

EPSON



ROBOT CONTROLLER

RC800-A Series

Service Manual

Rev.1

ENSM23ZC0023

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Revision History

If, even after the establishment and issue of the first edition of this manual, changes are made in the mechanism or parts of the product with the purpose of improving the performance and reliability, revised editions shall be issued as necessary.

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CHAPTER

1

Maintenance Information

1.1 Safety Precautions on Maintenance

NOTE Important safety considerations are indicated throughout the manual by the following symbols. Be sure to read the descriptions shown with each symbol.

 Warning	This symbol indicates that a danger of possible serious injury or death exists if the associated instructions are not followed properly.
 Warning	This symbol indicates that a danger of possible harm to people caused by electric shock exists if the associated instructions are not followed properly.
 Caution	This symbol indicates that a danger of possible harm to people or physical damage to equipment and facilities exists if the associated instructions are not followed properly.
 Warning	■ Teaching robot system shall be performed by personnel who has taken robot system training held by us and suppliers. ■ Maintenance of robot system shall be performed by personnel who has taken robot system training held by us and suppliers. ■ Make sure to use only dedicated/specified maintenance parts especially for the optional boards or any other parts in the Controller to be replaced. Using non-specified parts may cause serious damage to the robot system. It may also cause serious safety problems. ■ Do not remove any parts that are not covered in this manual. Follow the maintenance procedure strictly as described in this manual. Do not proceed using any methods other than described in this manual when you do replace a part or maintain the equipment. Improper removal of parts or improper maintenance may cause not only improper function of the robot system but also serious safety problems.

 Warning	■ Before performing any maintenance procedure, always make sure that the main power of the Controller is turned OFF, disconnect the power supply, and that the high voltage charged area is completely discharged. Performing any maintenance procedure while the main power is ON or the high voltage charged area isn't discharged completely is extremely hazardous and may result in electric shock and/or cause serious safety problems.
 Caution	■ Do not touch the Motor Driver modules and Switching Power Supply Module directly in the Controller. The metal resistance of these can become very hot and may result in a burn. If you maintain them, examine the surface temperatures and wear protective gloves if necessary. ■ Do not shock, shake, or drop any parts during maintenance. When the parts related with data are shocked physically, they may be damaged and may also cause data loss during data loading/saving. ■ Do not lose the screws removed at maintenance. When the screw is dropped into the Controller, be sure to take it out. Leaving the screw in the Controller may cause short circuit and may result in equipment damage to the parts and/or robot system. ■ Make sure that the power rating (ampere) of a new Motor Driver module is correct. Using a Motor Driver module with improper power rating (ampere) in the Controller may cause improper function of the robot system and errors. ■ The serial number of the Manipulator that should be connected is indicated on the Connection Check Label on the Controller. Connect the Controller and the Manipulator correctly. Improper connection between the Controller and the Manipulator may cause not only improper function of the robot system but also serious safety problems.

NOTE

Before performing maintenance on the Controller, all the data must be copied as a backup. The details of data backup/restore are described in "Backup and Restore" in the ROBOT CONTROLLER RC800-A Manual.

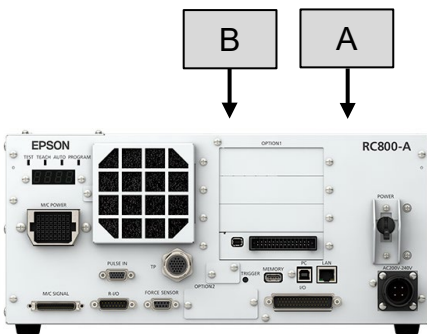
When maintaining the controller, wear at least the following protective gear. Working without protective gear may cause serious safety problems.

- Work clothes suitable for work
- Helmet
- Safety shoes

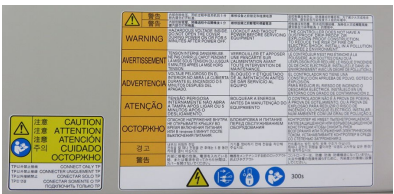
Warning labels and Caution labels are attached around the locations of the Controller and Manipulator where specific dangers exist. Do not tear, damage, or remove the labels.

Use meticulous care when handling those parts or units to which the following labels are attached as well as the nearby areas.

Labeling position



Controller top surface



1.2 Regular Inspection

Performing regular Inspection properly is essential for preventing trouble and maintaining safety. This chapter describes the schedules for maintenance inspection and procedures.

Be sure to perform the maintenance inspections in accordance with the schedules.

You will need the tools indicated on the right for maintenance inspection.

- Phillips screwdriver
- Flat head screwdriver
- Nipper
- Tester
- Wrench or nut driver

1.2.1 Inspection Point and Frequency

Inspection Point	Frequency	Method	Check Item
Controller	12 months	Turn ON/OFF motor and restart	Activates without any error
Emergency Stop Button	12 months	With the motor running, press the Emergency Stop Button.	Make sure the seven-segment LED on the controller is displayed. 
Safeguard	12 months	With the motor running, activate the safeguards.	Make sure the seven-segment LED on the controller is displayed. 
Fan Filter	1 month	Visual inspection and cleaning	No stain
Front Fan	1 month	With the motor running, check the operating sound	No noise
Rear Fan	1 month	With the motor running, check the operating sound	No noise

1.2.2 Timing of Replacement

Part	Frequency	Parts Code	Quantity	Working Time (Estimate)	Reference
Fan Filter	4 years from the start of operation or when deteriorated	1596688	1	5 min.	2.4.5 Air Filter
Front Fan	Warning 515 occurred or noise	2215753	1	20 min.	2.4.6 Front Fan
Rear Fan	Warning 516 occurred or noise	2215753	1	15 min.	2.4.7 Rear Fan

1.2.3 When to Replace the Safety-Related Parts

"Functional safety" refers to reducing risks and ensuring safety by introducing functions that ensure safety.

The part of the control system that has the functional safety role is called the "safety-related part", and in the RC800-A, the DPU and Safety Board correspond to the safety-related part. Be careful not to remove the DPU and/or the Safety Board carelessly.

Please replace the safety-related part, DPU and the Safety board, at the following times.

Part	Timing of Replacement	Error Code at Failure	Part Code	Version	Quantity	Reference
DPU	When it breaks down	2954 4225 4228 9625 9628	2228485	00	1	2.4.15 DPU
Safety Board	When it breaks down	9800~9814	2228486	00	1	2.4.2 Safety Board

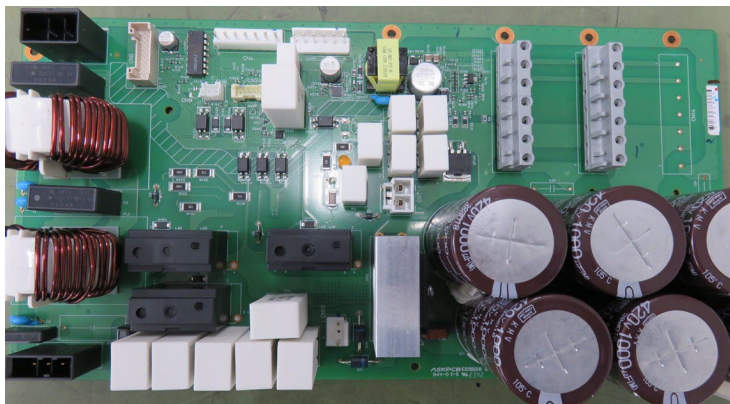
* "When it breaks down" is when the error indicated by the failure error code does not improve even after taking measures to correct the error. Refer to the Status Code/Error Code List manual for error descriptions and countermeasures.

NOTE If you remove the DPU and Safety board, you need to check the operation by the prescribed method.
([3.1 Procedure Flow for Operation Verifying](#))

NOTE As a guide for performing preventive maintenance of safety-related parts, it is recommended to replace the DPU after 7 years and the Safety board after 10 years from start of controller use.

The DPU and Safety board includes the following safety features:

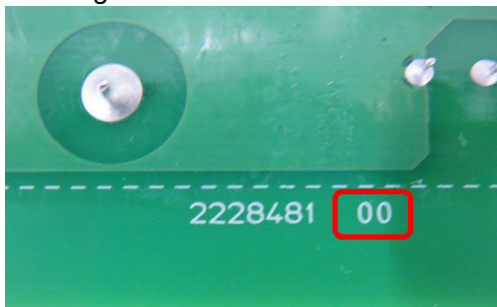
- DPU : Equipped with a relay to stop the robot more quickly by shutting off the power with hardware when using the Safety Door is opened or Emergency Stop used. The DPU installed varies depending on the manipulator.
- Safety board: Equipped with a safety circuit, speed monitoring, and position monitoring to stop the robot more quickly.



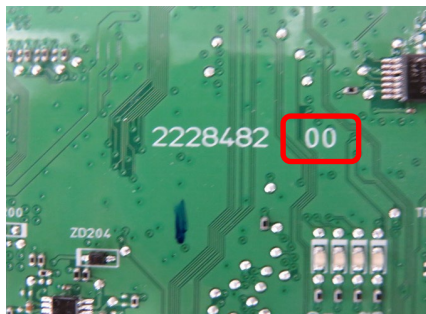
DPU: For Scara Robot

NOTE

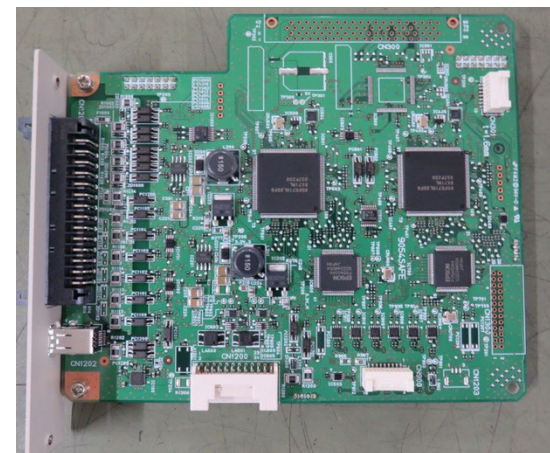
Each safety-related part is assigned a version (2 digits) to identify it in the design and manufacturing process. The version of the safety related part is printed at the location shown in the figure below.



DPU



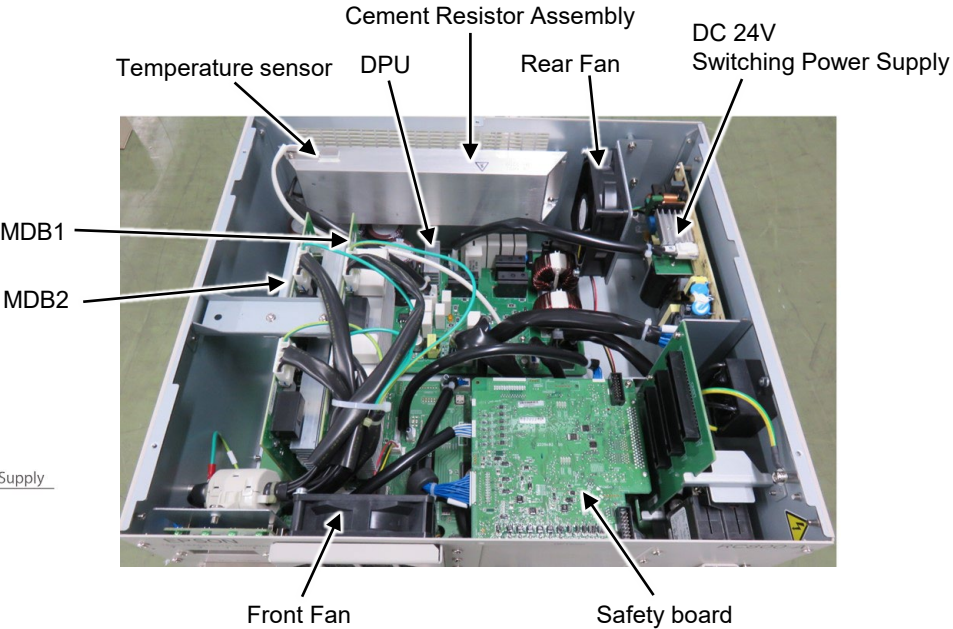
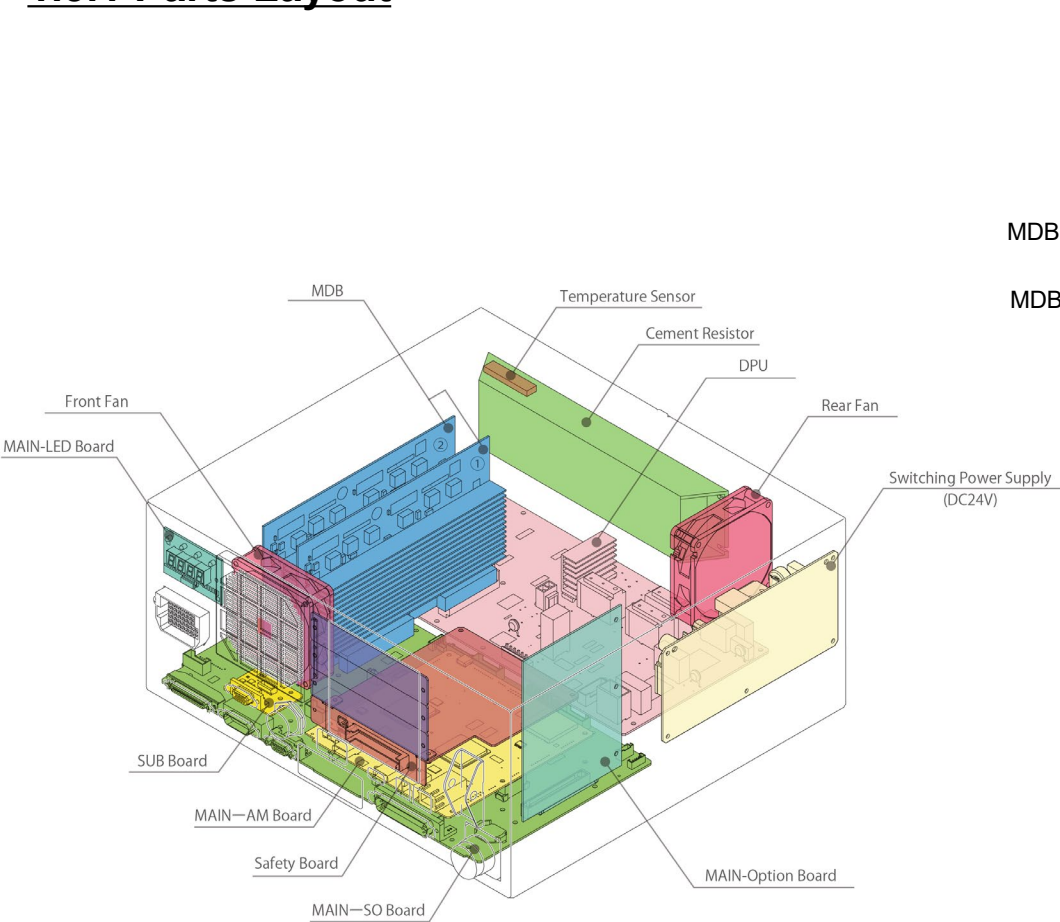
Safety board



Safety board

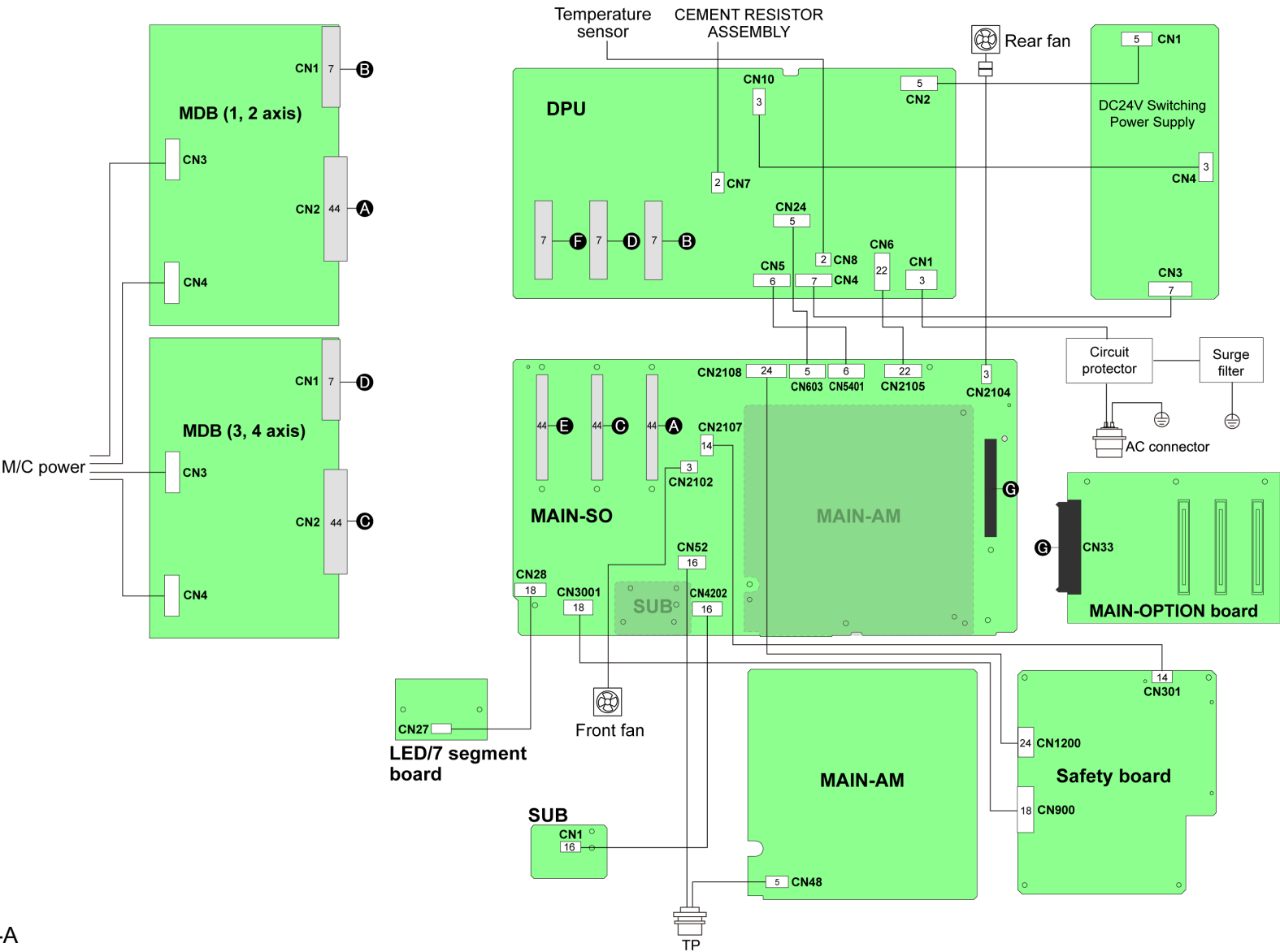
1.3 Controller Structure

1.3.1 Parts Layout



NOTE MDB: Motor drive board
 DPU: Drive power unit

1.3.2 Block Diagram



CHAPTER

2

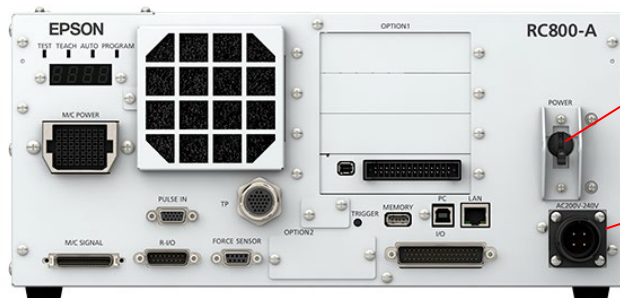
Maintenance

2.1 Safety Precautions on Disassembly and Assembly



CAUTION

- Be sure to turn off the Controller, disconnect the power plug, and then wait **300 seconds** before performing maintenance. Performing any maintenance procedure while the main power is ON or the high voltage charged area is not discharged completely is extremely hazardous and may result in electric shock and/or cause serious safety problems.



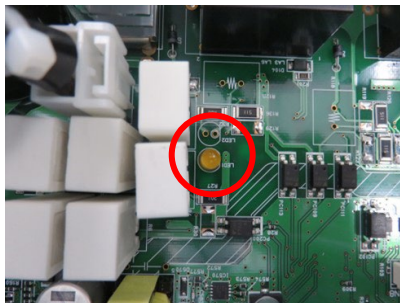
Turn off with the power switch

Power plug

- When opening the front side, make sure to disconnect the power plug. Touching the power supply terminal block inside the Control Unit or Drive Unit while the power supply is ON is extremely hazardous and may result in electric shock and/or cause serious safety problems.
- Use meticulous care when handling the lithium battery. Improper handling of the lithium battery as mentioned below is extremely hazardous, may result in heat generation, leakage, explosion, or inflammation, and may cause serious safety problems.
 - Battery Charge
 - Disassembly
 - Incorrect Installation
 - Forced Discharge
 - Deformation by Pressure
 - Short-circuit (Polarity; Positive/Negative)
 - Heating (85°C or more)
 - Soldering the terminal of the lithium battery directly
- When disposing of the battery, consult with the professional disposal services or comply with the local regulation. Spent battery or not, make sure the battery terminal is insulated. If the terminal contacts with the other metals, it may short and result in heat generation, leakage, explosion, or inflammation.



- Please remove the DPU after the LED goes out, since touching the DPU while the capacitor voltage is not fully discharged may cause an electric shock or component failure.

**NOTE**

- Be careful not to damage the cables.
- Be sure not to drop any screws into the Controller.
- After repair, connect the power plug, turn ON the Controller and check it works normally without vibration and abnormal sound.

2.1.1 Viewing the Maintenance Page

Each page is configured as shown below.

The work procedures are shown below.

Viewing the steps

Step 1

Filter cover

S01: 1-M3x6

Work sequence
Target part name
Screw type

About the screw type

S01 indicates the screw type. For details on the type, the size, torque value, etc., refer to [2.2 List of Screws](#).

Color classification/symbols of steps

If the work procedures are described on multiple pages, the color classification is performed as follows:

Step 2

Air filter

The work procedures are described on the page being browsed.

Step 1: Top Panel

The work procedures are not described on the page being browsed.

If the details of a work and the precautions for work are described, the step and the description items are connected by a line.

Step 2

Air filter

If the following icon is added to a step, the work procedures are described on another page. Clicking the icon will open the corresponding page.

