AL.33</td><td>Overvoltage</td></tr><tr><td>0</td><td>1</td><td>0</td><td>AL.10</td><td>Undervoltage</td></tr><tr><td rowspan="3">0</td><td rowspan="3">1</td><td rowspan="3">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 rowspan="2">1</td><td rowspan="2">0</td><td rowspan="2">0</td><td>AL.51</td><td>Overload 2</td></tr><tr><td>AL.24</td><td>Main circuit error</td></tr><tr><td rowspan="2">1</td><td rowspan="2">0</td><td rowspan="2">1</td><td>AL.32</td><td>Overcurrent</td></tr><tr><td>AL.31</td><td>Overspeed</td></tr><tr><td rowspan="3">1</td><td rowspan="3">0</td><td rowspan="3">1</td><td>AL.35</td><td>Command pulse frequency error</td></tr><tr><td>AL.52</td><td>Error excessive</td></tr><tr><td>AL.16</td><td>Encoder error 1</td></tr><tr><td rowspan="4">1</td><td rowspan="4">1</td><td rowspan="4">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></table>Note. 0: OFF
1: ON
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.
<table><tr><th>Setting value</th><th>Connector pin No.</th></tr><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></table>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.</td><td>0000 h</td><td>PD34</td><td>Alarm code output
This is used to select if output alarm codes.
Alarm codes are outputted to pins CN1-22, CN1-23, and CN1-24.
0: Disabled
1: Enabled
[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 pin CN1-22, CN1-23, or CN1-24 with alarm code output selected.
For derails about alarm code combinations, see "MR-J4-_A(-RJ) Servo Amplifier Instruction Manual, Chapter 8: Troubleshooting".</td><td></td><td>P
S
T</td></tr>
<tr><td></td><td></td><td></td><td>WNG (warning) / BWNG (battery warning) output device setting.
Used to select the connector pin for outputting WNG (warning) and BWNG (battery warning).
See the comparison table below for the setting method.</td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td colspan="3">Output device selection setting comparison table
(1) WNG (warning) output
<table><tr><th colspan="2">MR-J2S-_A_</th></tr><tr><th>No. 49</th><th>Target pin</th></tr><tr><td>0 _ 0 _</td><td>Not output</td></tr><tr><td>0 _ 1 _</td><td>CN1A-19</td></tr><tr><td>0 _ 2 _</td><td>CN1B-18</td></tr><tr><td>0 _ 3 _</td><td>CN1A-18</td></tr><tr><td>0 _ 4 _</td><td>CN1B-19</td></tr><tr><td>0 _ 5 _</td><td>CN1B-6</td></tr></table>→<table><tr><th colspan="3">MR-J4-_A_</th></tr><tr><th>Target pin</th><th>Target parameter</th><th>Setting value</th></tr><tr><td>CN1-49</td><td>PD28</td><td>0 0 0 8 h</td></tr><tr><td colspan="3">No corresponding parameter</td></tr><tr><td>CN1-24</td><td>PD25</td><td>0 0 0 8 h</td></tr><tr><td>CN1-23</td><td>PD24</td><td>0 0 0 8 h</td></tr><tr><td>CN1-25</td><td>PD26</td><td>0 0 0 8 h</td></tr></table>(2) BWNG (Battery warning)
<table><tr><th colspan="2">MR-J2S-_A_</th></tr><tr><th>No. 49</th><th>Target pin</th></tr><tr><td>0 0 _ _</td><td>Not output</td></tr><tr><td>0 1 _ _</td><td>CN1A-19</td></tr><tr><td>0 2 _ _</td><td>CN1B-18</td></tr><tr><td>0 3 _ _</td><td>CN1A-18</td></tr><tr><td>0 4 _ _</td><td>CN1B-19</td></tr><tr><td>0 5 _ _</td><td>CN1B-6</td></tr></table>→<table><tr><th colspan="3">MR-J4-_A_</th></tr><tr><th>Target pin</th><th>Target parameter</th><th>Setting value</th></tr><tr><td>CN1-49</td><td>PD28</td><td>0 0 0 9 h</td></tr><tr><td colspan="3">No corresponding parameter</td></tr><tr><td>CN1-24</td><td>PD25</td><td>0 0 0 9 h</td></tr><tr><td>CN1-23</td><td>PD24</td><td>0 0 0 9 h</td></tr><tr><td>CN1-25</td><td>PD26</td><td>0 0 0 9 h</td></tr></table></td></tr>
</table>

MR-J2S-_A_			MR-J4-_A_			Control mode
No.	Name and function	Initial value	No.	Name and function	Initial value	
50	For manufacturer setting Do not change this value by any means.	0000 h				
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. 0 _ 0 0 Action when RES (reset) is turned ON 0: Base circuit shut-off 1: No base circuit shut-off	0000 h	PD30	Function selection D-1 Used to select the base circuit status when RES (Reset) is ON. 0 0 _ 0 Action when RES (reset) is turned ON 0: Base circuit shut-off 1: No base circuit shut-off Set the same value as for MR-J2S-_A_.	0000 h	P S T
52	For manufacturer setting Do not change this value by any means.	0000 h				
53	Function selection 8 Used to select the serial communication protocol. 0 _ _ 0 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	0000 h		No corresponding parameter Note: MR-J4-_A_ Protocol station No. selection: Supported Protocol check selection: Supported		

<table>
<tr><th colspan="3">MR-J2S-_A_</th><th colspan="3">MR-J4-_A_</th><th rowspan="2">Control mode</th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th></tr>
<tr><td>54</td><td>Function selection 9
Used to select the command pulse rotation direction, encoder output pulse direction, and encoder pulse output setting.
[ ][ ]0[ ]
Change in servo motor rotation direction
Changes the servo motor rotation direction relative to the input pulse train.
<table><tr><th rowspan="2">Setting value</th><th colspan="2">Servo motor rotation direction</th></tr><tr><th>When forward rotation pulse is input (Note)</th><th>When reverse rotation pulse is input (Note)</th></tr><tr><td>0</td><td>CCW</td><td>CW</td></tr><tr><td>1</td><td>CW</td><td>CCW</td></tr></table>Change in encoder pulse output phase
Changes the positions of the pulse output A-phase and B-phase of the encoder.
<table><tr><th rowspan="2">Setting value</th><th colspan="2">Servo motor rotation direction</th></tr><tr><th>CCW</th><th>CW</th></tr><tr><td>0</td><td>  </td><td>  </td></tr><tr><td>1</td><td>  </td><td>  </td></tr></table>Encoder output pulse setting selection
(See parameter No. 27)
0: Output pulse specification
1: Division ratio setting</td><td>0000 h</td><td>PA14</td><td>Select servo motor rotation direction relative to the input pulse train.
<table><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><tr><td>0</td><td>CCW</td><td>CW</td></tr><tr><td>1</td><td>CW</td><td>CCW</td></tr></table>Set the same value as for MR-J2S-_A_.</td><td>0</td><td>P</td></tr>
<tr><td></td><td></td><td></td><td>PC19</td><td>Encoder output pulse selection
0 0[ ][ ]
Change in encoder pulse output phase
Changes the positions of the pulse output A-phase and B-phase of the encoder.
<table><tr><th rowspan="2">Setting value</th><th colspan="2">Servo motor rotation direction</th></tr><tr><th>CCW</th><th>CW</th></tr><tr><td>0</td><td>  </td><td>  </td></tr><tr><td>1</td><td>  </td><td>  </td></tr></table>Encoder output pulse setting selection
Set the same value as for MR-J2S-_A_.</td><td>0000 h</td><td>P
S
T</td></tr>
<tr><td>55</td><td>Function selection A
Used to select the control method of the position command acceleration/deceleration time constant (parameter No. 7).
0 0[ ]0
Position command acceleration/deceleration time constant control
0: Primary delay
1: Linear acceleration/deceleration</td><td>0000 h</td><td>PB25</td><td>Function selection B-1
Used to select the position command acceleration/deceleration filter type.
0 0[ ]0
Position command acceleration/deceleration filter type
0: Primary delay
1: Linear acceleration/deceleration
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_.</td><td>0000 h</td><td>P</td></tr>
<tr><td>56</td><td>Serial communication time-out selection
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.</td><td>0</td><td></td><td>No corresponding parameter
Note: MR-J4-_A_
Time-out check carried out</td><td></td><td></td></tr>
<tr><td>57</td><td>For manufacturer setting
Do not change this value by any means.</td><td>10</td><td></td><td></td><td></td><td></td></tr>
</table>

<table>
<tr><th colspan="3">MR-J2S-_A_</th><th colspan="3">MR-J4-_A_</th><th>Control mode</th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th><th></th></tr>
<tr>
<td>58</td>
<td>Machine resonance suppression filter 1
Select the machine resonance suppression filter.
 
<table>
<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>
<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>
</table>
Notch depth selection
<table>
<tr><th>Setting value</th><th>Response</th><th>Gain</th></tr>
<tr><td>0</td><td rowspan="4">Deep
to
Shallow</td><td>-40dB</td></tr>
<tr><td>1</td><td>-14dB</td></tr>
<tr><td>2</td><td>-8dB</td></tr>
<tr><td>3</td><td>-4dB</td></tr>
</table>
</td>
<td>0000 h</td>
<td>PB01</td>
<td>Adaptive tuning mode (adaptive filter II).
Set the adaptive filter tuning. Select the adjustment mode of machine resonance suppression filter 1.
 

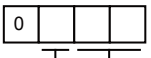
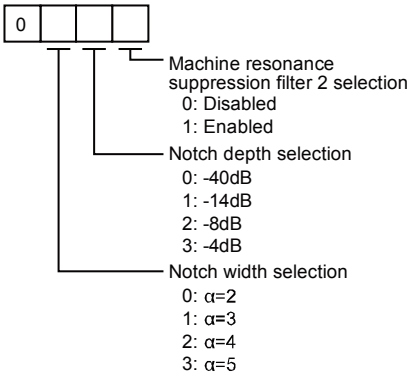
See the comparison table below for the setting method.</td>
<td>0000 h</td>
<td>P
S
T</td>
</tr>
<tr>
<td></td><td></td><td></td>
<td>PB13</td>
<td>Machine resonance suppression filter 1
Used to set the notch frequency of machine resonance suppression filter 1.
When "Automatic setting (_ _ _ 1)" is selected 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_.</td>
<td>4500</td><td></td>
</tr>
<tr>
<td></td><td></td><td></td>
<td>PB14</td>
<td>Used to set the shape 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.
Set manually for the manual setting.
 

Set the notch depth according to the setting of MR-J2S-_A_.
Set the notch width to ”0: α = 2”.</td>
<td>0000 h</td><td></td>
</tr>
</table>

Setting comparison table for machine resonance suppression filter 1

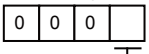
MR-J2S-_A_			MR-J4-_A_		
No. 58	No. 60		PB01	PB13	PB14
0 _ 0 0	_ 0 _ _		0 0 0 0	Setting not required	
0 _ 0 1 to 0 _ 1 F	_ 0 _ _	→	0 0 0 2	Set a value according to MR-J2S. (Note)	0 0 _ 0 (Note)
0 _ _ _	0 0 1 _		0 0 0 1	Automatic setting	
0 _ _ _	0 0 2 _		0 0 0 1	Automatic setting	

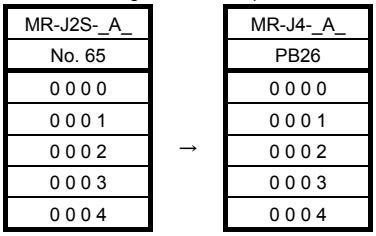
Note Set a frequency and notch depth according to the values of MR-J2S-_A_.
Set the notch width to “0: α = 2”.
For details, see PB13 and PB14 shown below.

<table>
<tr><th colspan="3">MR-J2S-_A_</th><th colspan="3">MR-J4-_A_</th><th rowspan="2">Control mode</th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th></tr>
<tr><td>59</td><td>Machine resonance suppression filter 2
Used to set the machine resonance suppression filter.
 
</td><td>0000 h</td><td>PB16</td><td>Set the shape of the machine resonance suppression filter 2.
 

See the comparison table below for the setting method.
Setting comparison table for machine resonance suppression filter 2
<table><tr><th>MR-J2S-_A_</th><th colspan="2">MR-J4-_A_</th></tr><tr><th>No. 59</th><th>PB16</th><th>PB15</th></tr><tr><td>0 _ 0 0</td><td>0 0 0 0</td><td>Setting not required</td></tr><tr><td>0 _ 0 1
to
0 _ 1 F</td><td>→ 0 0 _ 1
(Note 1)</td><td>Set a value according to J2S.
(Note 2)</td></tr></table>Note 1. Set the notch depth according to MR-J2S-_A_. Set the notch width to ”0: α = 2”.
2. Set a value while referring to PB15.</td><td>0000 h</td><td rowspan="2">P
S
T</td></tr>
<tr><td></td><td></td><td></td><td>PB15</td><td>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_.</td><td>4500</td></tr>
</table>

MR-J2S-_A_			MR-J4-_A_			Control mode
No.	Name and function	Initial value	No.	Name and function	Initial value	
60	Low-pass filter/adaptive vibration suppression control Select the low-pass filter/adaptive vibration suppression control. [ ][ ][ ][0] 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 $\frac{\text{VG2 setting value} \times 10}{2\pi \times (1 + \text{GD2 setting value} \times 0.1)}$ [Hz] For 2 kW or less $\frac{\text{VG2 setting value} \times 5}{2\pi \times (1 + \text{GD2 setting value} \times 0.1)}$ [Hz] 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. 3: Maintenance Until then, detection of machine resonance is stopped by keeping the characteristics of the filter generated until that moment. Adaptive vibration suppression control selection Set the sensitiveness to detect the machine resonance. 0: Normal 1: High sensitive	0000 h	PB23	Low-pass filter selection [0][0][ ][0] Low-pass filter 0: Automatic setting 1: Manual setting 2: Disabled Set "0000 (automatic setting)".	0000 h	P S
			PB18	Low-pass filter setting One of the following statuses is applied, depending on how PB23 is set. PB23: _ _ 0 _ (Initial value) — PB18: Automatic setting PB23: _ _ 1 _ — PB18: Setting value enabled PB23: _ _ 2 _ — PB18: Setting value disabled Nothing needs to be set due to automatic setting.	3141	P S
			PB01	Adaptive tuning mode (adaptive filter II)	0000 h	P S T
61	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: x0.1	70	PB29	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: x1.0 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.	7.00	P S

<table>
<tr><th colspan="3">MR-J2S-_A_</th><th colspan="3">MR-J4-_A_</th><th rowspan="2">Control mode</th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th></tr>
<tr><td>62</td><td>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.
Setting range: 10 to 200</td><td>100</td><td>PB30</td><td>Gain switching position loop gain
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].
Setting range: 0.0 to 2000.0
Because the setting unit is different from that for MR-J2S-_A_, calculate the setting value using the equation below and set it.
PB30 setting value = PB08 setting value x MR-J2S-_A_ No. 62 setting value / 100.</td><td>0.0</td><td>P</td></tr>
<tr><td>63</td><td>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.
Setting range: 10 to 200</td><td>100</td><td>PB31</td><td>Gain switching speed loop gain
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].
Setting range: 0 to 65535
Because the setting unit is different from that for MR-J2S-_A_, calculate the setting value using the equation below and set it.
PB31 setting value = PB09 setting value x MR-J2S-_A_ No. 63 setting value / 100.</td><td>0</td><td>P
S</td></tr>
<tr><td>64</td><td>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.
Setting range: 50 to 1000</td><td>100</td><td>PB32</td><td>Gain switching speed integral compensation
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].
Setting range: 0.0 to 5000.0
Because the setting unit is different from that for MR-J2S-_A_, calculate the setting value using the equation below and set it.
PB32 setting value = PB10 setting value x MR-J2S-_A_ No. 64 setting value / 100.</td><td>0.0</td><td>P
S</td></tr>
<tr><td>65</td><td>Gain switching selection
Select the gain switching condition.
 

Gain will be changed under the following conditions based on the setting value of parameters 61 to 64.
0: Disabled
1: Gain switching (CDP) is ON
2: The appointed frequency is equal to or more than the setting value of parameter No. 66
3: The droop pulse is equal to or more than the setting value of parameter No. 66
4: The servo motor speed is equal to or more than the setting value of parameter No. 66</td><td>0000 h</td><td>PB26</td><td>Gain switching function
Select the gain switching condition.
See the comparison table below for the setting method.
Gain switching selection comparison table
 
</td><td>0000 h</td><td>P
S</td></tr>
</table>

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
68	For manufacturer setting Do not change this value by any means.	0				
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 [Pr. PD03] to [Pr. PD22]. 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
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		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 [Pr. PD03] to [Pr. 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 [Pr. PD03] to [Pr. PD22]. Set the same value as for MR-J2S-_A_.		T

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 [Pr. PD03] to [Pr. 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 [Pr. PD03] to [Pr. 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 [Pr. PD03] to [Pr. 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 [Pr. PD03] to [Pr. 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 [Pr. PD03] to [Pr. 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 [Pr. PD03] to [Pr. 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 [Pr. PD03] to [Pr. PD22]. Set the same value as for MR-J2S-_A_.	100.0	P S T
77	For manufacturer setting Do not change this value by any means.	100				
78		10000				
79		10				
80		10				
81		100				
82		100				
83		100				
84		0000				

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

- 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 module

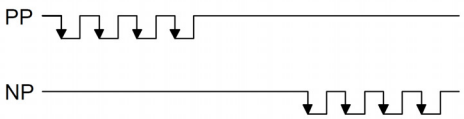
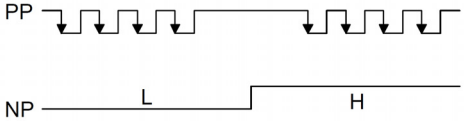
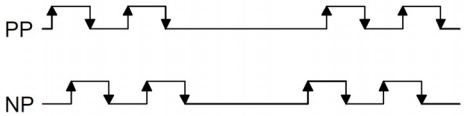
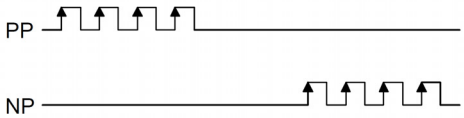
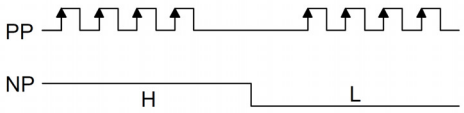
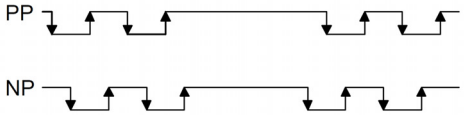
Signal type	Command pulse logic setting (Note 1)	
	Q-series positioning module Pr. 23 setting	MR-J4-_A_ servo amplifier [Pr. PA13] setting
Open-collector type	Positive logic	Positive logic (_ _ 0 _ h)
	Negative logic	Negative logic (_ _ 1 _ h)
Differential line driver type	Positive logic (Note 2)	Negative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

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)

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

Setting value	Pulse train form		Forward rotation command / Reverse rotation command
_ _ 1 0h	Negative logic	Forward rotation pulse train Reverse rotation pulse train	
_ _ 1 1h	Negative logic	Pulse train + code	
_ _ 1 2h	Negative logic	A-phase pulse train B-phase pulse train	
_ _ 0 0h	Positive logic	Forward rotation pulse train Reverse rotation pulse train	
_ _ 0 1h	Positive logic	Pulse train + code	
_ _ 0 2h	Positive logic	A-phase pulse train B-phase pulse train	

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

Part 3: 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_.

List of supported servo system controllers

Type	Servo system controller model
Motion controller	Q172CPU (N)
	Q173CPU (N)
	A171SHCPU (N) (Note 1)
	A172SHCPU (N) (Note 1)
	A173UHCPU (Note 1)
	A273UHCPU (Note 1)
Positioning module	QD75M
	A1SD75M

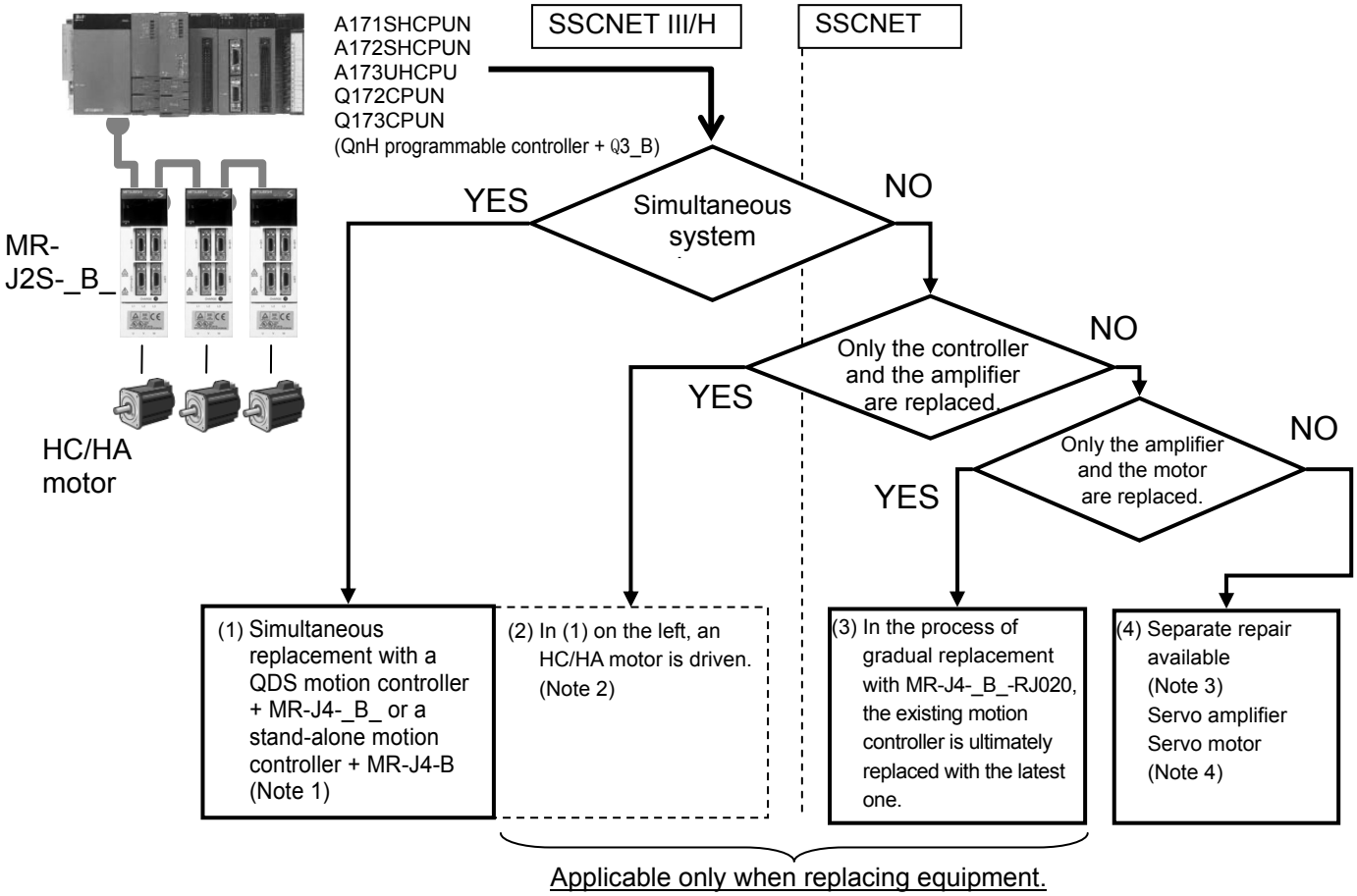
Note 1. For OS versions that support MR-J2S-_B_, see the table below.

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		
	SW0SRX-SV43C	T and later versions	
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	

2 CASE STUDY ON REPLACEMENT OF MR-J2S-_B_

2.1 Consideration of Replacement Method



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

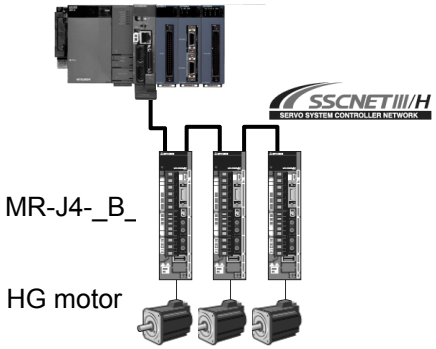
Note 1. Although heavier burdens including a longer construction period need to be borne, once replaced the system can be operated for a long period of time.
2. When designing a new system, apply simultaneous replacement at (1).
3. Separate repair means replacement.
4. When the servo motor is replaced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

2.2 Replacement Method

(1) For simultaneous replacement

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

QnUD programmable controller + QDS motion controller + Q3_DB

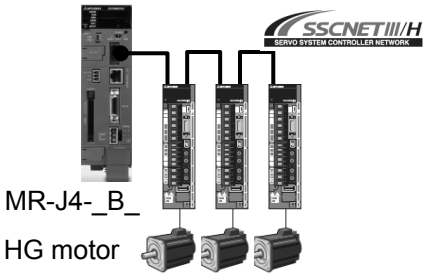


High-speed motion control and excellent extensibility can reduce cycle time.

"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)



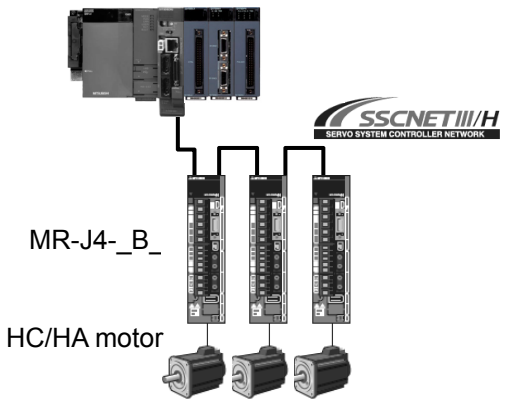
High performance equivalent to that of a QDS motion controller can be achieved at a lower cost.

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

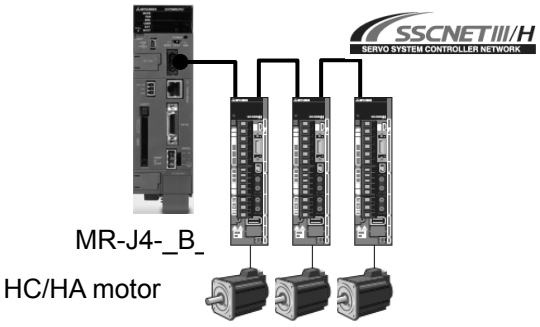
(2) For replacement of only a controller and an amplifier

QDS motion controller + MR-J4-_B_ + HC/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 (Notes 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.

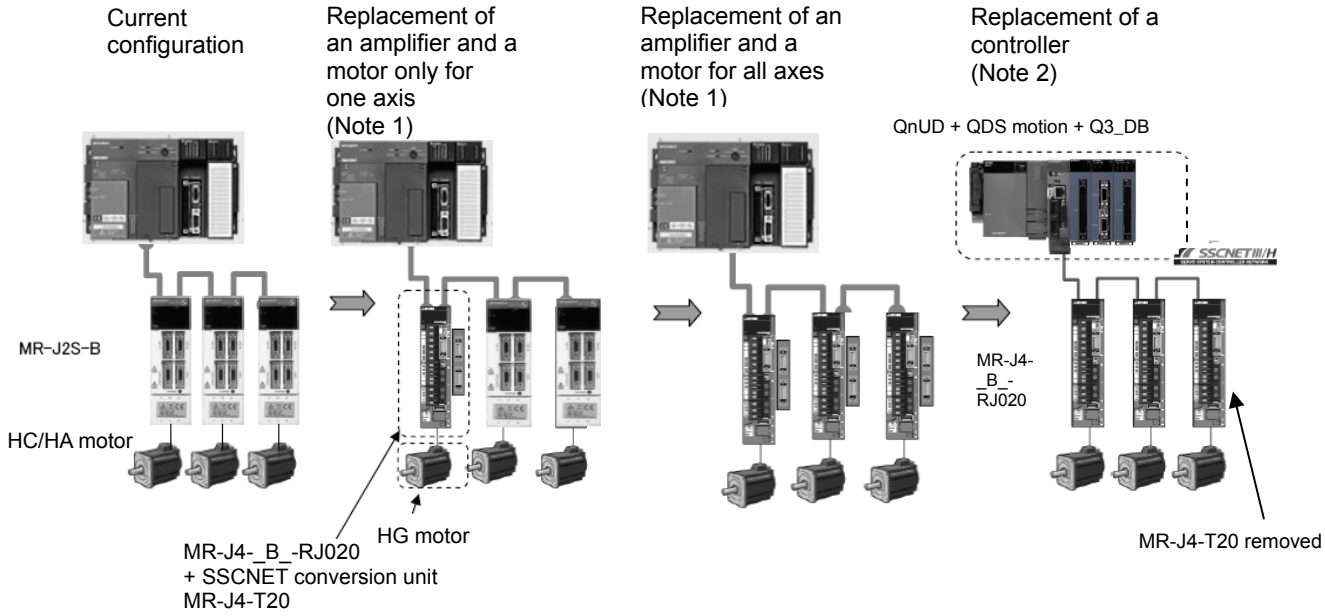
POINT

- 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.)

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-J4-15KB (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)
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

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

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

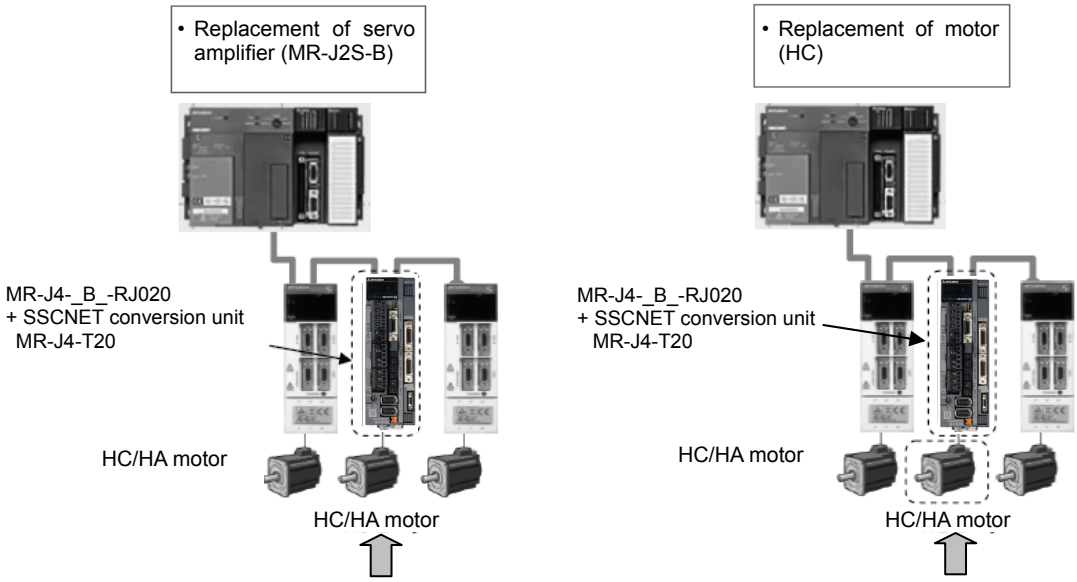


Note 1. MR-J4-_B_-RJ020 equipped with the SSCNET conversion unit operates as MR-J2S-_B_.

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".



- MR-J4-_B_-RJ020 can drive a J2S-compatible HC/HA motor.
- Existing wiring can be used by using the renewal tool. (For details, see "[Appendix 2]Introduction to Renewal Tool".)

- MR-J2S-_B_ cannot drive an HG motor.
Replace with MR-J4-_B_ and an HG motor simultaneously.
- Existing wiring can be used by using the renewal tool. For details, see "[Appendix 2] Introduction to Renewal Tool".)

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.

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	・ Position control mode ・ Speed control mode	・ 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
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 24 V DC power supply	Installed.	Not installed.	×	Part 5 Section 1.2.4
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]	MR-J4-_B_ Servo Amplifier Instruction Manual, Section 4.5
	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

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

Note 1. MR Configurator 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	5.6 Mbps		50 Mbps	150 Mbps
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 • 16 axes)	
			[Long distance cable] Maximum distance between stations: 50 m Maximum overall distance: 800 m (50 m • 16 axes)	[Long distance cable] Maximum distance between stations: 100 m Maximum overall distance: 1600 m (100 m • 16 axes)

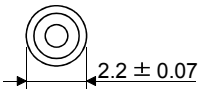
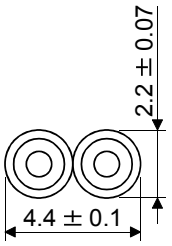
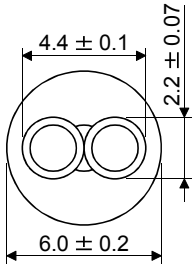
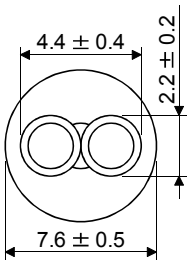
Note 1. When SSCNET III/H communication is used to receive a command sent for the first time from the controller in the factory setting, the operation mode is fixed to"J4 mode". To return to the factory setting or to select an arbitrary mode, change the setting with the application "MR-J4(W)-B mode selection".
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

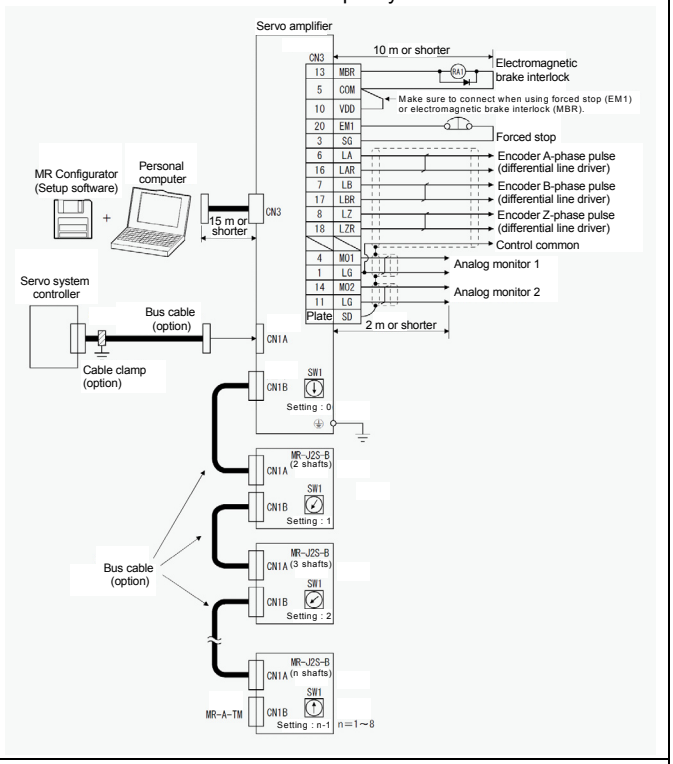
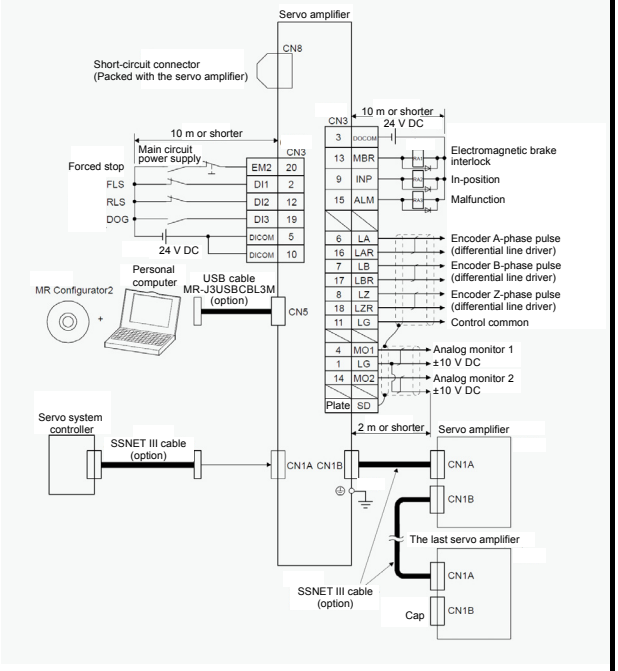
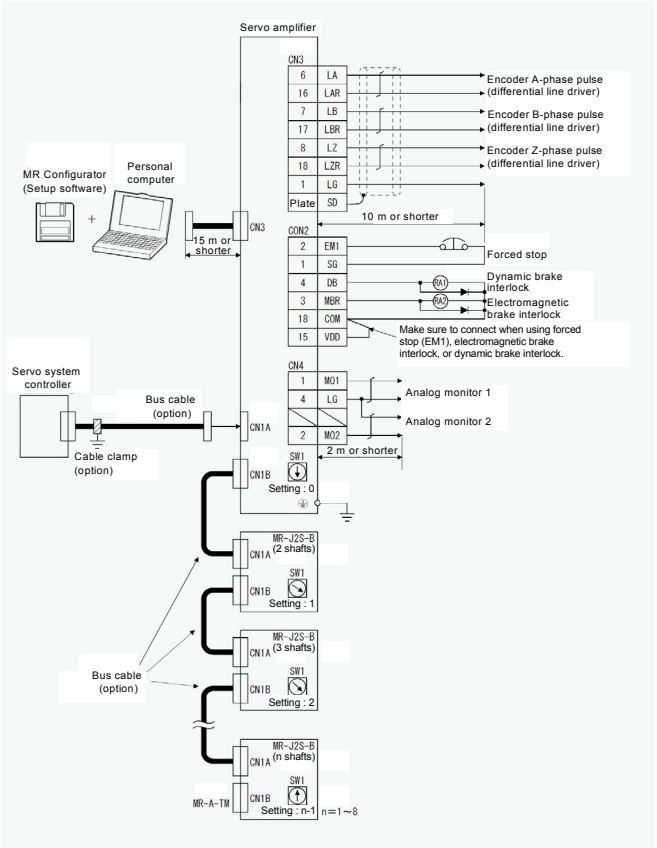
Note. For cable of 30 m or shorter, contact your local sales office.
Contact Mitsubishi Electric System & Service about ultra-high flex-life cables and long distance cables longer than 50 m.

(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
	Ambience	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.

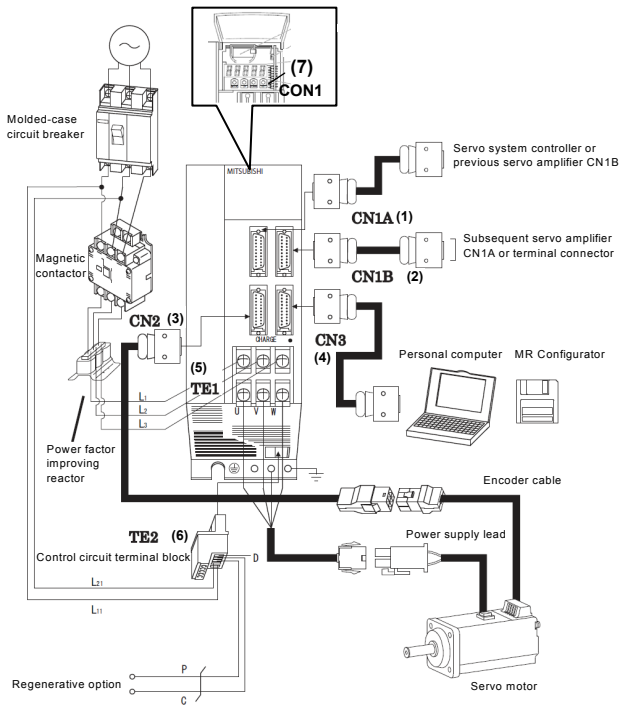
3.4 Comparison of Standard Connection Diagrams

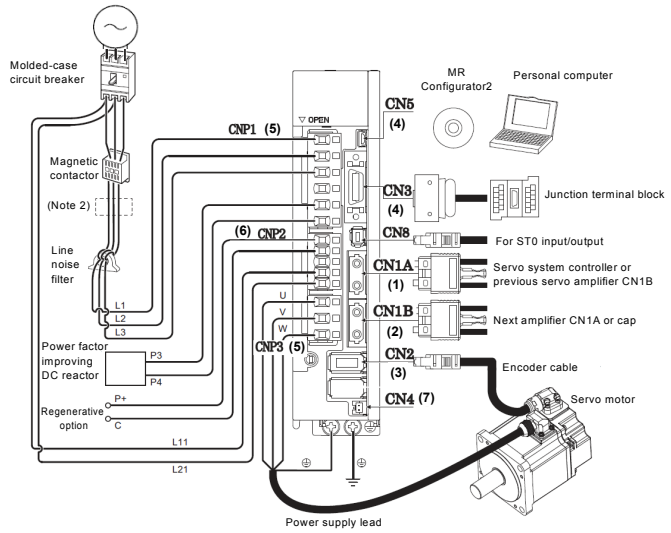
MR-J2S-_B_	MR-J4-_B_
MR-J2S-700B or models with less capacity 	
MR-J2S-11KB or models with more capacity 	

3.5 List of Corresponding Connectors and Terminal Blocks

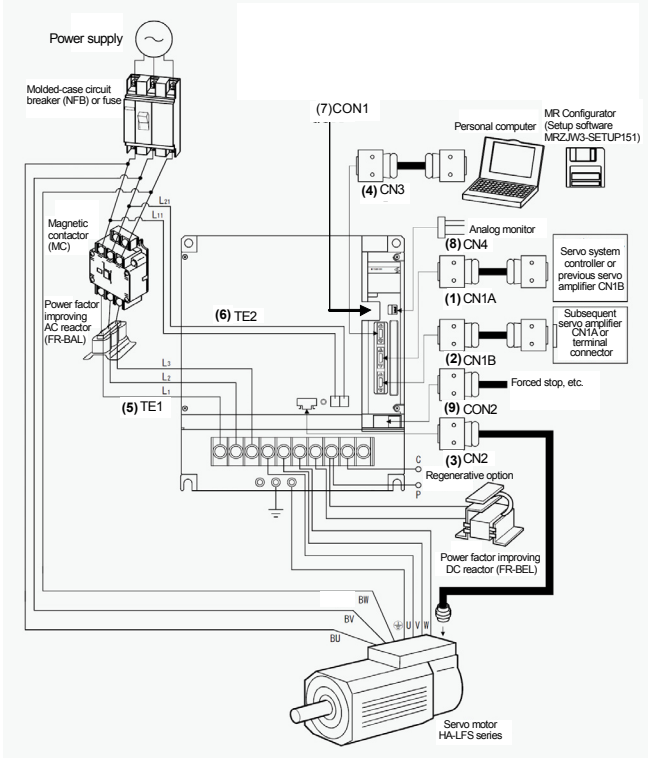
(1) Comparison of connectors

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

<table>
<tr><th>MR-J2S-_B_</th><th>MR-J4-_B_</th></tr>
<tr><td>


The above configuration example is applied to the MR-J2S-100B or less capacities.
</td><td rowspan="2">


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.
</td></tr>
<tr><td>


The above configuration example is for MR-J2S-11KB or models with more capacity.
</td></tr>
</table>

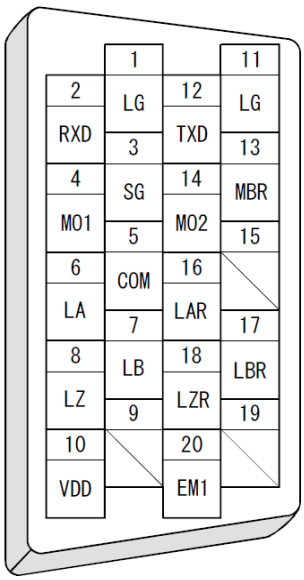
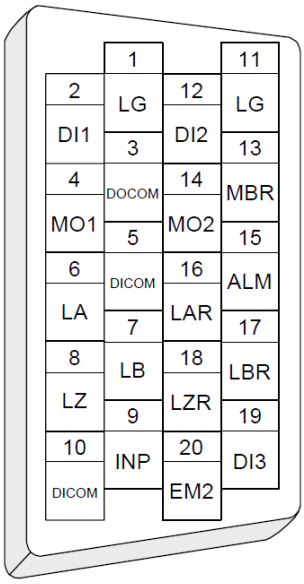
(2) List of connector and terminal block correspondence

	MR-J2S-_B_			MR-J4-_B_	Precautions
(1)	Bus cable-connecting 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	PC connection		USB communication connector CN5	Must switch to USB cable (option).
		Analog monitor		I/O signal connector CN3	Must fabricate a new cable.
		Encoder output pulses			
(8)	Analog output connector CN4 (Note 1)				
(9)	I/O signal connector CON2 (Note 1)				
(5)	Main circuit terminal block TE1	Input power supply		Main circuit power connector CNP1	Must switch to power connector (enclosed with amplifier).
		Servo motor power supply		Servo motor power connector CNP3	
(6)	Control circuit terminal block TE2			Control circuit power connector CNP2	
(7)	Battery connector CON1			Battery connector CN4	Must fabricate a new battery.

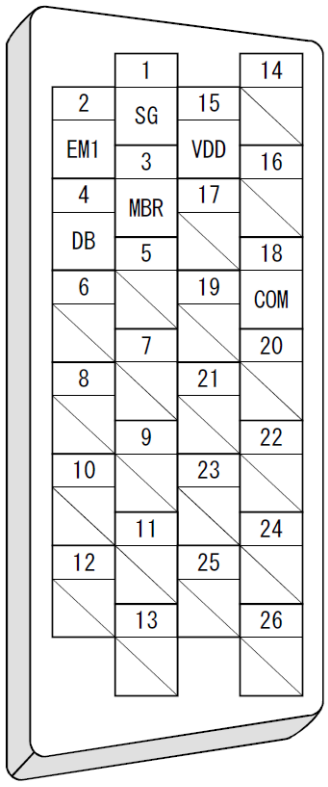
Note. When not using the STO function, attach a short-circuit connector supplied with a servo amplifier onto CN8 (STO input signal connector).

Note 1. These connectors are only for MR-J2S-11KB or models with more capacity.
2. The configuration of the main circuit terminal block differs depending on capacity.
See "Part 5: Common Reference Material".

(3) Comparison of signals

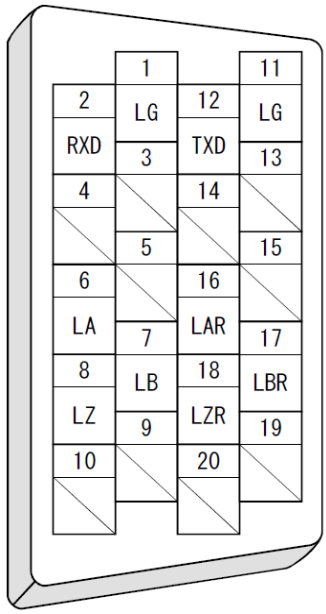
MR-J2S-_B_ <7 kW or less>		Symbol (Note 3)	MR-J4-_B_	
Connector pin assignment	Connector pin No.		Connector pin No.	Connector pin assignment
CN3 	CN3-20	EM1 (EM2)	CN3-20 (Note 1)	CN3 
	CN3-13	MBR	CN3-13	
		DB	(Note 2)	
	CN3-6 CN3-16	LA LAR	CN3-6 CN3-16	
	CN3-7 CN3-17	LB LBR	CN3-7 CN3-17	
	CN3-8 CN3-18	LZ LZR	CN3-8 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 CN3-11	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.

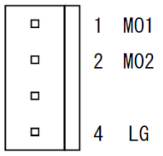
MR-J2S-_B_ <11 kW or more>		Symbol (Note 3)	MR-J4-_B_	
Connector pin assignment	Connector pin No.		Connector pin No.	Connector pin assignment
CON2 	CON2-1	SG (DOCOM)	CN3-3	
	CON2-2	EM1 (EM2)	CN3-20 (Note 1)	
	CON2-3	MBR	CN3-13	
	CON2-4	DB	(Note 2)	
	CON2-15	VDD		
	CON2-18	COM (DICOM)	CN3-5 CN3-10	
	CN3-6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

CON2

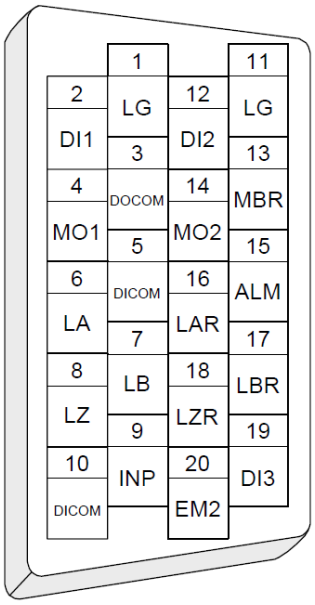
CN3



CN4



CN3



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.

3.6 Comparison of Peripheral Equipment

POINT
● See "Part 7: Replacement of Optional Peripheral Equipment".

3.7 Comparison of Parameters

⚠ CAUTION

- 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 5: 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 Pr. 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.

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 No.	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 pulses	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.

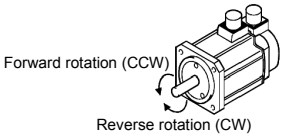
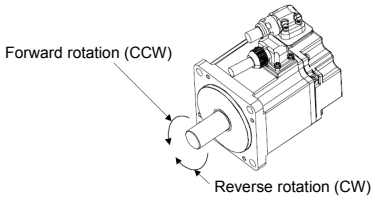
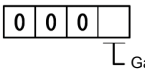
3.7.2 Parameters comparison list

MR-J2S-_B_					MR-J4-_B_				
No.	Symbol	Parameter name	Initial value	Customer setting value	No.	Symbol	Parameter name	Initial value	Customer setting value
1	*AMS	Amplifier setting Absolute position detection system selection	0000		PA03	*ABS	Absolute position detection system selection	0000 h	
2	*REG	Regenerative resistor: Regenerative option selection	0000		PA02	**REG	Regenerative option selection	0000 h	
		Regenerative resistor: 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	0001 h	
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	
		Machine resonance suppression filter 1: Notch depth selection			PB14	NHQ1	Notch shape selection 1	0000 h	
19	FFC	Feed forward gain	0		PB04	FFC	Feed forward gain	0	
20	INP	In-position range	100		PA10	INP	In-position range	1600	

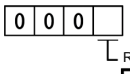
MR-J2S-_B_						MR-J4-_B_				
No.	Symbol	Parameter name		Initial value	Customer setting value	No.	Symbol	Parameter name	Initial value	Customer setting value
21	MBR	Electromagnetic brake sequence output		0		PC02	MBR	Electromagnetic brake sequence output	0	
22	MOD	Analog monitor output	Analog monitor 1 output selection	0001		PC09	MOD1	Analog monitor 1 output	0000 h	
			Analog monitor 2 output selection			PC10	MOD2	Analog monitor 2 output	0000 h	
23	*OP1	Option function 1 Servo forced stop selection		0000		PA04	*AOP1	Function selection A-1 Servo forced stop selection	2000 h	
24	*OP2	Option function 2	Slight vibration suppression control selection	0000		PB24	*MVS	Slight vibration suppression control selection	0000 h	
			Motor-less operation selection			PC05	**COP2	Function selection C-2 Motor-less operation selection	0000 h	
25	LPF	Low-pass filter/adaptive vibration suppression control	Low-pass filter selection	0000		PB23	VFBF	Low-pass filter selection	0000 h	
			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	0000 h	
32	OP5	Option function 5 PI-PID function switching control selection		0000		PB24	*MVS	PI-PID switching control selection	0000 h	
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	0000 h	
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 pulses		4000		PA15	*ENR	Encoder output pulses	4000	
39		For manufacturer setting								
40	*BLK	Parameter writing inhibit		0000		PA19	*BLK	Parameter writing inhibit	00AB h	
41 to 48		For manufacturer setting								
49	*CDP	Gain switching selection		0000		PB26	*CDP	Gain switching selection	0000 h	
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	0000 h	
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	0000 h	
62 to 75		For manufacturer setting								

3.7.3 Comparison of parameter details

<table>
<tr><th colspan="3">MR-J2S-_B_</th><th colspan="3">MR-J4-_B_</th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th></tr>
<tr><td>1</td><td>Amplifier setting
Select the absolute position detection system.
0 0 0 _
Absolute position detection system selection
0: Disabled (used in incremental system)
1: Enabled (used in absolute position detection system)</td><td>0000</td><td>PA03</td><td>Absolute position detection system
Set this parameter when using the absolute position detection system. The parameter is not available in the speed control mode and torque control mode.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Absolute position detection system selection
0: Disabled (used in incremental system)
1: Enabled (used in 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></table></td><td>0000 h</td></tr>
<tr><td>2</td><td>Regenerative resistor
Select the regenerative option.
0 _ _ _
Regenerative option selection
00: • The regenerative option is not used by servo amplifiers at 7 kW or less (built-in regenerative resistor is used). MRR-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 servo amplifiers 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 capability by cooling the regenerative resistor included with the 11 kW to 22 kW servo amplifier with a cooling fan.
10: MR-RB032
11: MR-RB12
External dynamic brake selection
0: Disabled
1: Enabled
Select "1" when using the external dynamic brake with MR-J2S-11KB or models with more capacity.</td><td>0000</td><td>PA02</td><td>Regenerative option
Used to select the regenerative option.
Incorrect setting may cause the regenerative option to burn.
If a selected regenerative option is not for use with the servo amplifier, [AL. 37 Pa-rameter error] occurs.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ x x</td><td>Regenerative option selection
00: 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 regenera-tive resistor is used.
• Supplied regenerative resistors or regenerative option is used with the servo amplifier of 11 kW to 22 kW.
01: FR-RC/FR-CV/FR-BU2
When you use FR-RC, FR-CV, or FR-BU2, select "Mode 2 (_ _ _ 1)" of "Undervoltage alarm detection mode selec-tion" in [Pr. PC20].
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.)
0B: MR-RB3N
0C: MR-RB5N (Cooling fan is required.)
A: When increasing the capability by cooling the regenera tive resistor or regenerative option included with the 11 kW to 22 kW servo amplifier with a cooling fan.</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></table></td><td>0000 h</td></tr>
<tr><td></td><td></td><td></td><td>PD07 to PD09</td><td>Output device selection 1 to 3
You can assign any output device to pins CN3-13, CN3-9, and CN3-15.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ x x</td><td>Device selection
Refer to table 3.1 for settings.</td><td>See the right column.</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></table>Table 3.1 Selectable output devices
<table><tr><th>Setting digit</th><th>Output device</th></tr><tr><td>00</td><td>Always off</td></tr><tr><td>02</td><td>RD (Ready)</td></tr><tr><td>03</td><td>ALM (malfunction)</td></tr><tr><td>04</td><td>INP (In-position)</td></tr><tr><td>05</td><td>MBR (Electromagnetic brake interlock)</td></tr><tr><td>06</td><td>DB (Dynamic brake interlock)</td></tr><tr><td>07</td><td>TLC (Limiting torque)</td></tr><tr><td>08</td><td>WNG (Warning)</td></tr><tr><td>09</td><td>BWNG (Battery warning)</td></tr><tr><td>0A</td><td>SA (Speed reached)</td></tr><tr><td>0C</td><td>ZSP (Zero speed detection)</td></tr><tr><td>0F</td><td>CDPS (Variable gain selection)</td></tr><tr><td>10</td><td>CLDS (during fully closed loop control)</td></tr><tr><td>11</td><td>ABSV (Absolute position undetermined)</td></tr><tr><td>17</td><td>MTTR (During tough drive)</td></tr></table>Note: When using the external dynamic brake for MR-J4-_B_11kW or models with more capacity, make sure to change the settings.</td><td>PD07: 0005 h
PD08: 0004 h
PD09: 0003 h</td></tr>
<tr><td>6</td><td>Number of feedback pulses
Set the number of pulses per revolution on the controller side command unit. Servo motor information such as cumulative feedback pulses, present position, droop pulses, and within-one-revolution position are derived from these setting values converted into the number of pulses.
<table><tr><th>Setting digit</th><th>Number of feedback pulses</th></tr><tr><td>0</td><td>16384</td></tr><tr><td>1</td><td>8192</td></tr><tr><td>6</td><td>32768</td></tr><tr><td>7</td><td>131072</td></tr><tr><td>255</td><td>Depending on the number of pulses of the servo motor encoder resolution.</td></tr></table></td><td>0</td><td></td><td>No corresponding parameter</td><td></td></tr>
</table>

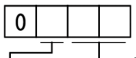
<table>
<tr><th colspan="2">MR-J2S-_B_</th><th></th><th colspan="2">MR-J4-_B_</th><th></th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th></tr>
<tr><td>7</td><td>Rotation direction selection
Select servo motor rotation direction relative.
0: Forward rotation (CCW) with an increase of the positioning address
1: Reverse rotation (CW) with an increase of the positioning address
 
</td><td>0</td><td>PA14</td><td>Rotation direction selection/travel direction selection
This is used to select a rotation direction or travel direction.
<table><tr><td rowspan="2">Setting digit</td><td colspan="2">Servo motor rotation direction/linear servo motor travel direction</td></tr><tr><td>Positioning address increase</td><td>Positioning address decrease</td></tr><tr><td>0</td><td>CCW or positive direction</td><td>CW or negative direction</td></tr><tr><td>1</td><td>CW or negative direction</td><td>CCW or positive direction</td></tr></table>The following shows the servo motor rotation directions.
 
</td><td>0</td></tr>
<tr><td>8</td><td>Auto tuning
Used to select the gain adjustment mode of auto tuning.
 

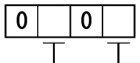
<table><tr><th>Setting digit</th><th>Gain adjustment mode</th><th>Adjustment</th></tr><tr><td>0</td><td>Interpolation mode</td><td>Fixes position loop gain 1 (parameter No. 13).</td></tr><tr><td>1</td><td>Auto tuning mode 1</td><td>This is the ordinary auto tuning.</td></tr><tr><td>3</td><td>Auto tuning mode 2</td><td>Fixes to the load to motor inertia ratio set by parameter No. 12. The responsive setting is changeable.</td></tr><tr><td>4</td><td>Manual mode 1</td><td>Adjust manually simply.</td></tr><tr><td>2</td><td>Manual mode 2</td><td>Adjust all gains manually.</td></tr></table></td><td>0001</td><td>PA08</td><td>Auto tuning mode
Select the gain adjustment mode.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Select the gain adjustment mode.
0: 2 gain adjustment mode 1 (interpolation mode)
1: Auto tuning mode 1
2: Auto tuning mode 2
3: Manual mode
4: 2 gain adjustment mode 2
Refer to table 3.2 for details.</td><td>1h</td></tr><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></table>Table 3.1 Gain adjustment mode selection
<table><tr><th>Setting digit</th><th>Gain adjustment mode</th><th>Automatically adjusted parameter</th></tr><tr><td>_ _ _ 0</td><td>2 gain adjustment mode 1 (interpolation mode)</td><td>[Pr. PB06 Load to motor inertia ratio/load to motor mass ratio]
[Pr. PB08 Position loop gain]
[Pr. PB09 Speed loop gain]
[Pr. PB10 Speed integral compensation]</td></tr><tr><td>_ _ _ 1</td><td>Auto tuning mode 1</td><td>[Pr. PB06 Load to motor inertia ratio/load to motor mass ratio]
[Pr. PB07 Model loop gain]
[Pr. PB08 Position loop gain]
[Pr. PB09 Speed loop gain]
[Pr. PB10 Speed integral compensation]</td></tr><tr><td>_ _ _ 2</td><td>Auto tuning mode 2</td><td>[Pr. PB07 Model loop gain]
[Pr. PB08 Position loop gain]
[Pr. PB09 Speed loop gain]
[Pr. PB10 Speed integral compensation]</td></tr><tr><td>_ _ _ 3</td><td>Manual mode</td><td></td></tr><tr><td>_ _ _ 4</td><td>2 gain adjustment mode 2</td><td>[Pr. PB08 Position loop gain]
[Pr. PB09 Speed loop gain]
[Pr. PB10 Speed integral compensation]</td></tr></table><Gain adjustment mode correspondence table>
<table><tr><th>MR-J2S-_B_</th><th>MR-J4-_B_</th></tr><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></table></td><td>0001 h</td></tr>
</table>

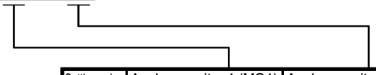
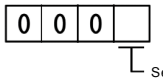
<table>
<tr><th colspan="3">MR-J2S-_B_</th><th colspan="3">MR-J4-_B_</th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th></tr>
<tr><td>9</td><td>Servo response
Select a response of the auto tuning.
 

<table><tr><th>Setting value</th><th>Response</th><th>Guideline for machine resonance frequency</th></tr><tr><td>1</td><td rowspan="16">Low response
↑
Middle response
↓
High 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>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>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></table>・If the machine hunts or generates large gear sound, decrease the set value.
・To improve performance, e.g. shorten the settling time, increase the set value.</td><td>7 kW or less: 0005
11 kW or more: 0002</td><td>PA09</td><td>Auto tuning response
Set a response of the auto tuning.
See the comparison table below for the setting method.
Response level comparison table
<table><tr><th>MR-J2S-_B_</th><th></th><th>MR-J4-_B_</th></tr><tr><td>No. 9</td><td></td><td>PA09</td></tr><tr><td>_ _ 0 1</td><td rowspan="16">→</td><td>8 or 9</td></tr><tr><td>_ _ 0 2</td><td>11</td></tr><tr><td>_ _ 0 3</td><td>13</td></tr><tr><td>_ _ 0 4</td><td>14</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>23</td></tr><tr><td>_ _ 0 A</td><td>25</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>32</td></tr><tr><td>_ _ 0 F</td><td>33 or 34</td></tr></table>
Auto tuning response
Set a response of the auto tuning.
<table><tr><th rowspan="2">Setting value</th><th colspan="2">Machine characteristic</th></tr><tr><th>Response</th><th>Guideline for machine resonance frequency [Hz]</th></tr><tr><td>1</td><td rowspan="20">Low response
↑
Middle response
↓</td><td>2.7</td></tr><tr><td>2</td><td>3.6</td></tr><tr><td>3</td><td>4.9</td></tr><tr><td>4</td><td>6.6</td></tr><tr><td>5</td><td>10.0</td></tr><tr><td>6</td><td>11.3</td></tr><tr><td>7</td><td>12.7</td></tr><tr><td>8</td><td>14.3</td></tr><tr><td>9</td><td>16.1</td></tr><tr><td>10</td><td>18.1</td></tr><tr><td>11</td><td>20.4</td></tr><tr><td>12</td><td>23.0</td></tr><tr><td>13</td><td>25.9</td></tr><tr><td>14</td><td>29.2</td></tr><tr><td>15</td><td>32.9</td></tr><tr><td>16</td><td>37.0</td></tr><tr><td>17</td><td>41.7</td></tr><tr><td>18</td><td>47.0</td></tr><tr><td>19</td><td>52.9</td></tr><tr><td>20</td><td>59.6</td></tr></table><table><tr><th rowspan="2">Setting value</th><th colspan="2">Machine characteristic</th></tr><tr><th>Response</th><th>Guideline for machine resonance frequency [Hz]</th></tr><tr><td>21</td><td rowspan="20">Middle response
↑
High response
↓</td><td>67.1</td></tr><tr><td>22</td><td>75.6</td></tr><tr><td>23</td><td>85.2</td></tr><tr><td>24</td><td>95.9</td></tr><tr><td>25</td><td>108.0</td></tr><tr><td>26</td><td>121.7</td></tr><tr><td>27</td><td>137.1</td></tr><tr><td>28</td><td>154.4</td></tr><tr><td>29</td><td>173.9</td></tr><tr><td>30</td><td>195.9</td></tr><tr><td>31</td><td>220.6</td></tr><tr><td>32</td><td>248.5</td></tr><tr><td>33</td><td>279.9</td></tr><tr><td>34</td><td>315.3</td></tr><tr><td>35</td><td>355.1</td></tr><tr><td>36</td><td>400.0</td></tr><tr><td>37</td><td>446.6</td></tr><tr><td>38</td><td>501.2</td></tr><tr><td>39</td><td>571.5</td></tr><tr><td>40</td><td>642.7</td></tr></table></td><td>16</td></tr>
</table>

MR-J2S-_B_			MR-J4-_B_		
No.	Name and function	Initial value	No.	Name and function	Initial value
10	Forward rotation torque limit Used to set the parameter assuming that the rated torque is 100%. Used to limit the torque in forward rotation power running and the reverse rotation regenerative mode. In any mode other than the test operation mode on MR Configurator (setup software), the torque limit value on the servo system controller side is made valid.	300		No corresponding parameter	
11	Reverse rotation torque limit Used to set the parameter assuming that the rated torque is 100%. Used to limit the torque in reverse rotation power running and the forward rotation regenerative mode. In any mode other than the test operation mode on MR Configurator (setup software), the torque limit value on the servo system controller side is made valid.	300		No corresponding parameter	
12	Load to motor inertia ratio (load inertia ratio) Used to set the ratio of the load inertia (moment of inertia) to the servo motor shaft moment of inertia. When auto tuning mode 1 or interpolation mode is selected, the result of auto tuning is automatically used.	7.0	PB06	Load to motor inertia ratio/load to motor mass ratio This is used to set the load to motor inertia ratio or load to motor mass ratio. The setting of the parameter will be the automatic setting or manual setting depending on the [Pr. PA08] setting. Refer to the following table for details. When the parameter is automatic setting, the value will vary between 0.00 and 100.00. Pr. PA08 / This parameter _ _ _0 (2 gain adjustment mode 1 (interpolation mode)) / Automatic setting _ _ _1 (Auto tuning mode 1) / Automatic setting _ _ _2 (Auto tuning mode 2) / Manual setting _ _ _3 (Manual mode) / Manual setting _ _ _4 (2 gain adjustment mode 2) / Manual setting	7.00
13	Position loop gain 1 This is used to set the gain of the position loop. Increase the gain to improve trackability in response to the position command. When auto tuning mode 1 or 2 is selected, the auto tuning result is automatically used.	7 kW or less: 35 11 kW or more: 19	PB07	Model loop gain Set the response gain up to the target position. Increasing the setting value will also increase the response level to the position command but will be liable to generate vibration and/or noise. The setting of the parameter will be the automatic setting or manual setting depending on the [Pr. PA08] setting. Refer to the following table for details. Pr. PA08 / This parameter _ _ _0 (2 gain adjustment mode 1 (interpolation mode)) / Manual setting _ _ _1 (Auto tuning mode 1) / Automatic setting _ _ _2 (Auto tuning mode 2) / Automatic setting _ _ _3 (Manual mode) / Manual setting _ _ _4 (2 gain adjustment mode 2) / Manual setting	15.0
14	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 mode 1 or 2 and manual mode is selected, the auto tuning result is automatically used.	7 kW or less: 177 11 kW or more: 96		No corresponding parameter	
15	Position loop gain 2 This is 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 mode 1 or 2, manual mode, and interpolation mode are selected, the auto tuning result is automatically used.	7 kW or less: 35 11 kW or more: 19	PB08	Position loop gain Set this parameter to increase the position response to level load disturbance. Increasing the setting value will also increase the response level to the load disturbance but will be liable to generate vibration and/or noise. The setting of the parameter will be the automatic setting or manual setting depending on the [Pr. PA08] setting. Refer to the following table for details. Pr. PA08 / This parameter _ _ _0 (2 gain adjustment mode 1 (interpolation mode)) / Automatic setting _ _ _1 (Auto tuning mode 1) / Automatic setting _ _ _2 (Auto tuning mode 2) / Automatic setting _ _ _3 (Manual mode) / Manual setting _ _ _4 (2 gain adjustment mode 2) / Automatic setting	37.0
16	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 mode 1 or 2 and interpolation mode are selected, the auto tuning result is automatically used.	7 kW or less: 817 11 kW or more: 455	PB09	Speed loop gain This is used to set the gain of the speed loop. Set this parameter when vibration occurs on machines of low rigidity or large backlash. Increasing the setting value will also increase the response level but will be liable to generate vibration and/or noise. The setting of the parameter will be the automatic setting or manual setting depending on the [Pr. PA08] setting. See the [Pr. PB08] table for details.	823
17	Speed integral compensation Set the time constant of the integral compensation. When auto tuning mode 1 or 2, manual mode, and interpolation mode are selected, the auto tuning result is automatically used.	7 kW or less: 48 11 kW or more: 91	PB10	Speed integral compensation This is used to set the integral time constant of the speed loop. Decreasing the setting value will increase the response level but will be liable to generate vibration and/or noise. The setting of the parameter will be the automatic setting or manual setting depending on the [Pr. PA08] setting. See the [Pr. PB08] table for details.	33.7

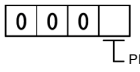
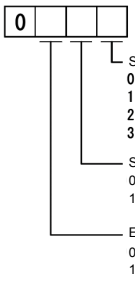
<table>
<tr><th colspan="3">MR-J2S-_B_</th><th colspan="3">MR-J4-_B_</th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th></tr>
<tr><td>18</td><td>Machine resonance suppression filter 1 (Notch filter)
Select the machine resonance suppression filter.
 
Notch frequency selection
<table><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><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></table>Notch depth selection
<table><tr><th>Setting value</th><th>Depth</th><th>Gain</th></tr><tr><td>0</td><td>Deep</td><td>−40dB</td></tr><tr><td>1</td><td>≀</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></table></td><td>0000 h</td><td>PB13</td><td>Machine resonance suppression filter 1
Set the notch frequency 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.
When you select "Manual setting (_ _ _ 2)" of "Filter tuning mode selection" in [Pr. PB01], the setting value will be enabled.</td><td>4500</td></tr>
<tr><td></td><td></td><td></td><td>PB14</td><td>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.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>For manufacturer setting</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></table></td><td>0000 h</td></tr>
<tr><td>19</td><td>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 guideline, when the feed forward gain setting is 100%, set 1 s or more as the acceleration time constant up to the rated speed.</td><td>0</td><td>PB04</td><td>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 guideline, when the feed forward gain setting is 100%, set 1 s or more as the acceleration time constant up to the rated speed.</td><td>0</td></tr>
<tr><td>20</td><td>In-position range
Used to set the droop pulse range in which the in-position (INP) will be output to the controller. Set in the feedback pulse unit (parameter No. 6). For example, when you want to set ±10 μm when the ball screw is directly coupled, the lead is 10 mm, and the feedback pulses are 8192 pulses/rev (parameter No. 6: 1), set "8" as indicated by the following expression.
$\frac{10\times10^{-6}}{10\times10^{-3}}\cdot 8192=8.192\fallingdotseq 8$</td><td>100</td><td>PA10</td><td>In-position range
Set an in-position range per command pulse.</td><td>1600</td></tr>
<tr><td>21</td><td>Electromagnetic brake sequence output
Used to set the delay time (Tb) between electromagnetic brake interlock (MBR) OFF and base circuit shut-off.</td><td>0</td><td>PC02</td><td>Electromagnetic brake sequence output
This is used to set the delay time between MBR (Electromagnetic brake interlock) and the base drive circuit is shut-off.</td><td>0</td></tr>
</table>

<table>
<tr><th colspan="3">MR-J2S-_B_</th><th colspan="3">MR-J4-_B_</th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th></tr>
<tr><td>22</td><td>Analog monitor output
Used to select the signals output to analog monitor 1 (MO1) and analog monitor 2 (MO2).
 

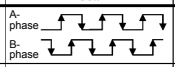
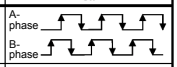
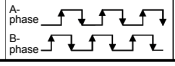
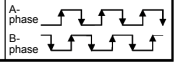
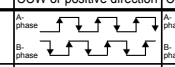
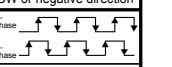
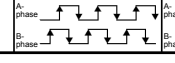
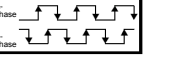
 
<table>
<tr><th>Setting value</th><th>Analog monitor 1 (MO1)</th><th>Analog monitor 2 (MO2)</th></tr>
<tr><td>0</td><td colspan="2">Servo motor speed (±8 V/max. speed)</td></tr>
<tr><td>1</td><td colspan="2">Torque (8V/max. torque) (Note)</td></tr>
<tr><td>2</td><td colspan="2">Servo motor speed (±8 V/max. speed)</td></tr>
<tr><td>3</td><td colspan="2">Torque (8V/max. torque) (Note)</td></tr>
<tr><td>4</td><td colspan="2">Current command (±8 V/max. current command)</td></tr>
<tr><td>5</td><td colspan="2">Speed command (±8 V/max. speed)</td></tr>
<tr><td>6</td><td colspan="2">Droop pulses (±10 V/128 pulse)</td></tr>
<tr><td>7</td><td colspan="2">Droop pulses (±10 V/2048 pulse)</td></tr>
<tr><td>8</td><td colspan="2">Droop pulses (±10 V/8192 pulse)</td></tr>
<tr><td>9</td><td colspan="2">Droop pulses (±10 V/32768 pulse)</td></tr>
<tr><td>A</td><td colspan="2">Droop pulses (±10 V/131072 pulse)</td></tr>
<tr><td>B</td><td colspan="2">Bus voltage (+8 V/400 V)</td></tr>
</table>
Note. 8 V is outputted at the maximum torque.</td><td>0001</td><td>PC09</td><td>Analog monitor 1 output
Used to select the signals output to MO1 (analog monitor 1).
<table>
<tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr>
<tr><td>_ _ x x</td><td>Analog monitor 1 output selection
Refer to table 3.3 for settings.</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>
</table>
Table 3.3 Analog monitor setting value
<table>
<tr><th rowspan="2">Setting value</th><th rowspan="2">Item</th><th colspan="4">Operation mode (Note 1)</th></tr>
<tr><th>Standard</th><th>Full.</th><th>Lin.</th><th>DD</th></tr>
<tr><td>00</td><td>Servo motor speed or linear servo motor speed
(±8 V/max. speed or max. speed)</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>01</td><td>Torque or thrust
(±8 V/max. torque or max. thrust)</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>02</td><td>Servo motor speed or linear servo motor speed
(+8 V/max. speed or max. speed)</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>03</td><td>Torque or thrust
(+8 V/max. torque or max. thrust)</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>04</td><td>Current command (±8 V/max. current command)</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>05</td><td>Speed command (±8 V/max. speed or max. speed)</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>06</td><td>Servo motor-side droop pulses (±10 V/100 pulses) (Note 2)</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>07</td><td>Servo motor-side droop pulses (±10 V/1000 pulses) (Note 2)</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>08</td><td>Servo motor-side droop pulses (±10 V/10000 pulses) (Note 2)</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>09</td><td>Servo motor-side droop pulses (±10 V/100000 pulses) (Note 2)</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>0A</td><td>Feedback position (±10 V/1 Mpulses) (Note 2)</td><td>○</td><td></td><td></td><td></td></tr>
<tr><td>0B</td><td>Feedback position (±10 V/10 Mpulses) (Note 2)</td><td>○</td><td></td><td></td><td></td></tr>
<tr><td>0C</td><td>Feedback position (±10 V/100 Mpulses) (Note 2)</td><td>○</td><td></td><td></td><td></td></tr>
<tr><td>0D</td><td>Bus voltage (+8 V/400 V, 200 V amplifiers)</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>0E</td><td>Speed command (±8 V/max. speed or max. speed)</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>10</td><td>Load-side droop pulses (±10 V/100 pulses) (Note 2)</td><td></td><td>○</td><td></td><td></td></tr>
<tr><td>11</td><td>Load-side droop pulses (±10 V/1000 pulses) (Note 2)</td><td></td><td>○</td><td></td><td></td></tr>
<tr><td>12</td><td>Load-side droop pulses (±10 V/10000 pulses) (Note 2)</td><td></td><td>○</td><td></td><td></td></tr>
<tr><td>13</td><td>Load-side droop pulses (±10 V/100000 pulses) (Note 2)</td><td></td><td>○</td><td></td><td></td></tr>
<tr><td>14</td><td>Load-side droop pulses (±10 V/1 Mpulses) (Note 2)</td><td></td><td>○</td><td></td><td></td></tr>
<tr><td>15</td><td>Servo motor-side/load-side position deviation
(±10 V/100000 pulses)</td><td></td><td>○</td><td></td><td></td></tr>
<tr><td>16</td><td>Servo motor-side/load-side speed deviation
(±8 V/max. speed or max. speed)</td><td></td><td>○</td><td></td><td></td></tr>
<tr><td>17</td><td>Encoder inside temperature (±10 V/±128 °C)</td><td>○</td><td>○</td><td></td><td>○</td></tr>
</table>
Note 1. Items with ○ are available for each operation mode.
Standard: Standard (semi closed loop system) use of the rotary servo motor
Full.: Fully closed loop system use of the rotary servo motor
Lin.: Linear servo motor use
DD: Direct drive (DD) motor use
2. Encoder pulse unit</td><td>0000 h</td></tr>
<tr><td></td><td></td><td></td><td>PC10</td><td>Analog monitor 2 output
Used to select the signals output to MO2 (analog monitor 2).
<table>
<tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr>
<tr><td>_ _ x x</td><td>Analog monitor 2 output selection
Refer to [Pr. PC09] for settings.</td><td>01h</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>
</table></td><td>0001 h</td></tr>
<tr><td>23</td><td>Option function 1
Used to make the servo forced stop function invalid.
 

Servo forced stop selection
0: Enabled (Use forced stop (EM1))
1: Disabled (Do not use forced stop (EM1))
Automatically switched on internally</td><td>0000 h</td><td>PA04</td><td>Function selection A-1
This is used to select the forced stop input and forced stop deceleration function.
<table>
<tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></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>Servo forced stop selection
0: Enabled (The forced stop input EM2 or EM1 is used.)
1: Disabled (Do not use forced stop input EM2 or EM1)
Refer to table 3.4 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)
Refer to table 3.4 for details.</td><td>2h</td></tr>
</table>
Table 3.4 Deceleration method
<table>
<tr><th rowspan="2">Setting value</th><th rowspan="2">EM2/EM1</th><th colspan="2">Deceleration method</th></tr>
<tr><th>EM2 or EM1 is off</th><th>Alarm occurred</th></tr>
<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></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></td><td>MBR (Electromagnetic brake interlock) turns off after the forced stop deceleration.</td></tr>
</table></td><td>2000 h</td></tr>
</table>

MR-J2S-_B_			MR-J4-_B_		
No.	Name and function	Initial value	No.	Name and function	Initial value
24	Option function 2 Used to select slight vibration suppression control and motor-less operation. 0 _ _ 0 Slight vibration suppression control selection It will become effective if the auto tuning selection is set to "0002" in parameter No. 8. Used to suppress vibration at the time of stop. 0: Disabled 1: Enabled 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).	0000 h	PB24	Slight vibration suppression control Select the slight vibration suppression control. Setting digit: _ _ _ x — Explanation: Slight vibration suppression control selection; 0: Disabled; 1: Enabled; To enable the slight vibration suppression control, select "Manual mode (_ _ _ 3)" of "Gain adjustment mode selection" in [Pr. PA08]. Slight vibration suppression control cannot be used in the speed control mode. — Initial value: 0h	0000 h
			PC05	Function selection C-2 This is used to select the motor-less operation. This function is not available with linear servo motor control mode, fully closed loop control mode, and DD motor control mode. Setting digit: _ _ _ x — Explanation: Motor-less operation selection; 0: Disabled; 1: Enabled — Initial value: 0h Setting digit: _ _ x _ — Explanation: For manufacturer setting — Initial value: 0h Setting digit: _ x _ _ — Initial value: 0h Setting digit: x _ _ _ — Initial value: 0h	0000 h
25	Low-pass filter/adaptive vibration suppression control Used to select the low-pass filter/adaptive vibration suppression control. _ _ _ 0 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 $\frac{\text{VG2 setting value} \times 10}{2\pi \times (1 + \text{GD2 setting value} \times 0.1)}$ [Hz] For 2 kw or more $\frac{\text{VG2 setting value} \times 5}{2\pi \times (1 + \text{GD2 setting value} \times 0.1)}$ [Hz] Adaptive vibration suppression control selection 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. Adaptive vibration suppression control level selection Used to set the machine resonance detection sensitivity. 0: Normal 1: High sensitive	0000 h	PB23	Low-pass filter selection Select the shaft resonance suppression filter. Setting digit: _ _ _ x — Explanation: Shaft resonance suppression filter selection; 0: Automatic setting; 1: Manual setting; 2: Disabled; When you select "Enabled (_ _ _ 1)" of "Machine resonance suppression filter 4 selection" in [Pr. PB49], the shaft resonance suppression filter is not available. — Initial value: 0h	0000 h
				No corresponding parameter (Machine resonance filters can be automatically adjusted with PB01.)	
27	Analog monitor 1 offset Used to set the offset voltage of analog monitor 1 (MO1).	0	PC11	Analog monitor 1 offset This is used to set the offset voltage of MO1 (Analog monitor 1).	0
28	Analog monitor 2 offset Used to set the offset voltage of analog monitor 2 (MO2).	0	PC12	Analog monitor 2 offset This is used to set the offset voltage of MO2 (Analog monitor 2).	0
30	Zero speed Used to set the output range of Zero speed (ZSP).	50	PC07	Zero speed Used to set the output range of ZSP (Zero speed detection). ZSP (Zero speed detection) has hysteresis of 20 r/min or 20mm/s.	50
31	Error excessive alarm level Used to set the output range of the excessive droop pulse alarm. Note. The setting unit of 0.025 rev applies to servo amplifiers with a software version of B1 or later. For amplifiers with a software version older than B1, the setting unit of 0.1 rev is applied.	80	PC01	Error excessive alarm level Set an error excessive alarm level. Set this per rev. for rotary servo motors and direct drive motors. Setting "0" will be 3 rev. A setting value over 200 rev will be clamped to 200 rev. Set this per mm for linear servo motors. Setting "0" will be 100 mm.	0
			PC06	Function selection C-3 Select the error excessive alarm level setting for [Pr. PC01]. The parameter is not available in the speed control mode and torque control mode. Setting digit: _ _ _ x — Explanation: For manufacturer setting — Initial value: 0h Setting digit: _ _ x _ — Initial value: 0h Setting digit: _ x _ _ — Initial value: 0h Setting digit: x _ _ _ — Explanation: Error excessive alarm level unit selection; 0: Per 1 rev or 1 mm; 1: Per 0.1 rev or 0.1 mm; 2: Per 0.01 rev or 0.01 mm; 3: Per 0.001 rev or 0.001 mm — Initial value: 0h	0000 h

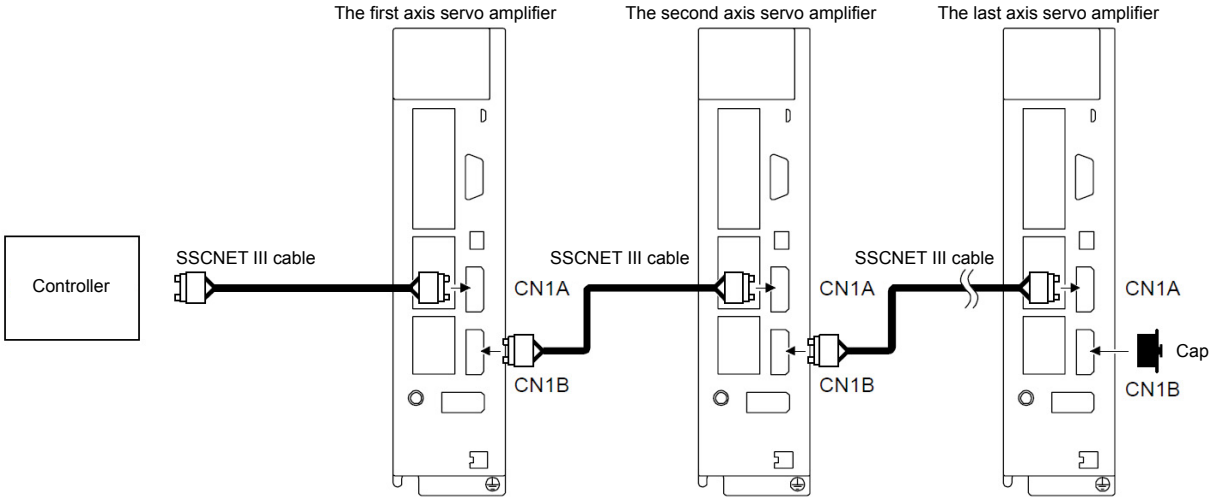
<table>
<tr><th colspan="3">MR-J2S-_B_</th><th colspan="3">MR-J4-_B_</th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th></tr>
<tr><td>32</td><td>Option function 5
Used to select PI-PID control switch-over.
 
</td><td>0000</td><td>PB24</td><td>Slight vibration suppression control
Used to select PI-PID switching control.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ x _</td><td>PI-PID switching control selection
0: PI control enabled
(Switching to PID control is possible with commands of controller.)
3: Continuous PID control enabled</td><td>0h</td></tr></table>Switching with PI-PID switching position droop is not possible.</td><td>0000 h</td></tr>
<tr><td>33</td><td>Option function 6
Used to select the serial communication baud rate, serial communication response delay time setting, and encoder output pulse setting.
 
</td><td>0000</td><td></td><td>No corresponding parameter
(No serial communication function)</td><td></td></tr>
<tr><td></td><td></td><td></td><td>PC03</td><td>Encoder output pulse selection
Encoder output pulse setting selection
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ x _</td><td>Encoder output pulse selection
0: Output pulse setting
(The setting value "_10_" will trigger [AL. 37 parameter error].)
1: Division ratio setting
3: A-phase/B-phase pulse electronic gear setting
4: A/B-phase pulse through output setting
For linear servo motors, selecting "0" will output as division ratio setting because the output pulse setting is not available.
The setting "4" is enabled only when an A/B/Z-phase differential output linear encoder is used. In this case, encoder output pulses phase selection (_ _ _ x) is disabled. When another encoder is connected, [AL. 37 parameter error] will be triggered. When standard control mode (_ _ 0 _) is selected in [Pr. PA01 operation mode], [AL. 37 parameter error] will be triggered.</td><td>0h</td></tr></table></td><td>0000 h</td></tr>
<tr><td>34</td><td>PI-PID switching position droop.
Used to set the position droop value (number of pulses) at which PI control is switched over to PID control. Set "0001" in parameter No. 32 to enable this function.</td><td>0</td><td></td><td>No corresponding parameter</td><td></td></tr>
<tr><td>36</td><td>Speed differential compensation
This is used to set the differential compensation value.</td><td>980</td><td>PB11</td><td>Speed differential compensation
This is used to set the differential compensation.
To enable the parameter, select "Continuous PID control enabled (_ _ 3 _)" of "PI-PID switching control selection" in [Pr. PB24].</td><td>980</td></tr>
<tr><td>38</td><td>Encoder output pulses
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.
You can use parameter No. 33 to choose the output pulse setting or output division 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 M pulse/s (after multiplication by 4). Use this parameter within this range.
• 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.
A- and B-phase output pulses = $\frac{5600}{4}$ = 1400 [pulse]
• 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 = $\frac{\text{Encoder resolution per servo motor revolution}}{\text{Setting value}}$ [pulse]
For instance, when "8" is set, the actual output A- and B-phase pulses are as follows.
A- and B-phase output pulses = $\frac{131072}{8} \cdot \frac{1}{4}$ = 4096 [pulse]</td><td>4000</td><td>PA15</td><td>Encoder output pulses
Set the encoder output pulses from the servo amplifier by using the number of output pulses per revolution, dividing ratio, or electronic gear ratio. (after multiplication by 4)
To set a numerator of the electronic gear, select "A-phase/B-phase pulse electronic gear setting (_ _ 3 _)" of "Encoder output pulse setting selection" in [Pr. PC03].
The maximum output frequency is 4.6 Mpps. Set the parameter within this range.</td><td>4000</td></tr>
</table>

<table>
<tr><th colspan="3">MR-J2S-_B_</th><th colspan="3">MR-J4-_B_</th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th></tr>
<tr><td>40</td><td>Parameter writing inhibit
<table>
<tr><th>Setting value</th><th>Setting operation</th><th>Operation from controller</th><th>Operation from MR Configurator (setup software)</th></tr>
<tr><td>0000 (Initial value)</td><td>Reference
Writing</td><td>Parameter No. 1 to 75</td><td>Parameter No. 1 to 11, 40</td></tr>
<tr><td>000A</td><td>Reference
Writing</td><td>Parameter No. 1 to 75</td><td>Parameter No. 40</td></tr>
<tr><td>000C</td><td>Reference
Writing</td><td>Parameter No. 1 to 75</td><td>Parameter No. 1 to 40
Parameter No. 1 to 11, 40</td></tr>
<tr><td>000E</td><td>Reference
Writing</td><td>Parameter No. 1 to 75</td><td>Parameter No. 1 to 40</td></tr>
<tr><td>000F</td><td>Reference
Writing</td><td>Parameter No. 1 to 75</td><td>Parameter No. 1 to 75</td></tr>
<tr><td>100E</td><td>Reference
Writing</td><td>Parameter No. 1 to 75</td><td>Parameter No. 1 to 40
Parameter No. 40</td></tr>
</table></td><td>0000</td><td>PA19</td><td>Parameter writing inhibit
Select a reference range and writing range of the parameter.
Refer to table 3.5 for settings.
Table 3.5 [Pr. PA19] setting value and reading/writing range
<table>
<tr><th>PA19</th><th>Setting operation</th><th>PA</th><th>PB</th><th>PC</th><th>PD</th><th>PE</th><th>PF</th><th>PL</th></tr>
<tr><td rowspan="2">Other than below</td><td>Reading</td><td>○</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Writing</td><td>○</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">000Ah</td><td>Reading</td><td>Only 19</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Writing</td><td>Only 19</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">000Bh</td><td>Reading</td><td>○</td><td>○</td><td>○</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Writing</td><td>○</td><td>○</td><td>○</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">000Ch</td><td>Reading</td><td>○</td><td>○</td><td>○</td><td>○</td><td></td><td></td><td></td></tr>
<tr><td>Writing</td><td>○</td><td>○</td><td>○</td><td>○</td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">000Fh</td><td>Reading</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td></td><td>○</td></tr>
<tr><td>Writing</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td></td><td>○</td></tr>
<tr><td rowspan="2">00AAh</td><td>Reading</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td></td></tr>
<tr><td>Writing</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td></td></tr>
<tr><td rowspan="2">00ABh (Initial value)</td><td>Reading</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>Writing</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td rowspan="2">100Bh</td><td>Reading</td><td>○</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Writing</td><td>Only 19</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">100Ch</td><td>Reading</td><td>○</td><td>○</td><td>○</td><td>○</td><td></td><td></td><td></td></tr>
<tr><td>Writing</td><td>Only 19</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">100Fh</td><td>Reading</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td></td><td>○</td></tr>
<tr><td>Writing</td><td>Only 19</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">10AAh</td><td>Reading</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td></td></tr>
<tr><td>Writing</td><td>Only 19</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">10ABh</td><td>Reading</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr>
<tr><td>Writing</td><td>Only 19</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table></td><td>00AB h</td></tr>
<tr><td>49</td><td>Gain switching selection
Select the gain switching condition.
0 0 0 □
Gain switching selection
Gain will be changed under the following condition based on the setting value of parameter No. 52 to 55.
0: Disabled
1: Control command of controller
2: When the appointed frequency is equal to or more than the setting value of parameter No. 50
3: When the droop pulse is equal to or more than the setting value of parameter No. 50
4: When the servo motor speed is equal to or more than the setting value of parameter No. 50</td><td>0000</td><td>PB26</td><td>Gain switching function
Select the gain switching condition.
Set conditions to enable the gain switching values set in [Pr. PB29] to [Pr. PB36] and [Pr. PB56] to [Pr. PB60].
<table>
<tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr>
<tr><td>_ _ _ x</td><td>Gain switching selection
0: Disabled
1: Control command from controller is enabled
2: Command frequency
3: Droop pulses
4: Servo motor speed/linear servo motor speed</td><td>0h</td></tr>
<tr><td>_ _ x _</td><td>Gain switching condition selection
0: Gain after switching is enabled with gain switching condition or more
1: Gain after switching is enabled with gain switching condition or less</td><td>0h</td></tr>
<tr><td>_ x _ _</td><td rowspan="2">For manufacturer setting</td><td>0h</td></tr>
<tr><td>x _ _ _</td><td>0h</td></tr>
</table></td><td>0000</td></tr>
<tr><td>50</td><td>Gain switching condition
Set the values of 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.</td><td>10</td><td>PB27</td><td>Gain switching condition
This is used to set the value of 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 unit "r/min" will be "mm/s" for linear servo motors.</td><td>10</td></tr>
<tr><td>51</td><td>Gain switching time constant
Set the time constant at which the gains will switch in response to the conditions set in parameters No. 49 and No. 50.</td><td>1</td><td>PB28</td><td>Gain switching time constant
This is used to set the time constant at which the gains will change in response to the conditions set in [Pr. PB26] and [Pr. PB27].</td><td>1</td></tr>
<tr><td>52</td><td>Load to motor inertia ratio 2
Set the load to motor inertia ratio for the servo motor when gain switching is enabled.</td><td>7.0</td><td>PB29</td><td>Load to motor inertia ratio/load to motor mass ratio after gain switching
This is used to set the load to motor inertia ratio/load to motor mass ratio when gain switching is enabled.
This parameter is enabled only when you select "Manual mode (_ _ _ 3)" of "Gain adjustment mode selection" in [Pr. PA08].</td><td>7.00</td></tr>
<tr><td>53</td><td>Position loop gain 2 changing ratio
Used to set the changing ratio for position loop gain 2 when gain switching is enabled.
This parameter is enabled when auto tuning is disabled.</td><td>100</td><td>PB30</td><td>Position loop gain after gain switching
Set the position loop gain when the gain switching is enabled.
When you set a value less than 1.0 rad/s, the value will be the same as [Pr. PB08].
This parameter is enabled only when you select "Manual mode (_ _ _ 3)" of "Gain adjustment mode selection" in [Pr. PA08].</td><td>0.0</td></tr>
<tr><td>54</td><td>Speed loop gain 2 changing ratio
Used to set the changing ratio for speed loop gain 2 when gain switching is enabled.
This parameter is enabled when auto tuning is disabled.</td><td>100</td><td>PB31</td><td>Speed loop gain after gain switching
Set the speed loop gain when the gain switching is enabled.
When you set a value less than 20 rad/s, the value will be the same as [Pr. PB09].
This parameter is enabled only when you select "Manual mode (_ _ _ 3)" of "Gain adjustment mode selection" in [Pr. PA08].</td><td>0</td></tr>
<tr><td>55</td><td>Speed integral compensation changing ratio
Used to set the changing ratio for speed integral compensation when gain switching is enabled.
This parameter is enabled when auto tuning is disabled.</td><td>100</td><td>PB32</td><td>Speed integral compensation after gain switching
Set the speed integral compensation when the gain changing is enabled.
When you set a value less than 0.1 ms, the value will be the same as [Pr. PB10].
This parameter is enabled only when you select "Manual mode (_ _ _ 3)" of "Gain adjustment mode selection" in [Pr. PA08].</td><td>0.0</td></tr>
</table>

<table>
<tr><th colspan="3">MR-J2S-_B_</th><th colspan="3">MR-J4-_B_</th></tr>
<tr><th>No.</th><th>Name and function</th><th>Initial value</th><th>No.</th><th>Name and function</th><th>Initial value</th></tr>
<tr><td>60</td><td>Option function C
Used to select the encoder pulse direction.
0 _ 0 0
Encoder pulse output phase changing
Used to change the output A-phase and B-phase positions of the encoder.
<table><tr><th rowspan="2">Setting value</th><th colspan="2">Servo motor rotation direction</th></tr><tr><th>CCW</th><th>CW</th></tr><tr><td>0</td><td>  </td><td>  </td></tr><tr><td>1</td><td>  </td><td>  </td></tr></table></td><td>0000</td><td>PC03</td><td>Encoder output pulse selection
Select the encoder pulse direction.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Encoder output pulse phase selection
0: Increasing A-phase 90° in CCW or positive direction
1: Increasing A-phase 90° in CW or negative direction
<table><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><tr><td>0</td><td>  </td><td>  </td></tr><tr><td>1</td><td>  </td><td>  </td></tr></table></td><td>0h</td></tr></table></td><td>0000 h</td></tr>
<tr><td>61</td><td>Machine resonance suppression filter 2
Select the machine resonance suppression filter.
0 _ _ _
Notch frequency selection
Set "00" when the adaptive vibration suppression control is set to "Effective" or "Maintain" (parameter No. 25: □1□□ or □2□□).
<table><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><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></table>Notch depth selection
<table><tr><th>Setting value</th><th>Depth</th><th>Gain</th></tr><tr><td>0</td><td rowspan="4">Deep
to
Shallow</td><td>−40dB</td></tr><tr><td>1</td><td>−14dB</td></tr><tr><td>2</td><td>−8dB</td></tr><tr><td>3</td><td>−4dB</td></tr></table></td><td>0000</td><td>PB15</td><td>Machine resonance suppression filter 2
Set the notch frequency of the machine resonance suppression filter 2.
To enable the setting value, select "Enabled (_ _ _ 1)" of "Machine resonance suppression filter 2 selection" in [Pr. PB16].</td><td>4500</td></tr>
<tr><td></td><td></td><td></td><td>PB16</td><td>Notch shape selection 2
Set the shape of the machine resonance suppression filter 2.
<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><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></table></td><td>0000 h</td></tr>
</table>

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.