Step 2

Air filter

You can return to the original page by simultaneously pressing the [Alt] key and the [←] key.
* The operation method may differ depending on the viewer.
For details, refer to Help of each viewer.

CAUTION

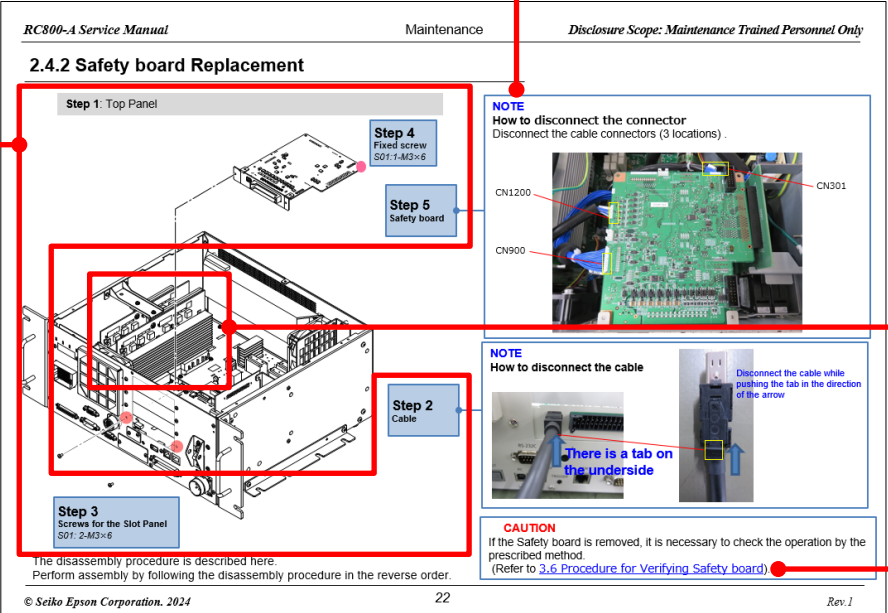
Indicates information about risks causing damage to humans and risks due to which the Controller functions cannot be implemented.

POINT

Indicates a method of proceeding with work in an efficient manner.

NOTE

Indicates information not concerning the work procedures.



Depending on the product, three MDBs are mounted. This manual shows an example in which two DMBs are mounted.

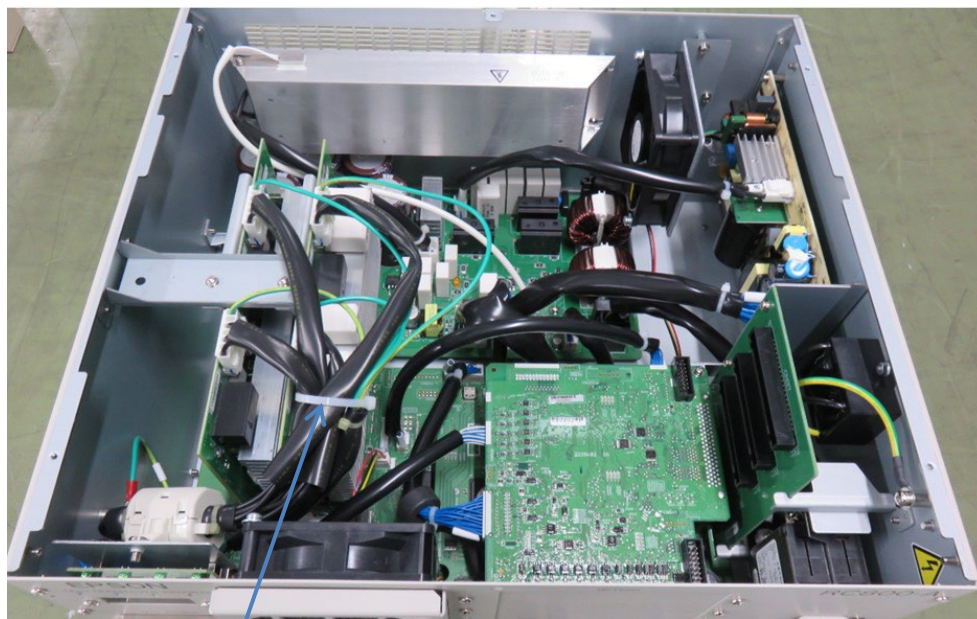
Clicking the underlined blue characters will open the corresponding page.
You can return to the original page by simultaneously pressing the [Alt] key and the [←] key.
* The operation method may differ depending on the viewer.
For details, refer to Help of each viewer.

2.2 List of Screws

Manual Notation	Image	Screw Type	Size	Material
S01		Cross-recessed binding head machine screw	M3x6, M4x6, M4x8	Iron/nickel plating
S02		Cross-recessed pan head machine screw Pre-assembled washers and screws	M4x30	Iron/zinc plating
S03		Cross-recessed pan head machine screw Pre-assembled washers and screws	M3x6、 M3x10	Iron/nickel plating
S04		Hexagonal support with Male thread and Female thread	Width across flats: 5.5 mm Length of prism portion: 7.0 mm Thread diameter (Male thread / Female thread): M3	Iron/nickel plating

2.3 MCPC-MDB Cable Replacement

Please secure the cable with a cable tie as shown below to separate the power line and signal line inside the controller.



HARNESS_MDB-MCPOWER

POINT

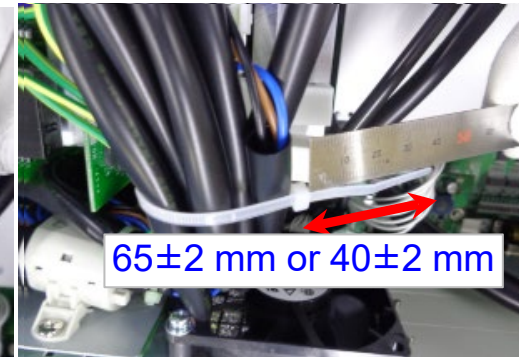
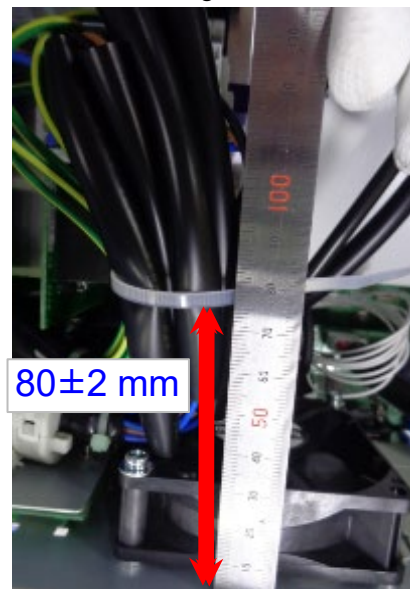
The management points for replacing cables between MCPC and MDB are listed below.

Using INSULOK-TIE AB150

Installation position: 80 ± 2 mm from front panel

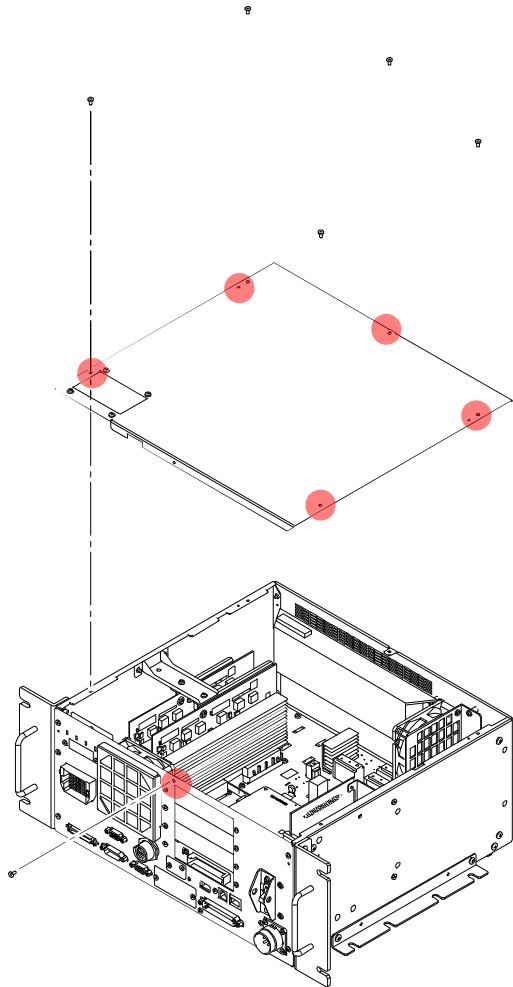
Extra binding length of SCARA robot: 65 ± 2 mm

Extra bundle length for 6-axis robot: 40 ± 2 mm



2.4 Replacement Procedure

2.4.1 Top Panel Replacement



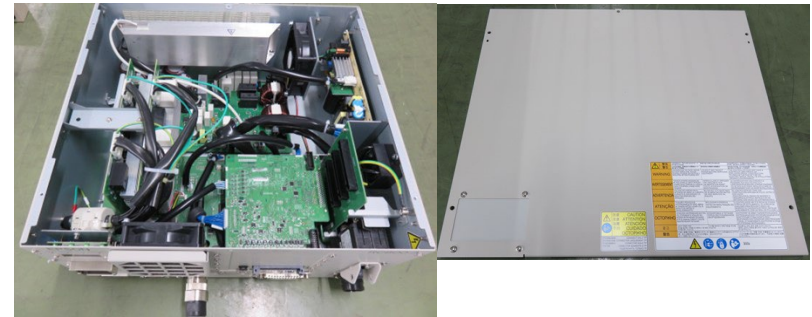
Step 1
Top Panel
S01: 6-M3x6

CAUTION

Before removing the top panel, be sure to turn off the Controller, disconnect the power plug, and then wait **300 seconds**.

NOTE

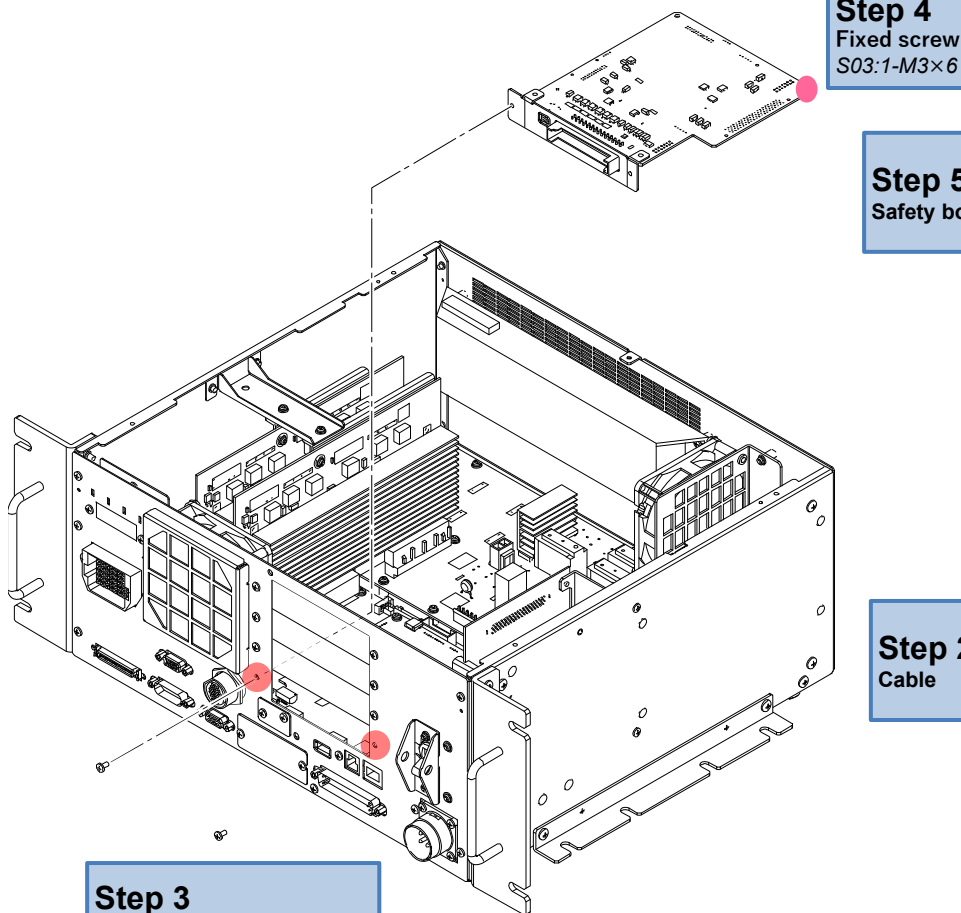
Install the top panel with the warning labels facing the front of the controller.



The disassembly procedure is described here.
Perform assembly by following the disassembly procedure in the reverse order.

2.4.2 Safety board Replacement

Step 1: Top Panel



Step 4
Fixed screw
S03:1-M3×6

Step 5
Safety board

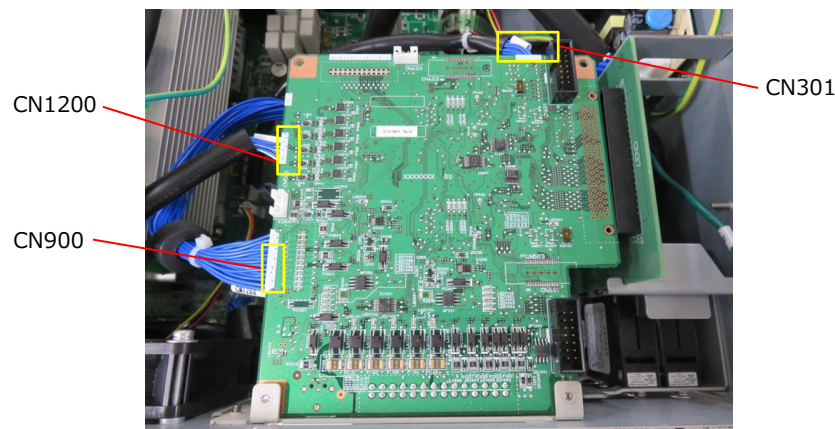
Step 3
Screws for the Slot Panel
S01: 2-M3×6

The disassembly procedure is described here.
Perform assembly by following the disassembly procedure in the reverse order.

NOTE

How to disconnect the connector

Disconnect the cable connectors (3 locations) .

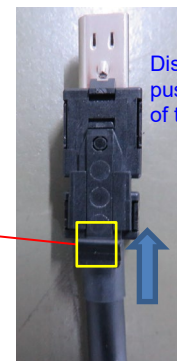


NOTE

How to disconnect the cable



There is a tab on the underside



Disconnect the cable while pushing the tab in the direction of the arrow

CAUTION

If the Safety board is removed, it is necessary to check the operation by the prescribed method.
(Refer to [3.6 Procedure for Verifying Safety board](#)).

2.4.3 Front Panel Replacement

Step 1: Top Panel

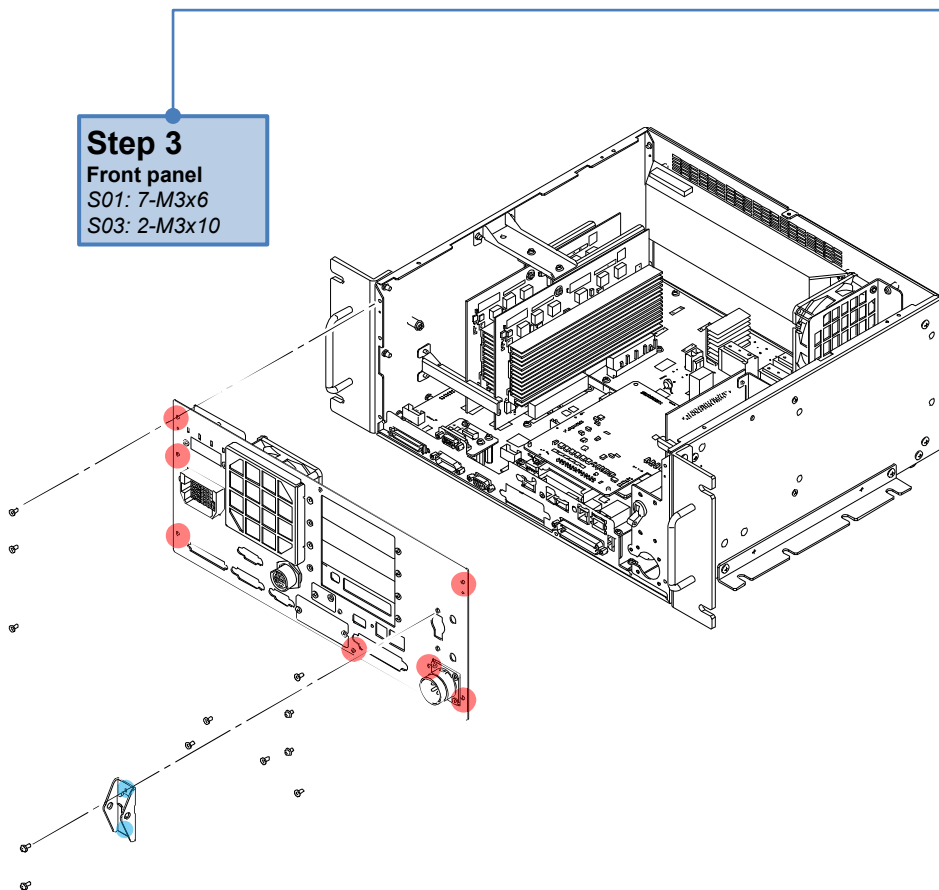
Step 2: Safety Board

Step 3

Front panel

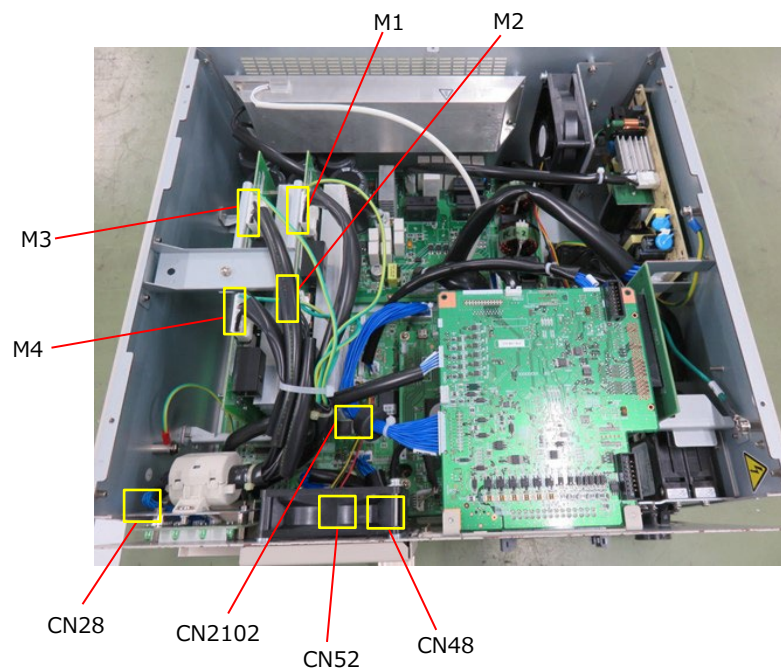
S01: 7-M3x6

S03: 2-M3x10



CAUTION

Before removing the front panel, be sure to turn off the Controller, disconnect the power plug, and then wait **300 seconds**.



NOTE

How to disconnect the connector

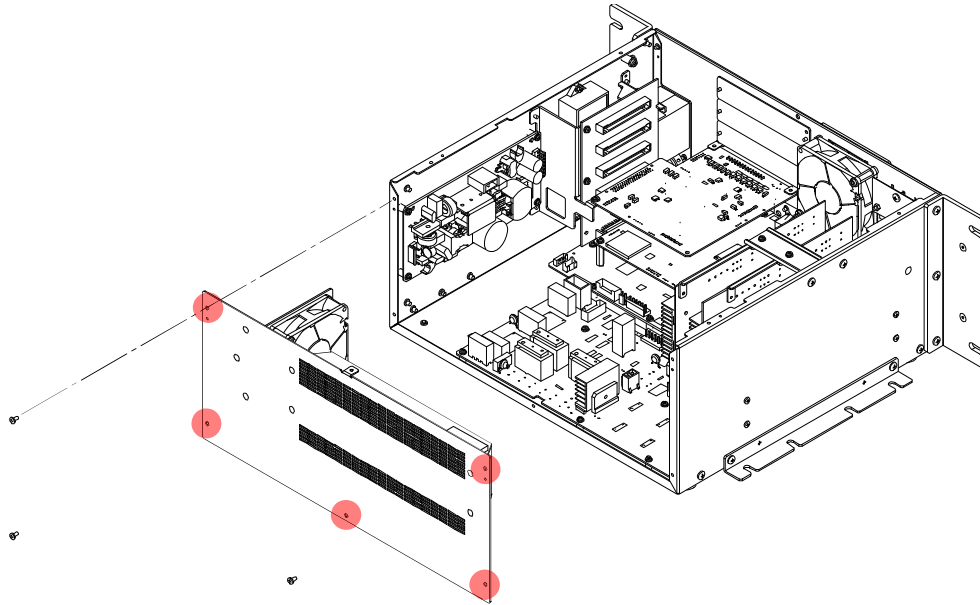
- Connectors (M1,M2,M3,M4) of the cable connecting the MDB
- Connector (CN28) of the cable connecting the MAIN-LED
- Connector (CN2102) of the cable connecting the Front Fan
- Connectors (CN48,CN52) of the cable connecting the TP bypass plug

The disassembly procedure is described here.

Perform assembly by following the disassembly procedure in the reverse order.

2.4.4 Rear Panel Replacement

Step 1: Top Panel



Step 2 Rear Panel S01: 5-M3x6

The disassembly procedure is described here.
Perform assembly by following the disassembly procedure in the reverse order.

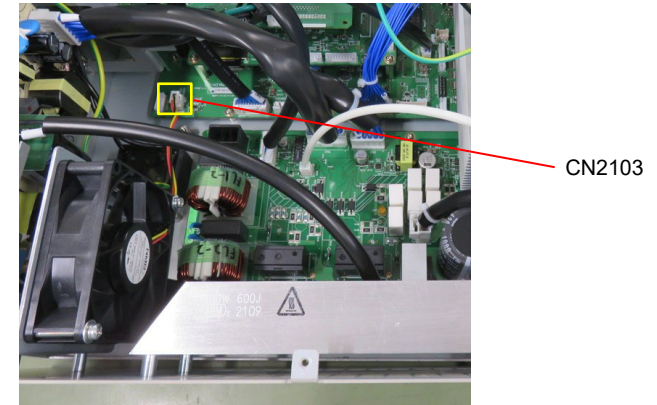
CAUTION

Before removing the rear panel, be sure to turn off the Controller, disconnect the power plug, and then wait **300 seconds**.