MEMO

Part 4
Replacement of MR-J2M with MR-J4

Part 4: Replacement of MR-J2M with MR-J4

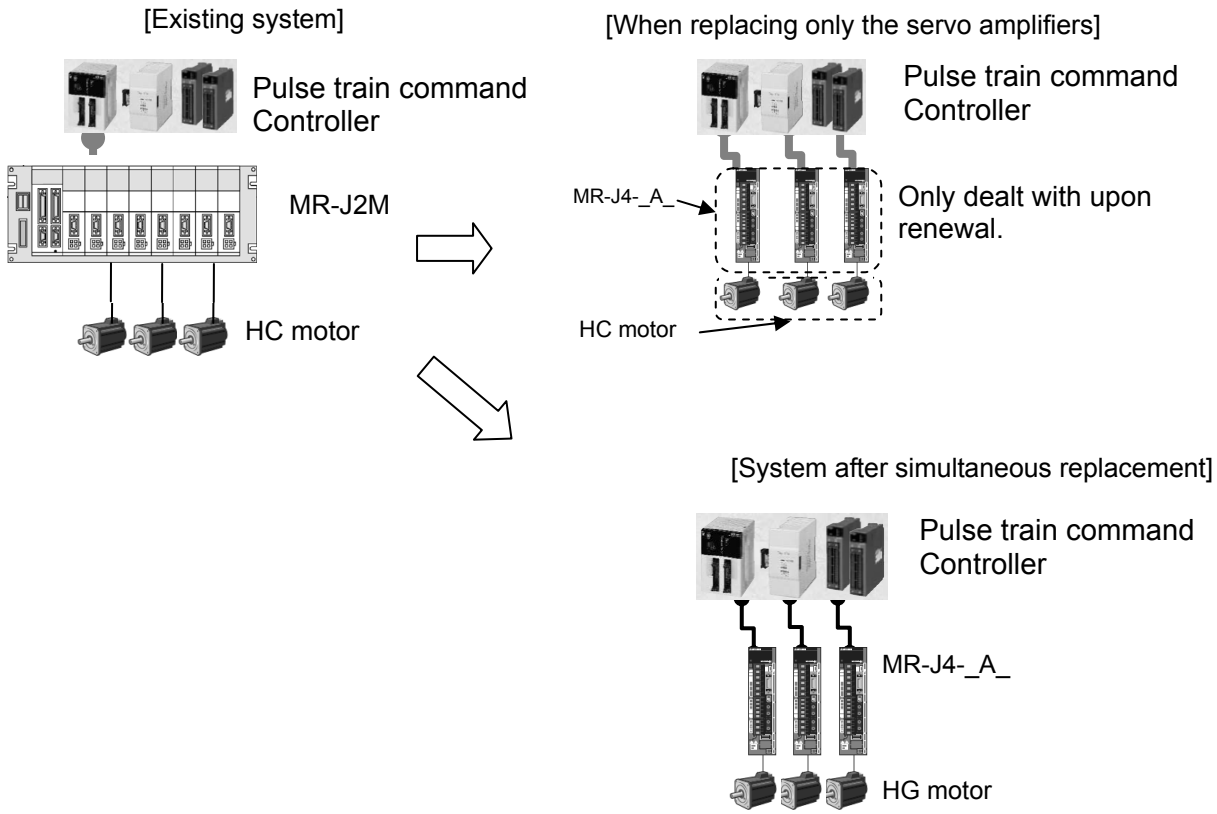
1 SUMMARY

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	Mounting compatibility (O: Interchangeable)
	Base unit	Interface unit	Drive Unit		
200 VAC general-purpose 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
200 VAC 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.

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

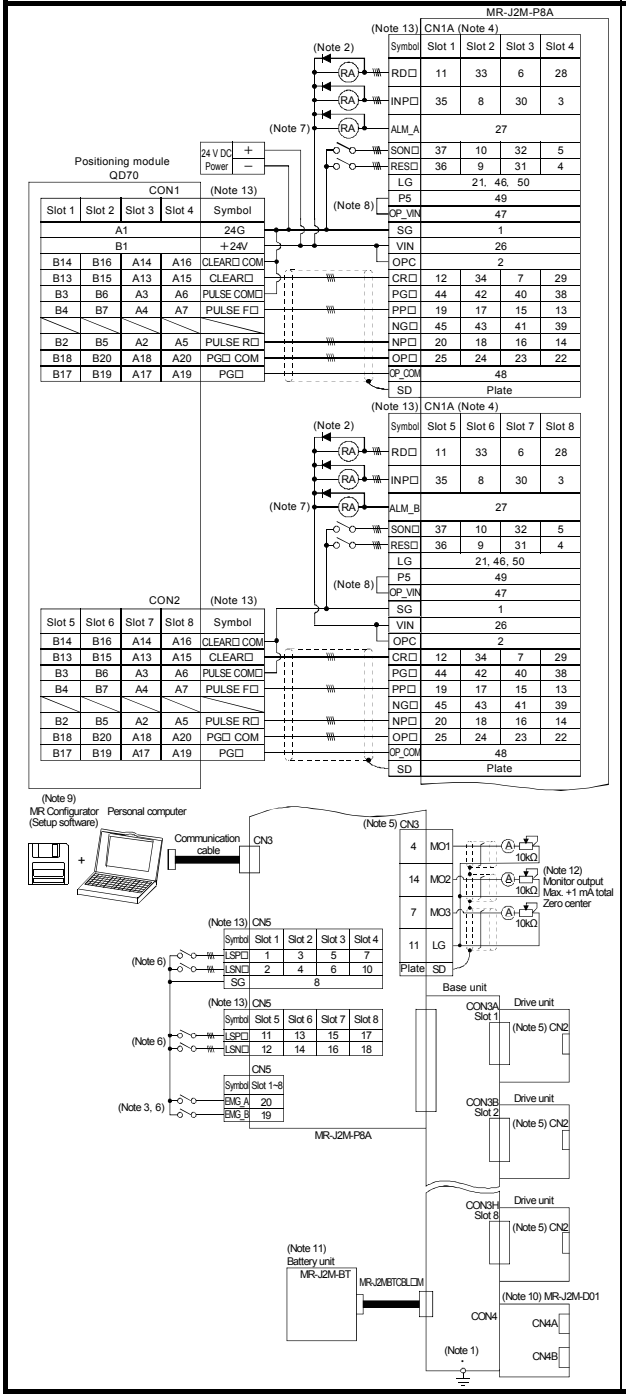
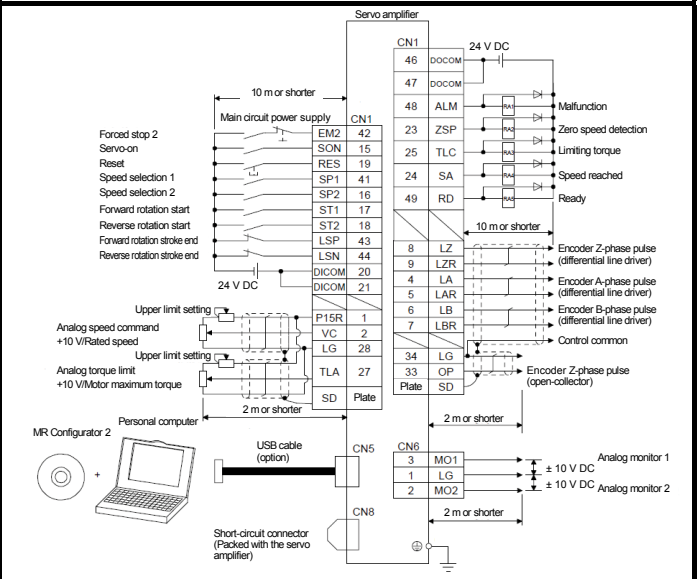
3.1 Function Comparison Table

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 brakes	Built-in	Built-in (Coasting distance is different.)	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 11.3
3	Control circuit power supply	Single-phase 200 V AC to 230 V AC	Single-phase 200 VAC to 240 VAC	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 1.3
4	Main circuit power supply	Single-phase/3-phase 200 V AC to 230 V AC 3-phase 200 V AC to 230 V AC	Single-phase/3-phase 200 V AC to 240 V AC 3-phase 200 V AC to 240 V AC	MR-J4-_A_ Servo Amplifier Instruction Manual, Section 1.3
5	24 V DC 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 section: 15 steps	Real-time auto tuning section: 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 x 8 axes; DO: 2 points x 8 axes (B) SSCNET-compatible DI: 0 point; DO: 0 point * When an extension I/O unit is used, the following will be added. DI: 32 points; DO: 8 points	(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 10-bit torque, 14-bit speed 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	The 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% 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

Item		MR-J2M series	MR-J4 series	Reference document/items
20	Notch filter	Provided (2 pcs.)	Provided (5 pcs.)	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)	Select EM1 (DB stop) or EM2 (deceleration to a stop)	MR-J4-_A_Servo Amplifier Instruction Manual

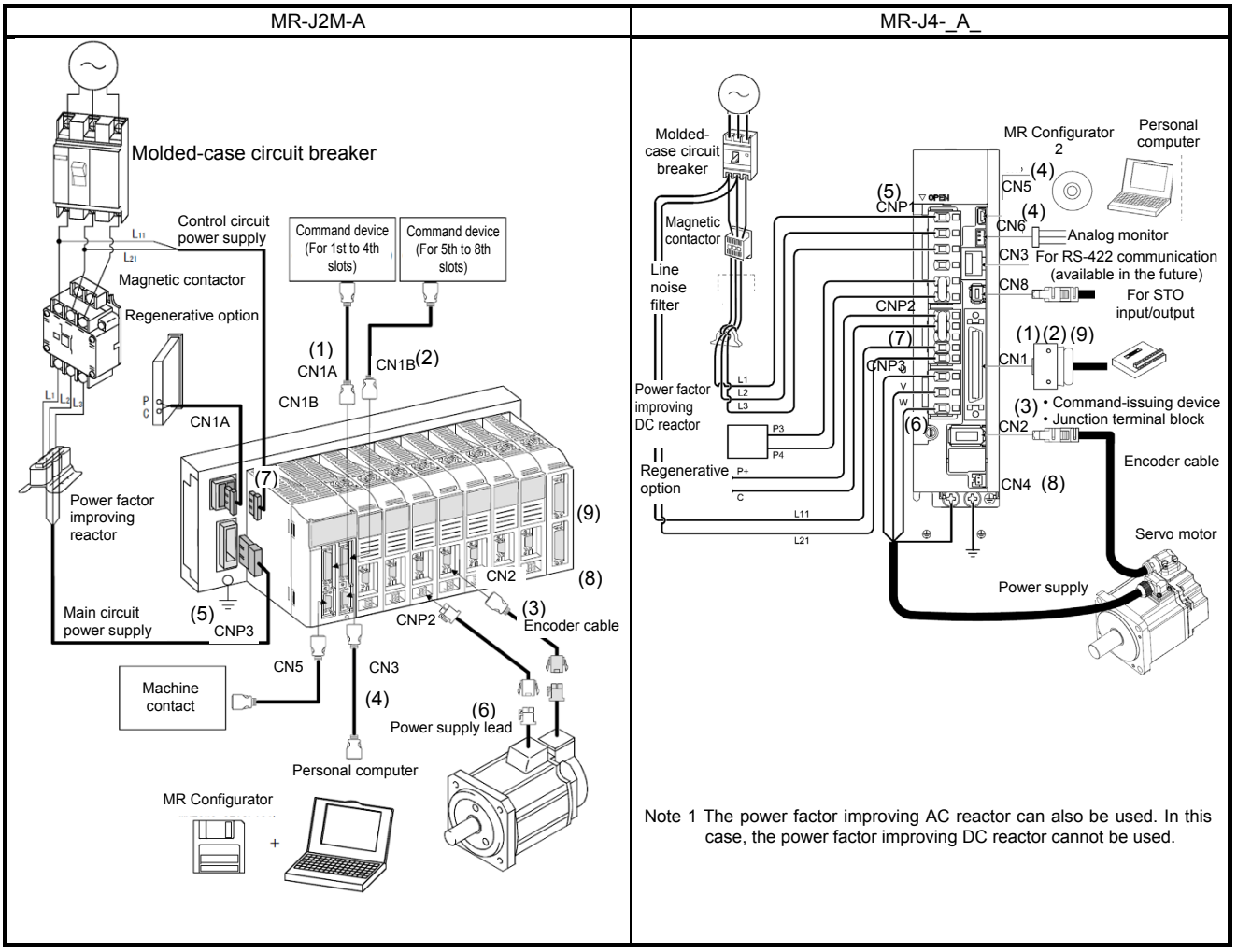
3.2 Comparison of Standard Connection Diagrams

MR-J2M-A	MR-J4-_A_
	

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.



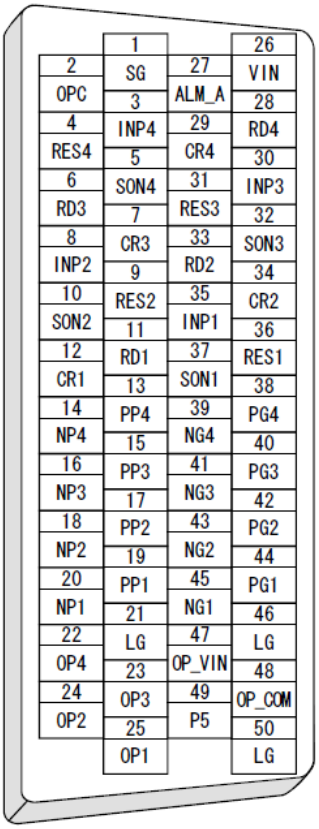
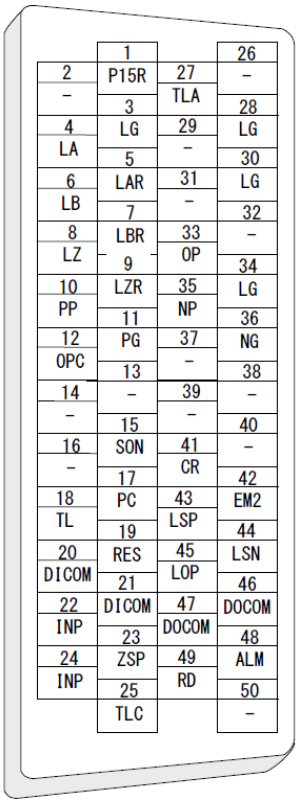
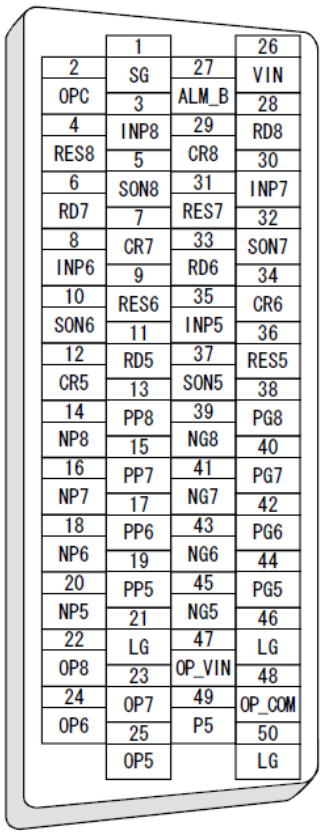
Note 1 The power factor improving AC reactor can also be used. In this case, the power factor improving DC reactor cannot be used.

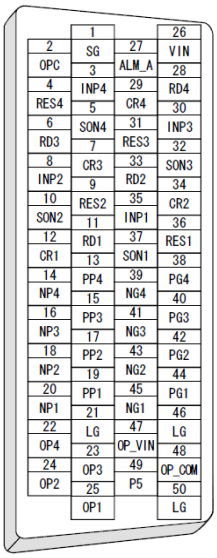
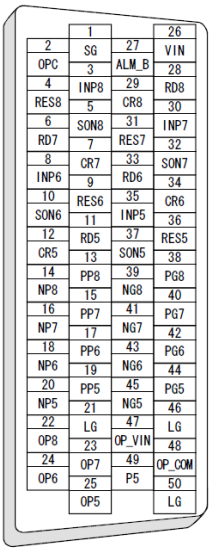
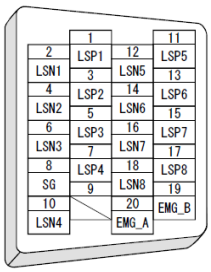
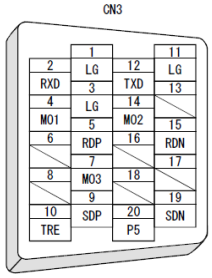
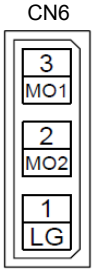
• List of corresponding connectors

	MR-J2M-A		→	MR-J4-_A_	Precautions
(1)	I/O signal connector CN1A			I/O signal connector CN1	Must fabricate 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	PC connection		USB communication connector CN5	Must switch to USB cable (option).
		Analog monitor		Analog monitor connector CN6	Must switch to monitor cable (option).
(5)	Main circuit power connector CNP3			Main circuit power connector CNP1	Must switch to power connector (enclosed with amplifier).
(6)	Servo motor power connector CNP2			Servo motor power connector CNP3	
(7)	Control circuit power connector CNP1B			Control circuit power connector CNP2	
(8)	Battery connector CON5			Battery connector CN4	Must fabricate a new battery.
(9)	Extension I/O unit connector CN4A CN4B			I/O signal connector CN1	Must fabricate a new cable.

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

(2) Comparison of signals

MR-J2M-A		Signal symbol	MR-J4-_A_	
Connector pin assignment	Connector pin No.		Connector pin No.	Connector pin assignment
CN1A  	CN1A-50 CN1A-46 CN1A-21 CN1B-50 CN1B-46 CN1B-21	LG	CN1-3 CN1-28 CN1-30 CN1-34	CN1 
CN1B  	CN1A-20 (Slot 1) CN1A-18 (Slot 2) CN1A-16 (Slot 3) CN1A-14 (Slot 4) CN1B-20 (Slot 5) CN1B-18 (Slot 6) CN1B-16 (Slot 7) CN1B-14 (Slot 8)	NP	CN1-35	
	CN1A-19 (Slot 1) CN1A-17 (Slot 2) CN1A-15 (Slot 3) CN1A-13 (Slot 4) CN1B-19 (Slot 5) CN1B-17 (Slot 6) CN1B-15 (Slot 7) CN1B-13 (Slot 8)	PP	CN1-10	
	CN1A-12 (Slot 1) CN1A-34 (Slot 2) CN1A-7 (Slot 3) CN1A-29 (Slot 4) CN1B-12 (Slot 5) CN1B-34 (Slot 6) CN1B-7 (Slot 7) CN1B-29 (Slot 8)	CR	CN1-41	
	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	

MR-J2M-A		Signal symbol	MR-J4-_A_	
Connector pin assignment	Connector pin No.		Connector pin No.	Connector pin assignment
CN1A  	CN1A-35 (Slot 1) 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)	INP	CN1-22 CN1-24	
	CN1A-37 (Slot 1) 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)	SON	CN1-15	
CN1B  	CN1A-36 (Slot 1) 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)	RES	CN1-19	
	CN5-19 (Slot 1-4) CN5-20 (Slot 5-8)	EMG (EM2)	CN1-42	
	CN5-1 (Slot 1) 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)	LSP	CN1-43	
CN5  	CN5-2 (Slot 1) 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)	LSN	CN1-44	
	CN1A-27 (Slot 1-4) CN1B-27 (Slot 5-8)	ALM	CN1-48	
CN3  	CN3-1 CN3-3 CN3-11 CN3-13	LG	CN6-1	CN6 
	CN3-4	MO1	CN6-2	
	CN3-14	MO2	CN6-3	
	CN3-7	MO3	-	

3.4 Comparison of Peripheral Equipment

POINT
● See "Part 7: 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
● 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_		Precautions
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 option	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			

(2) Drive unit MR-J2M-_DU

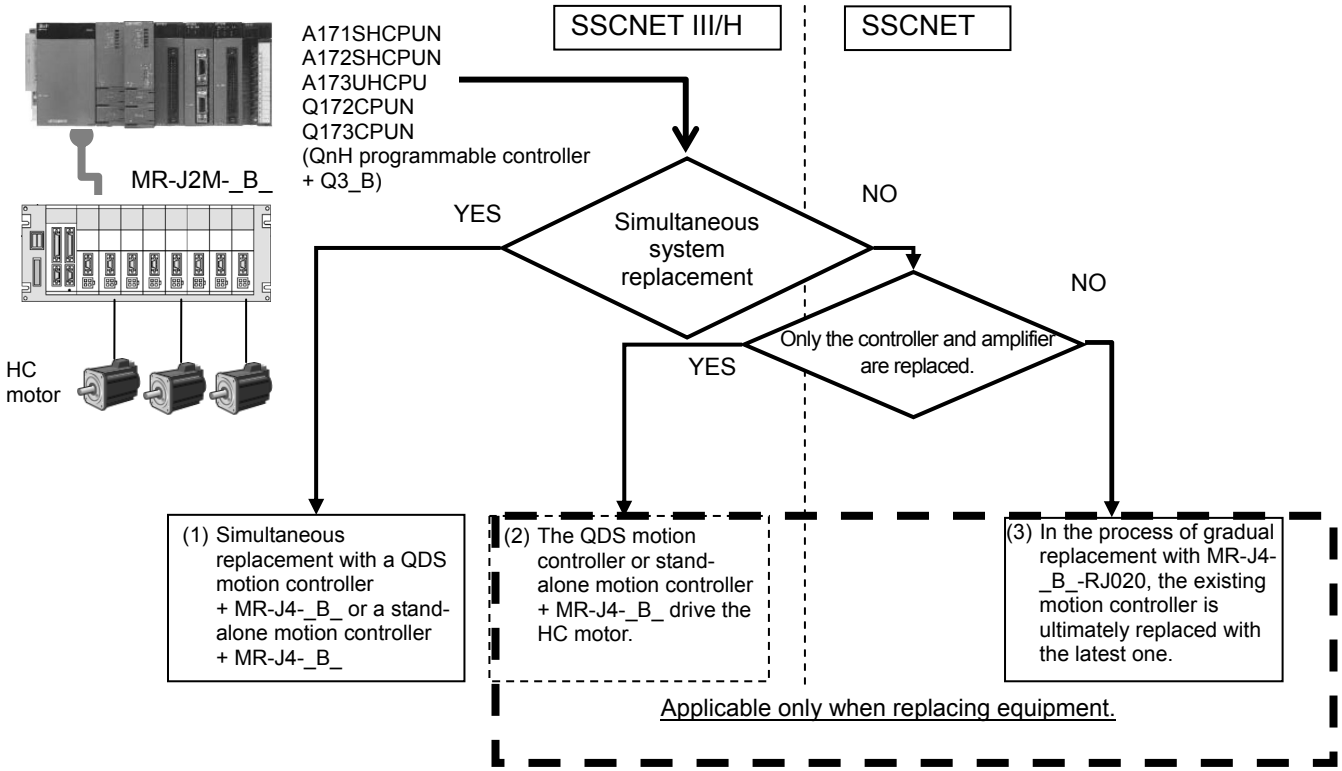
<table>
<tr><th colspan="2">MR-J2M-A
(Drive unit MR-J2M-_DU)</th><th colspan="2">MR-J4-_A_</th><th rowspan="2">Precautions</th></tr>
<tr><th>No.</th><th>Name</th><th>No.</th><th>Name</th></tr>
<tr><td>0</td><td>For manufacturer setting</td><td></td><td></td><td></td></tr>
<tr><td>1</td><td>Absolute position detection system</td><td>PA03</td><td>Absolute position detection system</td><td></td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">Auto tuning</td><td>PA09</td><td>Auto tuning response</td><td>The setting value must be changed based on machine resonance frequency.</td></tr>
<tr><td>PA08</td><td>Auto tuning mode</td><td>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>
<tr><th>MR-J2M-A</th><th>MR-J4-_A_</th></tr>
<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>
</table></td></tr>
<tr><td>3</td><td>Electronic gear numerator</td><td>PA06</td><td>Electronic gear numerator</td><td rowspan="2">The setting value must be changed according to resolution and detection capability.</td></tr>
<tr><td>4</td><td>Electronic gear denominator</td><td>PA07</td><td>Electronic gear denominator</td></tr>
<tr><td>5</td><td>In-position range</td><td>PA10</td><td>In-position range</td><td>Set it per command input pulse before electronic gear conversion for both J2M-A and J4-A.</td></tr>
<tr><td>6</td><td>Position loop gain 1</td><td>PB07</td><td>Model loop gain</td><td>The unit system is different.
(rad/s→0.1 rad/s)</td></tr>
<tr><td>7</td><td>Position command acceleration/deceleration time constant</td><td>PB03</td><td>Position command acceleration/deceleration time constant</td><td></td></tr>
<tr><td>8
to
15</td><td>For manufacturer setting</td><td></td><td></td><td></td></tr>
<tr><td>16</td><td>Alarm history clear</td><td>PC18</td><td>Alarm history clear</td><td></td></tr>
<tr><td>17</td><td rowspan="2">For manufacturer setting</td><td></td><td></td><td rowspan="2"></td></tr>
<tr><td>18</td><td></td><td></td></tr>
<tr><td>19</td><td>DRU parameter writing inhibit</td><td>PA19</td><td>Parameter writing inhibit</td><td>Change the setting value as necessary.</td></tr>
<tr><td rowspan="2">20</td><td>Slight vibration suppression control</td><td>PB24</td><td>Slight vibration suppression control</td><td rowspan="2"></td></tr>
<tr><td>Encoder cable communication method selection</td><td>PC22</td><td>Encoder cable communication method selection</td></tr>
<tr><td>21</td><td>Function selection 3 (command pulse selection)</td><td>PA13</td><td>Command pulse input form</td><td></td></tr>
<tr><td>22</td><td>Stop method selection when LSP/LSN is valid</td><td>PD30</td><td>Stop method selection when LSP/LSN is valid</td><td></td></tr>
<tr><td>23</td><td>Feed forward gain</td><td>PB04</td><td>Feed forward gain</td><td></td></tr>
<tr><td>24</td><td>Zero speed</td><td>PC17</td><td>Zero speed</td><td></td></tr>
<tr><td>25</td><td rowspan="2">For manufacturer setting</td><td></td><td></td><td rowspan="2"></td></tr>
<tr><td>26</td><td></td><td></td></tr>
<tr><td>27</td><td>Encoder output pulses</td><td>PA15</td><td>Encoder output pulses</td><td>Max. output frequency is different.</td></tr>
<tr><td rowspan="2">28</td><td rowspan="2">Internal torque limit 1</td><td>PA11</td><td>Forward rotation torque limit</td><td rowspan="2"></td></tr>
<tr><td>PA12</td><td>Reverse rotation torque limit</td></tr>
<tr><td>29
to
32</td><td>For manufacturer setting</td><td></td><td></td><td></td></tr>
<tr><td>33</td><td>Electromagnetic brake sequence output</td><td>PC16</td><td>Electromagnetic brake sequence output</td><td></td></tr>
<tr><td>34</td><td>Load to motor inertia ratio</td><td>PB06</td><td>Load to motor inertia ratio</td><td>The unit system is different.
(0.1-fold→0.01-fold)
Pay attention to the setting value.</td></tr>
<tr><td>35</td><td>Position loop gain 2</td><td>PB08</td><td>Position loop gain</td><td></td></tr>
</table>

MR-J2M-A (Drive unit MR-J2M-_DU)		MR-J4-_A_		Precautions
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	Operation to be performed for the short-circuit of RES	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	Gain switching load to motor inertia ratio	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	Commanded pulse multiplication numerator 2	PC32	Command input pulse multiplication numerator 2	
70	Commanded pulse multiplication numerator 3	PC33	Command input pulse multiplication numerator 3	
71	Commanded 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			

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

POINT
● 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 Consideration of Replacement Method



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

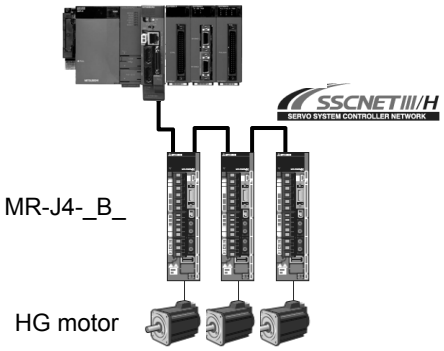
"QDS motion controller" refers to the following model.
Q172DSCPU/Q173DSCPU
"Stand-alone motion controller" refers to the following model.
Q170MSCPU (-S1)

4.2 Replacement Method

(1) For simultaneous replacement

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

QnUD programmable controller + QDS motion controller + Q3_DB

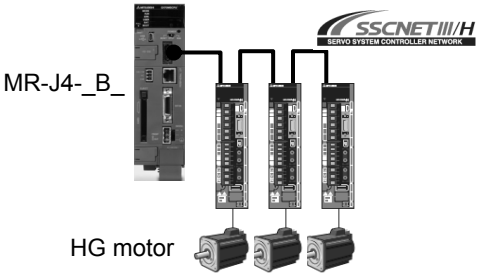


Advantage: Higher-speed motion control and excellent expandability achieve a shorter cycle time.

"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)



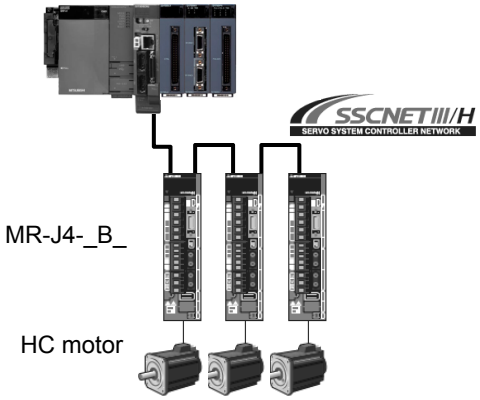
Advantage: High performance equivalent to that of a QDS motion controller can be achieved at a lower cost.

"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

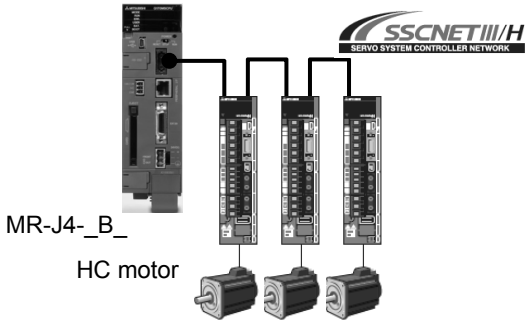
QnUD programmable controller + QDS motion controller + Q3_DB



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

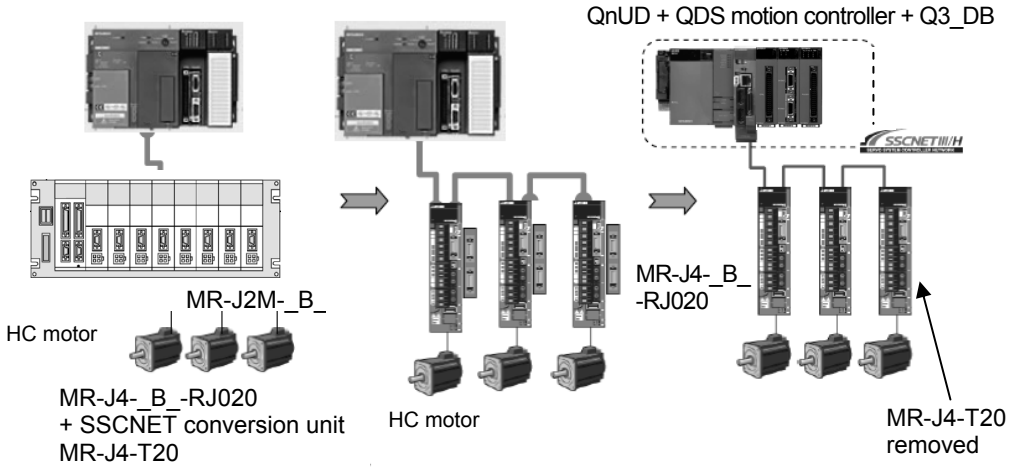
Stand-alone motion controller
+ MR-J4-_B_
+ HC motor

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.

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



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

4.3 Function Comparison Table

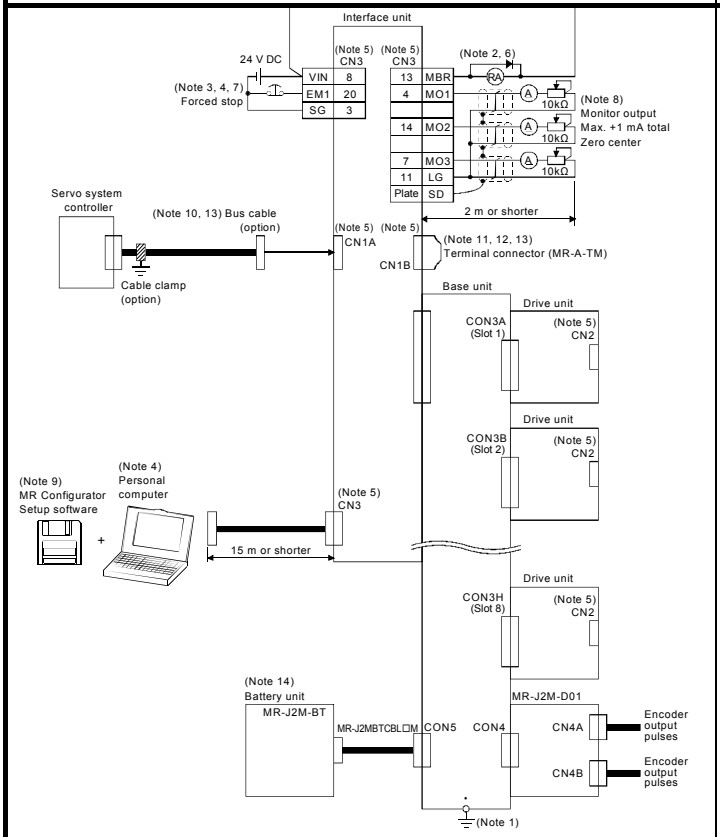
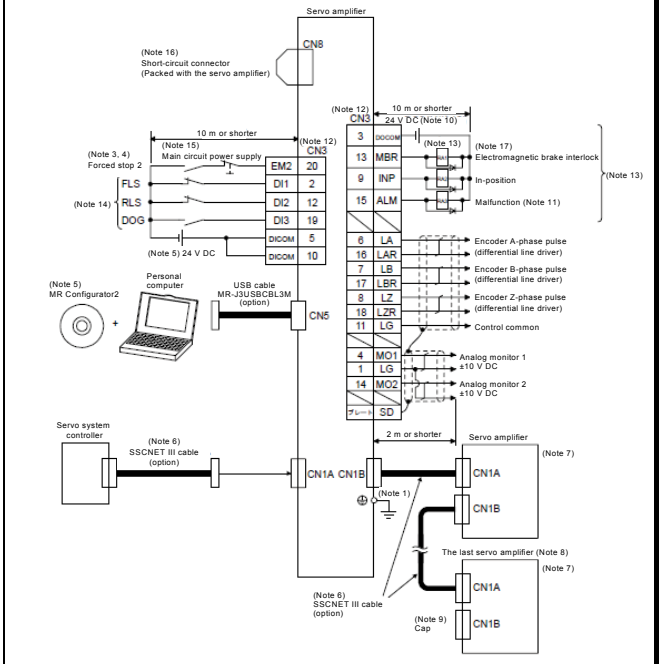
(1) General
Same as 3.1.1.

(2) Comparison of networks
<Comparison of servo system network specifications>

Item	MR-J2M series	→	MR-J4 series (Note 1)	
	SSCNET		SSCNET III	SSCNET III/H
Communication media	Metal cable		Optical-fiber cable	
Communication speed	5.6 Mbps		50 Mbps	150 Mbps
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 • 16 axes)	
			[Long distance cable] Maximum distance between stations: 50 m Maximum overall distance: 800 m (50 m • 16 axes)	[Long distance cable] Maximum distance between stations: 100 m Maximum overall distance: 1600 m (100 m • 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.

4.4 Comparison of Standard Connection Diagrams

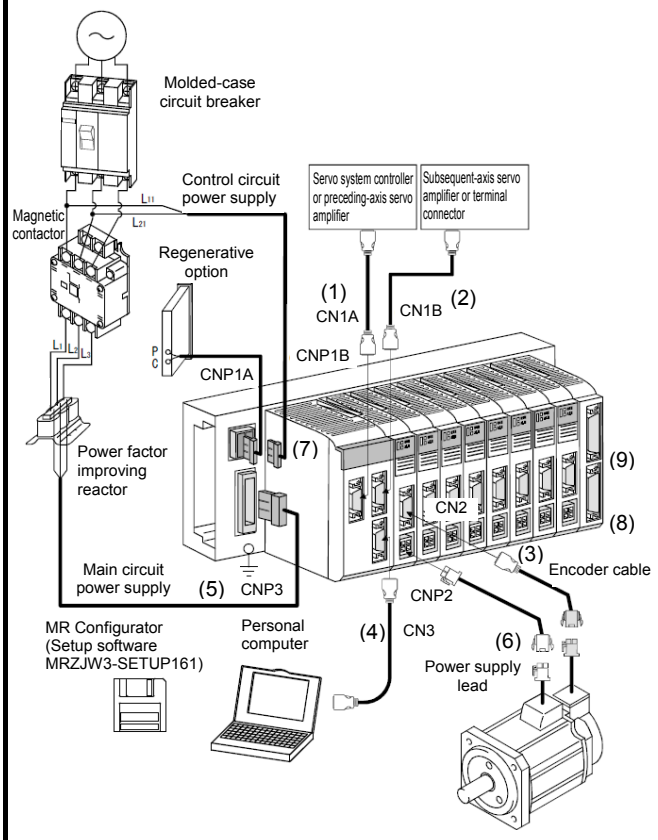
MR-J2M-B	MR-J4-_B_
	

4.5 List of Corresponding Connectors and Terminal Blocks

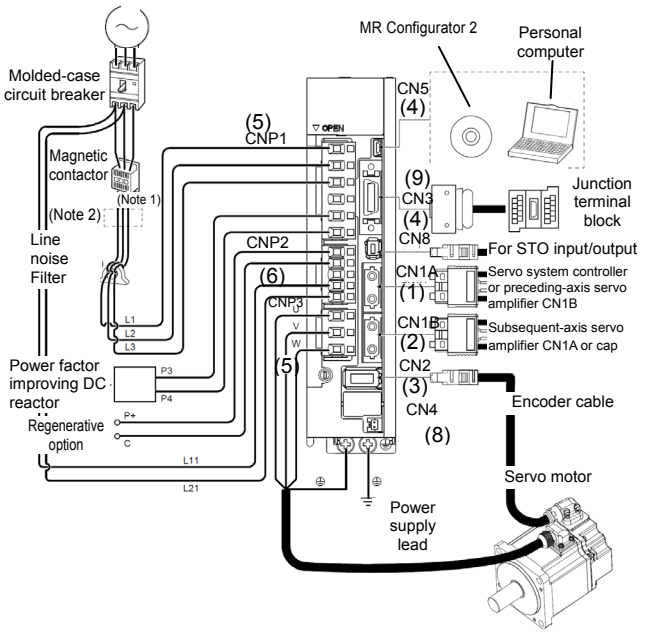
(1) Connector comparison table

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

MR-J2M-B



MR-J4-_B_



Note 1: The above configuration example is for MR-J4-200B or models with less capacity.

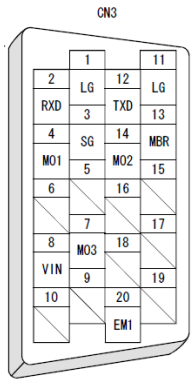
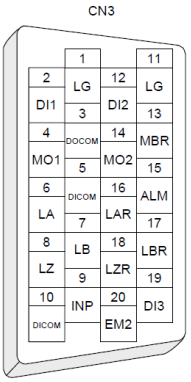
2: The power factor improving AC reactor can also be used. In this case, the power factor improving DC reactor cannot be used.

• List of corresponding connectors

	MR-J2M-B			MR-J4-_B_	Precautions
(1)	Bus cable connector CN1A			SSCNET III cable connector CN1A	Must switch to SSCNET III cable (option).
(2)	Bus cable connector CN1B			SSCNET III cable connector CN1B	Must 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	PC connection	→	USB communication connector CN5	Must switch to USB cable (option).
		Analog monitor		I/O signal connector CN3	Must fabricate a new cable.
(5)	Main circuit power connector CNP3			Main circuit power connector CNP1	Must switch to power connector (enclosed with amplifier).
(6)	Servo motor power connector CNP2			Servo motor power connector CNP3	
(7)	Control circuit power connector CNP1B			Control circuit power connector CNP2	
(8)	Battery connector CON5			Battery connector CN4	Must fabricate a new battery.
(9)	Extension I/O unit connectors CN4A and CN4B			I/O signal connector CN3	Must fabricate a new cable.

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

(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 CN3-11	LG	CN3-1 CN3-11	
	Plate	SD	Plate	

* The following table shows the output device pins and parameters for assigning MR-J4-_B_ devices.

Connector pin No.	Parameter	Initial assignment device	I/Odivision
CN3-13	[Pr. PD07]	MBR	DO-1
CN3-15	[Pr. PD09]	ALM	
CN3-9	[Pr. PD08]	INP	

4.6 Comparison of Peripheral Equipment

POINT
● See "Part 7: Replacement of Optional Peripheral Equipment".

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

- 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 Pr. 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_		Precautions
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. The setting values must be changed.
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.

(2) Drive unit MR-J2M-_DU

MR-J2M-B (Drive unit MR-J2M-_DU)		MR-J4-_B_		Precautions
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	For setting a servo system controller			No corresponding parameter (Setting not required)
6	Number of feedback pulses			No corresponding parameter
7	Rotation direction selection	PA14	Rotation direction selection	
8	Auto tuning	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 MR-J2M-B: Interpolation mode → MR-J4-_B_: 2 gain adjustment mode 1 MR-J2M-B: Auto tuning mode 1 → MR-J4-_B_: Auto tuning mode 1 MR-J2M-B: Auto tuning mode 2 → MR-J4-_B_: Auto tuning mode 2 MR-J2M-B: Manual mode 1 → MR-J4-_B_: MR-J2M-B: Manual mode 2 → MR-J4-_B_: 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 Adaptive vibration suppression control level selection			No corresponding parameter (Machine resonance filters can be automatically adjusted with PB01.)
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: 1/0.1/0.01/0.001 rev. The unit is selectable.
		PC06	Error excessive alarm level unit selection	

MR-J2M-B (Drive unit MR-J2M-_DU)		MR-J4-_B_		Precautions
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 pulses	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 pulses	Max. output frequency is different.
39	For manufacturer setting			
40	DRU parameter writing inhibit	PA19	Parameter writing inhibit	Change the setting value as necessary.

MEMO

Part 5
Common Reference Material

Part 5: Common Reference Material

1 SPECIFICATION DIFFERENCES

1.1 Detailed Specification/Function Differences

(1) Comparison of MR-J2S series, 200 V Class

Item		MR-J2S series	MR-J4 series
1	Capacity range	0.1 kW to 22 kW/200 V	0.1 kW to 22 kW/200 V
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 22 kW)	Built-in (0.1 kW to 7 kW) External (11 kW to 22 kW) **Coasting distance is different.**
4	Control circuit power supply	1-phase 200 VAC to 230 VAC	1-phase 200 V AC to **240** V AC
5	Main circuit power supply	1-phase /3-phase 200 V AC to 230 V AC (to 750 W) 3-phase 200 V AC to 230 V AC (1 to 22 kW)	1-phase /3-phase 200 V AC to **240** V AC (to 750 W) 3-phase 200 VAC to **240** VAC (1 to 22 kW)
6	24 V DC power supply	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) ・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) ・Torque control mode (analog command) (B) SSCNET III / H interface ・Position control mode ・Speed control mode ・**Torque control mode**
9	Maximum input pulse frequency	Differential receiver: 500 kpps Open-collector 200 kpps Command pulse: Sink interface	Differential receiver: **4 Mpps** Open-collector 200 kpps Command pulse: Sink interface
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	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 interface / Source interface Output: Sink interface	Input: Sink interface / Source interface Output: Sink interface / Source interface
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**
17	Servo motor (Encoder resolution)	HC series (17-bit ABS) HA series (17-bit ABS)	HG series (**22-bit** ABS)
18	Servo motor maximum torqur	HC-KFS 300%	HG-KR **350%**
		HC-MFS 300%	HG-MR 300%
		HC-SFS 300%	HG-SR 300%
		HA-LFS 250%, 300%	HG-JR **300%**

Item		MR-J2S series	MR-J4 series
19	Push buttons (type A)	Four buttons	Four 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 function	Unprovided	**Provided**
25	Drive recorder function	Unprovided	**Provided**
26	Forced stop	EM1 (DB stop)	**Select EM1 (DB stop) or EM2 (deceleration to a stop)**
Note:	Changed items are shown **with shading**.		

(2) Comparison of MR-J2S series, 400 V Class

Item		MR-J2S series	MR-J4 series
1	Capacity range	0.6 kW to 22 kW/400 V	0.6 kW to 22 kW/400 V
2	Regenerative resistor	Built-in 0.6 kW to 7 kW) External (11 kW to 22 kW)	Built-in 0.6 kW to 7 kW) External (11 kW to 22 kW)
3	Dynamic brake	Built-in 0.6 kW to 7 kW) External (11 kW to 22 kW)	Built-in (0.6 kW to 7 kW) External (11 kW to 22 kW) **Coasting distance is different.**
4	Control circuit power supply	24VDC(0.6kW to 7kW) One-phase 380 to 480 V AC (11kW to 22kW)	One-phase 380 to 480 V AC
5	Main circuit power supply	3-phase 380 V AC to 480 V AC	3-phase 380 V AC to 480 V AC
6	24 V DC power supply	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) ・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) ・Torque control mode (analog command) (B) SSCNET III / H interface ・Position control mode ・Speed control mode ・**Torque control mode**
9	Maximum input pulse frequency	Differential pulse 500 kpps Open-collector 200 kpps Command pulse: Sink interface	Differential pulse 4 Mpps Open-collector 200 kpps Command pulse: Sink interface
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	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 interface/Source interface Output: Sink interface	Input: Sink interface/ Source interface Output: Sink interface/ **Source interface**
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	The 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**
17	Servo motor (Encoder resolution)	HC series (17-bit ABS) HA series (17-bit ABS)	HG series (**22-bit** ABS)
18	Servo motor maximum torqur	HC-KFS 300%	HG-KR **350%**
		HC-MFS 300%	HG-MR 300%
		HC-SFS 300%	HG-SR 300%
		HA-LFS 250%, 300%	HG-JR **300%**
19	Push buttons (type A)	Four buttons	Four 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 function	Unprovided	**Provided**
25	Drive recorder function	Unprovided	**Provided**
26	Forced stop	EM1 (DB stop)	**Select EM1 (DB stop) or EM2 (deceleration to a stop)**
Note:		Changed items are shown **with shading**.	

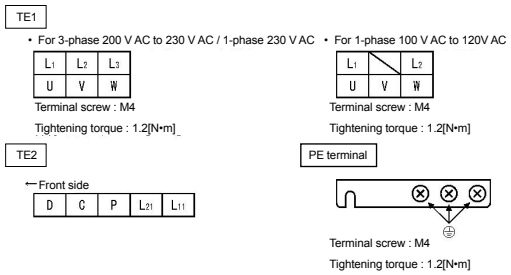
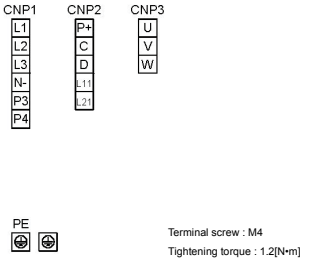
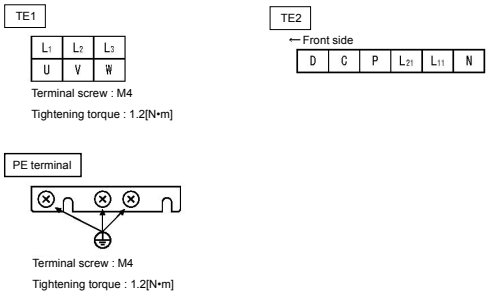
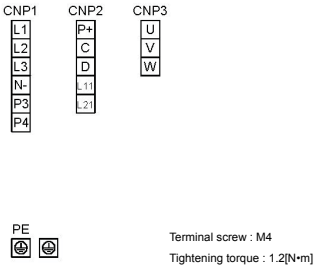
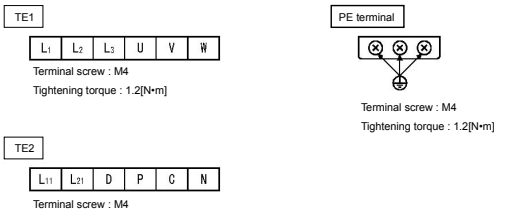
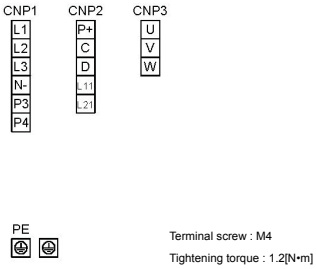
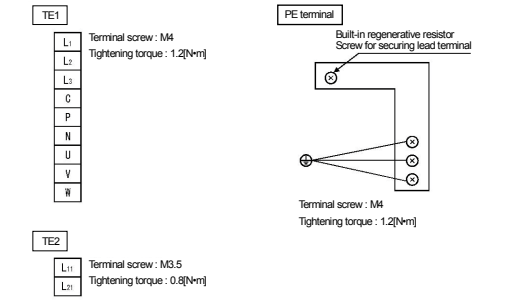
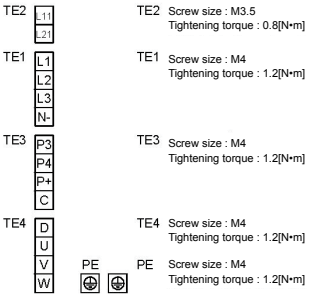
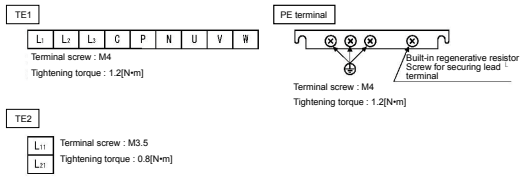
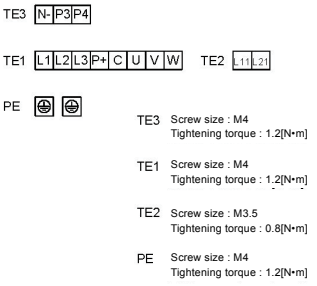
(3) Comparison of MR-J2M series

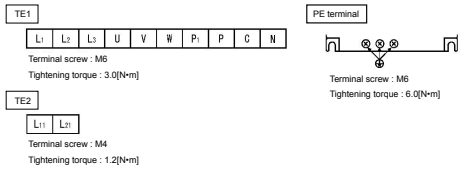
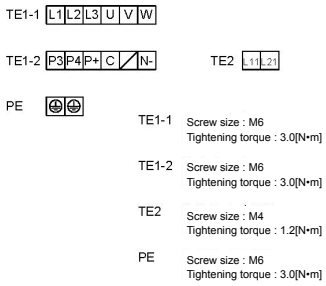
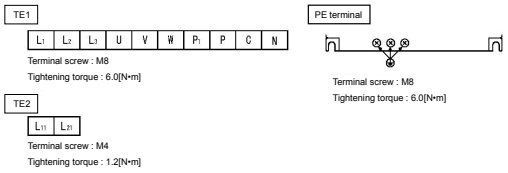
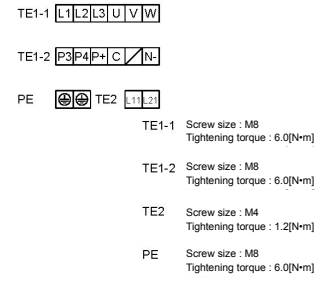
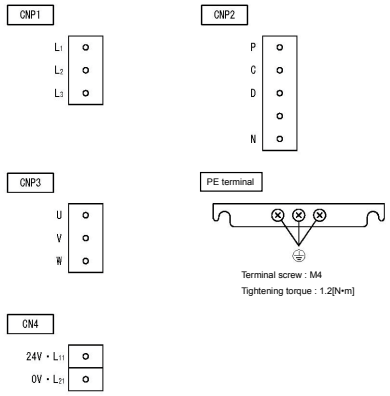
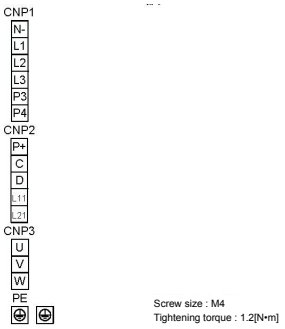
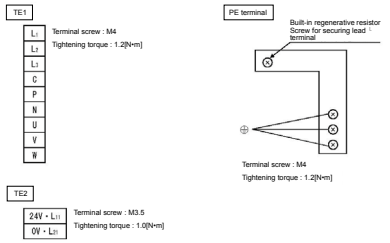
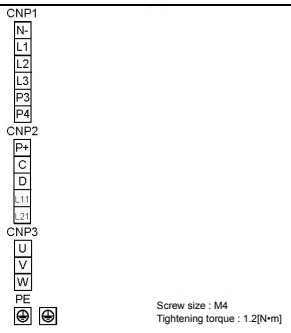
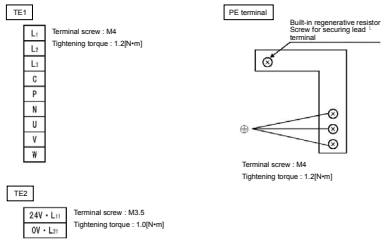
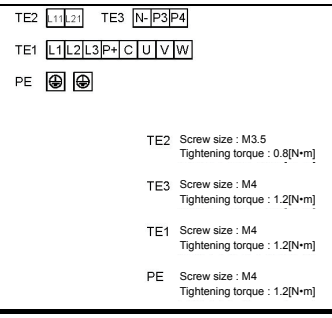
Item		MR-J2M series	MR-J4 series
1	Capacity range (to 0.75 kW / 200 V)	0.1 to 0.75 kW/200V	0.1 to 0.75 kW/200V
2	Regenerative resistor	External option	Built-in (200 W or more)
3	Dynamic brake	Built-in	Built-in **(Coasting distance is different.)**
4	Control circuit power supply	1-phase 200 VAC to 230 VAC	1-phase 200 V AC to **240 V** AC
5	Main circuit power supply	1-phase /3-phase 200 VAC to 230 VAC 3-phase 200 VAC to 230 VAC	1-phase /3-phase 200 V AC to **240 V** AC 3-phase 200 V AC to **240 V** AC
6	24 V DC power supply	External supply required	**External supply required**
7	Auto tuning	Real-time auto tuning section: 15 steps	Real-time auto tuning section: **40 steps** **Advanced gain search (available in the future)** **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 pulse frequency	Differential pulse 500 kpps Open-collector 200 kpps Command pulse: Sink interface	Differential pulse **4 Mpps** Open-collector 200 kpps Command pulse: Sink interface
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 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 interface Output: Sink interface	Input: Sink interface/ **Source interface** Output: Sink interface/ **Source interface**
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□□)	**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	Servo motor maximum torqur	HC-KFS 300% HC-MFS 300%	HG-KR **350%** HG-MR 300%
19	Push buttons (type A)	Four buttons	Four 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 function	Unprovided	**Provided**
25	Drive recorder function	Unprovided	**Provided**
26	Forced stop	EM1 (DB stop)	**Select EM1 (DB stop) or EM2 (deceleration to a stop)**
Note:		Changed items are shown **with shading**.	

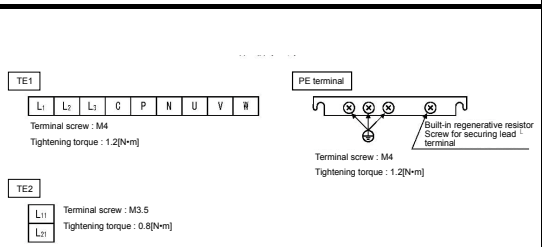
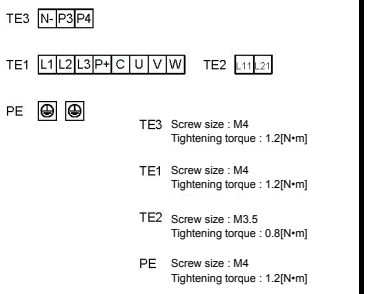
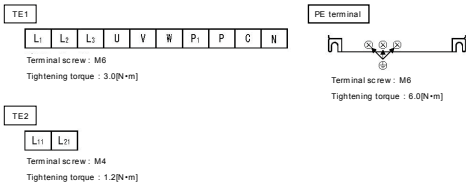
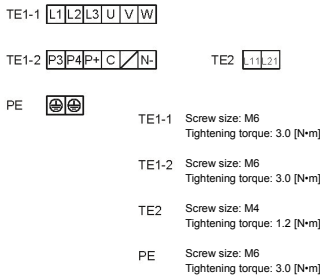
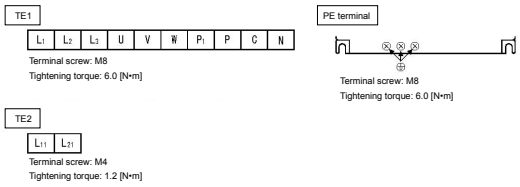
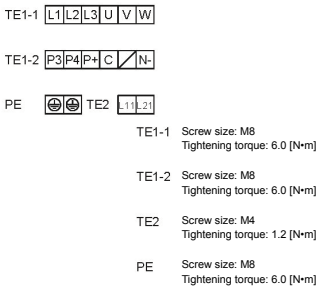
1.2 Servo amplifier

If using the existing cables and motor, see [Appendix 2] Introduction to Renewal Tool.

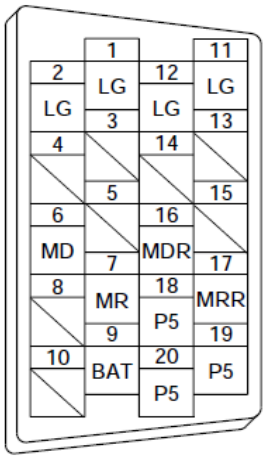
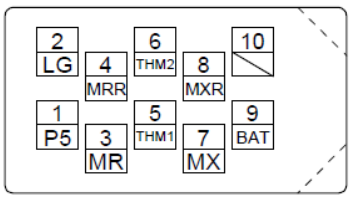
1.2.1 Main circuit terminal block

Series	Main circuit terminal block	Series	Main circuit
MR-J2S-10_ to MR-J2S-60_		MR-J4-10_ to MR-J4-60_	
MR-J2S-70_, MR-J2S-100_		MR-J4-70_, MR-J4-100_	
MR-J2S-200_, MR-J2S-350_		MR-J4-200_, MR-J4-350_	
MR-J2S-500_,		MR-J4-500_,	
MR-J2S-700_,		MR-J4-700_,	

Series	Main circuit terminal block	Series	Main circuit
MR-J2S-11K_, MR-J2S-15K_		MR-J4-11K_, MR-J4-15K_	
MR-J2S-22K_,		MR-J4-22K_,	
MR-J2S-60_4 to MR-J2S-200_4		MR-J4-60_4 to MR-J4-200_4	
MR-J2S-350_4		MR-J4-350_4	
MR-J2S-500_4		MR-J4-500_4	

Series	Main circuit terminal block	Series	Main circuit
MR-J2S-700_4		MR-J4-700_4	
MR-J2S-11K_4, MR-J2S-15K_4		MR-J4-11K_4, MR-J4-15K_4	
MR-J2S-22K_4		MR-J4-22K_4	

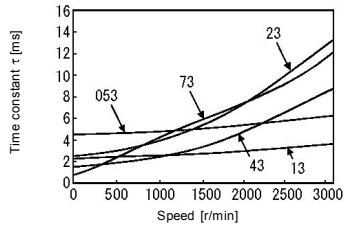
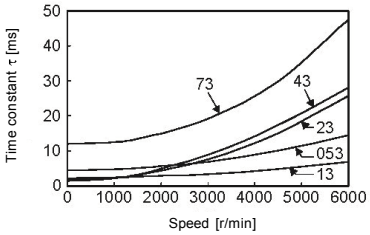
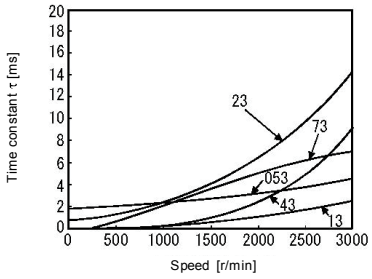
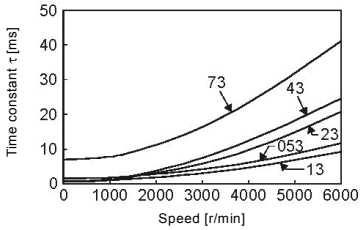
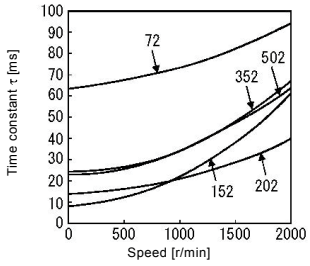
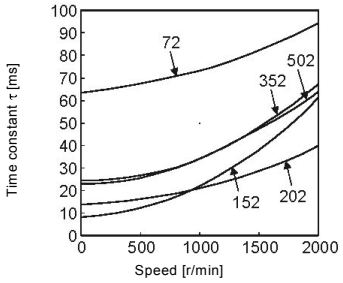
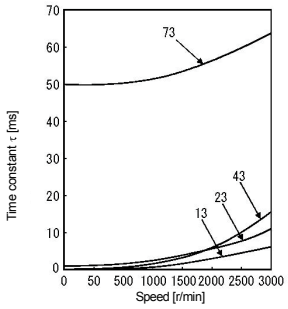
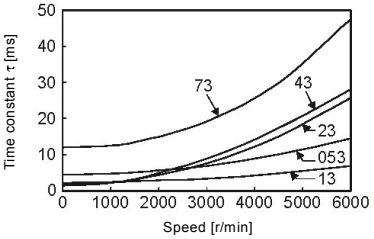
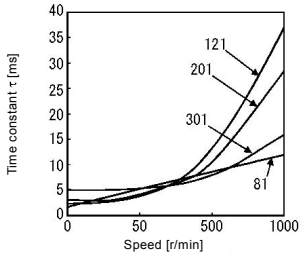
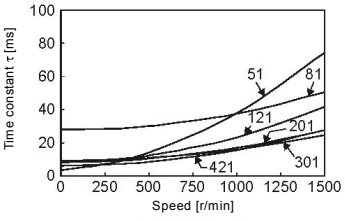
1.2.2 Comparison of encoder signals (CN2)

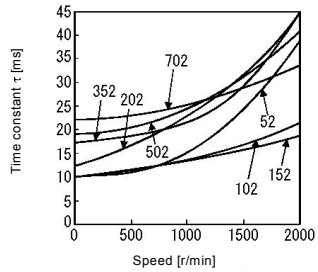
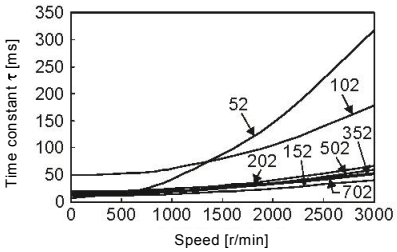
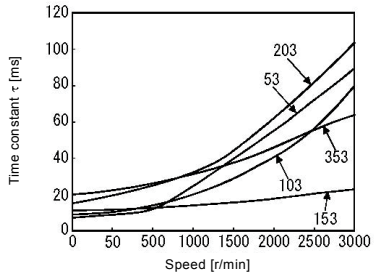
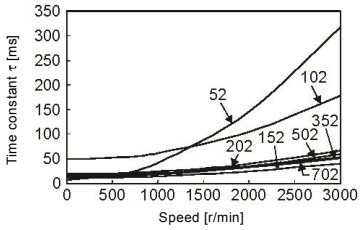
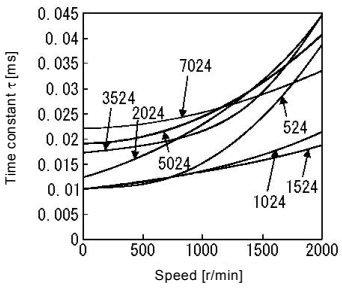
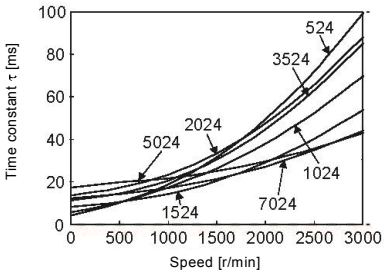
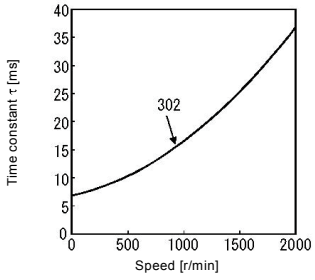
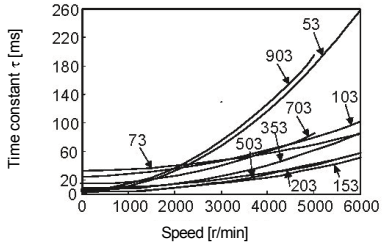
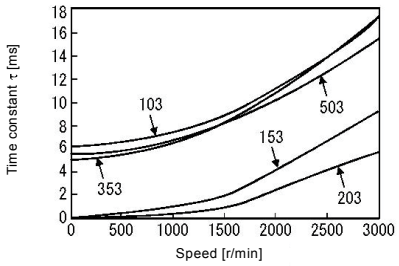
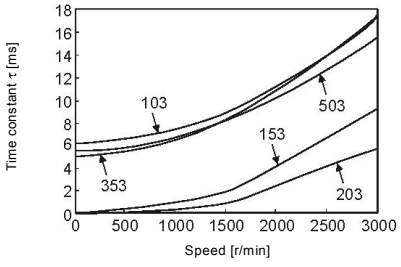
MR-J2S series		Signal symbol	MR-J4 series	
Connector pin assignment	Connector pin No.		Connector pin No.	Connector pin assignment
CN2 	CN2-1 CN2-2 CN2-11 CN2-12	LG	CN2-2	CN2 (Note 3) 
	CN2-6	MD (MX)	CN2-7 (Note 1)	
	CN2-7	MR	CN2-3	
	CN2-9	BAT	CN2-9	
	CN2-16	MDR (MXR)	CN2-8 (Note 2)	
	CN2-17	MRR	CN2-4	
	CN2-18 CN2-19 CN2-20	P5	CN2-1	

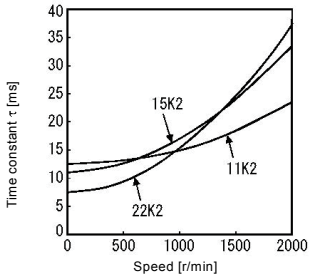
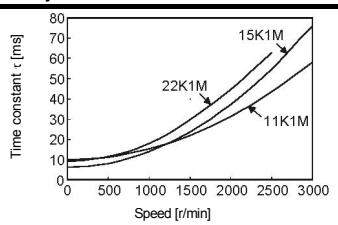
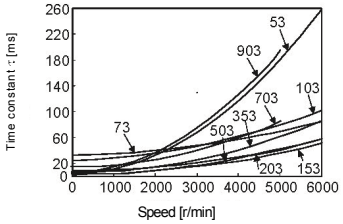
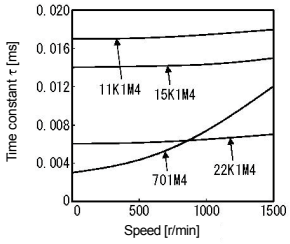
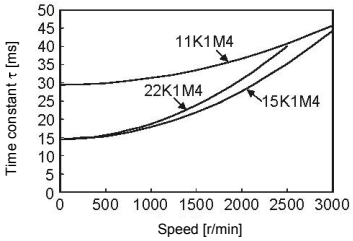
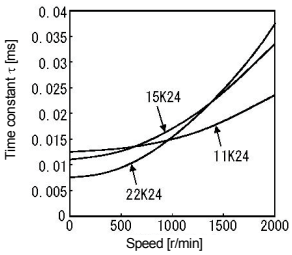
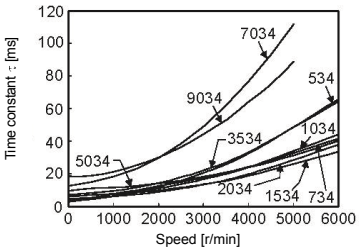
Note 1. MX for MR-J4 series.
2. MXR for MR-J4 series.
3. For the HC/HA motor, THM1 and THM2 are not used.

1.2.3 Dynamic brake: coasting distance

(1) Dynamic brake time constant

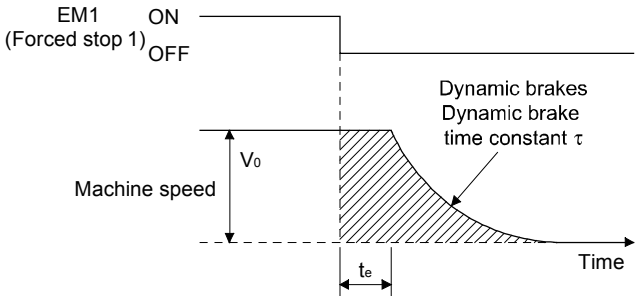
Series	Dynamic brake time constant	Series	Dynamic brake time constant
HC-KFS		HG-KR	
HC-MFS		HG-MR	
HC-UFS 2000r/min		HG-UR	
HC-UFS 3000 r/min		HG-KR	
HC-SFS 1000 r/min		HG-SR 1000 r/min	

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 400 V		HG-SR 400 V	
HC-LFS		HG-JR 3000 r/min	
HC-RFS		HG-RR	

Series	Dynamic brake time constant	Series	Dynamic brake time constant
HA-LFS 200 V		HG-JR 200 V	 HA-JR1500 r/min series  HA-JR3000 r/min series
HA-LFS 400 V 1500 r/min		HG-JR 400 V 1500 r/min	
HA-LFS 400 V 2000 r/min		HG-JR 400 V 3000 r/min	

(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

$$L_{max} = \frac{V_0}{60} \cdot \left\{ t_e + \tau \left(1 + \frac{J_L}{J_M} \right) \right\} \quad \cdots\cdots (5.1)$$

L_{max} : Maximum coasting distance ····· [mm]
V_0 : Machine's fast feed speed ····· [mm/min]
J_M : Moment of inertia of the servo motor ····· [$\times 10^{-4}$kg•m^2]
J_L : Load moment of inertia converted into equivalent value on servo motor shaft ····· [$\times 10^{-4}$kg•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 22 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.

(3) Electronic dynamic brake

The electronic dynamic brake operates in the initial state for 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.

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)

<table>
<tr><th rowspan="2">No./symbol/ name</th><th rowspan="2">Setting digit</th><th rowspan="2">Function</th><th rowspan="2">Initial value [unit]</th><th colspan="3">Control mode</th></tr>
<tr><th>P</th><th>S</th><th>T</th></tr>
<tr><td>PF09
*FOP5
Function selection F-5</td><td>_ _ _ x</td><td>Electronic dynamic brake selection.
0: Automatic (enabled only for specified servo motors)
2: Disabled
Refer to the following table for the specified servo motors.<table><tr><th>Series</th><th>Servo motor</th></tr><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></table></td><td>0 h</td><td>○</td><td>○</td><td></td></tr>
<tr><td>PF15
DBT
Electronic dynamic brake operating time</td><td></td><td>Set an operating time for the electronic dynamic brake. (Note 1)

Setting range: 0 to 10000</td><td>2000 [ms]</td><td>○</td><td>○</td><td>○</td></tr>
</table>

Note 1. Even if any operation that attempts to release the electronic dynamic brake is executed during the brake operation, the servo system cannot be switched on until the PF15 operating time is over.

Parameter settings (for MR-J4-_B_series)

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [unit]</th><th>Setting range</th></tr>
<tr><td>PF06</td><td>*FOP5</td><td>Function selection F-5<table><tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr><tr><td>_ _ _ x</td><td>Electronic dynamic brake selection.
0: Automatic (effective only for specific servo motors)
2: Disabled
See the following table for specific servo motors.<table><tr><th>Series</th><th>Servo motor</th></tr><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></table></td><td>0 h</td></tr></table></td><td>Refer to Name and function column.</td><td></td></tr>
<tr><td>PF12</td><td>DBT</td><td>Electronic dynamic brake operating time
Set an operating time for the electronic dynamic brake. (Note 1)</td><td>2000 [ms]</td><td>0 to 10000</td></tr>
</table>

Note 1. Even if any operation that attempts to release the electronic dynamic brake is executed during the brake operation, the servo system cannot be switched on until the PF12 operating time is over.

1.2.4 Forced stop deceleration function selection

(1) Parameter setting (for MR-J4-_A_series)

POINT

● 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 _ _ _".

No./symbol/name	Setting digit	Function	Initial value [unit]	Control mode		
				P	S	T
PA04 *AOP1 Function selection A-1	_ _ _ x	For manufacturer setting	0 h			
	_ _ x _		0 h			
	_ x _ _		0 h			
	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.	2 h	○	○	

Setting value	EM2/EM1	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.

(2) Parameter setting (for MR-J4-_B_series)

POINT
● With MR-J4-_B_, the deceleration to a stop function is enabled by factory settings. To disable the deceleration to a stop function, set PA04 to "0 _ _ _".

<table>
<tr><th>No.</th><th>Symbol</th><th>Name and function</th><th>Initial value [unit]</th><th>Setting range</th></tr>
<tr><td>PA04</td><td>*AOP1</td><td>Function selection A-1
This is used to select the forced stop input and forced stop deceleration function.

<table>
<tr><th>Setting digit</th><th>Explanation</th><th>Initial value</th></tr>
<tr><td>_ _ _ x</td><td rowspan="2">For manufacturer setting</td><td>0 h</td></tr>
<tr><td>_ _ x _</td><td>0 h</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>0 h</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>2 h</td></tr>
</table>

<table>
<tr><th rowspan="2">Setting value</th><th rowspan="2">EM2/EM1</th><th colspan="2">Deceleration method</th></tr>
<tr><th>EM2 or EM1 is off</th><th>Alarm occurred</th></tr>
<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></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></td><td>MBR (Electromagnetic brake interlock) turns off after the forced stop deceleration.</td></tr>
</table>
</td><td>Refer to Name and function column.</td><td></td></tr>
</table>

1.2.5 24 V DC power supply for interface: built-in ⇒ outside supply requisite

These are the recommended specifications for a 24 V DC power source for interface that is required for renewal.
Make a selection according to the following specifications.

Item	MR-J2S series	MR-J2M series		MR-J4 series
For interface 24 V DC power supply	Servo amplifier Internal power supply			External supply required 24 V DC ±10%
	External supply 24 V DC ±10% Power capacity: 80 mA or more	External supply 24 V DC ±10% Power capacity: 300 mA or more	→	Power capacity MR-J4-_A_:500 mA or more MR-J4-_B_:300 mA or more

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, axis name setting, parameter converter (Note 1)
Monitor	Display all, I/O monitor, graph, and ABS data display
Diagnosis	Alarm display, alarm onset data, drive recorder, no motor 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 mode information
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.

(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

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.

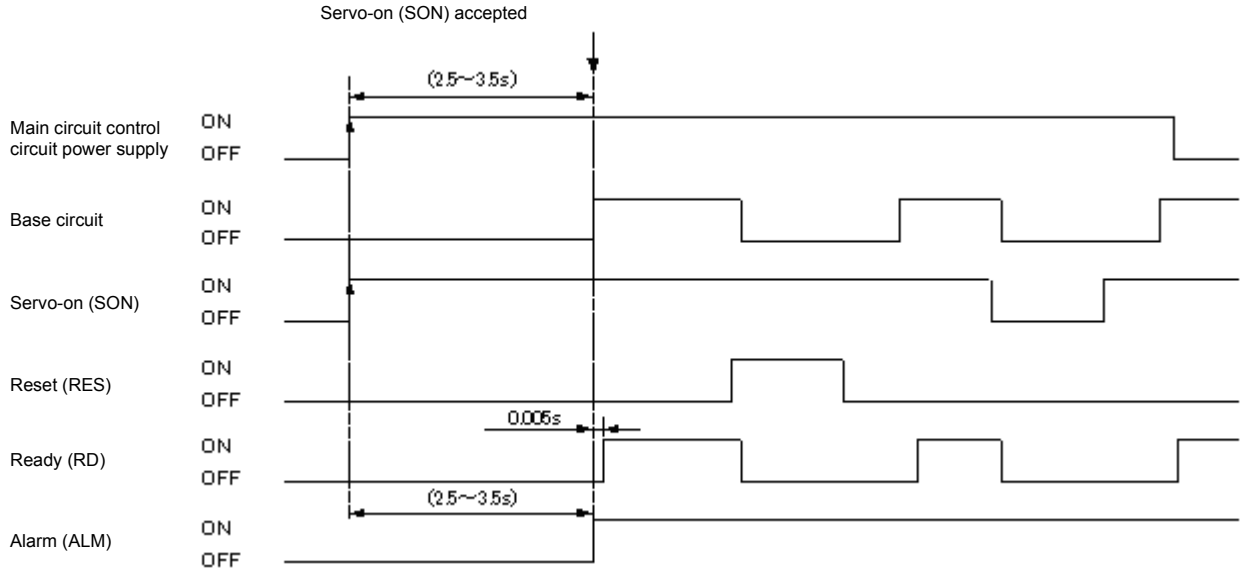
<Points to note upon replacement>

(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.

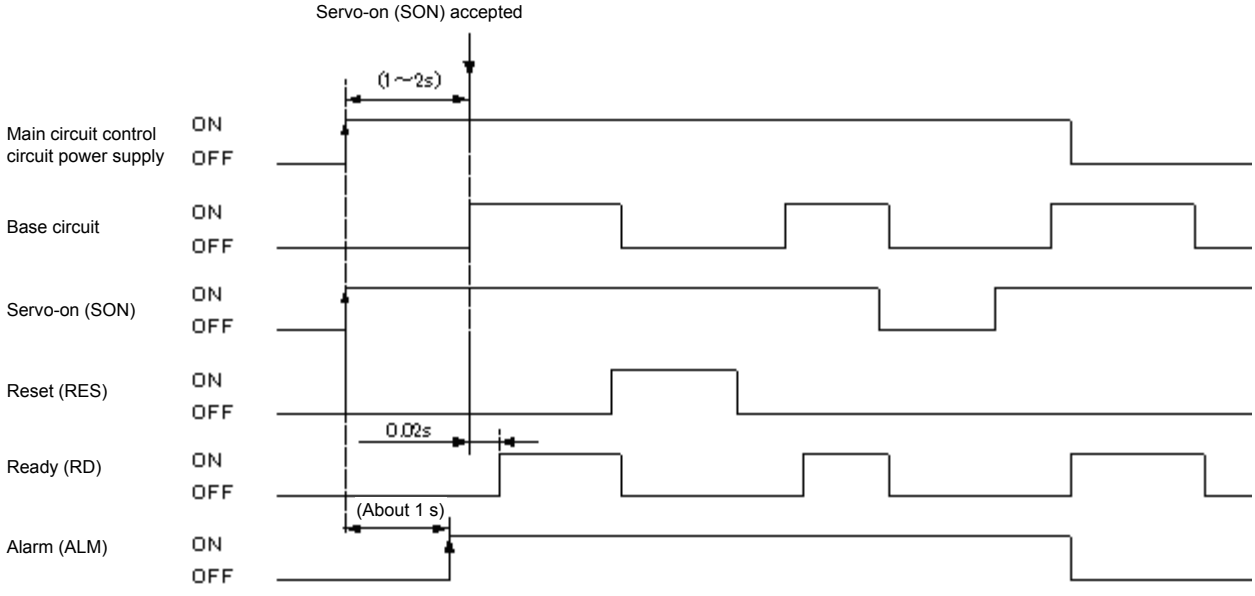
(1) MR-J4-_A_ / MR-J4-_B_ series servo amplifier

The initializing time is 2.5 to 3.5 s.



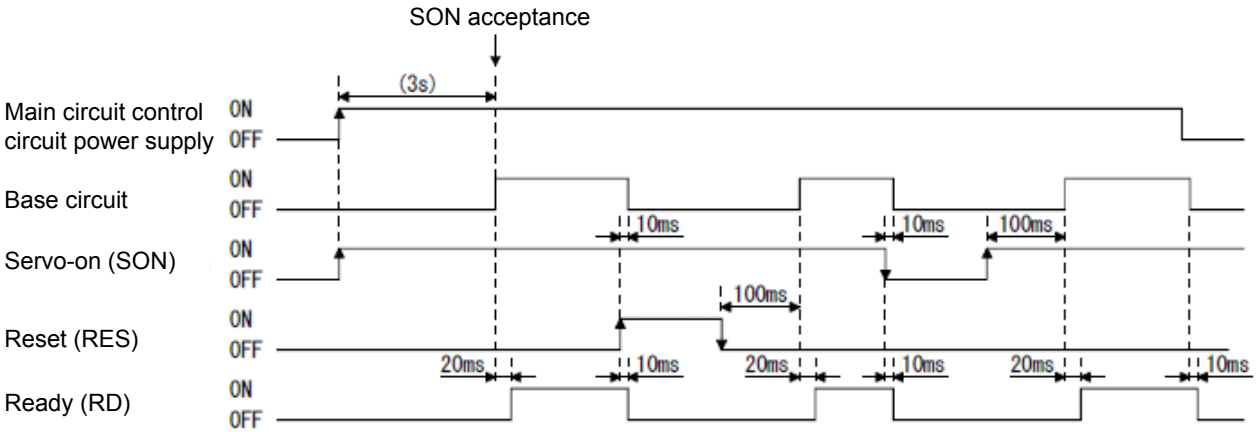
(2) MR-J2S-_A_ series servo amplifier

The initializing time is 1 to 2 s.



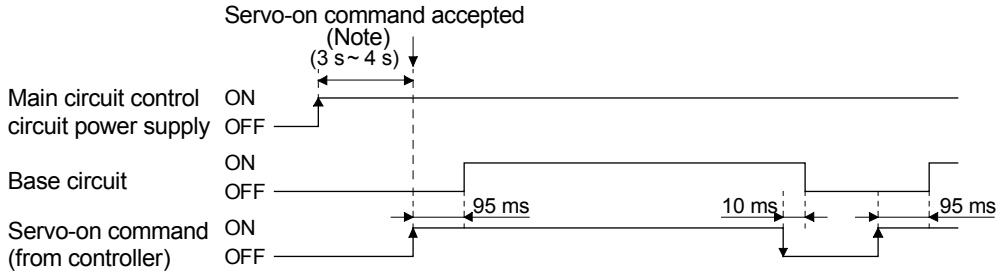
(3) MR-J2M-P8A series servo amplifier

The initializing time is 3 s.



(4) MR-J2S-_B_ series servo amplifier

The initializing time is 3 to 4 s.



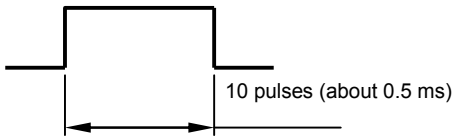
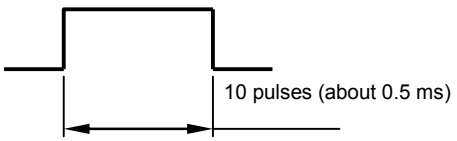
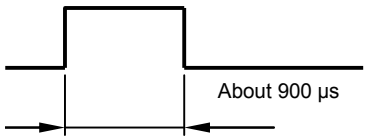
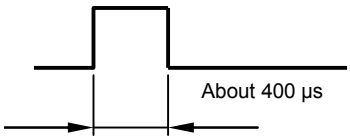
1.2.9 The pulse width of the Encoder Z-Phase pulse

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.

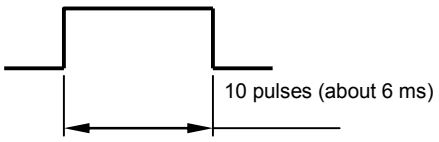
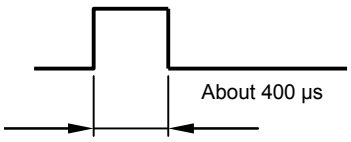
<Precautions>

* Always reset the home position upon replacement.

<Amplifier replacement>

	MR-J2S/MR-J2M series	MR-J4 series
At low speed	10/131,072 pulses (Example: At 10 r/min)  * Approximately less than 5 r/min	10/131,072 pulses (Example: At 10 r/min)  * Approximately less than 10 r/min
At high speed	Approximately 900 µs fixed  * Approximately 5 r/min or more	Approximately 400 µs fixed  * Approximately 10 r/min or more

<Simultaneous replacement>

	HG-KR, MR, SR motor
At low speed	4,096 / 4,194,304 pulses (Example: At 10 r/min)  * At approximately less than 130 r/min
At high speed	Approximately 400 µs fixed  * Approximately 130 r/min or more

2 SERVO AMPLIFIER DIMENSIONS / INSTALLATION DIFFERENCES

2.1 MR-J2S ⇒ MR-J4 Comparison Table of Servo Amplifier Dimensions/Installation Differences

2.1.1 200 V class

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. Please note the following when replacing: 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.