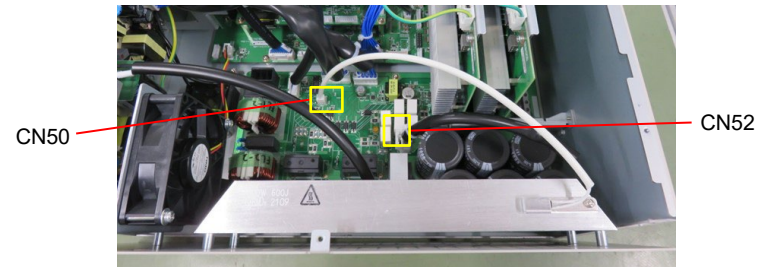
NOTE

How to disconnect the connector

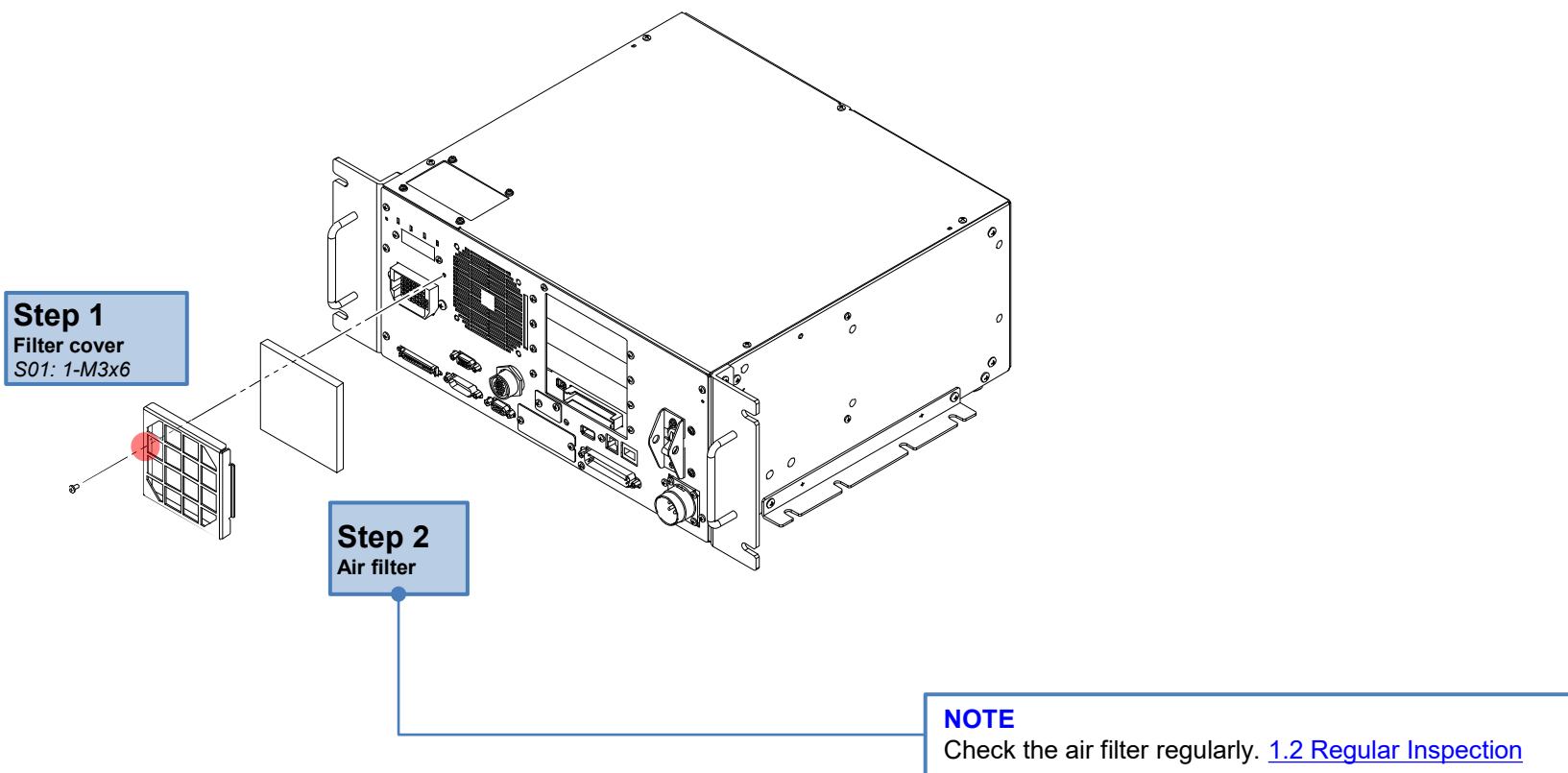
Disconnect the cable connector (1 location) that connects the rear fan.



Disconnect the cable connectors (2 locations) connecting the DPU and regenerative resistor.



2.4.5 Air Filter Replacement

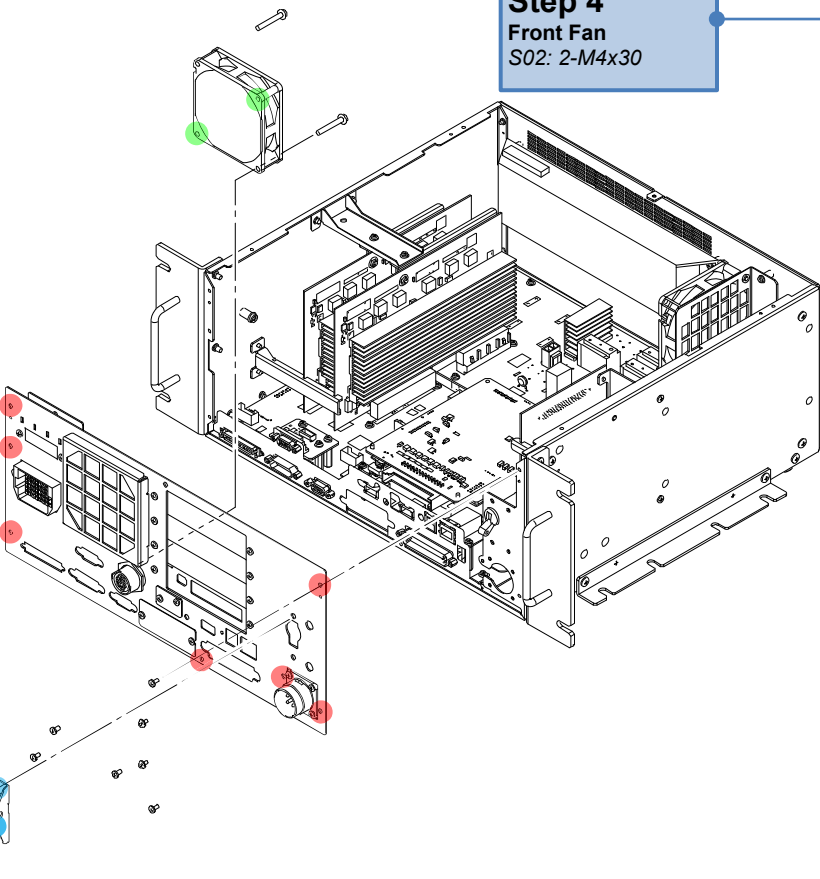


The disassembly procedure is described here.
Perform assembly by following the disassembly procedure in the reverse order.

2.4.6 Front Fan Replacement

- Step 1: Top Panel
- Step 2: Safety board
- Step 3: Front Panel

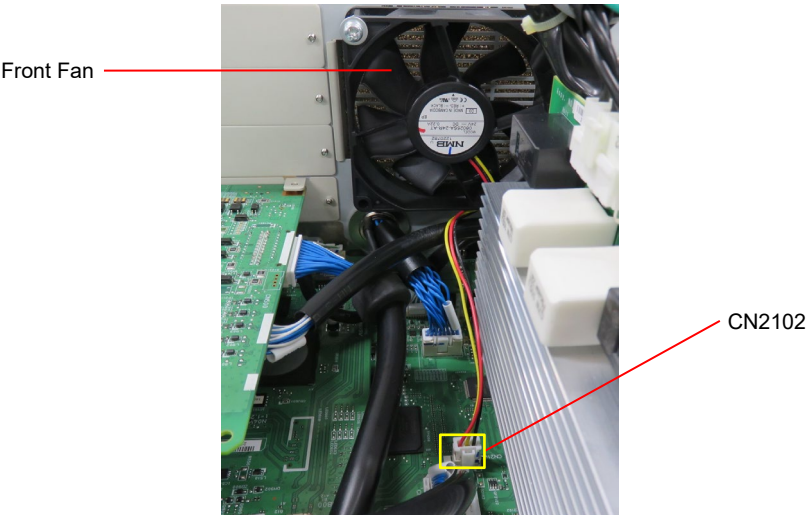
Step 4
Front Fan
S02: 2-M4x30



The disassembly procedure is described here.
Perform assembly by following the disassembly procedure in the reverse order.

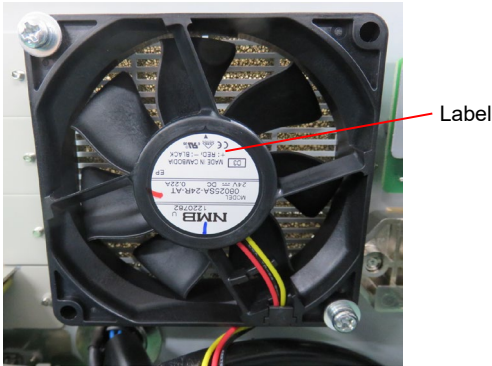
NOTE

How to disconnect the connector
Disconnect the front fan cable from the connector (1 location).



Installation

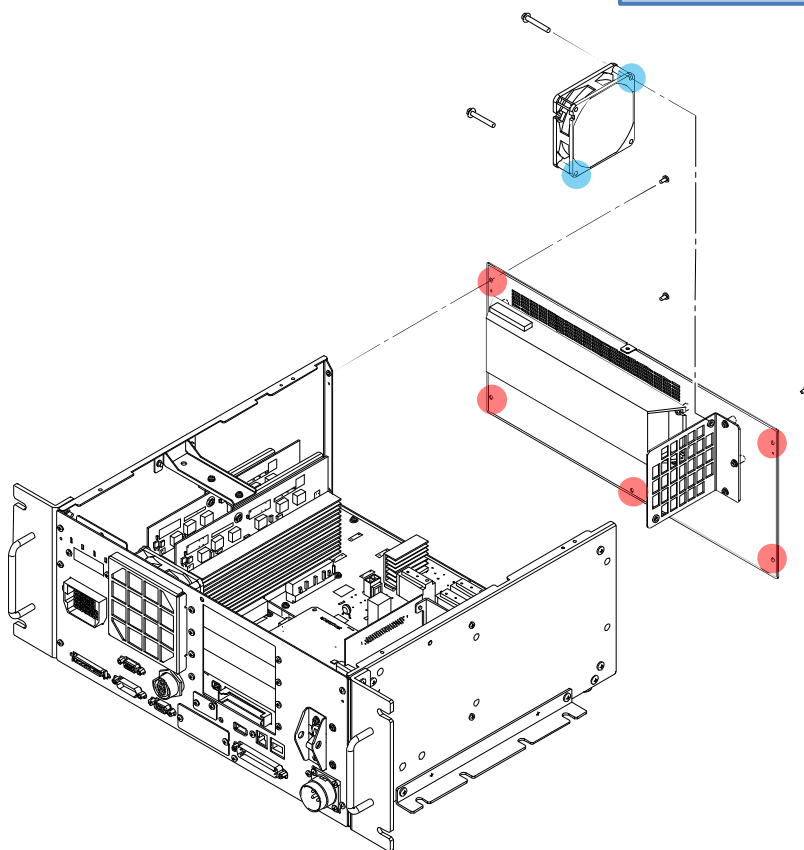
CAUTION
The fans have an air flow direction. Therefore, install the fans according to the orientation of the labels in the figure below.
Pull out the cable from the right side.



2.4.7 Rear Fan Replacement

Step 1: Top Panel
Step 2: Rear Panel

Step 3
Rear Fan
S02: 2-M4x30

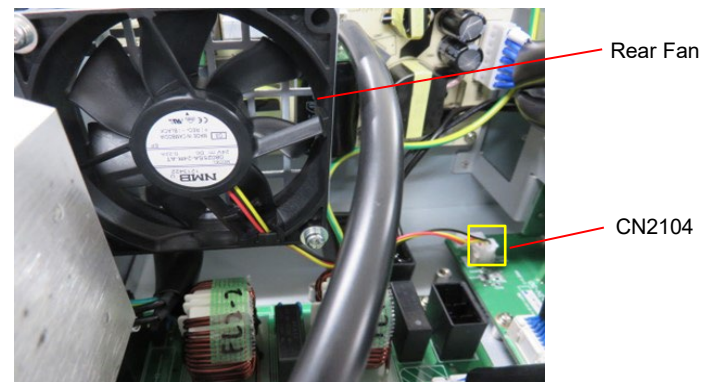


The disassembly procedure is described here.
Perform assembly by following the disassembly procedure in the reverse order.

NOTE

How to disconnect the connector

Disconnect the rear fan cable from the connector (1 location).



Installation

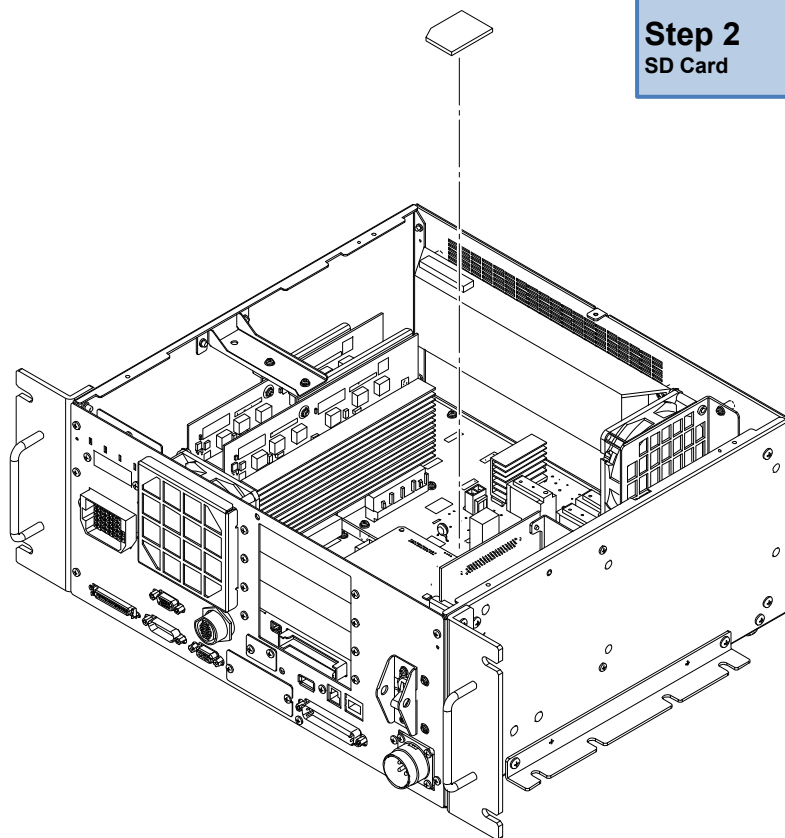
CAUTION

The fans have an air flow direction. Therefore, install the fans according to the orientation of the labels in the figure below.
Pull out the cable from the bottom side.



2.4.8 SD Card Replacement

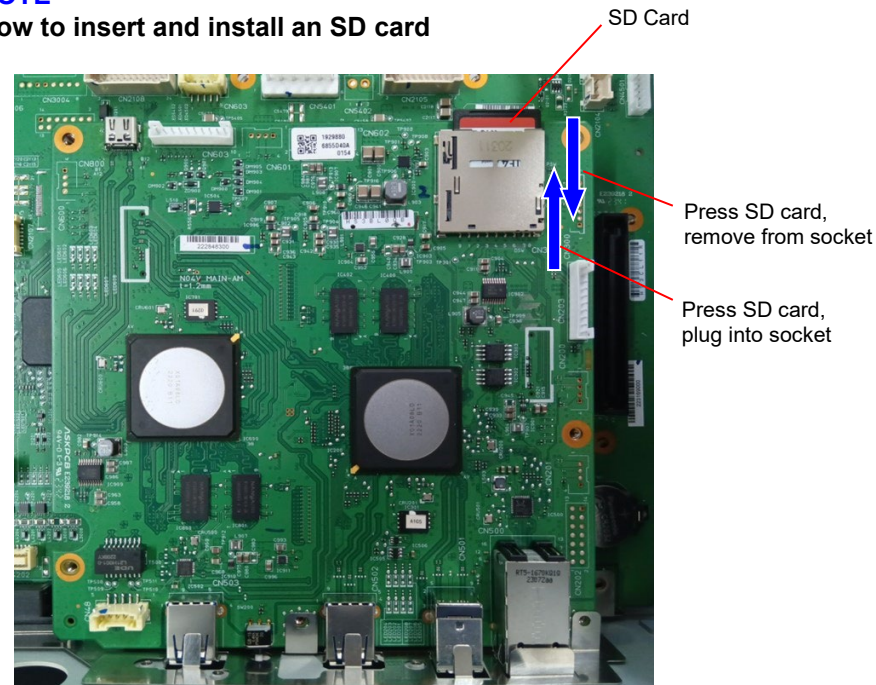
Step 1: Top Panel



Step 2 SD Card

NOTE

How to insert and install an SD card



The disassembly procedure is described here.
Perform assembly by following the disassembly procedure in the reverse order.

2.4.9 MDB Replacement

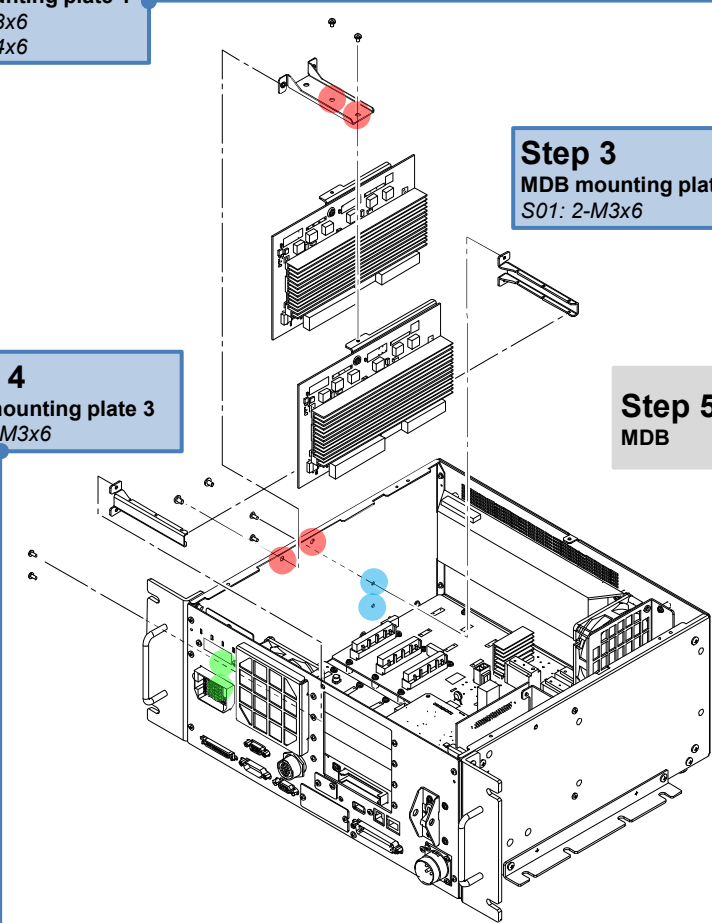
Step 1: Top Panel

Step 2
MDB mounting plate 1
S03: 2-M3x6
S01: 2-M4x6

Step 3
MDB mounting plate 2
S01: 2-M3x6

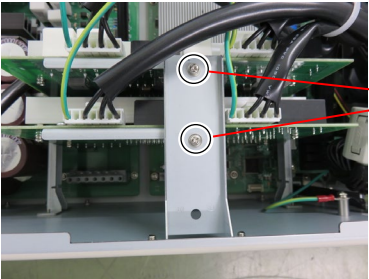
Step 4
MDB mounting plate 3
S01: 2-M3x6

Step 5
MDB



The disassembly procedure is described here.
Perform assembly by following the disassembly procedure in the reverse order.

NOTE
Fixing screws of MDB mounting plate 1



S03:2-M3x6



S01:2-M4x6

NOTE
Fixing screws of MDB mounting plate 2
Fixing screws of MDB mounting plate 3

MDB mounting
plate 2 screws



MDB mounting
plate 3 screws

POINT
The MDB can be removed by simply loosening the screws on MDB mounting plate 2 and MDB mounting plate 3.
When replacing MAIN-SO Board, remove MDB board fixing plate 2 and MDB board fixing plate 3.