Comparison of dimensions (comparison between the same capacity types) Unit: mm

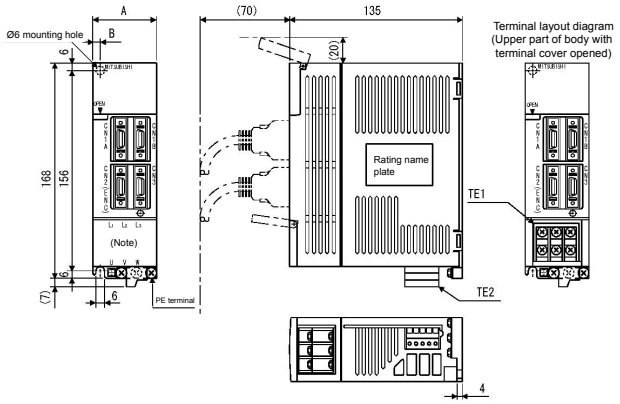
Model MR-J2S series	Model MR-J4 series	Height		Width		Depth		Mounting screw distance	
		MR-J2S	MR-J4	MR-J2S	MR-J4	MR-J2S	MR-J4	MR-J2S	MR-J4
MR-J2S-10_	MR-J4-10_	168	168	50	**40**	135	135	156 (Vertical) (2 screws)	156 (Vertical) (2 screws)
MR-J2S-20_	MR-J4-20_								
MR-J2S-40_	MR-J4-40_			70			**170** (Note 1)		
MR-J2S-60_	MR-J4-60_								
MR-J2S-70_	MR-J4-70_				**60**	190	**185**	156 (Vertical)/42 (Horizontal) (3 screws)	156 (Vertical)/42 (Horizontal) (3 screws)
MR-J2S-100_	MR-J4-100_								
MR-J2S-200_	MR-J4-200_			90	90	195	195	156 (Vertical)/78 (Horizontal) (4 screws)	156 (Vertical)/78 (Horizontal) **(3 screws)** (Note 2)
MR-J2S-350_	MR-J4-350_								
MR-J2S-500_	MR-J4-500_	250	250	130	**105**	200	200	235 (Vertical)/118 (Horizontal) (4 screws)	235 (Vertical)**/93 (Horizontal)** (4 screws)
MR-J2S-700_	MR-J4-700_	350	**300**	180	**172**			335 (Vertical)/160 (Horizontal) (4 screws)	**285 (Vertical)**/160 (Horizontal) (4 screws)
MR-J2S-11K_	MR-J4-11K_	400	400	260	**220**	260	260	376 (Vertical)/236 (Horizontal) (4 screws)	**380 (Vertical)/196 (Horizontal)** (4 screws)
MR-J2S-15K_	MR-J4-15K_								
MR-J2S-22K_	MR-J4-22K_			350	**260**			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**.

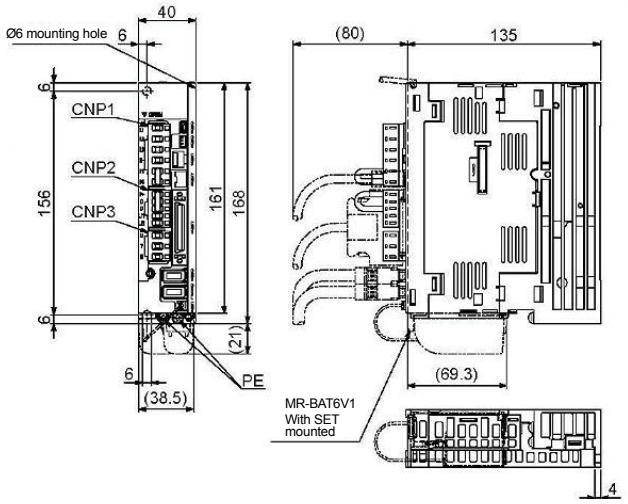
Comparison of 200 V class dimensions

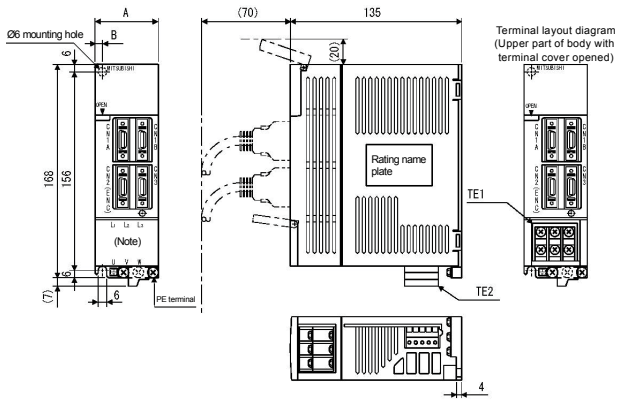
MR-J2S series dimensions	MR-J4 series dimensions
MR-J2S-10_, MR-J2S-20_	MR-J4-10_, MR-J4-20_
MR-J2S-40_, MR-J2S-60_	MR-J4-40_, MR-J4-60_
MR-J2S-70_, MR-J2S-100_	MR-J4-70_, MR-J4-100_



Servo amplifier	Variable dimensions		Mass [kg]
	A	B	
MR-J2S-10A(1)	50	6	0.7
MR-J2S-20A(1)			
MR-J2S-40A(1)	70	22	1.1
MR-J2S-60A			

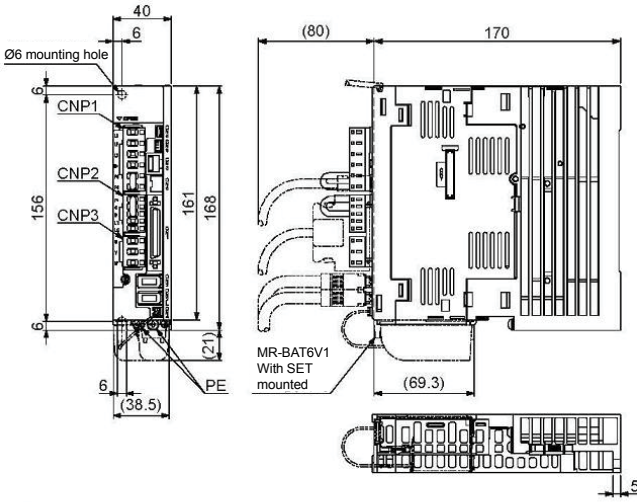
(Note) For 3-phase 200 to 230 V ACor single-phase 230 V AC power supply products

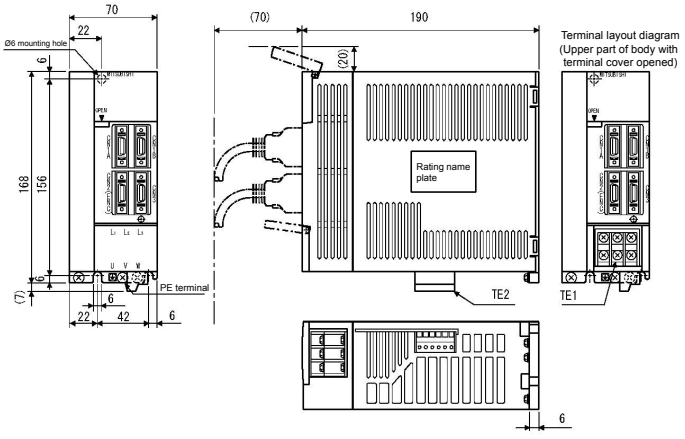


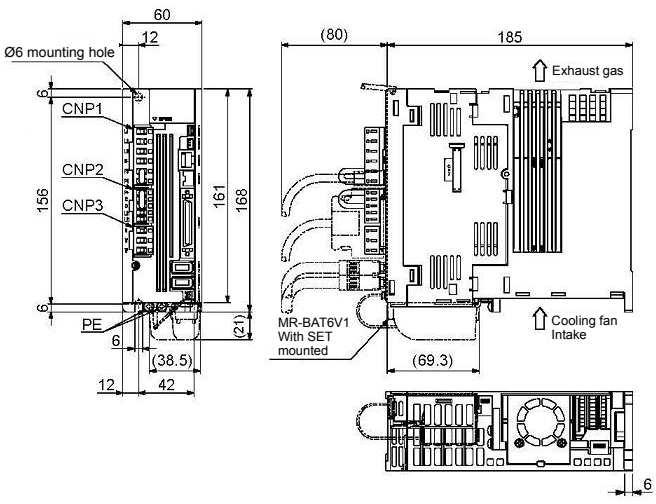


Servo amplifier	Variable dimensions		Mass [kg]
	A	B	
MR-J2S-10A(1)	50	6	0.7
MR-J2S-20A(1)			
MR-J2S-40A(1)	70	22	1.1
MR-J2S-60A			

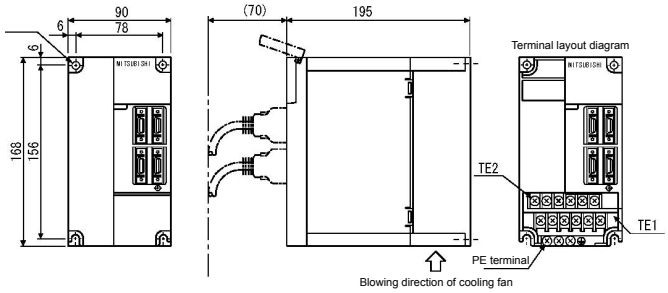
(Note) For 3-phase 200 to 230 V ACor single-phase 230 V AC power supply products

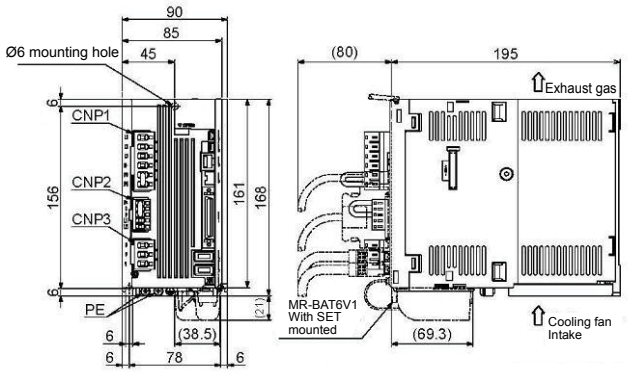


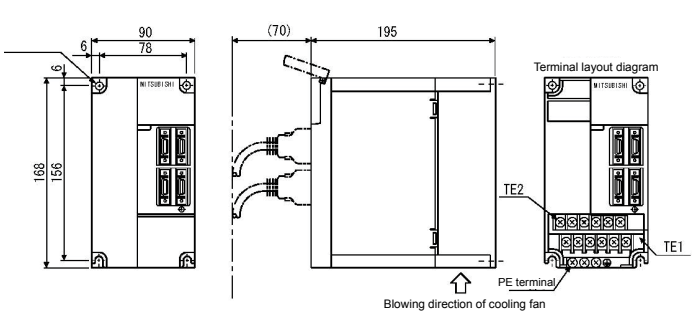


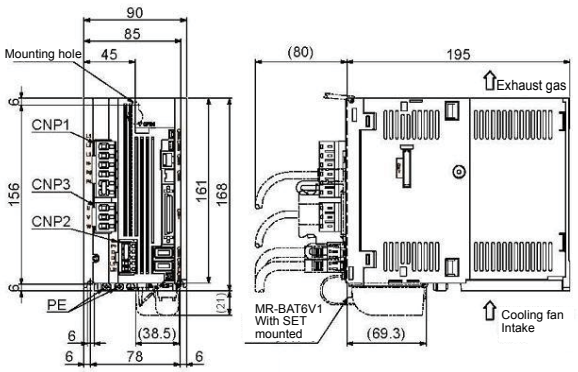


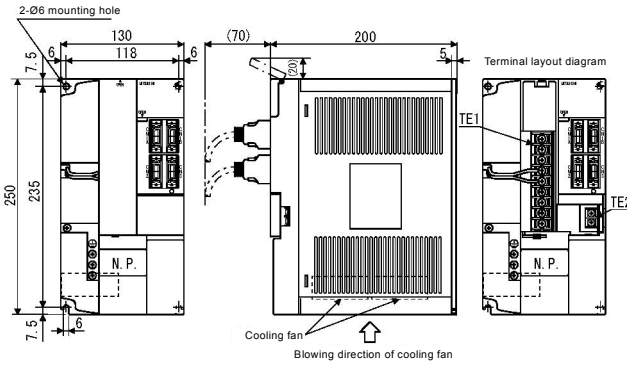
MR-J2S series dimensions	MR-J4 series dimensions
MR-J2S-200_	MR-J4-200_
MR-J2S-350_	MR-J4-350_
MR-J2S-500_	MR-J4-500_
MR-J2S-700_	MR-J4-700_

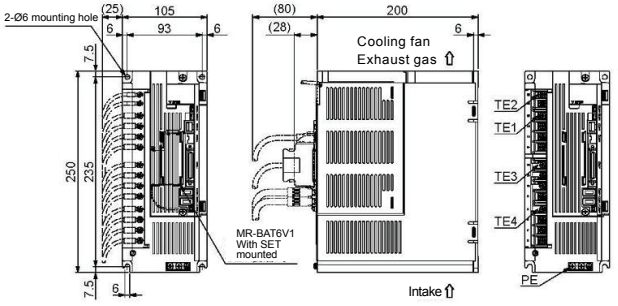


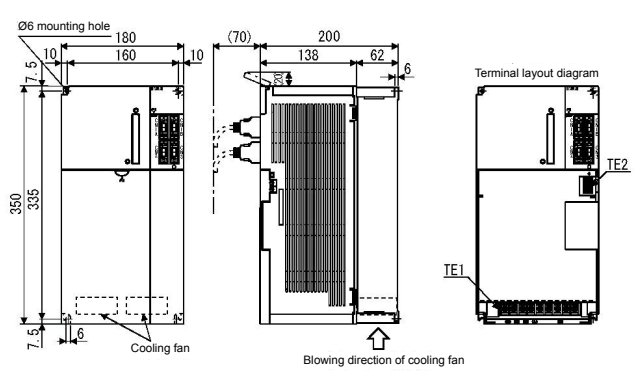


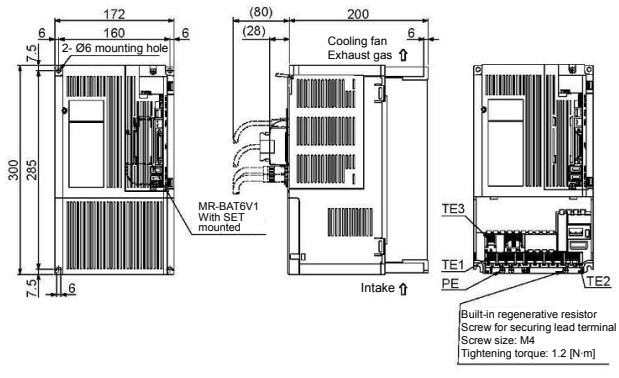




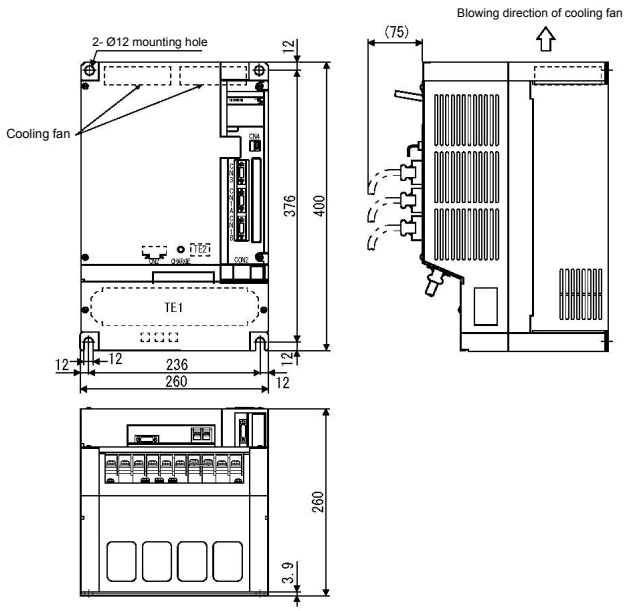


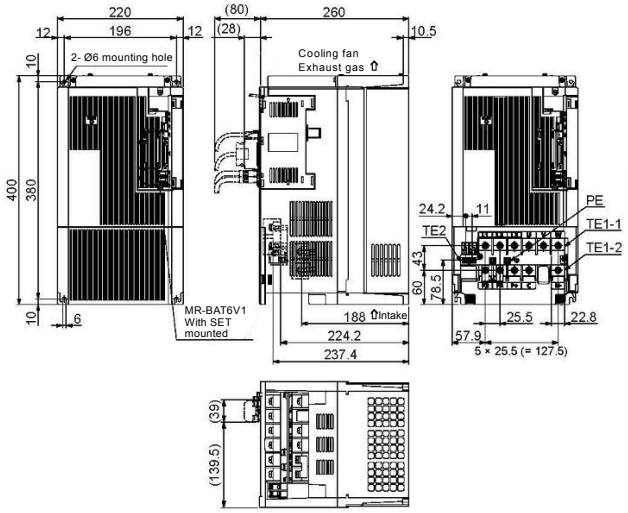


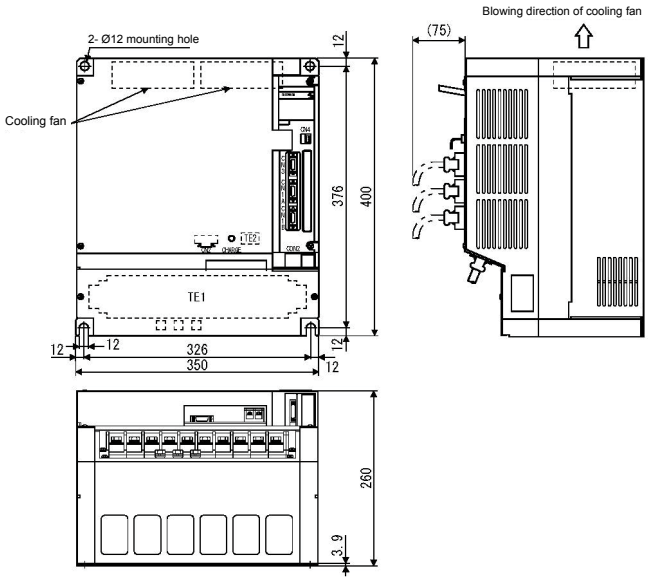


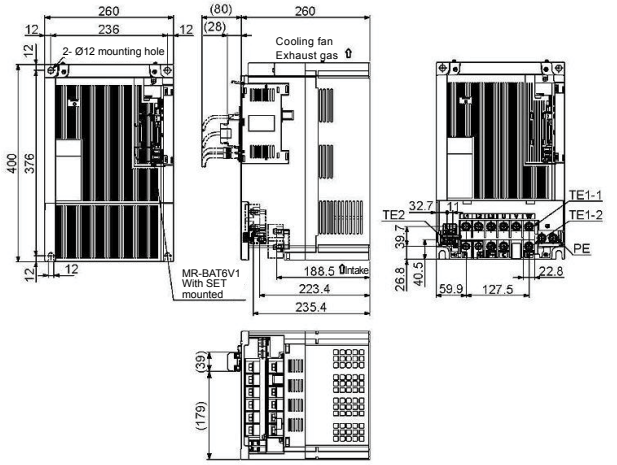


MR-J2S series dimensions	MR-J4 series dimensions
MR-J2S-11K_, MR-J2S-15K_	MR-J4-11K_, MR-J4-15K_
MR-J2S-22K_	MR-J4-22K_









2.1.2 400 V class

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 replacement for 5 kW capacity type is possible using the same mounting holes. 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.

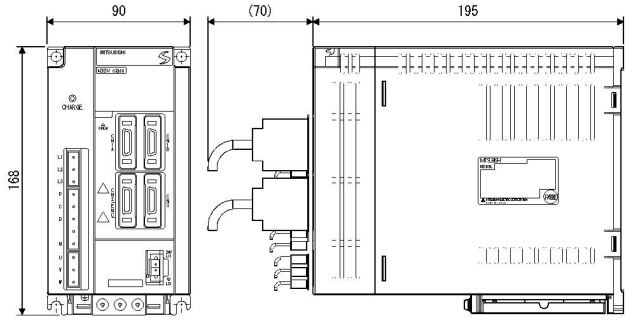
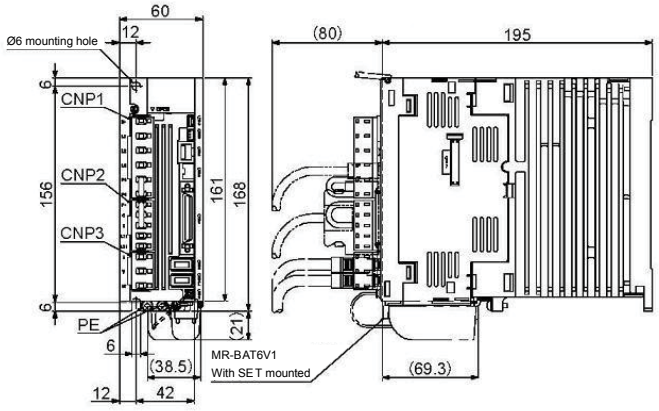
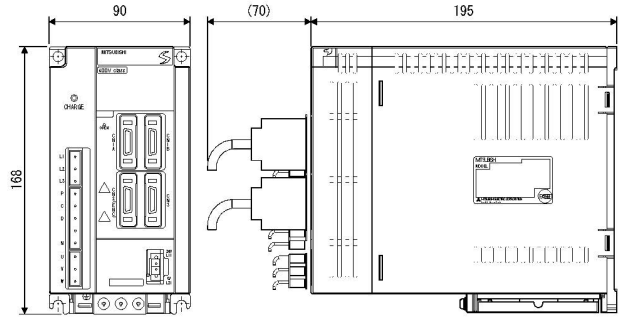
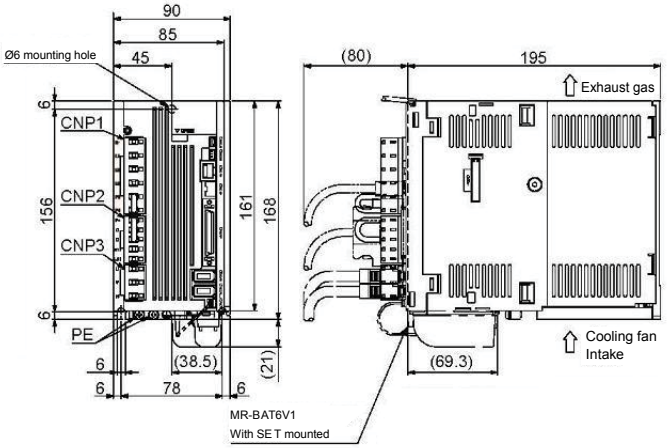
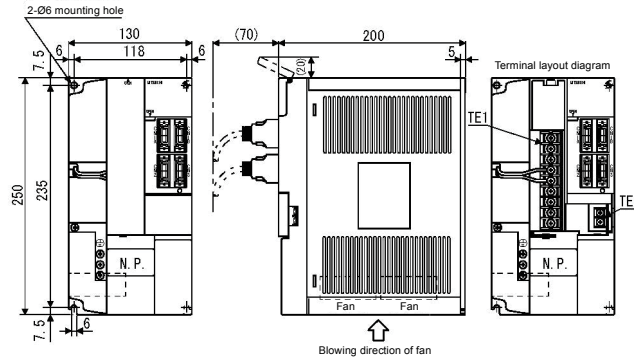
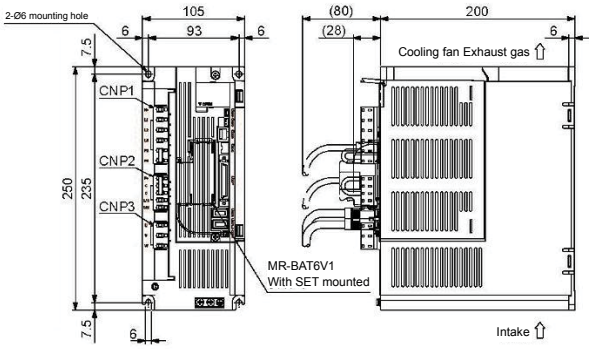
Comparison of dimensions (comparison between the same capacity types) Unit: mm

Model MR-J2S series	Model MR-J4 series	Height		Width		Depth		Mounting screw distance	
		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								
MR-J2S-200_4	MR-J4-200_4				90				156 (Vertical)/78 (Horizontal) **(3 screws)** (Note)
MR-J2S-350_4	MR-J4-350_4	250	250	130	**105**	200	200	235 (Vertical)/118 (Horizontal) (4 screws)	235 (Vertical)/**93 (Horizontal)** (4 screws)
MR-J2S-500_4	MR-J4-500_4				130				235 (Vertical)/118 (Horizontal) (4 screws)
MR-J2S-700_4	MR-J4-700_4	350	**300**	180	**172**			335 (Vertical)/160 (Horizontal) (4 screws)	**285 (Vertical)**/160 (Horizontal) (4 screws)
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								
MR-J2S-22K_4	MR-J4-22K_4			350	**260**			376 (Vertical)/326 (Horizontal) (4 screws)	376 (Vertical)/**236 (Horizontal)** (4 screws)

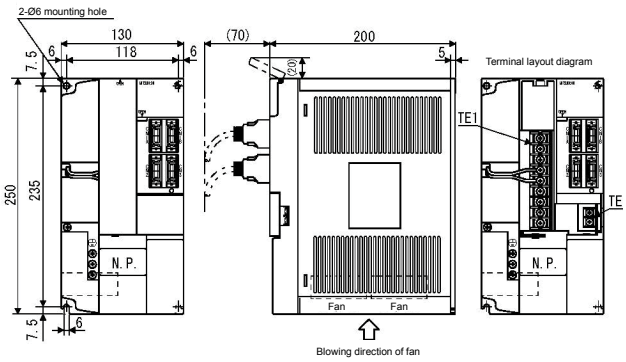
Note. The number of mounting screws will be changed.

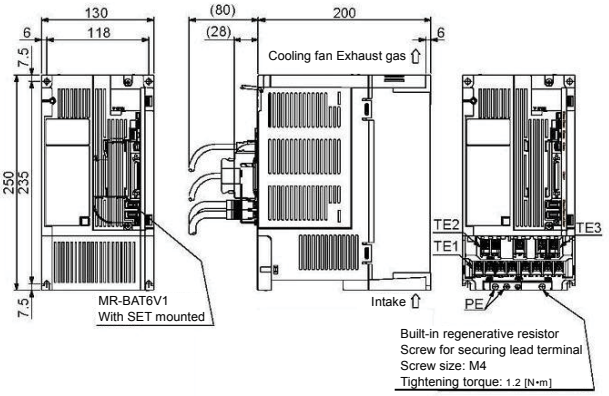
● Dimensions with differences are shown with **shading**.

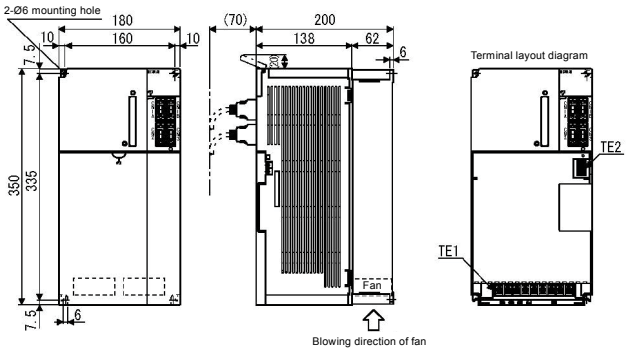
Comparison of 400 V class dimensions

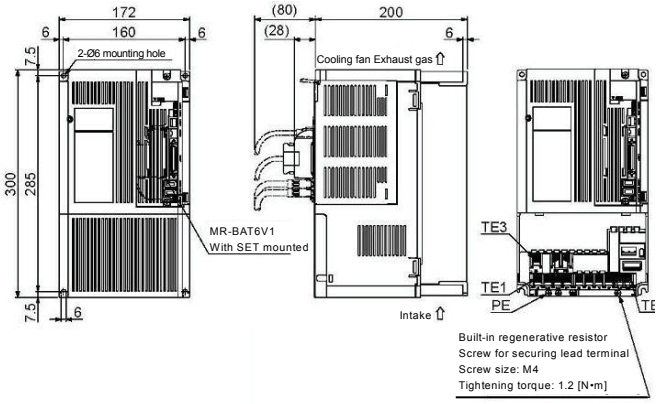
MR-J2S series dimensions	MR-J4 series dimensions
MR-J2S-60_4, MR-J2S-100_4	MR-J4-60_4, MR-J4-100_4
	
MR-J2S-200_4	MR-J4-200_4
	
MR-J2S-350_4	MR-J4-350_4
	

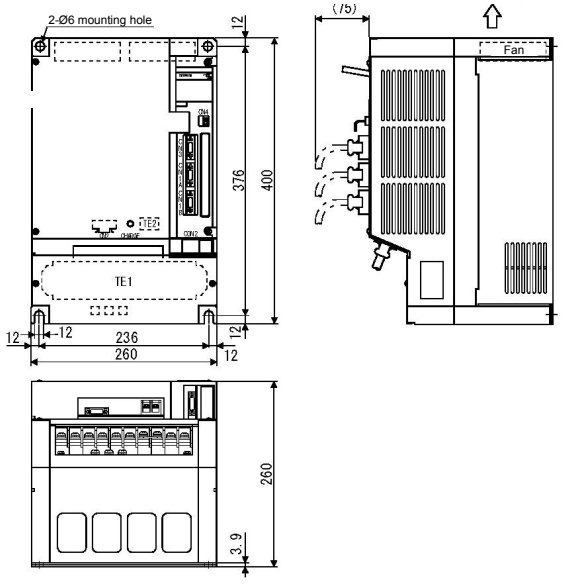
MR-J2S series dimensions	MR-J4 series dimensions
MR-J2S-500_4	MR-J4-500_4
MR-J2S-700_4	MR-J4-700_4
MR-J2S-11K_4, MR-J2S-15K_4	MR-J4-11K_4, MR-J4-15K_4

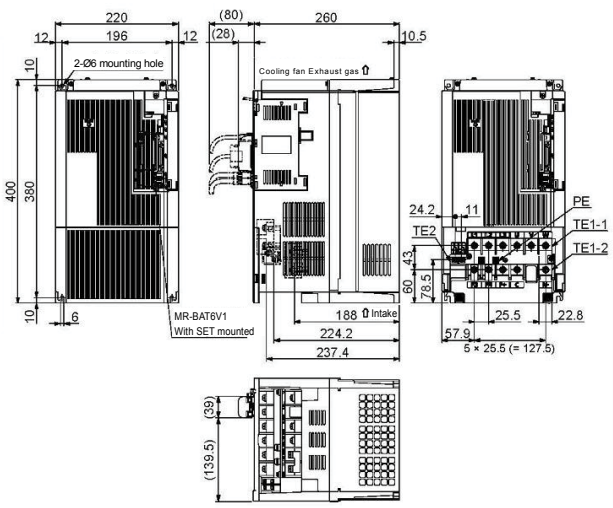


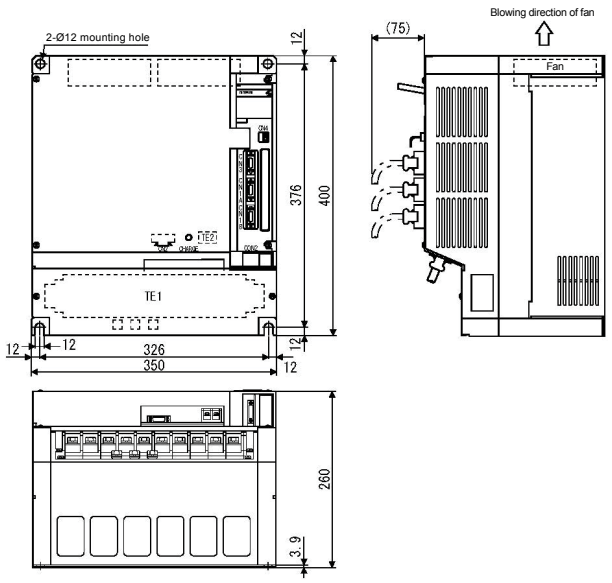
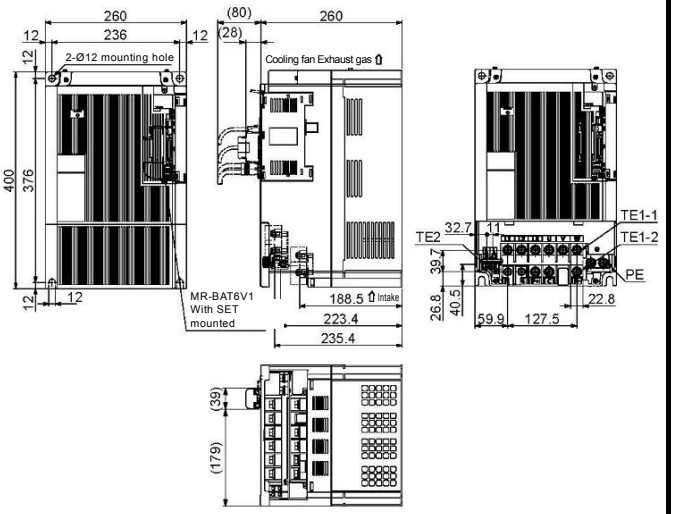










MR-J2S series dimensions	MR-J4 series dimensions
MR-J2S-22K_4	MR-J4-22K_4
	

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 are the same or smaller than the MR-J2M series basically. 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.

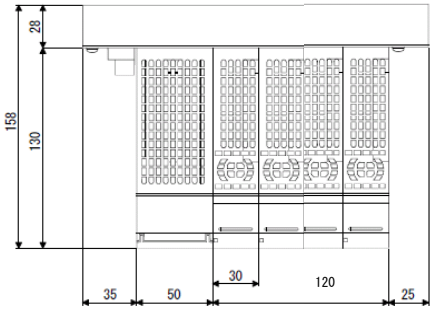
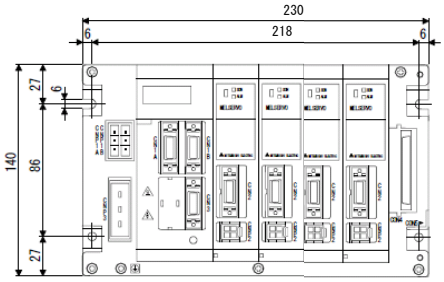
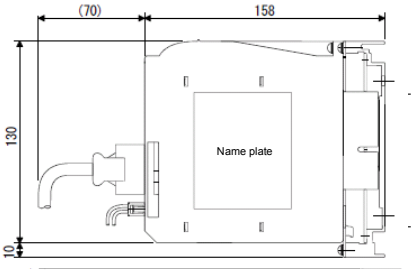
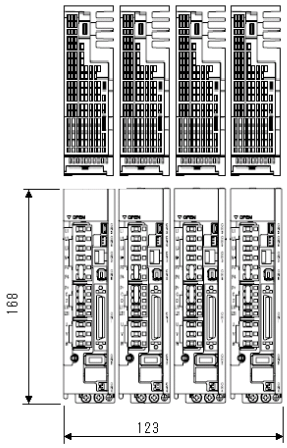
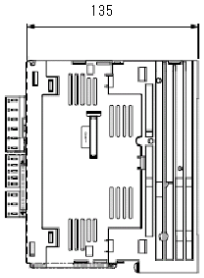
Comparison of dimensions (comparison between the same capacity types) Unit: mm

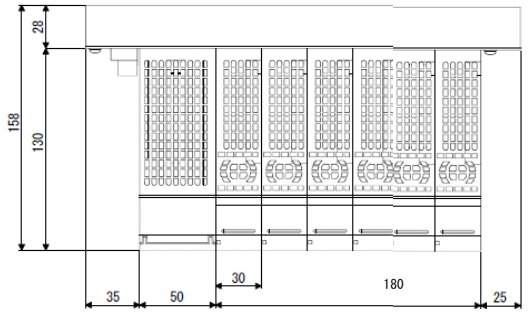
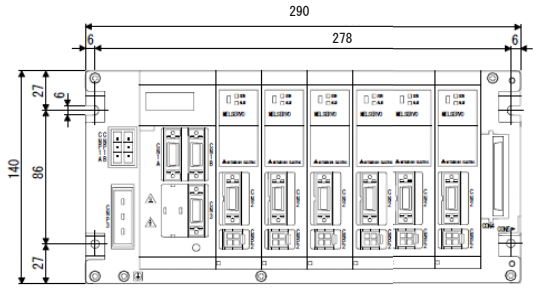
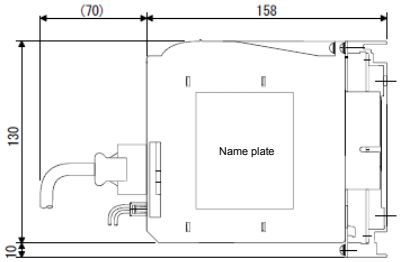
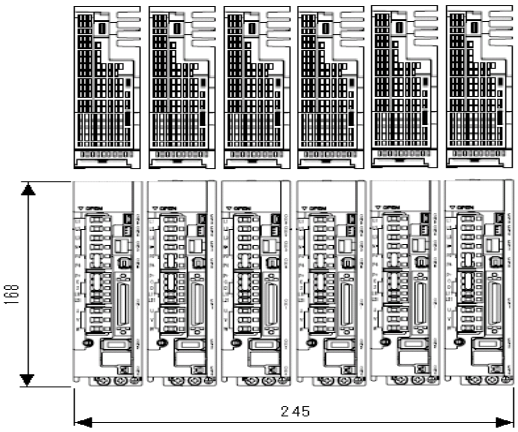
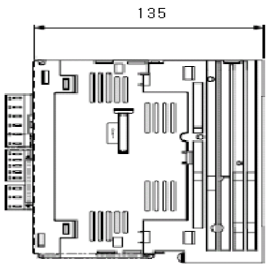
Model MR-J2M series	Model MR-J4 series	Height		Width		Depth		Mounting screw distance	
		MR-J2M	MR-J4	MR-J2M	MR-J4	MR-J2M	MR-J4	MR-J2M	MR-J4
MR-J2M-BU4 + MR-J2M-P8A + MR-J2M-_DU	MR-J4-10, 20A × 4 units	140	**168 (Note 1)**	230	**40×4 =160**	158	**135**	86 (Vertical)/218 (Horizontal) (4 screws)	**156 (Vertical) (2 screws) × 4**
	MR-J4-40A × 4 units						**170 (Note 1)**		
	MR-J4-70A × 2 units				**60 × 2 =120**		**185 (Note 1)**		**156 (Vertical)/42 (Horizontal) (3 screws) × 2**
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**		**185 (Note 1)**		**156 (Vertical)/42 (Horizontal) (3 screws) × 3**
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**		**185 (Note 1)**		**156 (Vertical)/42 (Horizontal) (3 screws) × 4**

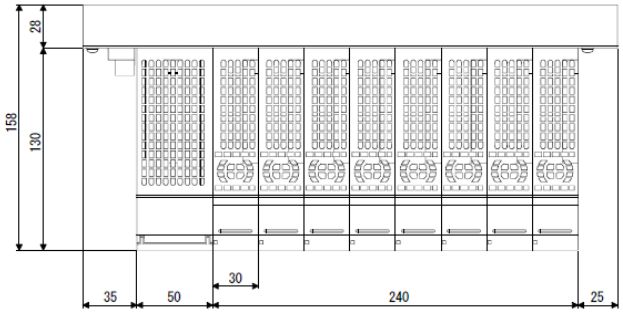
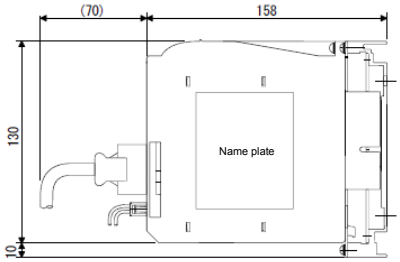
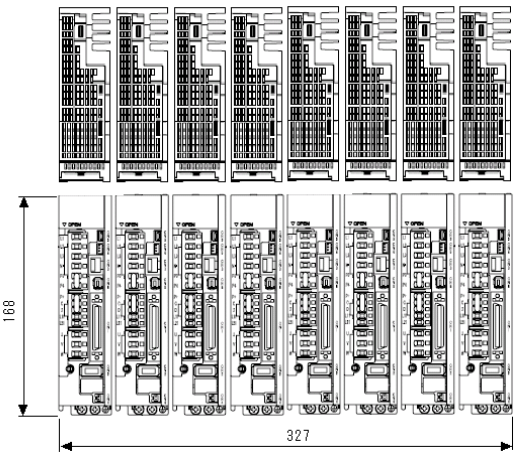
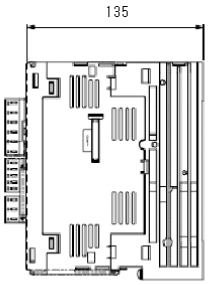
Note 1. The depth will increase.
2. The number of mounting screws will be changed.

● Dimensions with differences are shown with **shading**.

Comparison between the MR-J2M and the MR-J4 series

Series	Dimensions
MR-J2M-BU4 + MR-J2M-P8A + MR-J2M-_DU MR-J2M-BU4 + MR-J2M-P8B+ MR-J2M-_DU	  
When four MR-J4-10_ units are closely mounted	  * 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.

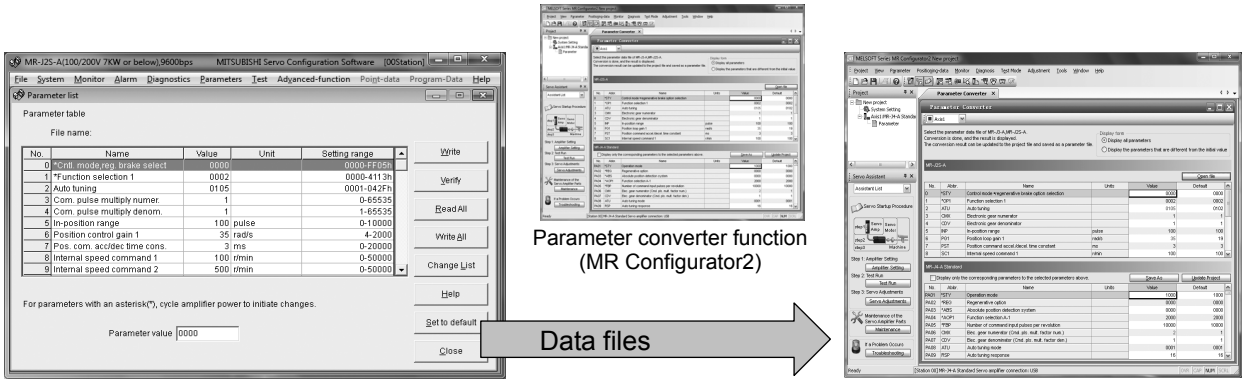
Series	Dimensions
MR-J2M-BU6 + MR-J2M-P8A + MR-J2M-_DU MR-J2M-BU6 + MR-J2M-P8B+ MR-J2M-_DU	  
When six MR-J4-10_ units are closely mounted	  * When mounting the servo amplifiers closely, leave a clearance of 1 mm between the adjacent servo amplifiers in consideration of mounting tolerances. In this case, keep the ambient temperature within 0 °C to 45 °C or use the servo amplifier with 75% or less of the effective load ratio.

Series	Dimensions
MR-J2M-BU8 + MR-J2M-P8A + MR-J2M-_DU MR-J2M-BU8 + MR-J2M-P8B+ MR-J2M-_DU	  
When eight MR-J4-10_ units are closely mounted	  * 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.

3 PARAMETER CONVERTER OPERATION PROCEDURE

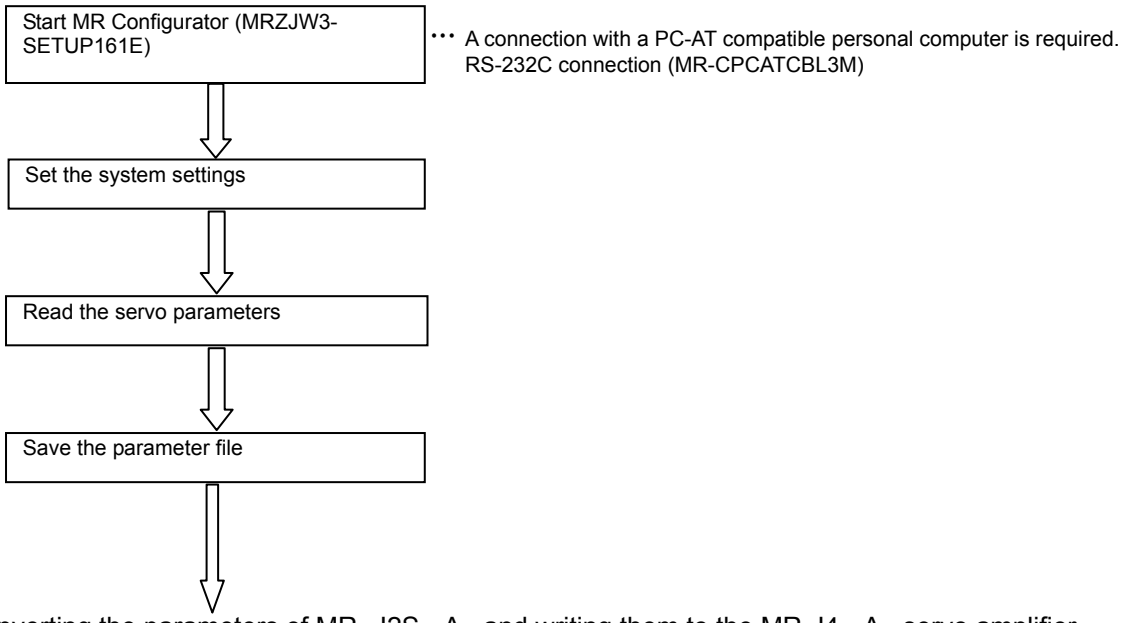
The parameter converter function of MR Configurator2 allows the servo parameters of MR-J2S-_A_ to be changed to the servo parameters of MR-J4-_A_. (Version 1.12N or later)

POINT
●This applies only to the common parameters of MR-J2S-_A_ and MR-J4-_A_. Additional parameters of MR-J4-_A_ are set to the initial values of MR-J4-_A_

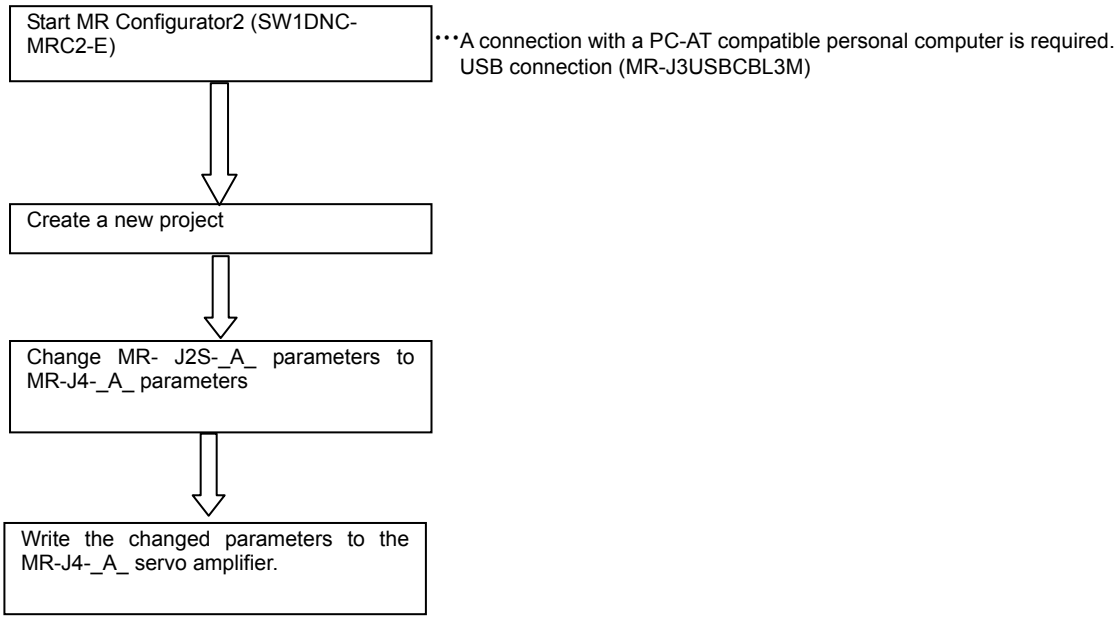


3.1 MR-J2S-_A_ Parameter Conversion Procedure

● Parameter reading from the servo amplifier MR- J2S-_A_



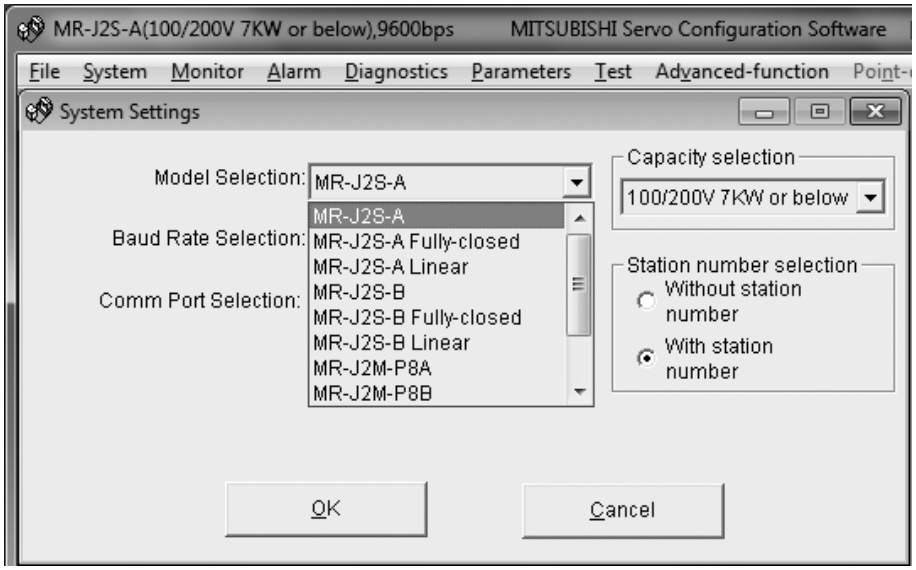
● Converting the parameters of MR- J2S-_A_ and writing them to the MR-J4-_A_ servo amplifier



3.1.1 Parameter reading from the servo amplifier MR- J2S-_A_

(1) Start MR Configurator (MRZJW3-SETUP161E).

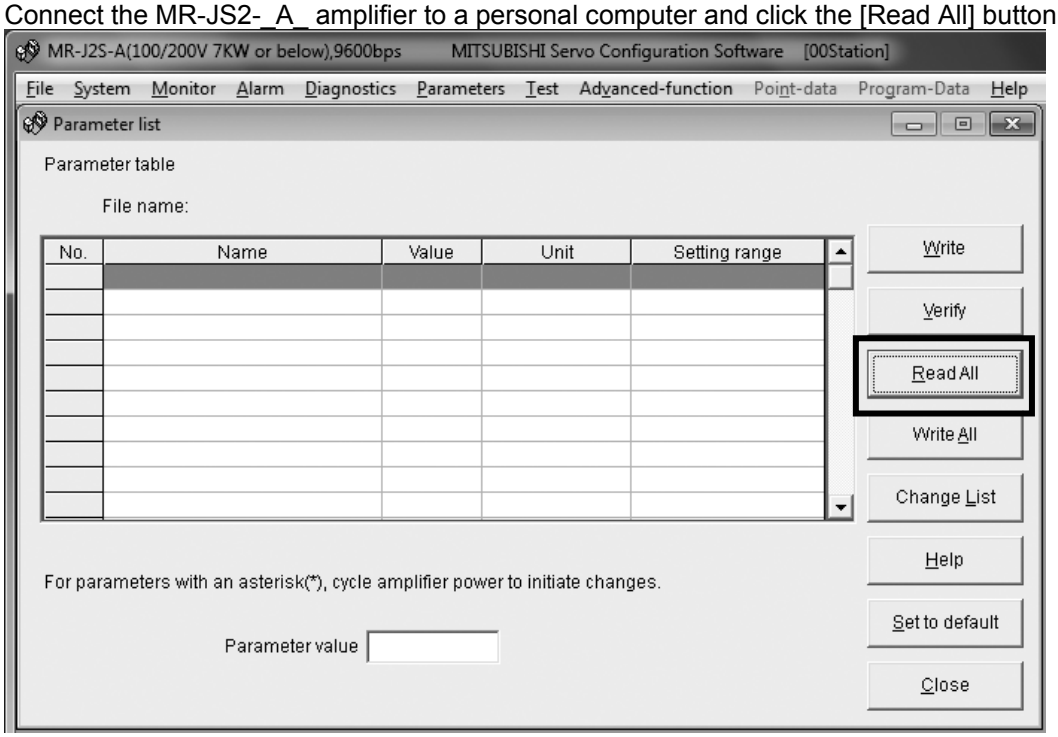
(2) Set the system settings.
Click [System] in the menu to display the system settings dialog box.
Set the Model selection, Baud rate selection, Comm port selection, Capacity selection, and Station number selection.



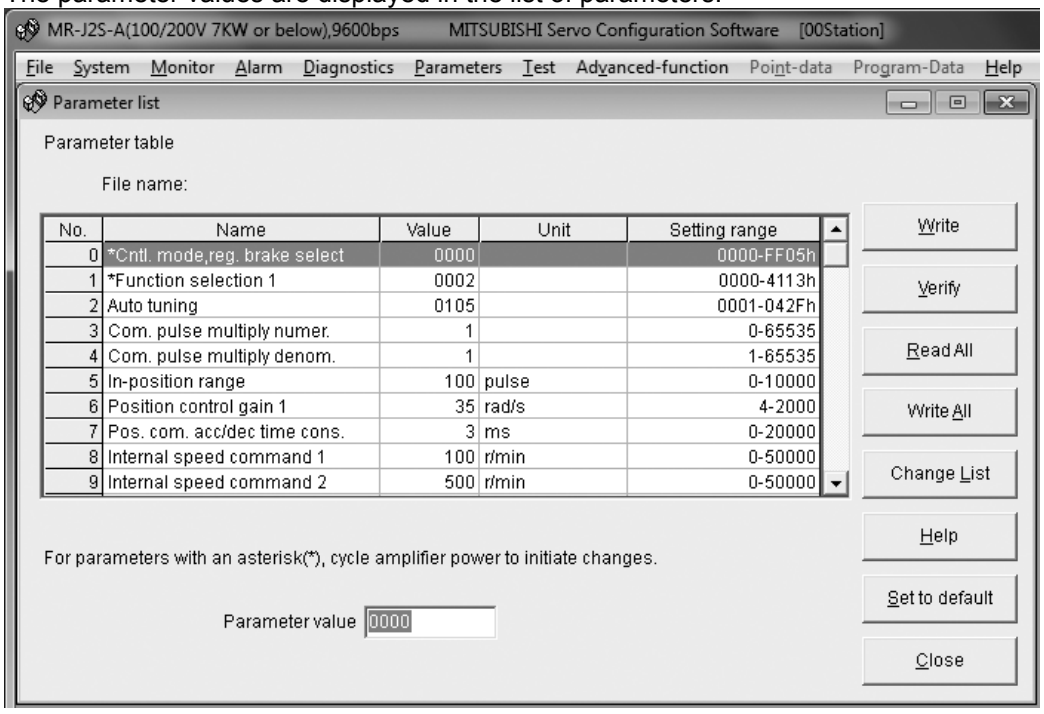
(3) Read the servo parameters.

Click [Parameters] in the menu to display the parameter list screen.

Connect the MR-JS2-_A_ amplifier to a personal computer and click the [Read All] button.



The parameter values are displayed in the list of parameters.

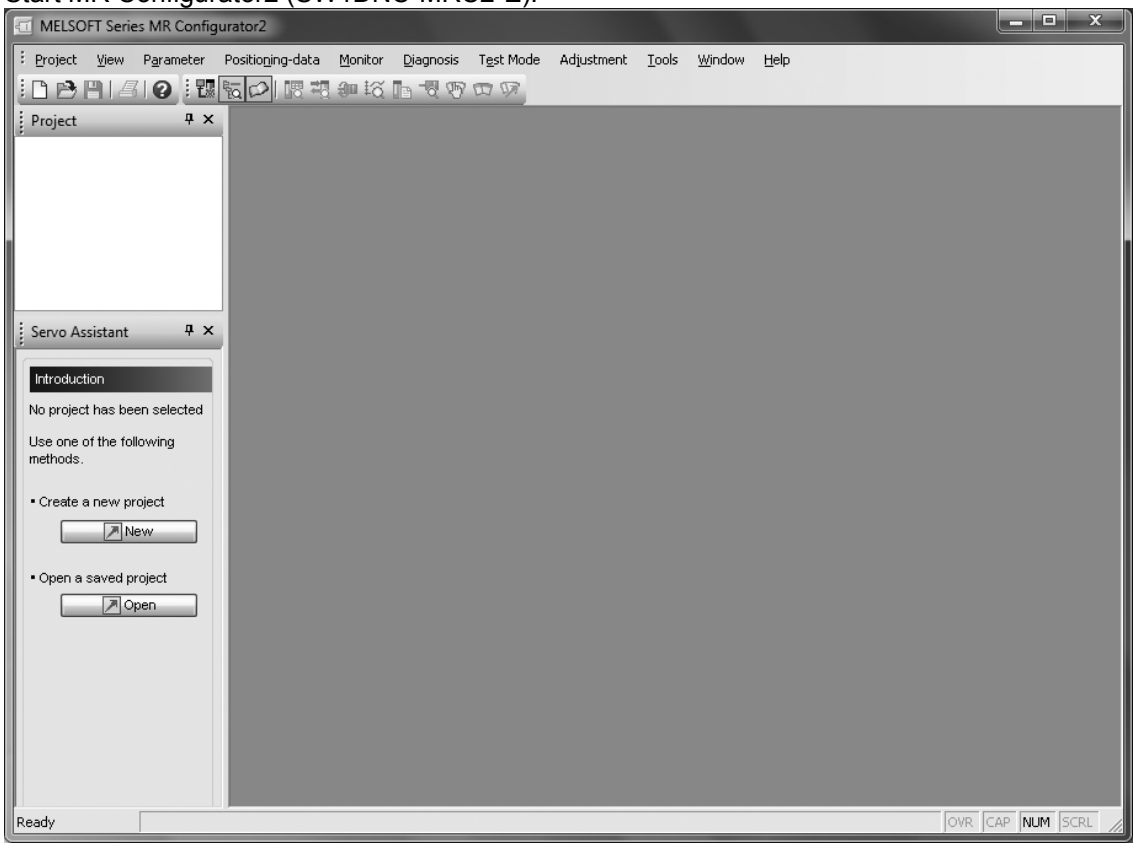


Select [File] - [Save] to save the parameter file.

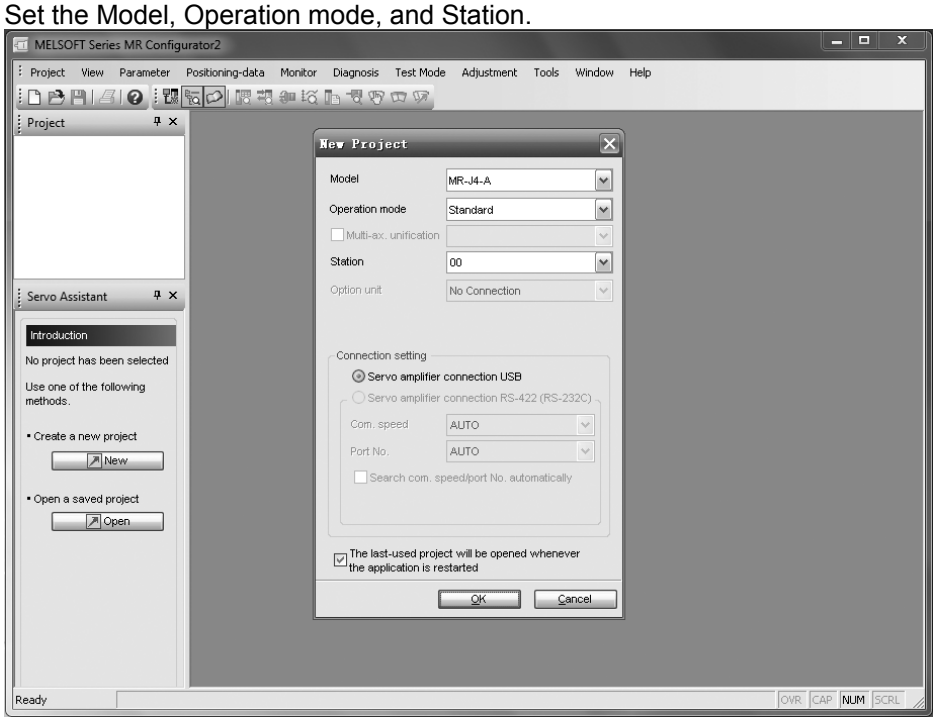
(The work with MR Configurator (MRZJW3-SETUP161E) is finished.)

3.1.2 Converting the parameters of MR- J2S-_A_ and writing them to the MR-J4-_A_ servo amplifier

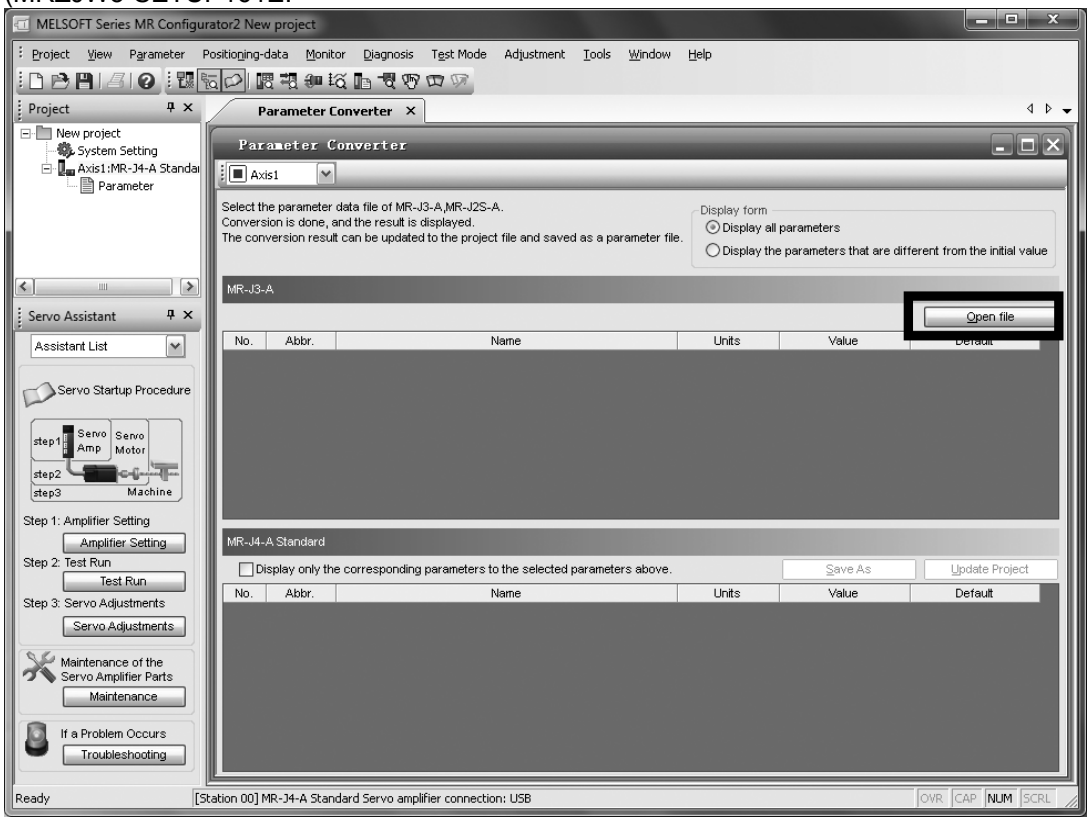
(1) Start MR Configurator2 (SW1DNC-MRC2-E).



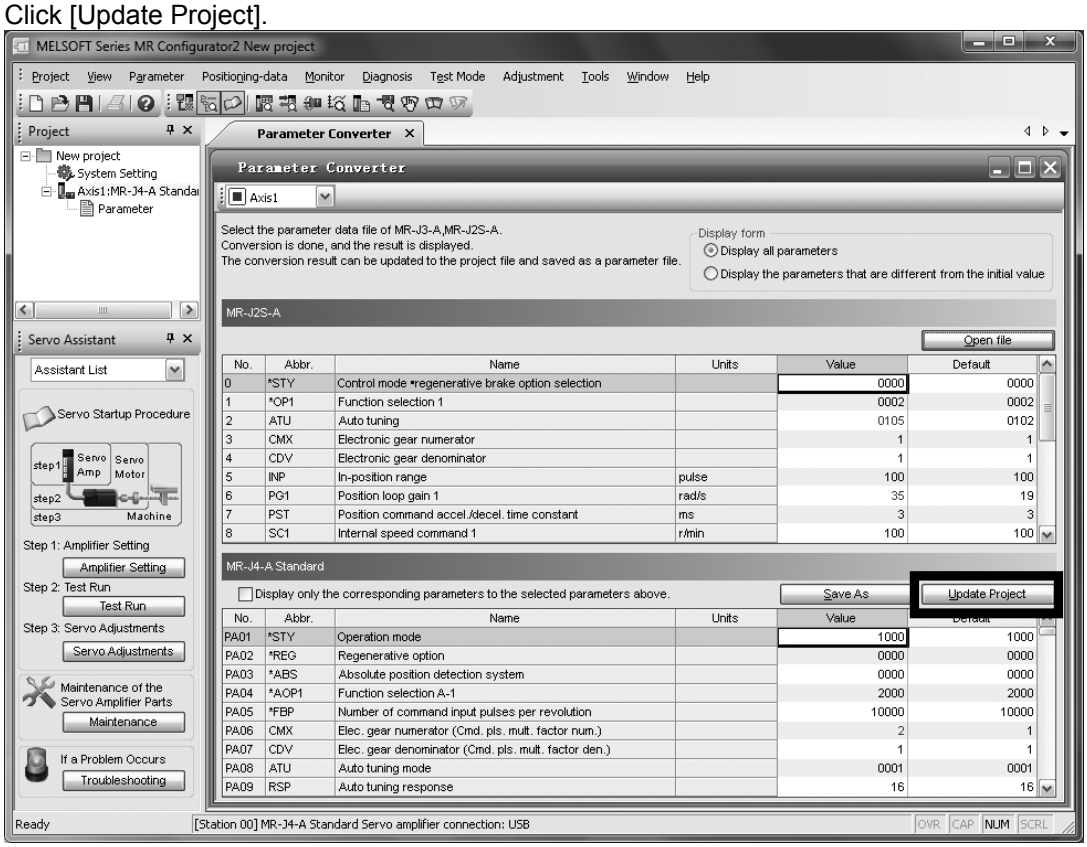
(2) Create a new project.
Select [Project] - [New] from the menu to display the New project dialog box.
Set the Model, Operation mode, and Station.



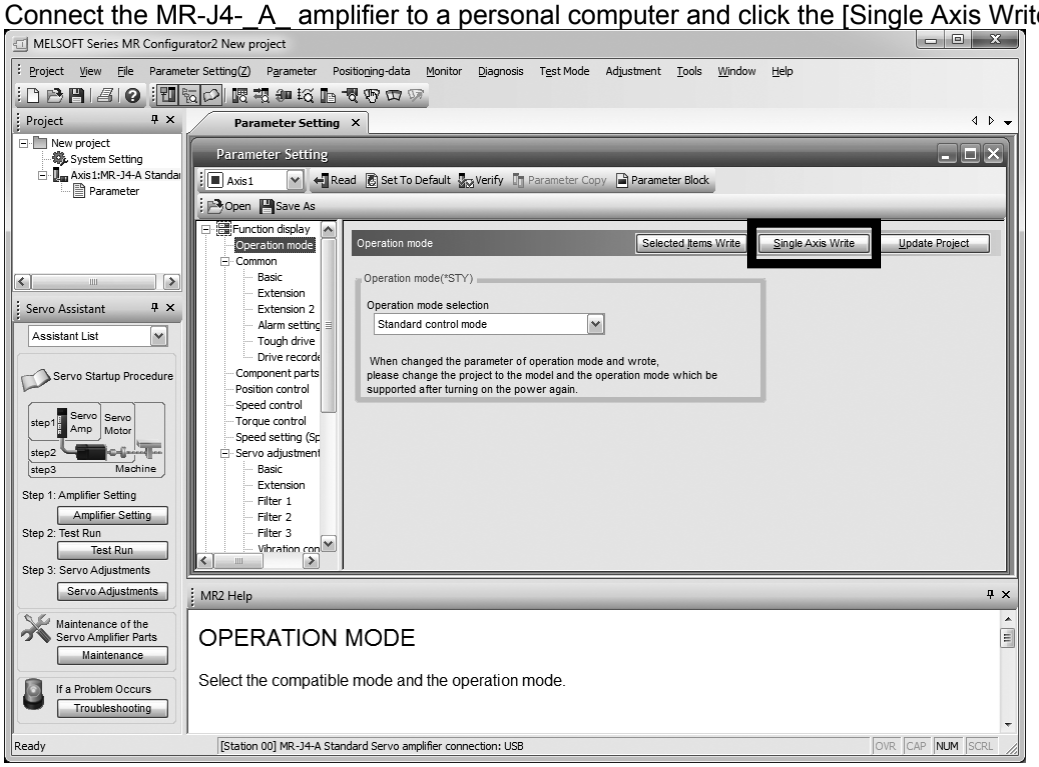
(3) Change MR- J2S-_A_ parameters to MR-J4-_A_ parameters.
Select [Parameter] - [Parameter Converter] from the menu to display the parameter converter screen. Then click the [Open file] button and specify the user file that was saved with MR Configurator (MRZJW3-SETUP161E.



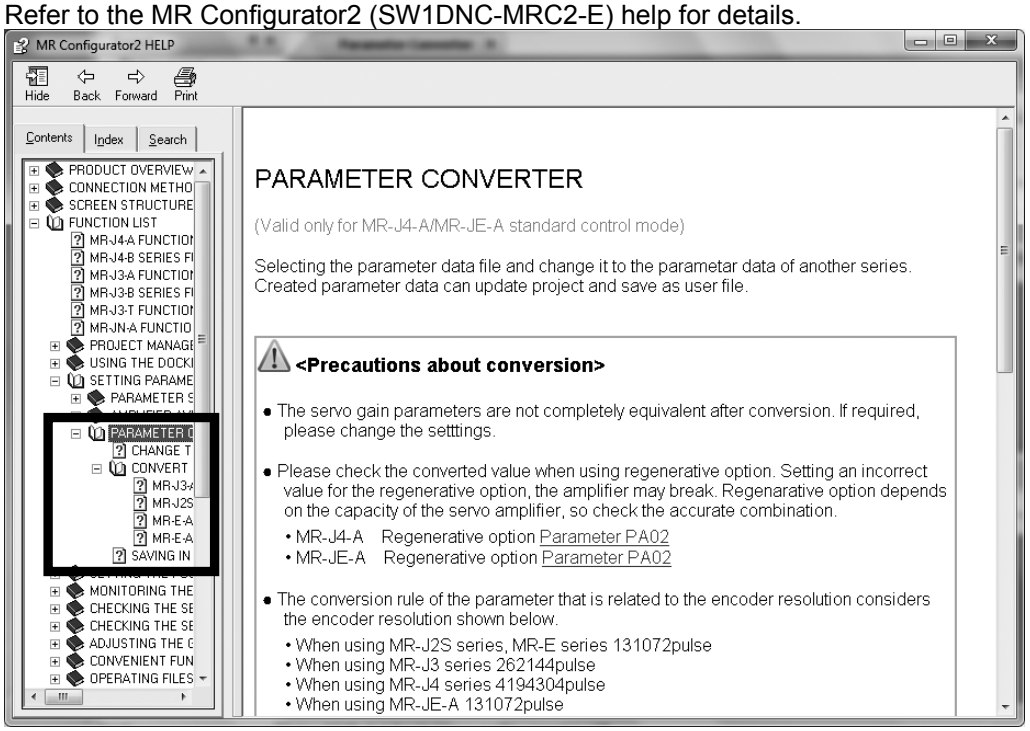
Click [Update Project].



(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.



3.1.3 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 (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. (1-2) When the setting value of No. 4 is 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. (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.
			PA06	Dec	-	
4	Dec	-	PA07	Dec	-	
			PA21	Hex	X_ _ _	
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.

Hex: hexadecimal parameter; Dec: decimal parameter

MR-J2S-_A_			MR-J4-_A_			Conversion rule
No.	Type	Target	No.	Type	Target	
7	Dec	-	PB03	Dec	-	The setting value will be maintained.
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

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

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 (No. 35) × (No. 62) ÷ 100. One decimal place will be added.
62	Dec	-				
37	Dec	-	PB31	Dec	-	The value will be (No. 37) × (No. 63) ÷ 100.
63	Dec	-				
38	Dec	-	PB32	Dec	-	One decimal place will be added to (No. 38) × (No. 64) ÷ 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

POINT

- The parameter writing inhibit after parameter conversion is the initial value (the following setting value).
  - MR-J4-_A_ parameter writing inhibit, parameter PA19: 00AA h
- When using analog monitor output, perform an operation check because MR-J2S-_A_and MR-J4-_A_have different output voltage specifications for droop pulses.
  - MR-J4-_A_ parameter PC14, parameter PC15
- Various offset parameters cannot be converted. Change the settings as necessary.
  - MR-J4-_A_ parameter PC37 to parameter PC40
- Input/output signal assignments will be initialized. Change the settings as necessary.
  - 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.
  - 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_.

3.1.4 Parameters that need to be checked after parameter conversion

Parameter No.	Name	Initial value	Setting value	Description
PA04	Function selection A-1	2000 h	0000 h	Forced stop deceleration function selection To configure the same settings as those for MR-J2S-_A_, select "Forced stop deceleration function disabled (EM1)".
PA15	Encoder output pulses	-	-	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_ 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: Replacement of MR-J2S-_A_ with MR-J4-_A_".

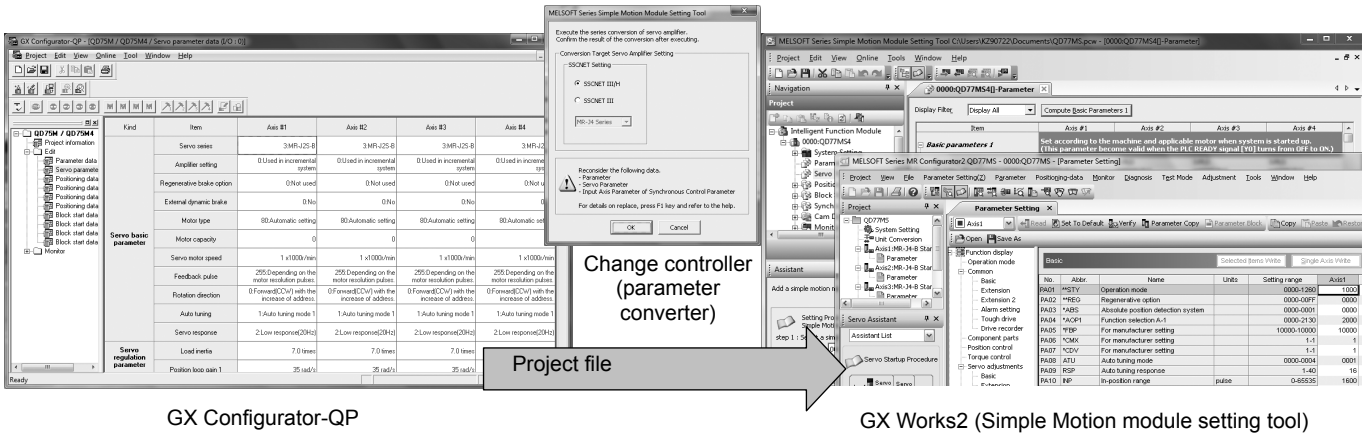
3.2 MR-J2S-_B_ Parameter Conversion Procedure

The parameter converter functions of GX Work2 and MT Developer2 convert the servo parameters of MR-J2S-_B_ to those of MR-J4-_B_ when the controller is changed.
(GX Works2: 1.87R or later, MT Developer2: 1.42U 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 → Simple Motion module QD77MS/LD77MS
- Motion controller A series/Q17nCPUN → Q17nDSCPU/Q170MSCPU



GX Configurator-QP
SW3/6RNC-GSVE

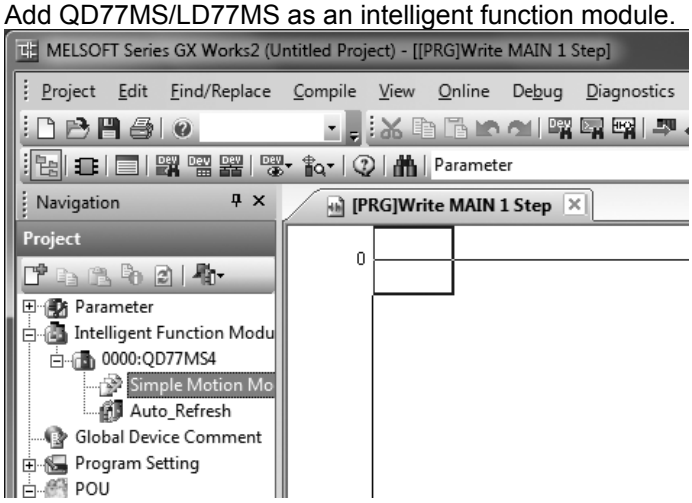
Change MR-J2S-_B_ → MR-J4-_B_

GX Works2 (Simple Motion module setting tool)
MT Developer2

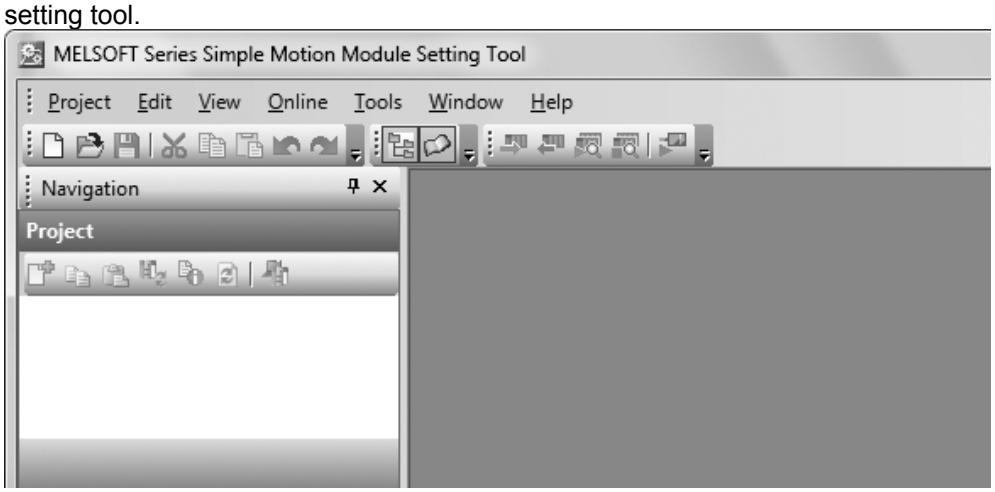
3.2.1 Parameter conversion of QD75M to QD77MS/LD77MS

(1) Start GX Works2 and create a project.

(2) Add QD77MS/LD77MS as an intelligent function module.



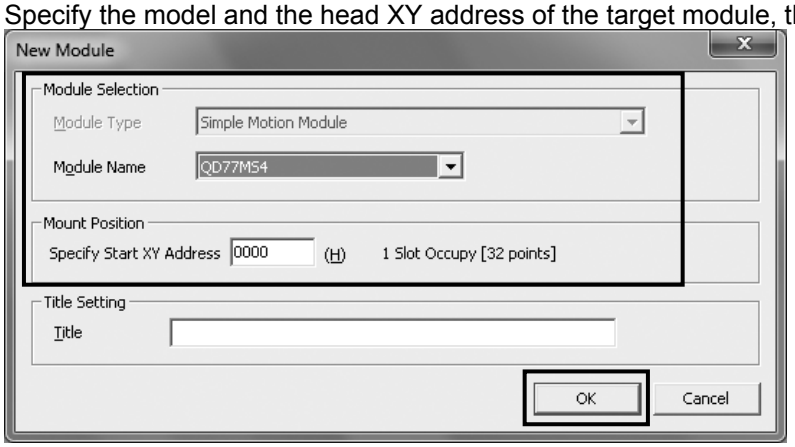
(3) Double-click the icon of the simple Motion module that you just added to start the simple Motion module setting tool.



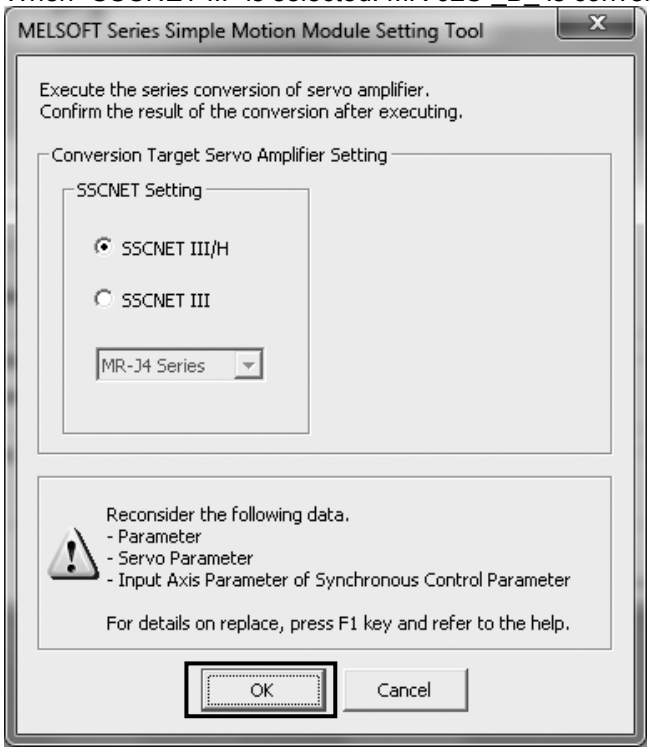
(4) Read the GX Configurator-QP data.
Click [Project] - [Import GX Configurator-QP Data] from the menu. A dialog box for reading the GX Configurator-QP data is displayed.
Specify the QD75M data as the GX Configurator-QP data and click the [Open] button.

When using QD75 data made on GX Work2, save the QD75 data as GX Configurator-QP data on GX Work2, then perform the above operation.

(5) Specify the target module.
Specify the model and the head XY address of the target module, then click the [OK] button.



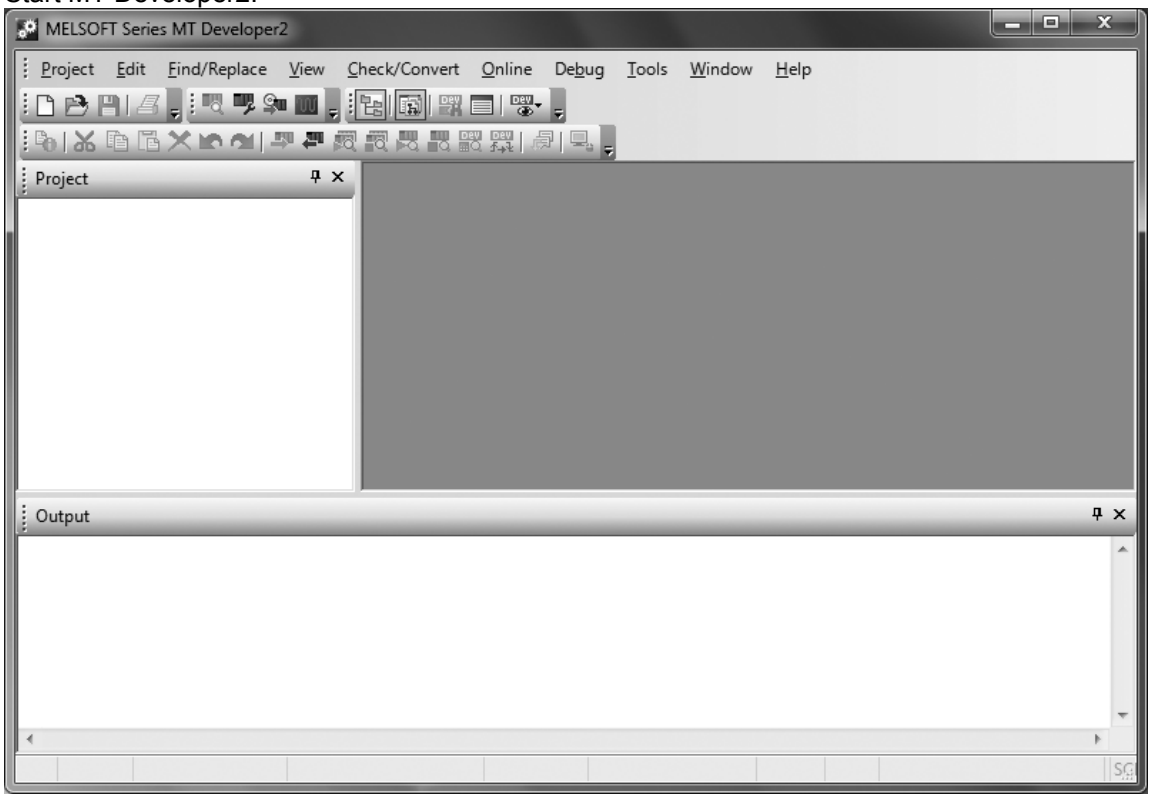
(6) Execute servo parameter conversion.
Select the target servo amplifier setting and click the [OK] button.
The servo parameters are converted as follows depending on the target servo amplifier setting.
When "SSCNET III / H" is selected: MR-J2S-_B_ is converted to MR-J4-_B_.
When "SSCNET III" is selected: MR-J2S-_B_ is converted to MR-J3-_B_.



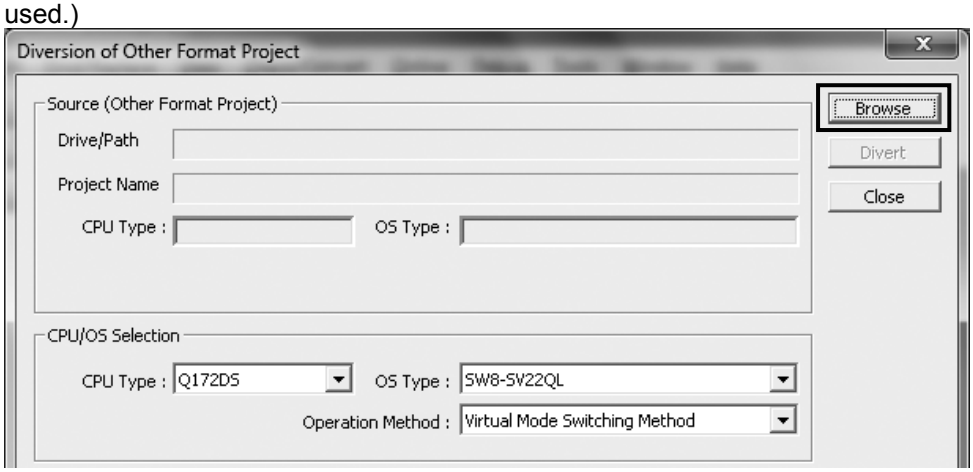
(7) Parameter conversion is now complete.

3.2.2 File diversion of A/QN motion to QDS motion/stand alone motion

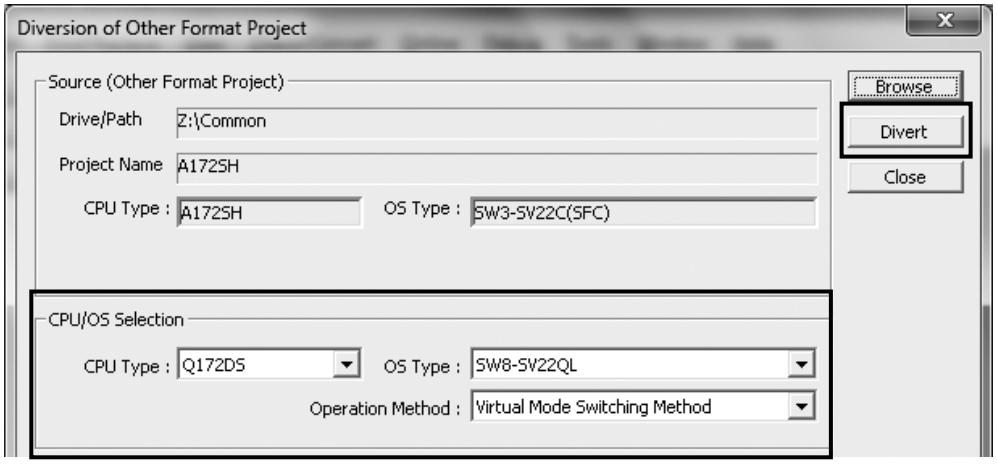
(1) Start MT Developer2.



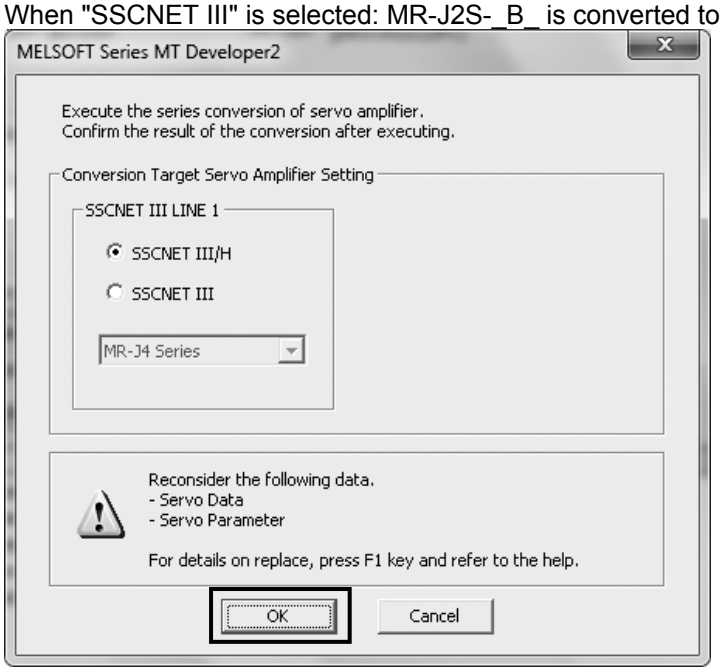
(2) Select the source project.
From the menu, click [Project] - [Divert File] - [Diversion of Other Format Project]. The ”Diversion of Other Format Project” dialog box is displayed.
Click the [Browse] button to select the source project.
(For an MT Developer2 project, the "Diversion of the MT Developer2 Format Project" dialog box must be used.)



(3) Execute file diversion.
Select the CPU type, OS type, and Operation method in the CPU/OS selection, and click the [Divert] 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.

3.2.3 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 rule
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

MR-J2S-_B_				MR-J4-_B_			Conversion rule
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.
			_ _ 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.
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

MR-J2S-_B_				MR-J4-_B_			Conversion rule
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.
23	Option function 1 (Servo forced stop selection)	Hex	_ _ _ X	PA04	Hex	_ X_ _	The setting value will be maintained.
24	Option 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.
25	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	Option 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 _.
33	Option function 6 (Encoder pulse output setting selection)	Hex	_ X_ _	PC03	Hex	_ _ X_	The setting value will be maintained.
36	Speed differential compensation	Dec	-	PB11	Dec	-	The setting value will be maintained.
33	Option 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 change 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 change 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

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.
							Otherwise, _ _ _ 1 will be set.
			_ X_ _	PB16	Hex	_ _ X_	The setting value will be maintained.

Hex: hexadecimal parameter; Dec: decimal parameter

POINT

- 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).
  - 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.
  - MR-J4-_B_ error excessive alarm level, parameter PC01
- Output signal assignments will be initialized. Change the settings as necessary.
  - MR-J4-_B_ parameter PD07 to parameter PD09
- Various offset parameters cannot be converted. Change the settings as necessary.
  - MR-J4-_B_ parameter PC11, parameter PC12

3.2.4 Parameters that need to be checked after parameter conversion

Parameter No.	Name	Initial value	Setting value	Description
PA04	Function selection A-1	2000 h	0000 h	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 pulses	-	-	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: Replacement of MR-J2S-_B_ with MR-J4-_B_".

4. COMMON POINTS TO NOTE

4.1 Points to Note When Replacing a Battery

POINT

- 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.)
  When replacing the battery for MR-J4, observe the following points and procedures.