2.4.9 MDB Replacement

Step 1: Top Panel

Step 2

MDB mounting plate 1

S03: 2-M3x6

S01: 2-M4x6

Step 3

MDB mounting plate 2

S01: 2-M3x6

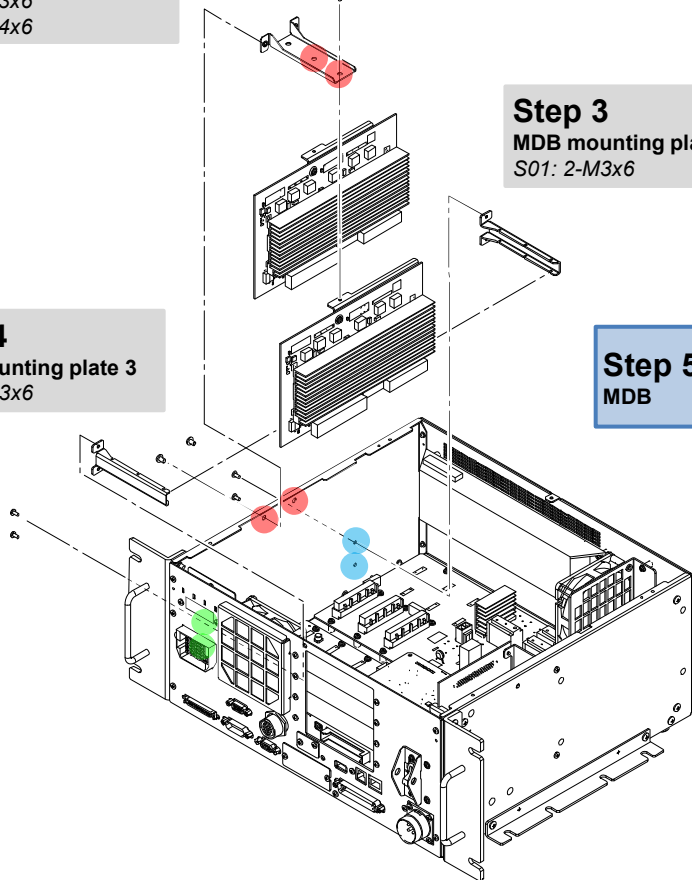
Step 4

MDB mounting plate 3

S01: 2-M3x6

Step 5

MDB



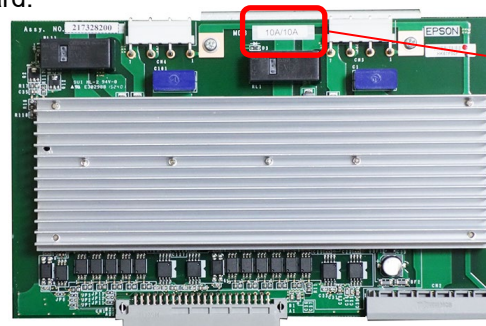
The disassembly procedure is described here.
Perform assembly by following the disassembly procedure in the reverse order.

CAUTION

If the MDB position is incorrect, a warning 700 "The motor driver model does not match the current robot" will appear.

There are various types of MDB.

The MDB can be identified from the "Assy. No" or the "MDB name" on the board.

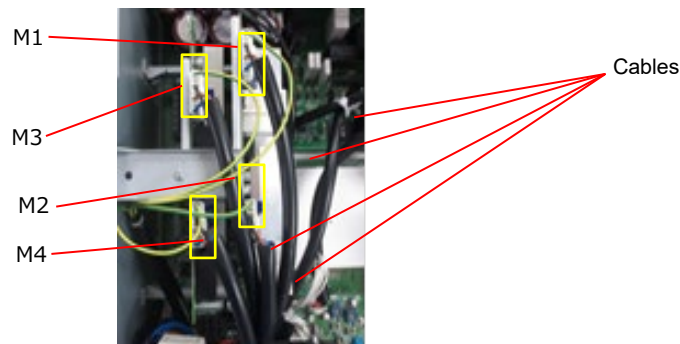


MDB name

CAUTION

Disconnect the MDB cable connectors (4 locations).

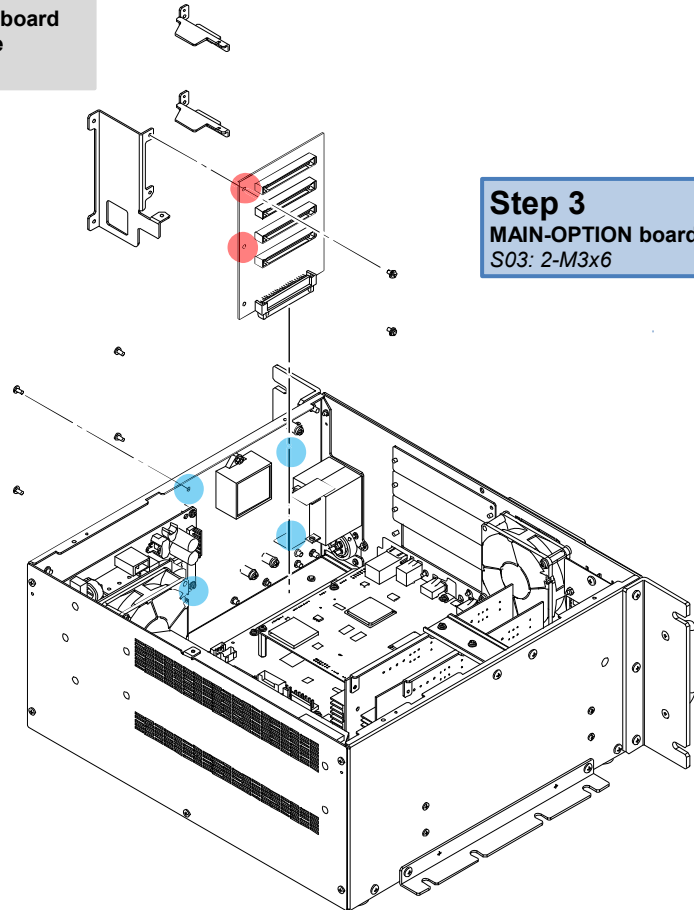
When installing an MDB, the amperage varies depending on the MDB, so after replacing the MDB and cable, Please be careful to install them in the same position.



2.4.10 MAIN-OPTION Board Replacement

Step 1: Top Panel
Step 2: Safety board

Step 4
MAIN-OPTION board
mounting plate
S01: 4-M3x6

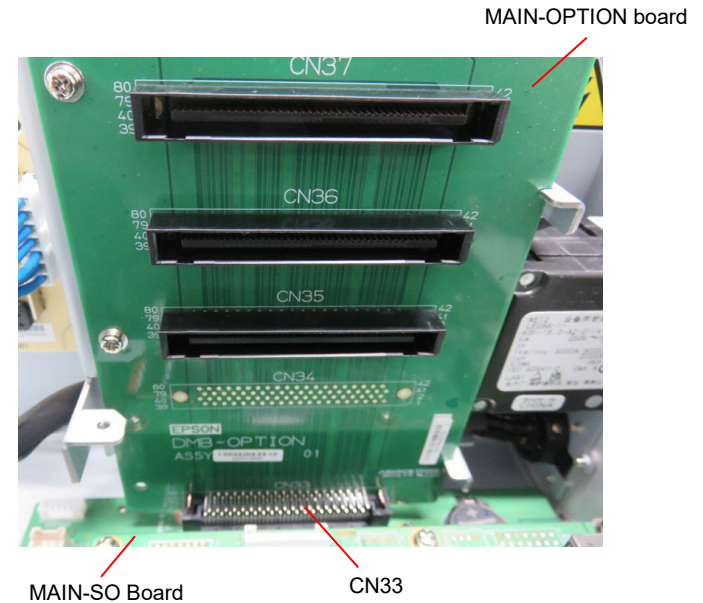


Step 3
MAIN-OPTION board
S03: 2-M3x6

NOTE

How to disconnect the connector

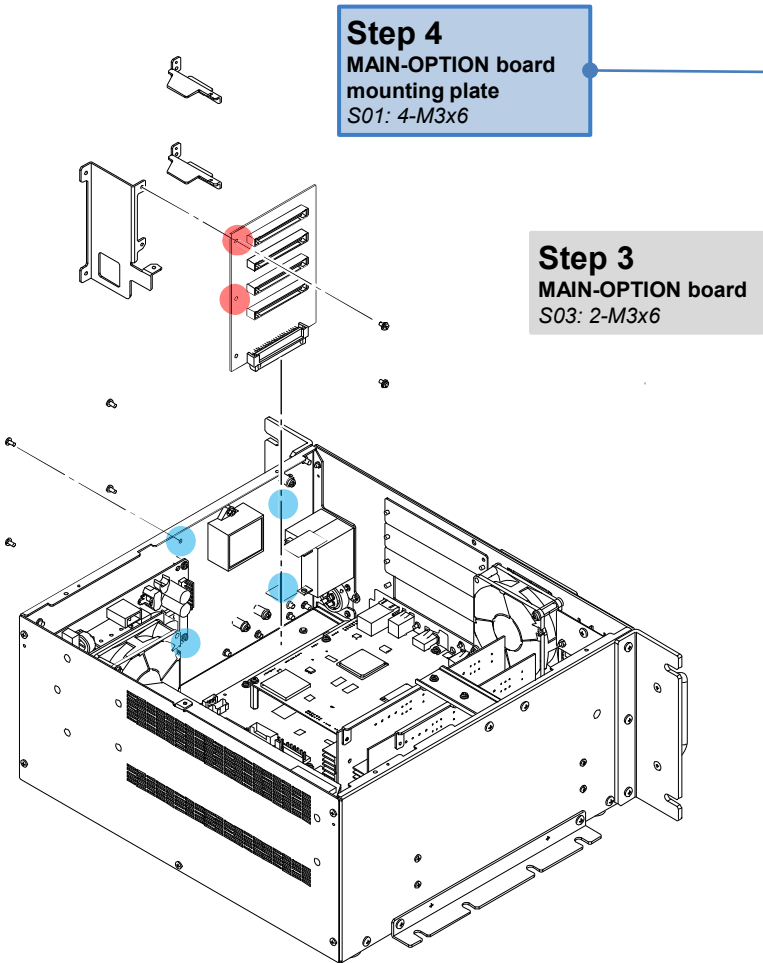
Disconnect the MAIN-OPTION board from the connector (1 location).



The disassembly procedure is described here.
Perform assembly by following the disassembly procedure in the reverse order.

2.4.10 MAIN-OPTION Board Replacement

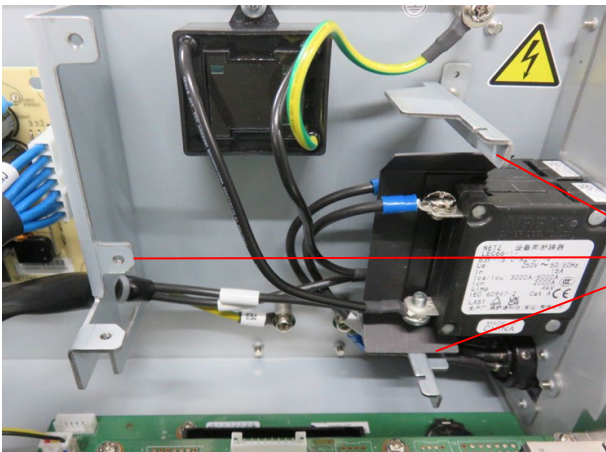
Step 1: Top Panel
Step 2: Safety board



The disassembly procedure is described here.
Perform assembly by following the disassembly procedure in the reverse order.

NOTE

When replacing MAIN-SO Board, remove the screws on the MAIN-OPTION board mounting plate.



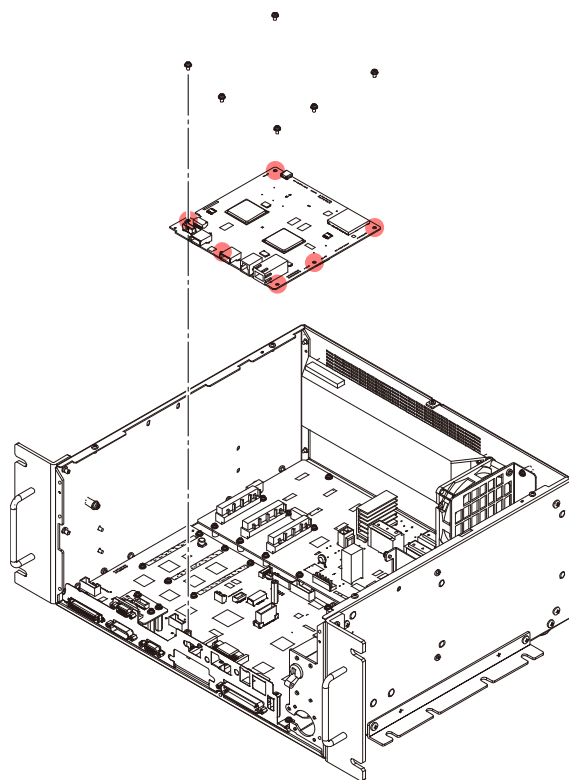
MAIN-OPTION board mounting plate

Fixing four screws of DMB-OPTION board mounting plate



2.4.11 MAIN-AM Board Replacement

Step 1: Top Panel
Step 2: MDB
Step 3: Safety board
Step 4: Front Panel



Step 5
MAIN-AM Board
S03: 6-M3x6

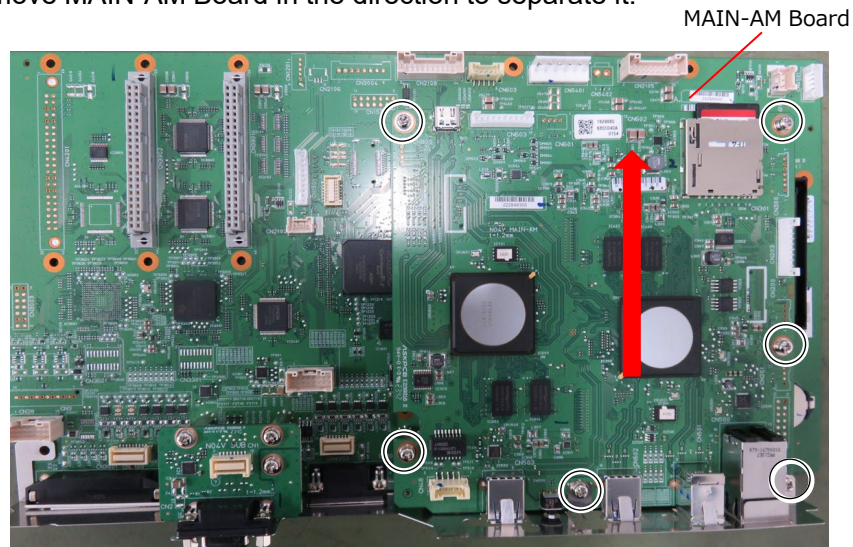
The disassembly procedure is described here.
Perform assembly by following the disassembly procedure in the reverse order.

NOTE

How to remove MAIN-AM Board

Please remove the 6 MAIN-AM Board fixing screws.

↑ Remove MAIN-AM Board in the direction to separate it.



POINT

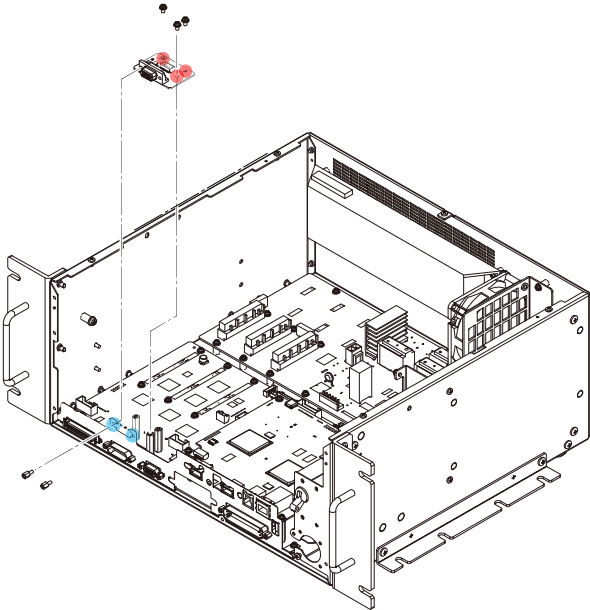
After replacing the board, place the MAIN-AM Board between the support column and the earth plate, and then tighten the screws.



2.4.12 SUB Board Replacement

- Step 1: Top Panel
- Step 2: MDB
- Step 3: Safety Board
- Step 4: MAIN-OPTION Board

Step 5: Front Panel

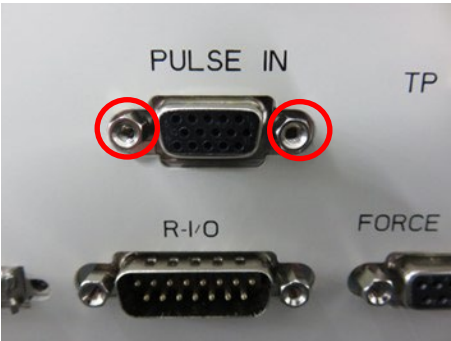


Step 6
SUB Board
S04: 2-M3
S03: 3-M3x6

NOTE

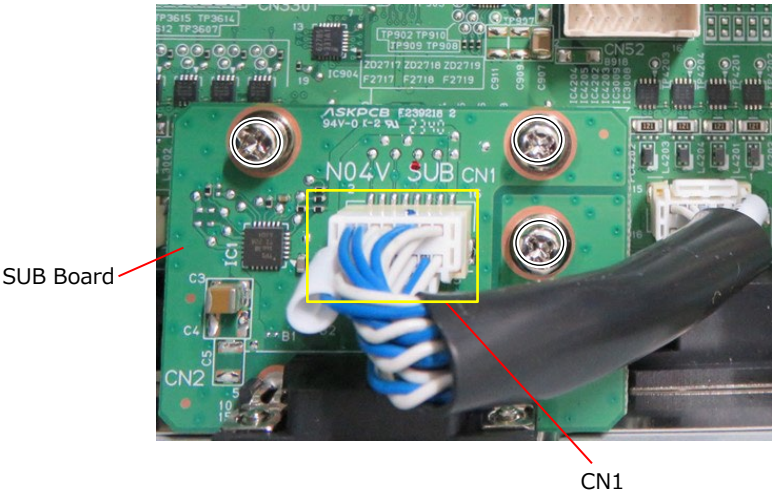
How to remove SUB Board

Remove the two Hexagonal support from the PULSE IN connector.
Remove the three fixing screws on the SUB Board.



How to disconnect connector

Disconnect the SUB Board cable connector (1 location).



The disassembly procedure is described here.
Perform assembly by following the disassembly procedure in the reverse order.

2.4.13 MAIN-SO Board Replacement

- Step 1: Top Panel

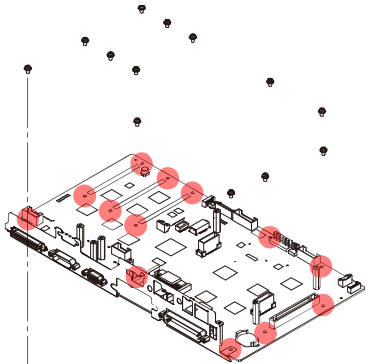
Step 2: MDB

Step 3: Safety Board

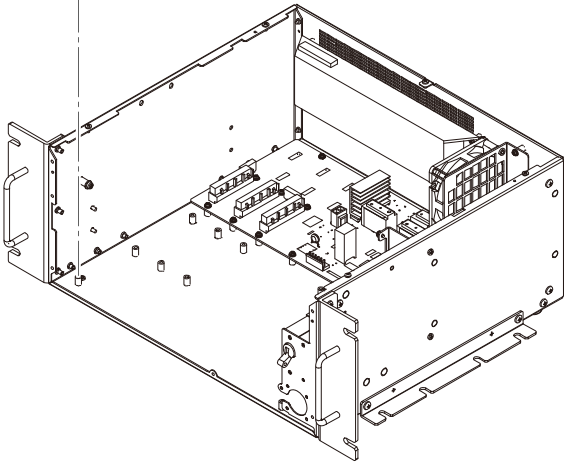
Step 4: MAIN-OPTION Board
- Step 5: Front Panel

Step 6: MAIN-AM Board

Step 7: SUB Board

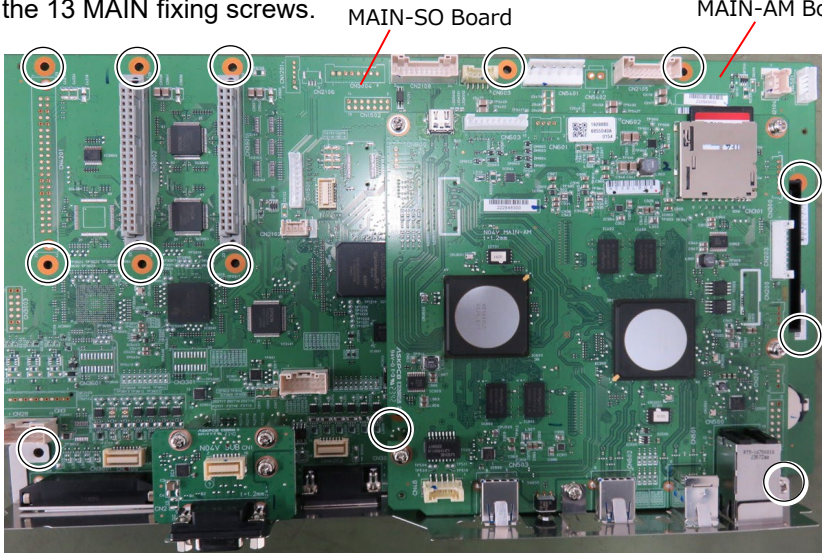


Step 8
MAIN-SO Board
S03: 13-M3x6

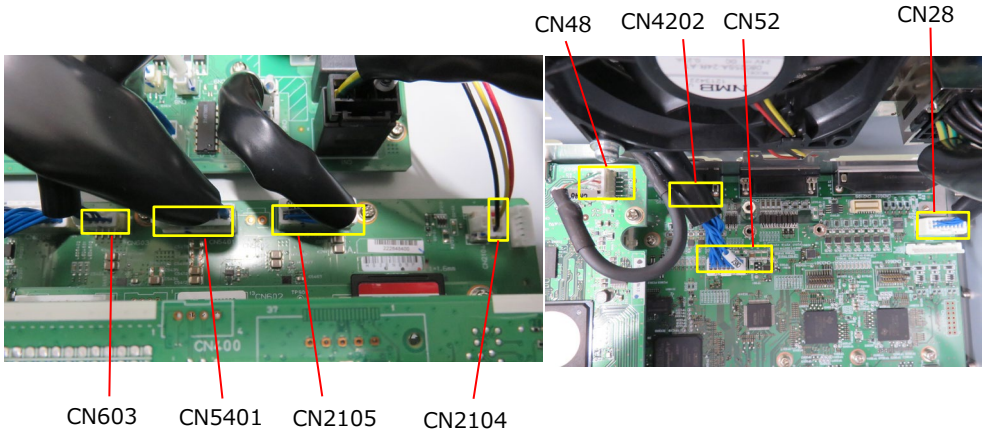


The disassembly procedure is described here.
Perform assembly by following the disassembly procedure in the reverse order.

NOTE
How to remove MAIN-SO Board
Remove the 13 MAIN fixing screws.



How to disconnect connector
Disconnect the MAIN cable connectors (8 locations).



2.4.13 MAIN-SO Board Replacement

- Step 1:** Top Panel

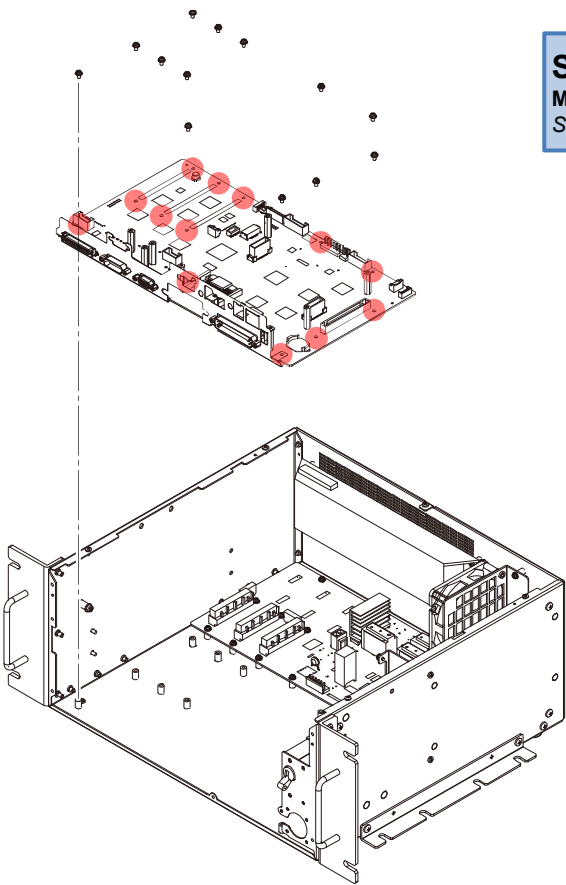
Step 2: MDB

Step 3: Safety Board

Step 4: MAIN-OPTION Board
- Step 5:** Front Panel

Step 6: MAIN-AM Board

Step 7: SUB Board



Step 8
MAIN-SO Board
S03: 13-M3x6

The disassembly procedure is described here.
Perform assembly by following the disassembly procedure in the reverse order.

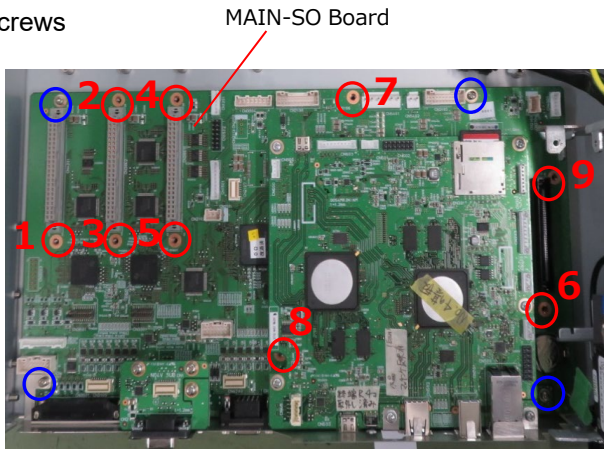
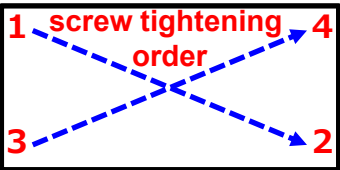
NOTE

How to install MAIN-SO Board

After replacing the board, tighten the 13 screws in the following order.

- Temporarily tighten the 4 blue round screws
- Tighten the 9 red circle screws
- Fully tighten the 4 blue round screws

○ Temporary tightening screws x 4

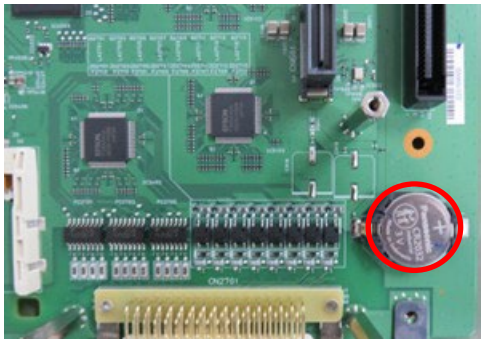


CAUTION

Please remove the button battery from the original board and attach it to the replaced board.

Please back up your data before proceeding.

Reference: "Backup and Restore" in the robot controller RC800-A manual.



2.4.14 LED/7 Segment Board Replacement

Step 1: Top Panel

Step 3

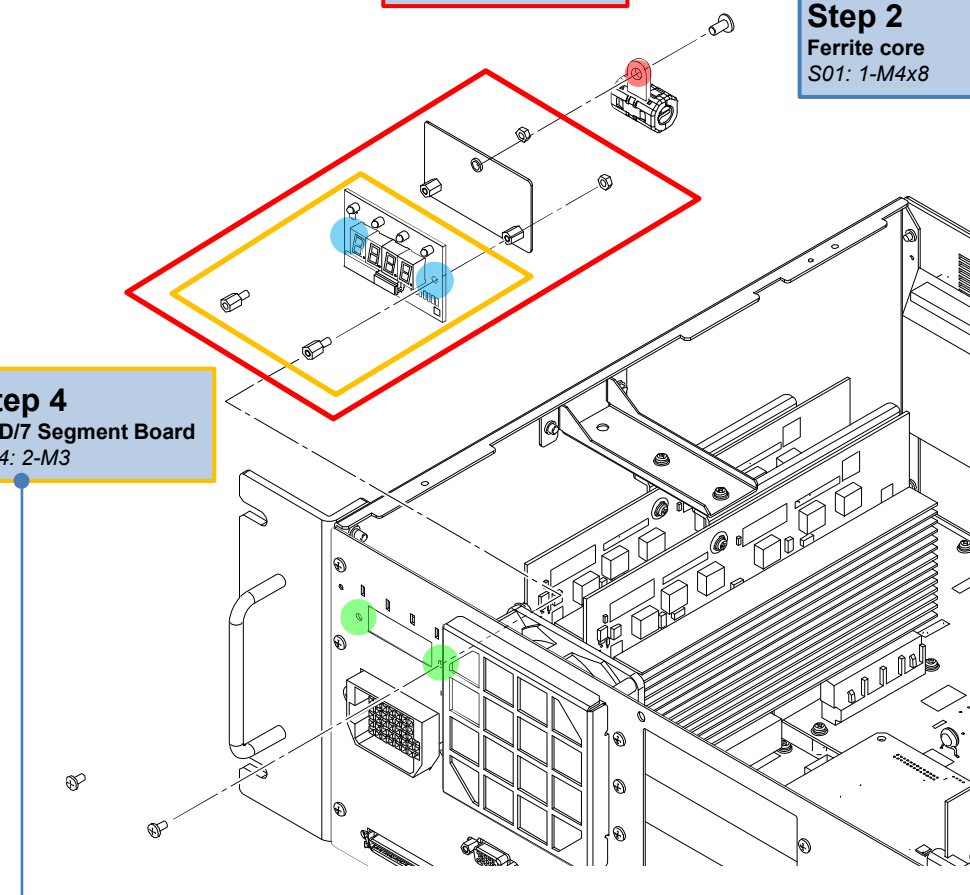
LED/7 Segment Board
S01: 2-M3x6

Step 2

Ferrite core
S01: 1-M4x8

Step 4

LED/7 Segment Board
S04: 2-M3



The disassembly procedure is described here.
Perform assembly by following the disassembly procedure in the reverse order.

NOTE

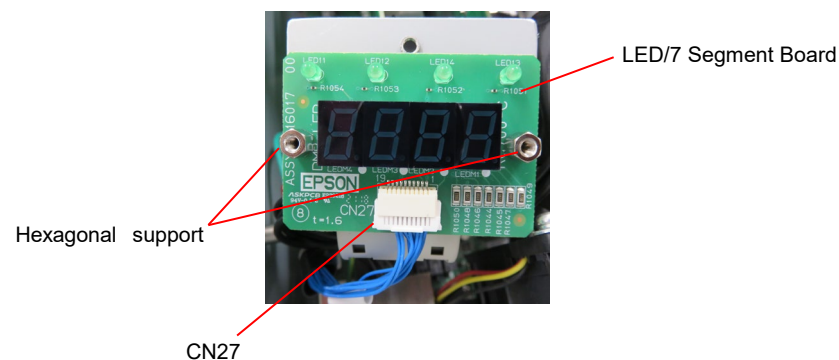
LED/7 Segment Board
Remove the two fixing screws on the LED/7 Segment Board.



NOTE

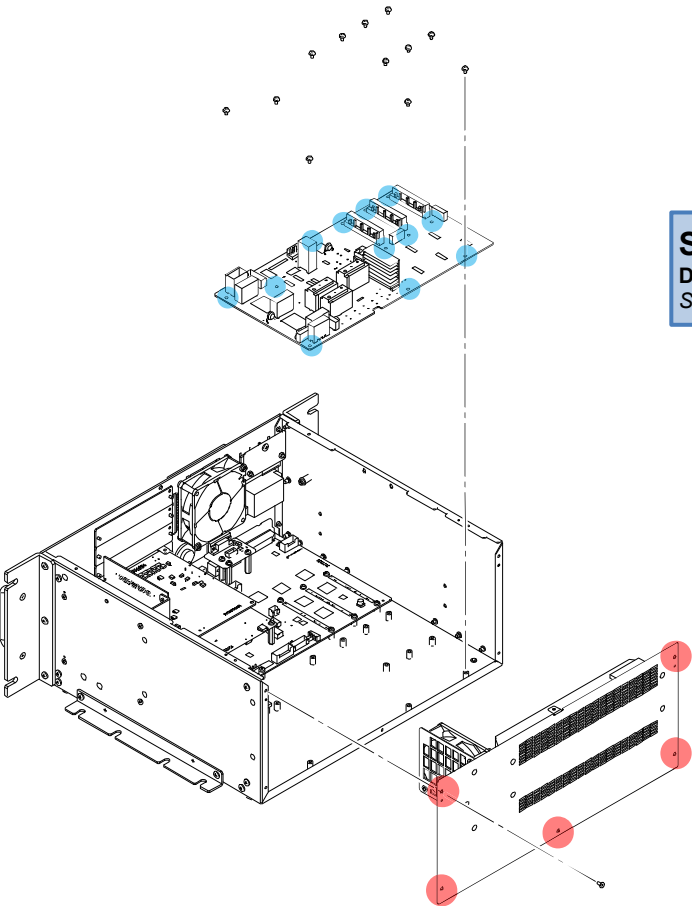
How to remove LED/7 Segment Board

The LED/7 Segment Board can be removed in the LED/7 Segment Board Assy state.
After removing the connector (CN27), remove the Hexagonal support to separate the LED/7 Segment Board.



2.4.15 DPU Replacement

- Step 1: Top Panel
- Step 2: MDB
- Step 3: Rear Panel



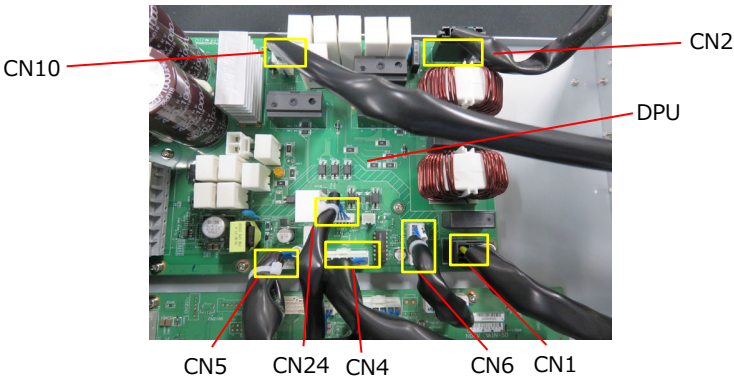
Step 4
DPU
S03: 12-M3x6

The disassembly procedure is described here.
Perform assembly by following the disassembly procedure in the reverse order.

NOTE

How to disconnect connector

Disconnect the DPU cable connectors (7 locations).



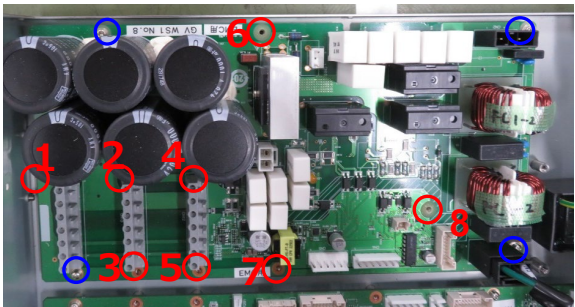
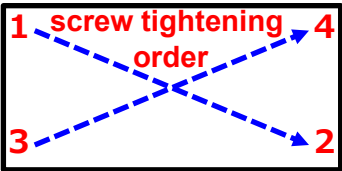
NOTE

How to install DPU

After replacing the board, tighten the 12 screws in the following order.

- Temporarily tighten the 4 blue round screws
- Tighten the 8 red round screws
- Fully tighten the 4 blue round screws

○ Temporary tightening screws x 4



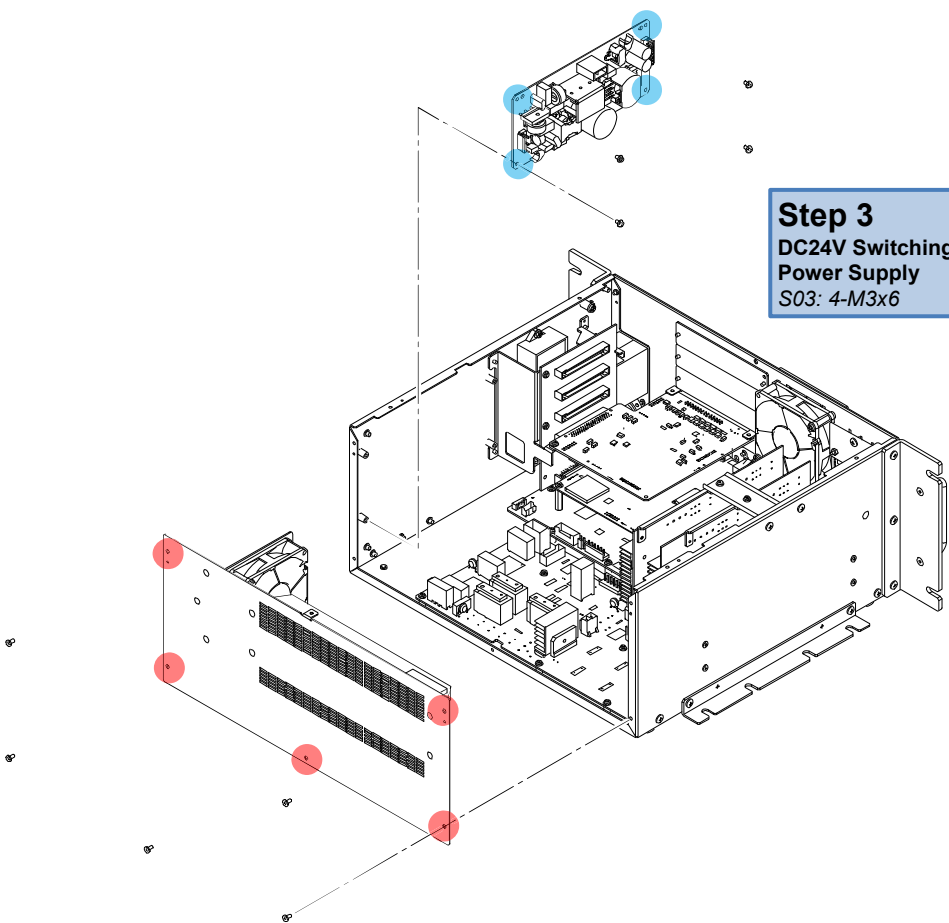
CAUTION

If the DPU is removed, it is necessary to check the operation by the prescribed method.

(Refer to [3.3 Procedure for Verifying DPU Parts Operation](#)).

2.4.16 DC 24V Switching Power Supply Replacement

Step 1: Top Panel
Step 2: Rear Panel

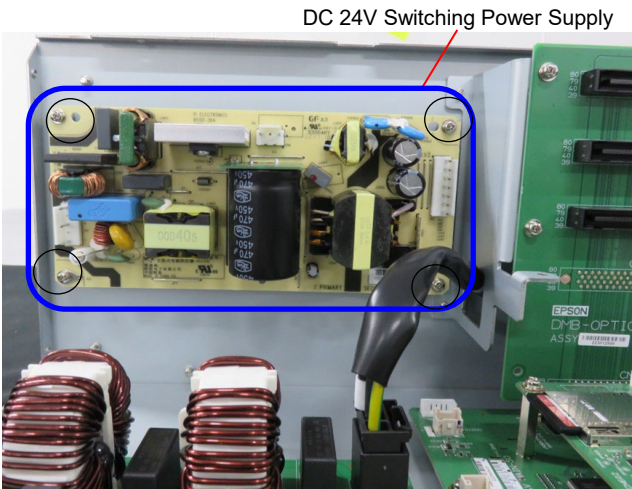


Step 3
DC24V Switching
Power Supply
S03: 4-M3x6

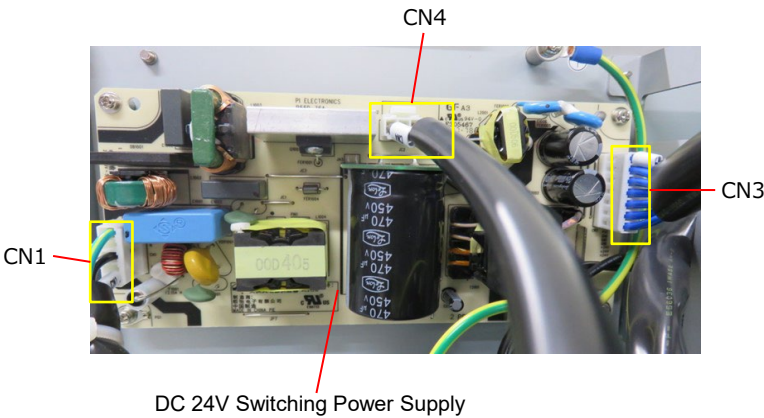
The disassembly procedure is described here.
Perform assembly by following the disassembly procedure in the reverse order.

NOTE

How to install DC24V Switching Power Supply
Remove the 4 fixing screws.



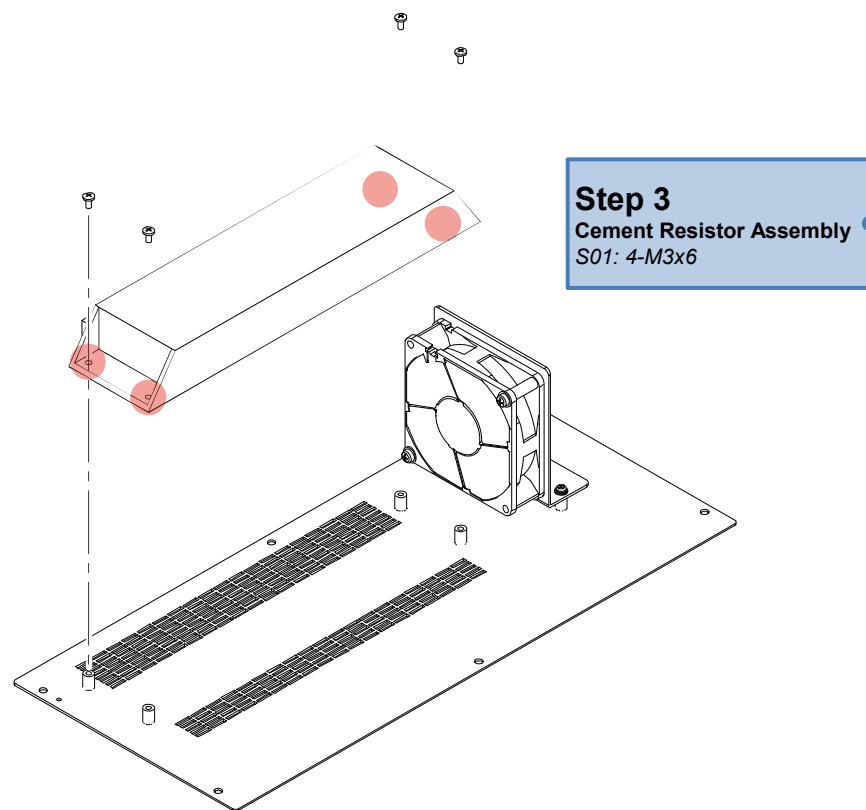
How to disconnect connectors
Disconnect the cable connectors (3 locations).



2.4.17 Cement Resistor Assembly Replacement

Step 1: Top Panel

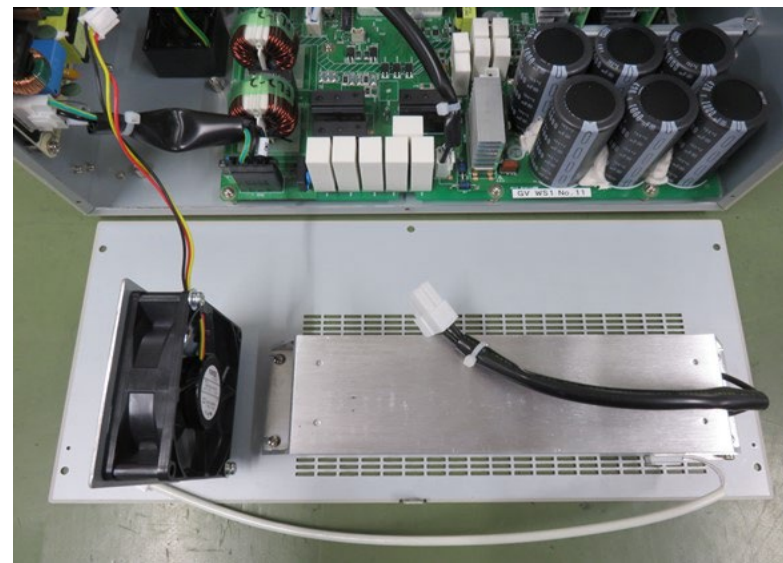
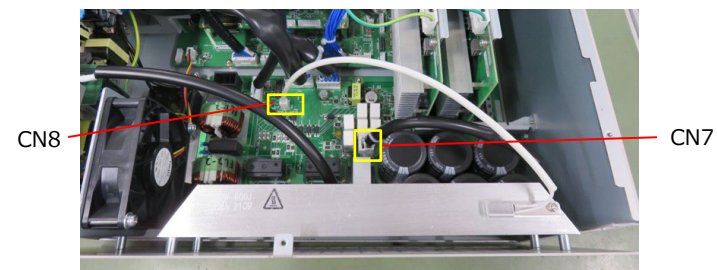
Step 2: Rear Panel



NOTE

How to disconnect Cement Resistor Assembly

Disconnect the cable connectors (2 places).