⚠ 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 human body and work bench.
  - Do not touch the conductive areas, such as connector pins and electrical parts, directly by hand.

POINT

- Replacing battery with the control circuit power off will erase the absolute position data.
- Verify that the battery being replaced is within the service lives.

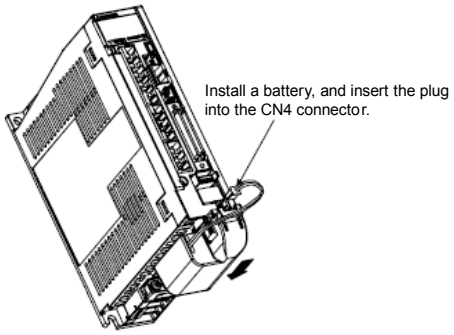
POINT

- Replace the battery only with the control circuit power supply in the on state. Replacing battery with the control circuit power on will not erase the absolute position data.

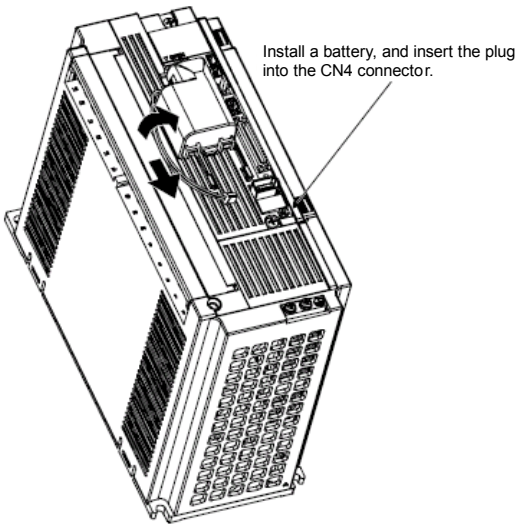
4.1.1 Servo amplifier battery mounting method

POINT

- For the servo amplifier with a battery holder on the bottom, it is not possible to wire for the earth with the battery installed. Insert the battery after executing the earth wiring of the servo amplifier.



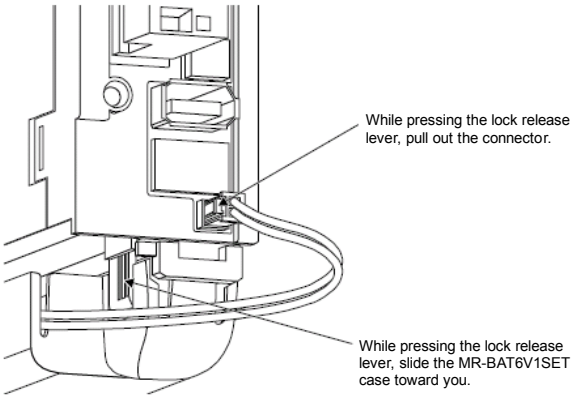
MR-J4-350_ or less



MR-J4-500_ or more

4.1.2 Disassembly method

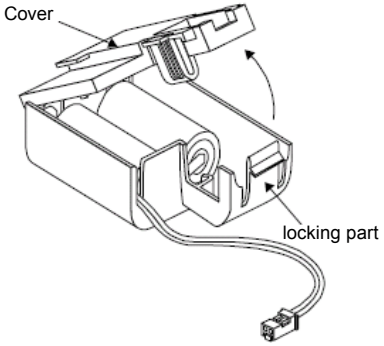
> ⚠ CAUTION
>
> - Pulling out the connector of the MR-BAT6V1SET without the lock release lever pressed may damage the CN4 connector of the servo amplifier or the connector of the MR-BAT6V1SET.



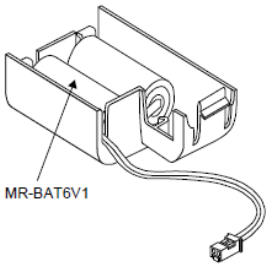
4.1.3 Replacement procedure of MR-BAT6V1SET built-in battery

When the MR-BAT6V1SET reaches the end of its life, replace the MR-BAT6V1 battery in the MR-BAT6V1SET.

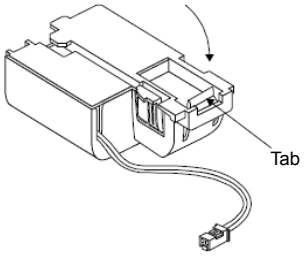
While pressing the locking part, open the cover.



Replace the battery with a new MR-BAT6V1 battery.



Press the cover until it is fixed with the projection of the locking part to close the cover



5 HC/HA MOTOR DRIVE

5.1 Parameter setting

(1) MR-J4-_A_

Parameter No.	Setting item	Setting value	Description
PC22	Function selection C-1	_1_ _h	Serial encoder selection. This setting is for communication with the encoder of HC/HA motor. An incorrect setting causes encoder initial communication receive data error 1 (AL.16.1) or encoder normal communication receive data error 1 (AL.20.1).

5.2 Corresponding Software Version

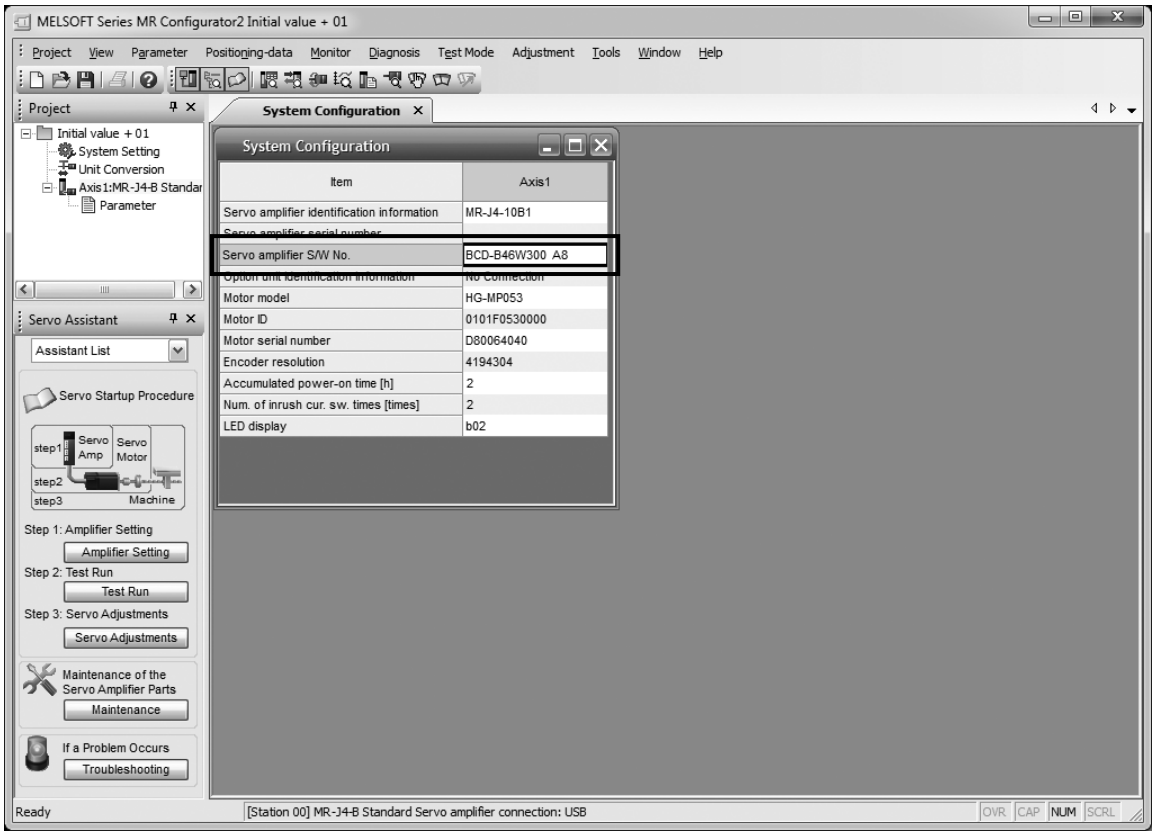
Servo motor series name	Servo motor model	Servo amplifier model	Standard S/W corresponding version
			A type
HC-KFS series	HC-KFS053	MR-J4-10_	A8
	HC-KFS13	MR-J4-10_	A4
	HC-KFS23	MR-J4-20_	A4
	HC-KFS43	MR-J4-40_	A4
	HC-KFS73	MR-J4-70_	A4
HC-KFS high-speed rotation series	HC-KFS46	MR-J4-70_	A6
	HC-KFS410	MR-J4-70_	A6
HC-MFS series	HC-MFS053	MR-J4-10_	A4
	HC-MFS13	MR-J4-10_	A4
	HC-MFS23	MR-J4-20_	A4
	HC-MFS43	MR-J4-40_	A4
	HC-MFS73	MR-J4-70_	A4
HC-LFS series	HC-LFS52	MR-J4-60_	A8
	HC-LFS102	MR-J4-100_	A8
	HC-LFS152	MR-J4-200_	A8
	HC-LFS202	MR-J4-350_	A8
	HC-LFS302	MR-J4-500_	A8
HA-SFS 1000r/min series	HC-SFS81	MR-J4-100_	A8
	HC-SFS121	MR-J4-200_	A8
	HC-SFS201	MR-J4-200_	A8
	HC-SFS301	MR-J4-350_	A8
HC-SFS 2000r/min series	HC-SFS52	MR-J4-60_	A4
	HC-SFS102	MR-J4-100_	A4
	HC-SFS152	MR-J4-200_	A4
	HC-SFS202	MR-J4-200_	A4
	HC-SFS352	MR-J4-350_	A4
	HC-SFS502	MR-J4-500_	A8
	HC-SFS702	MR-J4-700_	A8
	HC-SFS524	MR-J4-60_4	A8
	HC-SFS1024	MR-J4-100_4	A8
	HC-SFS1524	MR-J4-200_4	A8
	HC-SFS2024	MR-J4-200_4	A8
	HC-SFS3524	MR-J4-350_4	A8
	HC-SFS5024	MR-J4-500_4	A8
	HC-SFS7024	MR-J4-700_4	A8

Servo motor series name	Servo motor model	Servo amplifier model	Standard S/W corresponding version
			A type
HC-SFS 3000r/min series	HC-SFS53	MR-J4-60_	A8
	HC-SFS103	MR-J4-100_	A8
	HC-SFS153	MR-J4-200_	A8
	HC-SFS203	MR-J4-200_	A8
	HC-SFS353	MR-J4-350_	A8
HC-RFS series	HC-RFS103	MR-J4-200_	A8
	HC-RFS153	MR-J4-200_	A8
	HC-RFS203	MR-J4-350_	A8
	HC-RFS353	MR-J4-500_	(Note 1)
	HC-RFS503	MR-J4-500_	A8
HA-LFS 1000r/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
	HA-LFS702	MR-J4-700_	A8
	HA-LFS11K2	MR-J4-11K_	(Note 1)
	HA-LFS15K2	MR-J4-15K_	(Note 1)
	HA-LFS22K2	MR-J4-22K_	(Note 1)
	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-SFS 2000r/min series	HC-UFS72	MR-J4-70_	(Note 1)
	HC-UFS152	MR-J4-200_	(Note 1)
	HC-UFS202	MR-J4-350_	(Note 1)
	HC-UFS352	MR-J4-500_	(Note 1)
	HC-UFS502	MR-J4-500_	(Note 1)
HC-UFS 3000r/min series	HC-UFS13	MR-J4-10_	A8
	HC-UFS23	MR-J4-20_	A8
	HC-UFS43	MR-J4-40_	A8
	HC-UFS73	MR-J4-70_	A8

Note 1. If using these servo motors, please contact your local sales office.

5.2.1 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 No.



Servo amplifier S/W number: BCD-○○○○○○○ ○○

↓ ↓

S/W number / software version

Part 6
Replacement of Motor

Part 6: Replacement of Motor

1 SERVO MOTOR REPLACEMENT

1.1 Servo Motor Substitute Model and Compatibility

POINT

- Compatibility here means the mounting 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)	Precautions
Small capacity, low inertia HC-KFS series Standard/With brake (B): With brake	HC-KFS053 (B)	HG-KR053 (B)	○	● ◆model has different torque characteristics. 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	○	● 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. For details, see "2.4 Comparison of Actual Reduction Ratios for Geared Servo Motors".
	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 1/11		
	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.

Series	Model	Example of replacement model	Compatibility (○: Compatible)	Precautions
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.

(2) HC-MFS motor

Series	Model	Example of replacement model	Compatibility (○: Compatible)	Precautions
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	○	● 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. For details, see "2.4 Comparison of Actual Reduction Ratios for Geared Servo Motors".
	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)	● 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 1/11		
	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		
	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.

Series	Model	Example of replacement model	Compatibility (○: Compatible)	Precautions
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.

(3) HC-SFS motor

Series	Model	Example of replacement model	Compatibility (○: Compatible)	Precautions
Medium capacity, medium inertia HC-SFS series Standard/With brake (4): 400 V specifications (B): With brake	HC-SFS81 (B)	HG-SR81 (B)	○	● 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	○	● 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.

Series	Model	Example of replacement model	Compatibility (○: Compatible)	Precautions
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	○	● 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)	● 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	○	● 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.

Series	Model	Example of replacement model	Compatibility (○: Compatible)	Precautions
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	○	● 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	○	● 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.

(4) HC-RFS/-LFS/-UFS motor

Series	Model	Example of replacement model	Compatibility (○: Compatible)	Precautions
Medium capacity, ultra-low inertia HC-RFS series (B): With brake	HC-RFS103 (B)	HG-RR103 (B)	○	
	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)	● 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)	● 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.

Series	Model	Example of replacement model	Compatibility (○: Compatible)	Precautions
Medium capacity, ultra-low inertia HC-RFS series with high precision reducer Flange output type (G7) (B): With brake	HC-RFS103 (B) G7 1/5 ◇	HG-SR102 (B) G7 1/5	(Note 1)	● 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)	● 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-J4-70series_, 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)	HG-JR353 (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)	● 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)		
Large capacity, low inertia HA-LFS series (4): 400 V specifications (B): With brake	HA-LFS502	HG-SR502	(Note 1) (Note 3)	● 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. The corresponding servo amplifier for HG-JR11K1M is MR-J4-11K_, for HG-JR15L1M is MR-J4-15K_, and for HG-JR22K1M is MR-J4-22K_.
	HA-LFS702	HG-SR702		
	HA-LFS11K1M (4) (B)	HG-JR11K1M(4)(B)		
	HA-LFS15K2 (4) (B) ◇			
	HA-LFS15K1M (4) (B)	HG-JR15K1M(4)(B)		
	HA-LFS22K2 (4) (B) ◇			
	HA-LFS22K1M (4)	HG-JR22K1M(4)		
	HA-LFS30K2 (4) ◇			

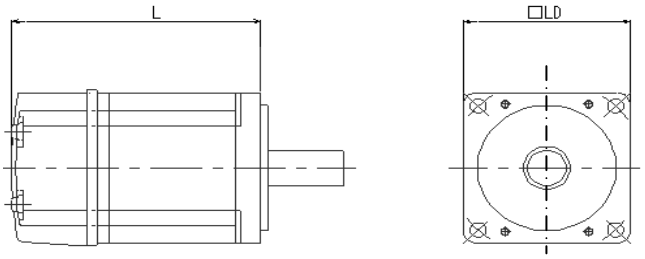
Note 1. For mounting dimensions, see “2.2 Detailed Comparison of Servo Motor Mounting Dimensions” and "2.3 Comparison of Mounting Dimensions for Geared Servo Motors".

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.

3. HG-JR 11 kW and higher have different motor thermal wiring from HA-LFS 11 kW and higher. If using existing encoder cables, contact your local sales office.

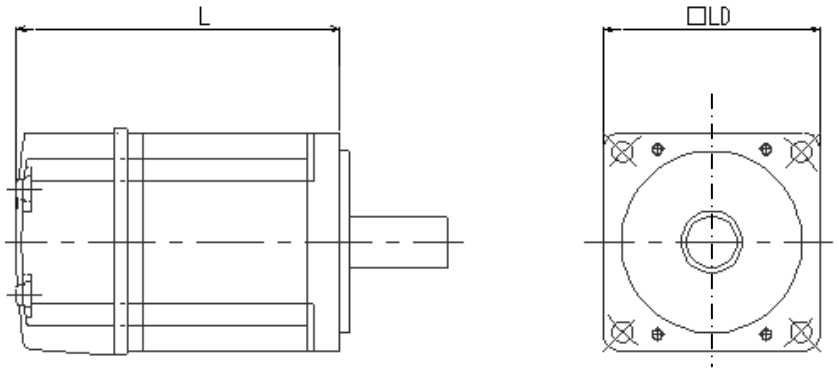
2 COMPARISON OF SERVO MOTOR SPECIFICATIONS

2.1 Comparison of Servo Motor Mounting Dimensions



Target product			Replacement product			Precautions
Model	L	LD	Model	L	LD	
HC-KFS053 (B) HC-MFS053 (B)	81.5 (109.5)	40	HG-KR053 (B) HG-MR053 (B)	66.4 (107)	40	
HC-KFS13 (B) HC-MFS13 (B)	96.5 (124.5)		HG-KR13 (B) HG-MR13 (B)	82.4 (123)		
HC-KFS23 (B) HC-MFS23 (B)	99.5 (131.5)	60	HG-KR23 (B) HG-MR23 (B)	76.6 (113.4)	60	
HC-KFS43 (B) HC-MFS43 (B)	124.5 (156.5)		HG-KR43 (B) HG-MR43 (B)	98.3 (135.1)		
HC-KFS73 (B) HC-MFS73 (B)	142 (177.5)	80	HG-KR73 (B) HG-MR73 (B)	112 (152.3)	80	
HC-KFS46 HC-KFS410	134	60	HG-KR43	98.3	60	
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) HC-SFS524 (B) HC-SFS53 (B)	120 (153)	130	HG-SR52 (B) HG-SR524 (B)	118.5 (153)	130	
HC-SFS102 (B) HC-SFS1024 (B) HC-SFS103 (B)	145 (178)		HG-SR102 (B) HG-SR1024 (B)	132.5 (167)		
HC-SFS152 (B) HC-SFS1524 (B) HC-SFS153 (B)	170 (203)		HG-SR152 (B) HG-SR1524 (B)	146.5 (181)		
HC-SFS202 (B) HC-SFS2024 (B) HC-SFS203 (B)	145 (193)	176	HG-SR202 (B) HG-SR2024 (B)	138.5 (188)	176	
HC-SFS352 (B) HC-SFS3524 (B) HC-SFS353 (B)	187 (235)		HG-SR352 (B) HG-SR3524 (B)	162.5 (212)		
HC-SFS502 (B) HC-SFS5024 (B)	208 (256)		HG-SR502 (B) HG-SR5024 (B)	178.5 (228)		
HC-SFS702 (B) HC-SFS7024 (B)	292 (340)		HG-SR702 (B) HG-SR7024 (B)	218.5 (268)		
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)		

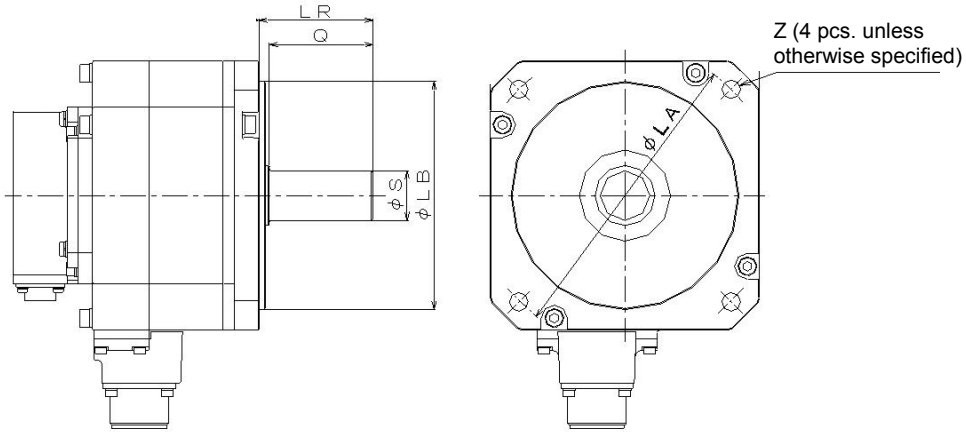
Note 1. As for the dimensions not listed here, refer to the catalog or Instruction Manual. ( ): With brake [Unit: mm]



Target product			Replacement product			Precautions
Model	L	LD	Model	L	LD	
HC-LFS52 (B)	145.5 (178.5)	130	HG-JR73 (B)	145.5 (191)	90	No compatibility in mounting. For details about dimensions, see the following pages.
HC-LFS102 (B)	165.5 (198.5)		HG-JR153 (B)	199.5 (245)		
HC-LFS152 (B)	193 (226)		HG-JR353 (B)	213 (251.5)	130	
HC-LFS202 (B)	200 (248)	176	HG-JR353 (B)	213 (251.5)		
HC-LFS302 (B)	250 (298)		HG-JR503 (B)	267 (305.5)		
HC-UFS13 (B)	70 (100)	60	HG-KR13 (B)	82.4 (123)	40	No compatibility in mounting. For details about dimensions, see the following pages.
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	
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-LFS502	300	200	HG-SR502	178.5	176	No compatibility in mounting. For details about dimensions, see the following pages.
HA-LFS702	342		HG-SR702	218.5		
HA-LFS11K1M (B) HA-LFS11K1M4 (B)	495 (610)	250	HG-JR11K1M (B) HG-JR11K1M4 (B)	339.5 (412)	220	
HA-LFS15K2 (B) HA-LFS15K24 (B)						
HA-LFS15K1M (B) HA-LFS15K1M4 (B)	555 (670)		HG-JR15K1M (B) HG-JR15K1M4 (B)	439.5 (512)		
HA-LFS22K2 (B) HA-LFS22K24 (B)						
HA-LFS22K1M HA-LFS22K1M4	605	280	HG-JR22K1M HG-JR22K1M4	476	250	
HA-LFS30K2	615					
HA-LFS30K24	605					

Note 1. As for the dimensions not listed here, refer to the catalog or Instruction Manual. ( ): With brake [Unit: mm]

2.2 Detailed Comparison of Servo Motor Mounting Dimensions



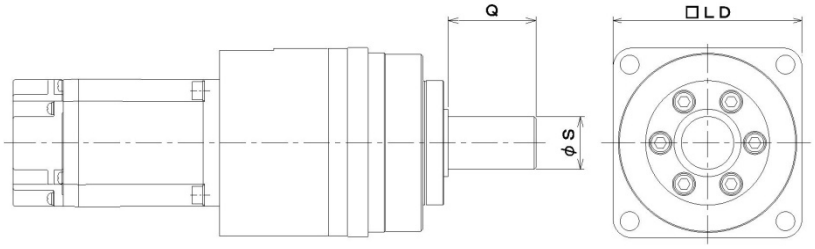
Target product							Replacement product						
Model	LA	LB	LR	Q	S	Z	Model	LA	LB	LR	Q	S	Z
HC-LFS52 (B)	145	110	55	50	24	9	HG-JR73 (B)	100	80	40	30	16	6.6
HC-LFS102 (B)	145	110	55	50	24	9	HG-JR153 (B)	100	80	40	30	16	6.6
HC-LFS152 (B)	145	110	55	50	24	9	HG-JR353 (B)	145	110	55	50	28	9
HC-LFS202 (B)	200	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	-	8	5.8	HG-KR13 (B)	46	30	25	21.5	8	2-4.5
HC-UFS23 (B)	90	70	30	-	14	6.6	HG-KR23 (B)	70	50	30	26	14	5.8
HC-UFS43 (B)	90	70	30	-	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-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-LFS11K1M (B) HA-LFS11K1M4 (B) 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-LFS15K1M (B) HA-LFS15K1M4 (B) 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-LFS22K1M HA-LFS22K1M4 HA-LFS30K2 HA-LFS30K24	300	250	140	-	60	19	HG-JR22K1M HG-JR22K1M4	265	230	140	130	65	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.

2.3 Comparison of Mounting Dimensions for Geared Servo Motors

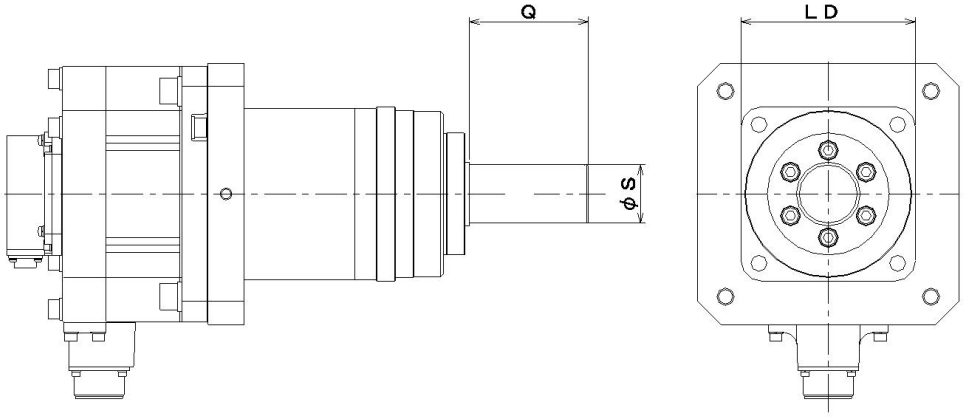
(For high precision applications: HC-KFS, MFS_G2 → HG-KR_G7)



Output (W)	HC-KFS and HC-MFS series (G2)				HG-KR series (G7)			
	Reduction ratio	Shaft length Q	Shaft diameter S	Flange LD	Reduction ratio	Shaft length Q	Shaft diameter S	Flange LD
50	1/5	25	16	70	1/5	28	16	60
	1/9	25	16	70	1/11	28	16	60
	1/20	25	16	70	1/21	28	16	60
	1/29	25	16	70	1/33	28	16	60
100	1/5	25	16	70	1/5	28	16	60
	1/9	25	16	70	1/11	28	16	60
	1/20	35	20	85	1/21	28	16	60
	1/29	35	20	85	1/33	42	25	90
200	1/5	25	16	70	1/5	28	16	60
	1/9	35	20	85	1/11	28	16	60
	1/20	40	25	100	1/21	42	25	90
	1/29	40	25	100	1/33	42	25	90
400	1/5	35	20	85	1/5	28	16	60
	1/9	40	25	100	1/11	42	25	90
	1/20	50	32	115	1/21	42	25	90
	1/29	50	32	115	1/33	82	40	120
750	1/5	40	25	100	1/5	42	25	90
	1/9	50	32	115	1/11	42	25	90
	1/20	60	40	130	1/21	82	40	120
	1/29	60	40	130	1/33	82	40	120

Note 1. As for the dimensions not listed here, refer to the catalog or Instruction Manual. [Unit: mm]

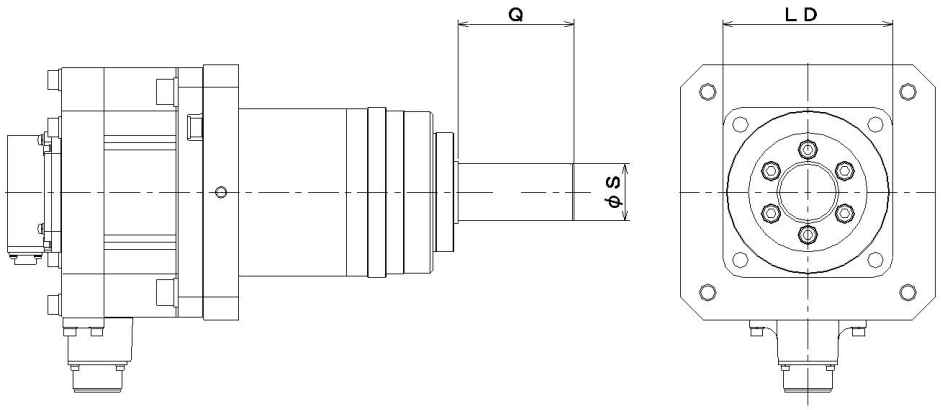
(For high precision applications: HC-SFS_G2 → HG-SR_G7)



Output (kW)	HC-SFS series (G2)				HG-SR series (G7)			
	Reduction ratio	Shaft length Q	Shaft diameter S	Flange LD	Reduction ratio	Shaft length Q	Shaft diameter S	Flange LD
0.5	1/5	55	35	□140	1/5	42	25	□90
	1/9	55	35	□140	1/11	42	25	□90
	1/20	55	35	□140	1/21	82	40	□120
	1/29	75	50	ϕ245	1/33	82	40	□120
	1/45	75	50	ϕ245	1/45	82	40	□120
1.0	1/5	55	35	□140	1/5	42	25	□90
	1/9	55	35	□140	1/11	82	40	□120
	1/20	75	50	ϕ245	1/21	82	40	□120
	1/29	75	50	ϕ245	1/33	82	50	□170
	1/45	90	60	ϕ310	1/45	82	50	□170
1.5	1/5	55	35	□140	1/5	42	25	□90
	1/9	75	50	ϕ245	1/11	82	40	□120
	1/20	75	50	ϕ245	1/21	82	50	□170
	1/29	90	60	ϕ310	1/33	82	50	□170
	1/45	90	60	ϕ310	1/45	82	50	□170
2.0	1/5	75	50	ϕ245	1/5	82	40	□120
	1/9	75	50	ϕ245	1/11	82	40	□120
	1/20	90	60	ϕ310	1/21	82	50	□170
	1/29	90	60	ϕ310	1/33	82	50	□170
	1/45	90	60	ϕ310	1/45	82	50	□170
3.5	1/5	90	60	ϕ310	1/5	82	40	□120
	1/9	90	60	ϕ310	1/11	82	50	□170
	1/20	90	60	ϕ310	1/21	82	50	□170
5.0	1/5	90	60	ϕ310	1/5	82	50	□170
	1/9	90	60	ϕ310	1/11	82	50	□170
7.0	1/5	90	60	ϕ310	1/5	82	50	□170

Note 1. As for the dimensions not listed here, refer to the catalog or Instruction Manual. [Unit: mm]

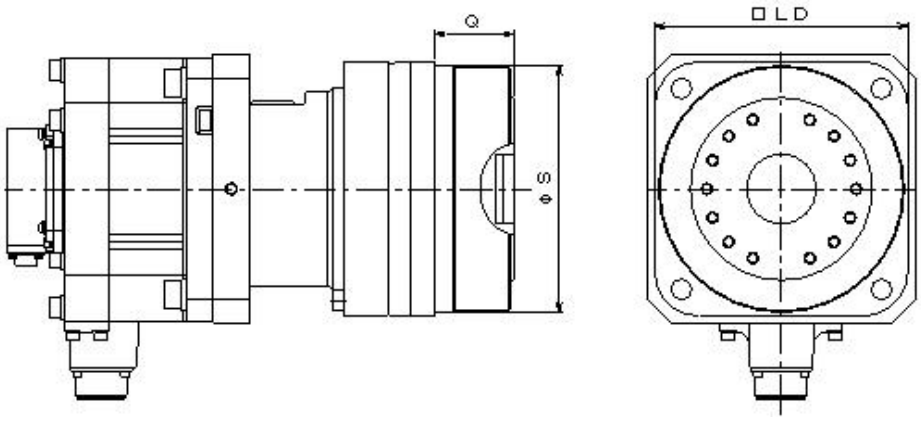
(For high precision applications: HC-RFS_G2 → HG-SR_G7)



Output (kW)	HC-RFS series (G2)				HG-SR series (G7)			
	Reduction ratio	Shaft length Q	Shaft diameter S	Flange LD	Reduction ratio	Shaft length Q	Shaft diameter S	Flange LD
1.0	1/5	55	35	□140	1/5	42	25	□90
	1/9	55	35	□140	1/11	82	40	□120
	1/20	75	50	ϕ245	1/21	82	40	□120
	1/29	75	50	ϕ245	1/33	82	50	□170
	1/45	75	50	ϕ245	1/45	82	50	□170
1.5	1/5	55	35	□140	1/5	42	25	□90
	1/9	75	50	ϕ245	1/11	82	40	□120
	1/20	75	50	ϕ245	1/21	82	50	□170
	1/29	75	50	ϕ245	1/33	82	50	□170
	1/45	90	60	ϕ310	1/45	82	50	□170
2.0	1/5	55	35	□140	1/5	82	40	□120
	1/9	75	50	ϕ245	1/11	82	40	□120
	1/20	75	50	ϕ245	1/21	82	50	□170
	1/29	90	60	ϕ310	1/33	82	50	□170
	1/45	90	60	ϕ310	1/45	82	50	□170
3.5	1/5	75	50	ϕ245	1/5	82	40	□120
	1/9	90	60	ϕ310	1/11	82	50	□170
	1/20	90	60	ϕ310	1/21	82	50	□170
	1/29	90	60	ϕ310	-	-	-	-
5.0	1/5	90	60	ϕ310	1/5	82	50	□170
	1/9	90	60	ϕ310	1/11	82	50	□170
	1/20	90	60	ϕ310	-	-	-	-

Note 1. As for the dimensions not listed here, refer to the catalog or Instruction Manual. [Unit: mm]

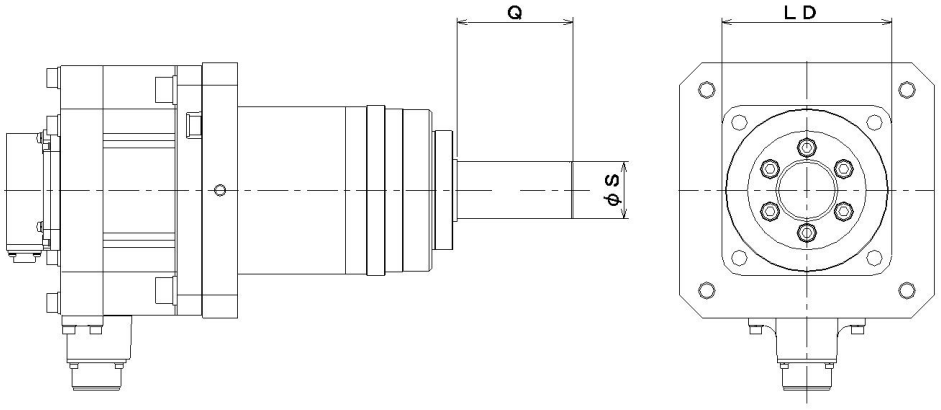
(For high precision applications: HC-RFS_G5 → HG-SR_G5)



Output (kW)	HC-RFS series (G5)				HG-SR series (G5)			
	Reduction ratio	Q	S	Flange LD	Reduction ratio	Q	S	Flange LD
1.0	1/5	27	85	90	1/5	27	85	90
	1/11	27	85	90	1/11	35	115	120
	1/21	35	115	120	1/21	35	115	120
	1/33	35	115	120	1/33	53	165	170
	1/45	53	165	170	1/45	53	165	170
1.5	1/5	27	85	90	1/5	27	85	90
	1/11	35	115	120	1/11	35	115	120
	1/21	35	115	120	1/21	53	165	170
	1/33	53	165	170	1/33	53	165	170
	1/45	53	165	170	1/45	53	165	170
2.0	1/5	27	85	90	1/5	35	115	120
	1/11	35	115	120	1/11	35	115	120
	1/21	53	165	170	1/21	53	165	170
	1/33	53	165	170	1/33	53	165	170
	1/45	53	165	170	1/45	53	165	170
3.5	1/5	35	115	120	1/5	35	115	120
	1/11	35	115	120	1/11	53	165	170
	1/21	53	165	170	1/21	53	165	170
	1/33	53	165	170	-	-	-	-
5.0	1/5	35	115	120	1/5	53	165	170
	1/11	53	165	170	1/11	53	165	170
	1/21	53	165	170	-	-	-	-

Note 1. As for the dimensions not listed here, refer to the catalog or Instruction Manual. [Unit: mm]

(For high precision applications: HG-RFS_G7 → HG-SR_G7)



Output (kW)	HC-RFS series (G7)				HG-SR series (G7)			
	Reduction ratio	Shaft length Q	Shaft diameter S	Flange LD	Reduction ratio	Shaft length Q	Shaft diameter S	Flange LD
1.0	1/5	42	25	90	1/5	42	25	90
	1/11	42	25	90	1/11	82	40	120
	1/21	82	40	120	1/21	82	40	120
	1/33	82	40	120	1/33	82	50	170
	1/45	82	50	170	1/45	82	50	170
1.5	1/5	42	25	90	1/5	42	25	90
	1/11	82	40	120	1/11	82	40	120
	1/21	82	40	120	1/21	82	50	170
	1/33	82	50	170	1/33	82	50	170
	1/45	82	50	170	1/45	82	50	170
2.0	1/5	42	25	90	1/5	82	40	120
	1/11	82	40	120	1/11	82	40	120
	1/21	82	50	170	1/21	82	50	170
	1/33	82	50	170	1/33	82	50	170
	1/45	82	50	170	1/45	82	50	170
3.5	1/5	82	40	120	1/5	82	40	120
	1/11	82	40	120	1/11	82	50	170
	1/21	82	50	170	1/21	82	50	170
	1/33	82	50	170	-	-	-	-
5.0	1/5	82	40	120	1/5	82	50	170
	1/11	82	50	170	1/11	82	50	170
	1/21	82	50	170	-	-	-	-

Note 1. As for the dimensions not listed here, refer to the catalog or Instruction Manual. [Unit: mm]

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, MFS_G1 → HG-KR_G1)

Output (W)	Reduction ratio	Actual reduction ratio	
		HC-KFS and HC-MFS series	HG-KR series
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. Dimensions with differences are shown with shading.

2.5 Comparison of Moment of Inertia

(1) HC-KFS/-MFS/-SFS motor

Series	Target product			Replacement product		
	Model	Moment of inertia $\times 10^{-4}$kg·m^2	Recommended load Moment of inertia ratio	Model	Moment of inertia $\times 10^{-4}$kg·m^2	Recommended load Moment of inertia ratio
Small capacity, low inertia	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, ultra-low inertia	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)	0.030 (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)	0.600 (0.725)		HG-MR73 (B)	0.586 (0.694)	
Medium capacity, medium inertia	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) HC-SFS524 (B) HC-SFS53 (B)	6.6 (8.6)		HG-SR52 (B) HG-SR524 (B)	7.26 (9.48)	
	HC-SFS102 (B) HC-SFS1024 (B) HC-SFS103 (B)	13.7 (15.7)		HG-SR102 (B) HG-SR1024 (B)	11.6 (13.8)	17 times or less
	HC-SFS152 (B) HC-SFS1524 (B) HC-SFS153 (B)	20.0 (22.0)		HG-SR152 (B) HG-SR1524 (B)	16.0 (18.2)	
	HC-SFS202 (B) HC-SFS2024 (B) HC-SFS203 (B)	42.5 (52.5)		HG-SR202 (B) HG-SR2024 (B)	46.8 (56.5)	15 times or less
	HC-SFS352 (B) HC-SFS3524 (B) HC-SFS353 (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)	

Note 1. As for the motor specifications not listed here, refer to the catalog or Instruction Manual. ( ): With brake
If the recommended load to motor inertia ratio with brake is exceeded, please ask the sales contact.

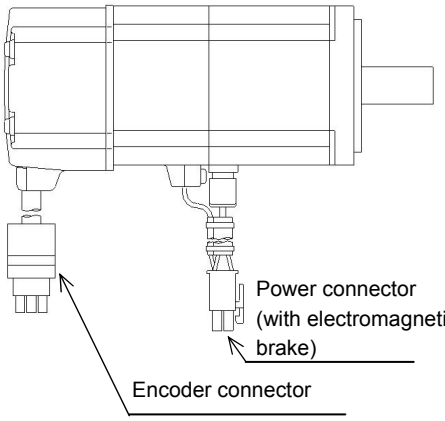
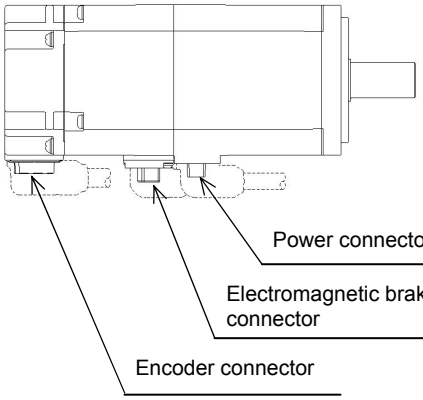
(2) HC-RFS/-LFS/-UFS motor

Series	Target product			Replacement product		
	Model	Moment of inertia $\times 10^{-4}$kg·m^2	Recommended load Moment of inertia ratio	Model	Moment of inertia $\times 10^{-4}$kg·m^2	Recommended load Moment of inertia ratio
Medium capacity, ultra-low inertia	HC-RFS103 (B)	1.5 (1.85)	5 times or less	HG-RR103 (B)	1.5 (1.85)	5 times or less
	HC-RFS153 (B)	1.9 (2.25)		HG-RR153 (B)	1.9 (2.25)	
	HC-RFS203 (B)	2.3 (2.65)		HG-RR203 (B)	2.3 (2.65)	
	HC-RFS353 (B)	8.6 (11.8)		HG-RR353 (B)	8.3 (11.8)	
	HC-RFS503 (B)	12.0 (15.5)		HG-RR503 (B)	12.0 (15.5)	
Medium capacity, low inertia	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)		HG-JR353 (B)	13.2 (15.4)	
	HC-LFS302 (B)	36 (46)		HG-JR503 (B)	19 (21.2)	
Small capacity flat type	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-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)	
High capacity low inertia	HA-LFS502	74.0	10 times or less	HG-SR502	99.7	10 times or less
	HA-LFS702	94.2		HG-SR702	151	
	HA-LFS11K1M (B) HA-LFS11K1M4 (B)	220 (293)		HG-JR11K1M (B) HG-JR11K1M4 (B)	220 (240)	
	HA-LFS15K2 (B) HA-LFS15K24 (B)					
	HA-LFS15K1M (B) HA-LFS15K1M4 (B)	295 (369)		HG-JR15K1M (B) HG-JR15K1M4 (B)	315 (336)	
	HA-LFS22K2 (B) HA-LFS22K24 (B)					
	HA-LFS22K1M HA-LFS22K1M4	550		HG-JR22K1M HG-JR22K1M4	489	
	HA-LFS30K2 HA-LFS30K24					

Note 1. As for the motor specifications not listed here, refer to the catalog or Instruction Manual. ( ): With brake
If the recommended load to motor inertia ratio with brake is exceeded, please ask the sales contact.

2.6 Comparison of Servo Motor Connector Specifications

(1) HC-KFS/-MFS/-UFS motor

<table>
<tr><td></td><td>MR-J2S series (HC-KFS/MFS/UFS)</td><td>MR-J4 series (HG-KR/MR)</td></tr>
<tr><td>Motor appearance</td><td> 
</td><td> 
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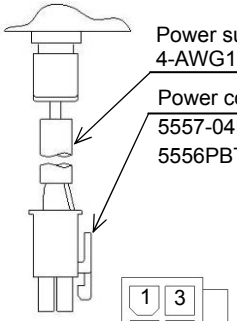
<tr><td>Power connector</td><td> 

Power connector pin assignment
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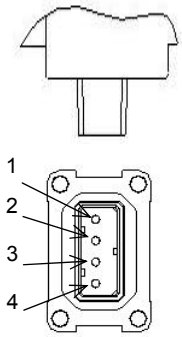
<tr><th>Pin number</th><th>Signal name</th></tr>
<tr><td>1</td><td>U</td></tr>
<tr><td>2</td><td>V</td></tr>
<tr><td>3</td><td>W</td></tr>
<tr><td>4</td><td>Earth</td></tr>
</table></td><td> 

Power connector pin assignment
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<tr><th>Pin number</th><th>Signal name</th></tr>
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<tr><td>2</td><td>U</td></tr>
<tr><td>3</td><td>V</td></tr>
<tr><td>4</td><td>W</td></tr>
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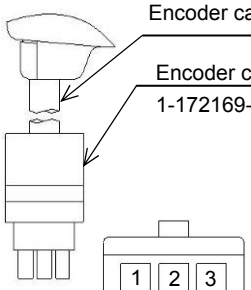
<tr><td>Encoder connector</td><td> 

Encoder connector pin assignment
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<tr><td>2</td><td>MRR</td></tr>
<tr><td>3</td><td>BAT</td></tr>
<tr><td>4</td><td>MD</td></tr>
<tr><td>5</td><td>MDR</td></tr>
<tr><td>6</td><td></td></tr>
<tr><td>7</td><td>P5</td></tr>
<tr><td>8</td><td>LG</td></tr>
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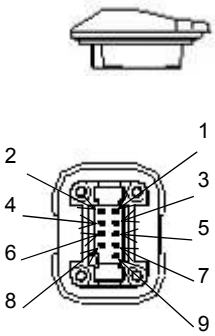
</table></td><td> 

Encoder connector pin assignment
<table>
<tr><th>Pin number</th><th>Signal name</th></tr>
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<tr><td>3</td><td>P5</td></tr>
<tr><td>4</td><td>MRR</td></tr>
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<tr><td>6</td><td>LG</td></tr>
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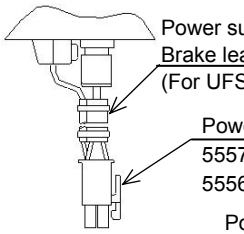
<tr><td>Electromagnetic brake connector
(Power connector)</td><td> 

Power connector (with brake) pin assignment
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<tr><th>Pin number</th><th>Signal name</th></tr>
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<tr><td>2</td><td>V</td></tr>
<tr><td>3</td><td>W</td></tr>
<tr><td>4</td><td>Earth</td></tr>
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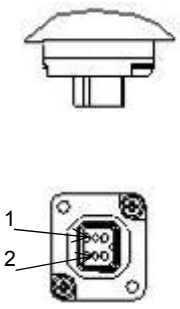
</table></td><td> 

Electromagnetic brake connector pin assignment
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<tr><th>Pin number</th><th>Signal name</th></tr>
<tr><td>1</td><td>B1</td></tr>
<tr><td>2</td><td>B2</td></tr>
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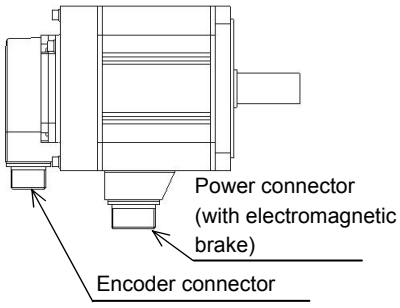
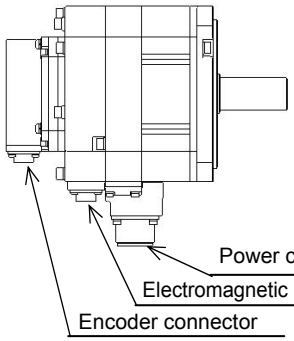
</table>

(2) HC-SFS motor

<table>
<tr><td>Motor appearance</td><td>MR-J2S series (HC-SFS)
Target models: HC-SFS81 (B)
HC-SFS52 (4) (B) to HC-SFS152 (4) (B)
HC-SFS53 (B) to HC-SFS153 (B)
 
</td><td>MR-J4 series (HG-SR)
Target models: HG-SR81 (B)
HG-SR52 (4) (B) to HG-SR152 (4) (B)
 
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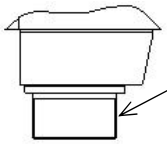
<tr><td>Power connector</td><td> 

Power connector
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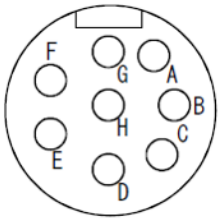
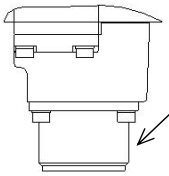
 

<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Earth</td></tr><tr><td>E</td><td></td></tr><tr><td>F</td><td></td></tr><tr><td>G</td><td></td></tr><tr><td>H</td><td></td></tr></table></td><td> 

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 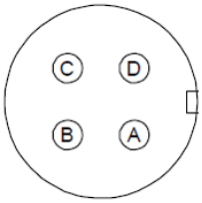

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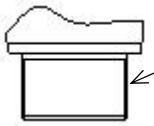
<tr><td>Encoder connector</td><td> 

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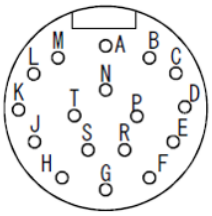
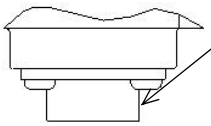
 

<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>MD</td></tr><tr><td>B</td><td>MDR</td></tr><tr><td>C</td><td>MR</td></tr><tr><td>D</td><td>MRR</td></tr><tr><td>E</td><td></td></tr><tr><td>F</td><td>BAT</td></tr><tr><td>G</td><td>LG</td></tr><tr><td>H</td><td></td></tr><tr><td>J</td><td></td></tr><tr><td>K</td><td></td></tr><tr><td>L</td><td></td></tr><tr><td>M</td><td></td></tr><tr><td>N</td><td>SHD</td></tr><tr><td>P</td><td></td></tr><tr><td>R</td><td>LG</td></tr><tr><td>S</td><td>P5</td></tr><tr><td>T</td><td></td></tr></table></td><td> 

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 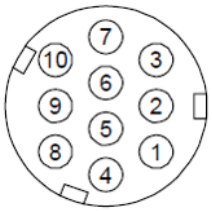

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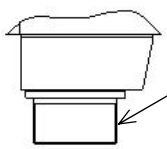
(Power connector)</td><td> 

Power connector (with brake)
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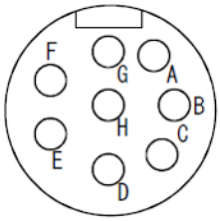
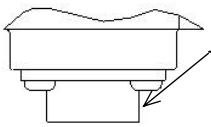
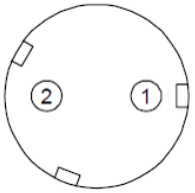
 

<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Earth</td></tr><tr><td>E</td><td></td></tr><tr><td>F</td><td></td></tr><tr><td>G</td><td>B1</td></tr><tr><td>H</td><td>B2</td></tr></table></td><td> 

Electromagnetic brake
connector pin assignment
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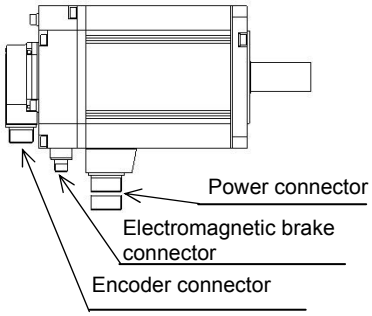
Target models: HC-SFS121 (B) to HC-SFS301 (B)
HC-SFS202 (4) (B) to HC-SFS702 (4) (B)
HC-SFS203 (B), HC-SFS353 (B)
 
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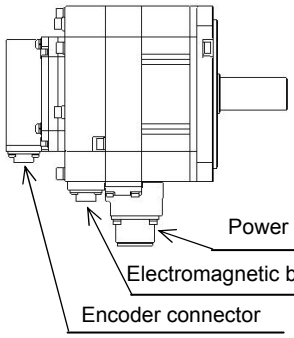
HG-SR202 (4) (B) to HG-SR702 (4) (B)
 
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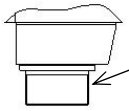
<tr><td>Power connector</td><td> 
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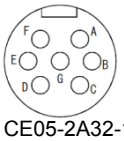
CE05-2A32-17P (7 kW)
CE05-2A24-10P
 
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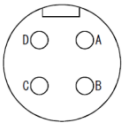
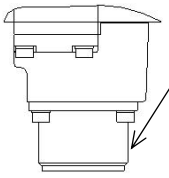
 
Power connector
pin assignment
<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Earth</td></tr><tr><td>E</td><td></td></tr><tr><td>F</td><td></td></tr><tr><td>G</td><td></td></tr><tr><td>H</td><td></td></tr></table></td><td> 
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 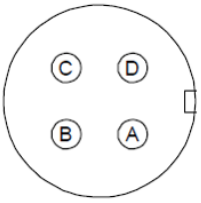
Power connector
pin assignment
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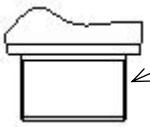
<tr><td>Encoder connector</td><td> 
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MS3102A20-29P
Encoder connector
pin assignment
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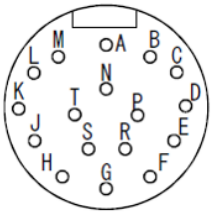
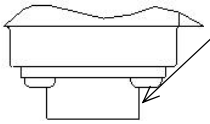
  </td><td> 
Encoder connector
CMV1-R10P
Encoder connector
pin assignment
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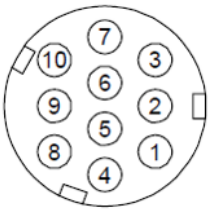
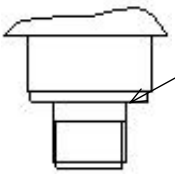
  </td></tr>
<tr><td>Electromagnetic brake connector</td><td> 
Electromagnetic brake connector
MS3102A10SL-4P
Electromagnetic brake
connector
pin assignment
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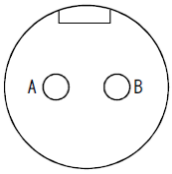
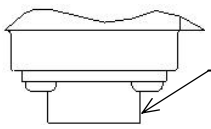
  </td><td> 
Brake connector
CMV1-R2P
Electromagnetic brake connector
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 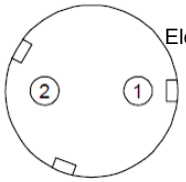 </td></tr>
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(3) HC-RFS motor

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 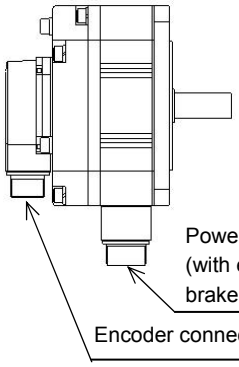
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 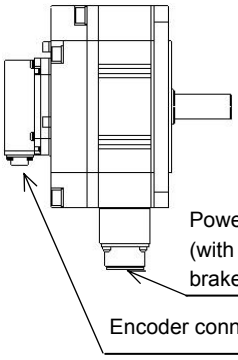
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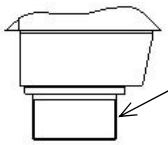
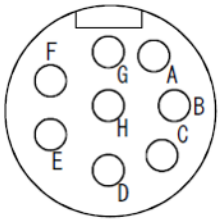
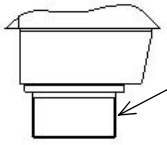
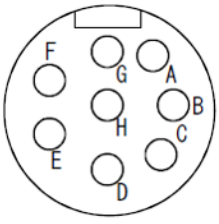
<tr><td>Power connector</td><td> 
Power connector
CE05-2A22-23P
Power connector
pin assignment
 

<table><tr><th>Pin number</th><th>Signal name</th></tr><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><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></table></td><td> 
Power connector
CE05-2A22-23P
Power connector
pin assignment
 

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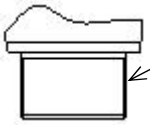
<tr><td>Encoder connector</td><td> 
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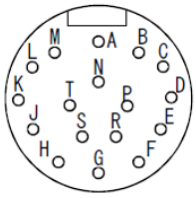
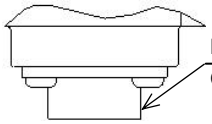
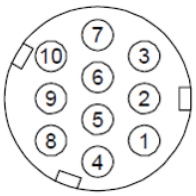
MS3102A20-29P
Encoder connector
pin assignment
 

<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>MD</td></tr><tr><td>B</td><td>MDR</td></tr><tr><td>C</td><td>MR</td></tr><tr><td>D</td><td>MRR</td></tr><tr><td>E</td><td></td></tr><tr><td>F</td><td>BAT</td></tr><tr><td>G</td><td>LG</td></tr><tr><td>H</td><td></td></tr><tr><td>J</td><td></td></tr><tr><td>K</td><td></td></tr><tr><td>L</td><td></td></tr><tr><td>M</td><td></td></tr><tr><td>N</td><td>SHD</td></tr><tr><td>P</td><td></td></tr><tr><td>R</td><td>LG</td></tr><tr><td>S</td><td>P5</td></tr><tr><td>T</td><td></td></tr></table></td><td> 
Encoder connector
CMV1-R10P
Encoder connector
pin assignment
 

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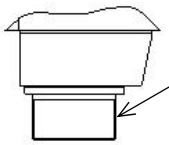
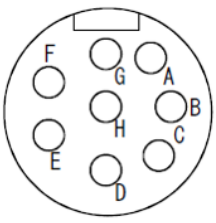
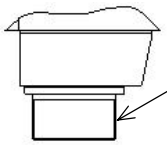
(Power connector)</td><td> 
Power connector
CE05-2A22-23P
Power connector (with brake)
pin assignment
 

<table><tr><th>Pin number</th><th>Signal name</th></tr><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><tr><td>E</td><td></td></tr><tr><td>F</td><td></td></tr><tr><td>G</td><td>B1</td></tr><tr><td>H</td><td>B2</td></tr></table></td><td> 
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CE05-2A22-23P
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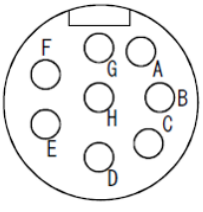
pin assignment
 

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 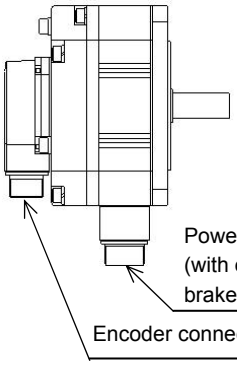
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 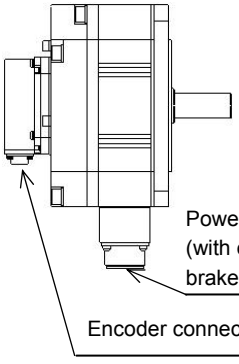
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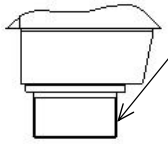
<tr><td>Power connector</td><td> 

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 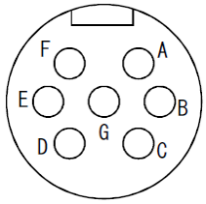

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 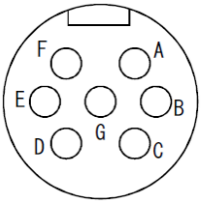

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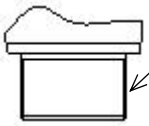
<tr><td>Encoder connector</td><td> 

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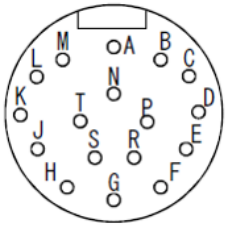
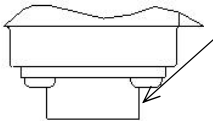
 

<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>MD</td></tr><tr><td>B</td><td>MDR</td></tr><tr><td>C</td><td>MR</td></tr><tr><td>D</td><td>MRR</td></tr><tr><td>E</td><td></td></tr><tr><td>F</td><td>BAT</td></tr><tr><td>G</td><td>LG</td></tr><tr><td>H</td><td></td></tr><tr><td>J</td><td></td></tr><tr><td>K</td><td></td></tr><tr><td>L</td><td></td></tr><tr><td>M</td><td></td></tr><tr><td>N</td><td>SHD</td></tr><tr><td>P</td><td></td></tr><tr><td>R</td><td>LG</td></tr><tr><td>S</td><td>P5</td></tr><tr><td>T</td><td></td></tr></table></td><td> 

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 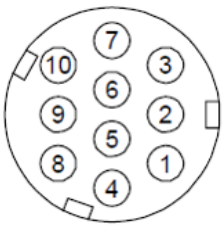

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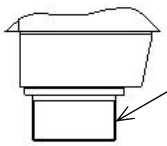
(Power connector)</td><td> 

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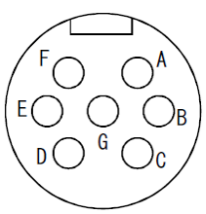
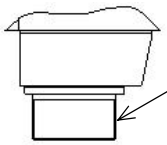
 

<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Earth</td></tr><tr><td>E</td><td>B1</td></tr><tr><td>F</td><td>B2</td></tr><tr><td>G</td><td></td></tr></table></td><td> 

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 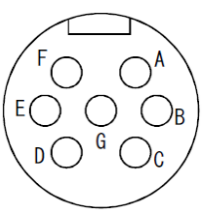

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(4) HC-LFS motor

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 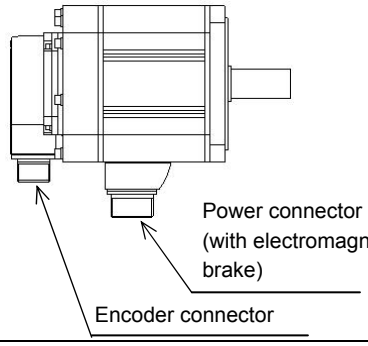
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 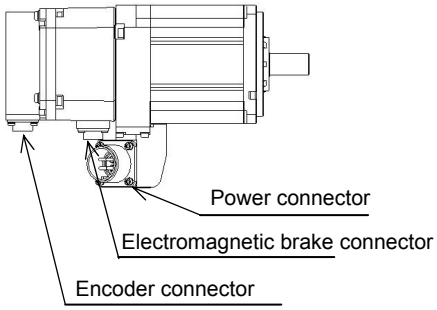
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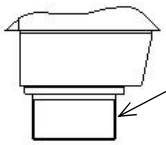
<tr><td>Power connector</td><td> 

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 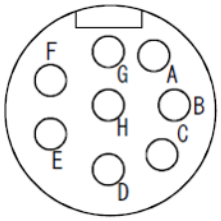

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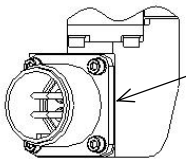
</table></td><td> 

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 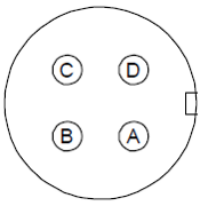

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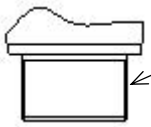
<tr><td>Encoder connector</td><td> 

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 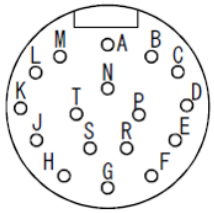

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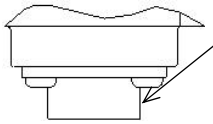
</table></td><td> 

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 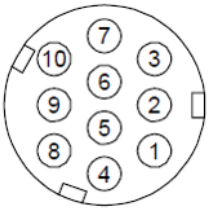

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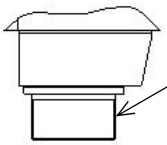
(Power connector)</td><td> 

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 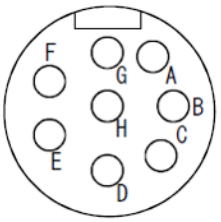

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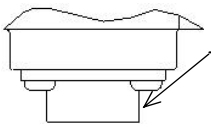
</table></td><td> 

Electromagnetic brake
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 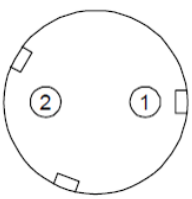

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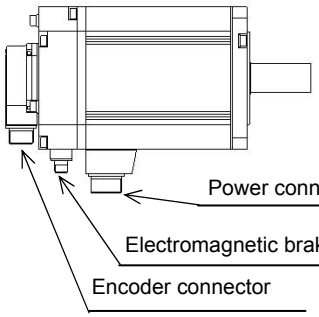
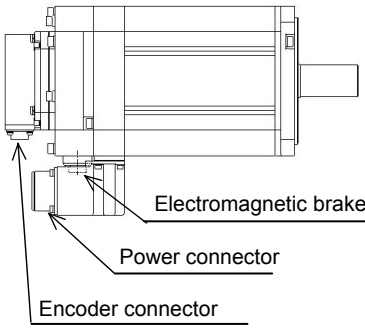
<tr><td>Motor appearance</td><td> 
</td><td> 
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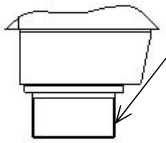
<tr><td>Power connector</td><td> 

Power connector
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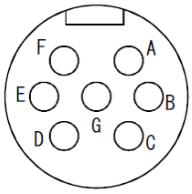
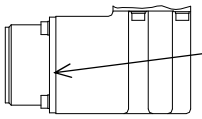
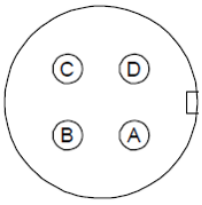
 

<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Earth</td></tr><tr><td>E</td><td></td></tr><tr><td>F</td><td></td></tr><tr><td>G</td><td></td></tr><tr><td>H</td><td></td></tr></table></td><td> 

Power connector
pin assignment
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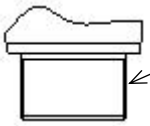
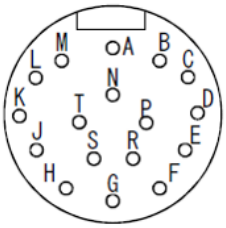
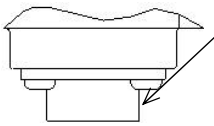
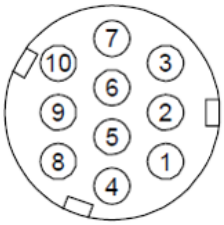
<tr><td>Encoder connector</td><td> 

Encoder connector
pin assignment
 

<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>MD</td></tr><tr><td>B</td><td>MDR</td></tr><tr><td>C</td><td>MR</td></tr><tr><td>D</td><td>MRR</td></tr><tr><td>E</td><td></td></tr><tr><td>F</td><td>BAT</td></tr><tr><td>G</td><td>LG</td></tr><tr><td>H</td><td></td></tr><tr><td>J</td><td></td></tr><tr><td>K</td><td></td></tr><tr><td>L</td><td></td></tr><tr><td>M</td><td></td></tr><tr><td>N</td><td>SHD</td></tr><tr><td>P</td><td></td></tr><tr><td>R</td><td>LG</td></tr><tr><td>S</td><td>P5</td></tr><tr><td>T</td><td></td></tr></table></td><td> 

Encoder connector
pin assignment
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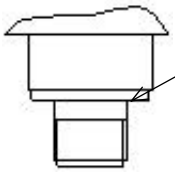
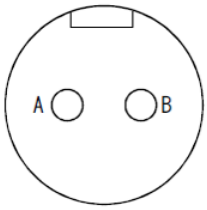
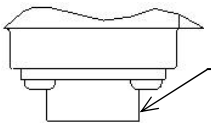
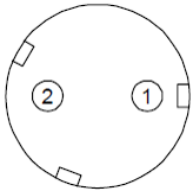
<tr><td>Electromagnetic brake connector</td><td> 

Electromagnetic brake
connector
pin assignment
<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>B1</td></tr><tr><td>B</td><td>B2</td></tr></table></td><td> 

Electromagnetic brake
connector
pin assignment
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(5) HC-UFS motor

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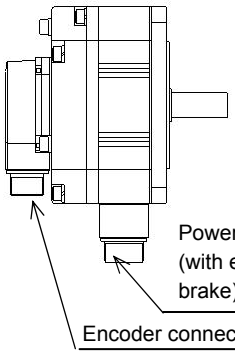
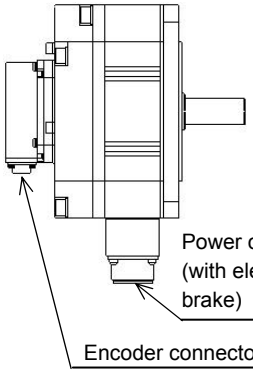
Target models: HG-UR72 (B), UR152 (B)</td></tr>
<tr><td>Motor appearance</td><td> 
</td><td> 
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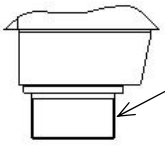
<tr><td>Power connector</td><td> 

Power connector
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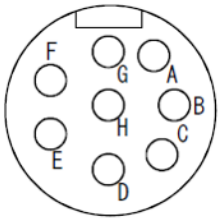

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<tr><td>C</td><td>W</td></tr>
<tr><td>D</td><td>Earth</td></tr>
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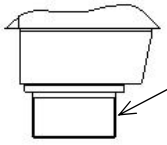
</table></td><td> 

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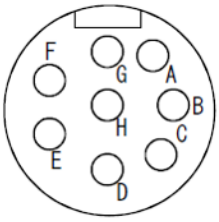
pin assignment


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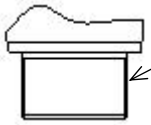
<tr><td>Encoder connector</td><td> 

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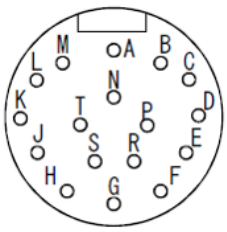

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<tr><td>M</td><td></td></tr>
<tr><td>N</td><td>SHD</td></tr>
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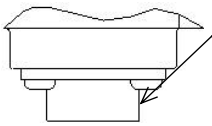
</table></td><td> 

Encoder connector
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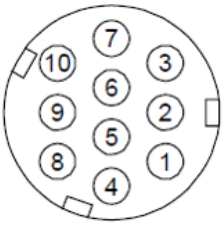

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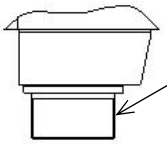
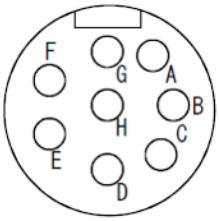
(Power connector)</td><td> 

Power connector (with brake)
pin assignment


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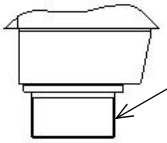
</table></td><td> 

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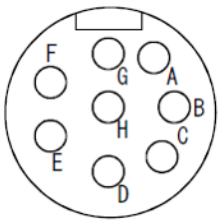

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 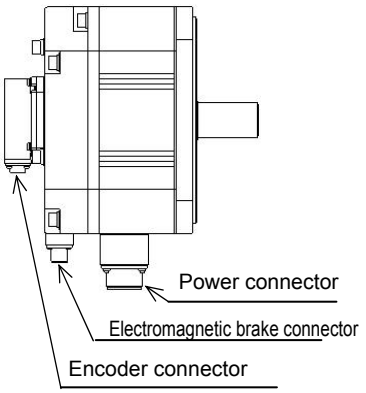
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 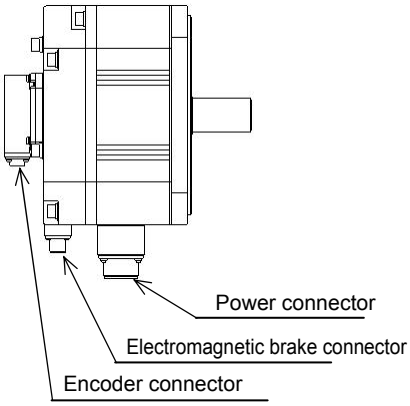
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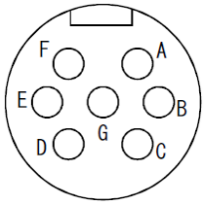
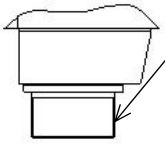
Power connector
pin assignment
 

<table><tr><th>Pin number</th><th>Signal name</th></tr><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><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></table></td><td> 

Power connector
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 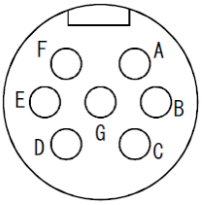

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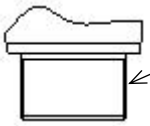
<tr><td>Encoder connector</td><td> 

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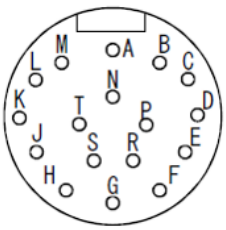
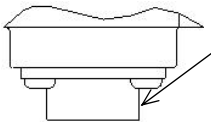
 

<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>MD</td></tr><tr><td>B</td><td>MDR</td></tr><tr><td>C</td><td>MR</td></tr><tr><td>D</td><td>MRR</td></tr><tr><td>E</td><td></td></tr><tr><td>F</td><td>BAT</td></tr><tr><td>G</td><td>LG</td></tr><tr><td>H</td><td></td></tr><tr><td>J</td><td></td></tr><tr><td>K</td><td></td></tr><tr><td>L</td><td></td></tr><tr><td>M</td><td></td></tr><tr><td>N</td><td>SHD</td></tr><tr><td>P</td><td></td></tr><tr><td>R</td><td>LG</td></tr><tr><td>S</td><td>P5</td></tr><tr><td>T</td><td></td></tr></table></td><td> 

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 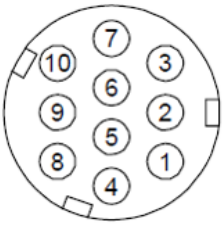

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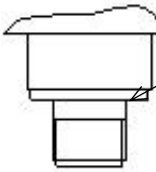
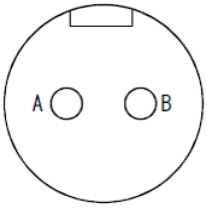
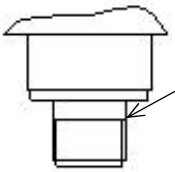
<tr><td>Electromagnetic brake connector</td><td> 

Electromagnetic brake
connector
pin assignment
 

<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>B1</td></tr><tr><td>B</td><td>B2</td></tr></table></td><td> 

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 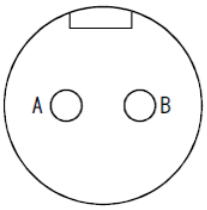

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(6) HA-LFS motor

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 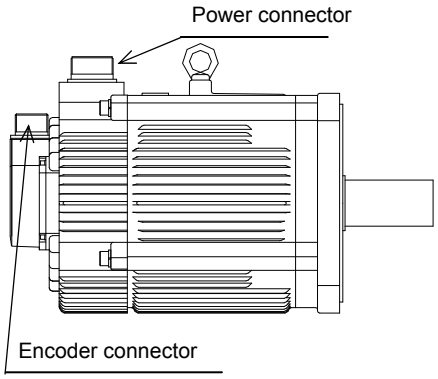
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 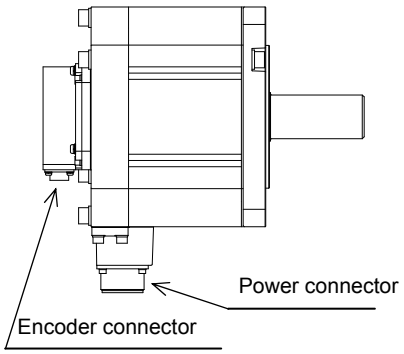
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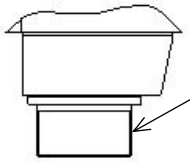
<tr><td>Power connector</td><td> 
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 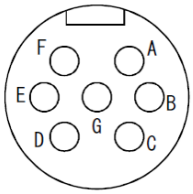

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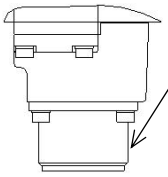
</table></td><td> 
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 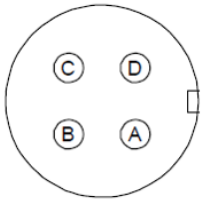

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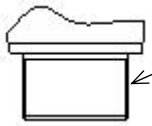
<tr><td>Encoder connector</td><td> 
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 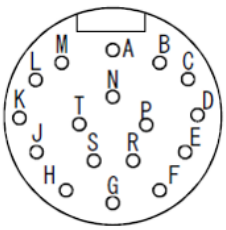

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<tr><td>F</td><td>BAT</td></tr>
<tr><td>G</td><td>LG</td></tr>
<tr><td>H</td><td></td></tr>
<tr><td>J</td><td></td></tr>
<tr><td>K</td><td></td></tr>
<tr><td>L</td><td></td></tr>
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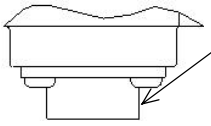
</table></td><td> 
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 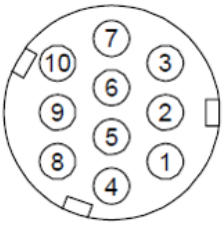

Encoder connector
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 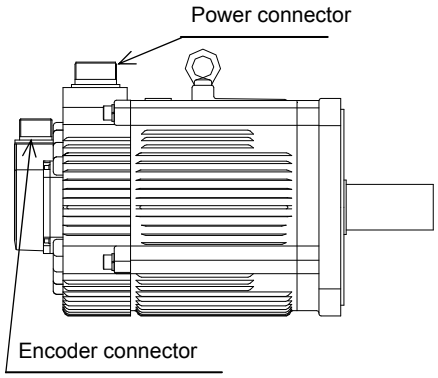
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 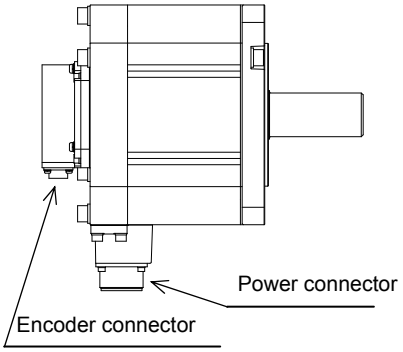
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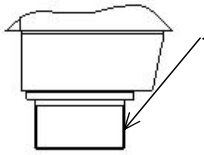
<tr><td>Power connector</td><td> 

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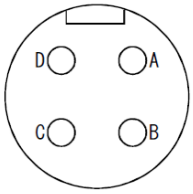
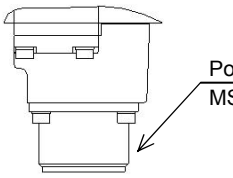
 

<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Earth</td></tr></table></td><td> 

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 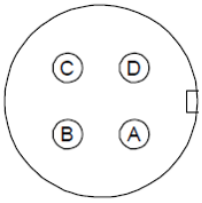

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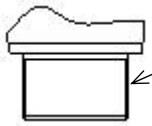
<tr><td>Encoder connector</td><td> 

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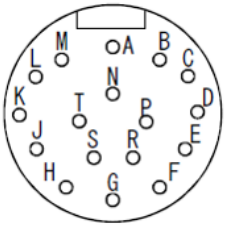
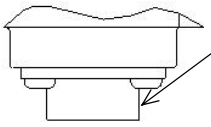
 

<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>MD</td></tr><tr><td>B</td><td>MDR</td></tr><tr><td>C</td><td>MR</td></tr><tr><td>D</td><td>MRR</td></tr><tr><td>E</td><td></td></tr><tr><td>F</td><td>BAT</td></tr><tr><td>G</td><td>LG</td></tr><tr><td>H</td><td></td></tr><tr><td>J</td><td></td></tr><tr><td>K</td><td></td></tr><tr><td>L</td><td></td></tr><tr><td>M</td><td></td></tr><tr><td>N</td><td>SHD</td></tr><tr><td>P</td><td></td></tr><tr><td>R</td><td>LG</td></tr><tr><td>S</td><td>P5</td></tr><tr><td>T</td><td></td></tr></table></td><td> 

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 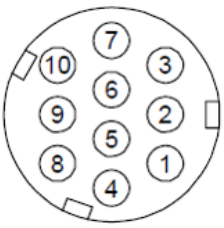

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HA-LFS15K2 (4) (B), LFS22K2 (4) (B)</td><td>MR-J4 series (HG-JR)
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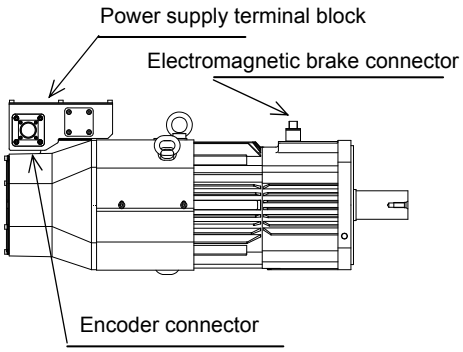
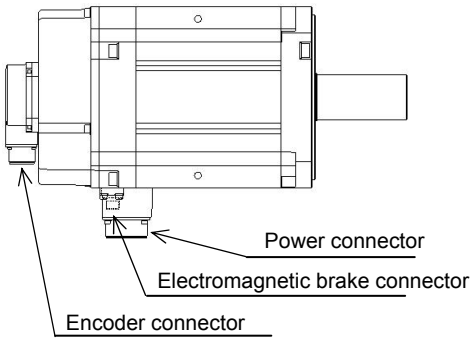
<tr><td>Motor appearance</td><td> 
</td><td> 
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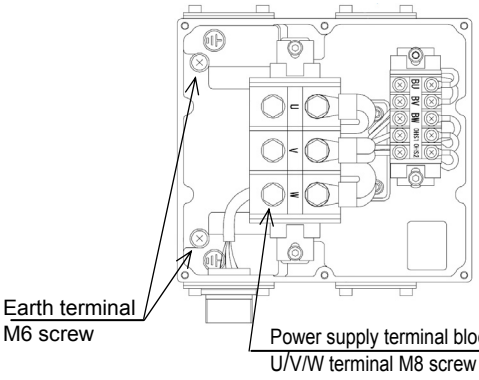
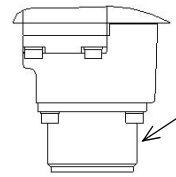
(power supply terminal block)</td><td> 
</td><td> 

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 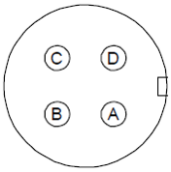

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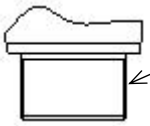
<tr><td>Encoder connector</td><td> 

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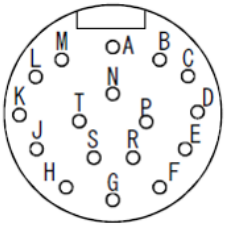
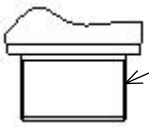
 
<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>MD</td></tr><tr><td>B</td><td>MDR</td></tr><tr><td>C</td><td>MR</td></tr><tr><td>D</td><td>MRR</td></tr><tr><td>E</td><td></td></tr><tr><td>F</td><td>BAT</td></tr><tr><td>G</td><td>LG</td></tr><tr><td>H</td><td></td></tr><tr><td>J</td><td></td></tr><tr><td>K</td><td></td></tr><tr><td>L</td><td></td></tr><tr><td>M</td><td></td></tr><tr><td>N</td><td>SHD</td></tr><tr><td>P</td><td></td></tr><tr><td>R</td><td>LG</td></tr><tr><td>S</td><td>P5</td></tr><tr><td>T</td><td></td></tr></table></td><td> 

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 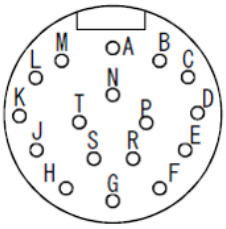
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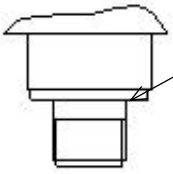
<tr><td>Electromagnetic brake connector</td><td> 

Electromagnetic brake
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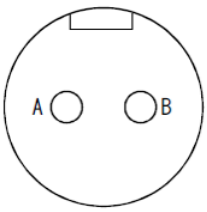
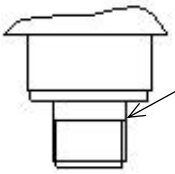
 
<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>B1</td></tr><tr><td>B</td><td>B2</td></tr></table></td><td> 

Electromagnetic brake
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 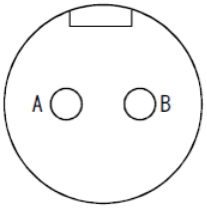
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 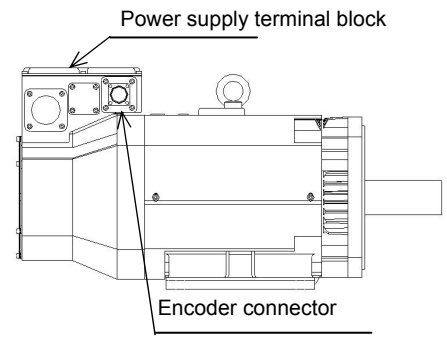
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 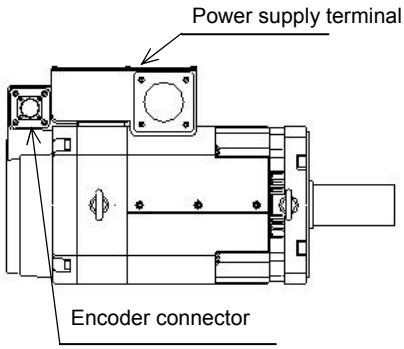
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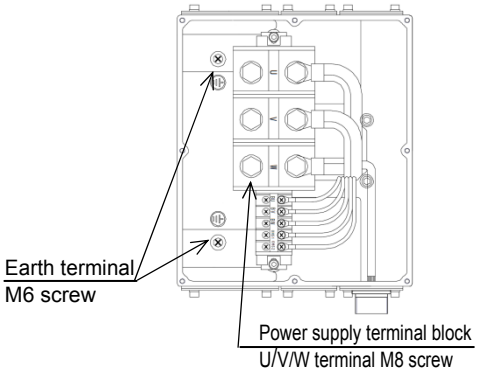
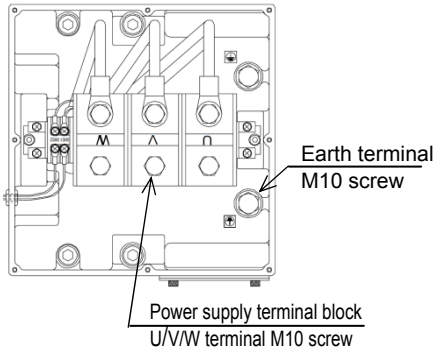
(power supply terminal block)</td><td> 
</td><td> 
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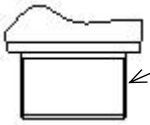
<tr><td>Encoder connector</td><td> 

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 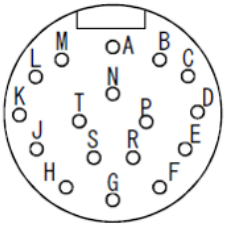

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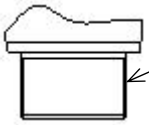
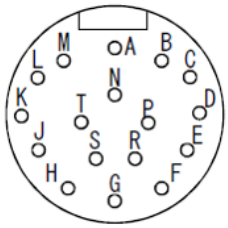
<tr><td>K</td><td></td></tr>
<tr><td>L</td><td></td></tr>
<tr><td>M</td><td></td></tr>
<tr><td>N</td><td>SHD</td></tr>
<tr><td>P</td><td></td></tr>
<tr><td>R</td><td>LG</td></tr>
<tr><td>S</td><td>P5</td></tr>
<tr><td>T</td><td></td></tr>
</table></td><td> 

Encoder connector pin assignment
 

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<tr><td>B</td><td></td></tr>
<tr><td>C</td><td>MR</td></tr>
<tr><td>D</td><td>MRR</td></tr>
<tr><td>E</td><td></td></tr>
<tr><td>F</td><td>BAT</td></tr>
<tr><td>G</td><td>LG</td></tr>
<tr><td>H</td><td></td></tr>
<tr><td>J</td><td></td></tr>
<tr><td>K</td><td>THM1</td></tr>
<tr><td>L</td><td>THM1</td></tr>
<tr><td>M</td><td></td></tr>
<tr><td>N</td><td>SHD</td></tr>
<tr><td>P</td><td></td></tr>
<tr><td>R</td><td>LG</td></tr>
<tr><td>S</td><td>P5</td></tr>
<tr><td>T</td><td></td></tr>
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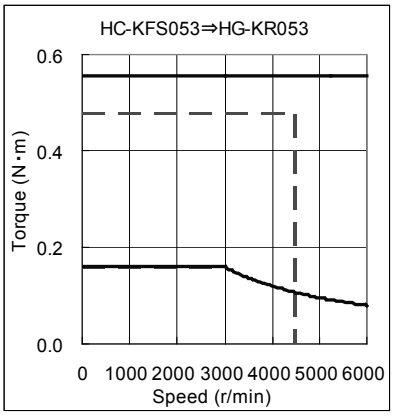
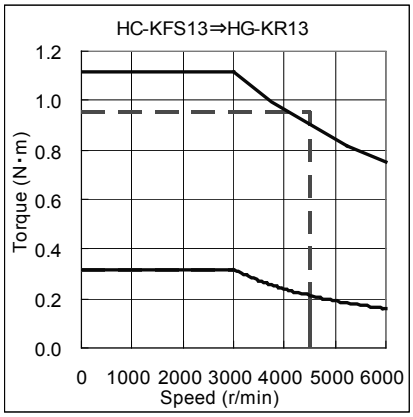
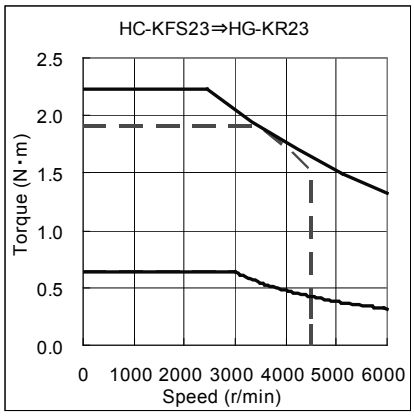
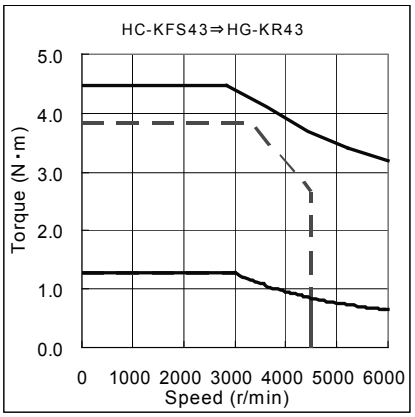
2.7 Comparison of Servo Motor Torque Characteristics

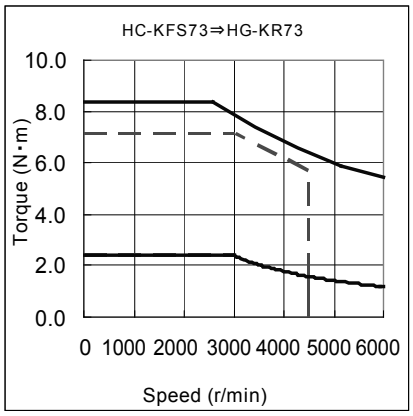
◆ Comparison of torque characteristics between the HG-KR and HC-KFS series (——: HG-KR, - - -:HC-KFS)

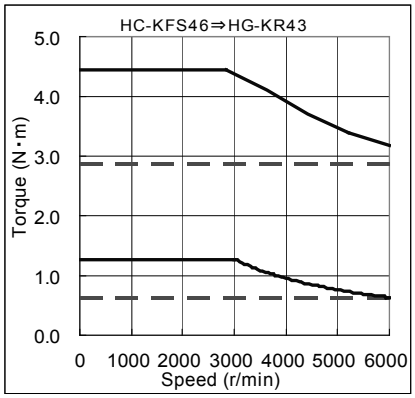


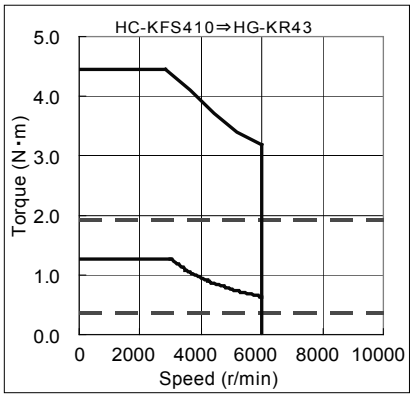






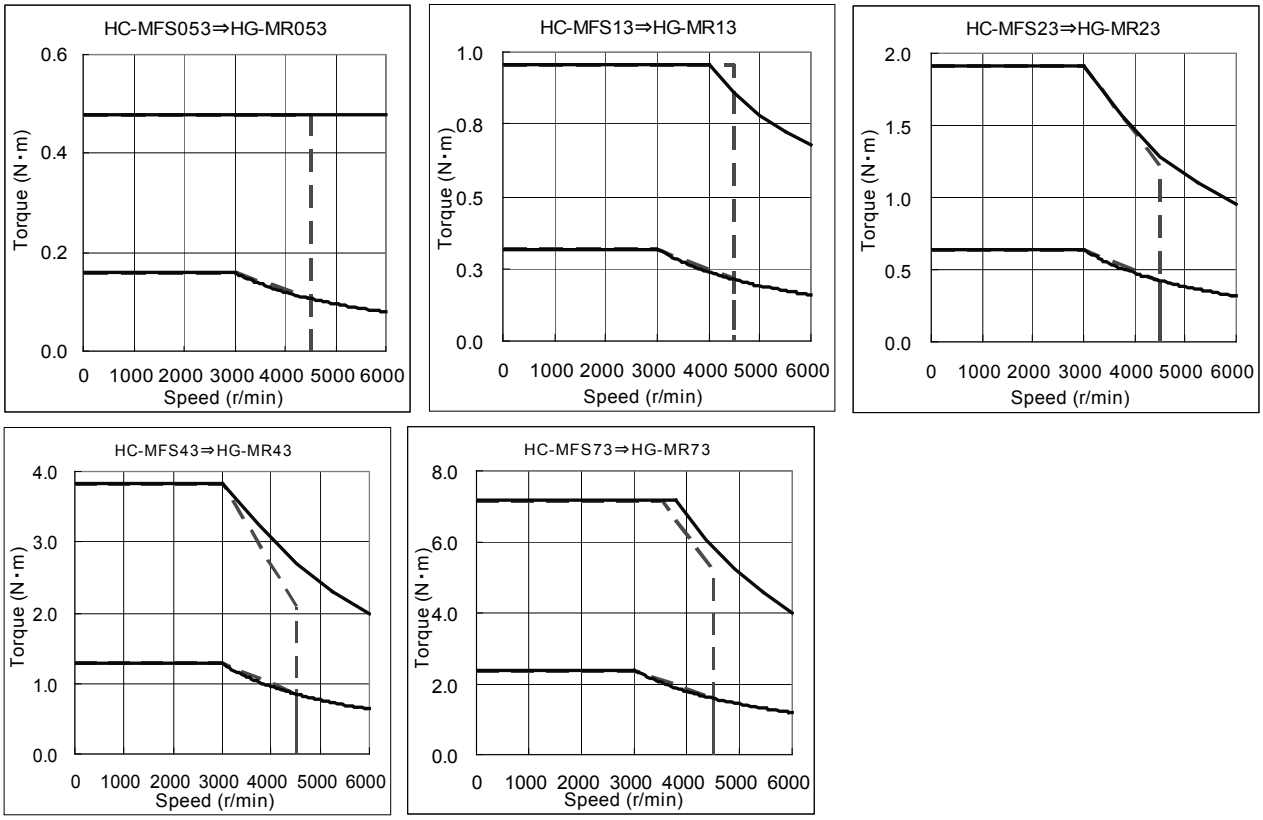






Note 1. The above torque characteristics are for three-phase 200 VAC.