The disassembly procedure is described here.

Perform assembly by following the disassembly procedure in the reverse order.

CHAPTER

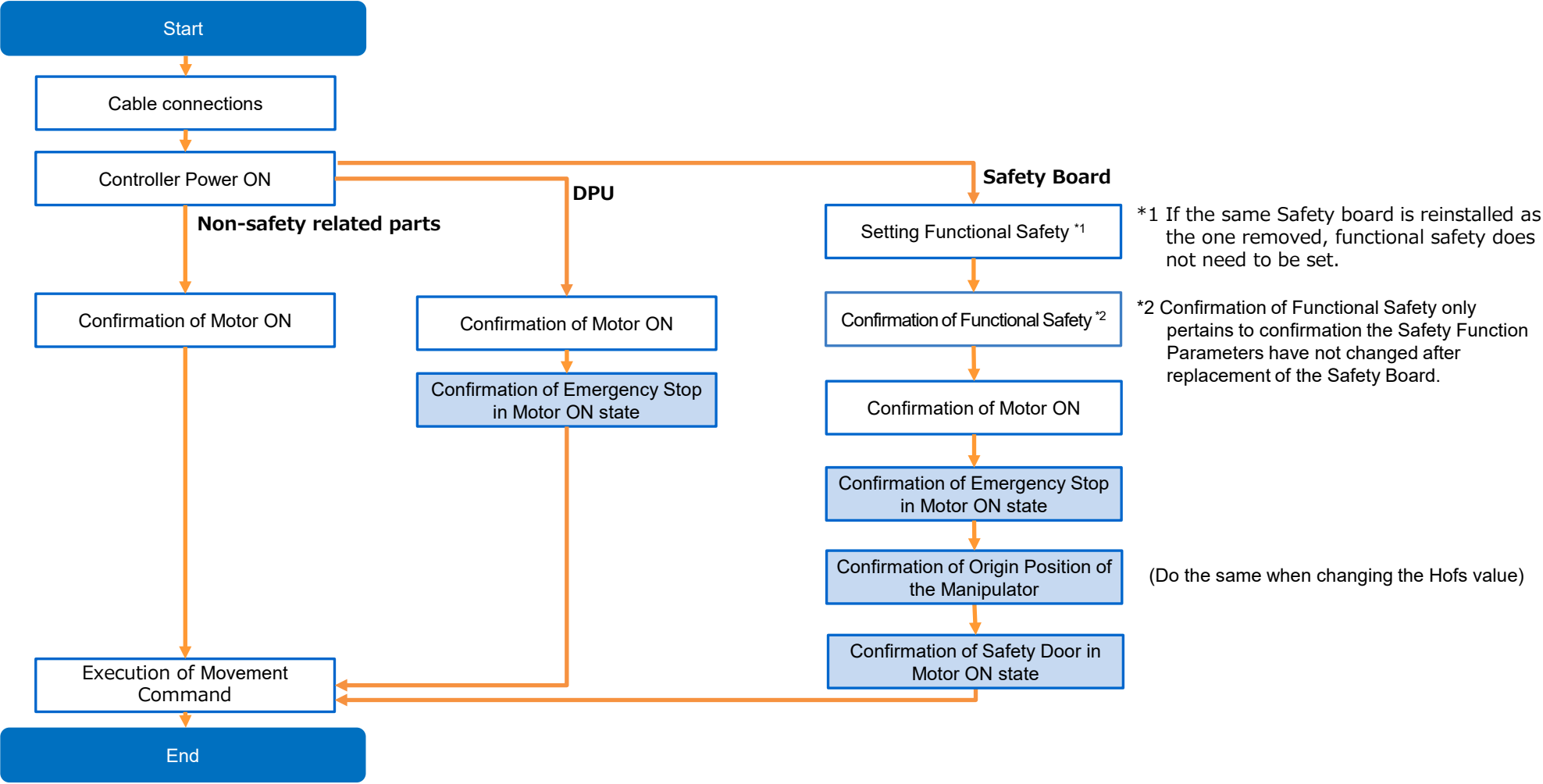
3

Verifying Robot System Operation

3.1 Procedure Flow for Operation Verifying

This chapter describes procedure to check proper operation of robot system after maintenance has been performed for either the Manipulator or the Controller.

Safety-related parts (DPU and Safety board) and non-safety related parts (other parts) have different confirmation procedures after the controller power is turned on. Use the checklist to check the operation of safety-related parts (work) so that there are no omissions. ([3.7 Safety-Related Parts Checklist](#))



3.2 Procedure for Verifying Non-Safety Related Parts Operation

This chapter describes Procedure for Verifying of the robot system after replacing the non-safety related parts of the controller (other than the DPU and Safety board).

Follow the steps below to check.

- (1) Connect all the necessary cables for the system.
- (2) Check the LED status during the time from the Controller is turned ON until the Controller boots up by referring to the list below.

	From power-on to boot	While running	
LED	All blink	LED for current operation mode (TEST, TEACH, AUTO, PROGRAM)	
7 segment	All lights out		READY (Normal)
			Emergency Stop
			Safety door opened
		Four digits	Error

For details of the display, refer to “RC800-A Manual the LED and Seven-segment LED Display”.

For error numbers, refer to “Status Code / Error Code List Manual”.

- (3) Execute MOTOR ON and check the following:
 - No error is displayed.
 - There is servo excitation, and the Manipulator operates normally.
- (4) Execute various motion commands (such as JUMP, etc.). The Manipulator must operate accordingly and normally without vibration or unusual sounds.


Warning

When verifying the robot system operation, prepare for failures with initial settings or wiring. If the Manipulator operates abnormally because of incorrect initial settings or wiring, press the Emergency Stop switch immediately to stop the Manipulator.

Verify the robot system operation in the restricted mode (low speeds and low power) status. Verifying the robot system operation at high speeds may damage the robot system and/or cause serious safety problems as the Manipulator cannot stop operating immediately in case of abnormal operation of the Manipulator.


Caution

The serial number of the Manipulator that should be connected is indicated on the Connection Check Label on the Controller. Connect the Controller and the Manipulator correctly. Improper connection between the Controller and the Manipulator may cause not only improper function of the robot system but also serious safety problems.

3.3 Procedure for Verifying DPU Parts Operation

This chapter describes Procedure for Verifying of the robot system after replacing the DPU.

Follow the steps below to check.

- (1) Connect all the necessary cables for the system.
- (2) Check the LED status during the time from the Controller is turned ON until the Controller boots up by referring to the list below.

	From power-on to boot	While running	
LED	All blink	LED for current operation mode (TEST, TEACH, AUTO, PROGRAM)	
7 segment	All lights out		READY (Normal)
			Emergency Stop
			Safety door opened
		Four digits	Error

For details of the display, refer to “RC800-A Manual the LED and Seven-segment LED Display”.

For error numbers, refer to “Status Code / Error Code List Manual”.

- (3) Execute MOTOR ON and check the following:
 - No error is displayed.
 - There is servo excitation, and the Manipulator operates normally.
- (4) Press the emergency stop with the motor ON and confirm that the robot power is cut off (motor OFF state). Record the results in the checklist.
([3.7 Safety-Related Parts Checklist](#))
- (5) Execute various motion commands (such as JUMP, etc.). The Manipulator must operate accordingly and normally without vibration or unusual sounds.



Warning

When verifying the robot system operation, prepare for failures with initial settings or wiring. If the Manipulator operates abnormally because of incorrect initial settings or wiring, press the Emergency Stop switch immediately to stop the Manipulator.

Verify the robot system operation in the restricted mode (low speeds and low power) status. Verifying the robot system operation at high speeds may damage the robot system and/or cause serious safety problems as the Manipulator cannot stop operating immediately in case of abnormal operation of the Manipulator.



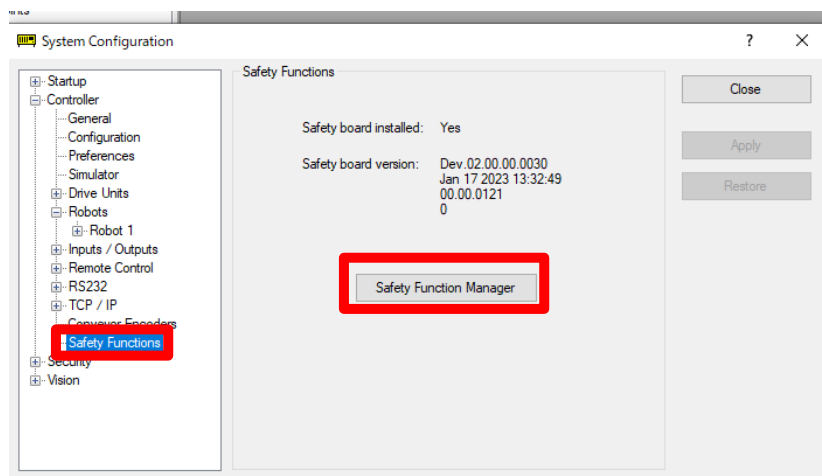
Caution

The serial number of the Manipulator that should be connected is indicated on the Connection Check Label on the Controller. Connect the Controller and the Manipulator correctly. Improper connection between the Controller and the Manipulator may cause not only improper function of the robot system but also serious safety problems.

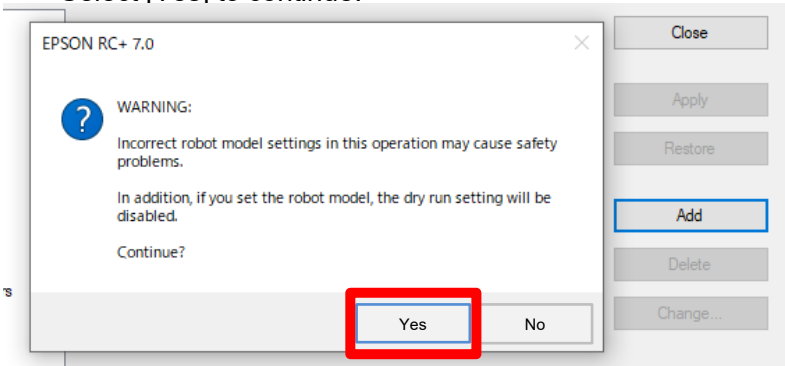
3.4 Setup Procedure After Parts Replacement (Safety Board)

This section describes the setting procedure for the safety related part of the controller (ASP safety board). For confirmation of the Safety Function parameters after maintenance of the robot a backup taken before parts replacement is required. In the case of not having a backup please contact person responsible for the safety management of the Functional Safety of the controller and set the safety function parameters again.

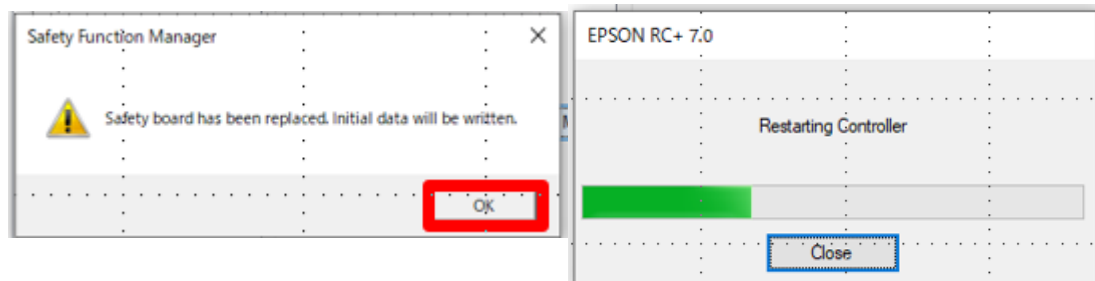
- (1) Power on the controller and connect RC+
- (2) Select [Setup] → [System Configuration] → [Safety Functions] and then select the [Safety Function Manager] button.



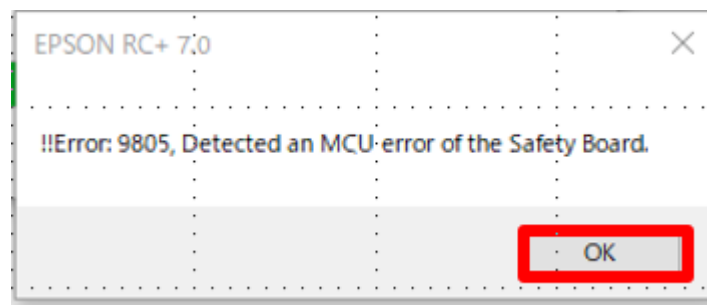
- (3) The following warning window will be displayed. Select [Yes] to continue.



- (4) The following popup will be displayed. Select [OK] to initialize the Safety Board to the factory state. Next the controller will restart.

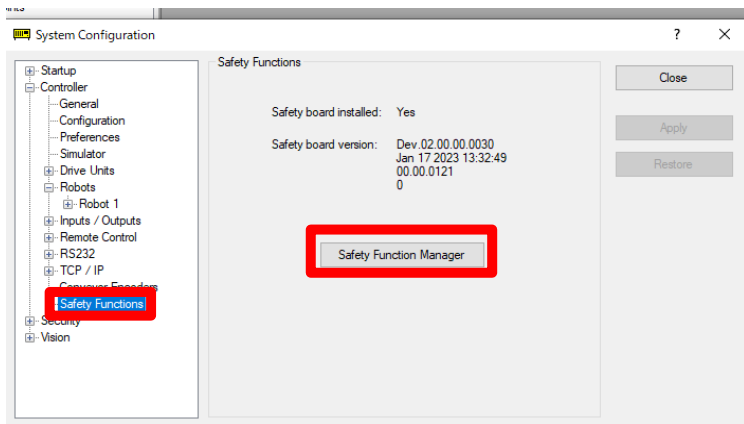


- (5) After the controller has restarted, an error 9805 message will occur. This is due to the Safety board not containing any robot parameters in the factory state. Select [OK] to continue.

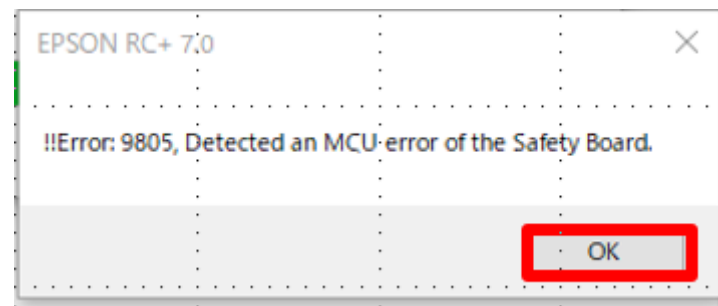


3.4 Setup Procedure After Parts Replacement (Safety Board)

(6) Next, select [Safety Function] → [Safety Function Manager]



(8) After the controller has restarted, an error 9805 message will occur. This is due to the Safety board not containing any robot parameters in the factory state. Select [OK] to continue.



(7) The [Safety Board Password Setting] window will be displayed.

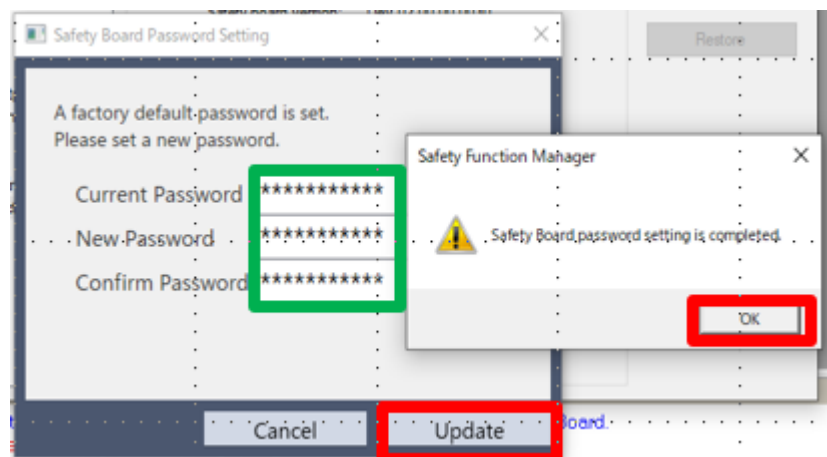
A new password will need to be set.

The current password is the factory default password [EpsonSafety]

After entering and confirming the new password, select the [Update] button.

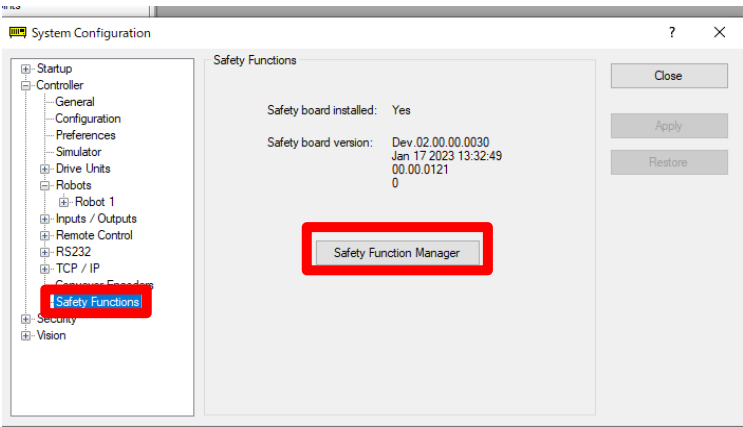
The following popup will be displayed, select [OK] to continue.

Next the controller will restart.

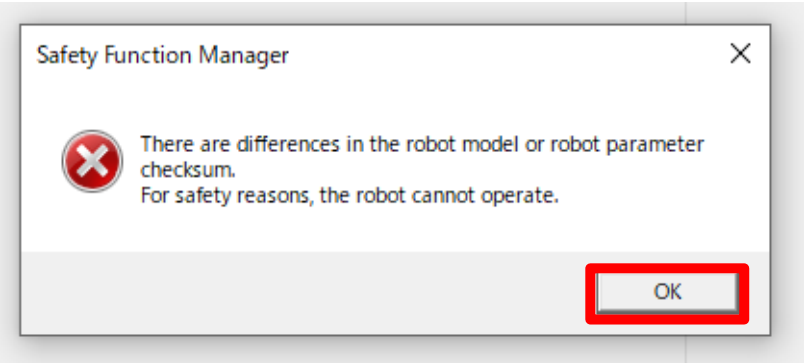


3.4 Setup Procedure After Parts Replacement (Safety Board)

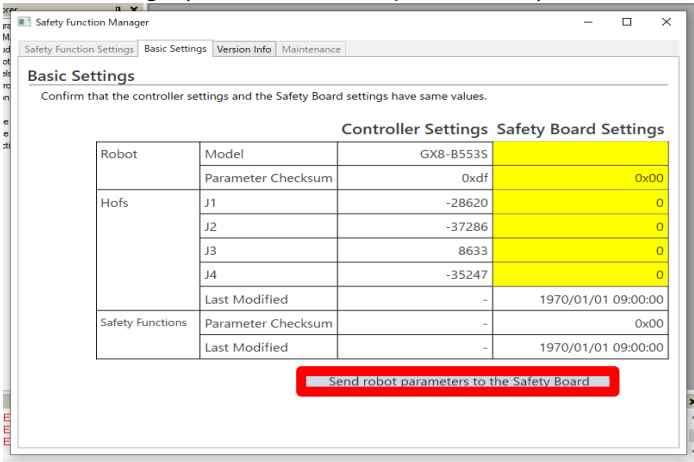
(9) Next, select [Safety Function] → [Safety Function Manager]



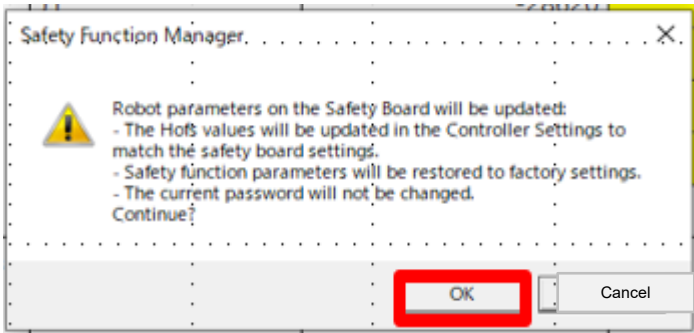
(10) The following warning window will be displayed. This is due to the Safety board not containing any robot parameters in the factory state. Select [OK] to continue.



(11) The Safety Function Manager will open. Select the [Basic Settings] tab. The Safety Boards Settings will appear highlighted in the Basic Settings Table. This is due to the Controller Settings and Safety Board Settings not matching. Select the [Send robot parameters to the Safety Board] button to copy the Controller Settings (Robot and Hofs parameters) to the Safety Board.

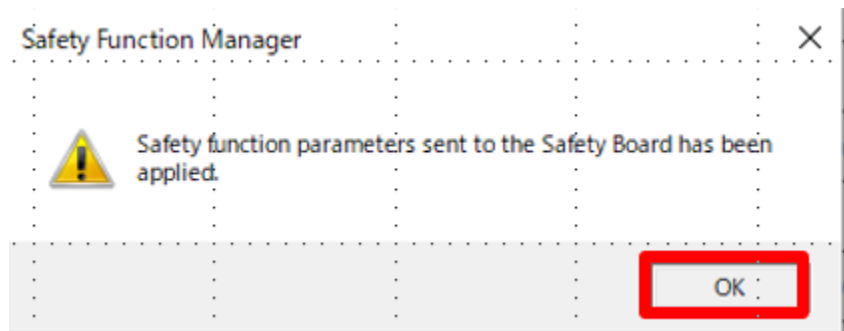


(12) The following window will be displayed. Select [OK] to continue.