◆ Comparison of torque characteristics between the HG-MR and HC-MFS series (——: HG-MR, - - -:HC-MFS)

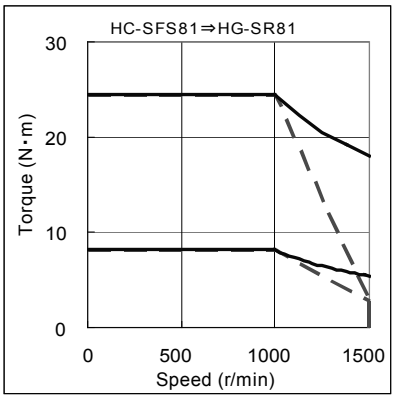


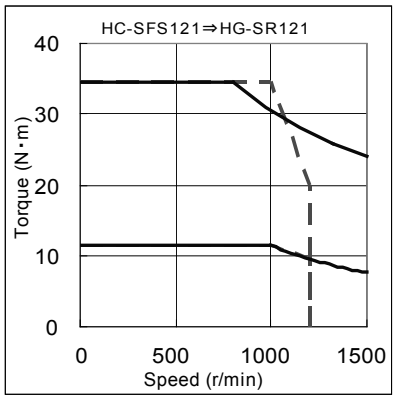
Note 1. The above torque characteristics are for three-phase 200 VAC.

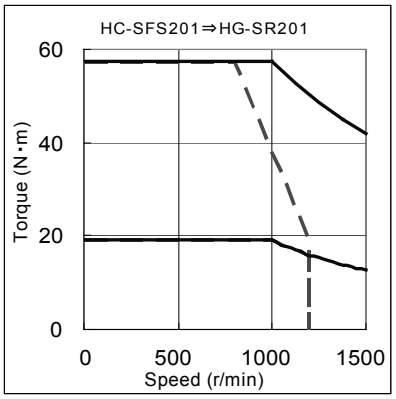
<Comparison of servo motor torque characteristics>

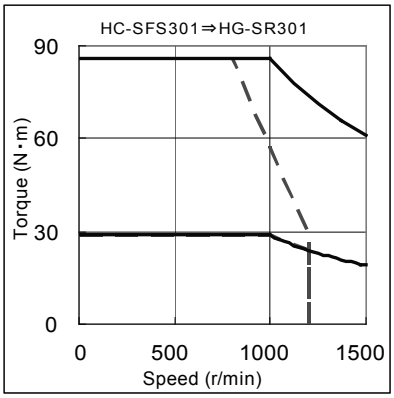
◆ Comparison of torque characteristics between the HG-SR and HC-SFS series (——: HG-SR,- - -: HC-SFS)

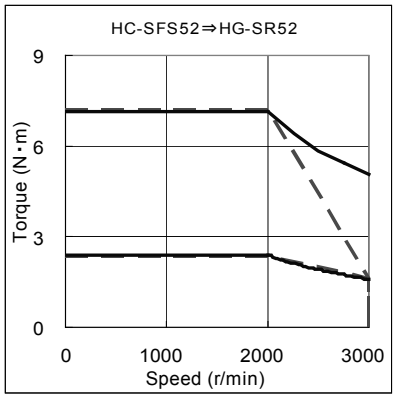
•HC-SFS: 1000 r/min / 2000 r/min series, 200 V class

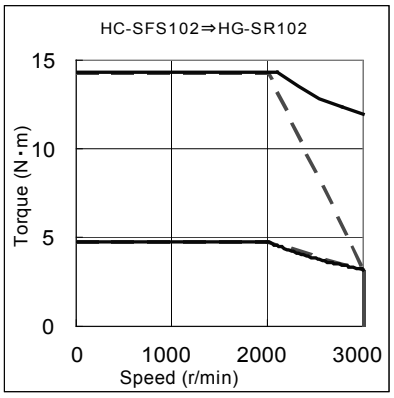


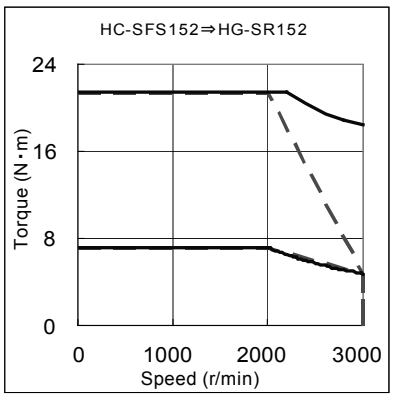


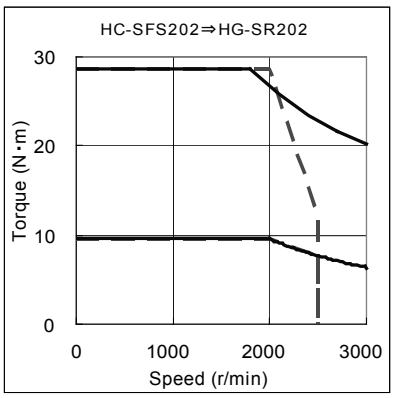


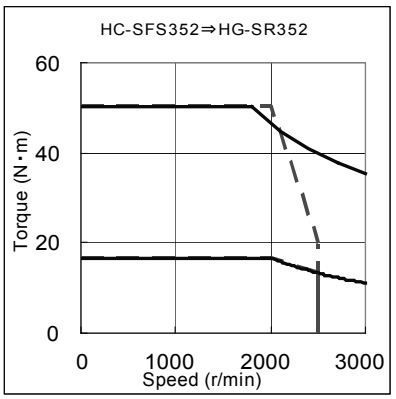


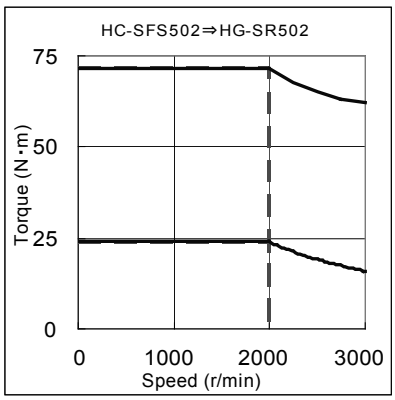


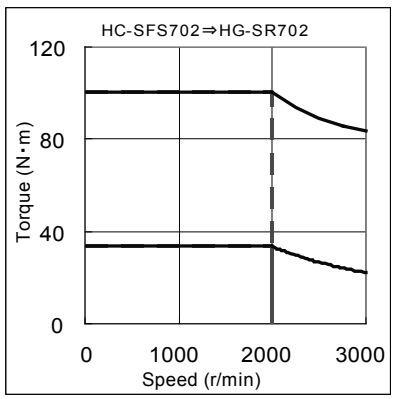










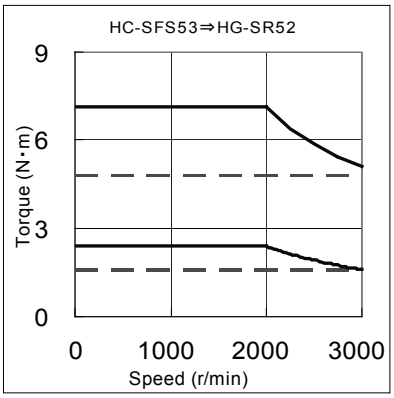


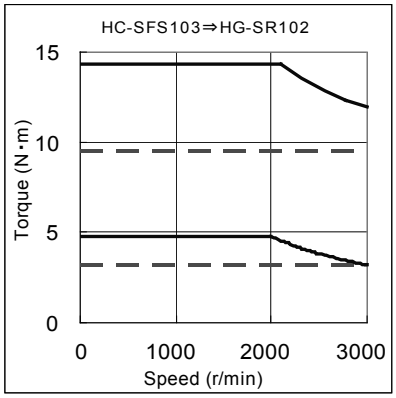
Note 1. The above torque characteristics are for three-phase 200 VAC.

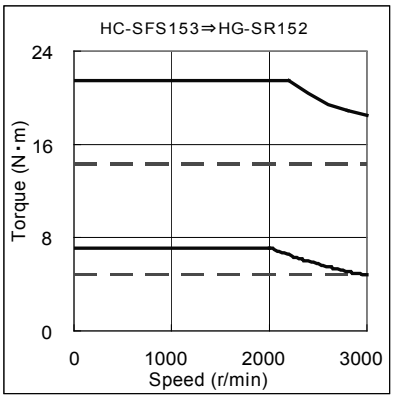
<Comparison of servo motor torque characteristics>

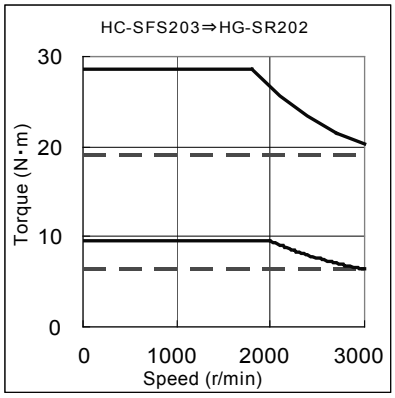
◆ Comparison of torque characteristics between the HG-SR and HC-SFS series (—: HG-SR,- - -: HC-SFS)

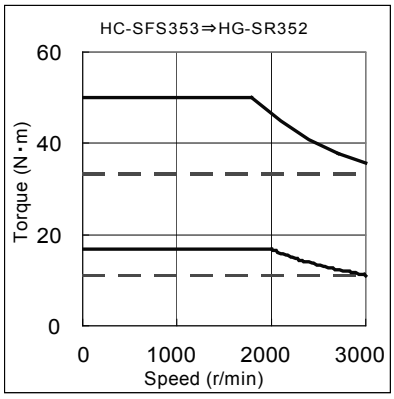
•HC-SFS: 3000 r/min series, 200 V class









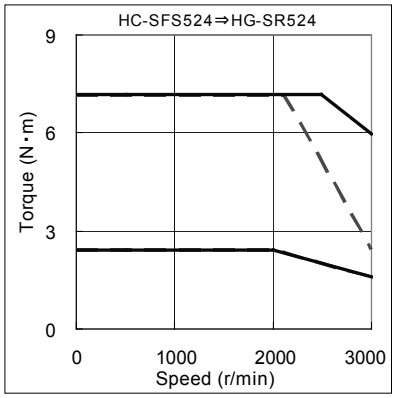


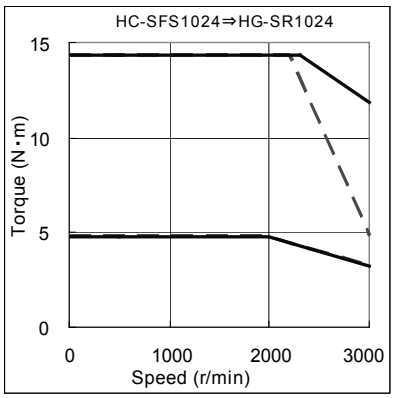
Note 1. The above torque characteristics are for three-phase 200 VAC.

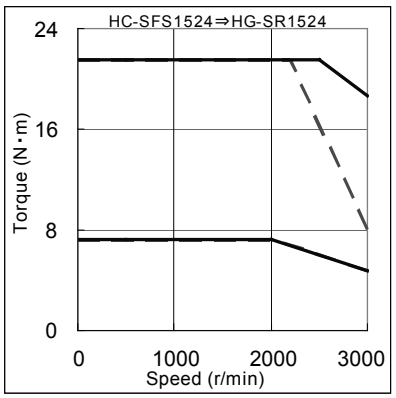
<Comparison of servo motor torque characteristics>

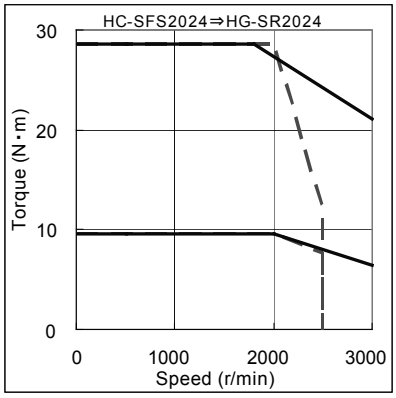
◆ Comparison of torque characteristics between the HG-SR and HC-SFS series (——: HG-SR,- - -: HC-SFS)

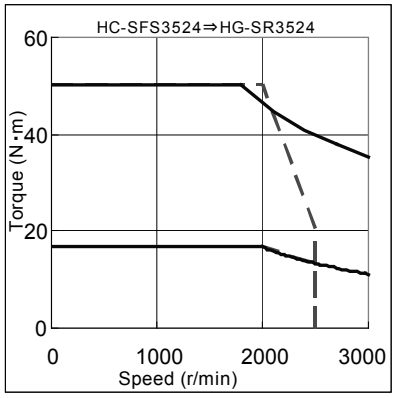
•HC-SFS: 2000 r/min series,400 V class

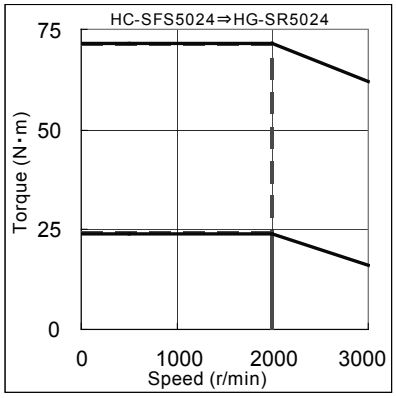


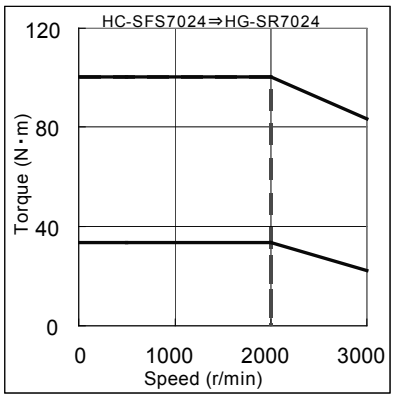






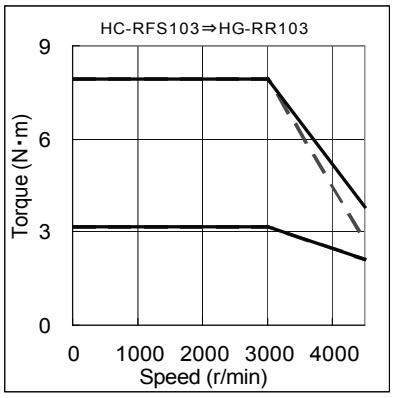


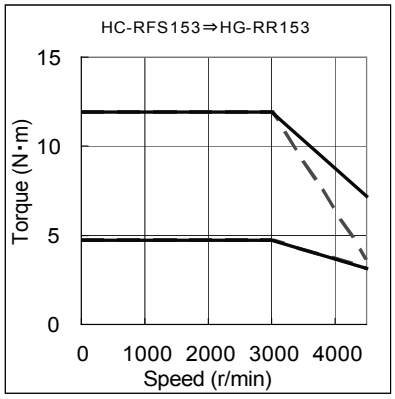


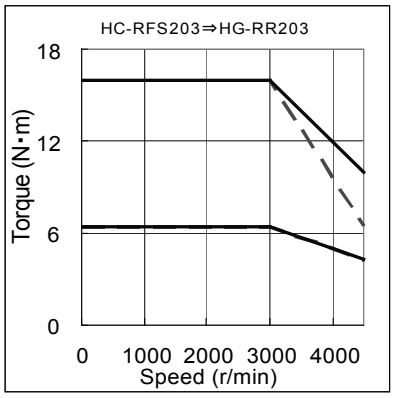


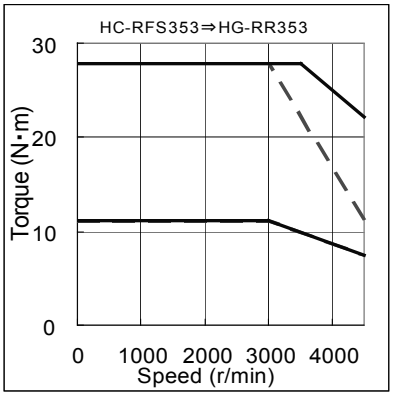
Note 1. The above torque characteristics are for three-phase 400 VAC.

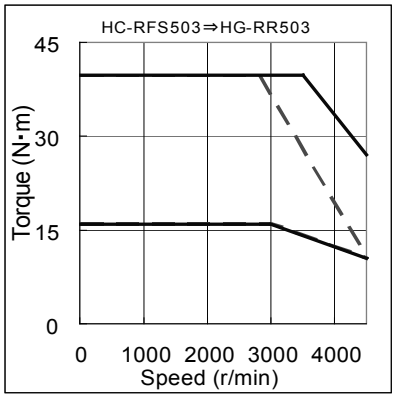
◆ Comparison of torque characteristics between the HG-RR and HC-RFS series (——: HG-RR,- - -: HC-RFS)







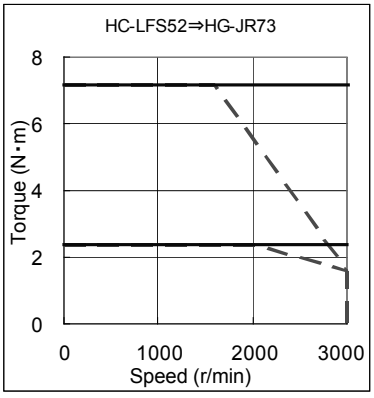


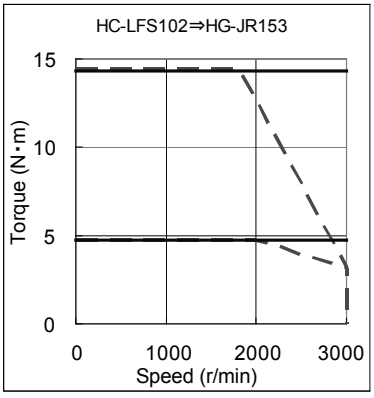


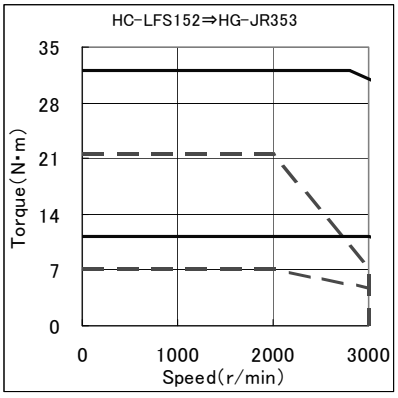
Note 1. The above torque characteristics are for three-phase 200 VAC.

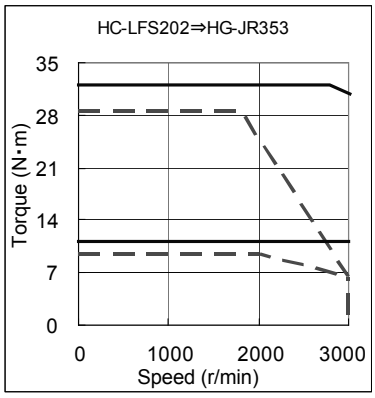
<Comparison of servo motor torque characteristics>

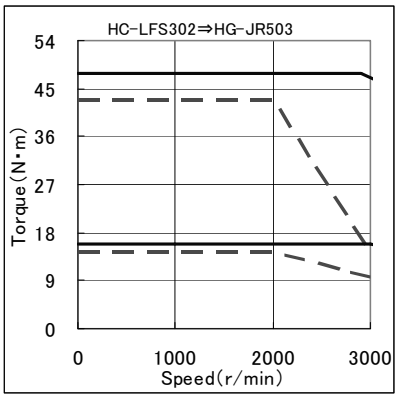
◆ Comparison of torque characteristics between the HG-JR and HC-LFS series (——: HG-JR,- - -: HC-LFS)





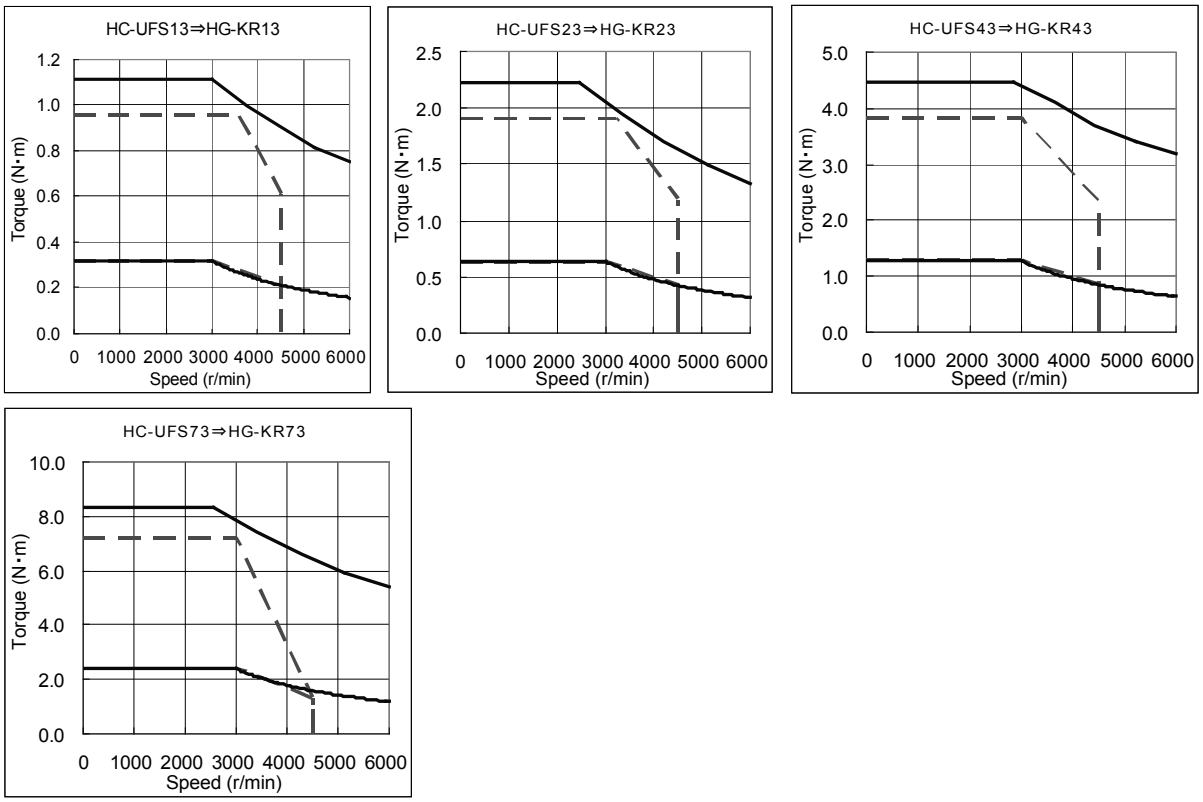






Note 1. The above torque characteristics are for three-phase 200 VAC.

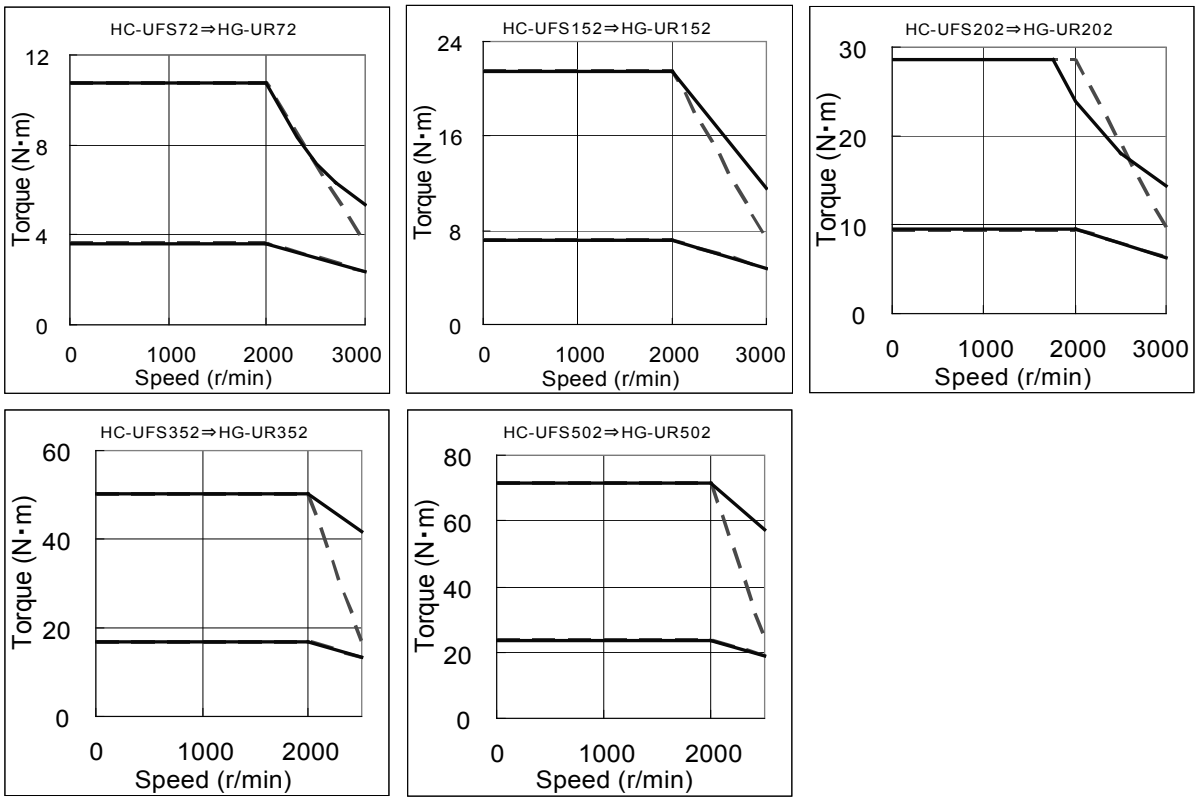
◆ Comparison of torque characteristics between the HG-KR and HC-UFS series (——: HG-KR,- - -:HC-UFS)



Note 1. The above torque characteristics are for three-phase 200 VAC.

<Comparison of servo motor torque characteristics>

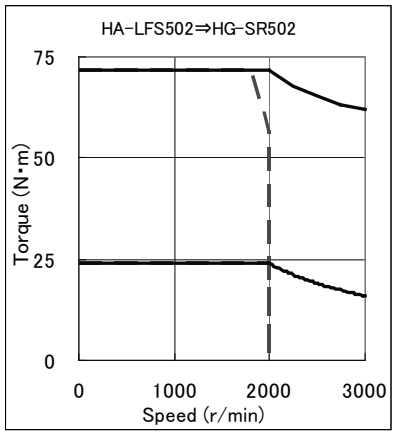
◆ Comparison of torque characteristics between the HG-UR and HC-UFS series (——: HG-UR,- - -:HC-UFS)

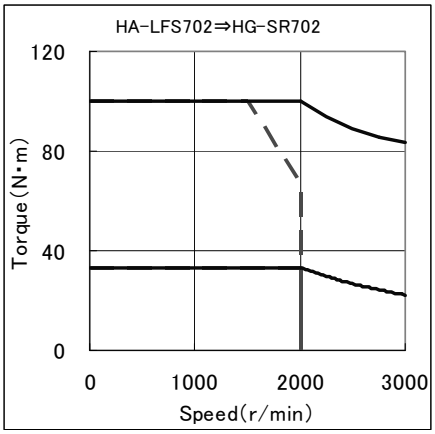


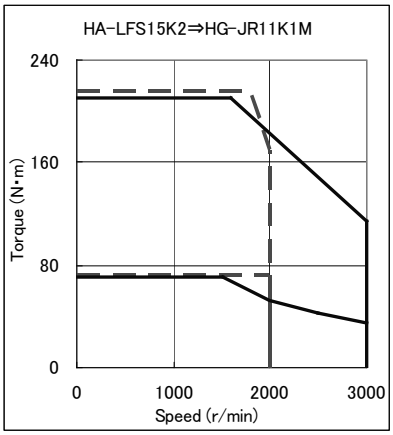
Note 1. The above torque characteristics are for three-phase 200 VAC.

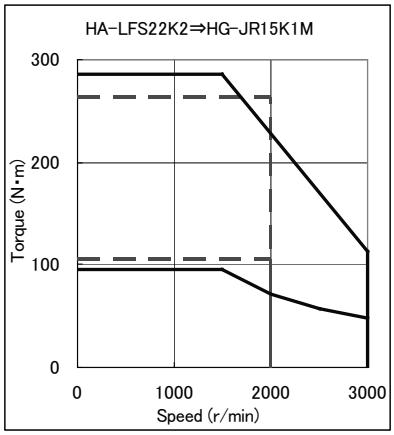
◆ Comparison of torque characteristics between the HG-JR, SR and HA-LFS series (——: HG-JR, SR,- - -: HA-LFS)

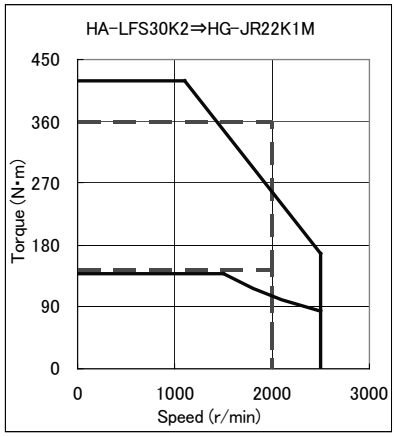
•HA-LFS: 2000 r/min series, 200 V class





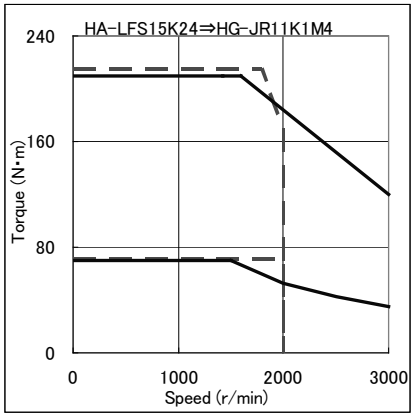


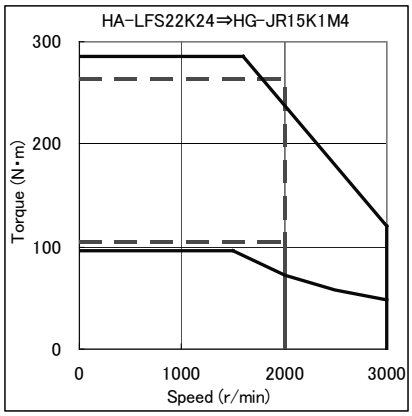


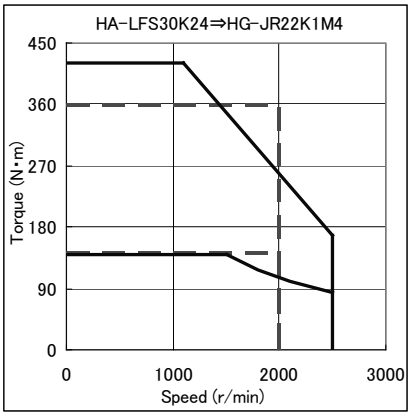


Note 1. The above torque characteristics are for three-phase 200 VAC.

·HA-LFS: 2000 r/min series, 400 V class





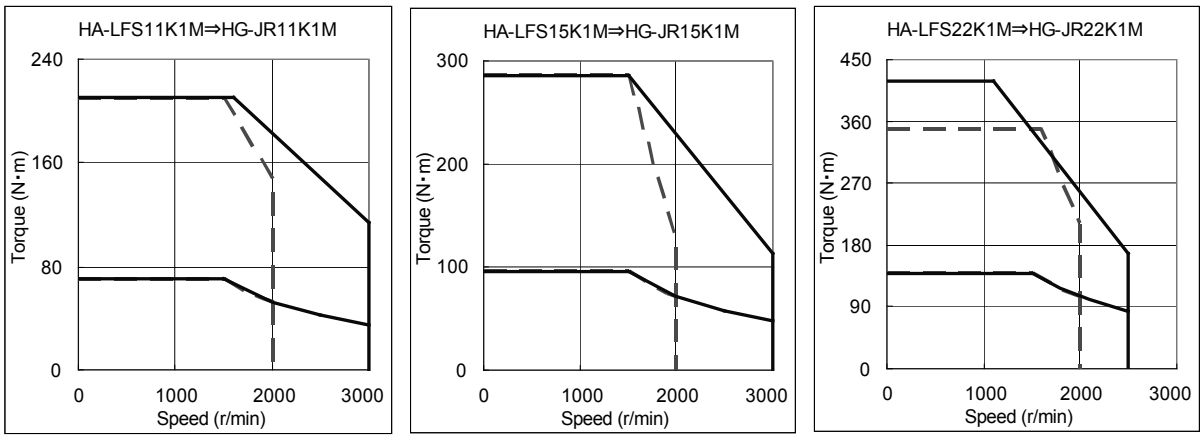


Note 1. The above torque characteristics are for three-phase 400 VAC.

<Comparison of servo motor torque characteristics>

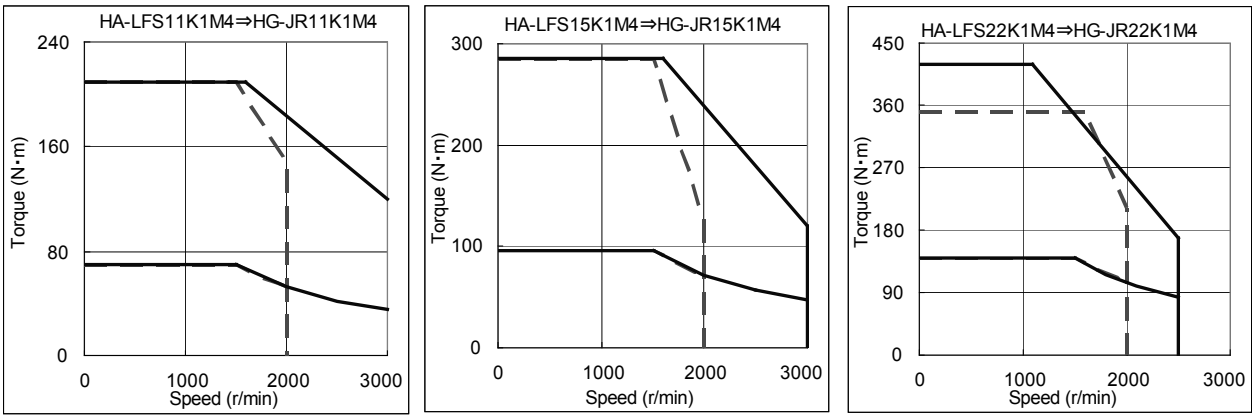
◆ Comparison of torque characteristics between the HG-JR and HA-LFS series (——: HG-JR, - - -: HA-LFS)

•HA-LFS: 1500 r/min series, 200 V class



Note 1. The above torque characteristics are for three-phase 200 VAC.

•HA-LFS: 1500 r/min series, 400 V class



Note 1. The above torque characteristics are for three-phase 400 VAC.

MEMO

Part 7
Replacement of Optional Peripheral Equipment

Part 7: Replacement of Optional Peripheral Equipment

1 COMPARISON TABLE OF REGENERATIVE OPTION COMBINATIONS

POINT

- 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

1.1 Regenerative Options (for 200 V)

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 [40 Ω]	12 [40 Ω]	30 [13 Ω]	3N [9 Ω]	31 [6.7 Ω]	32 [40 Ω]	(Note 1) 50 [13 Ω]	(Note 1) 5N [9 Ω]	(Note 1) 51 [6.7 Ω]
10_		30								
20_	10	30	100							
40_	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_										

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 [3.2 Ω]	(Note 2) 65 [8 Ω]	(Note 2) 66 [5 Ω]	(Note 2) 67 [4 Ω]	(Note 2) 9F [3 Ω]	(Note 2) 9T [2.5 Ω]
10_								
20_	10							
40_	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)		

Note 1. Always install a cooling fan.
2. The values in the parentheses are applied to when a cooling fan is installed.

Parameter settings (PA02 for MR-J4) may be required depending on the regenerative option model. Refer to the Instruction Manual for details.

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					

1.1.3 Combination and regenerative power for the MR-J4 series

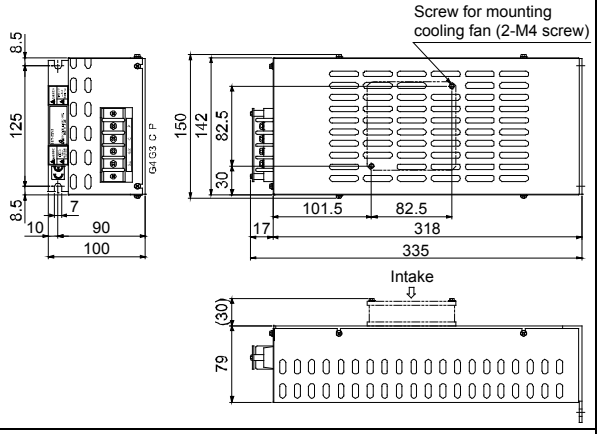
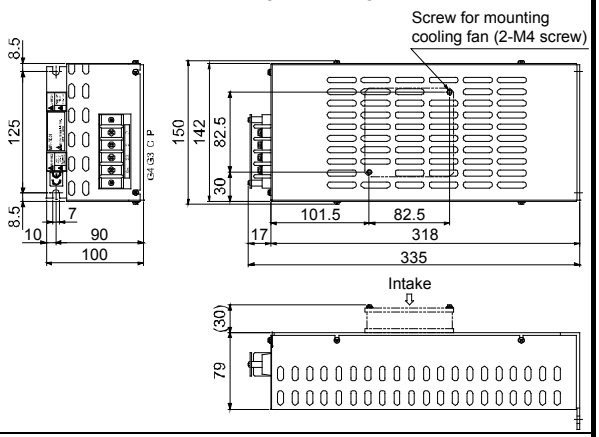
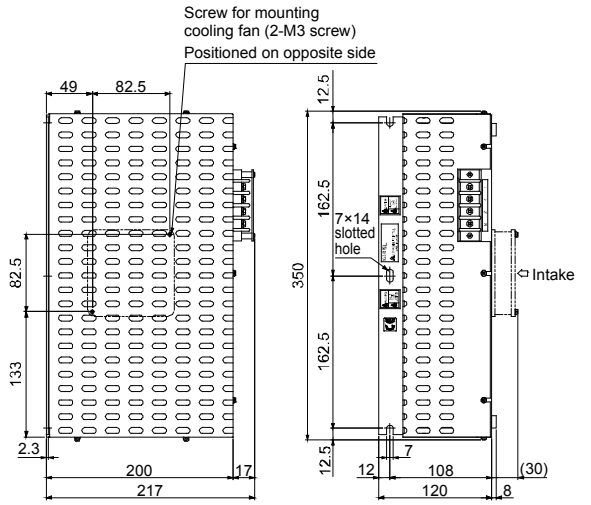
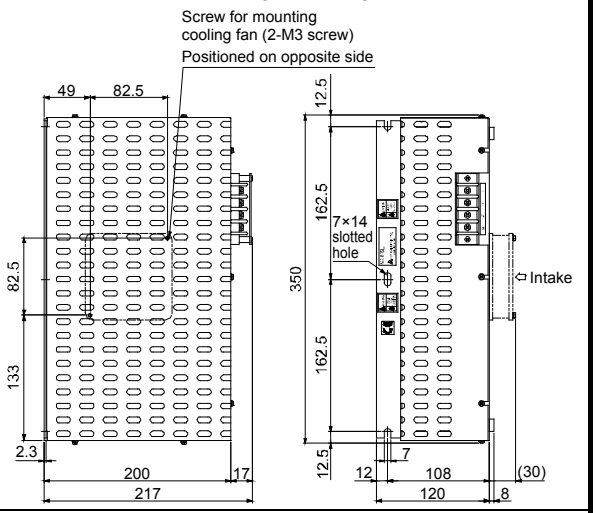
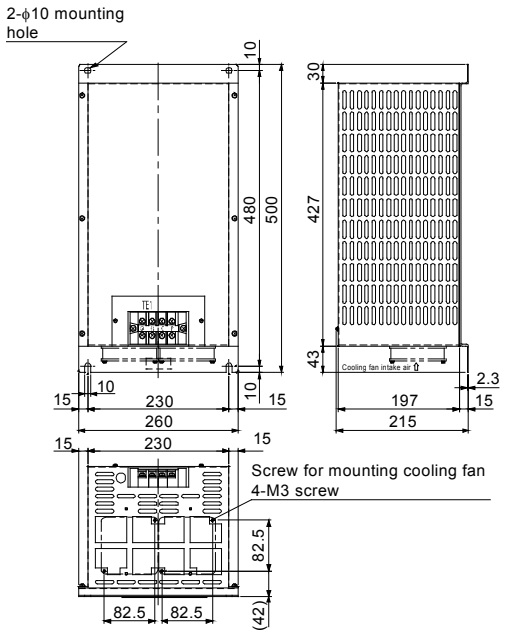
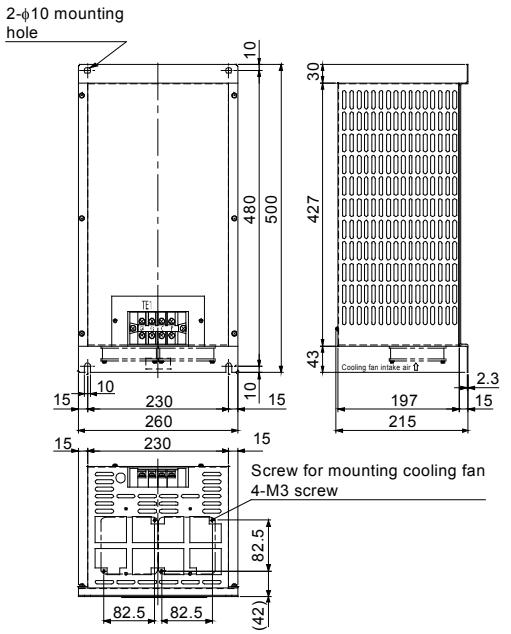
List of regenerative options

Servo amplifier model MR-J4-	Built-in regenerative resistor [W]	Permissible regenerative power of regenerative option [W] MR-RB								
		032 [40 Ω]	12 [40 Ω]	30 [13 Ω]	3N [9 Ω]	31 [6.7 Ω]	32 [40 Ω]	(Note 1) 50 [13 Ω]	(Note 1) 5N [9 Ω]	(Note 1) 51 [6.7 Ω]
10_		30								
20_	10	30	100							
40_	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_										

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 [3.2 Ω]	(Note 2) 65 [8 Ω]	(Note 2) 66 [5 Ω]	(Note 2) 67 [4 Ω]	(Note 2) 9F [3 Ω]	(Note 2) 9T [2.5 Ω]
10_								
20_	10							
40_	10							
60_	10							
70_	20							
100_	20							
200_	100							
350_	100							
500_	130							
700_	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)

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".

1.2 External Form Comparison

	MR-J2S	MR-J4
350_ 500_	MR-RB30 	MR-RB31/MR-RB32 
350_ 500_	MR-RB50 	MR-RB51/MR-RB5N 
11K_ 15K_ 22K_	MR-RB65/MR-RB66/MR-RB67 	MR-RB5R/MR-RB9F/MR-RB9T 

1.3 Regenerative Options (for 400 V)

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												

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]
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)

Note 1. Always install a cooling fan.

2. The values in the parentheses are applied to when a cooling fan is installed.

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				300	
700_4	170							500				500
11K_4												
15K_4												
22K_4												

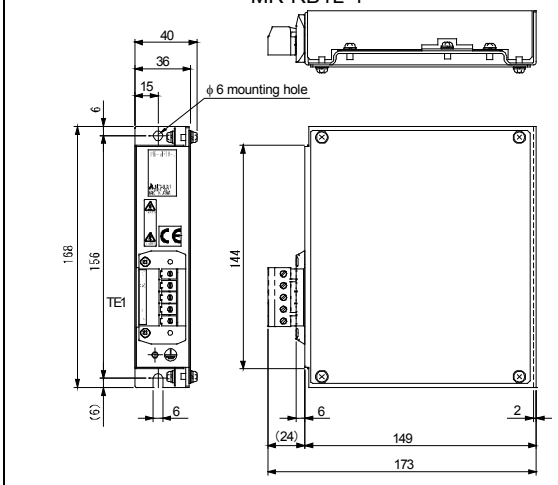
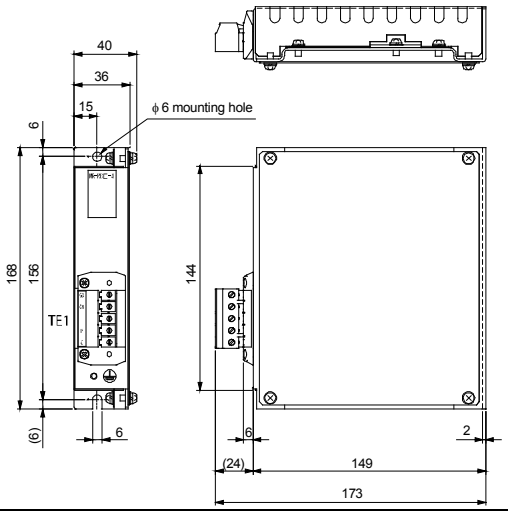
Servo amplifier Model MR-J4-	Built-in regenerative resistor [W]	(Note 2) Standard accessories [External]	Permissible regenerative power of regenerative option [W] MR-RB			
			(Note 2) 5K-4 [10 Ω]	(Note 2) 6B-4 [20 Ω]	(Note 2) 60-4 [12.5 Ω]	(Note 2) 6K-4 [10 Ω]
60_4	15					
100_4	15					
200_4	100					
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)

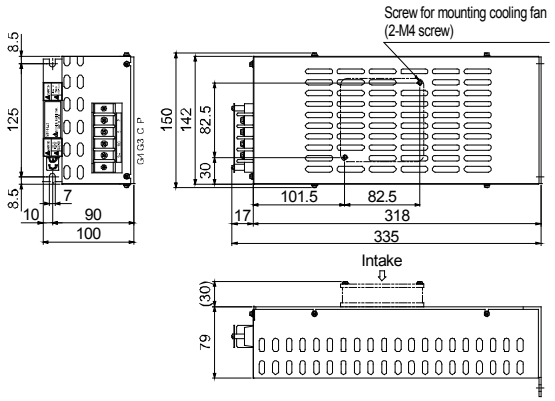
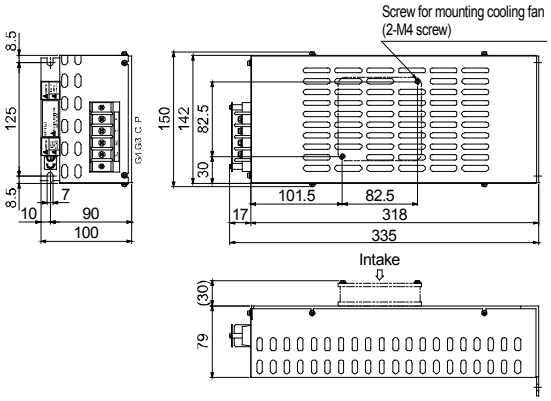
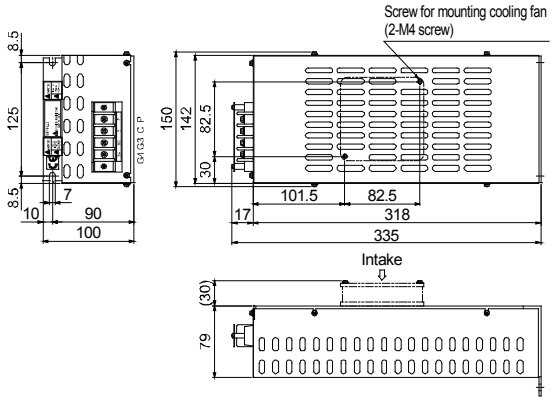
Note 1. Always install a cooling fan.

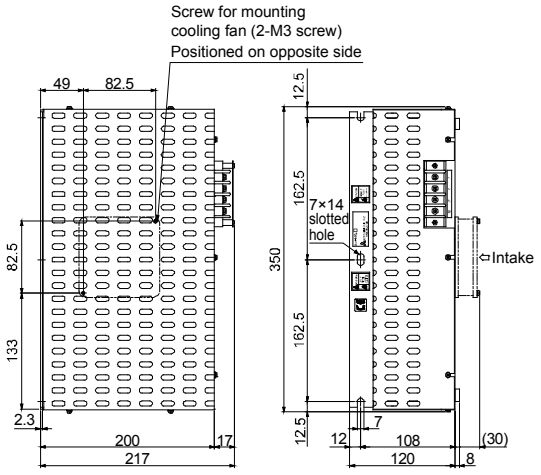
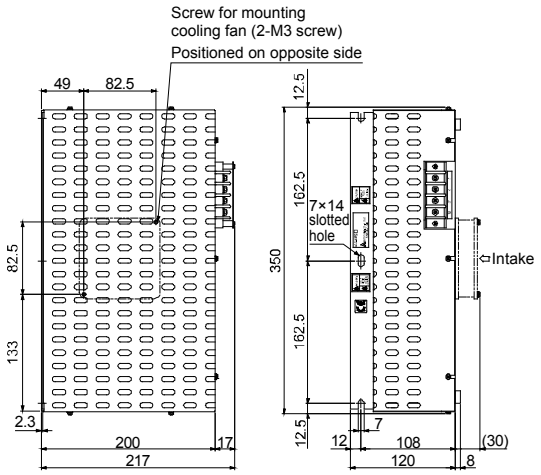
2. The values in the parentheses are applied to when a cooling fan is installed.
   • Changed items are shown with shading.
   • Parameter settings (PA02 for MR-J4) may be required depending on the regenerative option model. Refer to the Instruction Manual for details.

3. When using a combination with an MR-J4 servo amplifier other than the standard one, contact your local sales office.

1.4 External Form Comparison

<table>
<tr><th></th><th>MR-J2S</th><th>MR-J4</th></tr>
<tr><td>60_4
100_4</td><td>MR-RB1L-4
 
</td><td>MR-RB1H-4
 

MR-RB3M-4
 
</td></tr>
<tr><td>200_4
500_4
700_4</td><td>MR-RB3H-4/MR-RB3G-4/MR-RB34-4
 
</td><td>MR-RB3G-4/MR-RB34-4/MR-RB3U-4
 
</td></tr>
</table>

<table>
<tr><th></th><th>MR-J2S</th><th>MR-J4</th></tr>
<tr><td>200_4
500_4
700_4</td><td>MR-RB5H-4/MR-RB5G-4/MR-RB54-4
 
</td><td>MR-RB5G-4/MR-RB54-4/MR-RB5U-4
 
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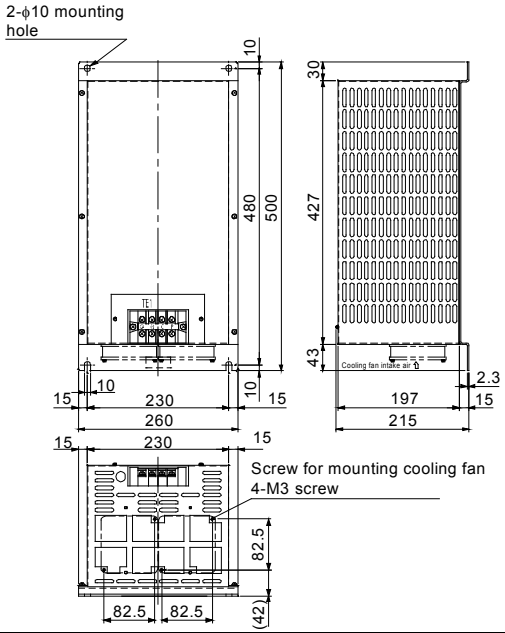
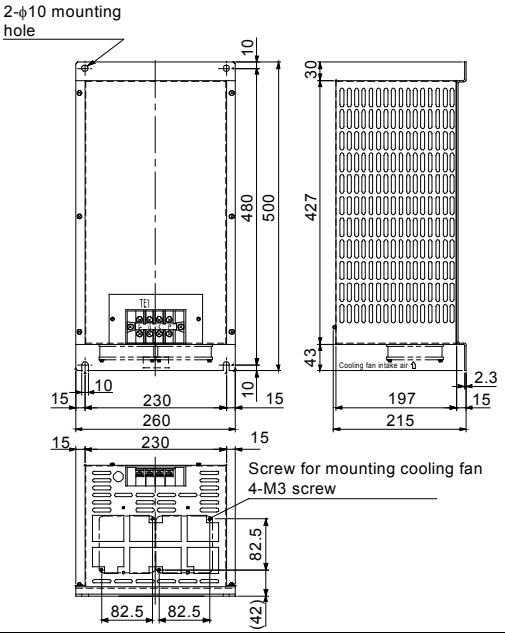
<tr><td>11K_4
15K_4</td><td>MR-RB6B-4/MR-RB60-4
 
</td><td>MR-RB54-4/MR-RB6K-4
 
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2 COMPARISON TABLE OF DYNAMIC BRAKE OPTION COMBINATIONS

POINT
● 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

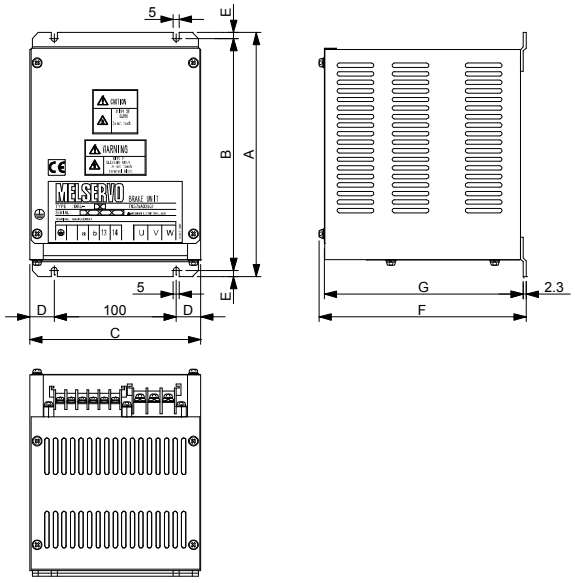
Model	Applicable servo amplifier	
DBU-11K	MR-J2S-11K_	MR-J4-11K_
DBU-15K	MR-J2S-15K_	MR-J4-15K_
DBU-22K	MR-J2S-22K_ (Note 1)	
DBU-22K-R1		MR-J4-22K_
DBU-11K-4	MR-J2S-11K_4	MR-J4-11K_4
DBU-22K-4	MR-J2S-15K_4 MR-J2S-22K_4	MR-J4-15K_4 MR-J4-22K_4

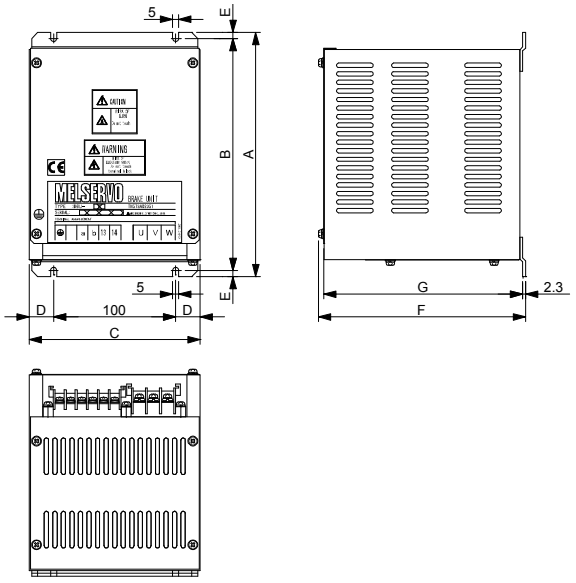
Changed items are shown with shading.

Note 1. DBU-22K can be used when MR-J4-22K_ is combined with an HA-LFS22K1M servo motor.

2.1 External Form Comparison

	MR-J2S	MR-J4
22K_	DBU-22K	DBU-22K-R1





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

3 COMPARISON TABLE OF CABLE OPTION COMBINATIONS

Cable option combinations

Application		MR-J2S series	MR-J4 series		Precautions
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 MR-J3ENECBL_M-H- (MTH)		(MTH) is required for MR-J4-22K_. _M: Cable length A_: Leading direction
		MR-ENCBL_M-H			
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-ENCNS2_		
		MR-ENCNS			
Controller to amplifier cable	B type	MR-J2HBUS_M-A	MR-J2HBUS_M		Connector will be changed due to change from metal communication to optical communication. _: Cable length
CN1 connector set		MR-J2CN1-A	MR-CCN1		
Controller to amplifier cable	A type	MR-J2HBUS_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_		Connector shape will be changed. _: Connector shape
Servo amplifier power connector (to 1 kW)			06JFAT-SAXGDK-H7.5 (Note 1)	CNP1	Change from screw-type to connector-type
			05JFAT-SAXGDK-H5.0 (Note 1)	CNP2	
			03JFAT-SAXGDK-H7.5 (Note 1)	CNP3	
Servo amplifier power connector (2 kW)			06JFAT-SAXGFK-XL (Note 1)	CNP1	
			05JFAT-SAXGDK-H5.0 (Note 1)	CNP2	
			03JFAT-SAXGFK-XL (Note 1)	CNP3	
Servo amplifier power connector (3.5kW)			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.

4 POWER SUPPLY WIRE SIZE

POINT
● If 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_	2 (AWG14): a	1.25 (AWG16)	1.25 (AWG16): a	2 (AWG14): a	1.25 (AWG16)	
MR-J2S-20_						
MR-J2S-40_						
MR-J2S-60_						
MR-J2S-70_						
MR-J2S-100_			2 (AWG14): a			
MR-J2S-200_	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			
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		2 (AWG14)
MR-J2S-15K_	22 (AWG4): e		30 (AWG2): f			
MR-J2S-22K_	50 (AWG1/0): g		60 (AWG2/0): g			

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 mm^2.

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			2 (AWG14)			
MR-J2S-350_4	3.5 (AWG12): b		3.5 (AWG12): b			
MR-J2S-500_4	5.5 (AWG10): b		5.5 (AWG10): b			
MR-J2S-700_4						
MR-J2S-11K_4	8 (AWG8): c		8 (AWG8): c	3.5 (AWG12): b	2 (AWG14)	2 (AWG14)
MR-J2S-15K_4	14 (AWG6): d		22 (AWG4): e	5.5 (AWG10): b		
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.

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_(-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_(-RJ)				
MR-J4-40_(-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	22 (AWG 4): h (Note 5) 8 (AWG 8): k
MR-J4-22K_(-RJ) (Note 2)	38 (AWG 2): i		5.5 (AWG 10): j	38 (AWG 2): i

Note 1. Alphabets in the table indicate crimping tools. For crimp terminals and applicable tools, see 4.2.2 (1) of this document.
2. To connect these models to a terminal block, be 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 mm^2.
5. This is for connection to a self-cooling linear servo motor.
6. Selection conditions of wire size is as follows.
   Wiring condition: In-air, one-row wiring
   Wire length: 30m or less

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, be 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 mm^2.
5. This is for connection to a self-cooling linear servo motor.
6. This is for connection to a liquid-cooling linear servo motor.

4.2 Selection Example of Crimp Terminals

4.2.1 MR-J2S-series crimp terminal

(1) Selection example of crimp terminals (200 V)

Recommended crimp terminals

Symbol	Servo amplifier-side crimp terminals		
	Crimp terminal	Applicable tool	Manufacturer
a	32959	47387	TE Connectivity
b	FDV5.5-4	YNT-1210S	J.S.T. Mfg. Co., Ltd.
c	FVD8-5	Main body: YF-1, E-4 Head: YNE-38 Dice: DH-111, DH-121	
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	

Symbol	Servo amplifier-side crimp terminals		
	Crimp terminal	Applicable tool	Manufacturer
(Note 1, 2) f	38-S6	Main body: YPT-60-21 Dice: TD-124, TD-112	J.S.T. Mfg. Co., Ltd.
		Main body: YF-1, E-4 Head: YET-60-1 Dice: TD-124, TD-112	
	R38-6S	NOP60 NOM60	NICHIFU
g	(Note 1) R60-8	Main body: YDT-60-21 Dice: TD-125, TD-113	J.S.T. Mfg. Co., Ltd.
		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 (400 V)

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	

4.2.2 MR-J4-series crimp terminal

(1) Selection example of crimp terminals (200 V)

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				
	(Note 2) Crimp terminal	Applicable tool			Manufacturer
		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. Coat the crimping part with an insulation tube.
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 (400 V)

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.

4.3 Selection of Molded-Case Circuit Breaker, Fuse, and Magnetic Contactor (Example)

4.3.1 MR-J2S series, molded-case circuit breakers, fuses, magnetic contactors

Always use one molded-case circuit breaker/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, magnetic contactors

Servo amplifier	Molded-case circuit breakers	Fuse			Magnetic contactor
		Class	Current [A]	Voltage [V]	
MR-J2S-10_	30 A frame 5 A	K5	10	AC250	S-N10
MR-J2S-20_	30 A frame 5 A	K5	10		
MR-J2S-40_/20_	30 A frame 10 A	K5	15		
MR-J2S-60_/40_	30 A frame 15 A	K5	20		
MR-J2S-70_	30 A frame 15 A	K5	20		
MR-J2S-100_	30 A frame 15 A	K5	25		
MR-J2S-200_	30 A frame 20 A	K5	40		S-N18
MR-J2S-350_	30 A frame 30 A	K5	70		S-N20
MR-J2S-500_	50 A frame 50 A	K5	125		S-N35
MR-J2S-700_	100 A frame 75 A	K5	150		S-N50
MR-J2S-11K_	100 A frame 100 A	K5	200		S-N65
MR-J2S-15K_	225 A frame 125 A	K5	250		S-N95
MR-J2S-22K_	225 A frame 175 A	K5	350		S-N125
MR-J2S-60_4	30 A frame 5 A				S-N10
MR-J2S-100_4	30 A frame 10 A				S-N10
MR-J2S-200_4	30 A frame 15 A				S-N10
MR-J2S-350_4	30 A frame 20 A				S-N18
MR-J2S-500_4	30 A frame 30 A				S-N18
MR-J2S-700_4	50 A frame 40 A				S-N20
MR-J2S-11K_4	60 A frame 60 A				S-N25
MR-J2S-15K_4	100 A frame 75 A				S-N35
MR-J2S-22K_4	225 A frame 125 A				S-N65

4.3.2 MR-J4 series, molded-case circuit breakers, fuses, magnetic contactors (recommended)

(1) For main circuit power supply

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, 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_						
MR-J4-40_	30 A frame 10 A			15		
MR-J4-60_	30 A frame 15 A			20		
MR-J4-70_						
MR-J4-100_						
MR-J4-200_	30 A frame 20 A			40		S-N20 (Note 3)
MR-J4-350_	30 A frame 30 A			70		S-N20
MR-J4-500_	50 A frame 50 A			125		S-N35
MR-J4-700_	100 A frame 75 A			150		S-N50
MR-J4-11K_	100 A frame 100 A			200		
MR-J4-15K_	125 A frame 125 A			250		S-N65
MR-J4-22K_	225 A frame 175 A			350		S-N95

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)		Fuse			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		S-N18
MR-J4-500_4	30 A frame 20 A			50		
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.

(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_(-RJ)	30 A frame 5 A	240	1	300	1	250
MR-J4-20_(-RJ)						
MR-J4-40_(-RJ)						
MR-J4-60_(-RJ)						
MR-J4-70_(-RJ)						
MR-J4-100_(-RJ)						
MR-J4-200_(-RJ)						
MR-J4-350_(-RJ)						
MR-J4-500_(-RJ)						
MR-J4-700_(-RJ)						
MR-J4-11K_(-RJ)						
MR-J4-15K_(-RJ)						
MR-J4-22K_(-RJ)						
MR-J4-60_4(-RJ)	30 A frame 5 A	480	1	600	1	600
MR-J4-100_4(-RJ)						
MR-J4-200_4(-RJ)						
MR-J4-350_4(-RJ)						
MR-J4-500_4(-RJ)						
MR-J4-700_4(-RJ)						
MR-J4-11K_4(-RJ)						
MR-J4-15K_4(-RJ)						
MR-J4-22K_4(-RJ)						

Note. In order for the servo amplifier to comply with the UL/CSA standard, see the Servo Amplifier Instruction Manual.

5 BATTERY

> POINT
>
> ● 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.

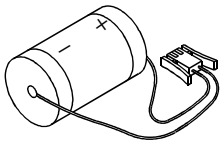
5.1 MR-J2S-Series Battery

5.1.1 Battery replacement procedure

Model: MR-BAT or A6BAT

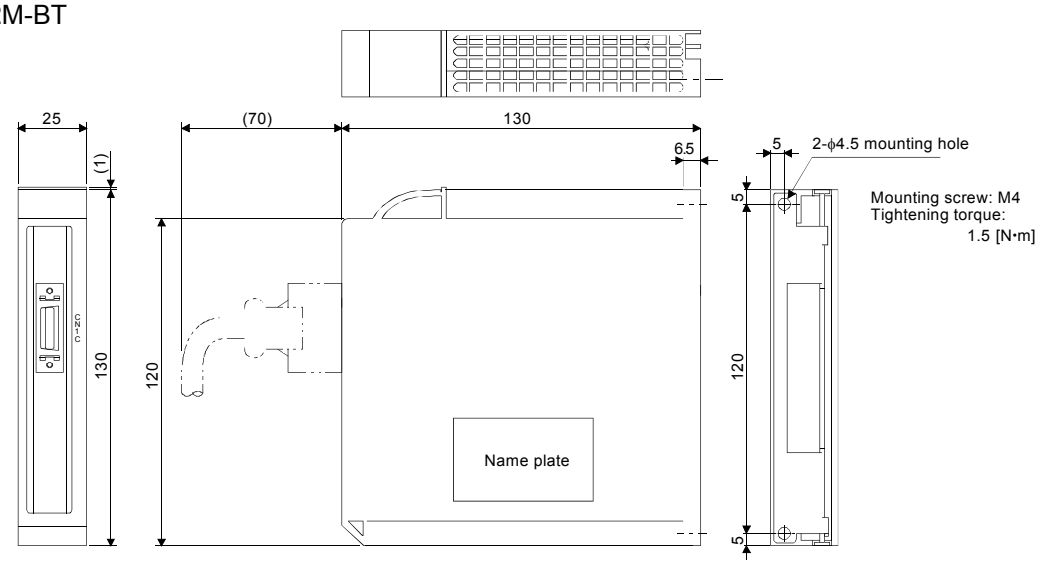
> ⚠ WARNING
>
> ● Before mounting a battery, turn off the power and wait 15 min or longer until the charge lamp turns off, then check the voltage between P and N with a voltage tester, etc., otherwise an electric shock may occur. In addition, when confirming whether the charge lamp is off or not, always confirm it from the front of the servo amplifier.

> POINT
>
> ● The internal circuits of the servo amplifier may be damaged by static electricity. Always take the following precautions.
> • Ground human body and work bench.
> • Do not touch the conductive areas, such as connector pins and electrical parts, directly by hand.



5.2 MR-J2M-Series Battery Unit

Type: MR-J2M-BT



5.3 MR-J4-Series Battery

5.3.1 Battery replacement procedure

Type: MR-BAT6V1SET

⚠ 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 human body and work bench. • Do not touch the conductive areas, such as connector pins and electrical parts, directly by hand.

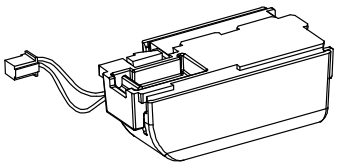
POINT

● 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.

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.
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.

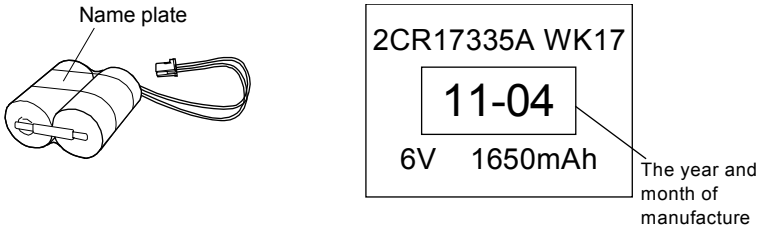


5.3.2 Intended use of MR-BAT6V1SET

This battery is used to construct an absolute position detection system.

5.3.3 Battery manufacture date

The manufacture date of an MR-BAT6V1 battery installed in MR-BAT6V1SET is written on the name plate attached to the MR-BAT6V1 battery.



6 EMC FILTER

POINT
● 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)

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.

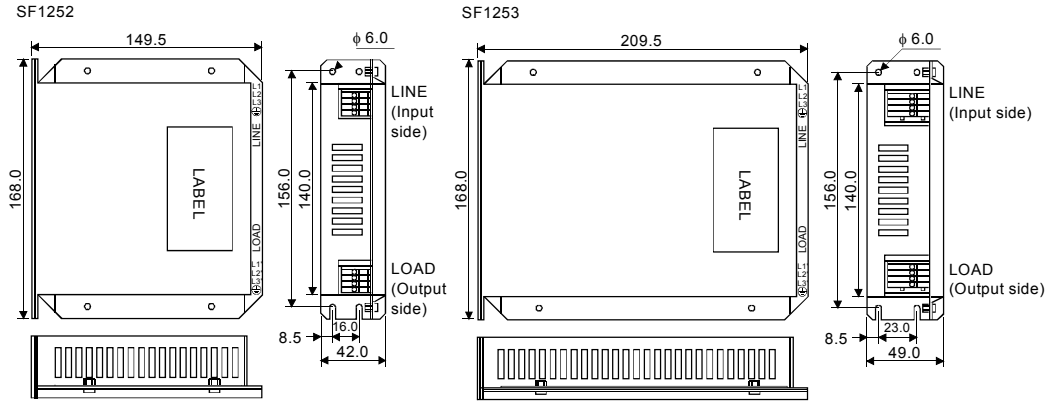
Combination with the servo amplifier

Servo amplifier	Recommended filter		Mass [kg]
	Model	Leakage current [mA]	
MR-J2S-10A to MR-J2S-100A	SF1252	38	0.75
MR-J2S-200A/MR-J2S-350A	SF1253	57	1.37
MR-J2S-500A	(Note) HF3040A-TM	1.5	5.5
MR-J2S-700A	(Note) HF3050A-TM	1.5	6.7
MR-J2S-11KA	(Note) HF3060A-TMA	3.0	10.0
MR-J2S-15KA	(Note) HF3080A-TMA	3.0	13.0
MR-J2S-22KA	(Note) HF3100A-TMA	3.0	14.5

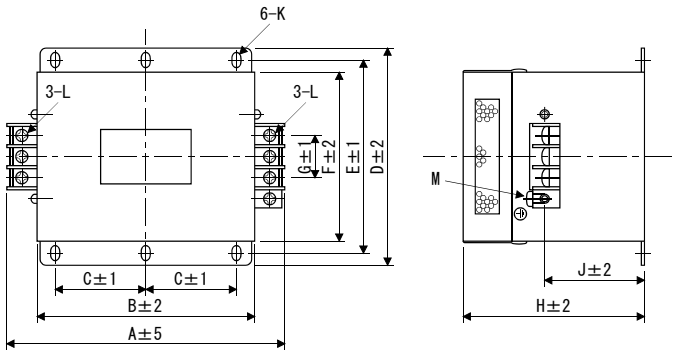
Note. Soshin Electric. A surge protector is separately required to use any of these EMC filters. (See EMC Installation Guidelines.)

6.1.1 Dimensions

[Unit: mm]

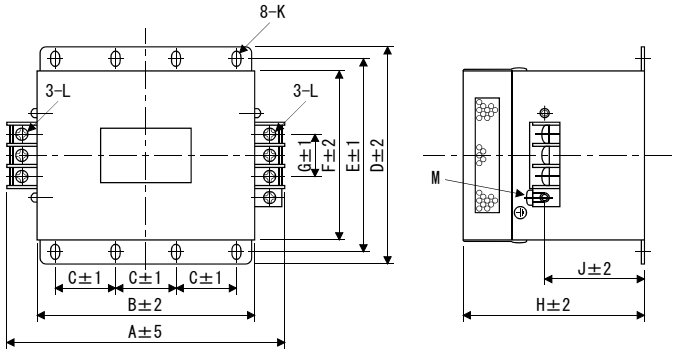


HF3040A-TM/HF3050A-TM/HF3060A-TMA



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												

6.2 MR-J2S-Series EMC Filter (400 V)

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.

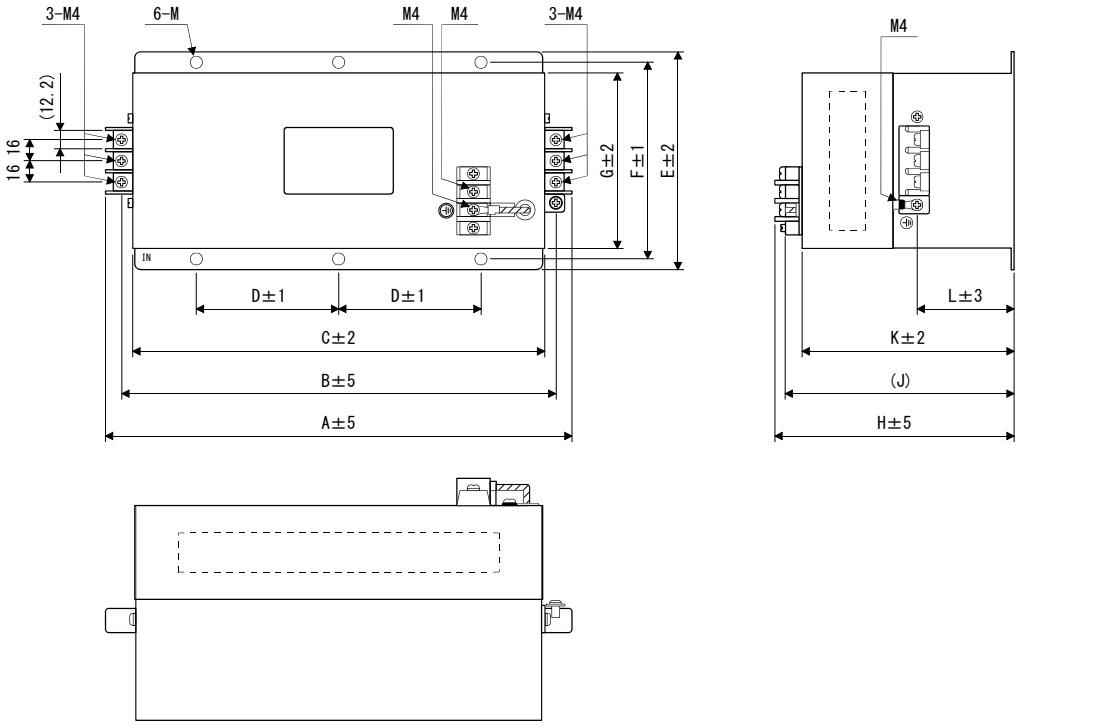
Combination with the servo amplifier

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		7.5
MR-J2S-15K_4	TF3040C-TX		12.5
MR-J2S-22K_4	TF3060C-TX		

Note 1. Soshin Electric
2. When one phase opens with the three-phase neutral-point (N) grounded power supply, the value will be 350 mA.

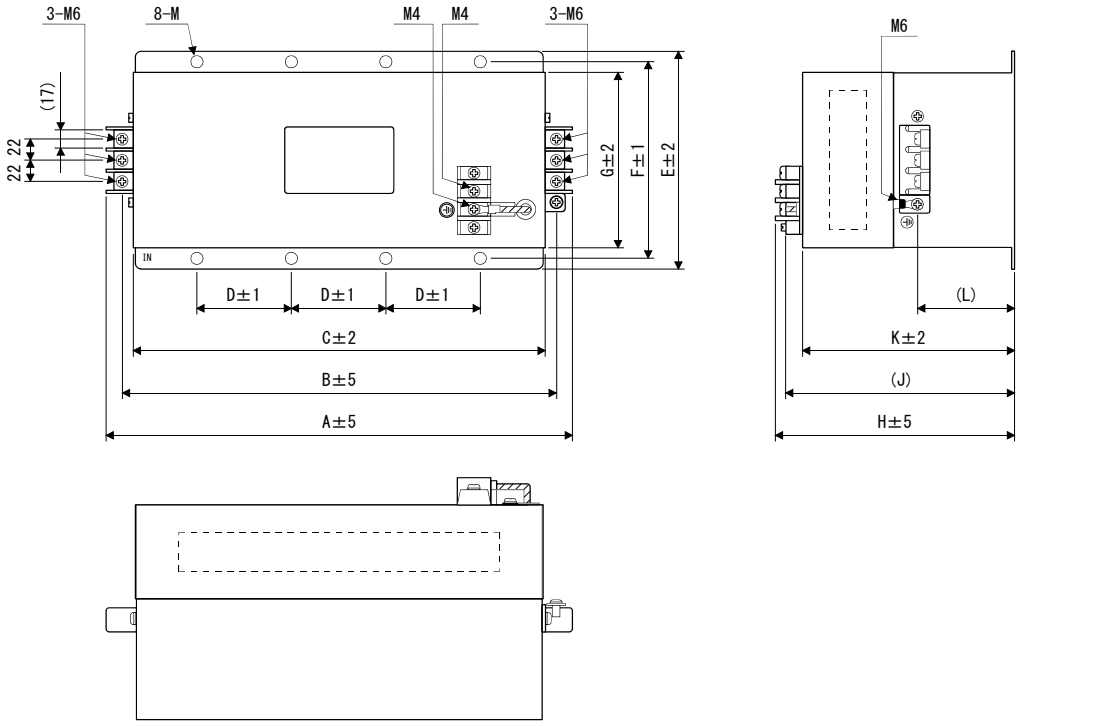
6.2.1 Dimensions

[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 (M6)
TF3020C-TX												
TF3030C-TX												

[Unit: mm]



Model	Dimensions [mm]											
	A	B	C	D	E	F	G	H	J	K	L	M
TF3040C-TX TF3060C-TX	438	412	390	100	175	160	145	200	(190)	180	(91.5)	R3.25 length 8 (M6)

6.3 MR-J4-Series EMC Filter (Recommended) (200 V)

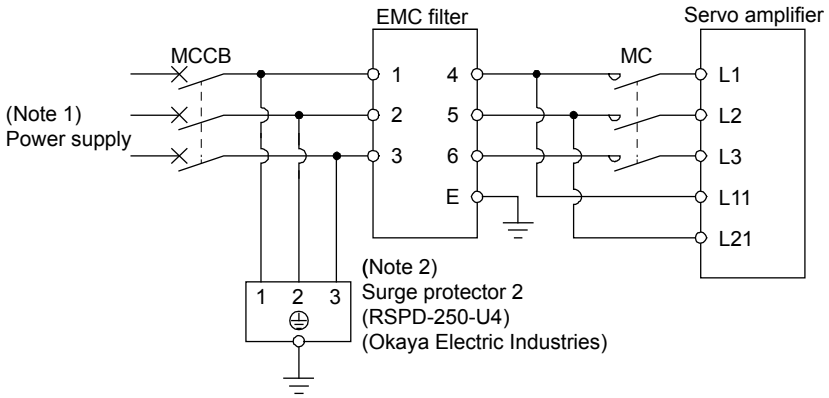
It is recommended that one of the following filters be used to comply with EN EMC directive.
Some EMC filters have large in leakage current.

Table: Combination with servo amplifier

Servo amplifier	Recommended filter (Soshin Electric)				Mass [kg]
	Model	Rated current [A]	Rated voltage [V AC]	Leakage current [mA]	
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
MR-J4-500_, MR-J4-700_	(Note) HF3040A-UN	40		6.5	6
MR-J4-11K_, MR-J4-15KA_, MR-J4-22KA_	(Note) HF3100A-UN	100			12

Note. A surge protector is separately required to use any of these EMC filters.

6.3.1 Connection example

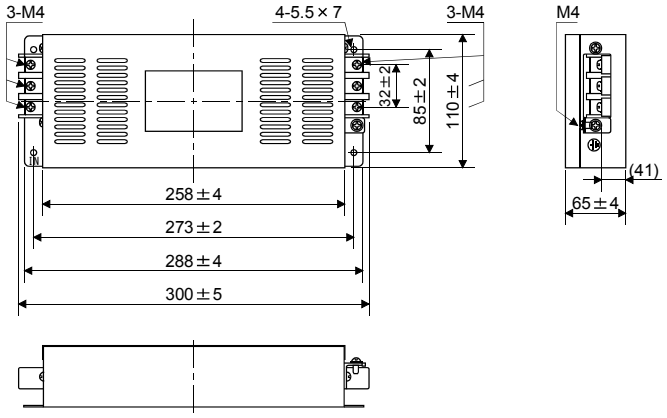


Note 1. For 1-phase 200 V AC to 240 V AC, connect the power supply to L1 and L3. Leave L2 open.
2. The example is when a surge protector is connected.

6.3.2 Dimensions

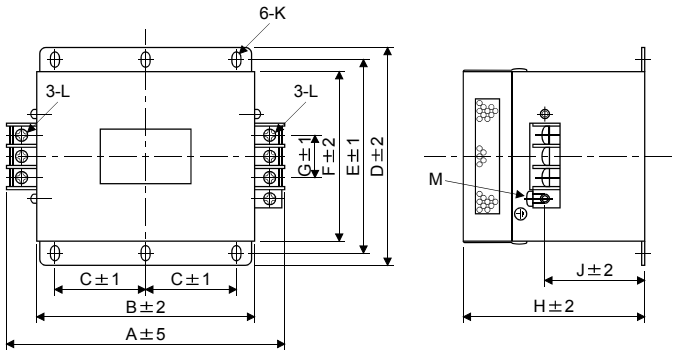
HF3010A-UN

[Unit: mm]



HF3030A-UN/HF-3040A-UN

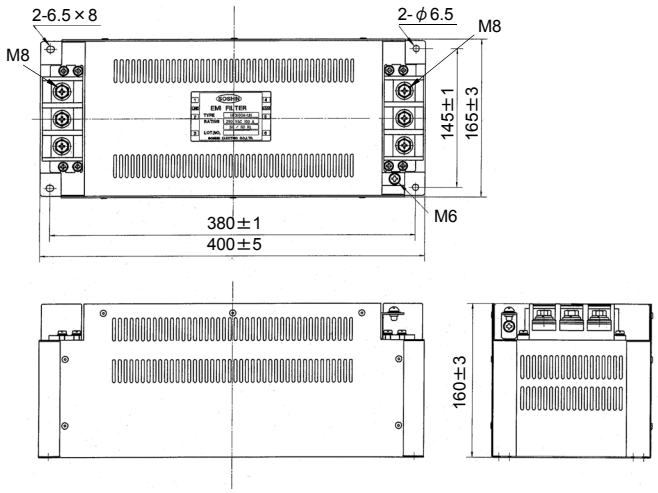
[Unit: mm]



Model	Dimensions [mm]											
	A	B	C	D	E	F	G	H	J	K	L	M
HF3030A-UN HF3040A-UN	260	210	85	155	140	125	44	140	70	R3.25 length 8	M5	M4

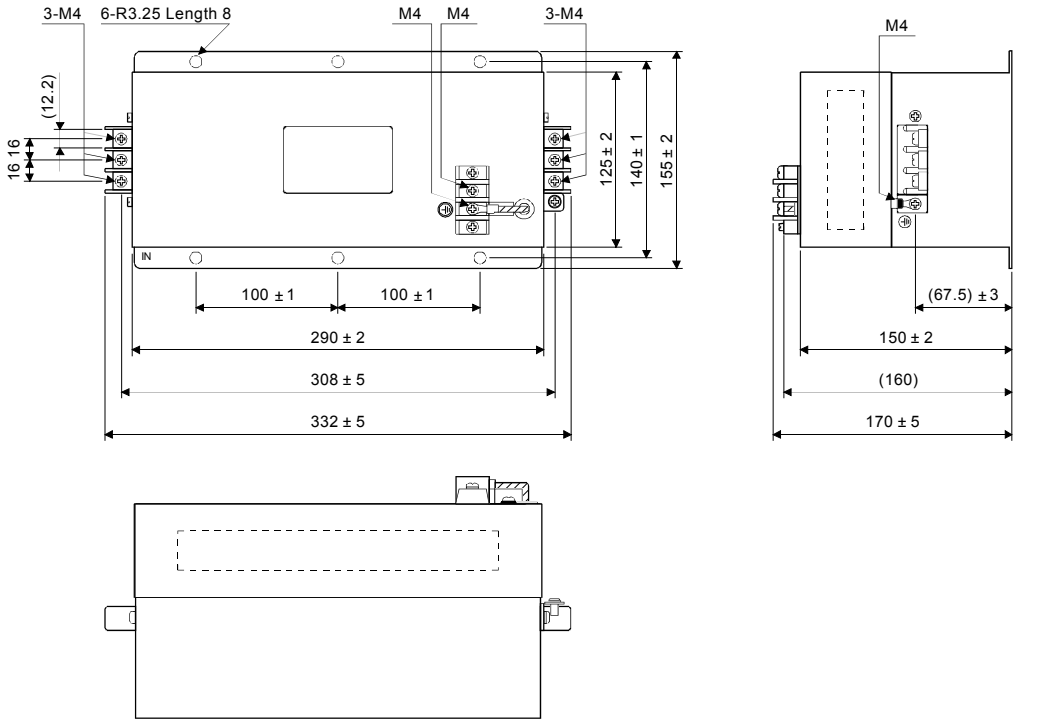
HF3100A-UN

[Unit: mm]



TF3005C-TX/TF3020C-TX/TF3030C-TX

[Unit: mm]



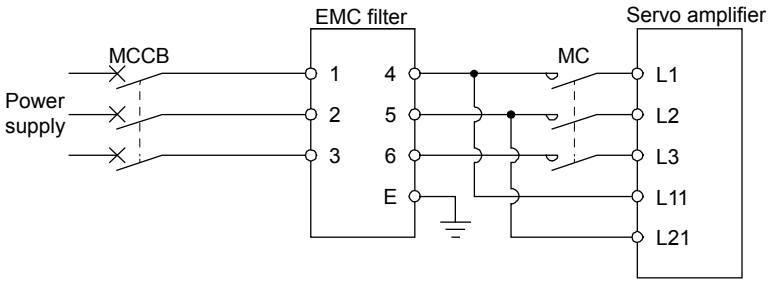
6.4 MR-J4-Series EMC Filter (Recommended) (400 V)

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 [V AC]	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			
MR-J4-11K_4	TF3030C-TX	30			7.5
MR-J4-15K_4	TF3040C-TX	40			12.5
MR-J4-22K_4	TF3060C-TX	60			

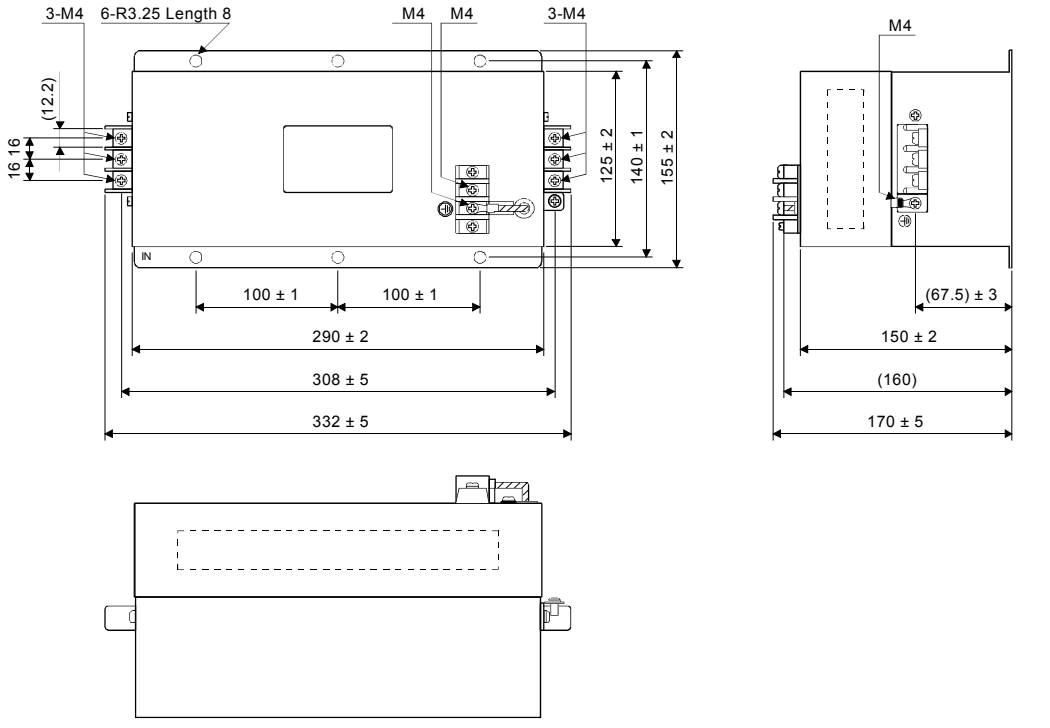
6.4.2 Connection example



6.4.3 Dimensions

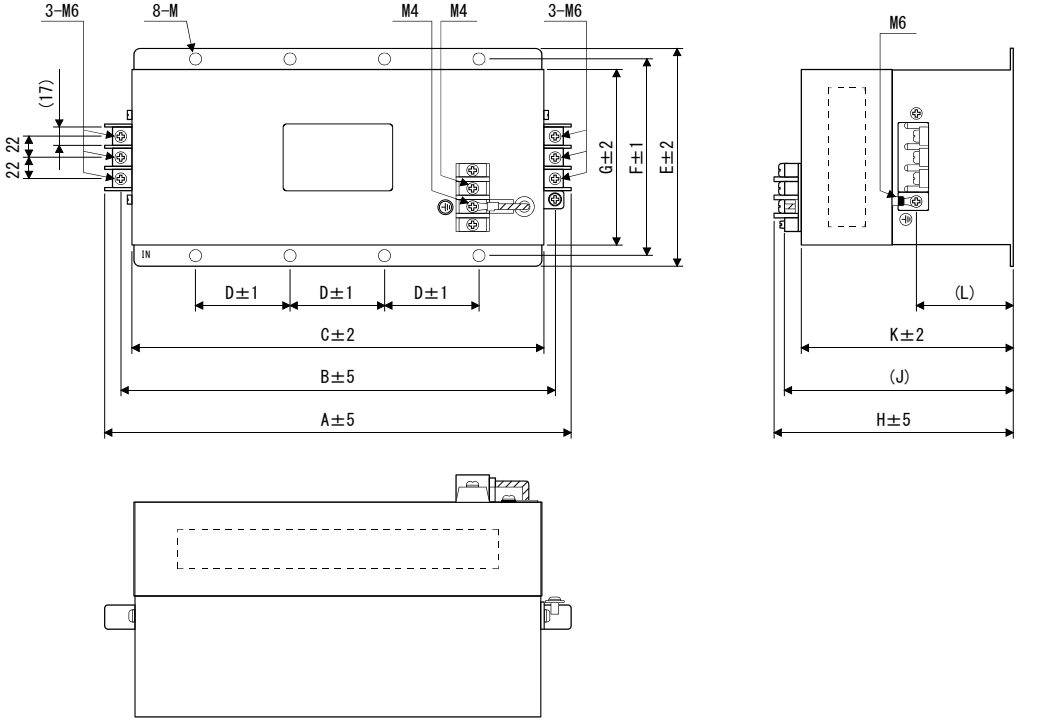
TF3005C-TX/TF3020C-TX/TF3030C-TX

[Unit: mm]



TF3040C-TX/TF3060C-TX

[Unit: mm]

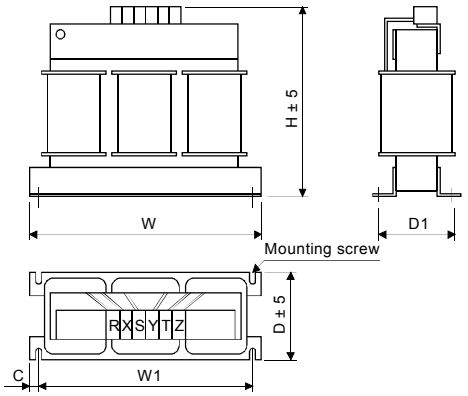


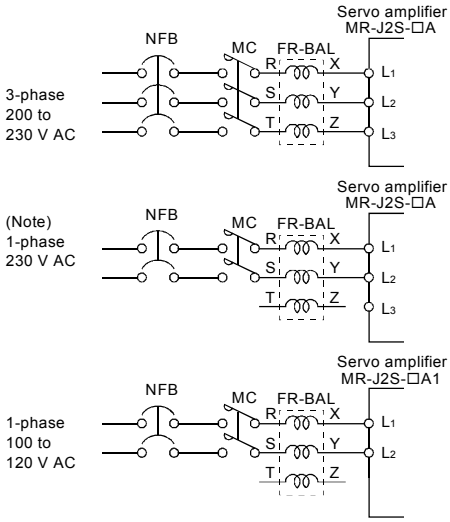
Model	Dimensions [mm]											
	A	B	C	D	E	F	G	H	J	K	L	M
TF3040C-TX F3060C-TX	438	412	390	100	175	160	145	200	(190)	180	(91.5)	R3.25 length 8 (M6)

7 POWER FACTOR IMPROVING AC REACTOR/POWER FACTOR IMPROVING DC REACTOR

7.1 MR-J2S-Series Power Factor Improving AC Reactor (200 V)

The input power factor is improved to about 90%. For use with a 1-phase power supply, it may be slightly lower than 90%.