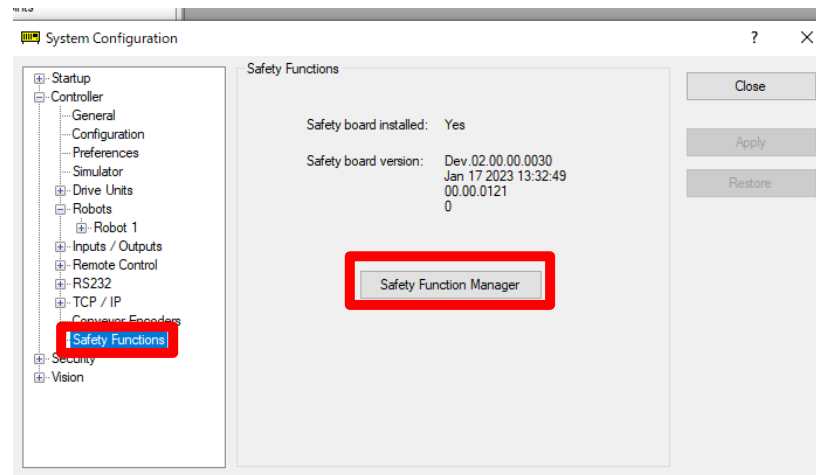


3.4 Setup Procedure After Parts Replacement (Safety Board)

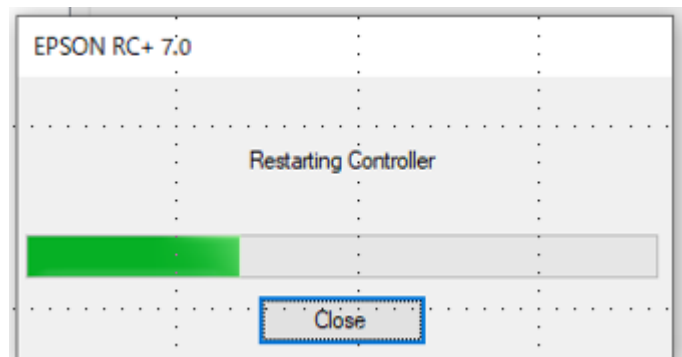
(13) The following popup will be displayed. Select [OK] to continue.



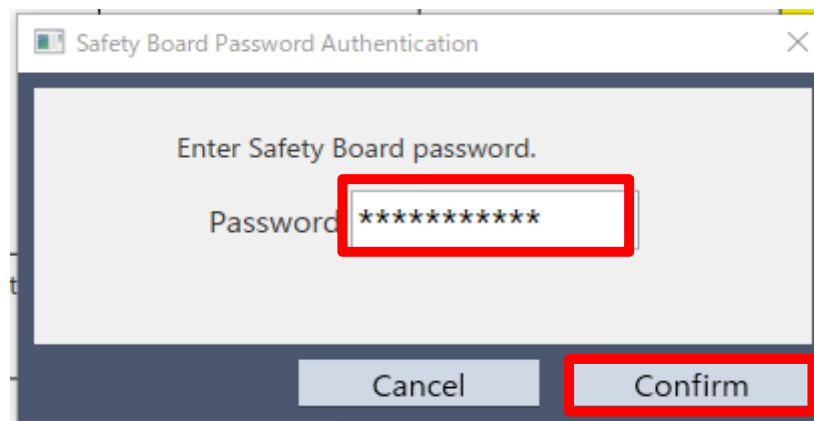
(15) Select [Safety Functions] → [Safety Function Manager]



(14) The controller will restart.

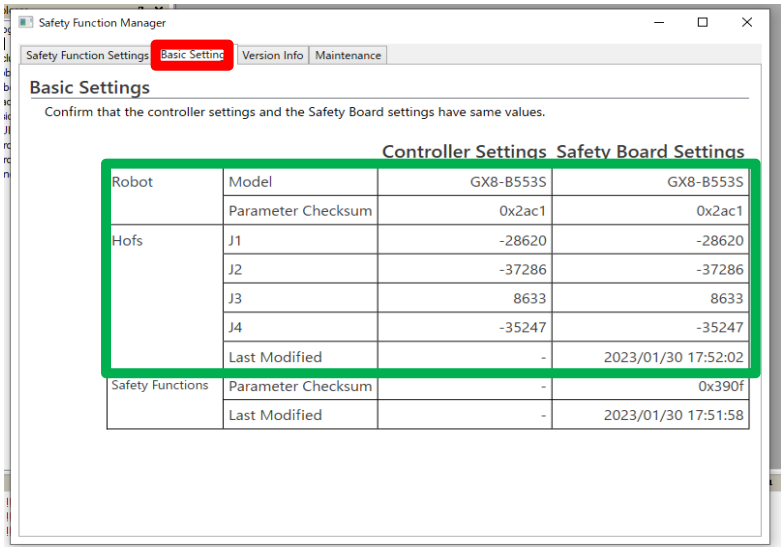


(16) Enter the Safety board password. This is the new password which was set at step (7) of this procedure. Select the [Confirm] button.

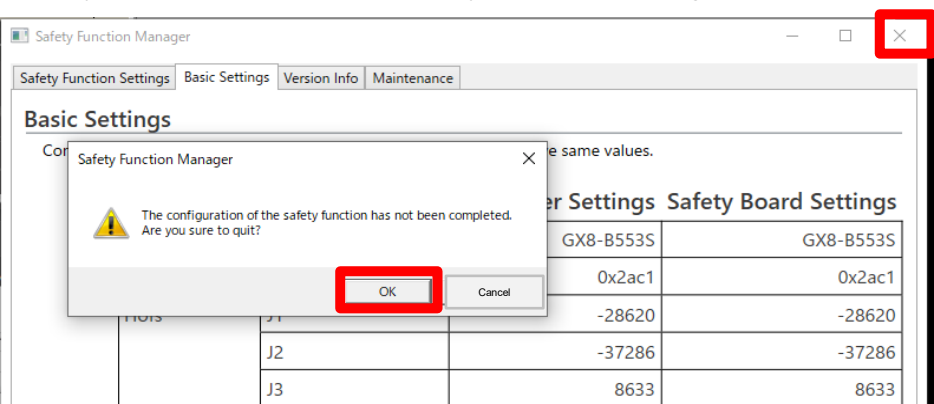


3.4 Setup Procedure After Parts Replacement (Safety Board)

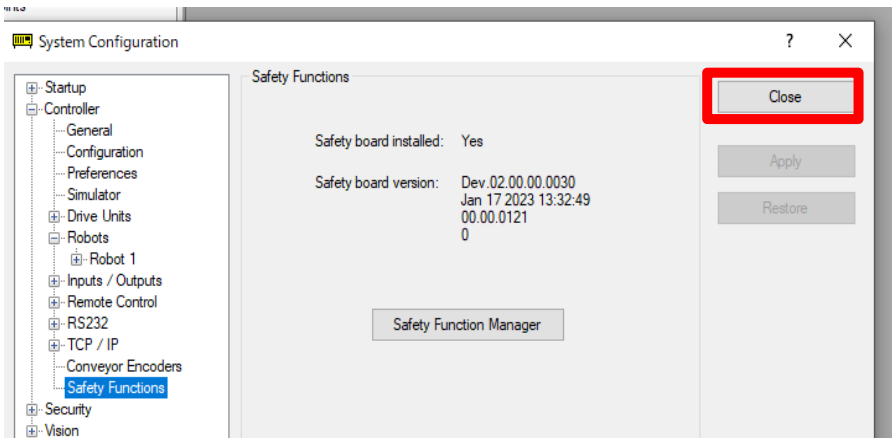
(17) The Safety Function Manager will open. Select the [Basic Settings] tab. Confirm that the Controller Settings and Safety Board Settings match.



(18) After confirming the settings select the [x] in the top of the Safety Functions Manager to exit. The following confirmation window will be displayed. Select [OK] and the Safety Functions Manager will close.



(19) This completes the initial setup procedure safety board replacement. Select [Close] to exit System Configuration.



Note: The Safety Function Settings have been returned to the initial factory state.

(20) Restore the Safety Function Settings from a controller backup file which was taken before maintenance of the robot.

Refer to the Robot Controller Safety Function Manual 4.6.3 Restoring Saved (Backed up) Settings

Note: If a backup of the system before maintenance is not available please contact the person responsible for the management of Functional Safety to set the Safety Functions.

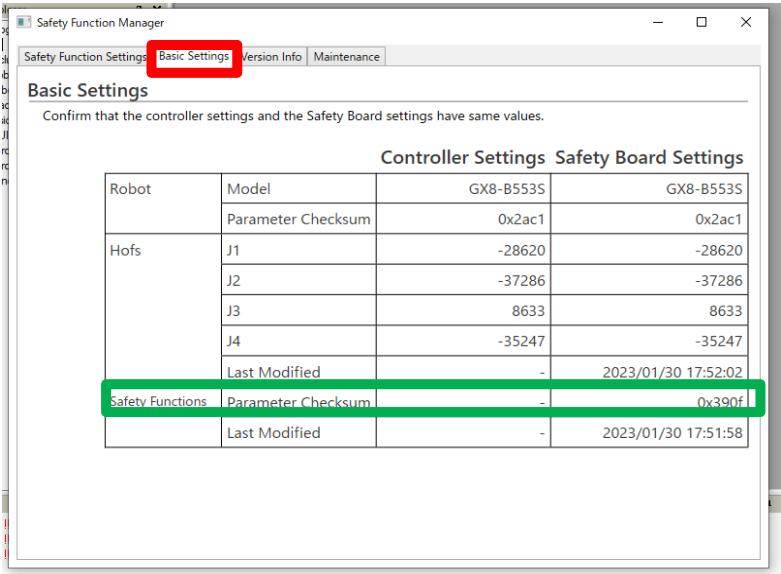
Refer to the Robot Controller Safety Function Manual 4. Setting Safety Functions

3.4 Setup Procedure After Parts Replacement (Safety Board)

(21) After a backup has been restored, confirmation the Safety Functions of the controller are the same as before replacement of the Safety Board will need to be performed. This can be done by confirming the Safety Functions Parameter Checksum has not changed. To do this the current Parameter Checksum and the restored backup Parameter Checksum can be confirmed.

The current Parameter Checksum can be viewed either in the Safety Function Manager or through command input in the RC+ Command window.

1) Safety Function Manger
Open the Safety Function Manger and select the [Basic Settings] tab. The Safety Function Parameter Checksum can be viewed here.
Note: The Safety Function Manager password will be required to open the manager.

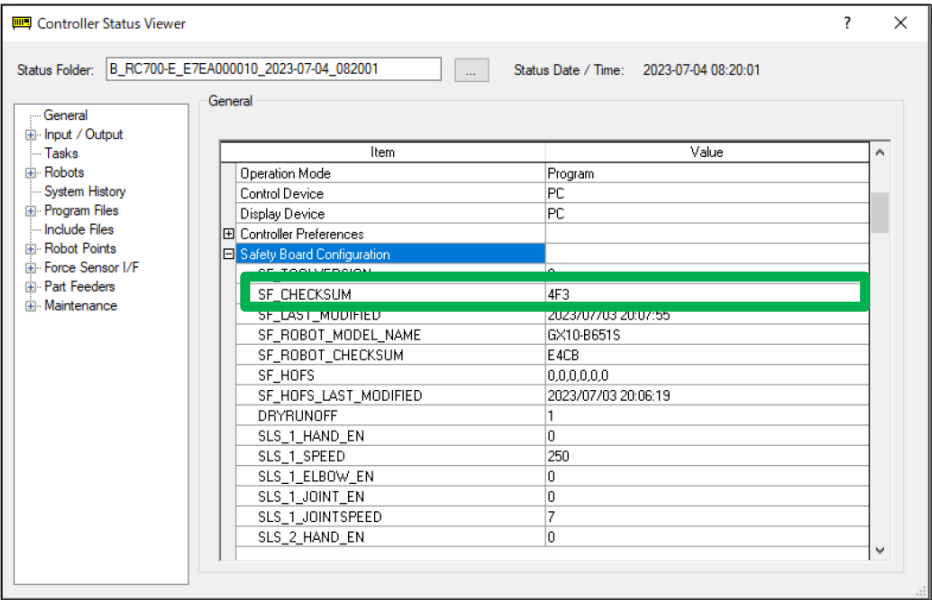


2) RC+ Command Window
Use the Spel+ Function **SF_Getparameter\$** in the command window.

Example:
>print SF_GetParam\$(SF_CHECKSUM)

The Backup Safety Function Parameter Checksum can be viewed in the RC+ Controller Status Viewer.

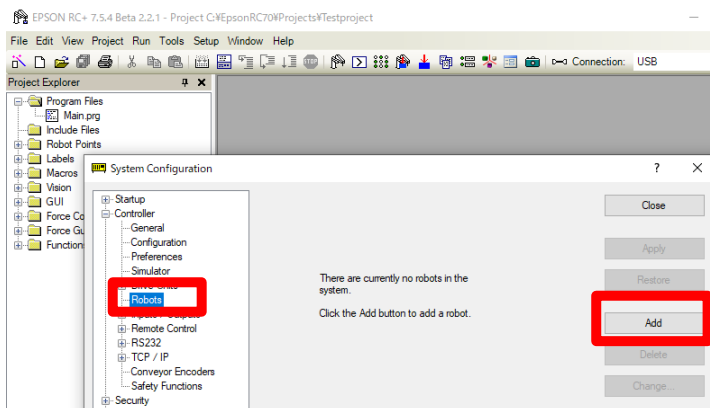
Note: For more information on Confirming Saved Information
Refer to the Robot Controller Safety Function Manual
4.2.6 Confirming Saved Information (Saved States Viewer)



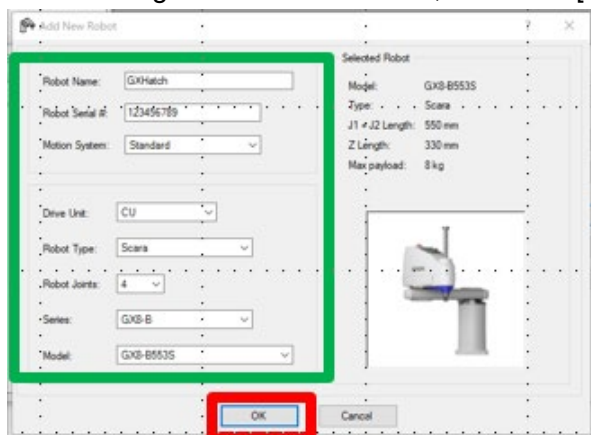
3.5 Setup Procedure After Parts Replacement (Controller)

This section describes the setup procedure for controller replacement when there is no backup to restore the settings of the new Safety board. If you have a backup of the original controller before failure, please use this to restore the controller. (Refer to the RC800-A Controller Manual 5.2 Backup and Restore)

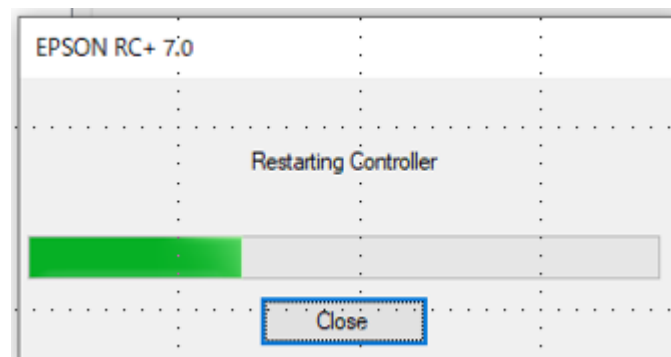
- (1) Power on the controller and connect RC+
- (2) Select [Setup] → [System Configuration] → [Robot] and select the [Add] button.



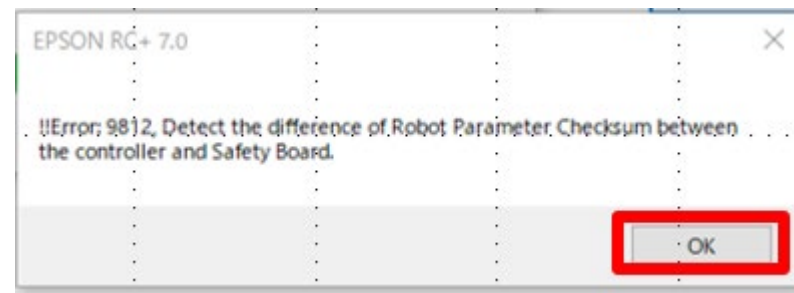
- (3) The [Add New Robot] window will be displayed.
After entering the robot information, select the [OK] button.



- (4) The controller will restart.

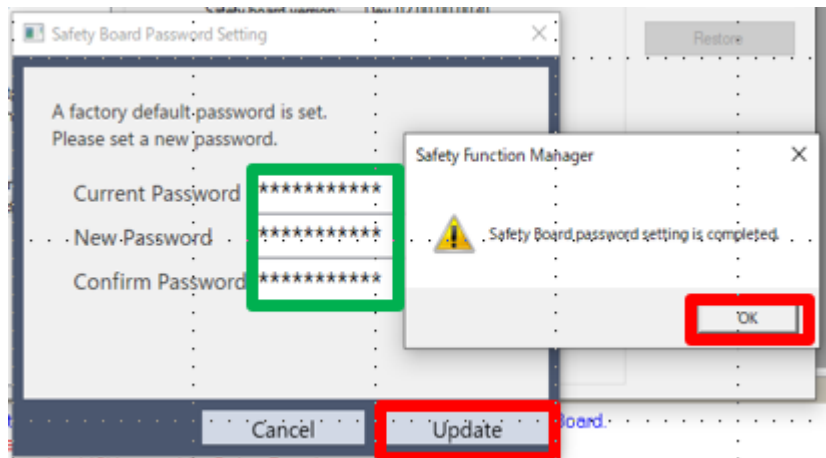


- (5) After the controller has restarted, an error 9812 message will occur. This is due to the Safety Board Settings not matching the Controller Settings. Select [OK] to continue.

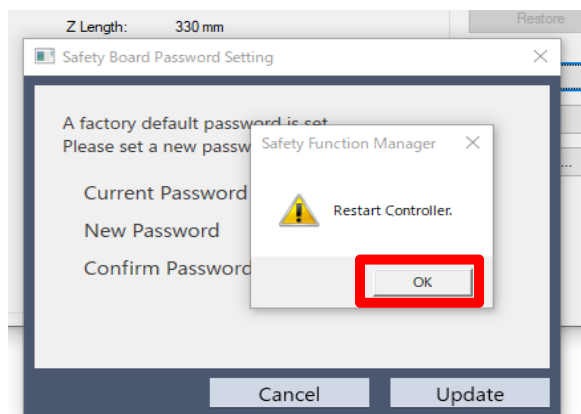


3.5 Setup Procedure After Parts Replacement (Controller)

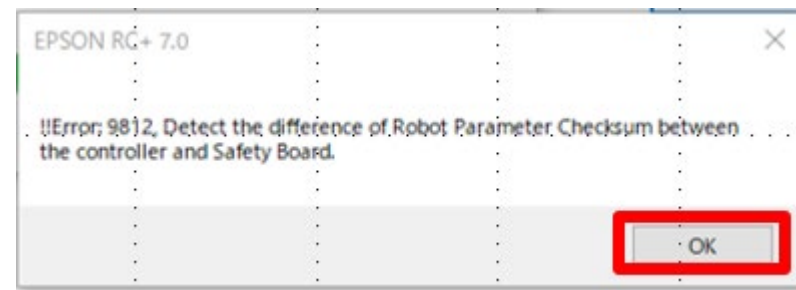
- (6) The [Safety Board Password Setting] window will be displayed.
 A new password will need to be set.
 The current password is the factory default password [EpsonSafety]
 After entering and confirming the new password, select the [Update] button.
 The following popup will be displayed, select [OK] to continue.



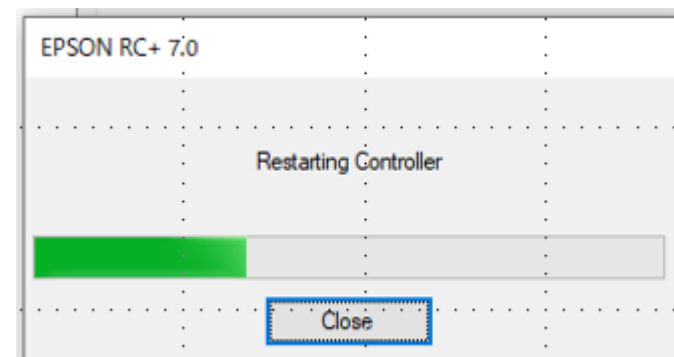
- (7) Select [OK] when the following popup is displayed to restart the controller.



- (8) After the controller has restarted, an error 9812 message will occur.
 This is due to the Safety Board Settings not matching the Controller Settings. Select [OK] to continue.

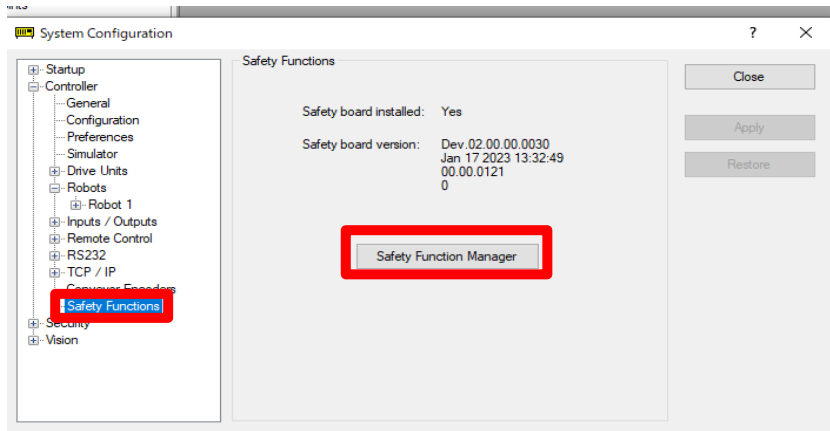


- (9) The controller will restart.
 The Robot information will be copied to the Safety board.