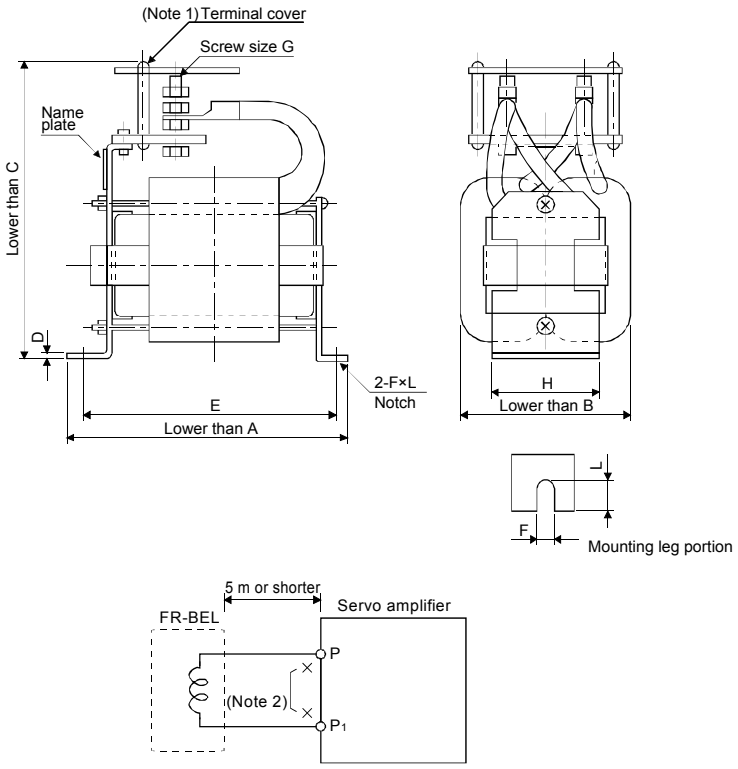


Note. For 1-phase 230 V AC, connect the power supply to L1/L2. Leave L3 open.

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_ MR-J2S-20_	FR-BAL-0.4K	135	120	115	59	$45^{0}_{-2.5}$	7.5	M4	M3.5	2.0
MR-J2S-40_	FR-BAL-0.75K	135	120	115	69	$57^{0}_{-2.5}$	7.5	M4	M3.5	2.8
MR-J2S-60_ MR-J2S-70_	FR-BAL-1.5K	160	145	140	71	$55^{0}_{-2.5}$	7.5	M4	M3.5	3.7
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_ MR-J2S-11K_	FR-BAL-15K	295	270	275	133	$110^{0}_{-2.5}$	12.5	M6	M6	27
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

7.2 MR-J2S-Series Power Factor Improving DC Reactor (200 V)

The input power factor is improved to about 95%.

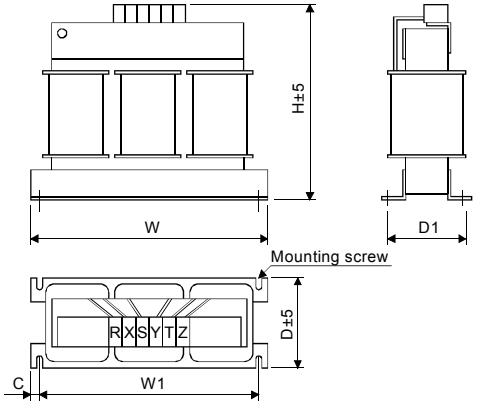


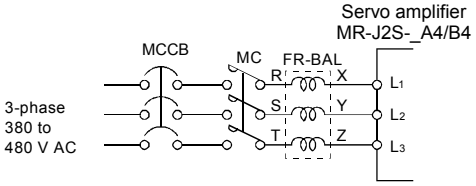
Note 1. Since the terminal cover is supplied, attach it after connecting a wire.
2. When using a power factor improving DC reactor, remove the short-circuit bar between P_1 and P.

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)

7.3 MR-J2S-Series Power Factor Improving AC Reactor (400 V)

The input power factor is improved to about 90%.

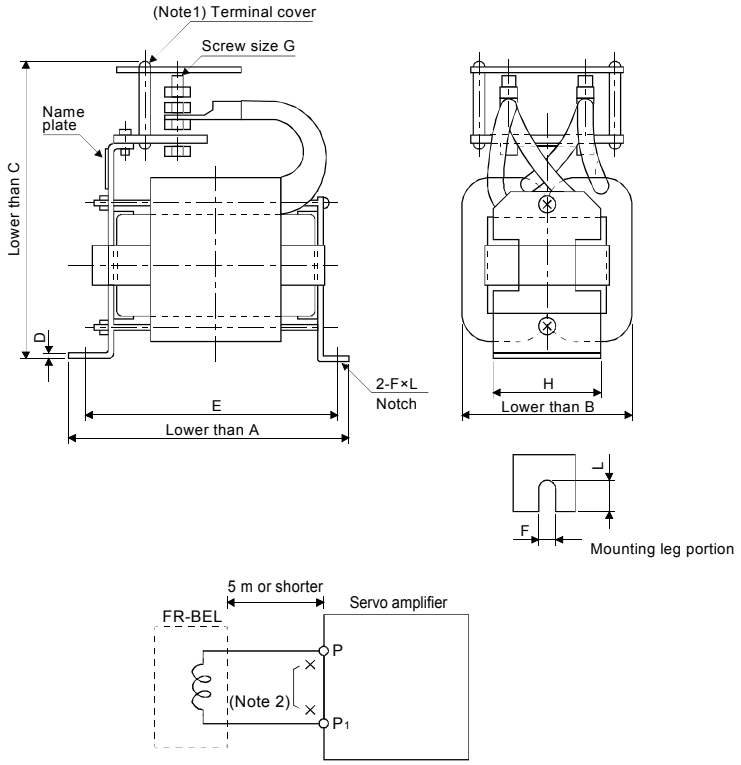




Servo amplifier	Power factor improving reactor	Dimensions [mm]						Mounting screw Size	Terminal screw Size	Mass [kg]
		W	W1	H	D	D1	C			
MR-J2S-60_4	FR-BAL-H1.5K	160	145	140	87	70 $^{0}_{-2.5}$	7.5	M4	M3.5	5.3
MR-J2S-100_4	FR-BAL-H2.2K	160	145	140	91	75 $^{0}_{-2.5}$	7.5	M4	M3.5	5.9
MR-J2S-200_4	FR-BAL-H3.7K	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

7.4 MR-J2S-Series Power Factor Improving DC Reactor (400 V)

The input power factor is improved to about 95%.



Note 1. Since the terminal cover is supplied, attach it after connecting a wire.
2. When using a power factor improving DC reactor, remove the short-circuit bar between P_1 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	

7.5 MR-J4-Series Power Factor Improving DC Reactor (200 V)

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.

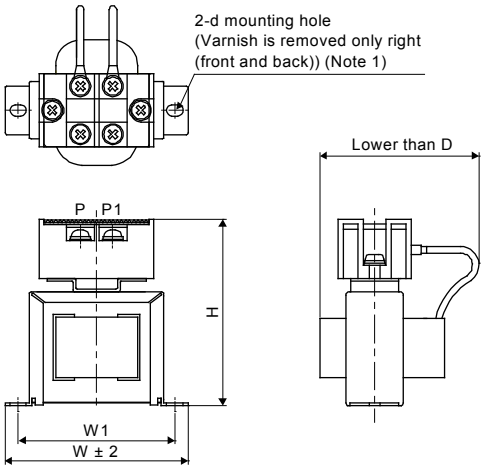


Fig. 7.1

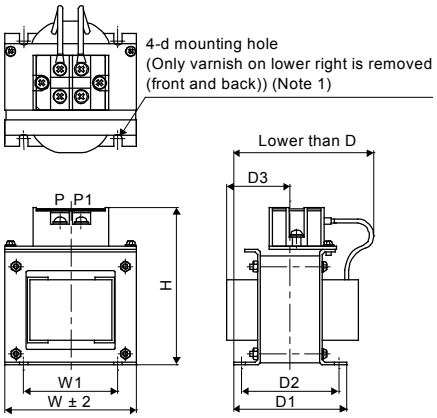
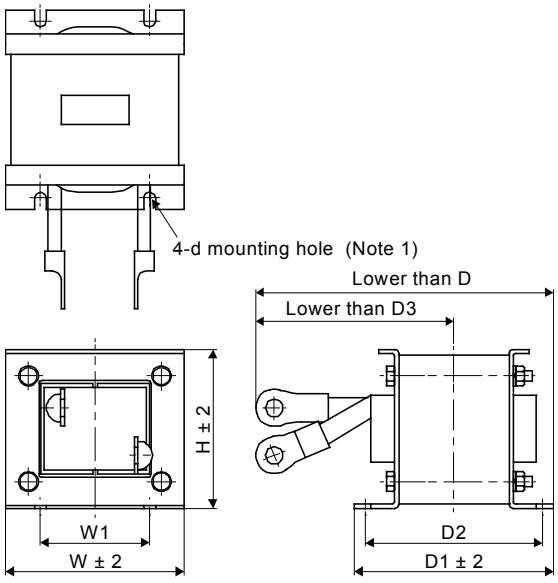


Fig. 7.2



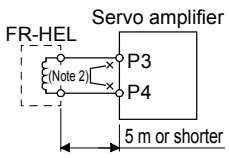


Fig. 7.3

Note 1. Use this for grounding.
2. When using the power factor improving DC reactor, remove the short bar across P3 and P4.

Servo amplifier	Power factor improving DC reactor	Dimensions	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	
MR-J4-350_	FR-HEL-7.5K		86	60	113	98	81	72	43	M4	M5	2.5	3.5 (AWG 12)
MR-J4-500_	FR-HEL-11K		105	64	133	112	92	79	47	M6	M6	3.3	5.5 (AWG 10)
MR-J4-700_	FR-HEL-15K		105	64	133	115	97	84	48.5	M6	M6	4.1	8 (AWG 8)
MR-J4-11K_	FR-HEL-15K		105	64	133	115	97	84	48.5	M6	M6	4.1	14 (AWG 6)
MR-J4-15K_	FR-HEL-22K		105	64	93	175	117	104	115 (Note 1)	M6	M10	5.6	22 (AWG 4)
MR-J4-22K_	FR-HEL-30K	Fig. 7.3	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.

2. Selection conditions of wire size is as follows.
   Electric wire type: 600 V grade heat-resistant polyvinyl chloride insulated wire (HIV wire)
   Wiring condition: In-air, one-row wiring

7.6 MR-J4-Series Power Factor Improving AC Reactor (200 V)

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, be 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.

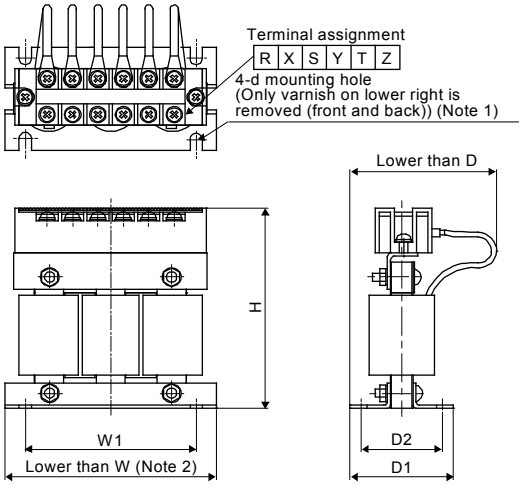
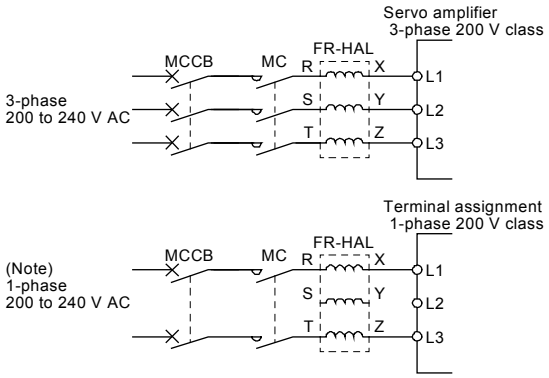


Fig. 7.4

Note 1. Use this for grounding.
2. W ± 2 is applicable for FR-HAL-0.4K to FR-HAL-1.5K.



Note. For 1-phase 200 V AC to 240 V AC, connect the power supply to L1 and L3. Leave L2 open.

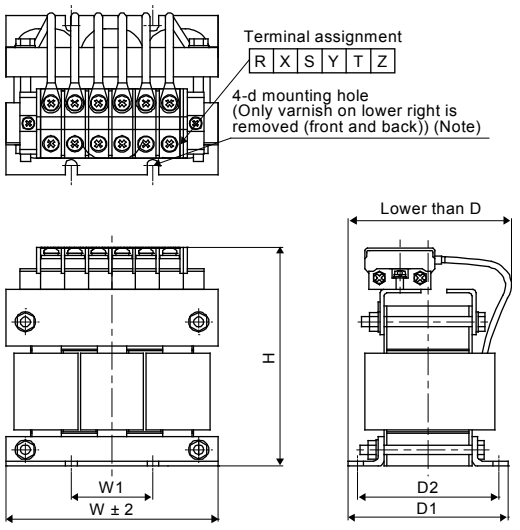


Fig. 7.5

Note. Use this for grounding.

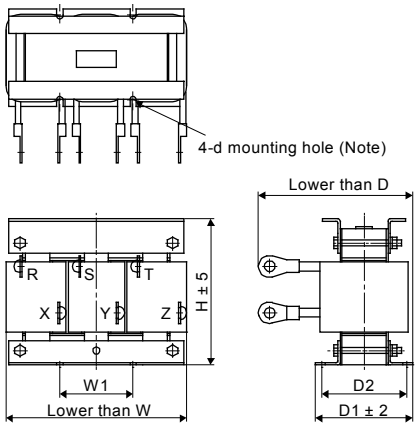


Fig. 7.6

Note. Use this for grounding.

Servo amplifier	Power factor improving AC reactor	Dimensions	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.

7.7 MR-J4-Series Power Factor Improving DC Reactor (400 V)

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.

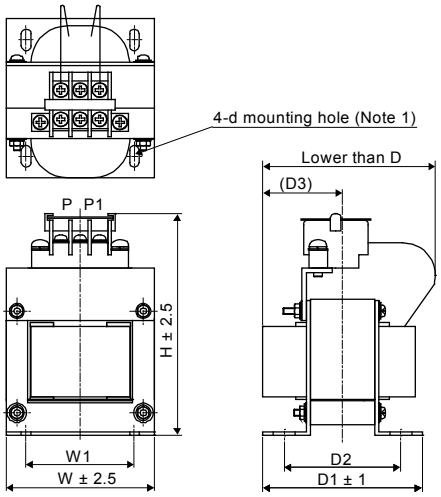


Fig. 7.7

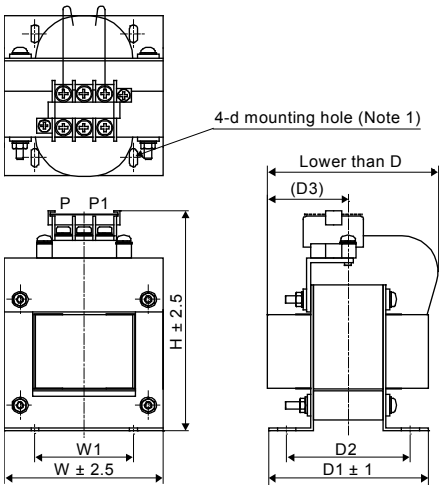
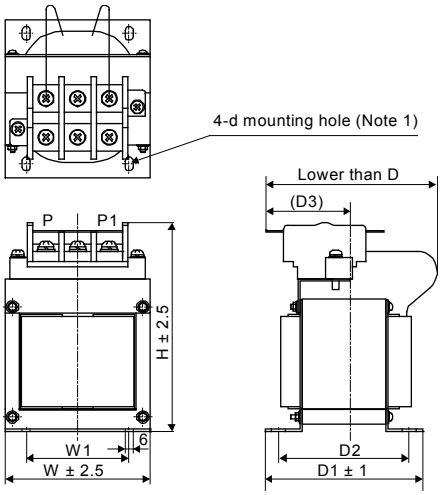


Fig. 7.8



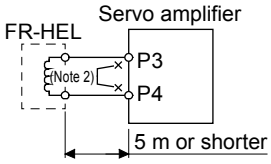


Fig. 7.9

Note 1. Use this for grounding.
2. When using the power factor improving DC reactor, remove the short bar across P3 and P4.

Servo amplifier	Power factor improving DC reactor	Dimensions	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		105	75	137	110	105	85	53	M5	M5	4.5	3.5 (AWG 12)
MR-J4-700_4	FR-HEL-H15K	Fig. 7.9	105	75	152	125	115	95	62	M5	M6	5.0	5.5 (AWG 10)
MR-J4-11K_4													8 (AWG 8)
MR-J4-15K_4	FR-HEL-H22K		133	90	178	120	95	75	53	M5	M6	6.0	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 is as follows.
Electric wire type: 600 V grade heat-resistant polyvinyl chloride insulated wire (HIV wire)
Wiring condition: In-air, one-row wiring

7.8 MR-J4-Series Power Factor Improving AC Reactor (400 V)

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, be 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.

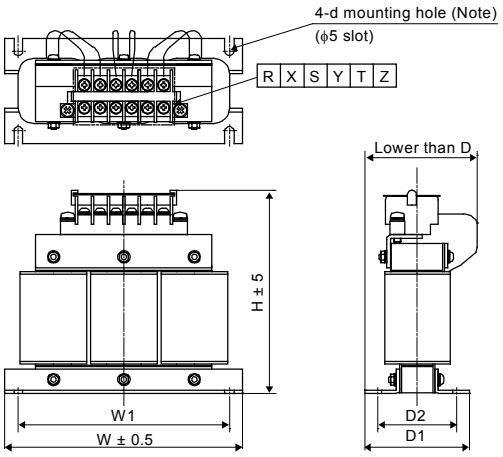
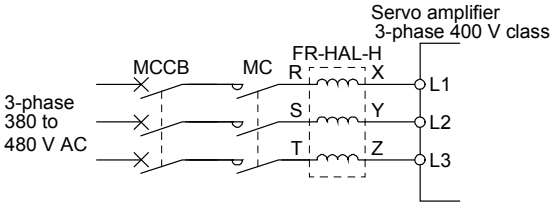


Fig. 7.10



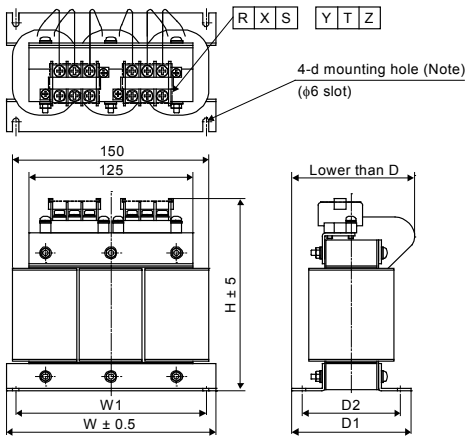


Fig. 7.11

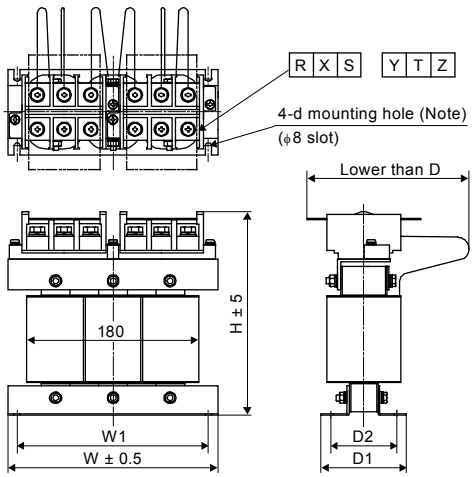


Fig. 7.12

Note. Use this for grounding.

Servo amplifier	Power factor improving AC reactor	Dimensions	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		220	200	195	105	90	70	M5	M5	9.0
MR-J4-15K_4	FR-HAL-H22K	Fig. 7.12	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.

8 MR Configurator

8.1 MR-J2S-Series MR Configurator (Setup Software)

MR Configurator (setup software MRZJW3-SETUP161E) uses the communication function of the servo amplifier to change parameter setting values, display graphs, and perform test operations, etc., on the personal computer.

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)
Monitor	Display all, I/O monitor, graph, and ABS data display
Diagnosis	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
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 with standard control mode.
2. This function is available only with fully closed loop control mode.
3. This function is available only with linear servo motor control mode.
4. This function is available with standard control mode, fully closed loop control mode, and DD motor control mode.
5. This function is available only with 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.

8.3 System Requirements

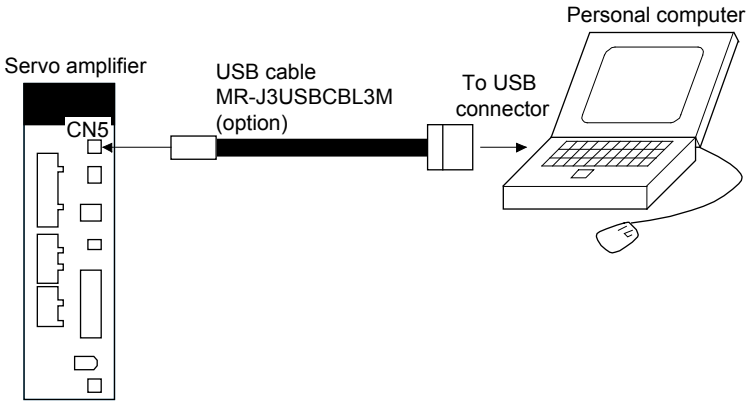
8.3.1 Components

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 Pro Microsoft® Windows® 8 Microsoft® Windows® 7 Enterprise [Service Pack none/1] Microsoft® Windows® 7 Ultimate [Service Pack none/1] Microsoft® Windows® 7 Professional [Service Pack none/1] Microsoft® Windows® 7 Home Premium [Service Pack none/1] Microsoft® Windows® 7 Starter [Service Pack none/1] Microsoft® Windows Vista® Enterprise [Service Pack none /1/2] Microsoft® Windows Vista® Ultimate [Service Pack none/1/2] Microsoft® Windows Vista® Business [Service Pack none/1/2] Microsoft® Windows Vista® Home Premium [Service Pack none/1/2] Microsoft® Windows Vista® Home Basic [Service Pack none/1/2] Microsoft® Windows® XP Professional [Service Pack 2/3] Microsoft® Windows® XP Home Edition [Service Pack 2/3] Microsoft® Windows® 2000 Professional [Service Pack 4]
	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 computer.	
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)
• DPI settings other than 96 DPI (Display property)
For 64-bit operating system, this software is compatible with Windows® 7.
4. When Windows® 7or 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

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.

MEMO

Part 8
Startup Procedure Manual

Part 8: Startup Procedure Manual

1 STARTUP

⚠ WARNING

- Do not operate the switches with wet hands. Otherwise, it may cause an electric shock.

⚠ CAUTION

- 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, e.g. 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

Parameter settings check for the currently used model	Confirm the parameter settings of the currently used MR-J2S amplifier with the display or with the setup software and record them.
↓	
Wiring check	Visually verify that the wires are correctly connected to the servo amplifier and the servo motor.
↓	
Surrounding environment check	Check the surrounding environment of the servo amplifier and servo motor.
↓	
Parameter setting (Note 1)	Set the parameters as necessary, such as the used control mode and regenerative option selection. (See this Replacement Manual.)
↓	
Test operation of the servo motor alone in the test operation mode (Note 1) (Note 2)	For the test operation, with the servo motor disconnected from the machine and operated at the speed as low as possible, check whether the servo motor rotates correctly.
↓	
Test operation of the servo motor alone by commands (Note 1) (Note 2)	For the test operation with the servo motor disconnected from the machine and operated at the speed as low as possible, give commands to the servo amplifier and check whether the servo motor rotates correctly.
↓	
Test operation with the servo motor and machine connected	After connecting the servo motor to the machine, check the motions of the machine by sending operation commands from a higher-level command-issuing device.
↓	
Gain adjustment (Note 1)	Make gain adjustment to optimize the machine motions.
↓	
Actual operation (Note 2)	Perform a home position return as necessary when in position control mode.
↓	
Stop	Stop giving commands and stop operation. In addition, check the conditions when the servo motor operation stops.

Note 1. For details about the settings for each servo amplifier and its test operation, see the applicable Servo Amplifier Instruction Manual. When the gain of the existing servo amplifier is extremely high, the characteristics may be slightly different after primary replacement. Make sure to set the gain again.

2. When turning on the power supply, also turn on the 24 V DC power supply for the external interface. Otherwise, AL. E6.1 occurs.

[Appendix 1] Summary of MR-J4_B_-RJ020

[Appendix 1] Summary of MR-J4_B_-RJ020 + MR-J4-T20

1 SUMMARY

By combining the MR-J4-_B_-RJ020 servo amplifier compatible with a conversion unit for SSCNET of MR-J2S-B and the MR-J4-T20 conversion unit for SSCNET of MR-J2S-B, it is possible to connect the MR-J4 servo amplifier to the SSCNET compatible servo system controller for MR-J2S-B.

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_

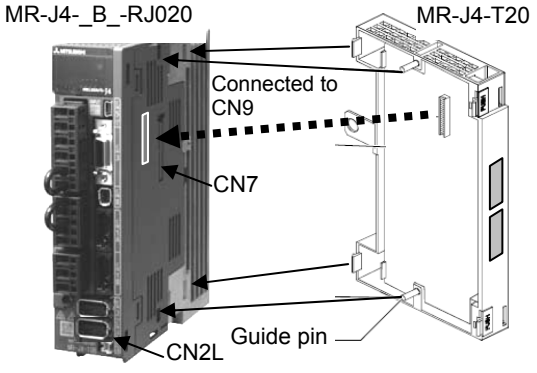
Using the SSCNET conversion unit for MR-J2S-B, the MR-J4-_B_ servo amplifier can be connected to the SSCNET compatible servo system controller for MR-J2S-B .

- 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
SSCNET conversion unit MR-J4-T20 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.



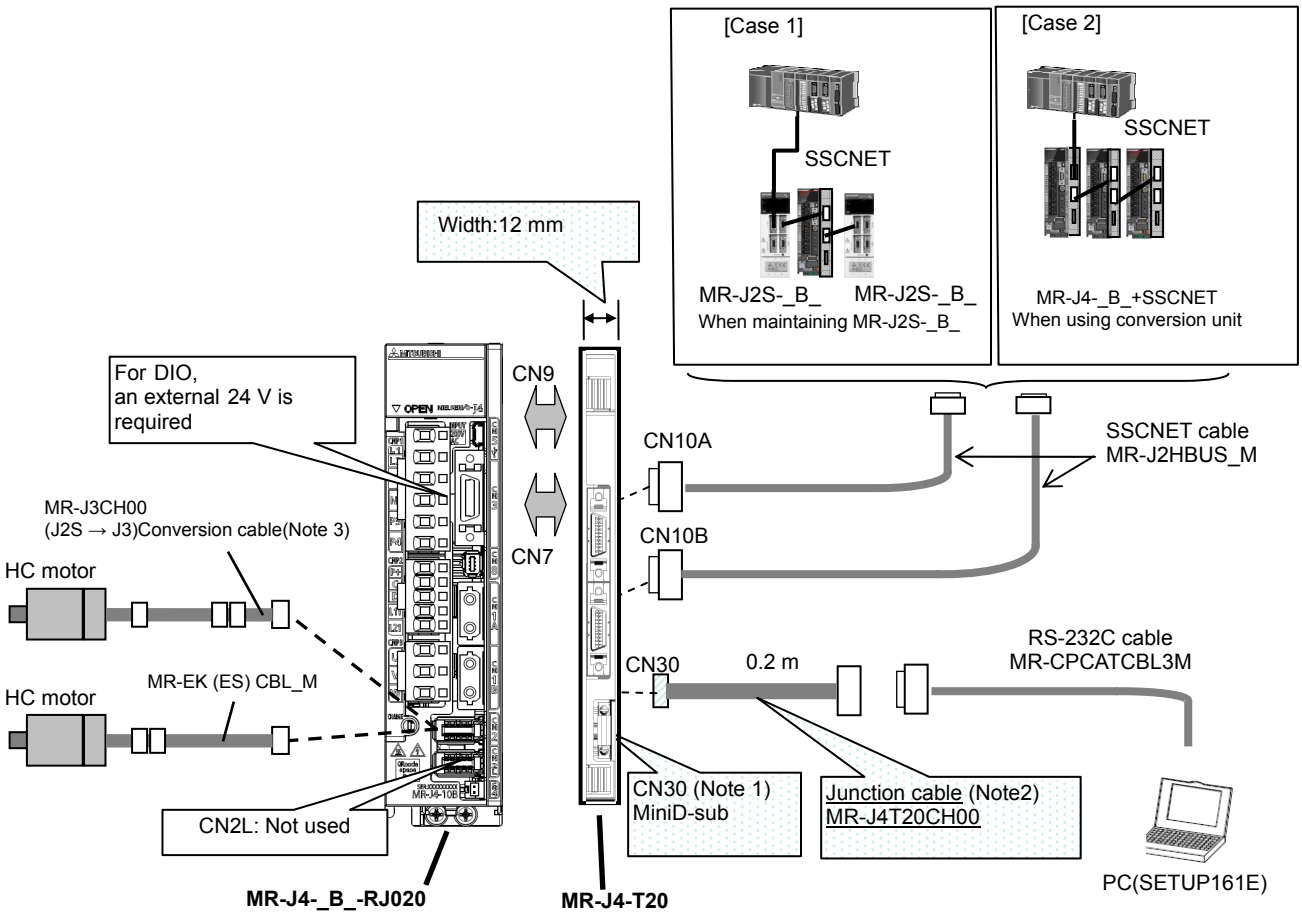
2 DIFFERENCES BETWEEN MR-J2S-_B_ AND MR-J4-_B_-RJ020

2.1 Function Comparison Table

		MR-J2S-_B	MR-J4-_B_-RJ020 MR-J4-T20	Remarks
System	Standard	○	○	
	Full.	Special specification	Note 1	
	Lin.	Special specification	Note 1	
	DDM	×	Note 1	
Supported network		SSCNET	SSCNET	
Supported motor		MR-J2S catalog motor MR-J2S optional motor	HG motor (Operates as 17 bits) HC-KFS HC-MFS HC-LFS HC-SFS HC-RFS HC-UFS HA-LFS motor	See "Chapter 7" of this document for details.
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	○	○	
	Gain search function	○	Note 2	
	Adaptive vibration suppression control	○	Note 2	
	Master-slave	○	Note 2	

Note 1. See "10 MODE SWITCHING METHOD".
2. This function is not needed after replacement.

3 SYSTEM CONFIGURATION

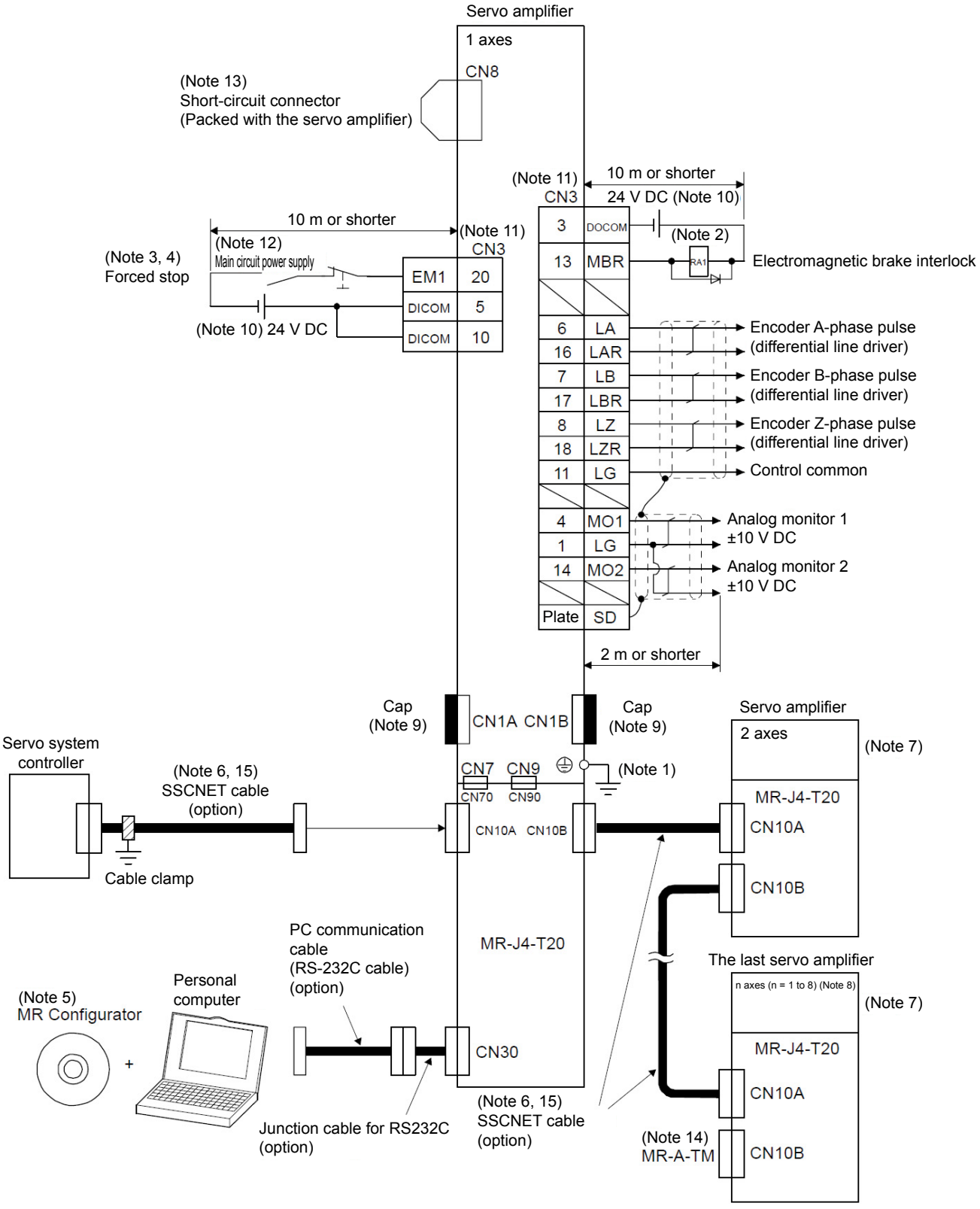


Note 1. While the SSCNET connector CN10A and CN10B use the D-sub connector as MR-J2SB does, the RS-232C connector uses a mini D-sub connector. Therefore, the MR-J4T20CH00 junction cable is used to connect to a conventional cable (MR-CPCATCBL3M).

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.

3. Use MR-J3CH00 or SC-J2SJ4ENC03M (manufactured by Mitsubishi Electric System & Service Co., Ltd.).

4 I/O SIGNAL CONNECTION EXAMPLE



Note
1. To prevent an electric shock, always connect the protective earth (PE) terminal (marked ⏚) of the servo amplifier to the protective earth (PE) of the cabinet.
2. Connect the diode in the correct direction. If it is connected reversely, the servo amplifier will malfunction and will not output signals, disabling EM1 (Forced stop) and other protective circuits.
3. If the controller does not have forced stop function, be sure to install the forced stop switch (normally closed contact).
4. When starting operation, always turn on EM1 (Forced stop). (Normally closed contact)
5. Use MRZJW3-SETUP161E. (Refer to section 11.7.)
6. The SSCNET cable differs depending on the controller or the servo amplifier to be connected. Select the SSCNET cable referring to the following table.

		MR-J4-_B(4)-RJ020 + MR-J4-T20
QD75M		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	MR-J2HBUS_M-A
MR-J2S-_B_・MR-J2-03B5 MR-J4-_B(4)-RJ020 + MR-J4-T20		MR-J2HBUS_M

7. The wiring after the second servo amplifier is omitted.
8. Up to eight axes (n = 1 to 8) can be connected.
9. CN1A and CN1B cannot be used in J2S compatibility mode. Make sure to attach a cap to the CN1A and CN1B connectors.
10. Supply 24 V DC ±10% current for interfaces from outside. The current capacity of these power supplies must be less than 100 mA in total. For convenience, the descriptions here are divided into those for input signals and those for output signals of the 24 V DC power supply, but single configuration is possible.
11. The pins with the same signal name are connected in the servo amplifier.
12. Configure a circuit to turn off EM1 when the main circuit power is turned off to prevent an unexpected restart of the servo amplifier.
13. The STO function cannot be used in J2S compatibility mode. When using, make sure to attach the shortt circuit connector that comes with the servo amplifier.
14. Make sure to mount the terminal connector (MR-A-TM) on CN10B of the final servo amplifier.
15. Use the SSCNET cable with a total length of 30 m or less. It is also recommended that the cable cramp or data line filter be used (by connecting three to four in a series) near the portion of the connector drawn out on the controller side in order to improve noise resistance.

5 PARAMETERS

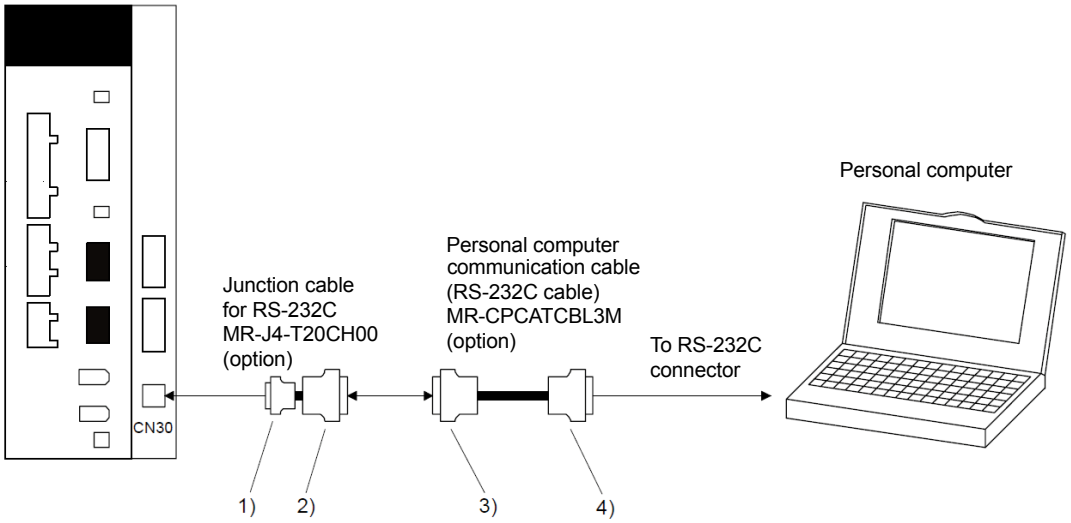
See the MELSERVO-J4 series MR-J4-_B_-RJ020/MR-J4-T20 servo amplifier Instruction Manual.

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 commu ication cable consists of the following two cables.

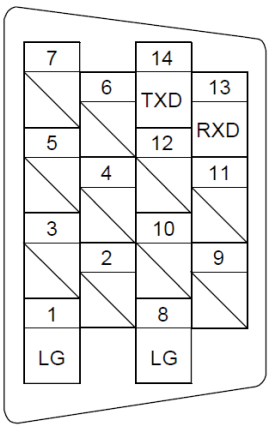
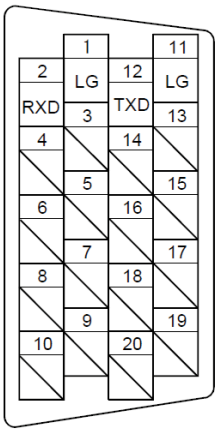
Cable model	Cable length	Product name
MR-J4T20CH00	0.2 m	Junction cable for RS-232C
MR-CPCATCBL3M	3 m	Personal computer communication cable (RS-232C cable)

(1) Connection between MR-J4-T20 and personal computer



(2) MR-J4-T20 side connector

(a) Cable specifications

Cable model	1) MR-J4-T20 side connector	2) Junction connector
MR-J4T20CH00	Connector: HDR-E14MG1+ Connector case: HDR-E14LPA5 (Honda Tsushin Kogyo)  View seen from the wiring side. (Note) Note. Do not connect anything to the pins shown as ▨.	Connector: 10220-0200EL Shell kit: 10320-E2W0-008 (3M)  View seen from the wiring side. (Note) Note. Do not connect anything to the pins shown as ▨.

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
	HC-KFS13	MR-J4-10B-RJ020	A0
	HC-KFS23	MR-J4-20B-RJ020	A0
	HC-KFS43	MR-J4-40B-RJ020	A0
	HC-KFS73	MR-J4-70B-RJ020	A0
HC-KFS high-speed rotation series	HC-KFS46	MR-J4-70B-RJ020	A0
	HC-KFS410	MR-J4-70B-RJ020	A0
HC-MFS series	HC-MFS053	MR-J4-10B-RJ020	A0
	HC-MFS13	MR-J4-10B-RJ020	A0
	HC-MFS23	MR-J4-20B-RJ020	A0
	HC-MFS43	MR-J4-40B-RJ020	A0
	HC-MFS73	MR-J4-70B-RJ020	A0
HC-LFS series	HC-LFS52	MR-J4-60B-RJ020	A0
	HC-LFS102	MR-J4-100B-RJ020	A0
	HC-LFS152	MR-J4-200B-RJ020	A0
	HC-LFS202	MR-J4-350B-RJ020	A0
	HC-LFS302	MR-J4-500B-RJ020	A0
HA-SFS 1000r/min series	HC-SFS81	MR-J4-100B-RJ020	A0
	HC-SFS121	MR-J4-200B-RJ020	A0
	HC-SFS201	MR-J4-200B-RJ020	A0
	HC-SFS301	MR-J4-350B-RJ020	A0
HC-SFS 2000r/min series	HC-SFS52	MR-J4-60B-RJ020	A0
	HC-SFS102	MR-J4-100B-RJ020	A0
	HC-SFS152	MR-J4-200B-RJ020	A0
	HC-SFS202	MR-J4-200B-RJ020	A0
	HC-SFS352	MR-J4-350B-RJ020	A0
	HC-SFS502	MR-J4-500B-RJ020	A0
	HC-SFS702	MR-J4-700B-RJ020	A0
	HC-SFS524	MR-J4-60B4-RJ020	A0
	HC-SFS1024	MR-J4-100B4-RJ020	A0
	HC-SFS1524	MR-J4-200B4-RJ020	A0
	HC-SFS2024	MR-J4-200B4-RJ020	A0
	HC-SFS3524	MR-J4-350B4-RJ020	A0
	HC-SFS5024	MR-J4-500B4-RJ020	A0
	HC-SFS7024	MR-J4-700B4-RJ020	A0
HC-SFS 3000r/min series	HC-SFS53	MR-J4-60B-RJ020	A0
	HC-SFS103	MR-J4-100B-RJ020	A0
	HC-SFS153	MR-J4-200B-RJ020	A0
	HC-SFS203	MR-J4-200B-RJ020	A0
	HC-SFS353	MR-J4-350B-RJ020	A0
HC-RFS series	HC-RFS103	MR-J4-200B-RJ020	A0
	HC-RFS153	MR-J4-200B-RJ020	A0
	HC-RFS203	MR-J4-350B-RJ020	A0
	HC-RFS353	MR-J4-500B-RJ020	(Note 1)
	HC-RFS503	MR-J4-500B-RJ020	A0

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
	HA-LFS702	MR-J4-700B-RJ020	A0
	HA-LFS11K2	MR-J4-11KB-RJ020	(Note 1)
	HA-LFS15K2	MR-J4-15KB-RJ020	(Note 1)
	HA-LFS22K2	MR-J4-22KB-RJ020	(Note 1)
	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	(Note 1)
	HC-UFS152	MR-J4-200B-RJ020	(Note 1)
	HC-UFS202	MR-J4-350B-RJ020	(Note 1)
	HC-UFS352	MR-J4-500B-RJ020	(Note 1)
	HC-UFS502	MR-J4-500B-RJ020	(Note 1)
HC-UFS 3000r/min series	HC-UFS13	MR-J4-10B-RJ020	A0
	HC-UFS23	MR-J4-20B-RJ020	A0
	HC-UFS43	MR-J4-40B-RJ020	A0
	HC-UFS73	MR-J4-70B-RJ020	A0

Note 1. Please contact your local sales office if using these servo motors.

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) These replacement models do not have compatible mounting holes.

(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.

(3) The wire size may differ from that of the MR-J2S-_B_ servo amplifier.

(4) The dynamic brake characteristics are different from when combined with the MR-J2S-_B_ servo amplifier.

(5) The operation timing is partly different from the MR-J2S-_B_ servo amplifier. In particular, note the electromagnetic brake release time of vertical axis. The vertical axis may drop.

(6) When selecting options and peripheral equipment not described in this chapter, see Chapter 11 of "MR-J4-_B_-RJ020 MR-J4-T20 Servo Amplifier Instruction Manual".

8.2 Differences When Using HG Series Servo Motor

(1) Servo amplifier power supply specifications (200 V class only)
See the following table for items that differ from when using an HG series servo motor.

Model MR-J4-_-RJ020		10B	20B	40B	60B	70B	100B	200B	350B	500B	700B
Main circuit power supply input	Voltage/Frequency	3-phase 200 V AC to 230 V AC, 50 Hz/60 Hz or 1-phase 230 V AC, 50 Hz/60 Hz					3-phase 200 V AC to 230 V AC, 50 Hz/60 Hz				
	Permissible voltage fluctuation	For 3-phase 200 V AC to 230 V AC: 170 V AC to 253 V AC For 1-phase 170 V AC: 207 V AC to 253 V AC					3-phase 170 V AC to 253 V AC				

(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. The alarm can be canceled by shutting off the power after leaving the power on for a few min with the alarm being issued. If power is switched on with the servo motor operated at speed of 500 r/min or higher, position mismatch may occur due to external force or the like. Power must therefore be switched on when the servo motor is stopped.

(3) MR-BAT6V1SETbattery 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)

8.3 Gain adjustment

When using [Pr. 13 Position loop 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 DIMENSIONS

9.1 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 does 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)	8 mm	○
40B/60B	52 × 168 × 170	70 × 168 × 135	None		○
70B/100B	72 × 168 × 185	70 × 168 × 190	2 mm (Note 2)	8 mm	△
200B/350B	97 × 168 × 195	90 × 168 × 195	7 mm (Note 2)	3 mm	△
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		△
60B4/100B4	72 × 168 × 195	90 × 168 × 195	None		△
200B4	97 × 168 × 195	90 × 168 × 195	7 mm (Note 2)	3 mm	△
350B4	107 × 250 × 200	130 × 250 × 200	None		△
500B4	132 × 250 × 200	130 × 250 × 200	2 mm (Note 2)	8 mm	△
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		△

Note 1. These are the installation intervals on the right side. All shaded 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..

9.2 Dimensions

These are external views when 100 W, 3.5 W, and 5 kW servo amplifiers are combined with MR-J4-T20. The views from the bottom show the increases in width.

9.2.1 Servo amplifier

MR-J4-10B-RJ020
MR-J4-T20

MR-J4-350B-RJ020
MR-J4-T20

MR-J4-500B-RJ020, MR-J4-T20

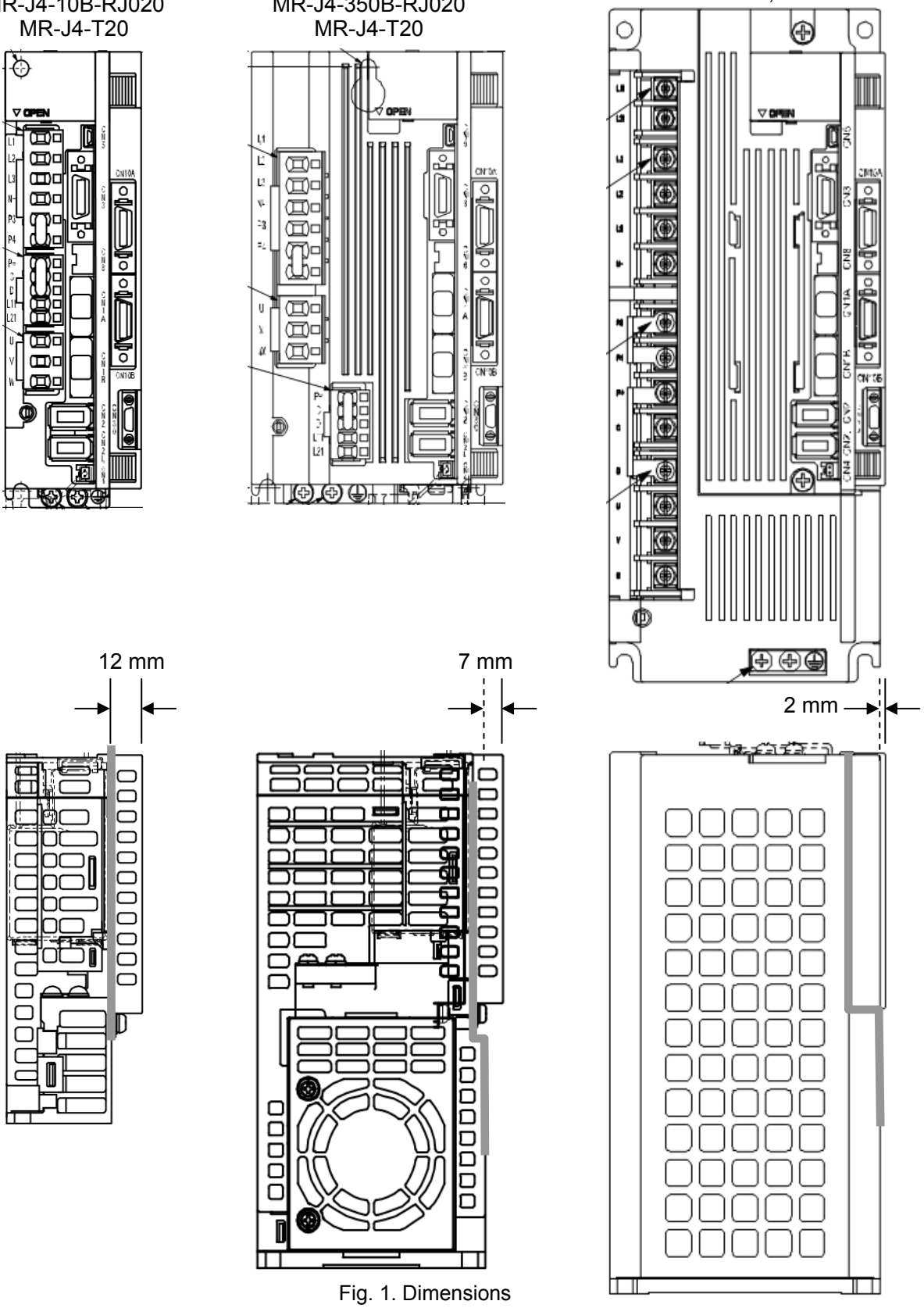


Fig. 1. Dimensions

9.2.2 Dimensions (MR-J4-T20)

The dimensions of MR-J4-T20 are shown below.

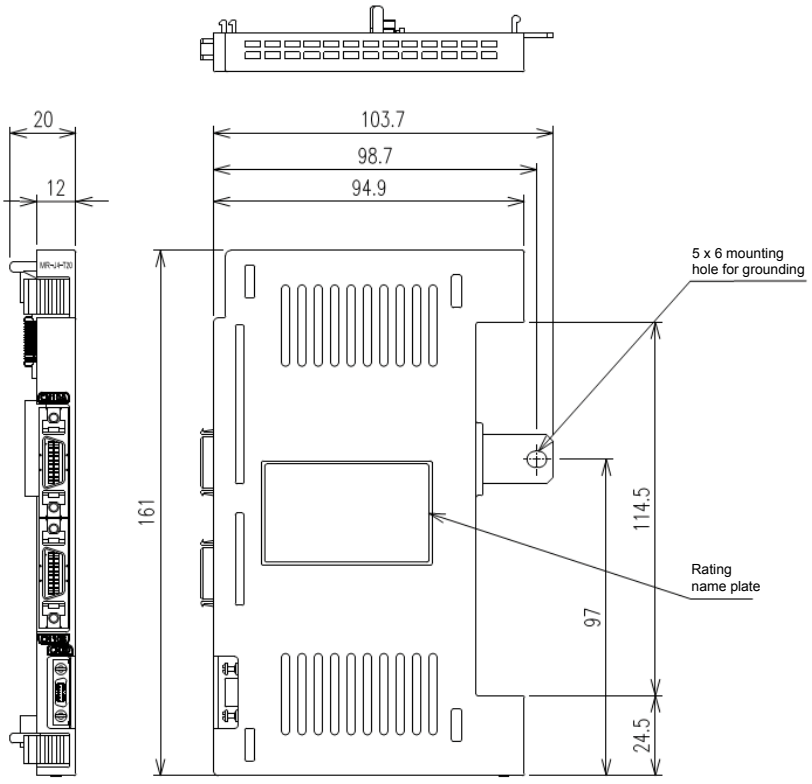


Fig. 2. Dimensions (MR-J4-T20)

10 MODE SWITCHING METHOD

POINT

- 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.

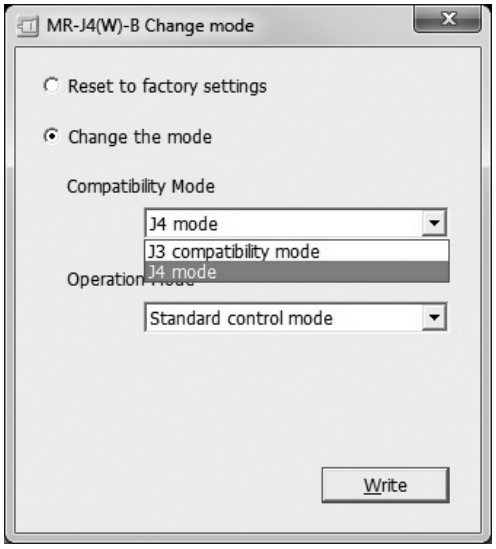
Function	Availability	
	MR-J4-_B	MR-J4-_B_-RJ020
CN2L connector	None	Yes (Not supported)
Linear servo system	Supported	Not supported
Direct drive servo system	Supported	Not supported
Fully closed loop system	Supported	Not supported

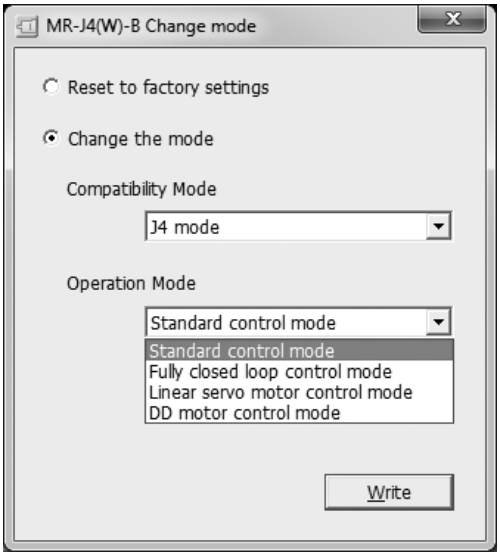
10.1 Mode Switching Method from J2S Compatibility Mode to J4 Mode

(1) Turn on the servo amplifier without MR-J4-T20.

(2) 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.

(3) Select "Change the mode", and then choose "J4 mode". Do not choose any control mode other than "Standard control mode" for the "Operation Mode".





(4) Click the "Write" button.

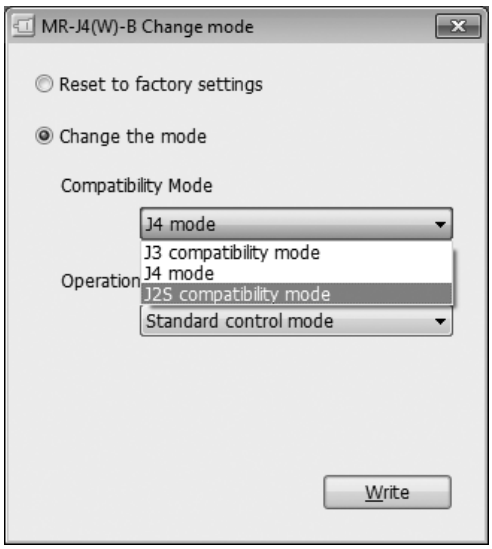
(5) By cycling the power supply of the servo amplifier, the mode will switch to J4 mode.

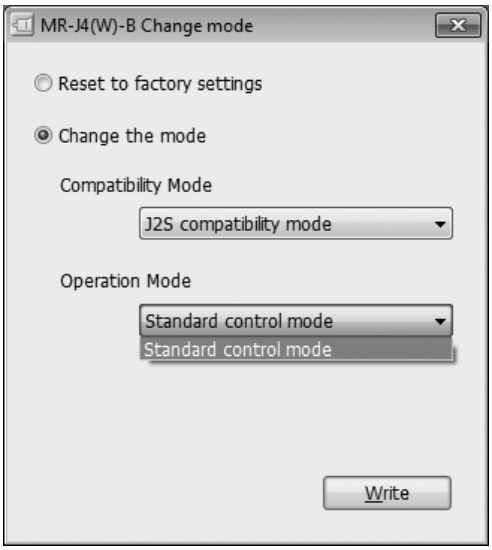
10.2 Mode Switching Method from J4 Mode to J2S Compatibility Mode

(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 "Change the 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.

MEMO

[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

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 model
General-purpose interface (Hereinafter referred to as A type)	MR-J2S-_A (_: 10 to 22K)	→	MR-J4-_A (_: 10 to 22K)
SSCNET Interface (Hereinafter referred to as B type)	MR-J2S-_B (_ : 10 to 22K)		MR-J4-_B-RJ020 (_: 10 to 22K) + MR-J4-T20

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.
- 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.

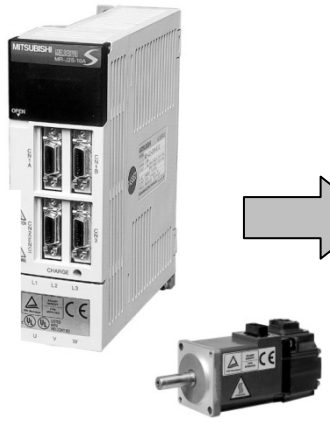
  Secondary replacement: Replace the servo motor after replacement of the servo amplifier.

  Simultaneous replacement: Replace the servo amplifier and the servo motor simultaneously.

  * It is not possible to replace the servo motor only.
  * A separate 24 V DC power supply (current capacity: 80 mA or more) for the interface is required when the internal 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.)

1.2.1 MR-J2S-_A_ renewal tool

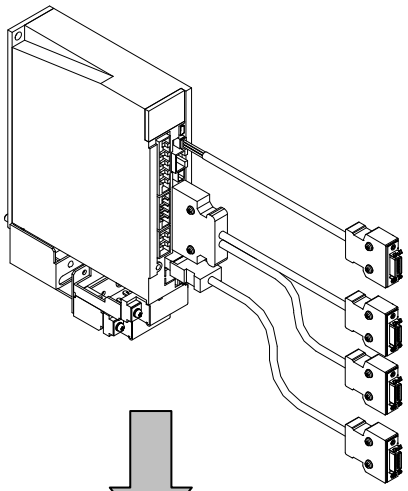
[Before replacement]

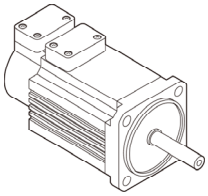


MR-J2S-_A_ servo amplifier and servo motor for MR-J2S

[After replacement]

<Primary replacement> When replacing the servo amplifier only

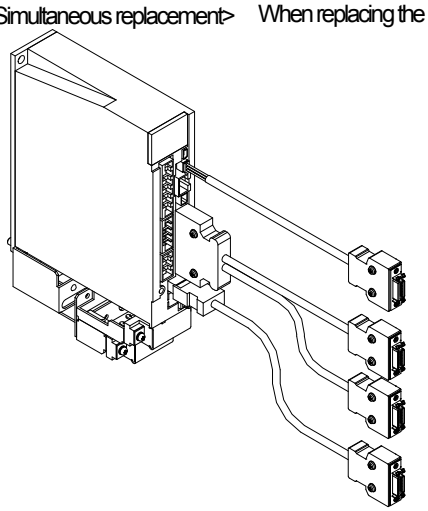


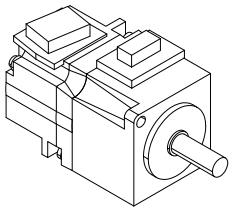


Servo motor for MR-J2S

<Secondary replacement> When replacing the servo motor after replacing the servo amplifier

<Simultaneous replacement> When replacing the servo amplifier and the servo motor simultaneously

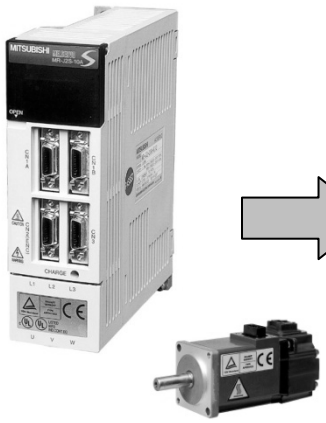




Servo motor for MR-J4

1.2.2 MR-J2S-_B_ renewal tool

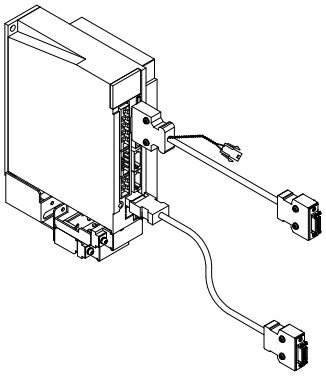
[Before replacement]

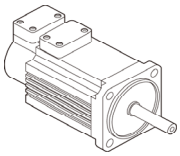


MR-J2S-_B_ servo amplifier and
Servo motor for MR-J2S

[After replacement]

<Primary replacement> When replacing the servo amplifier only

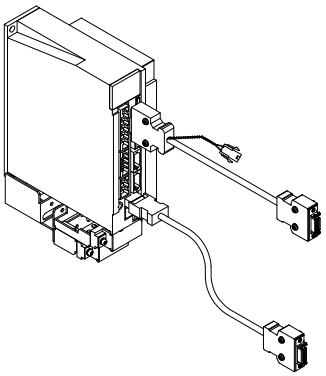


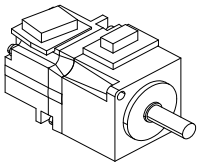


Servo motor for MR-J2S

<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

(1) Common items *When the renewal tool is used.

	Item	MR-J2S series	MR-J4 series	Renewal tool usage times	Compatibility (*)	Remarks
Servo amplifier	Capacity range	0.1 to 22 kW (200 V)	0.1 to 22 kW (200 V)	0.1 to 22 kW (200 V)	○	(Note 1)
	Dynamic brakes	Built-in (0.1 kW to 7 kW) External (11 kW to 22 kW)	Built-in (0.1 kW to 7 kW) External (11 kW to 22 kW) * Coasting distance is different.		△	(Note 2)
	Internal 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)		△	(Note 3)
	Control circuit power supply	Single-phase 200 V AC to 230 V AC	Single-phase 200 V AC to 240V AC		○	
	Main circuit power	Single-phase/3-phase 200 V AC to 230 V AC	Single-phase/3-phase 200 V AC to 240 V AC		○	
	Interface 24 V DC power supply	Built-in	External supply required	External supply required	×	(Note 4)
	Control circuit power/ regenerative resistor terminal connection method	0.1 to 1 kW: Plug-in type connector 2 kW or more: Terminal block	0.1 to 3.5 kW: Plug-in type connector 5 kW or more: Terminal block	With terminal block conversion	○	
	Main circuit power terminal connection method	Terminal block	0.1 to 3.5 kW: Plug-in type connector 5 kW or more: Terminal block	With terminal block conversion (excluding 5 kW)	○	
	Auto tuning	Real-time auto Tuning:15 grades	Real-time auto Tuning: 40 grades 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	Unprovided	Provided		○	
	Drive recorder	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)

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

(2) A type *When the renewal tool is used.

	Item	MR-J2S series		MR-J4 series	Renewal tool usage times	Compatibility (*)	Remarks
Servo amplifier	Control mode	• Position control mode (pulse command) • Speed control mode (analog command) • Torque control mode (analog command)		• 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	○	
		11 to 22 kW	Control signal (CN1A, CN1B) 2 pcs. Encoder signal (CN2), 1 unit Communication connector (CN3) 1 pc. Monitor signal (CN4), 1 unit				
	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		○	
	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 2-8 for important points to note.

Continued from previous page *When the renewal tool is used.

Item		MR-J2S series	MR-J4 series	Renewal tool usage times	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)
		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 (SETUP161E) 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/max. speed) • Torque (±8/max. torque) • Current command (±8/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/max. speed) • Torque (±8/max. torque) • Current command (±8/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 2-8 for important points to note.

(3) B type *When the renewal tool is used.

Item		MR-J2S series		MR-J4 series	Renewal tool usage times	Compatibility (*)	Remarks
Servo amplifier	Control mode	• Position control mode • Speed control mode		• 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 22 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 Each/ common	MR Configurator (SETUP161E) Communication method: RS-232		MR Configurator (SETUP161E) 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/max. speed) • Torque (±8/max. torque) • Current command (±8/max. current command) • Speed command (±8/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/max. speed) • Torque (±8/max. torque) • Current command (±8/max. current command) • Speed command (±8/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)		×	(Note 15) (Note 16)

○: Compatible; △: Limited functions or compatible with certain conditions; ×: Incompatible

See Appendix page 2-8 for important points to note.

<Precautions>

Note 1. The renewal tool is compatible with 0.1 to 22 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 24 V DC power supply (current capacity: 80 mA or more) for the interface is required** when the internal 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. If the renewal kit is used, it is necessary to remove the renewal kit when replacing the servo amplifier cooling fan. Take care.
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, and Part 3 for B types.
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 5 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.
13. Due to differences in motor maximum speed, for secondary and simultaneous replacement the output value of the monitor (motor speed) is differentfrom that of the existing amplifier.
Note that it is required to change the program when using monitor output with existing equipment.
14. 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.
15. Please note that the command pulse frequency and the droop pulse output unit are different.
16. When replacing, a separate communication cable (USB cable: MR-J3USBCBL3M) is required to connect between the servo amplifier and the personal computer.
17. The renewal tool **is not compatible with RS-422/232 serial communication functions.**

(4) Encoder *When the renewal tool is used.

Item		MR-J2S series	MR-J4 series	Renewal tool usage times	Com-patibility (*)	Re-marks
Encoder	Connector	1 pcs.	1 pc, different connector shape	With conversion cable	○	
	Communication method	Serial communication	Serial communication		○	
	Resolution	131072 pulses/rev	4194304 pulses/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 and Part 3 for B 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.

(5) Servo motor *When the renewal tool is used.

Item		MR-J2S series (Note 1)	MR-J4 series	Renewal tool usage times	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) 2000 r/min	HG-UR		○	
		HC-UFS (B) 3000 r/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)

<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-LFS22K1M motor is replaced with the HG-JR22K1M motor, it is necessary to change the crimp terminal of the existing power supply cable.
(Screw size, UVW terminal: M8 → M10; grounding terminal: M6 → M10; thermistor terminal: M4 → M3.5)

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 will become unnecessary, terminate the cables.

1.3 Renewal Tool Product Names

(1) For A types

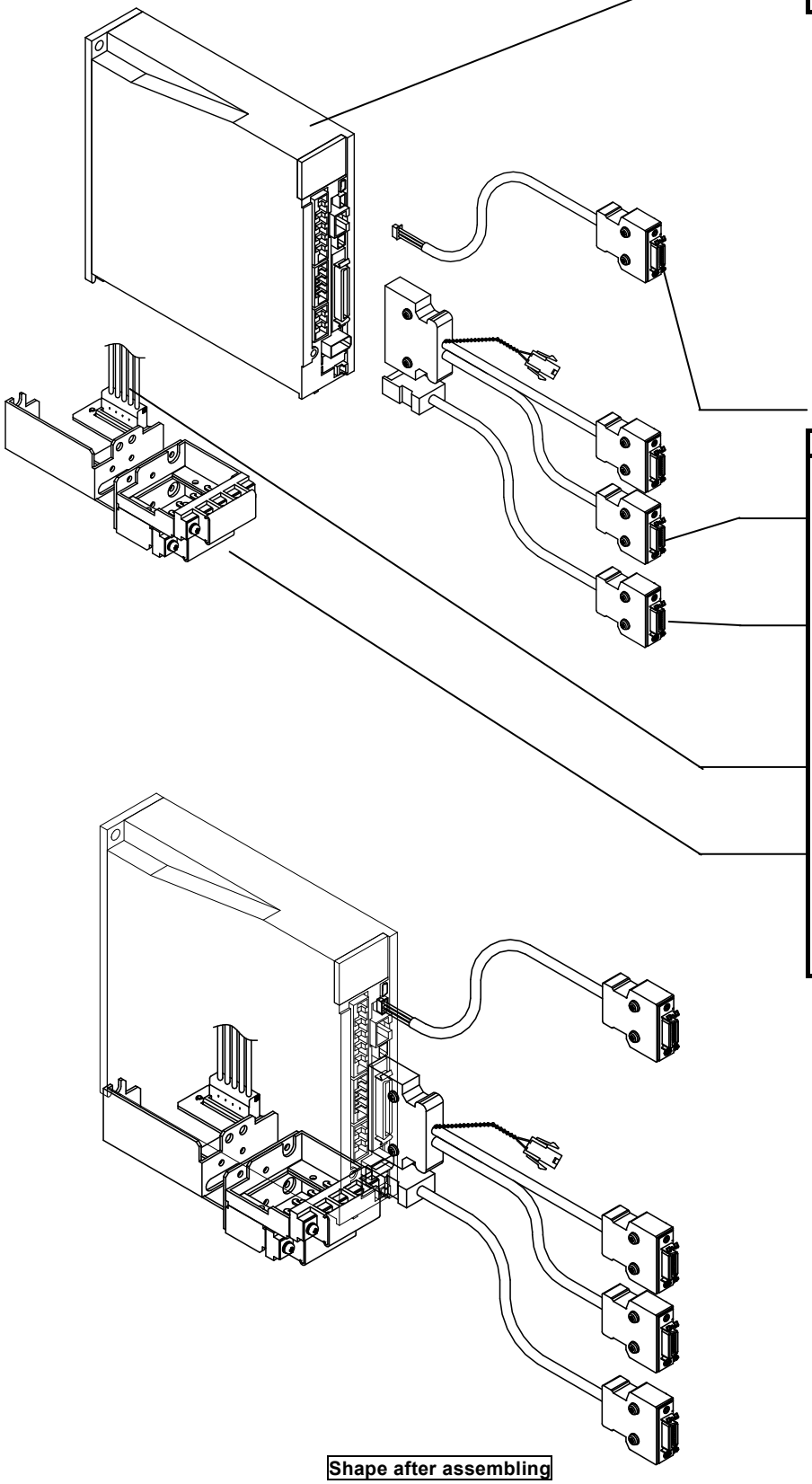
(Example) Primary replacement (SC-J2SJ4KT02K)

Name
Servo amplifier (MR-J4-_A_) **(Note 1)**

Note 1. **For primary replacement, the software version of the amplifier differs depending on the corresponding motor.** See "Part 5: Common Reference Material" in this document.

Name
Renewal kit (SC-J2SJ4KT_K)
Monitor conversion cable **(Note2)** The MR-J2S-_A_ monitor signal is changed for MR-J4-_A.
Control signal conversion cable The MR-J2S-_A_ control signal is changed for MR-J4-_A.
Encoder conversion cable The MR-J2S-_A_ encoder signal is changed for MR-J4-_A_.
Control power supply conversion terminal block Connect to the existing control power supply and regenerative option.
Main circuit power supply conversion terminal block Connect to the existing main circuit power supply and servo motor power supply.

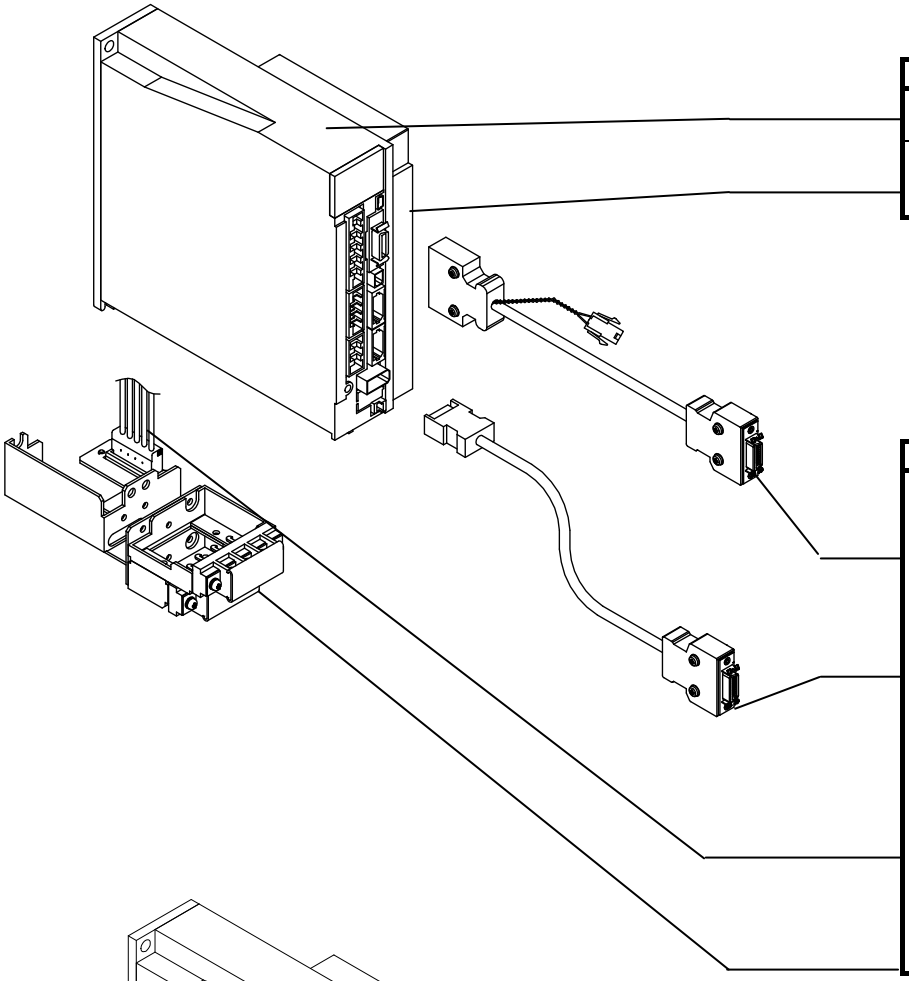
Note 2. The monitor conversion cable compatible with an amplifier capacity of 11 to 22 kW has a different shape.



Shape after assembling

(2) For B types

(Example) Primary replacement (SC-J2SBJ4KT02K)

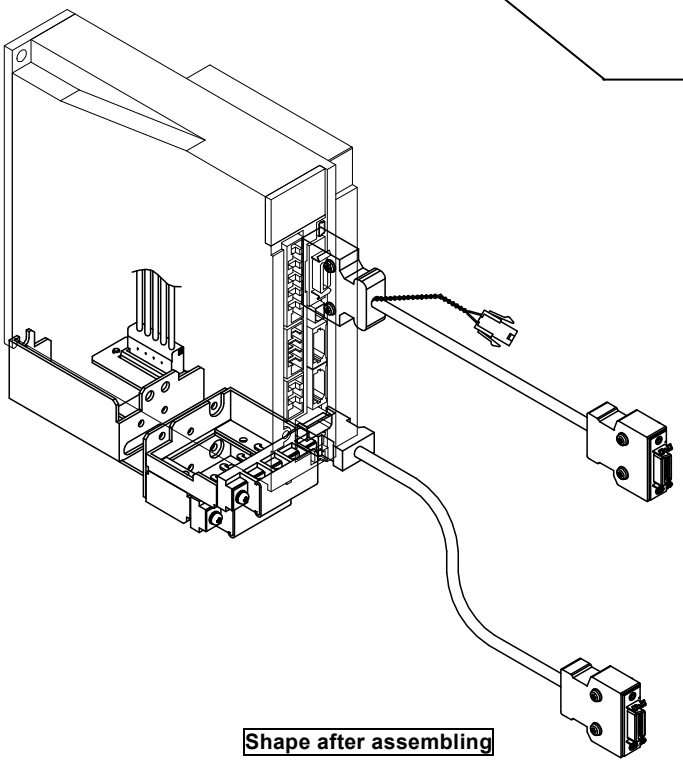


Name
Servo amplifier (MR-J4-_B-RJ020) **(Note 1)**
SSCNET conversion unit (MR-J4-T20) Purchase from Mitsubishi Electric.

Note 1. For **primary replacement, the software version of the amplifier differs depending on the corresponding motor.** Please contact your sales representative.

Name	
Renewal kit (SC-J2SBJ4KT_K)	
	Control signal conversion cable **(Note 2)** The MR-J2S-_B_ control signal is changed for MR-J4-_B-RJ020.
	Encoder conversion cable The MR-J2S-_B_ encoder signal is changed for MR-J4-_B-RJ020.
	Control power supply conversion terminal block Connects to the existing control power supply and regenerative option.
	Main circuit power supply conversion terminal block Connects to the existing main circuit power supply and servo motor power supply.

*Note 2. The shape of the control signal conversion cable compatible with the 11 to 22 kW capacity amplifier varies.

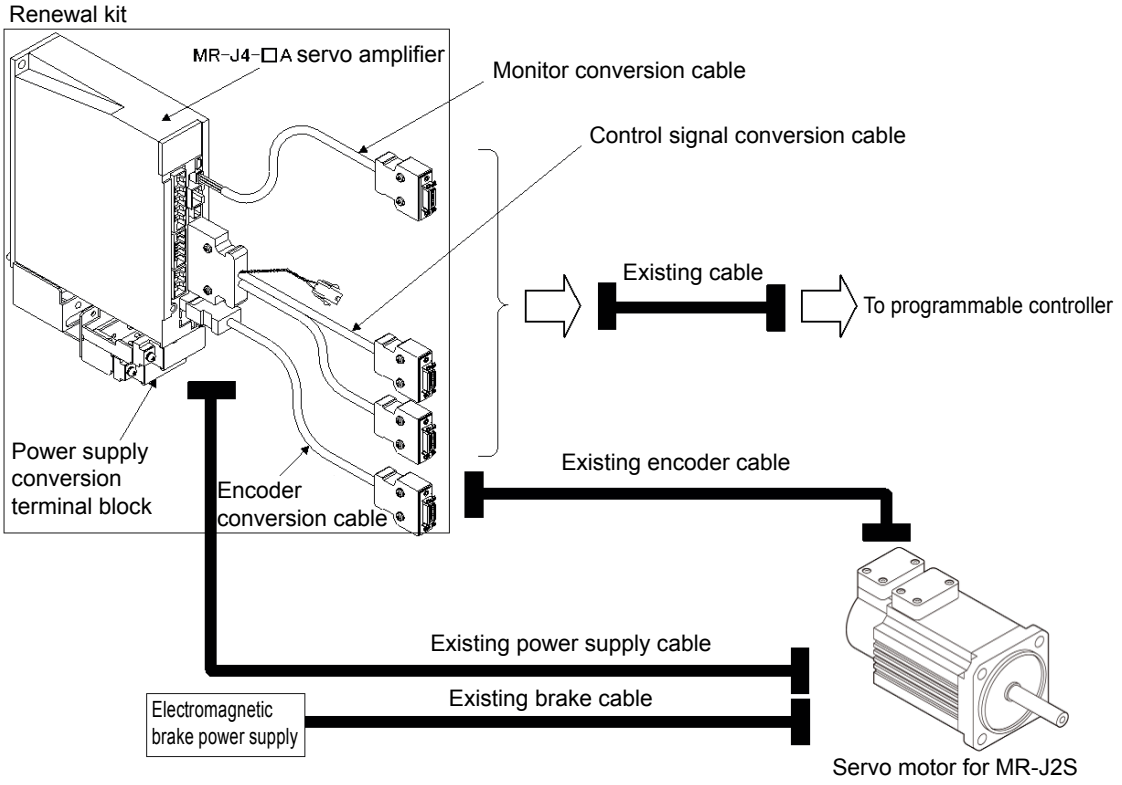


Shape after assembling

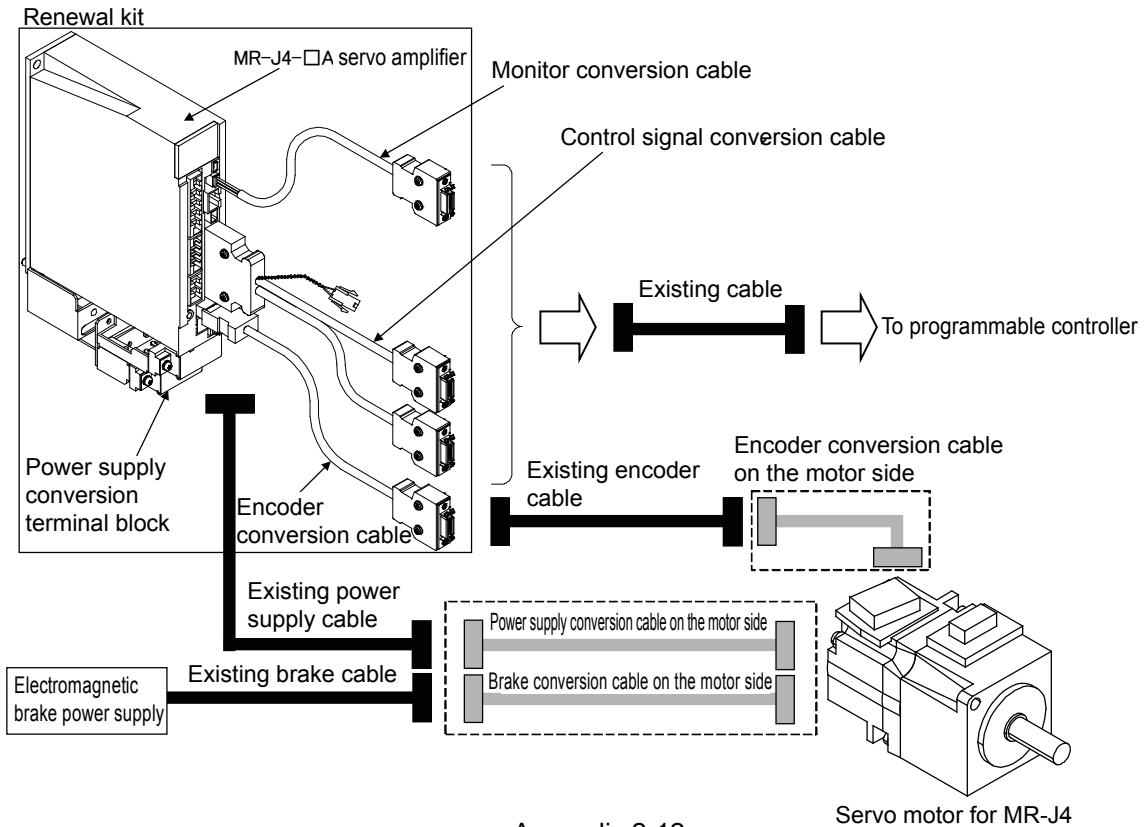
1.4 Renewal Tool Configuration

(1) For A types

1) Primary replacement:
When replacing the servo amplifier only



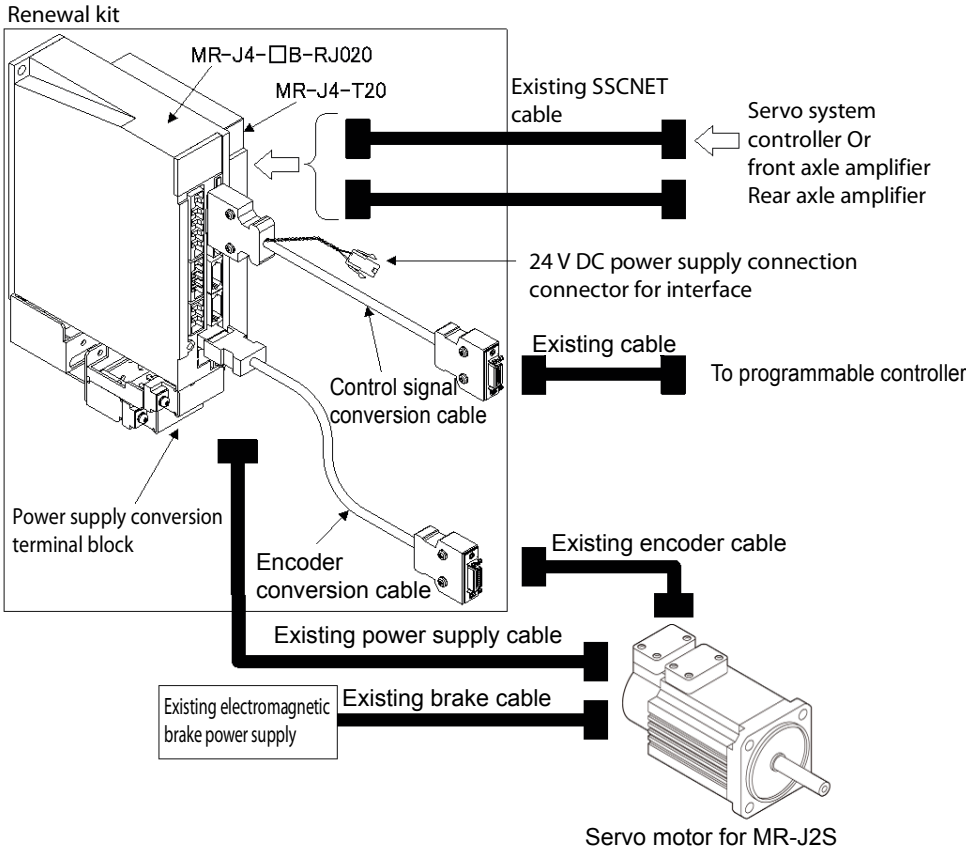
2) Secondary replacement: When replacing the servo motor after replacing the servo amplifier
Simultaneous replacement: When replacing the servo amplifier and the servo motor simultaneously



(2) For B types

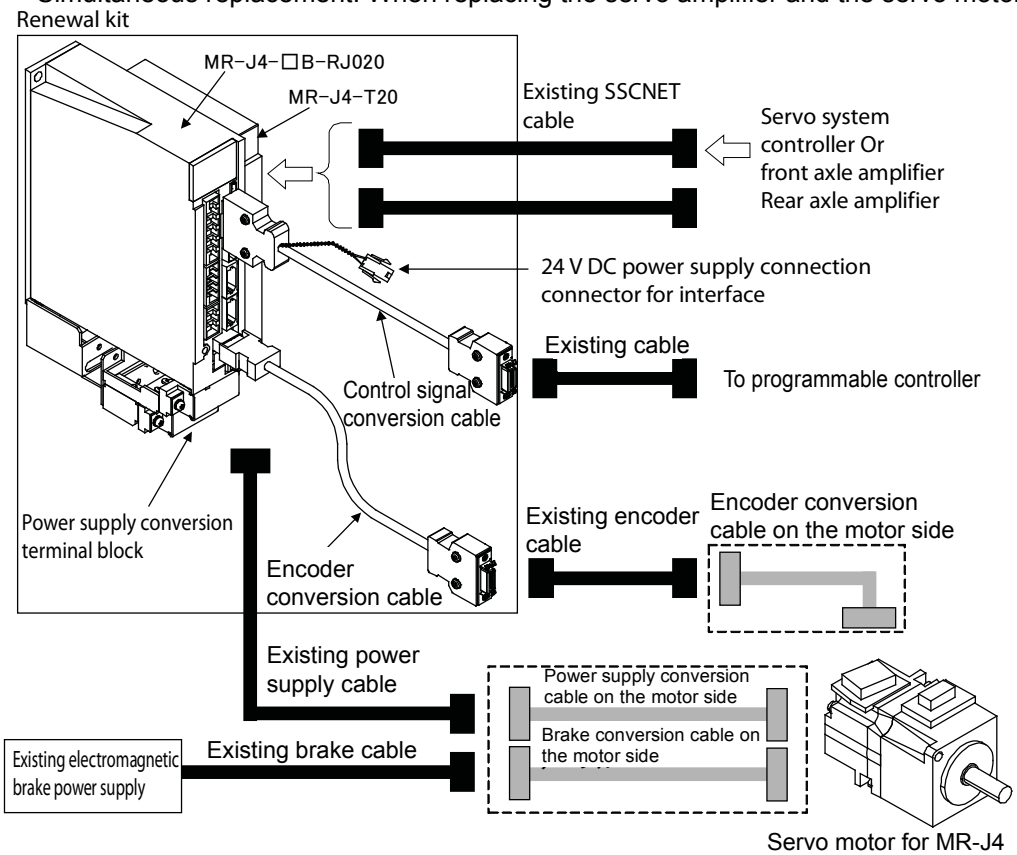
1) Primary replacement:

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



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)	
			Encoder conversion cable (SC-J2SJ4ENC03M)	
			Monitor conversion cable (SC-J2SJ4MOC03M)	
			24 V DC connector cable (SC-J2SJ4CTPWC5M)	
10		SC-J2SJ4CSET-02 (for 11 kW or more)	Control signal conversion cable (SC-J2SJ4CTC03M)	
			Encoder conversion cable (SC-J2SJ4ENC03M)	
			Monitor conversion cable (SC-J2SJ4MO2C03M)	
			24 V DC connector cable (SC-J2SJ4CTPWC5M)	

(2) For B types

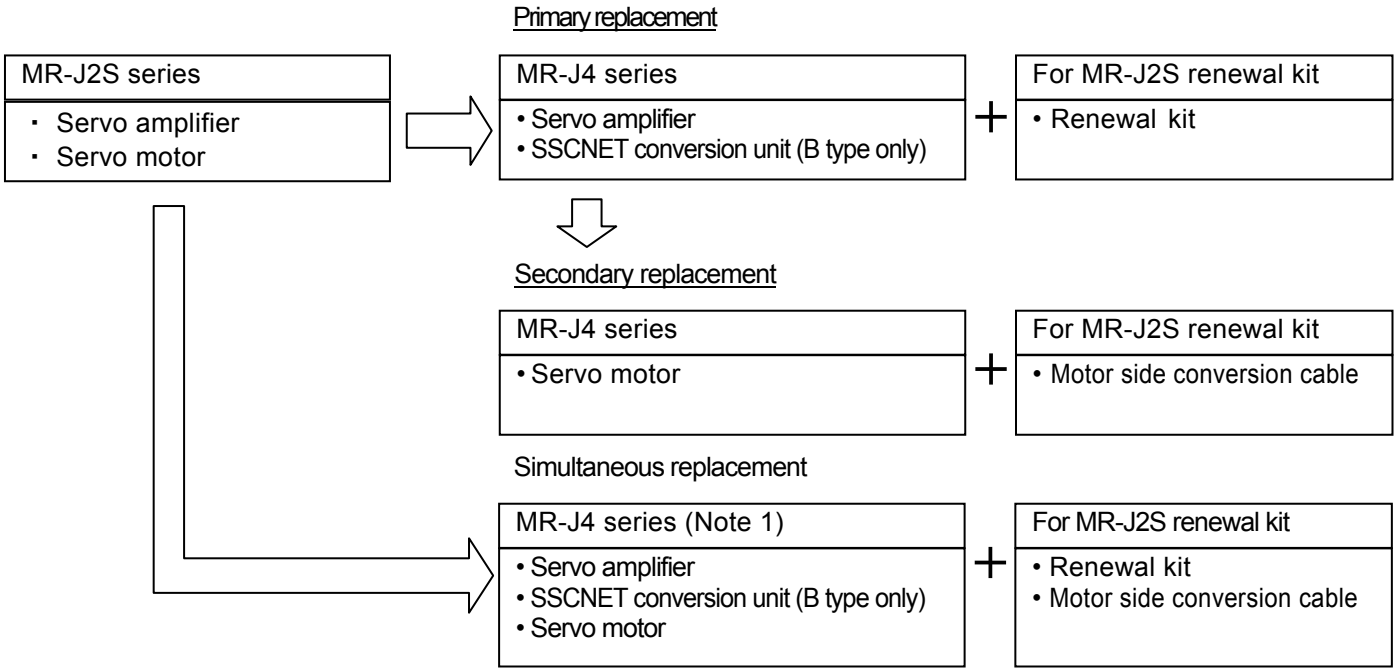
No.	Product name	Model	Application	Replacement method
1	Renewal kit	SC-J2SBJ4KT02K	MR-J4-_A servo amplifier capacity: For 100 W, 200 W	Used for primary replacement and simultaneous replacement.
2		SC-J2SBJ4KT06K	MR-J4-_A servo amplifier capacity: For 400 W, 600 W	
3		SC-J2SBJ4KT1K	MR-J4-_A servo amplifier capacity: For 700 W, 1 kW	
4		SC-J2SBJ4KT3K	MR-J4-_A servo amplifier capacity: For 2 kW, 3.5 kW	
5		SC-J2SBJ4KT5K	MR-J4-_A servo amplifier capacity: For 5 kW	
6		SC-J2SBJ4KT7K	MR-J4-_A servo amplifier capacity: For 7 kW	
7		SC-J2SBJ4KT15K	MR-J4-_A servo amplifier capacity: For 11 kW, 15 kW	
8		SC-J2SBJ4KT22K	MR-J4-_A 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-J2SBJ4CTC03M)	
			Encoder conversion cable (SC-J2SBJ4ENC03M)	
			24 V DC connector cable (SC-J2SBJ4CTPWC5M)	
10		SC-J2SBJ4CSET-02 (for 11 kW or more)	Control signal conversion cable (SC-J2SBJ4CTC03M)	
			Encoder conversion cable (SC-J2SBJ4ENC03M)	
			24 V DC connector cable (SC-J2SBJ4CTPWC5M)	

(3) 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, 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, 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-LFS22K1M → HG-JR22K1M	

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 7 of this Appendix regarding the dimensions)
(2) Depending on the condition of the existing setup, sometimes noise reduction techniques are necessary when replacing. Check Section 6.2 regarding noise reduction techniques.
(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 7 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.

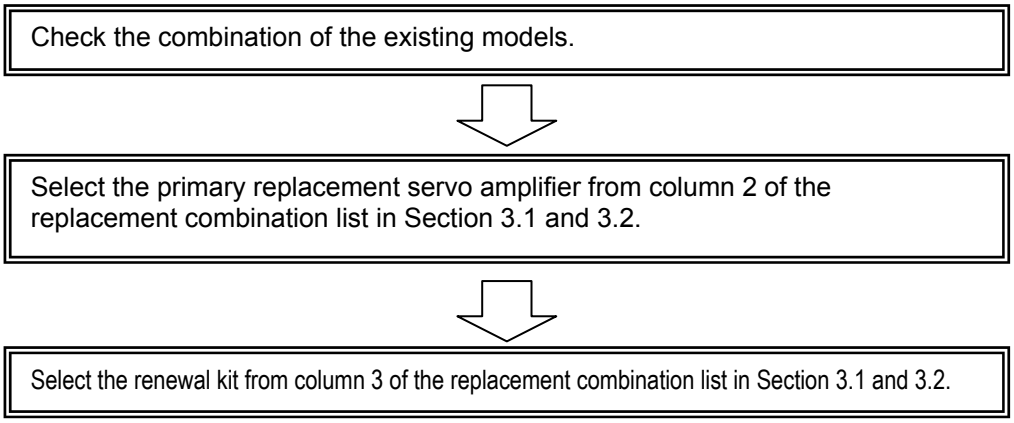
3.2 Selection of Products

3.2.1 Replacement selection flow

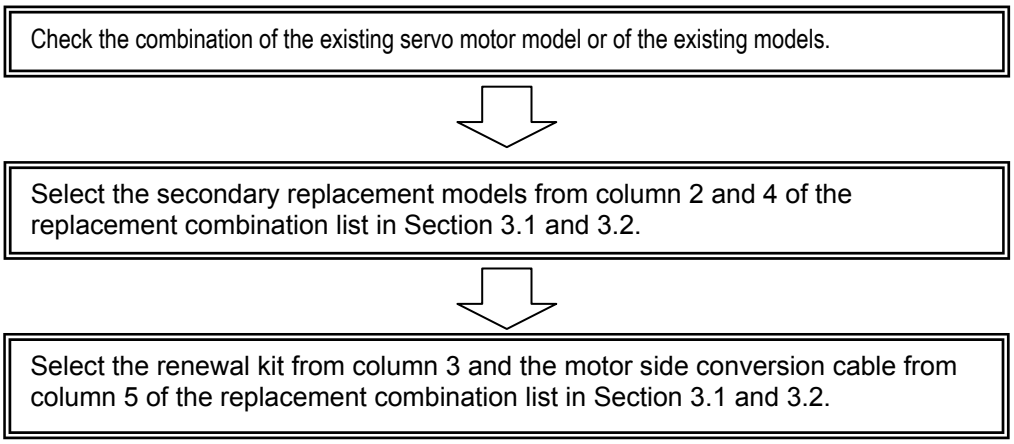
⚠CAUTION	● Because some existing HC-LFS, HA-LFS series motors differ in primary replacement amplifiers and secondary/simultaneous replacement amplifiers, the selection method may differ from the following flow.

(1) Replacement selection flow (For existing motors other than HC-RFS, HC-LFS, and HA-LFS series)

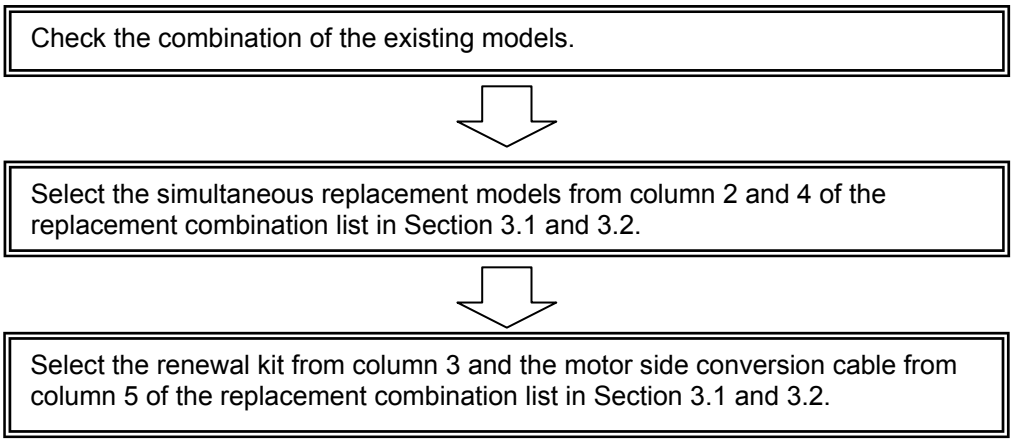
1) Primary replacement menu



2) Secondary replacement menu

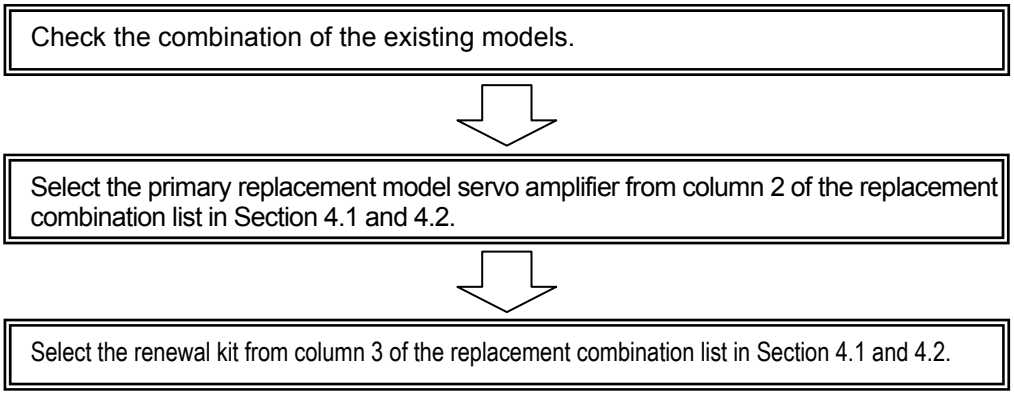


3) Simultaneous replacement menu

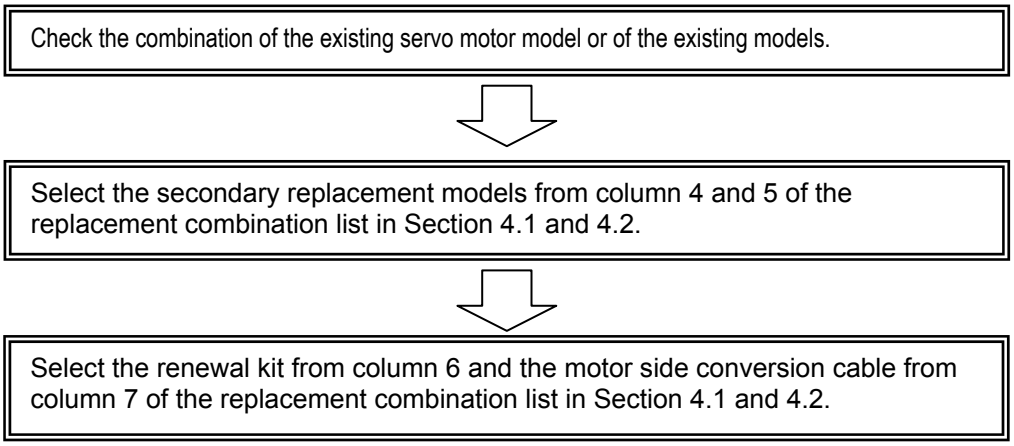


(2) Replacement selection flow (For existing HC-RFS, HC-LFS, and HA-LFS series motors)

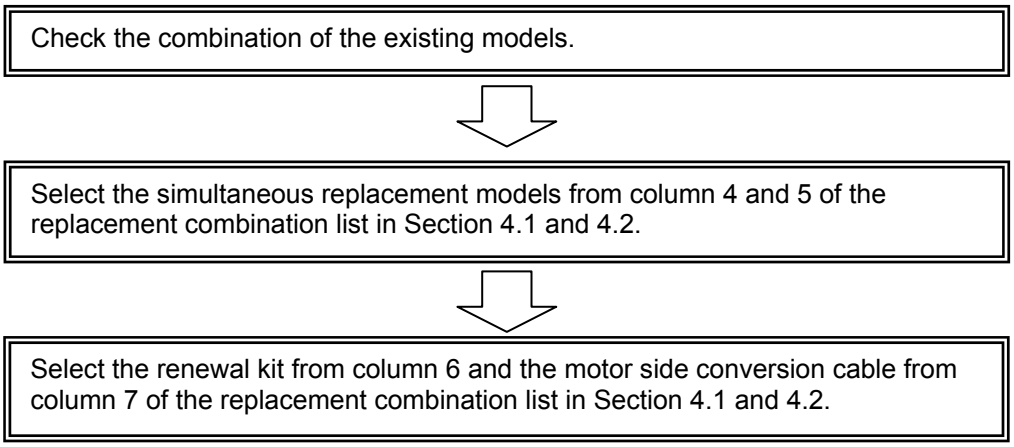
1) Primary replacement menu



2) Secondary replacement menu



3) Simultaneous replacement menu



4 REPLACMENT COMBINATION LIST

4.1 A Type Replacement Combination List

(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)	Com-patibility	Motor side conversion cable model: Power supply conversion cable	Motor side conversion cable model: Encoder conversion cable	Motor side conversion cable model: Brake conversion cable
[Small capacity/low inertia HC-KFS series, standard/with brake] ((B) represents models with brake)								
MR-J2S-10A	HC-KFS053 (B)	MR-J4-10A	SC-J2SJ4KT02K	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-20A	HC-KFS23 (B)	MR-J4-20A		HG-KR23 (B)				
MR-J2S-40A	HC-KFS43 (B)	MR-J4-40A	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	HC-KFS053 (B) G1 1/5	MR-J4-10A	SC-J2SJ4KT02K	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-20A	HC-KFS23 (B) G1 1/5	MR-J4-20A		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-40A	HC-KFS43 (B) G1 1/5	MR-J4-40A	SC-J2SJ4KT06K	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-70A	HC-KFS73 (B) G1 1/5	MR-J4-70A	SC-J2SJ4KT1K	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-10A	HC-KFS053 (B) G2 1/5	MR-J4-10A	SC-J2SJ4KT02K	HG-KR053 (B) G7 1/5	× (Note 3)	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) G7 1/11				
	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				
MR-J2S-20A	HC-KFS23 (B) G2 1/5	MR-J4-20A		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				
MR-J2S-40A	HC-KFS43 (B) G2 1/5	MR-J4-40A	SC-J2SJ4KT06K	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				
MR-J2S-70A	HC-KFS73 (B) G2 1/5	MR-J4-70A	SC-J2SJ4KT1K	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				

See Appendix page 2-40 for important points to note.

(2) Existing HC-KFS 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	Motor side conversion cable model: Power supply conversion cable	Motor side conversion cable model: Encoder conversion cable	Motor side conversion cable model: 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	HC-KFS053 (B) G5 1/5	MR-J4-10A	SC-J2SJ4KT02K	HG-KR053 (B) G5 1/5	△ (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				
	HC-KFS13 (B) G5 1/45			HG-KR13 (B) G5 1/45				
MR-J2S-20A	HC-KFS23 (B) G5 1/5	MR-J4-20A		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				
MR-J2S-40A	HC-KFS43 (B) G5 1/5	MR-J4-40A	SC-J2SJ4KT06K	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				
MR-J2S-70A	HC-KFS73 (B) G5 1/5	MR-J4-70A	SC-J2SJ4KT1K	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) represents models with brake)								
MR-J2S-10A	HC-KFS053 (B) G7 1/5	MR-J4-10A	SC-J2SJ4KT02K	HG-KR053 (B) G7 1/5	△ (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				
	HC-KFS13 (B) G7 1/45			HG-KR13 (B) G7 1/45				
MR-J2S-20A	HC-KFS23 (B) G7 1/5	MR-J4-20A		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				
MR-J2S-40A	HC-KFS43 (B) G7 1/5	MR-J4-40A	SC-J2SJ4KT06K	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				
MR-J2S-70A	HC-KFS73 (B) G7 1/5	MR-J4-70A	SC-J2SJ4KT1K	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				

See Appendix page 2-40 for important points to note.

(3) Existing HC-KFS46, KFS410 motor

○: 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)	Compatibility	Renewalkit model	Power supply conversion cable	Encoder conversion cable	Brake conversion cable
[Medium capacity/low inertia HC-KFS series, standard/with brake] ((B) represents models with brake)										
MR-J2S-70A	HC-KFS46 HC-KFS410	MR-J4-70A (Note 10)	SC-J2SJ4KT1K	MR-J4-40A (Note 10)	HG-KR43	△ (Note 4) (Note 15)	(Note 11)	Without brake: SC-J2SJ4PW1C03M-■ With brake: SC-J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.

See Appendix page 2-40 for important points to note.

(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)	Compatibility	Motor side conversion cable model: Power supply conversion cable	Motor side conversion cable model: Encoder conversion cable	Motor side conversion cable model: Brake conversion cable
[Small capacity/ultra-low inertia HC-MFS series, standard/with brake] ((B) represents models with brake)								
MR-J2S-10A	HC-MFS053 (B)	MR-J4-10A	SC-J2SJ4KT02K	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-20A	HC-MFS23 (B)	MR-J4-20A		HG-MR23 (B)				
MR-J2S-40A	HC-MFS43 (B)	MR-J4-40A	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	HC-MFS053 (B) G1 1/5	MR-J4-10A	SC-J2SJ4KT02K	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				
	HC-MFS13 (B) G1 1/20			HG-KR13 (B) G1 1/20				
MR-J2S-20A	HC-MFS23 (B) G1 1/5	MR-J4-20A		HG-KR23 (B) G1 1/5				
	HC-MFS23 (B) G1 1/12			HG-KR23 (B) G1 1/12 (Note 2)				
	HC-MFS23 (B) G1 1/20			HG-KR23 (B) G1 1/20 (Note 2)				
MR-J2S-40A	HC-MFS43 (B) G1 1/5	MR-J4-40A	SC-J2SJ4KT06K	HG-KR43 (B) G1 1/5				
	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				
	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	HC-MFS053 (B) G2 1/5	MR-J4-10A	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				
	HC-MFS13 (B) G2 1/29			HG-KR13 (B) G7 1/33				
MR-J2S-20A	HC-MFS23 (B) G2 1/5	MR-J4-20A		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				
MR-J2S-40A	HC-MFS43 (B) G2 1/5	MR-J4-40A	SC-J2SJ4KT06K	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				
MR-J2S-70A	HC-MFS73 (B) G2 1/5	MR-J4-70A	SC-J2SJ4KT1K	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 2-40 for important points to note.

(5) Existing HC-MFS 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	Motor side conversion cable model: Power supply conversion cable	Motor side conversion cable model: Encoder conversion cable	Motor side conversion cable model: 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	HC-MFS053 (B) G5 1/5	MR-J4-10A	SC-J2SJ4KT02K	HG-KR053 (B) G5 1/5	△ (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	HC-MFS23 (B) G5 1/5	MR-J4-20A		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				
MR-J2S-40A	HC-MFS43 (B) G5 1/5	MR-J4-40A	SC-J2SJ4KT06K	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				
MR-J2S-70A	HC-MFS73 (B) G5 1/5	MR-J4-70A	SC-J2SJ4KT1K	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/low inertia HC-MFS series with high-precision reducer, shaft output type (G7)] ((B) represents models with brake)								
MR-J2S-10A	HC-MFS053 (B) G7 1/5	MR-J4-10A	SC-J2SJ4KT02K	HG-KR053 (B) G7 1/5	△ (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	HC-MFS23 (B) G7 1/5	MR-J4-20A		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				
MR-J2S-40A	HC-MFS43 (B) G7 1/5	MR-J4-40A	SC-J2SJ4KT06K	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				
MR-J2S-70A	HC-MFS73 (B) G7 1/5	MR-J4-70A	SC-J2SJ4KT1K	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				

See Appendix page 2-40 for important points to note.

(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)	Compatibility	Motor side conversion cable model: Power supply conversion cable	Motor side conversion cable model: Encoder conversion cable	Motor side conversion cable model: Brake conversion cable
[Medium capacity/medium inertia HC-SFS series, standard/with brake] ((B) represents models with brake)								
MR-J2S-60A	HC-SFS52 (B)	MR-J4-60A	SC-J2SJ4KT06K	HG-SR52 (B)	△ (Note 6)	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)
	HC-SFS53 (B)							
MR-J2S-100A	HC-SFS81 (B)	MR-J4-100A	SC-J2SJ4KT1K	HG-SR81 (B)				
	HC-SFS102 (B)			HG-SR102 (B)				
	HC-SFS103 (B)							
MR-J2S-200A	HC-SFS121 (B)	MR-J4-200A	SC-J2SJ4KT3K	HG-SR121 (B)		SC-HAJ3PW1C1M		
	HC-SFS152 (B)			HG-SR152 (B)		SC-SAJ3PW2KC1M-S2		
	HC-SFS153 (B)							
	HC-SFS201 (B)			HG-SR201 (B)		SC-HAJ3PW1C1M		
	HC-SFS202 (B)			HG-SR202 (B)				
	HC-SFS203 (B)							
MR-J2S-350A	HC-SFS301 (B)	MR-J4-350A		HG-SR301 (B)				
	HC-SFS352 (B)			HG-SR352 (B)				
	HC-SFS353 (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)		Existing cable can be used.		
[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	MR-J4-60A	SC-J2SJ4KT06K	HG-SR52 (B) G7 1/5	× (Note 3) (Note 6)	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)
	HC-SFS52 (B) G2 1/9			HG-SR52 (B) G7 1/11				
	HC-SFS52 (B) G2 1/20			HG-SR52 (B) G7 1/21				
	HC-SFS52 (B) G2 1/29			HG-SR52 (B) G7 1/33				
	HC-SFS52 (B) G2 1/45			HG-SR52 (B) G7 1/45				
MR-J2S-100A	HC-SFS102 (B) G2 1/5	MR-J4-100A	SC-J2SJ4KT1K	HG-SR102 (B) G7 1/5				
	HC-SFS102 (B) G2 1/9			HG-SR102 (B) G7 1/11				
	HC-SFS102 (B) G2 1/20			HG-SR102 (B) G7 1/21				
	HC-SFS102 (B) G2 1/29			HG-SR102 (B) G7 1/33				
	HC-SFS102 (B) G2 1/45			HG-SR102 (B) G7 1/45				
MR-J2S-200A	HC-SFS152 (B) G2 1/5	MR-J4-200A	SC-J2SJ4KT3K	HG-SR152 (B) G7 1/5				
	HC-SFS152 (B) G2 1/9			HG-SR152 (B) G7 1/11				
	HC-SFS152 (B) G2 1/20			HG-SR152 (B) G7 1/21				
	HC-SFS152 (B) G2 1/29			HG-SR152 (B) G7 1/33				
	HC-SFS152 (B) G2 1/45			HG-SR152 (B) G7 1/45				
	HC-SFS202 (B) G2 1/5			HG-SR202 (B) G7 1/5		SC-HAJ3PW1C1M		
	HC-SFS202 (B) G2 1/9			HG-SR202 (B) G7 1/11				
	HC-SFS202 (B) G2 1/20			HG-SR202 (B) G7 1/21				
	HC-SFS202 (B) G2 1/29			HG-SR202 (B) G7 1/33				
	HC-SFS202 (B) G2 1/45			HG-SR202 (B) G7 1/45				
MR-J2S-350A	HC-SFS352 (B) G2 1/5	MR-J4-350A		HG-SR352 (B) G7 1/5				
	HC-SFS352 (B) G2 1/9			HG-SR352 (B) G7 1/11				
	HC-SFS352 (B) G2 1/20			HG-SR352 (B) G7 1/21				
MR-J2S-500A	HC-SFS502 (B) G2 1/5	MR-J4-500A	SC-J2SJ4KT5K	HG-SR502 (B) G7 1/5				
	HC-SFS502 (B) G2 1/9			HG-SR502 (B) G7 1/11				
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 2-40 for important points to note.

(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)	Compatibility	Motor side conversion cable model: Power supply conversion cable	Motor side conversion cable model: Encoder conversion cable	Motor side conversion cable model: 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	SC-HAJ3ENM3C1M	(Note 7)
	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		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		SC-HAJ3PW1C1M		
	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		SC-J2SJ4KT3K	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				
	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)1/6	MR-J4-500A	SC-J2SJ4KT5K	HG-SR502(B)G1(H)1/6				
	HC-SFS502(B)G1(H)1/11			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				
	HC-SFS502(B)G1(H)1/59			HG-SR502(B)G1(H)1/59				
MR-J2S-700A	HC-SFS702(B)G1(H)1/6	MR-J4-700A	SC-J2SJ4KT7K	HG-SR702(B)G1(H)1/6		Existing cable can be used.		
	HC-SFS702(B)G1(H)1/11			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				
	HC-SFS702(B)G1(H)1/59			HG-SR702(B)G1(H)1/59				

See Appendix page 2-40 for important points to note.

(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)	Compatibility	Motor side conversion cable model: Power supply conversion cable	Motor side conversion cable model: Encoder conversion cable	Motor side conversion cable model: 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		SC-HAJ3PW1C1M		
	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-350A	HC-SFS352 (B) G5 1/5	MR-J4-350A		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-J2SJ4KT5K	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		SC-HAJ3PW1C1M		
	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-350A	HC-SFS352 (B) G7 1/5	MR-J4-350A		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-J2SJ4KT5K	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 2-40 for important points to note.

(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)	Com-patibility	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			
	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		SC-J2SJ4KT3K			
	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			SC-J2SJ4PW2C1M		
	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		
	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									
	HC-RFS503 (B) G2 1/5	MR-J4-500A		MR-J4-500A	HG-SR502 (B) G7 1/5		SC-J2SJ4KT5K			
	HC-RFS503 (B) G2 1/9				HG-SR502 (B) G7 1/11					
	HC-RFS503 (B) G2 1/20									

See Appendix page 2-40 for important points to note.

(10) Existing HC-RFS motor series (G5, G7 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)	Com-patibility	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	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		MR-J4-200A	HG-SR152 (B) G5 1/5		SC-J2SJ4KT3K			
	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 11)	SC-HAJ3PW1C1M		
	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									
	HC-RFS503 (B) G5 1/5	MR-J4-500A		MR-J4-500A	HG-SR502 (B) G5 1/5		SC-J2SJ4KT5K			
	HC-RFS503 (B) G5 1/11				HG-SR502 (B) G5 1/11					
	HC-RFS503 (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	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		MR-J4-200A	HG-SR152 (B) G7 1/5		SC-J2SJ4KT3K			
	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 11)	SC-HAJ3PW1C1M		
	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									
	HC-RFS503 (B) G7 1/5	MR-J4-500A		MR-J4-500A	HG-SR502 (B) G7 1/5		SC-J2SJ4KT5K			
	HC-RFS503 (B) G7 1/11				HG-SR502 (B) G7 1/11					
	HC-RFS503 (B) G7 1/21									

See Appendix page 2-40 for important points to note.

(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)	Com-patibility	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		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	HC-UFS13 (B)	MR-J4-10A	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	HC-UFS23 (B)	MR-J4-20A		HG-KR23 (B)				
MR-J2S-40A	HC-UFS43 (B)	MR-J4-40A	SC-J2SJ4KT06K	HG-KR43 (B)				
MR-J2S-70A	HC-UFS73 (B)	MR-J4-70A	SC-J2SJ4KT1K	HG-KR73 (B)				

See Appendix page 2-40 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)	Com-patibility	Motor side conversion cable model: 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-60A	HC-LFS52 (B)	MR-J4-60A (Note 10)	SC-J2SJ4KT06K (Note 10)	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 (Note 10)	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)		SC-J2SJ4KT3K	SC-J2SJ4PW2C1M		
MR-J2S-350A	HC-LFS202 (B)	MR-J4-350A		MR-J4-350A				SC-HAJ3PW1C1M		
MR-J2S-500A	HC-LFS302 (B)	MR-J4-500A	SC-J2SJ4KT5K	MR-J4-500A	HG-JR503 (B)		SC-J2SJ4KT5K			

See Appendix page 2-40 for important points to note.

(13) 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)	Com-patibility	Motor side conversion cable model: Renewal kit model	Power supply conversion Cable	Encoder Conversion cable	Brake/Conversion cable for the cooling fan
[Large capacity/low inertia HA-LFS series, standard/with brake] ((B) represents models with brake)										
MR-J2S-500A	HA-LFS502	MR-J4-500A	SC-J2SJ4KT5K	MR-J4-500A	HG-SR502	× (Note 3)	SC-J2SJ4KT5K	SC-HAJ3PW1C1M	SC-HAJ3ENM3C1M	
MR-J2S-700A	HA-LFS702	MR-J4-700A	SC-J2SJ4KT7K	MR-J4-700A	HG-SR702		SC-J2SJ4KT7K	Existing cable can be used.		
MR-J2S-11KA	HA-LFS11K1M(B)	MR-J4-11KA	SC-J2SJ4KT15K	MR-J4-11KA	HG-JR11K1M (B)		SC-J2SJ4KT15K	SC-J2SJ4PW3C1M-■	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)		MR-J4-11KA (Note 10)	HG-JR11K1M (B)					
	HA-LFS15K1M(B)	MR-J4-15KA		MR-J4-15KA	HG-JR15K1M (B)					
MR-J2S-22KA	HA-LFS22K2 (B)	MR-J4-22KA (Note 10)	SC-J2SJ4KT22K (Note 10)	MR-J4-15KA (Note 10)	HG-JR15K1M (B)		(Note 11)			
	HA-LFS22K1M	MR-J4-22KA	SC-J2SJ4KT22K	MR-J4-22KA	HG-JR22K1M		SC-J2SJ4KT22K	(Note 8)		•Cooling fan conversion cable SC-J2SJ4FAN1C1M

See Appendix page 2-40 for important points to note.

4.2 B Type Replacement Combination List

(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				
							Motor side conversion cable model		
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)	Compatibility	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	HC-KFS053 (B)	MR-J4-10B-RJ020	MR-J4-T20	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	HC-KFS23 (B)	MR-J4-20B-RJ020			HG-KR23 (B)				
MR-J2S-40B	HC-KFS43 (B)	MR-J4-40B-RJ020		SC-J2SBJ4KT06K	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	HC-KFS053 (B) G1 1/5	MR-J4-10B-RJ020	MR-J4-T20	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	HC-KFS23 (B) G1 1/5	MR-J4-20B-RJ020			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	HC-KFS43 (B) G1 1/5	MR-J4-40B-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	HC-KFS053 (B) G2 1/5	MR-J4-10B-RJ020	MR-J4-T20	SC-J2SBJ4KT02K	HG-KR053 (B) G7 1/5	× (Note 3)	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) G7 1/11				
	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				
MR-J2S-20B	HC-KFS23 (B) G2 1/5	MR-J4-20B-RJ020			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				
MR-J2S-40B	HC-KFS43 (B) G2 1/5	MR-J4-40B-RJ020		SC-J2SBJ4KT06K	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				
MR-J2S-70B	HC-KFS73 (B) G2 1/5	MR-J4-70B-RJ020		SC-J2SBJ4KT1K	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				

See Appendix page 2-40 for important points to note.

(2) Existing HC-KFS 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)	SSCNET conversion unit model (Note 1)	Renewal kit model	Servo motor model (Note 1)	Compatibility	Motor side conversion cable model: Power supply conversion cable	Motor side conversion cable model: Encoder conversion cable	Motor side conversion cable model: 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	HC-KFS053(B) G5 1/5	MR-J4-10B-RJ020	MR-J4-T20	SC-J2SBJ4KT02K	HG-KR053 (B) G5 1/5	△ (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				
	HC-KFS13 (B) G5 1/45				HG-KR13 (B) G5 1/45				
MR-J2S-20B	HC-KFS23 (B) G5 1/5	MR-J4-20B-RJ020			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				
MR-J2S-40B	HC-KFS43 (B) G5 1/5	MR-J4-40B-RJ020		SC-J2SBJ4KT06K	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				
MR-J2S-70B	HC-KFS73 (B) G5 1/5	MR-J4-70B-RJ020		SC-J2SBJ4KT1K	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) represents models with brake)									
MR-J2S-10B	HC-KFS053(B) G7 1/5	MR-J4-10B-RJ020	MR-J4-T20	SC-J2SBJ4KT02K	HG-KR053 (B) G7 1/5	△ (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				
	HC-KFS13 (B) G7 1/45				HG-KR13 (B) G7 1/45				
MR-J2S-20B	HC-KFS23 (B) G7 1/5	MR-J4-20B-RJ020			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				
MR-J2S-40B	HC-KFS43 (B) G7 1/5	MR-J4-40B-RJ020		SC-J2SBJ4KT06K	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				
MR-J2S-70B	HC-KFS73 (B) G7 1/5	MR-J4-70B-RJ020		SC-J2SBJ4KT1K	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				

See Appendix page 2-40 for important points to note.

(3) Existing HC-KFS46, KFS410 motor

○: 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)	Com-patibility	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-70B	HC-KFS46 HC-KFS410	MR-J4-70B-RJ020 (Note 10)	MR-J4-T20	SC-J2SBJ4KT1K	MR-J4-40B-RJ020 (Note 10)	MR-J4-T20	HG-KR43	△ (Note 4) (Note 15)	(Note 11)	Without brake: SC-J2SJ4PW1C03M-■ With brake: SC-J2SJ4PWBK1C03M-■	SC-HAJ3ENM1C03M-■	Built in to power supply conversion cable.

See Appendix page 2-40 for important points to note.

(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)	SSCNET conversion unit model (Note 1)	Renewal kit model	Servo motor model (Note 1)	Com-patibility	Motor side conversion cable model: Power supply conversion cable	Motor side conversion cable model: Encoder conversion cable	Motor side conversion cable model: Brake conversion cable
[Small capacity/ultra-low inertia HC-MFS series, standard/with brake] ((B) represents models with brake)									
MR-J2S-10B	HC-MFS053 (B)	MR-J4-10B-RJ020	MR-J4-T20	SC-J2SBJ4KT02K	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-20B	HC-MFS23 (B)	MR-J4-20B-RJ020			HG-MR23 (B)				
MR-J2S-40B	HC-MFS43 (B)	MR-J4-40B-RJ020		SC-J2SBJ4KT06K	HG-MR43 (B)				
MR-J2S-70B	HC-MFS73 (B)	MR-J4-70B-RJ020		SC-J2SBJ4KT1K	HG-MR73 (B)				
[Small capacity/ultra-low inertia HC-MFS series with general reducer (G1)] ((B) represents models with brake)									
MR-J2S-10B	HC-MFS053 (B) G1 1/5	MR-J4-10B-RJ020	MR-J4-T20	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-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				
MR-J2S-20B	HC-MFS23 (B) G1 1/5	MR-J4-20B-RJ020			HG-KR23 (B) G1 1/5				
	HC-MFS23 (B) G1 1/12				HG-KR23 (B) G1 1/12 (Note 2)				
	HC-MFS23 (B) G1 1/20				HG-KR23 (B) G1 1/20 (Note 2)				
MR-J2S-40B	HC-MFS43 (B) G1 1/5	MR-J4-40B-RJ020		SC-J2SBJ4KT06K	HG-KR43 (B) G1 1/5				
	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-70B	HC-MFS73 (B) G1 1/5	MR-J4-70B-RJ020		SC-J2SBJ4KT1K	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-10B	HC-MFS053 (B) G2 1/5	MR-J4-10B-RJ020	MR-J4-T20	SC-J2SBJ4KT02K	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				
	HC-MFS13 (B) G2 1/29				HG-KR13 (B) G7 1/33				
MR-J2S-20B	HC-MFS23 (B) G2 1/5	MR-J4-20B-RJ020			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				
MR-J2S-40B	HC-MFS43 (B) G2 1/5	MR-J4-40B-RJ020		SC-J2SBJ4KT06K	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				
MR-J2S-70B	HC-MFS73 (B) G2 1/5	MR-J4-70B-RJ020		SC-J2SBJ4KT1K	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 2-40 for important points to note.

(5) Existing HC-MFS 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)	SSCNET conversion unit model (Note 1)	Renewal kit model	Servo motor model (Note 1)	Com-patibility	Motor side conversion cable model: Power supply conversion cable	Motor side conversion cable model: Encoder conversion cable	Motor side conversion cable model: 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	HC-MFS053(B)G5 1/5	MR-J4-10B-RJ020	MR-J4-T20	SC-J2SBJ4KT02K	HG-KR053 (B) G5 1/5	△ (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	HC-MFS23(B)G5 1/5	MR-J4-20B-RJ020			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				
MR-J2S-40B	HC-MFS43(B)G5 1/5	MR-J4-40B-RJ020		SC-J2SBJ4KT06K	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				
MR-J2S-70B	HC-MFS73(B)G5 1/5	MR-J4-70B-RJ020		SC-J2SBJ4KT1K	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) represents models with brake)									
MR-J2S-10B	HC-MFS053(B)G7 1/5	MR-J4-10B-RJ020	MR-J4-T20	SC-J2SBJ4KT02K	HG-KR053 (B) G7 1/5	△ (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	HC-MFS23(B)G7 1/5	MR-J4-20B-RJ020			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				
MR-J2S-40B	HC-MFS43(B)G7 1/5	MR-J4-40B-RJ020		SC-J2SBJ4KT06K	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				
MR-J2S-70B	HC-MFS73(B)G7 1/5	MR-J4-70B-RJ020		SC-J2SBJ4KT1K	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				

See Appendix page 2-40 for important points to note.

(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)	SSCNET conversion unit model (Note 1)	Renewal kit model	Servo motor model (Note 1)	Com-patibility	Motor side conversion cable model: Power supply conversion cable	Motor side conversion cable model: Encoder conversion cable	Motor side conversion cable model: Brake conversion cable
[Medium capacity/medium inertia HC-SFS series, standard/with brake] ((B) represents models with brake)									
MR-J2S-60B	HC-SFS52(B)	MR-J4-60B-RJ020	MR-J4-T20	SC-J2SBJ4KT06K	HG-SR52 (B)	△ (Note 6)	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)
	HC-SFS53(B)								
MR-J2S-100B	HC-SFS81(B)	MR-J4-100B-RJ020		SC-J2SBJ4KT1K	HG-SR81 (B)				
	HC-SFS102(B)				HG-SR102 (B)				
	HC-SFS103(B)								
MR-J2S-200B	HC-SFS121(B)	MR-J4-200B-RJ020		SC-J2SBJ4KT3K	HG-SR121 (B)		SC-HAJ3PW1C1M		
	HC-SFS152(B)				HG-SR152 (B)		SC-SAJ3PW2KC1M-S2		
	HC-SFS153(B)								
	HC-SFS201(B)				HG-SR201 (B)		SC-HAJ3PW1C1M		
	HC-SFS202(B)				HG-SR202 (B)				
	HC-SFS203(B)								
MR-J2S-350B	HC-SFS301(B)	MR-J4-350B-RJ020			HG-SR301 (B)				
	HC-SFS352(B)				HG-SR352 (B)				
	HC-SFS353(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)		Existing cable can be used.		
[Medium capacity/medium inertia HC-SFS series with high-precision reducer (G2)] ((B) represents models with brake)									
MR-J2S-60B	HC-SFS52(B)G21/5	MR-J4-60B-RJ020	MR-J4-T20	SC-J2SBJ4KT06K	HG-SR52 (B) G7 1/5	× (Note 3) (Note 6)	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)
	HC-SFS52(B)G21/9				HG-SR52 (B) G7 1/11				
	HC-SFS52(B)G21/20				HG-SR52 (B) G7 1/21				
	HC-SFS52(B)G21/29				HG-SR52 (B) G7 1/33				
	HC-SFS52(B)G21/45				HG-SR52 (B) G7 1/45				
MR-J2S-100B	HC-SFS102(B)G21/5	MR-J4-100B-RJ020		SC-J2SBJ4KT1K	HG-SR102 (B) G7 1/5				
	HC-SFS102(B)G21/9				HG-SR102 (B) G7 1/11				
	HC-SFS102(B)G21/20				HG-SR102 (B) G7 1/21				
	HC-SFS102(B)G21/29				HG-SR102 (B) G7 1/33				
	HC-SFS102(B)G21/45				HG-SR102 (B) G7 1/45				
MR-J2S-200B	HC-SFS152(B)G21/5	MR-J4-200B-RJ020		SC-J2SBJ4KT3K	HG-SR152 (B) G7 1/5				
	HC-SFS152(B)G21/9				HG-SR152 (B) G7 1/11				
	HC-SFS152(B)G21/20				HG-SR152 (B) G7 1/21				
	HC-SFS152(B)G21/29				HG-SR152 (B) G7 1/33				
	HC-SFS152(B)G21/45				HG-SR152 (B) G7 1/45				
	HC-SFS202(B)G21/5				HG-SR202 (B) G7 1/5		SC-HAJ3PW1C1M		
	HC-SFS202(B)G21/9				HG-SR202 (B) G7 1/11				
	HC-SFS202(B)G21/20				HG-SR202 (B) G7 1/21				
	HC-SFS202(B)G21/29				HG-SR202 (B) G7 1/33				
	HC-SFS202(B)G21/45				HG-SR202 (B) G7 1/45				
MR-J2S-350B	HC-SFS352(B)G21/5	MR-J4-350B-RJ020			HG-SR352 (B) G7 1/5				
	HC-SFS352(B)G21/9				HG-SR352 (B) G7 1/11				
	HC-SFS352(B)G21/20				HG-SR352 (B) G7 1/21				
MR-J2S-500B	HC-SFS502(B)G21/5	MR-J4-500B-RJ020		SC-J2SBJ4KT5K	HG-SR502 (B) G7 1/5				
	HC-SFS502(B)G21/9				HG-SR502 (B) G7 1/11				
MR-J2S-700B	HC-SFS702(B)G21/5	MR-J4-700B-RJ020		SC-J2SBJ4KT7K	HG-SR702 (B) G7 1/5		Existing cable can be used.		

See Appendix page 2-40 for important points to note.

(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				
							Motor side conversion cable model		
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)	Com-patibility	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	MR-J4-T20	SC-J2SBJ4KT06K	HG-SR52(B)G1(H)1/6	△ (Note 6)	SC-SAJ3PW2KC1M-S2	SC-HAJ3ENM3C1M	(Note 7)
	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		SC-J2SBJ4KT3K	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		SC-HAJ3PW1C1M		
	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		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 2-40 for important points to note.

(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)	SSCNET conversion unit model (Note 1)	Renewal kit model	Servo motor model (Note 1)	Com-patibility	Motor side conversion cable model: Power supply conversion cable	Motor side conversion cable model: Encoder conversion cable	Motor side conversion cable model: 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	MR-J4-T20	SC-J2SBJ4KT06K	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-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		SC-HAJ3PW1C1M		
	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			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-J2SBJ4KT5K	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		SC-J2SBJ4KT7K	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	MR-J4-T20	SC-J2SBJ4KT06K	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-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		SC-HAJ3PW1C1M		
	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			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-J2SBJ4KT5K	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		SC-J2SBJ4KT7K	HG-SR702 (B) G7 1/5		Existing cable can be used.		

See Appendix page 2-40 for important points to note.

(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					Motor side conversion cable		
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)	Com-patibility	Renewal kit model	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	MR-J4-T20	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)	MR-J4-T20	SC-J2SBJ4KT3K	MR-J4-100B-RJ020 (Note 10)	MR-J4-T20	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-J4-200B-RJ020			MR-J4-200B-RJ020		HG-SR152 (B) G7 1/5		SC-J2SBJ4KT3K			
	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-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-J2SJ4PW2C1M		
	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-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		(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-RFS353 (B) G2 1/29											
	HC-RFS503 (B) G2 1/5	MR-J4-500B-RJ020			MR-J4-500B-RJ020		HG-SR502 (B) G7 1/5		SC-J2SBJ4KT5K			
	HC-RFS503 (B) G2 1/9						HG-SR502 (B) G7 1/11					
	HC-RFS503 (B) G2 1/20											

See Appendix page 2-40 for important points to note.

(10) Existing HC-RFS motor series (G5, G7 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							
										Motor side conversion cable		
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)	Com-patibility	Renewal kit model	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-200B	HC-RFS103 (B) G5 1/5	MR-J4-200B-RJ020 (Note 10)	MR-J4-T20	SC-J2SBJ4KT3K	MR-J4-100B-RJ020 (Note 10)	MR-J4-T20	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-J4-200B-RJ020			MR-J4-200B-RJ020		HG-SR152 (B) G5 1/5		SC-J2SBJ4KT3K			
	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-350B	HC-RFS203 (B) G5 1/5	MR-J4-350B-RJ020 (Note 10)			MR-J4-200B-RJ020 (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-500B	HC-RFS353 (B) G5 1/5	MR-J4-500B-RJ020 (Note 10)		SC-J2SBJ4KT5K	MR-J4-350B-RJ020 (Note 10)		HG-SR352 (B) G5 1/5		(Note 11)	SC-HAJ3PW1C1M		
	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											
	HC-RFS503 (B) G5 1/5	MR-J4-500B-RJ020			MR-J4-500B-RJ020		HG-SR502 (B) G5 1/5		SC-J2SBJ4KT5K			
	HC-RFS503 (B) G5 1/11						HG-SR502 (B) G5 1/11					
	HC-RFS503 (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-200B	HC-RFS103 (B) G7 1/5	MR-J4-200B-RJ020 (Note 10)	MR-J4-T20	SC-J2SBJ4KT3K	MR-J4-100B-RJ020 (Note 10)	MR-J4-T20	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-J4-200B-RJ020			MR-J4-200B-RJ020		HG-SR152 (B) G7 1/5		SC-J2SBJ4KT3K			
	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-350B	HC-RFS203 (B) G7 1/5	MR-J4-350B-RJ020 (Note 10)			MR-J4-200B-RJ020 (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-500B	HC-RFS353 (B) G7 1/5	MR-J4-500B-RJ020 (Note 10)		SC-J2SBJ4KT5K	MR-J4-350B-RJ020 (Note 10)		HG-SR352 (B) G7 1/5		(Note 11)	SC-HAJ3PW1C1M		
	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											
	HC-RFS503 (B) G7 1/5	MR-J4-500B-RJ020			MR-J4-500B-RJ020		HG-SR502 (B) G7 1/5		SC-J2SBJ4KT5K			
	HC-RFS503 (B) G7 1/11						HG-SR502 (B) G7 1/11					
	HC-RFS503 (B) G7 1/21											

See Appendix page 2-40 for important points to note.

(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)	Com-patibility	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-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			HG-UR202 (B)				
MR-J2S-500B	HC-UFS352(B)	MR-J4-500B-RJ020		SC-J2SBJ4KT5K	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-10B	HC-UFS13(B)	MR-J4-10B-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	HC-UFS23(B)	MR-J4-20B-RJ020			HG-KR23 (B)				
MR-J2S-40B	HC-UFS43(B)	MR-J4-40B-RJ020		SC-J2SBJ4KT06K	HG-KR43 (B)				
MR-J2S-70B	HC-UFS73(B)	MR-J4-70B-RJ020		SC-J2SBJ4KT1K	HG-KR73 (B)				

See Appendix page 2-40 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)	Com-patibility	Motor side conversion cable model			
									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)		SC-J2SBJ4KT3K	SC-J2SJ4PW2C1M		
MR-J2S-350B	HC-LFS202(B)	MR-J4-350B-RJ020			MR-J4-350B-RJ020					SC-HAJ3PW1C1M		
MR-J2S-500B	HC-LFS302(B)	MR-J4-500B-RJ020		SC-J2SBJ4KT5K	MR-J4-500B-RJ020		HG-JR503 (B)		SC-J2SBJ4KT5K			

See Appendix page 2-40 for important points to note.

(13) 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)	Com-patibility	Motor side conversion cable model: Renewal kit model	Power supply conversion cable	Encoder conversion cable	Brake/Conversion cable for the cooling fan
[Large capacity/low inertia HA-LFS series, standard/with brake] ((B) represents models with brake)												
MR-J2S-500B	HA-LFS502	MR-J4-500B-RJ020	MR-J4-T20	SC-J2SBJ4KT5K	MR-J4-500B-RJ020	MR-J4-T20	HG-SR502	× (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-LFS11K1M (B)	MR-J4-11KB-RJ020		SC-J2SBJ4KT15K	MR-J4-11KB-RJ020		HG-JR11K1M (B)		SC-J2SBJ4KT15K	SC-J2SJ4PW3C1M-■	Existing cable can be used	• Existing brake cable can be used. • Cooling fan cable (Note 9)
MR-J2S-15KB	HA-LFS15K2 (B)	MR-J4-15KB-RJ020 (Note 10)			MR-J4-11KB-RJ020 (Note 10)							
	HA-LFS15K1M (B)	MR-J4-15KB-RJ020			MR-J4-15KB-RJ020		HG-JR15K1M (B)					
MR-J2S-22KB	HA-LFS22K2 (B)	MR-J4-22KB-RJ020 (Note 10)		SC-J2SBJ4KT22K (Note 10)	MR-J4-15KB-RJ020 (Note 10)				(Note 11)			
	HA-LFS22K1M	MR-J4-22KB-RJ020		SC-J2SBJ4KT22K	MR-J4-22KB-RJ020		HG-JR22K1M (Note 4)		SC-J2SBJ4KT22K	(Note 8)		• Cooling fan conversion cable SC-J2SJ4FAN1C1M

See Appendix page 2-40 for important points to note.

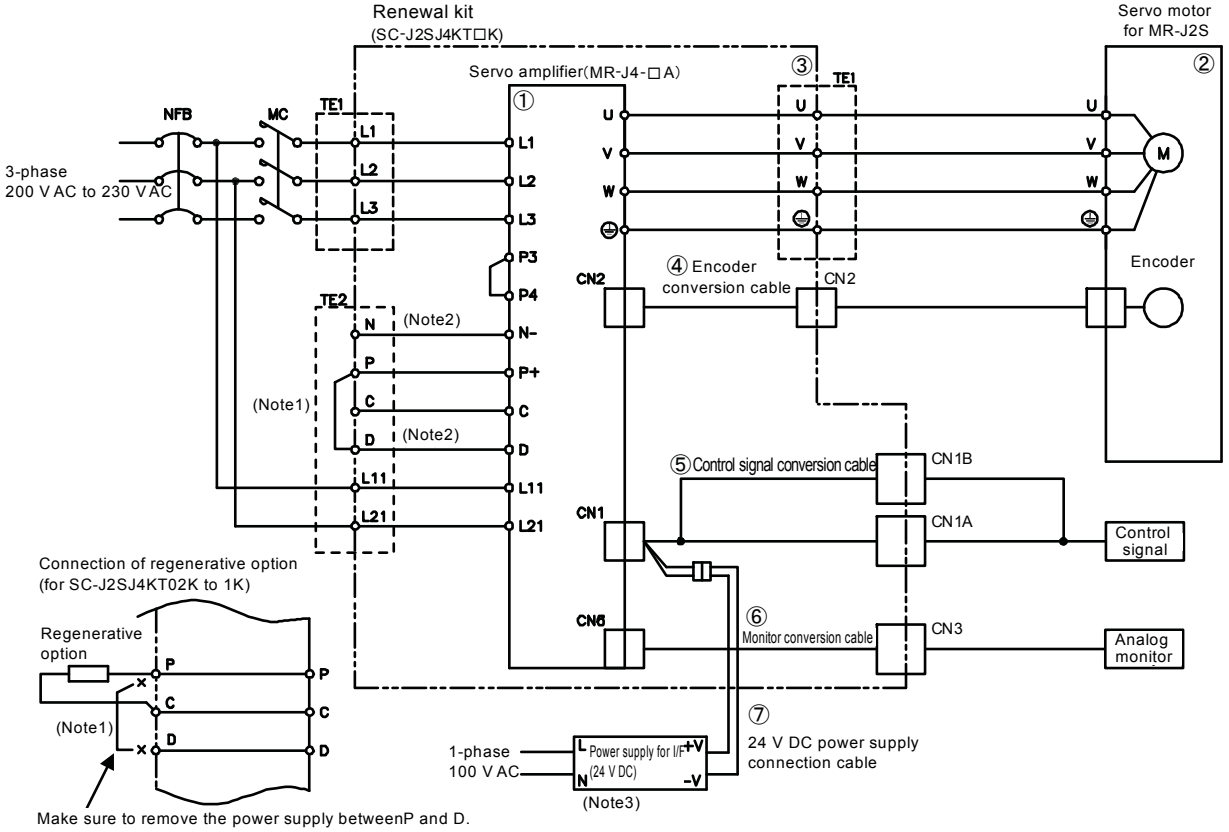
Note
1. Purchase from Mitsubishi Electric.
2. The actual reduction ratio is different when replacing a motor. Note that it is necessary to adjust the electronic gear after checking the actual reduction ratio of the motor. See Part 6 for details.
3. Note that because the flange dimensions and shaft end 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 6 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 6 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. Because the total length of the motor becomes shorter, the motor connector may interfere with the device side. Take care.
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-BKC1CBL1M-L or SC-BKC1CBL1M-H) made by Mitsubishi.
8. If the motor is replaced, it is necessary to change the crimped terminal of the existing power supply cable. (Screw size, UVW terminal: M8 → M10; Grounding terminal: M6 → M10; Thermistor terminal: M4 → M3.5)
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 6 for details.

5 RENEWAL TOOL CONNECTION DIAGRAM

These diagrams are the connection diagrams for wiring the servo amplifier and servo motor when using the renewal tool.

5.1 SC-J2SJ4KT02K to 3K

(1) Primary replacement (when replacing the servo amplifier only)



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)	24 V DC power supply connection cable	

*1: Manufactured by Mitsubishi Electric.

Note 1. When using the regenerative option, make sure to remove the wiring 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.

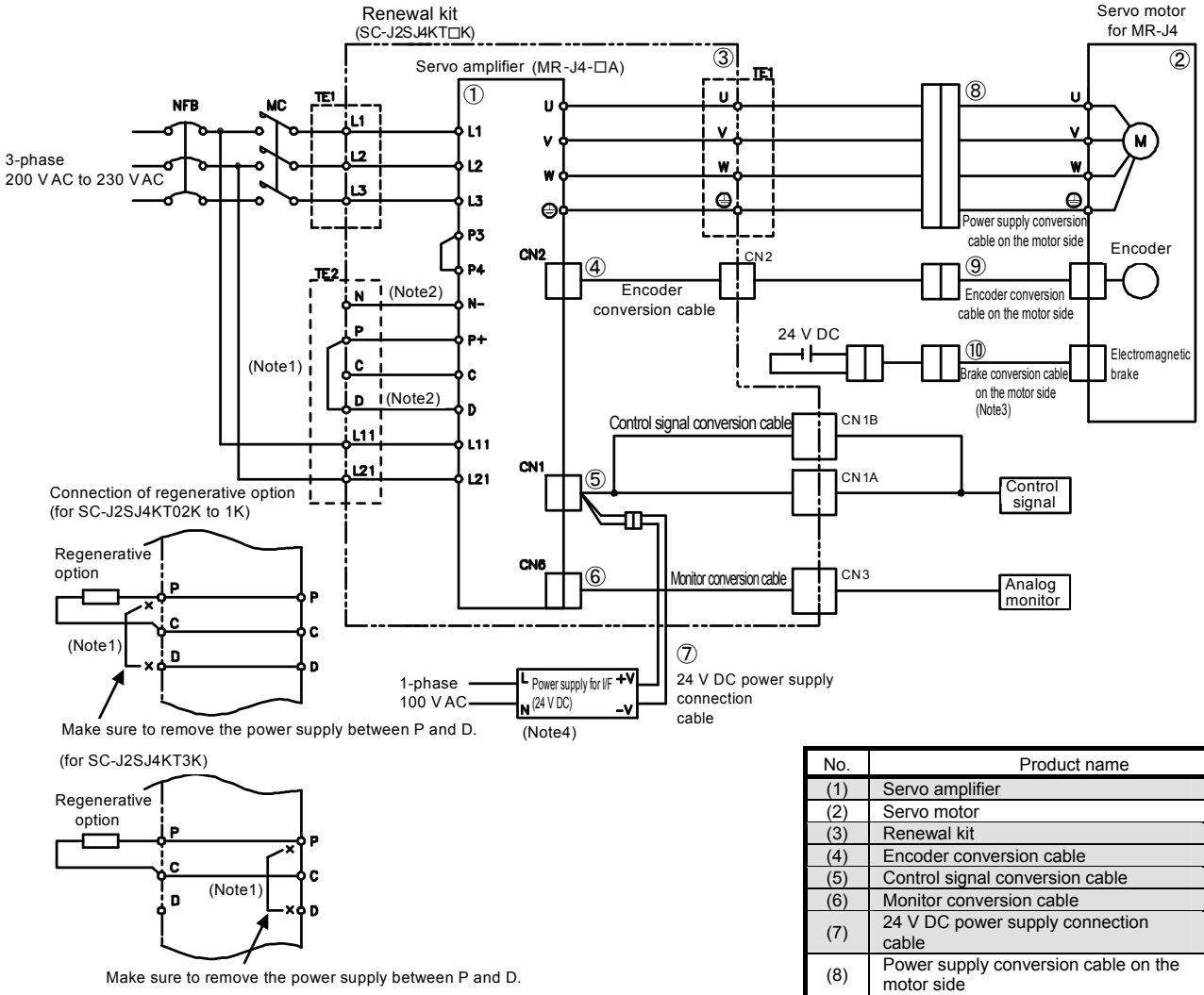
2. The N terminal of TE2 is limited to SC-J2SJ4KT1K and 3K. There is no D terminal wiring for SC-J2SJ4KT3K.

3. Required only when the internal power supply (24 V DC) for the I/F is used in the existing MR-J2S- A servo amplifier. Not included with the renewal tool. Note that a separate 24 V DC power supply (current capacity: 80 mA or more) is required when replacing.

   When connecting the 24 V DC power supply, use the "24 V DC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.

   (Electric wire colors: Red (+ side); white (- side))

(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)



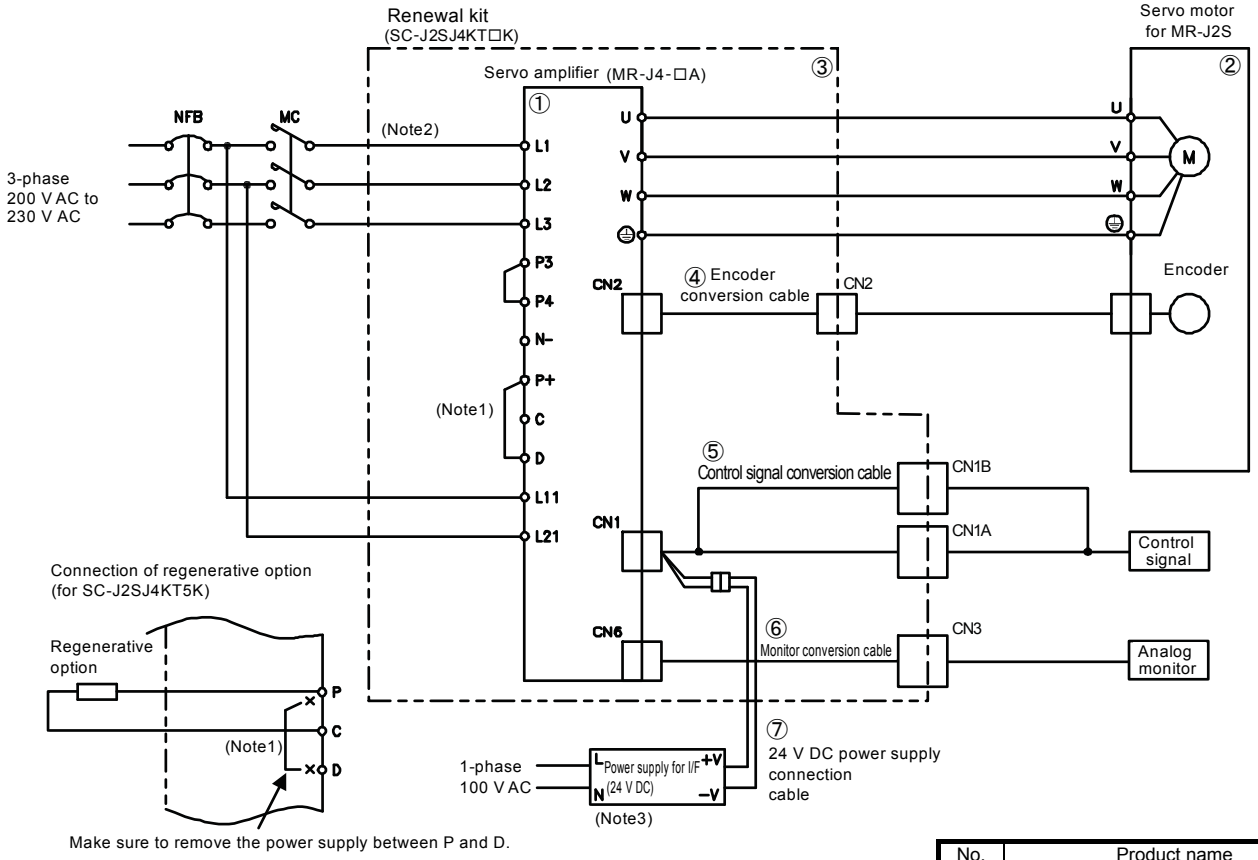
No.	Product name	
(1)	Servo amplifier	*1,2
(2)	Servo motor	*1
(3)	Renewal kit	
(4)	Encoder conversion cable	*2
(5)	Control signal conversion cable	*2
(6)	Monitor conversion cable	*2
(7)	24 V DC power supply connection cable	*2
(8)	Power supply conversion cable on the motor side	
(9)	Encoder conversion 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 primary replacement

Note 1. When using the regenerative option, make sure to remove the wiring 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-J2SJ4KT1K and 3K. There is no D terminal wiring for SC-J2SJ4KT3K.
3. Unnecessary if electromagnetic brakes are not installed.
4. Required only when the internal power supply (24 V DC) for the I/F is used in the existing MR-J2S- A servo amplifier. Not included with the renewal tool. Note that a separate 24 V DC power supply (current capacity: 80 mA or more) is required when replacing.
When connecting the 24 V DC power supply, use the "24 V DC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
(Electric wire colors: Red (+ side); white (- side))

5.2 SC-J2SJ4KT5K

(1) Primary replacement (when replacing the servo amplifier only)



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)	24 V DC power supply connection cable	

*1: Manufactured by Mitsubishi Electric.

Note 1. When using the regenerative option, make sure to remove the wiring 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.

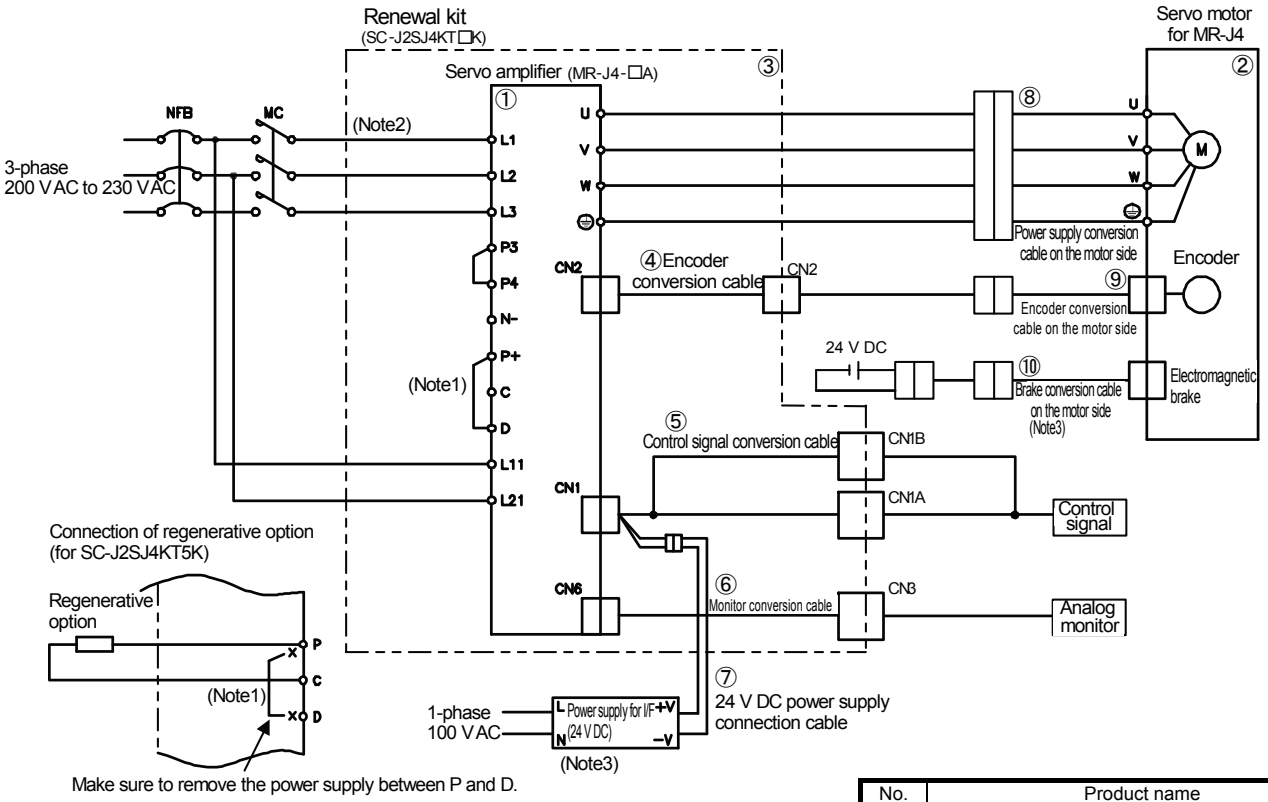
2. There is no conversion terminal block in the SC-J2SJ4KT5K renewal kit. Directly connect to the MR-J4 servo amplifier.

3. Required only when the internal power supply (24 V DC) for the I/F is used in the existing MR-J2S-_A_ servo amplifier. Not included with the renewal tool. Note that a separate 24 V DC power supply (current capacity: 80 mA or more) is required when replacing.

   When connecting the 24 V DC power supply, use the "24 V DC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.

   (Electric wire colors: Red (+ side); white (- side))

(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)



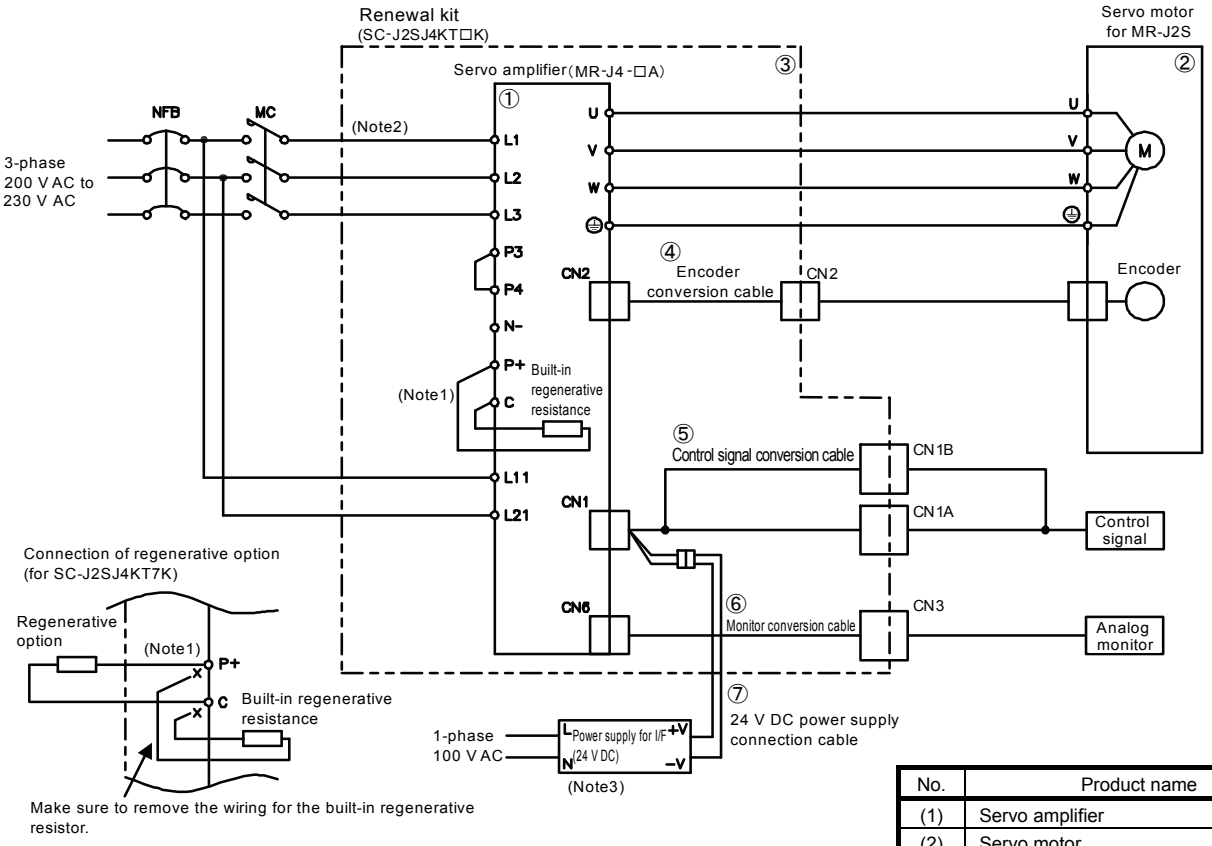
No.	Product name	
(1)	Servo amplifier	*1,2
(2)	Servo motor	*1
(3)	Renewal kit	
(4)	Encoder conversion cable	*2
(5)	Control signal conversion cable	*2
(6)	Monitor conversion cable	*2
(7)	24 V DC power supply connection cable	*2
(8)	Power supply conversion cable on the motor side	
(9)	Encoder conversion cable on the motor side	
(10)	Brake conversion cable on the motor side	

*1: Manufactured by Mitsubishi Electric.
*2: *2: For secondary replacement, replacement finished through primary replacement

Note 1. When using the regenerative option, make sure to remove the wiring 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-J2SJ4KT5K 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 (24 V DC) for the I/F is used in the existing MR-J2S-_A_ servo amplifier. Not included with the renewal tool. Note that a separate 24 V DC power supply (current capacity: 80 mA or more) is required when replacing.
When connecting the 24 V DC power supply, use the "24 V DC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
(Electric wire colors: Red (+ side); white (- side))

5.3 SC-J2SJ4KT7K

(1) Primary replacement (when replacing the servo amplifier only)



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)	24 V DC 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.

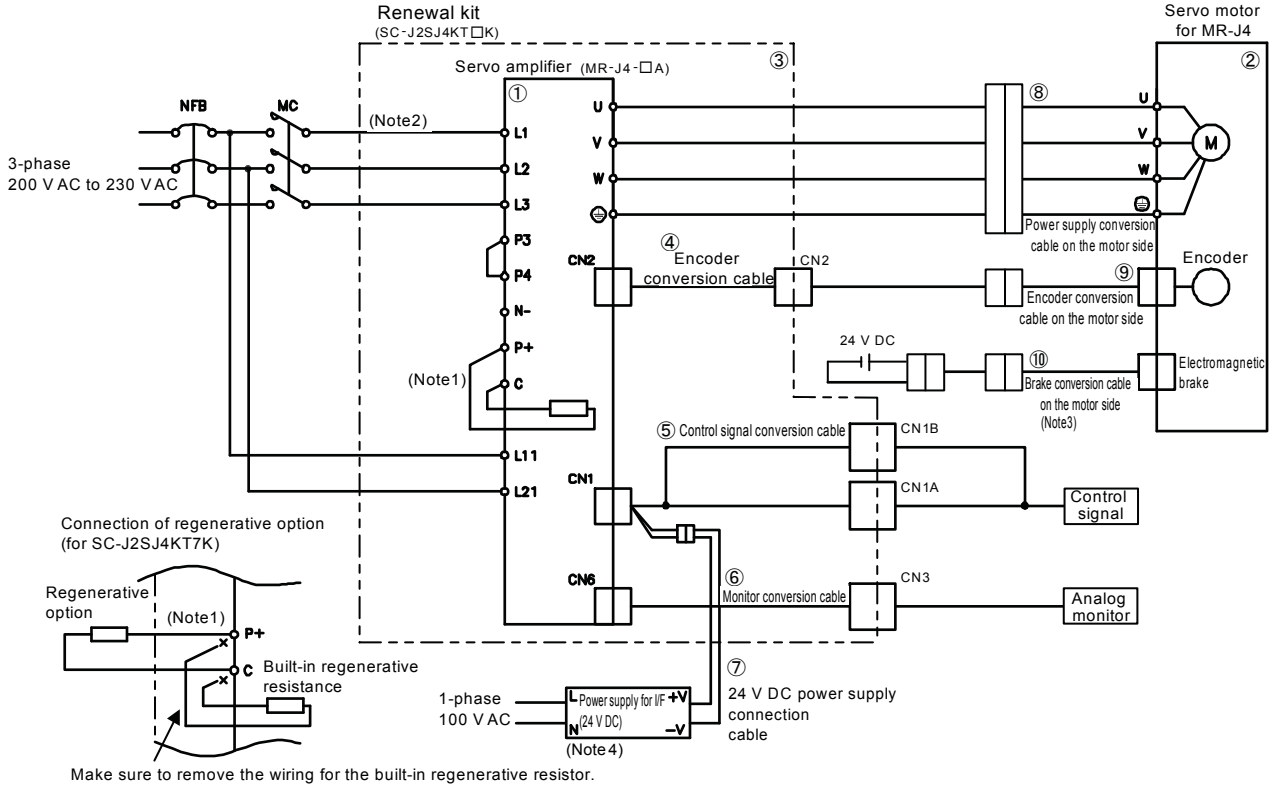
2. There is no conversion terminal block in the SC-J2SJ4KT7K renewal kit. Directly connect to the MR-J4 servo amplifier.

3. Required only when the internal power supply (24 V DC) for the I/F is used in the existing MR-J2S-_A_ servo amplifier. Not included with the renewal tool. Note that a separate 24 V DC power supply (current capacity: 80 mA or more) is required when replacing.

   When connecting the 24 V DC power supply, use the "24 V DC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.

   (Electric wire colors: Red (+ side); white (- side))

(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)



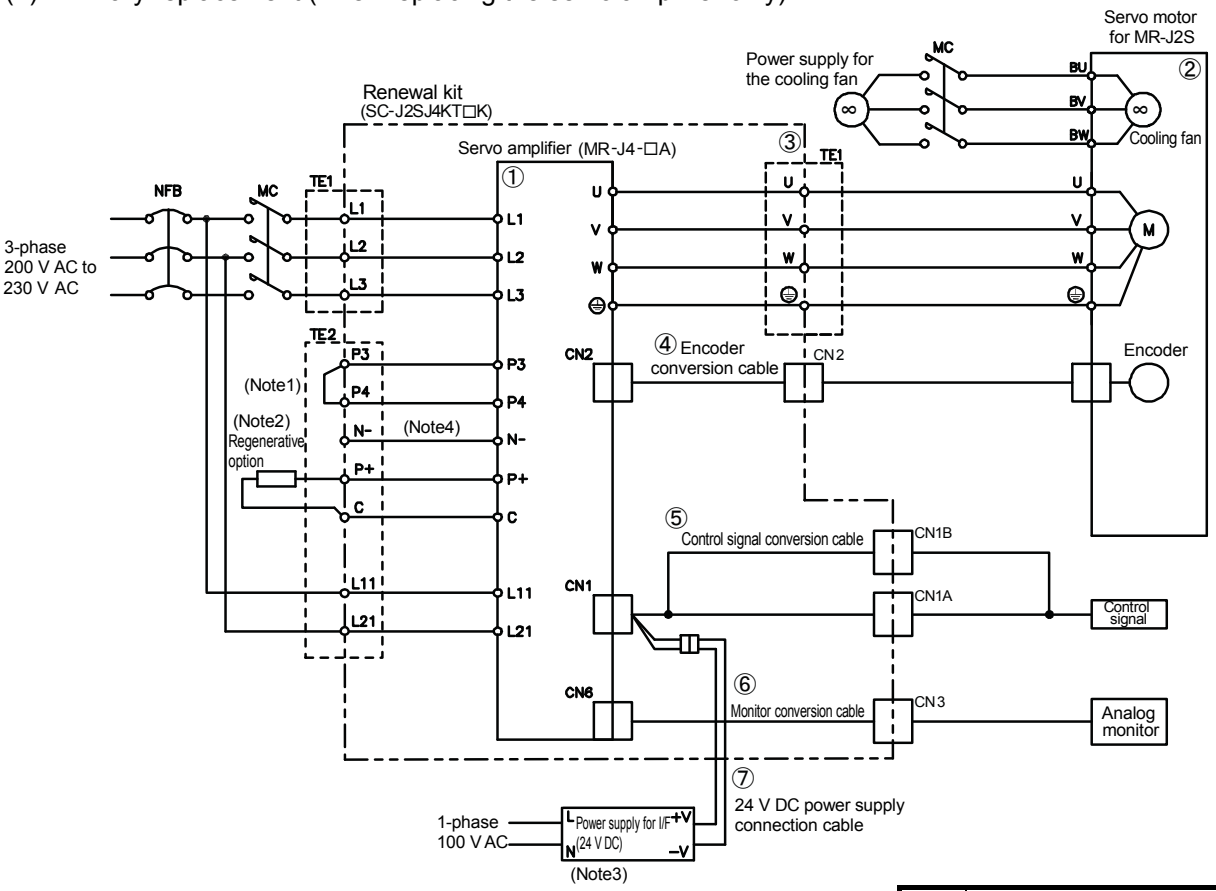
No.	Product name	
(1)	Servo amplifier	*1,2
(2)	Servo motor	*1
(3)	Renewal kit	
(4)	Encoder conversion cable	*2
(5)	Control signal conversion cable	*2
(6)	Monitor conversion cable	*2
(7)	24 V DC power supply connection cable	*2
(8)	Power supply conversion cable on the motor side	
(9)	Encoder conversion 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-J2SJ4KT7K 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 (24 V DC) for the I/F is used in the existing MR-J2S- A servo amplifier. Not included with the renewal tool. Note that a separate 24 V DC power supply (current capacity: 80 mA or more) is required when replacing.
When connecting the 24 V DC power supply, use the "24 V DC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
(Electric wire colors: Red (+ side); white (- side))

5.4 SC-J2SJ4KT15K, 22K

(1) Primary replacement (when replacing the servo amplifier only)



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)	24 V DC 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.

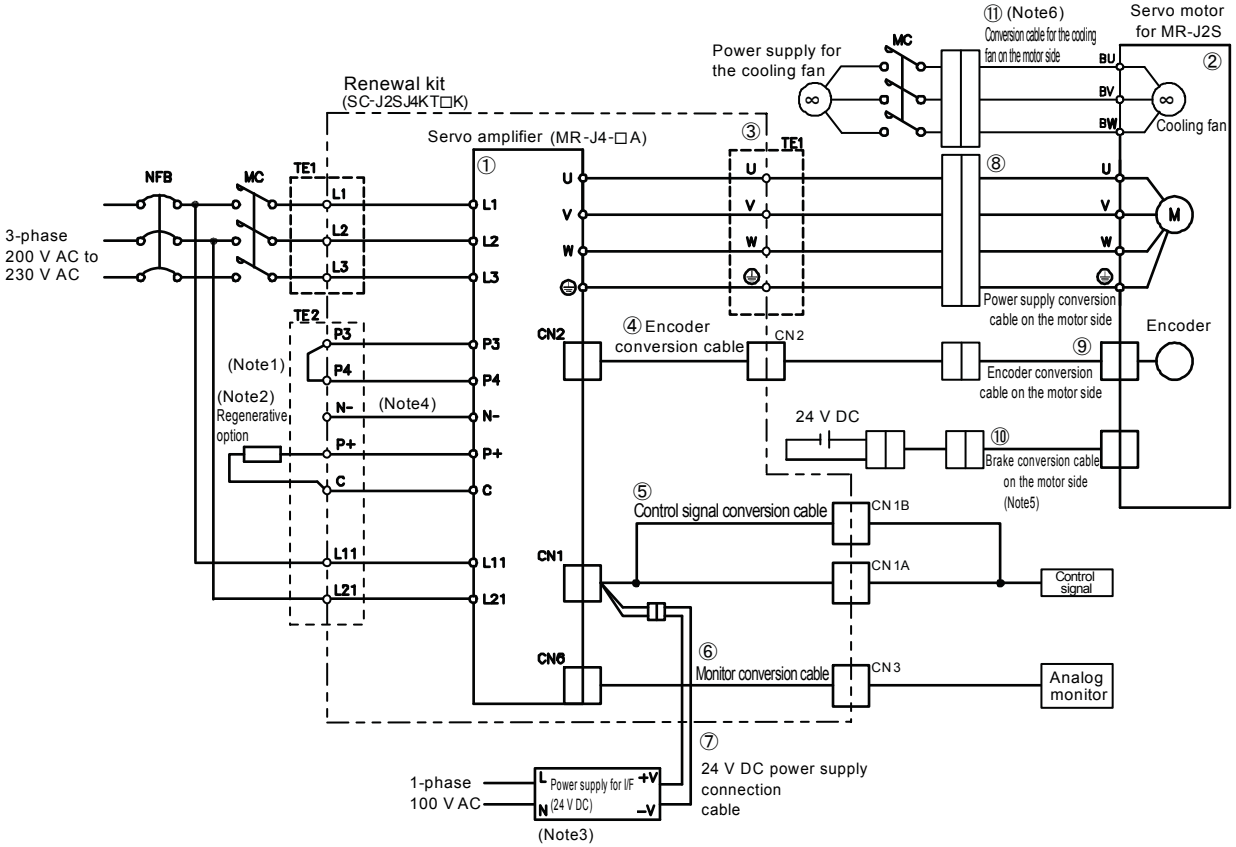
3. Required only when the internal power supply (24 V DC) for the I/F is used in the existing MR-J2S-_A_ servo amplifier. Not included with the renewal tool. Note that a separate 24 V DC power supply (current capacity: 80 mA or more) is required when replacing.

   When connecting the 24 V DC power supply, use the "24 V DC 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.

(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)



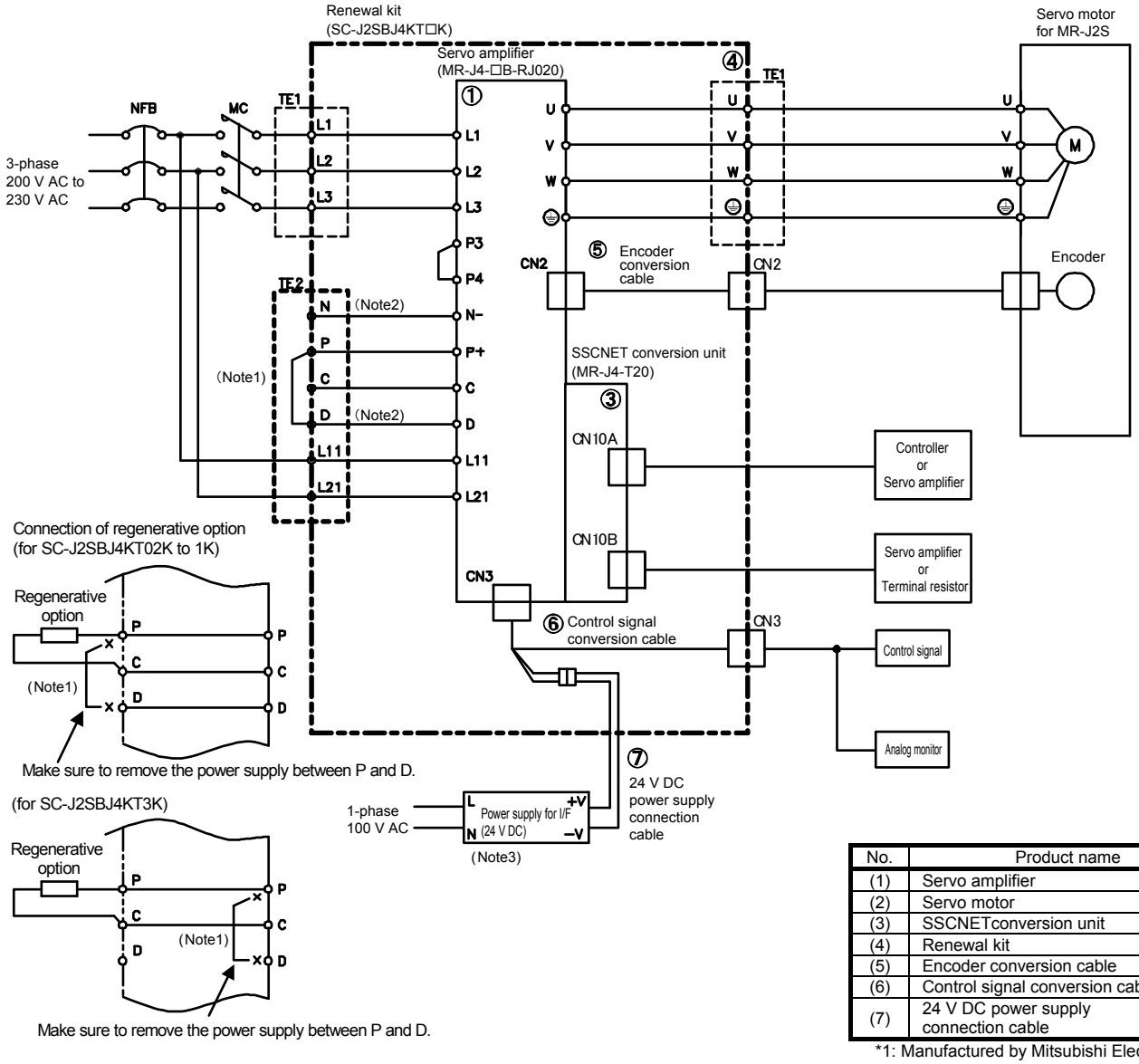
No.	Product name	
(1)	Servo amplifier	*1,2
(2)	Servo motor	*1
(3)	Renewal kit	
(4)	Encoder conversion cable	*2
(5)	Control signal conversion cable	*2
(6)	Monitor conversion cable	*2
(7)	24 V DC power supply connection cable	*2
(8)	Power supply conversion cable on the motor side	
(9)	Encoder conversion 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 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 regeneration 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 (24 V DC) for the I/F is used in the existing MR-J2S-_A_ servo amplifier. Not included with the renewal tool. Note that a separate 24 V DC power supply (current capacity: 80 mA or more) is required when replacing.
When connecting the 24 V DC power supply, use the "24 V DC 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 motors. Because the existing wiring becomes unnecessary, insulate as needed.

5.5 SC-J2SBJ4KT02K to 3K

(1) Primary replacement (when replacing the servo amplifier only)



No.	Product name	
(1)	Servo amplifier	*1
(2)	Servo motor	*1
(3)	SSCNETconversion unit	*1
(4)	Renewal kit	
(5)	Encoder conversion cable	
(6)	Control signal conversion cable	
(7)	24 V DC power supply connection cable	

*1: Manufactured by Mitsubishi Electric.

Note 1. When using the regenerative option, make sure to remove the wiring 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.

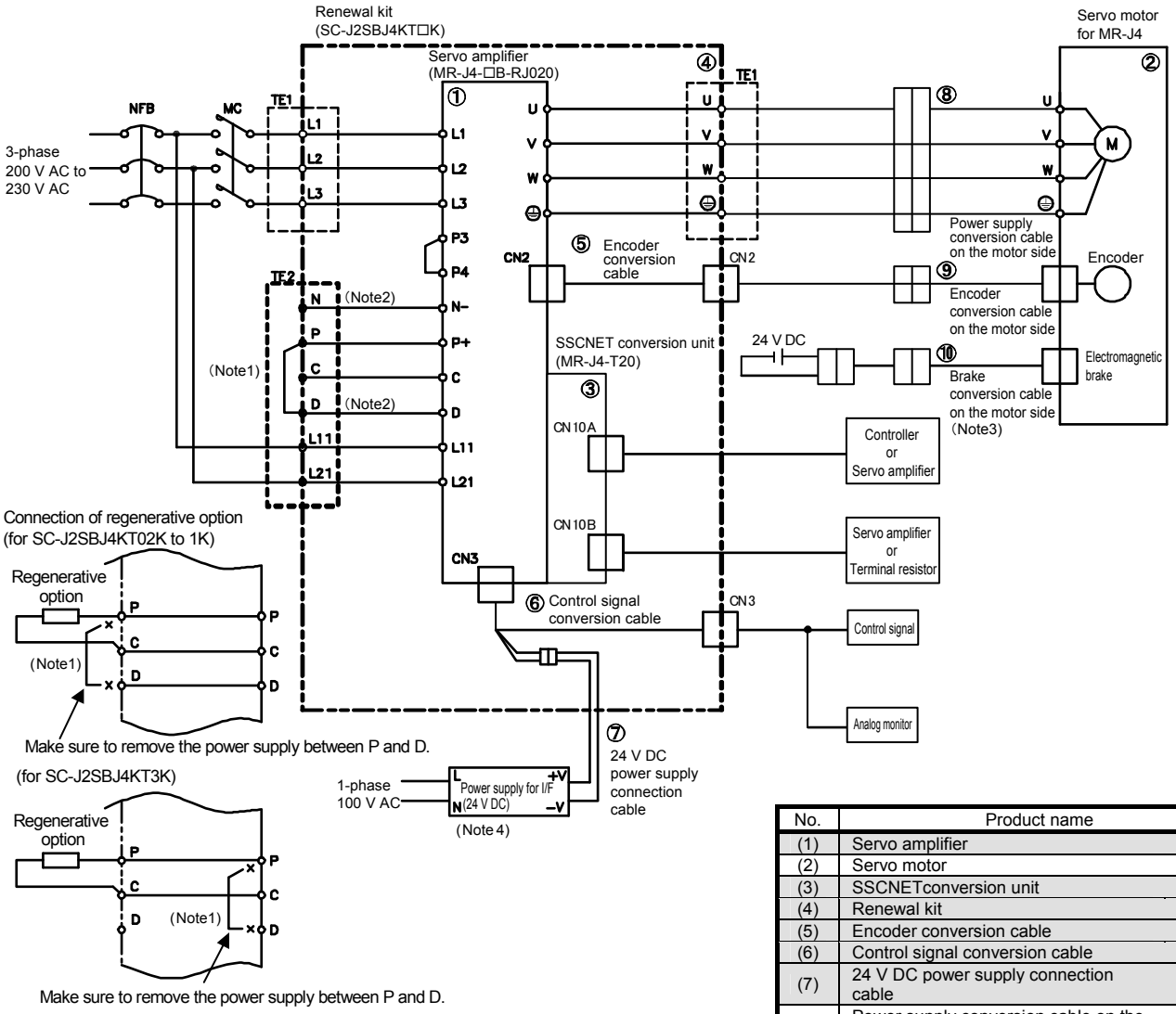
2. The N terminal of TE2 is limited to SC-J2SBJ4KT1K and 3K. There is no D terminal wiring for SC-J2SBJ4KT3K.

3. Required only when the internal power supply (24 V DC) for the I/F is used in the existing MR-J2S- B servo amplifier. Not included with the renewal tool. Note that a separate 24 V DC power supply (current capacity: 80 mA or more) is required when replacing.

   When connecting the 24 V DC power supply, use the "24 V DC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.

   (Electric wire colors: Red (+ side); white (- side))

(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)



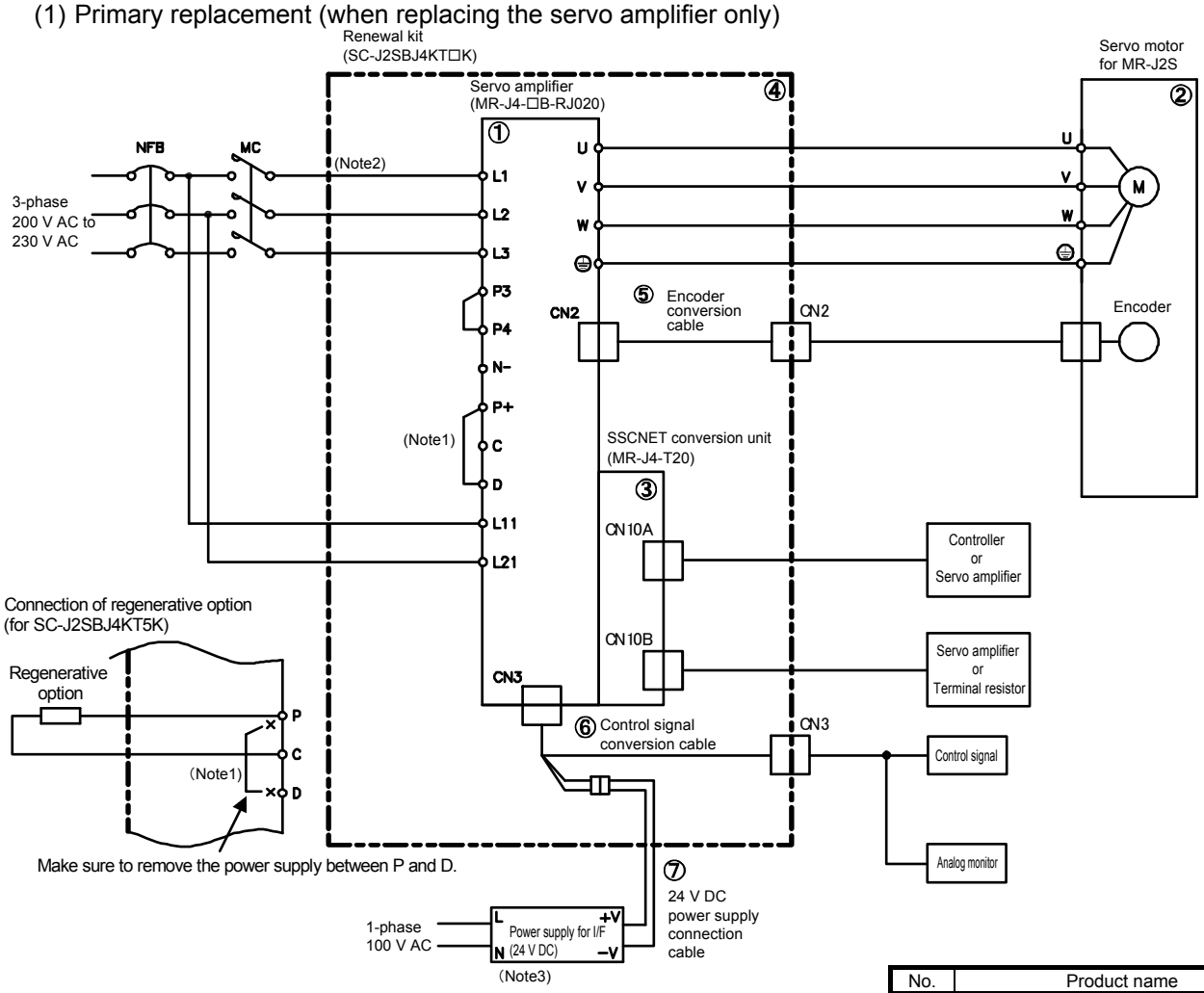
No.	Product name	
(1)	Servo amplifier	*1,2
(2)	Servo motor	*1
(3)	SSCNETconversion unit	*1
(4)	Renewal kit	*2
(5)	Encoder conversion cable	*2
(6)	Control signal conversion cable	*2
(7)	24 V DC power supply connection cable	*2
(8)	Power supply conversion cable on the motor side	
(9)	Encoder conversion 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 primary replacement

Note 1. When using the regenerative option, make sure to remove the wiring 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 (24 V DC) for the I/F is used in the existing MR-J2S- B servo amplifier. Not included with the renewal tool. Note that a separate 24 V DC power supply (current capacity: 80 mA or more) is required when replacing.
When connecting the 24 V DC power supply, use the "24 V DC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
(Electric wire colors: Red (+ side); white (- side))

5.6 SC-J2SBJ4KT5K

(1) Primary replacement (when replacing the servo amplifier only)



No.	Product name	
(1)	Servo amplifier	*1
(2)	Servo motor	*1
(3)	SSCNETconversion unit	*1
(4)	Renewal kit	
(5)	Encoder conversion cable	
(6)	Control signal conversion cable	
(7)	24 V DC power supply connection cable	

*1: Manufactured by Mitsubishi Electric.

Note 1. When using the regenerative option, make sure to remove the wiring 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.

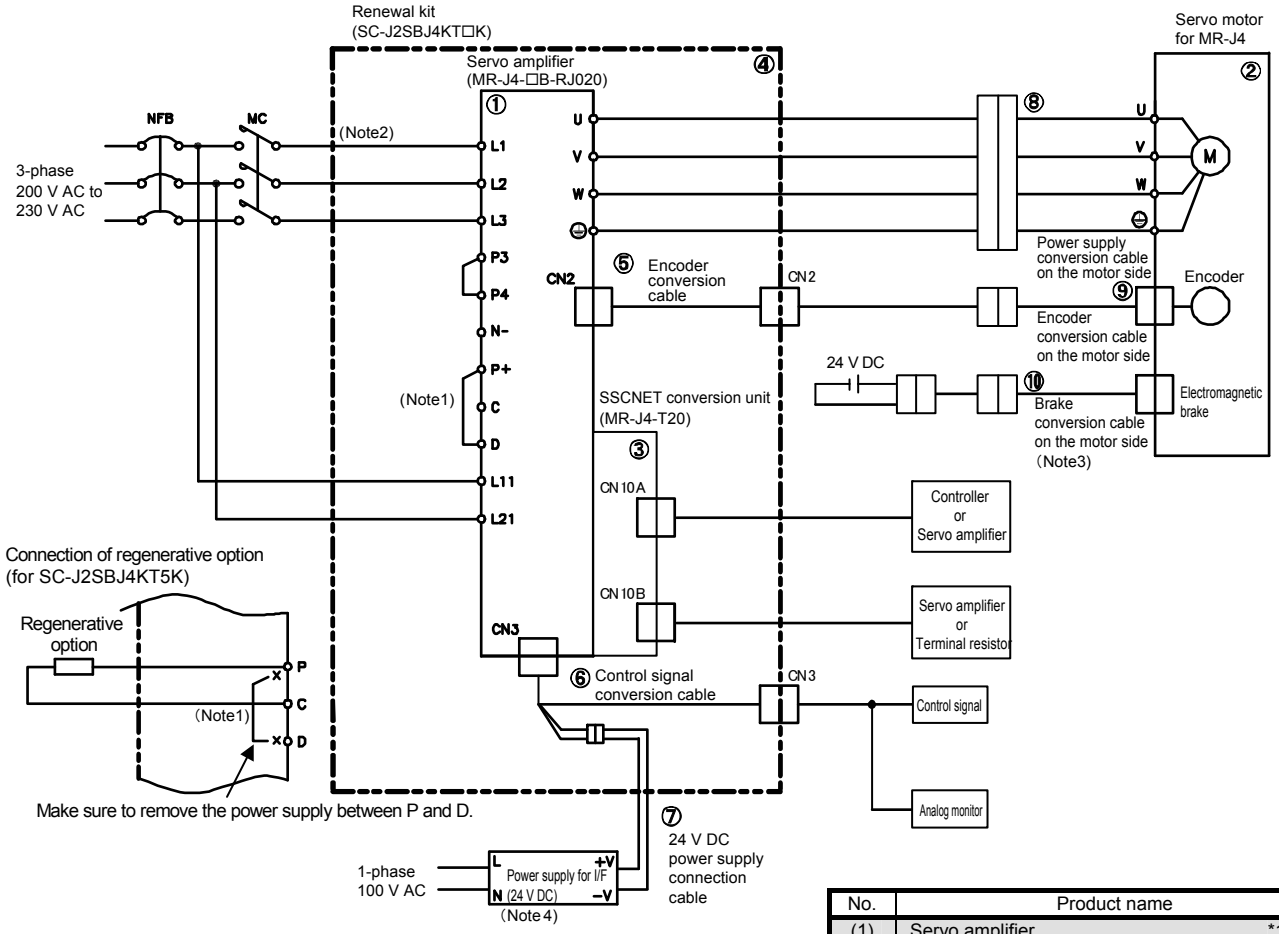
2. There is no conversion terminal block in the SC-J2SBJ4KT5K renewal kit. Directly connect to the MR-J4 servo amplifier.

3. Required only when the internal power supply (24 V DC) for the I/F is used in the existing MR-J2S-_B_ servo amplifier. Not included with the renewal tool. Note that a separate 24 V DC power supply (current capacity: 80mA and over) is required when replacing.

   When connecting the 24 V DC power supply, use the "24 V DC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.

   (Electric wire colors: Red (+ side); white (- side))

(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)



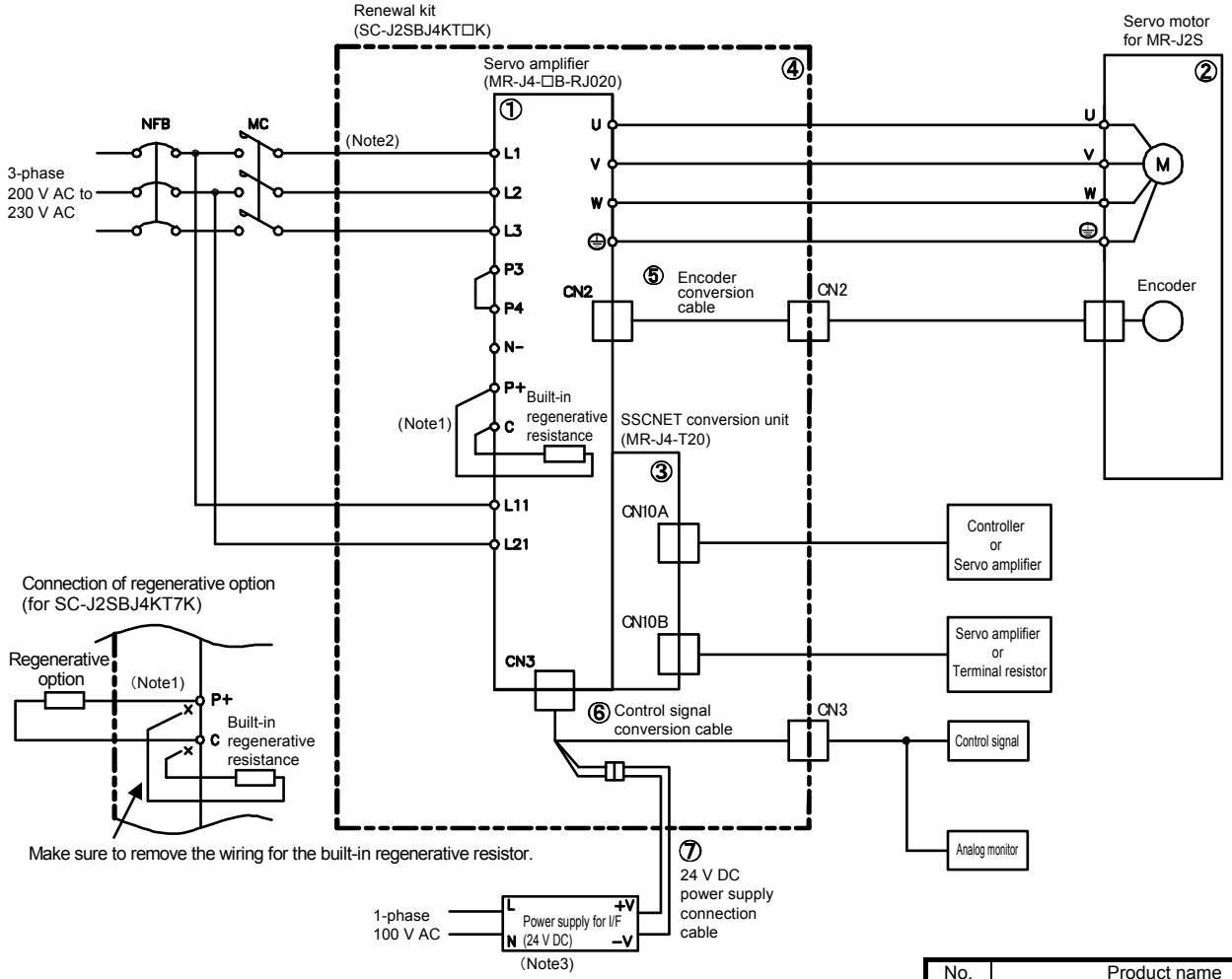
No.	Product name	
(1)	Servo amplifier	*1,2
(2)	Servo motor	*1
(3)	SSCNETconversion unit	*1,2
(4)	Renewal kit	*2
(5)	Encoder conversion cable	*2
(6)	Control signal conversion cable	*2
(7)	24 V DC power supply connection cable	*2
(8)	Power supply conversion cable on the motor side	
(9)	Encoder conversion 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 primary replacement

Note 1. When using the regenerative option, make sure to remove the wiring 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 (24 V DC) for the I/F is used in the existing MR-J2S- B servo amplifier.
Not included with the renewal tool. Note that a separate 24 V DC power supply (current capacity: 80 mA or more) is required when replacing.
When connecting the 24 V DC power supply, use the "24 V DC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
(Electric wire colors: Red (+ side); white (- side))

5.7 SC-J2SBJ4KT7K

(1) Primary replacement (when replacing the servo amplifier only)



No.	Product name	
(1)	Servo amplifier	*1
(2)	Servo motor	*1
(3)	SSCNETconversion unit	*1
(4)	Renewal kit	
(5)	Encoder conversion cable	
(6)	Control signal conversion cable	
(7)	24 V DC power supply connection cable	

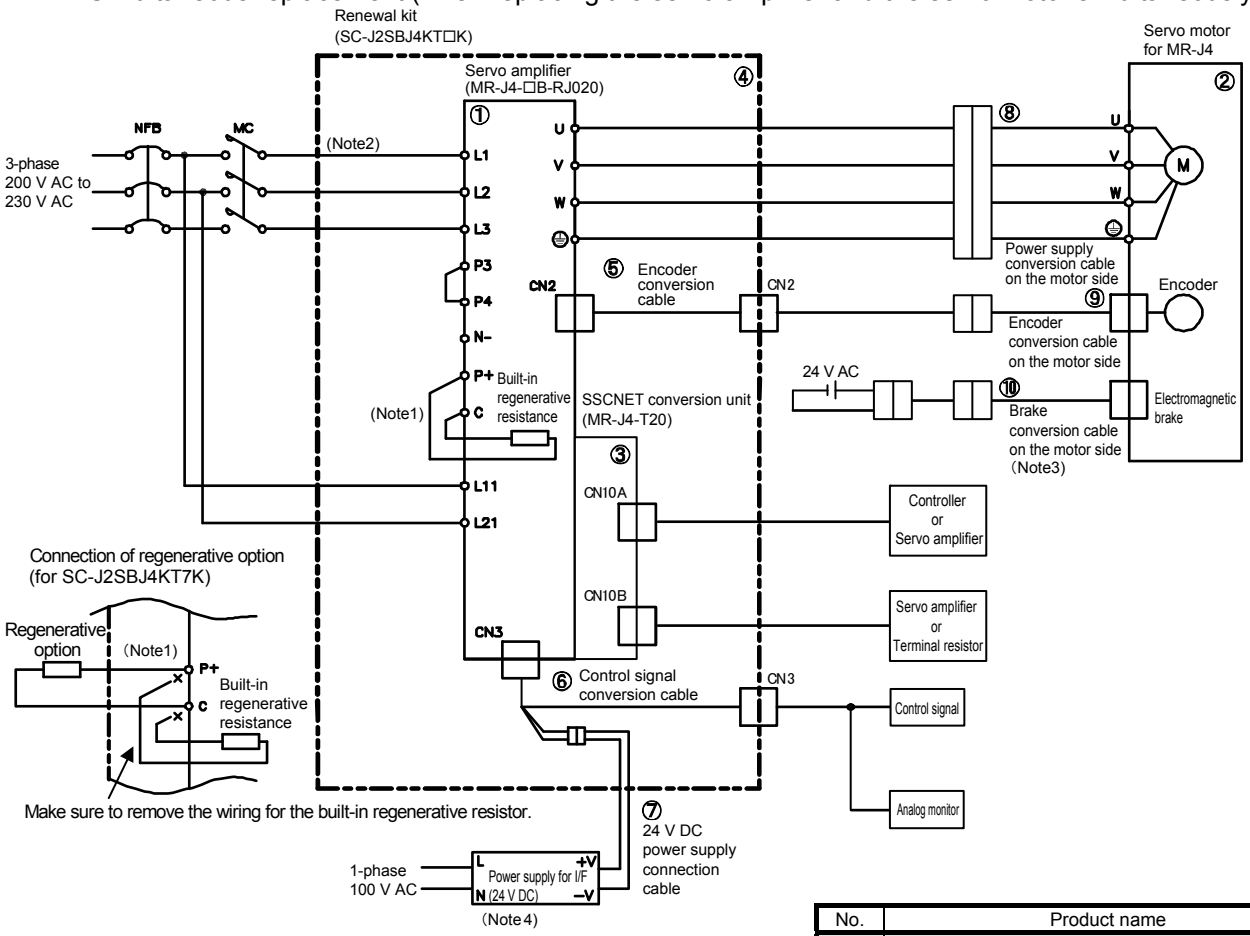
*1: Manufactured by Mitsubishi Electric.

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-J2SBJ4KT7K renewal kit. Directly connect to the MR-J4 servo amplifier.

3. Required only when the internal power supply (24 V DC) for the I/F is used in the existing MR-J2S-_B_ servo amplifier.
Not included with the renewal tool. Note that a separate 24 V DC power supply (current capacity: 80 mA or more) is required when replacing.
When connecting the 24 V DC power supply, use the "24 V DC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
(Electric wire colors: Red (+ side); white (- side))

(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



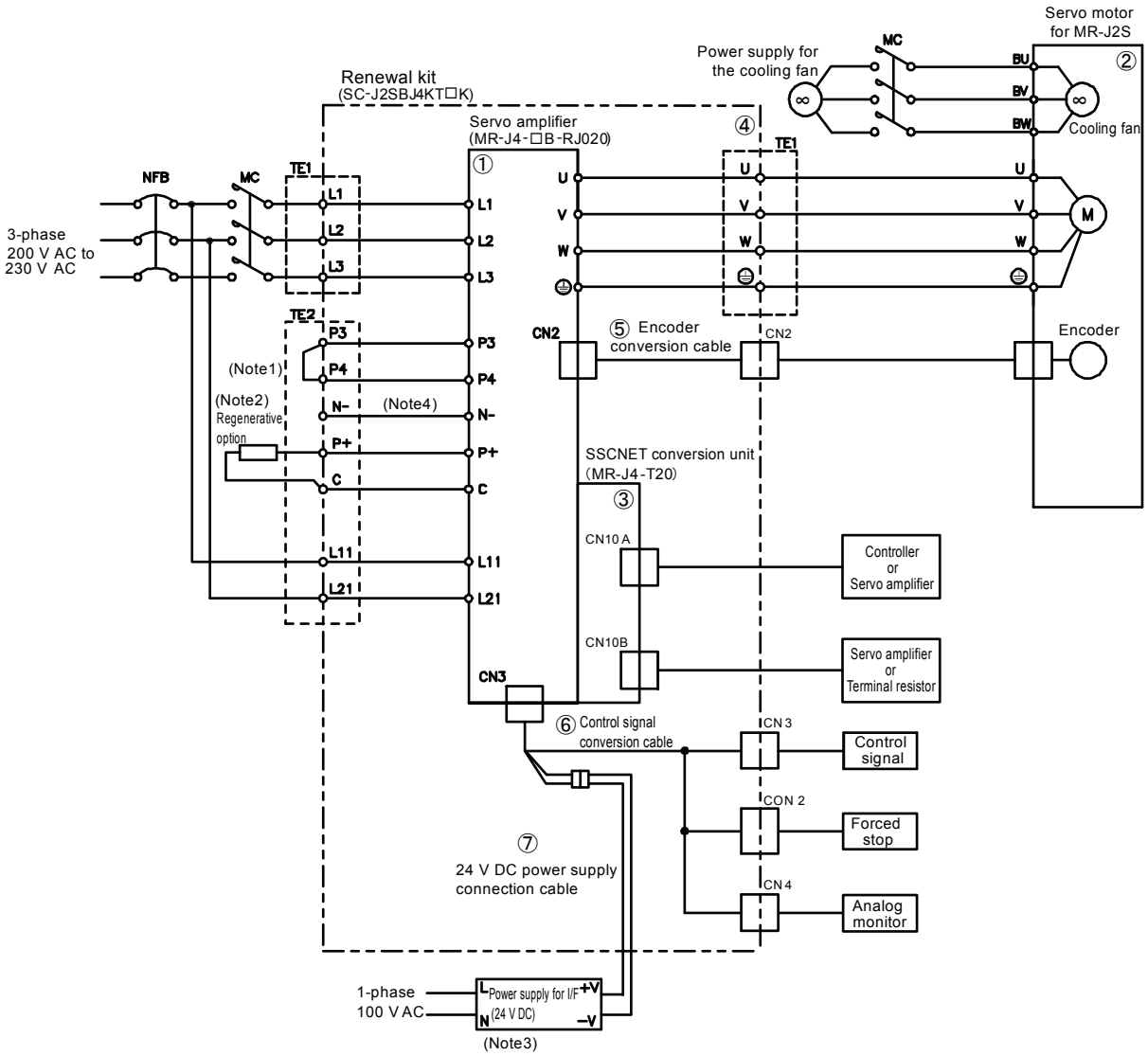
No.	Product name	
(1)	Servo amplifier	*1,2
(2)	Servo motor	*1
(3)	SSCNETconversion unit	*1,2
(4)	Renewal kit	*2
(5)	Encoder conversion cable	*2
(6)	Control signal conversion cable	*2
(7)	24 V DC power supply connection cable	*2
(8)	Power supply conversion cable on the motor side	
(9)	Encoder conversion 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 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-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 (24 V DC) for the I/F is used in the existing MR-J2S-_B_ servo amplifier. Not included with the renewal tool. Note that a separate 24 V DC power supply (current capacity: 80 mA or more) is required when replacing.
When connecting the 24 V DC power supply, use the "24 V DC power supply connection cable (model: SC-J2SJ4CTPWC5M)" included in the package.
(Electric wire colors: Red (+ side); white (- side))

5.8 SC-J2SBJ4KT15K, 22K

(1) Primary replacement (when replacing the servo amplifier only)

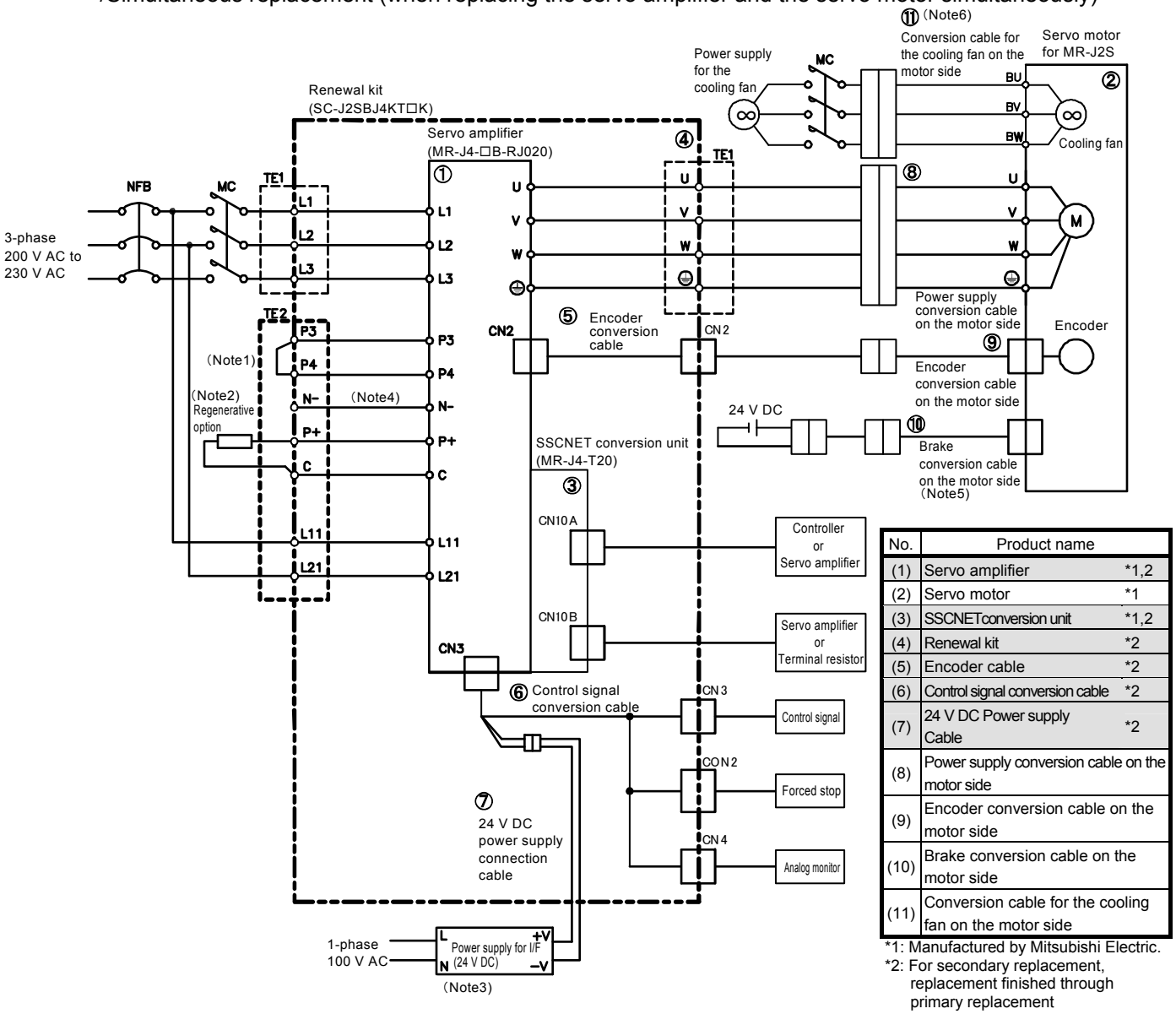


No.	Product name	
(1)	Servo amplifier	*1
(2)	Servo motor	*1
(3)	SSCNETconversion unit	*1
(4)	Renewal kit	
(5)	Encoder conversion cable	
(6)	Control signal conversion cable	
(7)	24 V DC power supply connection cable	

*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 (24 V DC) for the I/F is used in the existing MR-J2S-_B_ servo amplifier. Not included with the renewal tool. Note that a separate 24 V DC power supply (current capacity: 80 mA or more) is required when replacing.
When connecting the 24 V DC power supply, use the "24 V DC 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.

(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)



No.	Product name	
(1)	Servo amplifier	*1,2
(2)	Servo motor	*1
(3)	SSCNETconversion unit	*1,2
(4)	Renewal kit	*2
(5)	Encoder cable	*2
(6)	Control signal conversion cable	*2
(7)	24 V DC Power supply 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 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. The servo amplifier may malfunction if the connection destinations are incorrect.
3. Required only when the internal power supply (24 V DC) for the I/F is used in the existing MR-J2S- B servo amplifier. Not included with the renewal tool. Note that a separate 24 V DC power supply (current capacity: 80 mA or more) is required when replacing.
When connecting the 24 V DC power supply, use the "24 V DC 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.

6 Specifications

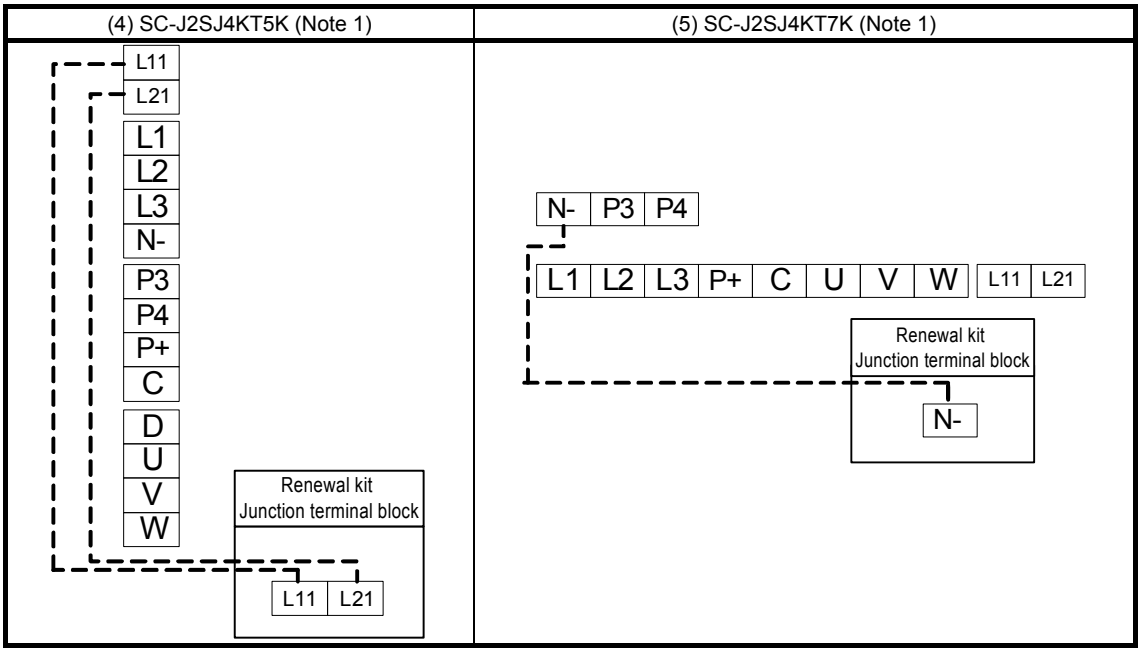
6.1 Standard Specifications

(1) Renewal kit specifications

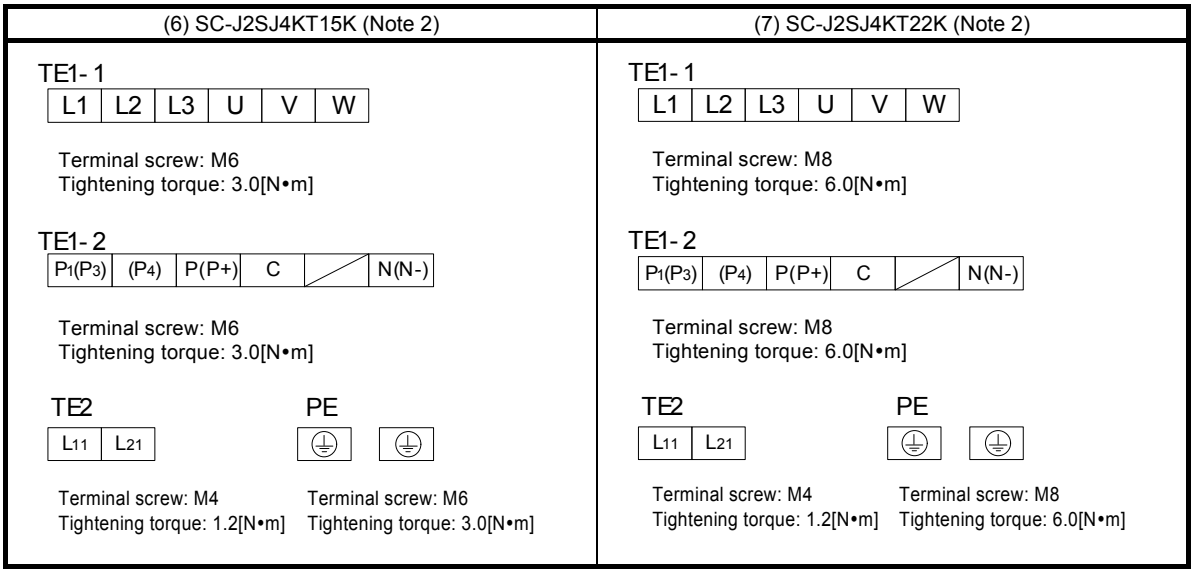
Item			Specifications
Power supply	Voltage/Frequency		3-phase 200 V AC to 240 V AC, 50/60 Hz.
	Permissible voltage fluctuation		3-phase 170 V AC to 264 V AC.
	Permissible frequency fluctuation		Within ±5%.
Environment	Ambient temperature	Operation	0 to +55°C (non-freezing).
		Storage	-20 to +65°C (non-freezing).
	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).

6.2 Terminal Block Specifications

(1) SC-J2SJ4KT02K, 06K	(2) SC-J2SJ4KT1K	(3) SC-J2SJ4KT3K
TE1 L_1 L_2 L_3 U V W Terminal screw: M4 Tightening torque: 1.2[N•m]	TE1 L_1 L_2 L_3 U V W Terminal screw: M4 Tightening torque: 1.2[N•m]	TE1 L_1 L_2 L_3 U V W Terminal screw: M4 Tightening torque: 1.2[N•m]
TE2 D C P L_{21} L_{11} Plug-in connector type	TE2 D C P L_{21} L_{11} N Plug-in connector type	TE2 L_{11} L_{21} D P C N Terminal screw: M4 Tightening torque: 1.2[N•m]



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.



Note 1. 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 24 V DC Power Supply Specifications for Interface

These are the recommended specifications for the 24 V DC power supply for the interface necessary for renewal.
Select according to the following specifications.

Product name	Specifications
For interface 24 V DC power	24 V DC, ±10%. Current capacity: 80 mA or more.

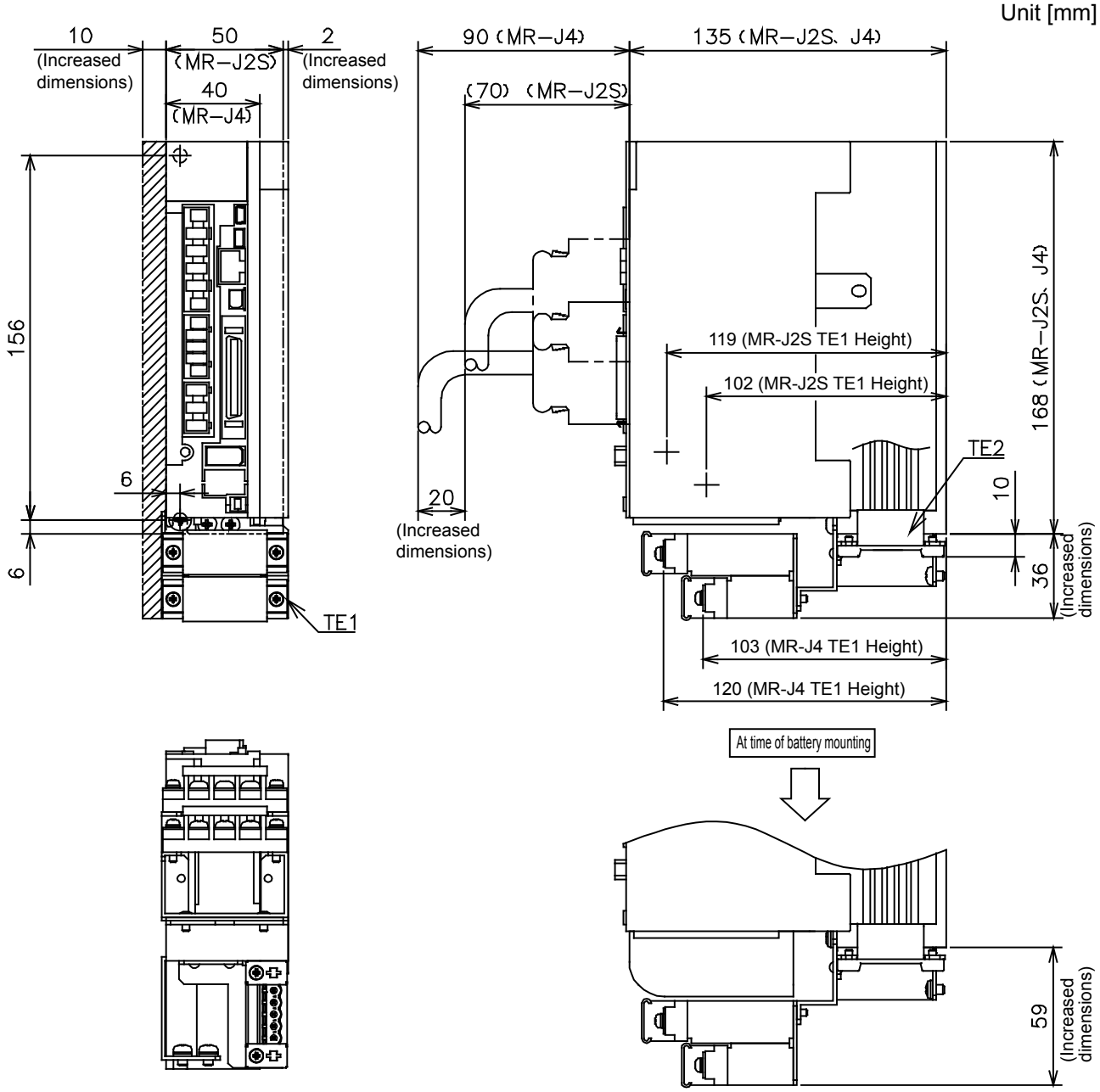
7 Dimensions

7.1 Renewal Kit

* The dimensions are the same for A and B types.

(1) SC-J2S(B)J4KT02K

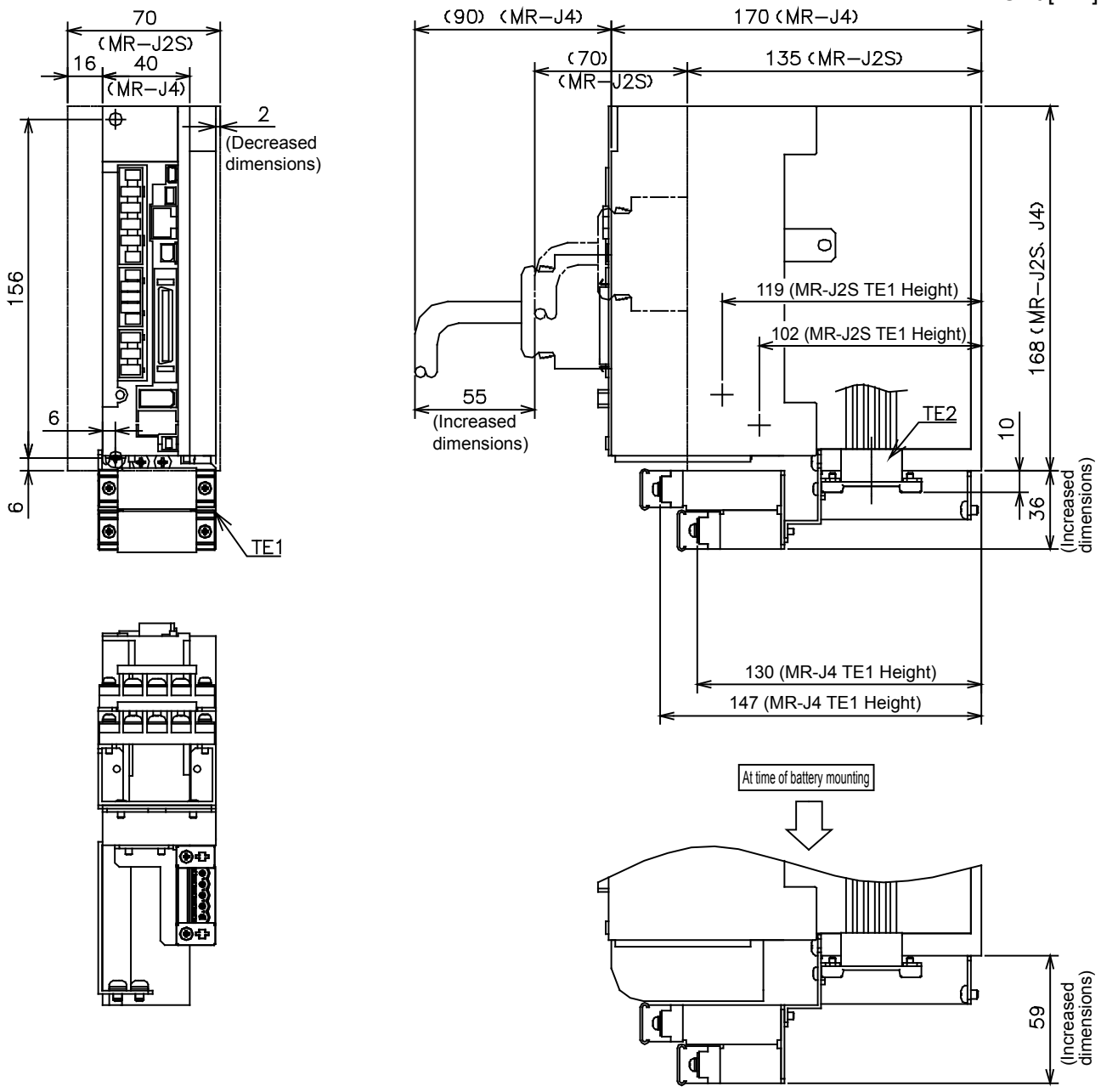
Unit [mm]



Note. Wiring and other items in the renewal kit are not drawn so that mounting method can be easily seen.

(2) SC-J2S (B) J4KT06K

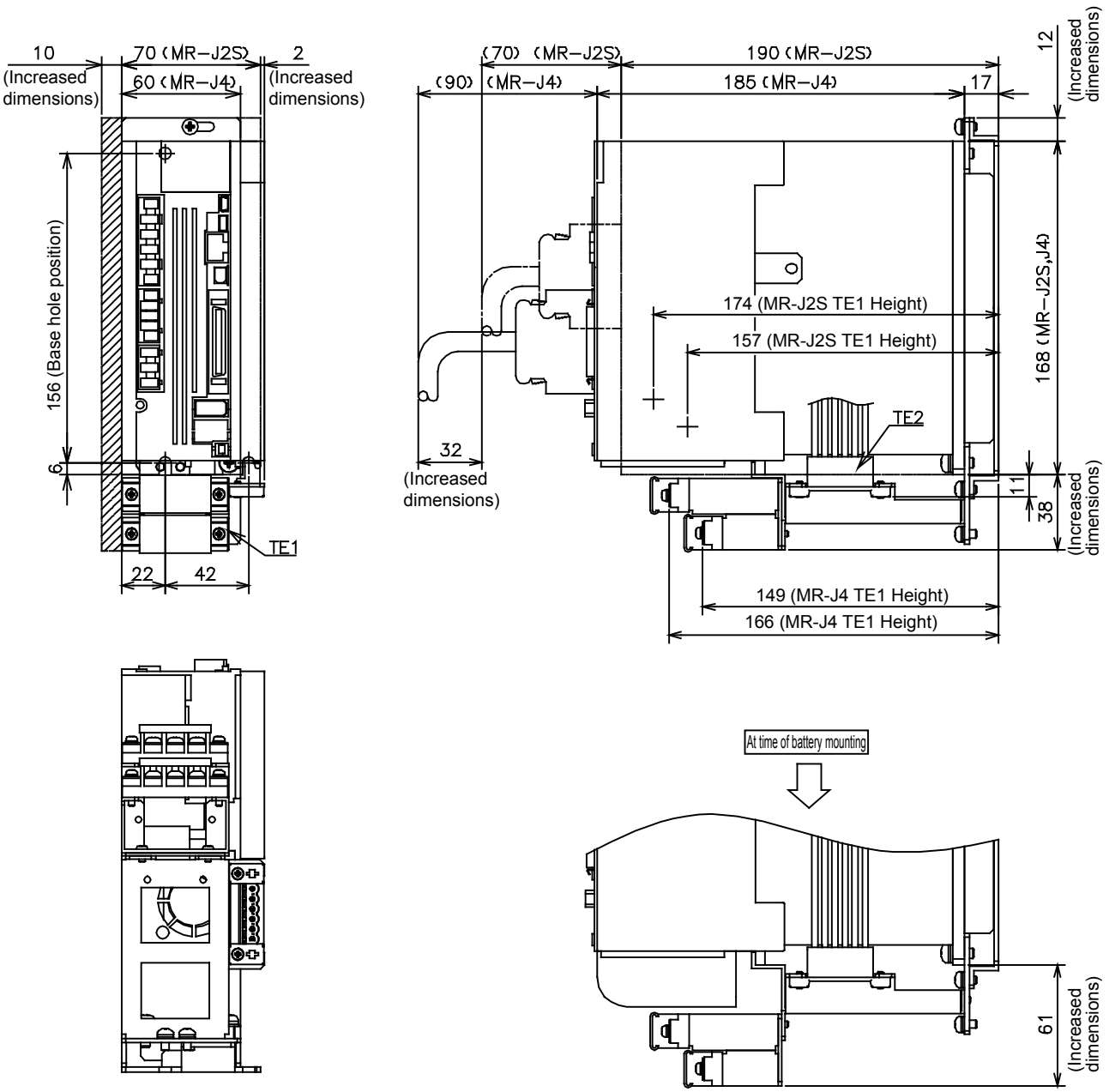
Unit [mm]



Note. Wiring and other items in the renewal kit are not drawn so that mounting method can be easily seen.

(3) SC-J2S (B) J4KT1K

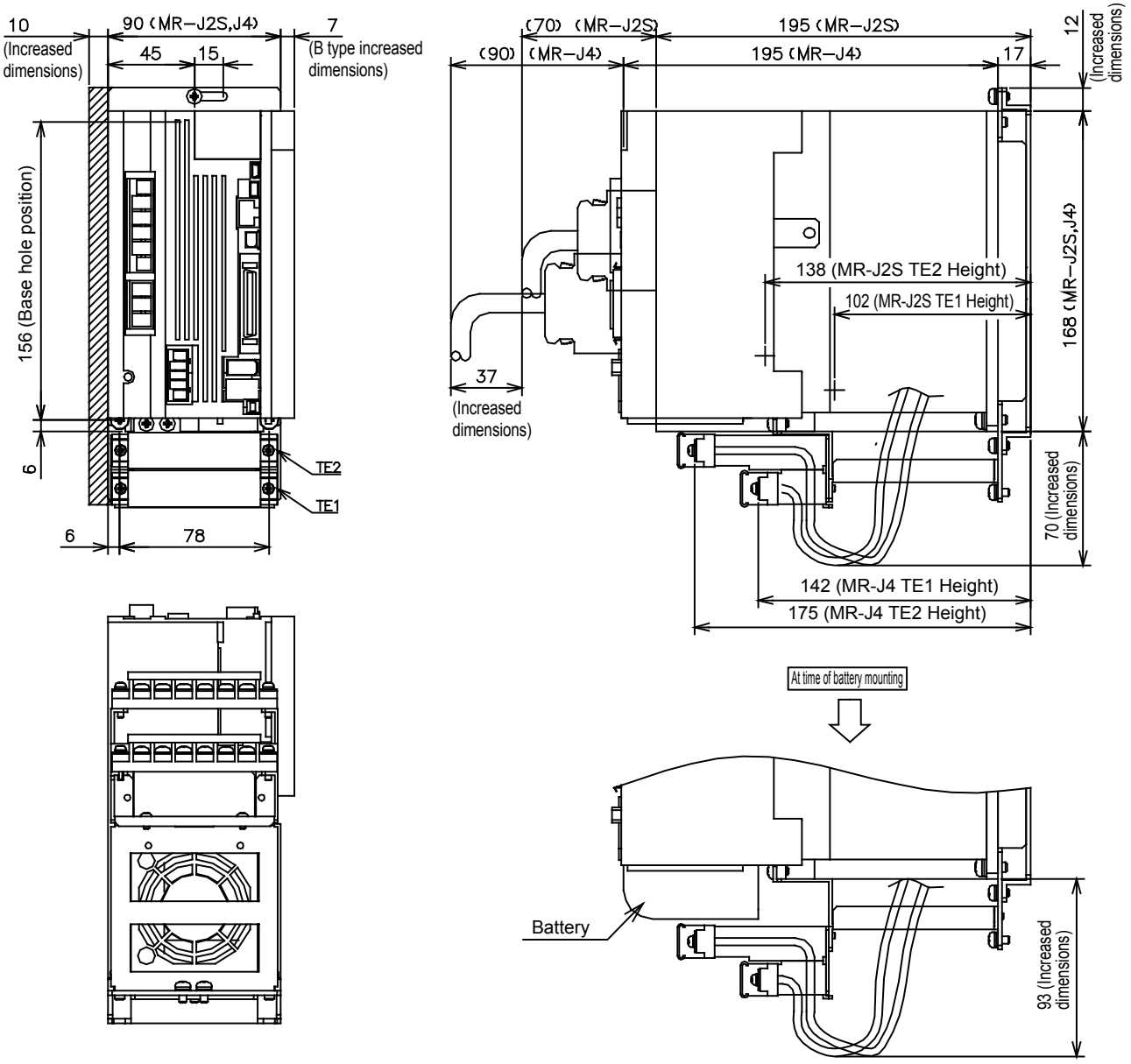
Unit [mm]



Note. Wiring and other items in the renewal kit are not drawn so that mounting method can be easily seen.

(4) SC-J2S (B) J4KT3K

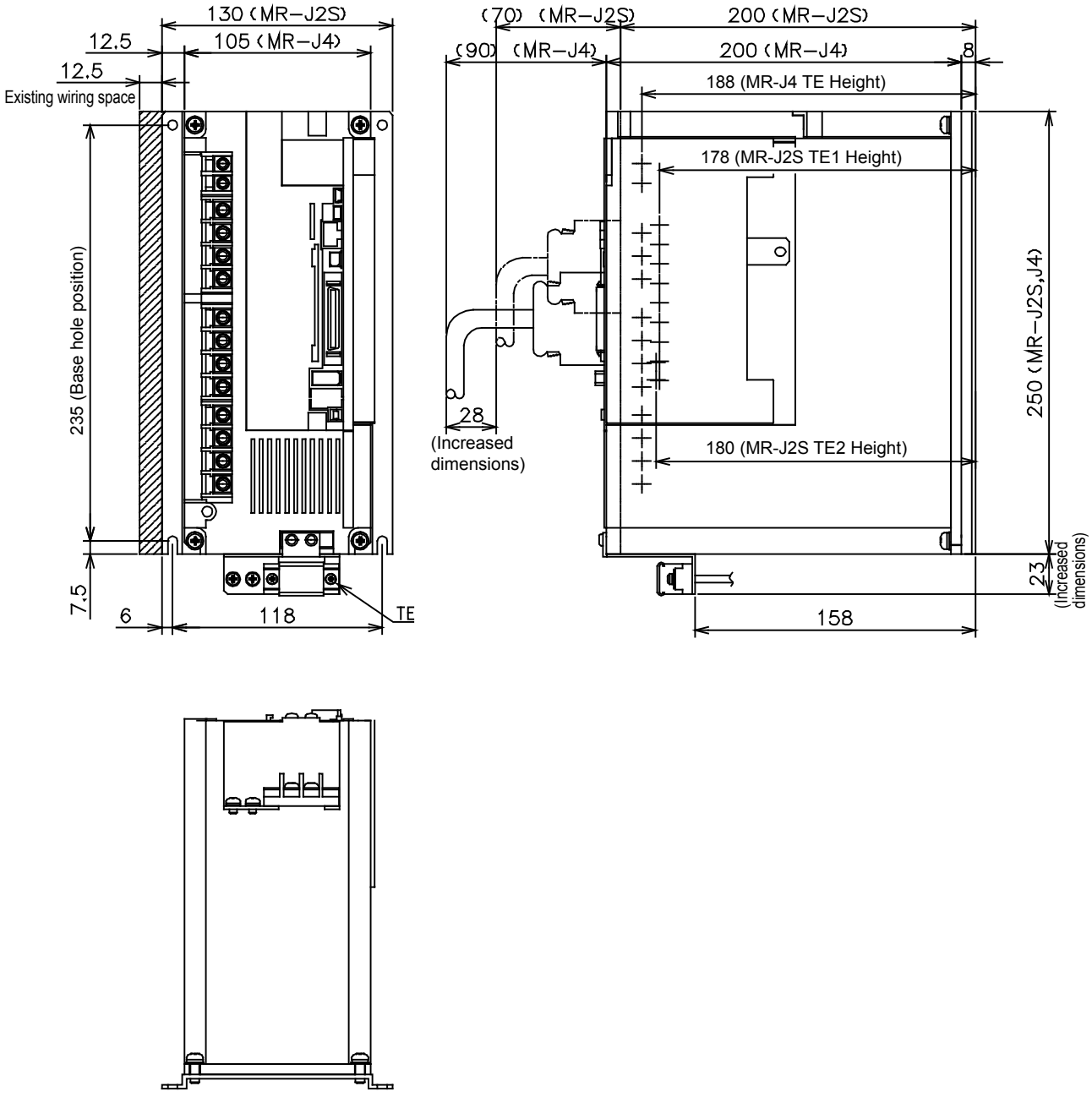
Unit [mm]



Note. Wiring and other items in the renewal kit are not drawn so that mounting method can be easily seen.

(5) SC-J2S (B) J4KT5K

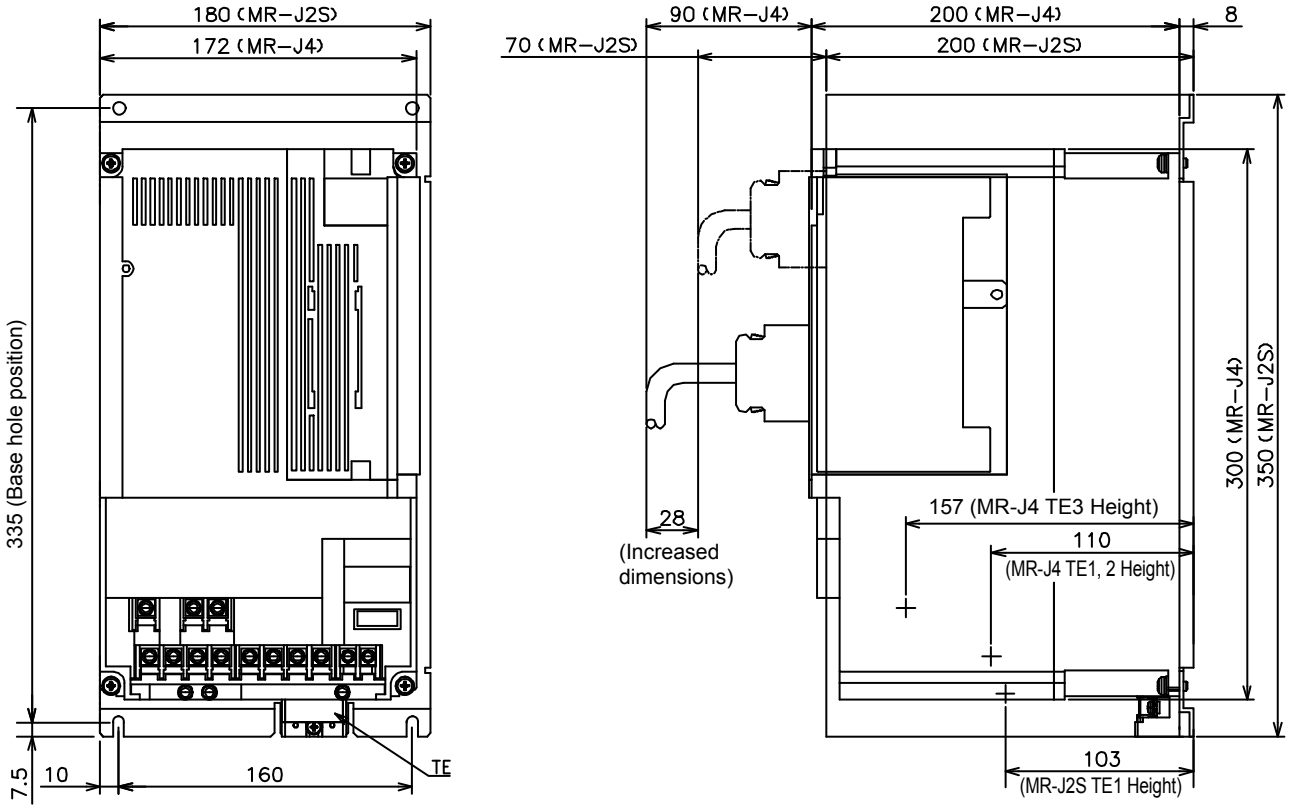
Unit [mm]

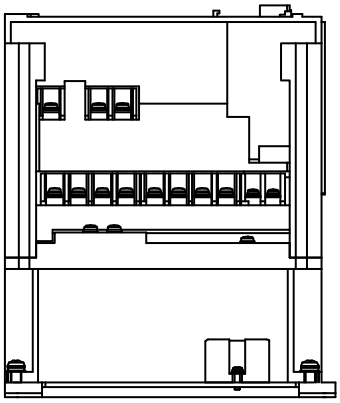


Note. Wiring and other items in the renewal kit are not drawn so that mounting method can be easily seen.

(6) SC-J2S (B) J4KT7K

Unit [mm]

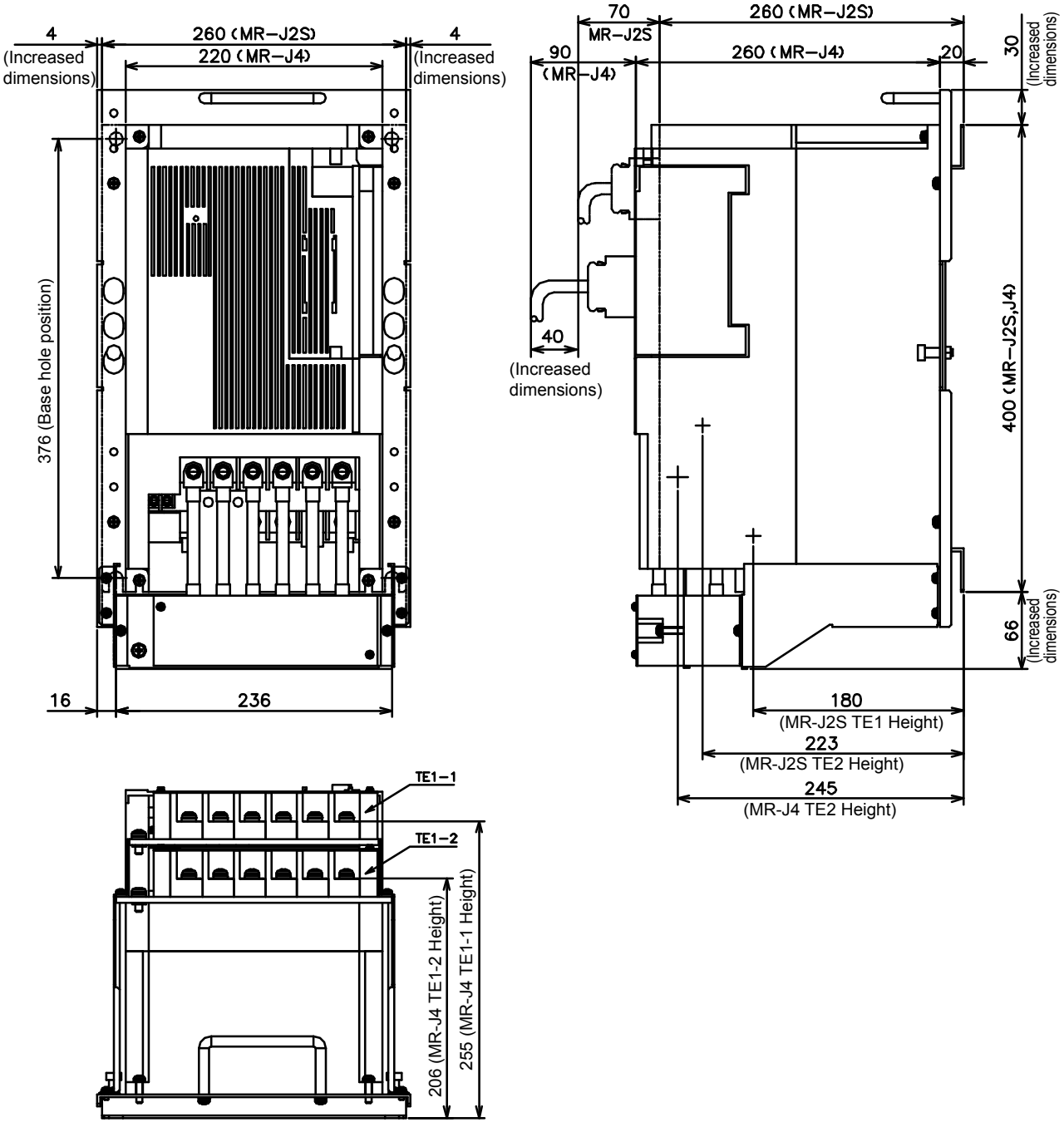




Note. Wiring and other items in the renewal kit are not drawn so that mounting method can be easily seen.

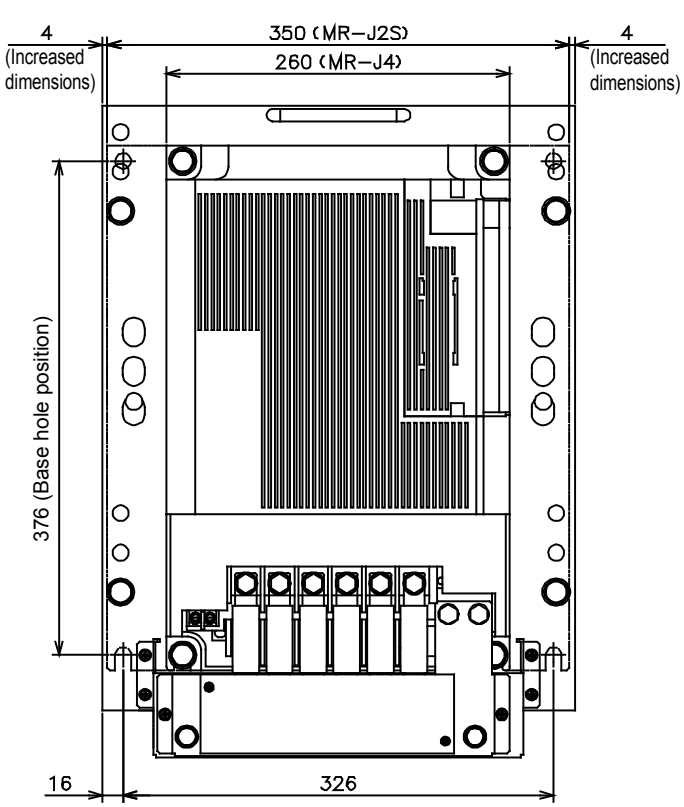
(7) SC-J2S (B) J4KT15K

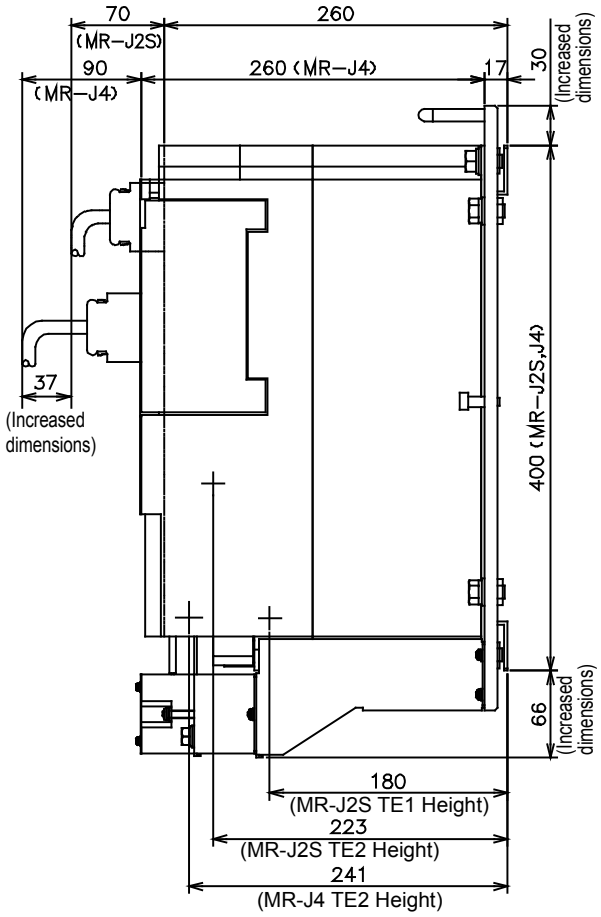
Unit [mm]

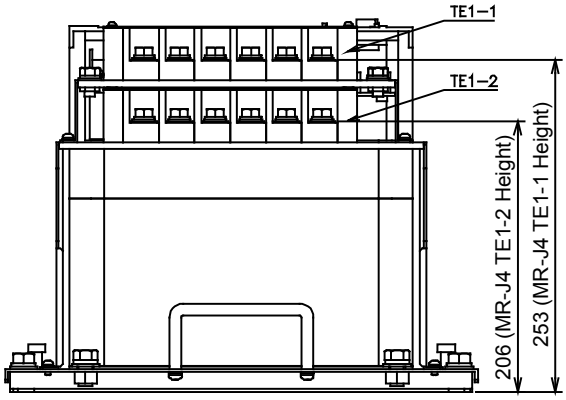


(8) SC-J2S (B) J4KT22K

Unit [mm]





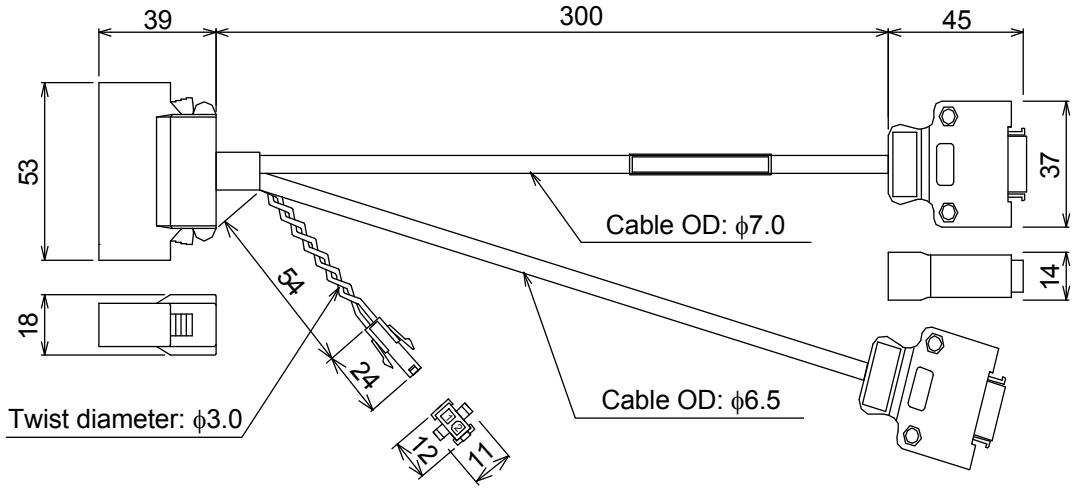


7.2 Conversion Cable

7.2.1 Conversion cable on the amplifier side

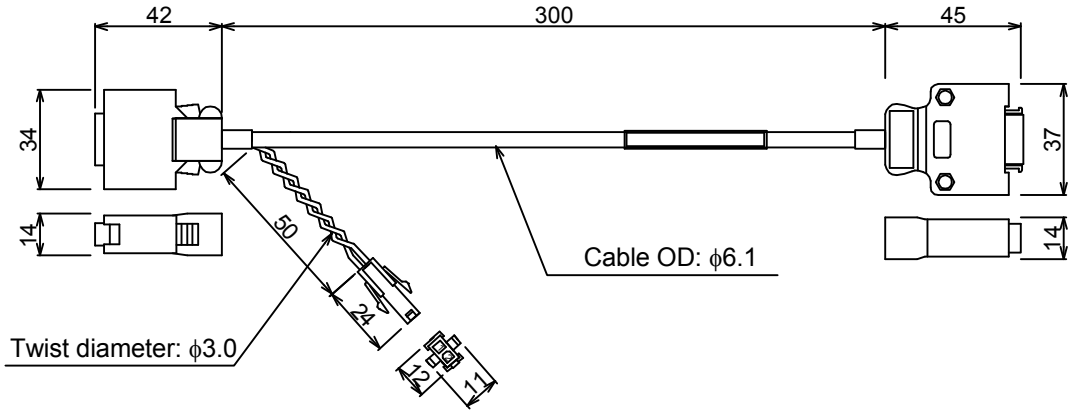
(1) SC-J2SJ4CTC03M

[Unit: mm]



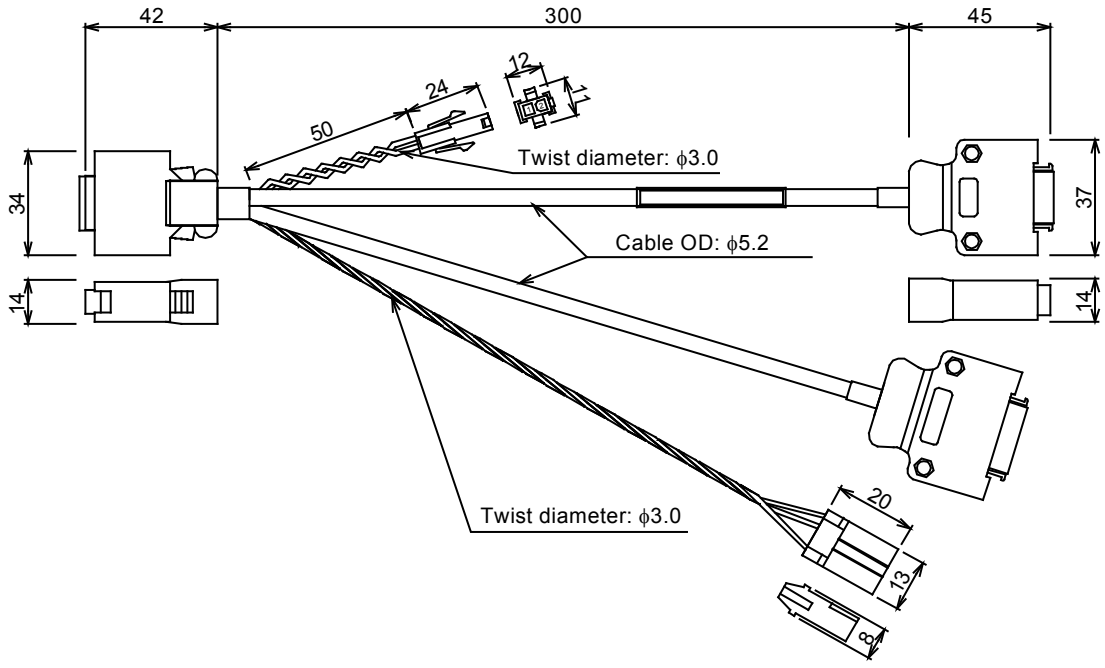
(2) SC-J2SBJ4CT1C03M

[Unit: mm]



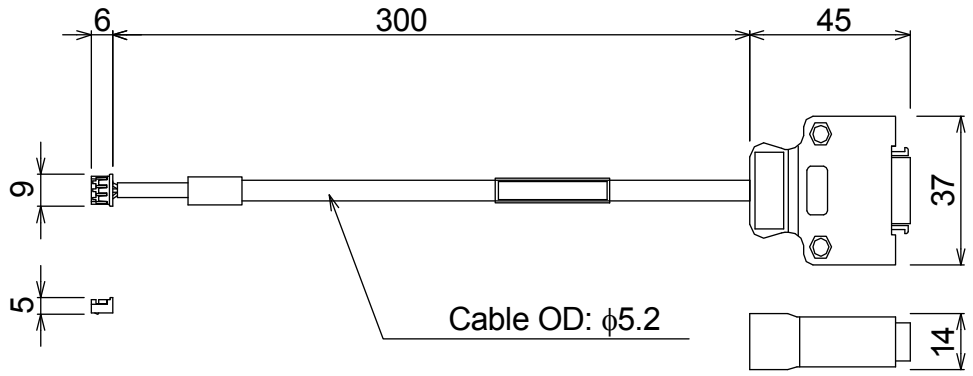
(3) SC-J2SBJ4CT2C03M

[Unit: mm]



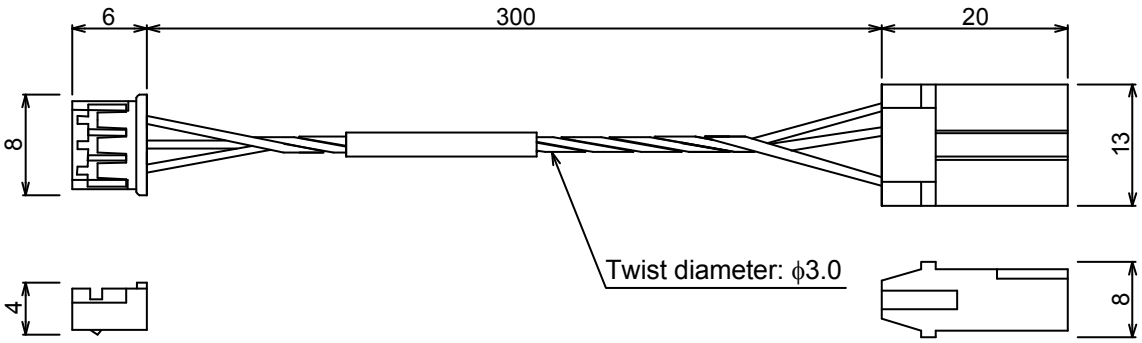
(4) SC-J2SJ4MOC03M

[Unit: mm]



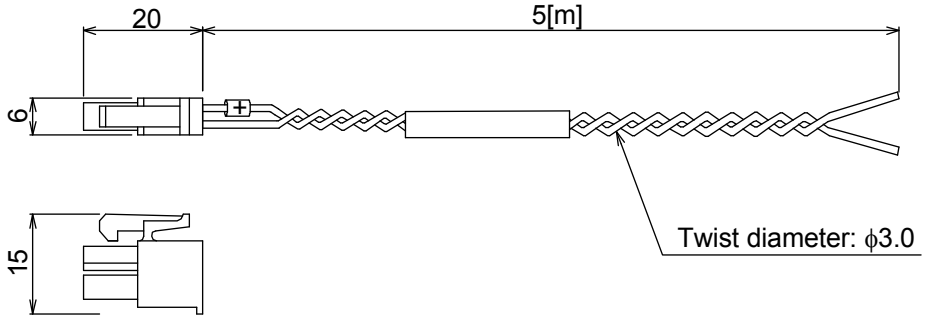
(5) SC-J2SJ4MO2C03M

[Unit: mm]



(6) SC-J2SJ4CTPWC5M

[Unit: mm]

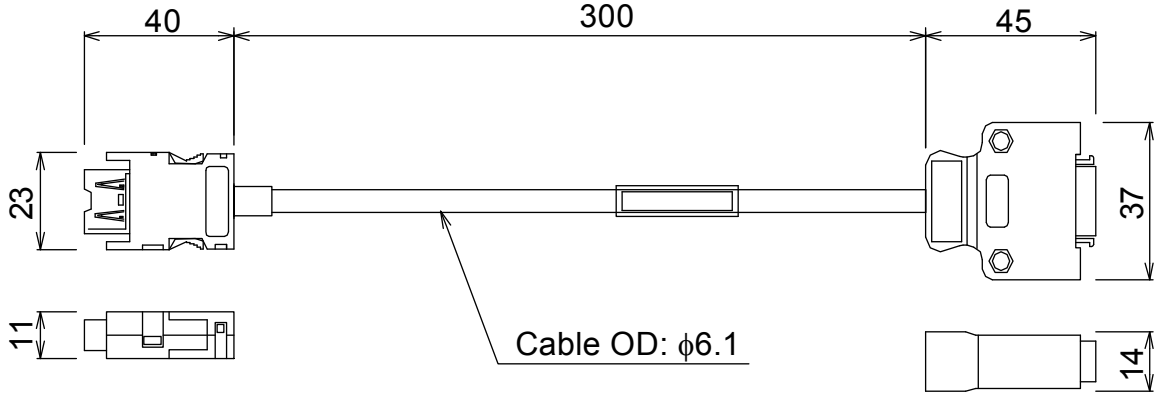


Connecting diagram

Signal name	Wire color
24 V DC+	Red
24 V DC-	White

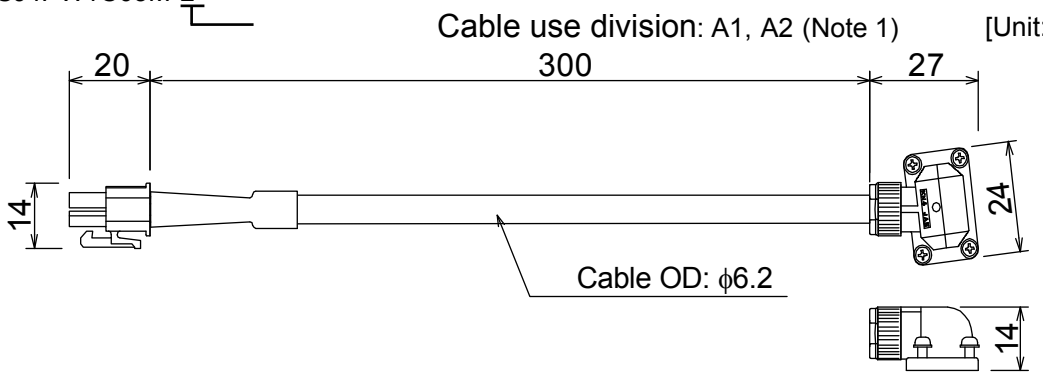
(7) SC-J2SJ4ENC03M

[Unit: mm]

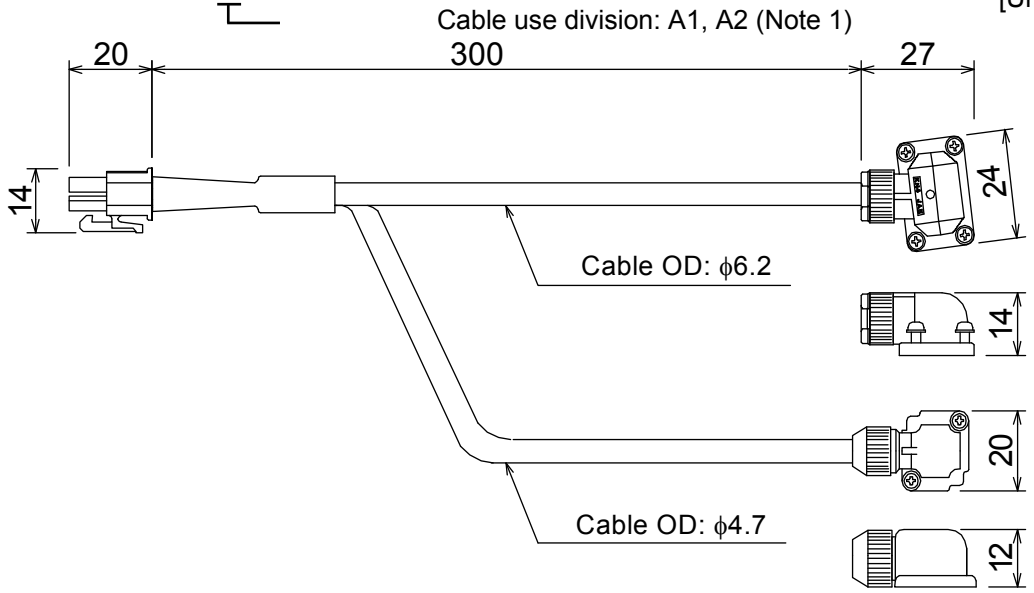


7.2.2 Power supply conversion cable on the motor side

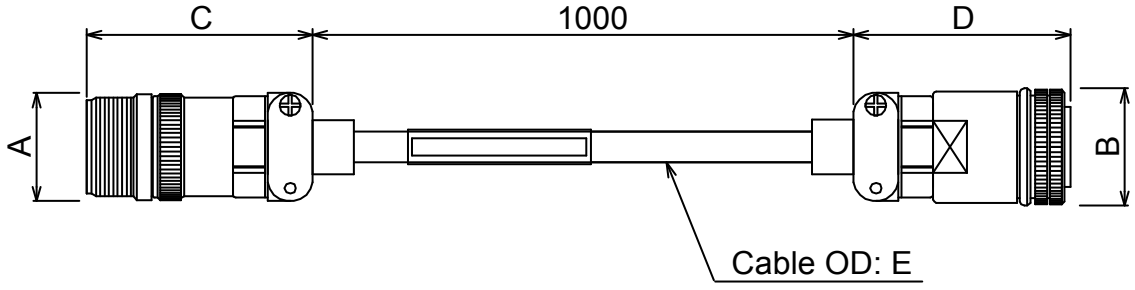
(1) SC-J2SJ4PW1C03M-■



(2) SC-J2SJ4PWBK1C03M-■



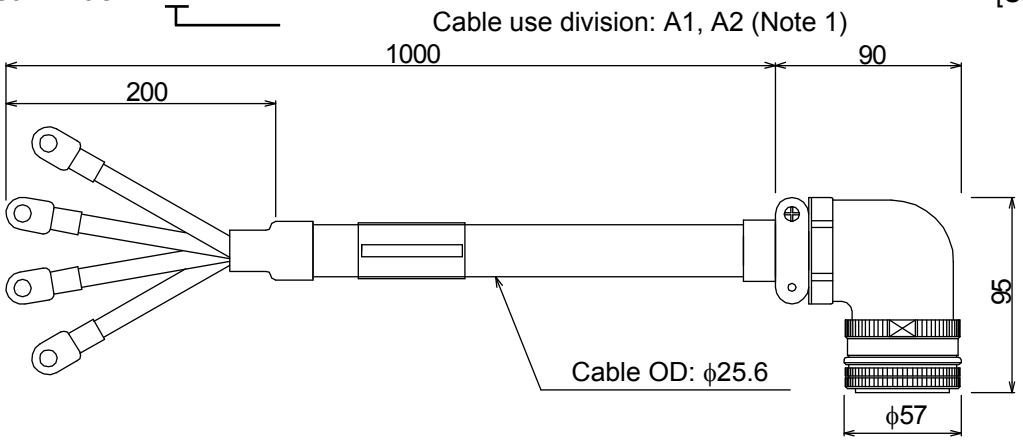
(3) SC-SAJ3PW2KC1M-S2
(4) SC-HAJ3PW1C1M
(5) SC-J2SJ4PW2C1M



Item		Specifications		
Model		SC-SAJ3PW2KC1M-S2	SC-HAJ3PW1C1M	SC-J2SJ4PW2C1M
Connector dimensions	A	ϕ35	ϕ39	ϕ38
	B	ϕ35	ϕ41	ϕ44
	C	68	74	74
	D	78	77	77
Cable shape	E	12	14	14

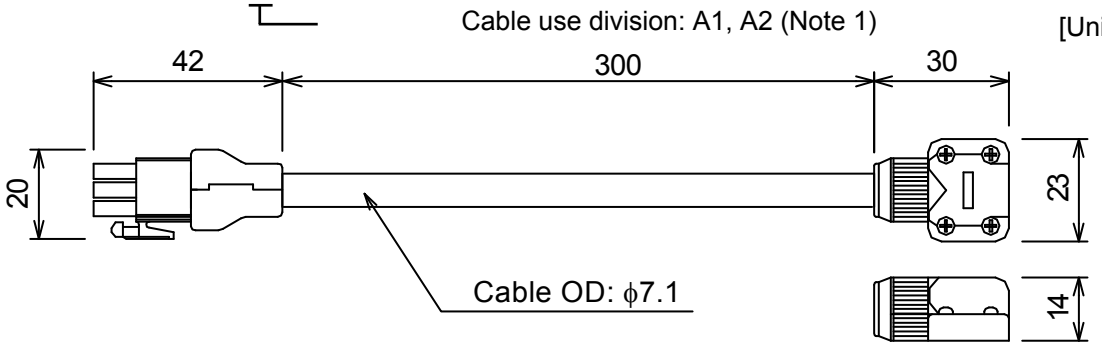
See the next page regarding Note 1.

(6) SC-J2SJ4PW3C1M-■ [Unit: mm]

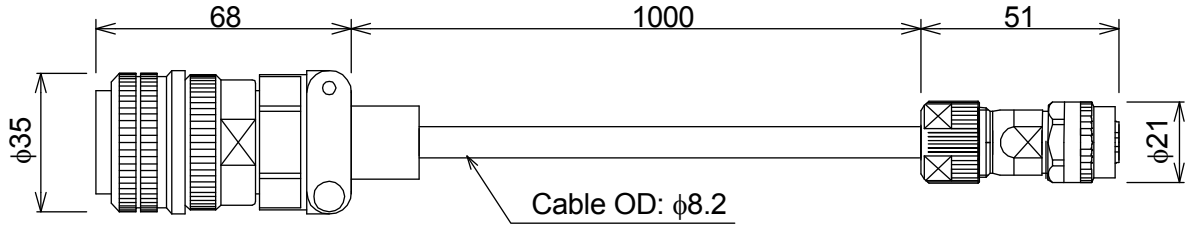


7.2.3 Encoder conversion cable on the motor side

(1) SC-HAJ3ENM1C03M-■ [Unit: mm]



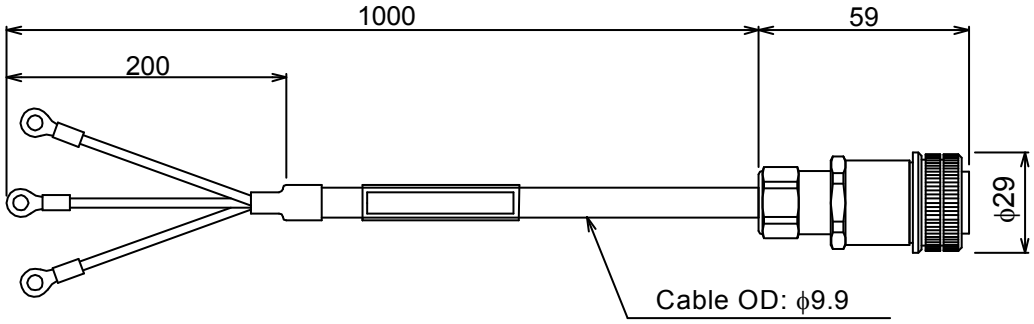
(2) SC-HAJ3ENM3C1M [Unit: mm]



7.2.4 Conversion cable for the cooling fan on the motor side

[Unit: mm]

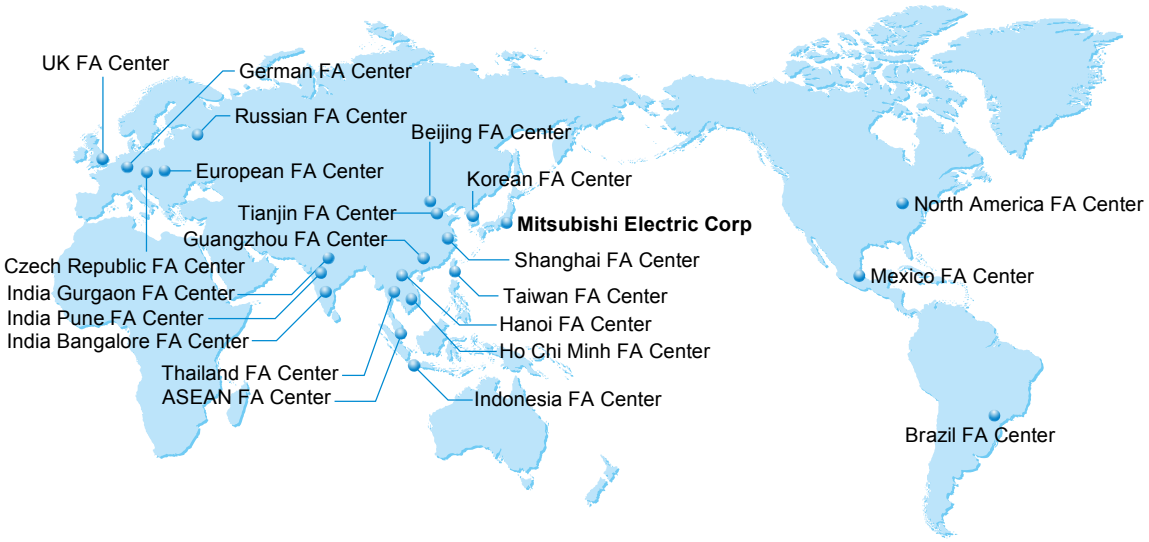
(1) SC-J2SJ4FAN1C1M



Note 1. Cable usage division

Service Network

Global FA Centers



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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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