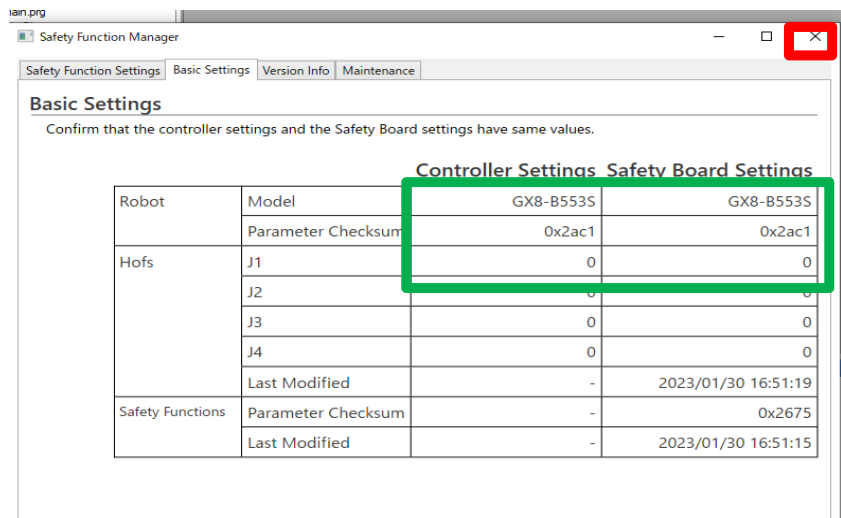


3.5 Setup Procedure After Parts Replacement (Controller)

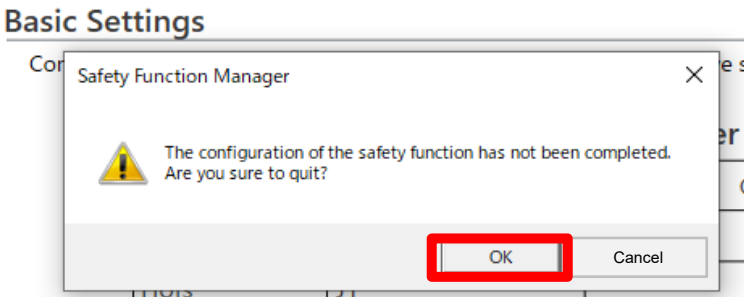
(10) Select [Safety Functions] → 「Safety Function Manager」



(11) The Safety Function Manager will open. Select the [Basic Settings] tab. Confirm that the Controller Settings and Safety Board Settings match.



(12) After confirming the settings select the [x] in the top of the Safety Functions Manager to exit. The following confirmation window will be displayed. Select [OK] and the Safety Functions Manager will close.



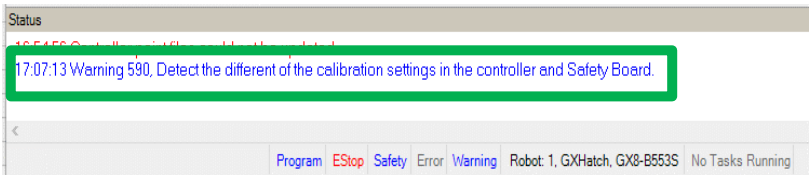
(13) Due to the controller being in the factory state the Hofs values are set at 0 in both the controller and Safety Board. If the Hofs values of the manipulator is known, then the following command should be executed in the command window using those values.

- [HofsJointAccuracy] : GX4/GX4-B, GX8/GX8-B Series
- [Hofs] : GX10, GX20, C4-B, C8-B, C12-B Series

If the Hofs values are not known, please refer to the Manipulator Service Manual 3.1 Calibration and perform Calibration.

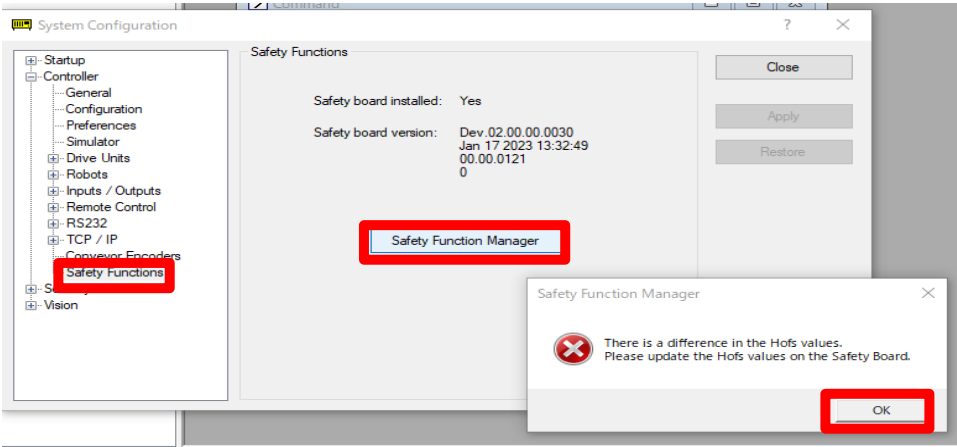
Caution: Do not use the Hofs command for GX4/GX4-B or GX8/GX8-B manipulators. Doing so will clear the Joint accuracy calibration parameters. If the Hofs command is used, perform Joint Accuracy Calibration again.

Note: Warning 590 will occur when the Hofs values are changed either using the above commands or during Calibration. This is due to the Hofs values of the Controller Settings and the Safety Board Settings not matching.

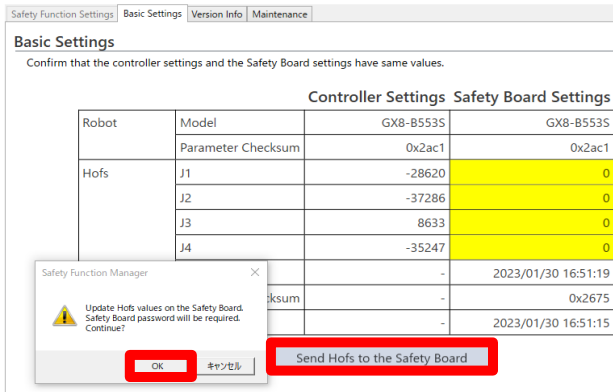


3.5 Setup Procedure After Parts Replacement (Controller)

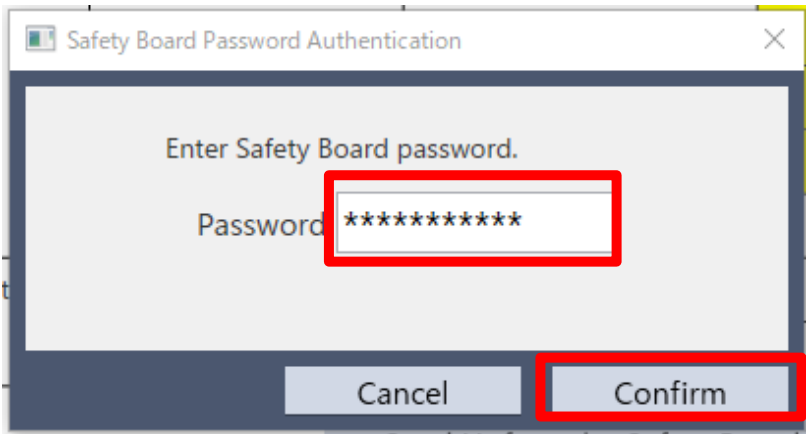
- (14) Select [Safety Functions] →[Safety Function Manager].
Select the [OK] button when the following popup is displayed.



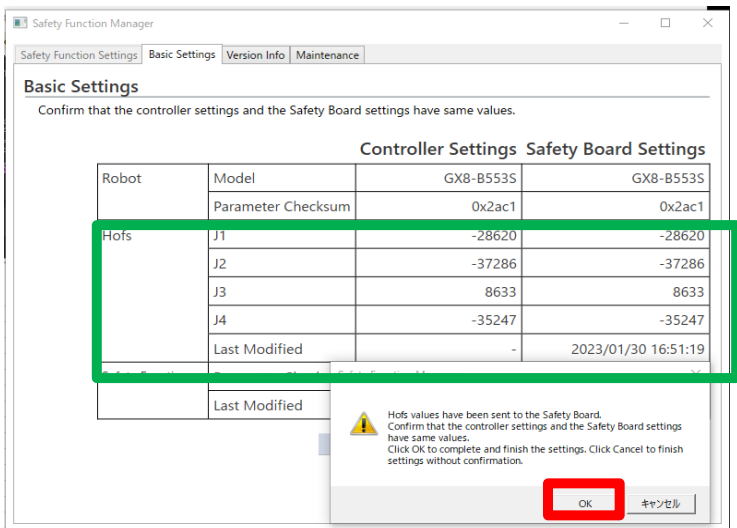
- (15) The Safety Function Manager will open. Select the [Basic Settings] tab. The Hofs values in the Safety Boards Settings will appear highlighted in the Basic Settings Table. This is due to the Controller Settings and Safety Board Settings not matching. Select the [Send Hofs to the Safety Board] button to copy the Controller Settings (Hofs values) to the Safety Board. Select the [OK] button when the following popup is displayed



- (16) Enter the Safety board password. This is the new password which was set at step (6) of this procedure. Select the [Confirm] button.

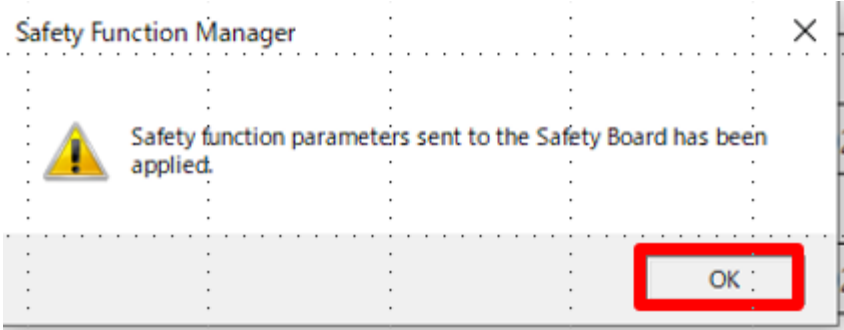


- (17) The Safety Function Manager will open. Select the [OK] button when the following popup is displayed.

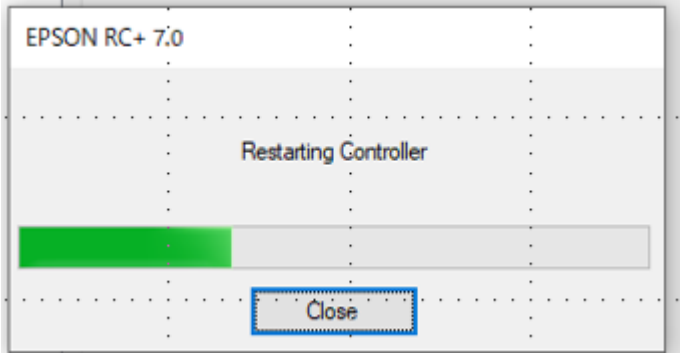


3.5 Setup Procedure After Parts Replacement (Controller)

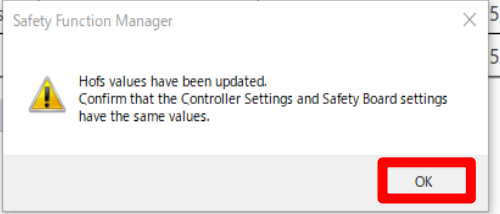
(18) The following popup will be displayed. Select [OK] to continue.



(20) After updating Hofs values, the controller will restart.

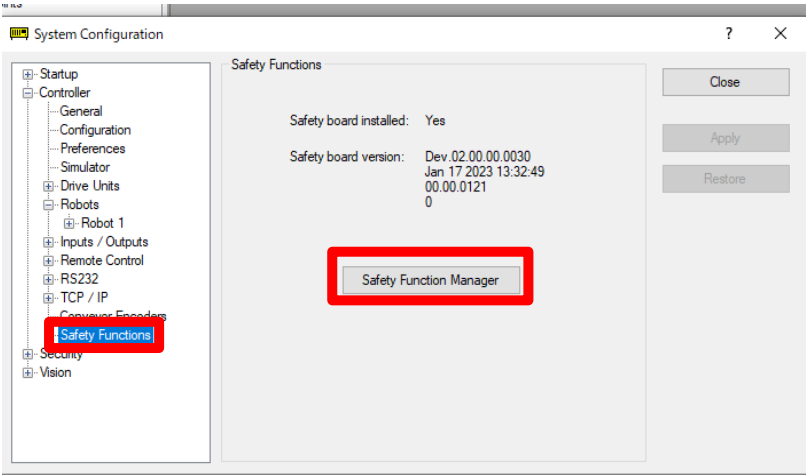


(19) Next select the [OK] button when the following popup is displayed. Select the [Basic Settings] tab. Confirm that the Controller Settings and Safety Board Settings match.

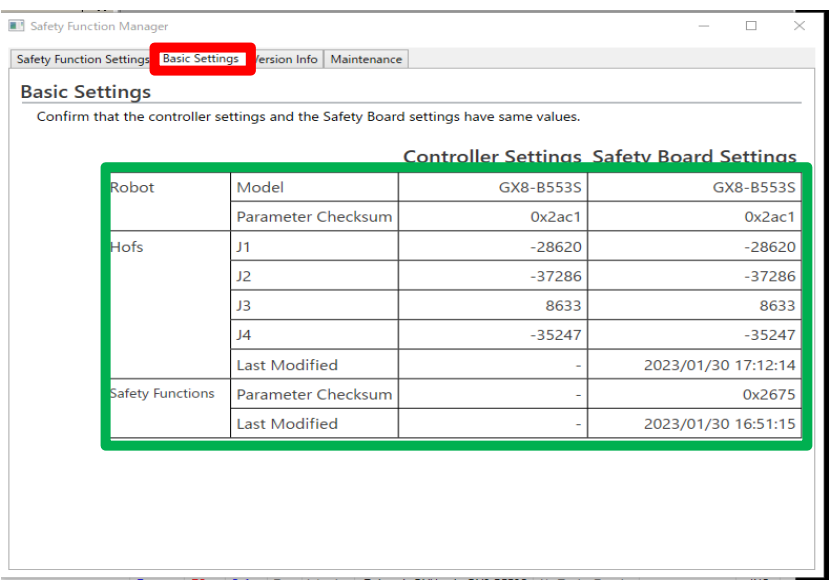
Controller Settings		Safety Board Settings	
Robot	Model	GX8-B553S	GX8-B553S
	Parameter Checksum	0x2ac1	0x2ac1
Hofs	J1	-28620	-28620
	J2	-37286	-37286
	J3	8633	8633
	J4	-35247	-35247
	Last Modified	-	2023/01/30 16:51:19
Safety Functions	Parameter Checks		
	Last Modified		

3.5 Setup Procedure After Parts Replacement (Controller)

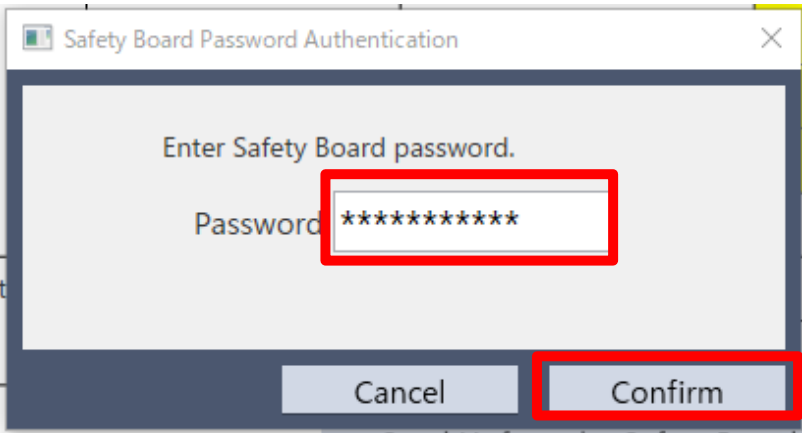
(21) Finally, check if there are any errors in the settings of the Safety board.
Select [Safety Functions] → [Safety Function Manager].



(23) Select the [Basic Settings] tab. Confirm that the Controller Settings and Safety Board Settings match.

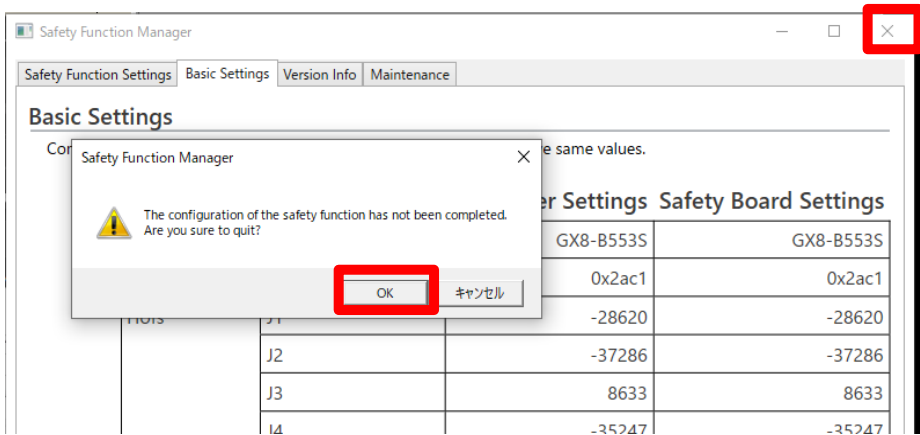


(22) Enter the Safety board password and then select the [Confirm] button.



3.5 Setup Procedure After Parts Replacement (Controller)

(24) After confirming the settings select the [x] in the top of the Safety Functions Manager to exit. The following confirmation window will be displayed. Select [OK] and the Safety Functions Manager will close.



Note: The Safety Function Settings have been returned to the initial factory state.

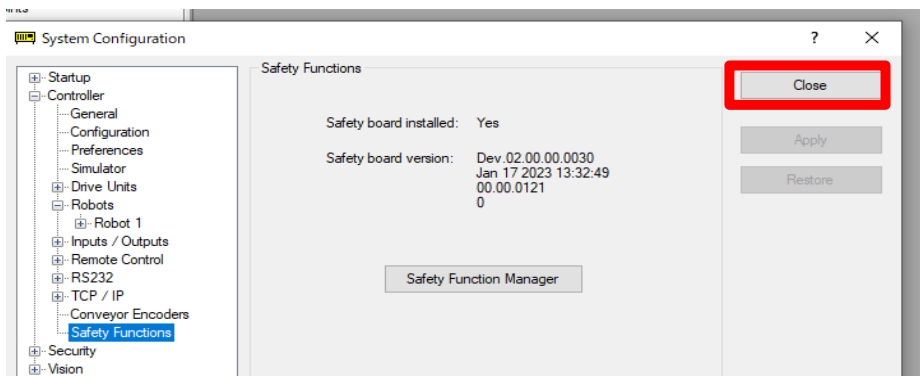
(26) Restore the Safety Function Settings from a controller backup file which was taken before maintenance of the robot.

**Refer to the Robot Controller Safety Function Manual
4.6.3 Restoring Saved (Backed up) Settings**

Note: If a backup of the system before maintenance is not available please contact the person responsible for the management of Functional Safety to set the Safety Functions.

**Refer to the Robot Controller Safety Function Manual
4. Setting Safety Functions**

(25) This completes the setup procedure safety board replacement. Select [Close] to exit System Configuration.



3.5 Setup Procedure After Parts Replacement (Controller)

(27) After a backup has been restored, confirmation the Safety Functions of the controller are the same as before replacement of the Safety Board will need to be performed.

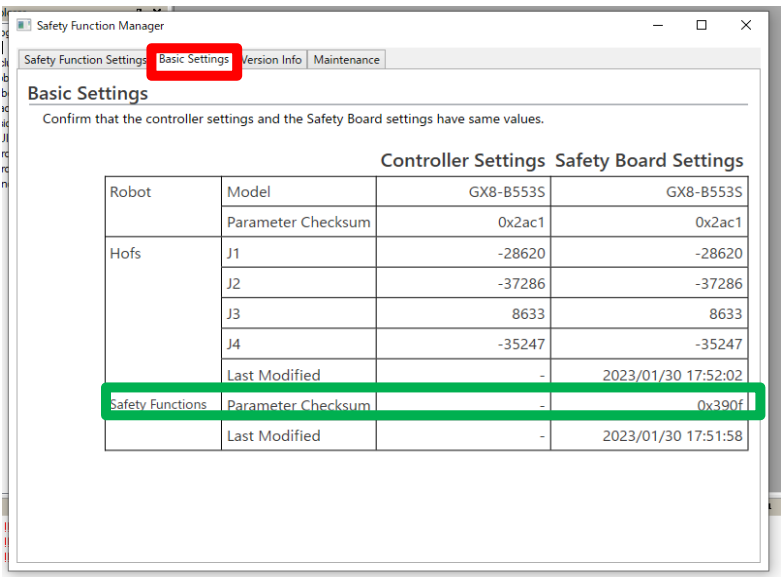
This can be done by confirming the Safety Functions Parameter Checksum has not changed. To do this the current Parameter Checksum and the restored backup Parameter Checksum can be confirmed.

The current Parameter Checksum can be viewed either in the Safety Function Manager or through command input in the RC+ Command window.

1) Safety Function Manger

Open the Safety Function Manger and select the [Basic Settings] tab. The Safety Function Parameter Checksum can be viewed here.

Note: The Safety Function Manager password will be required to open the manager.

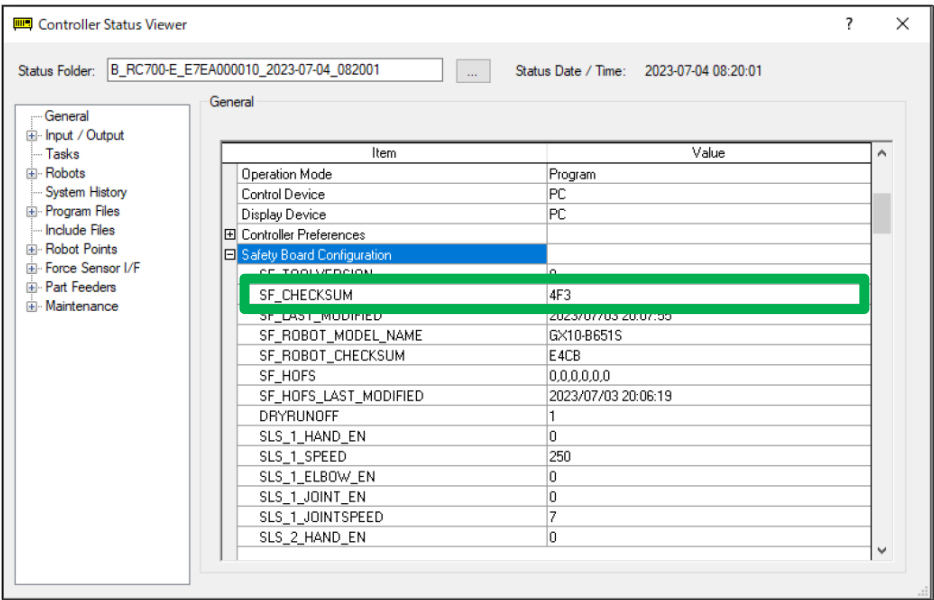


2) RC+ Command Window
Use the Spel+ Function **SF_Getparameter\$** in the command window.

Example:
>print SF_GetParam\$(SF_CHECKSUM)

The Backup Safety Function Parameter Checksum can be viewed in the RC+ Controller Status Viewer.

Note: For more information on Confirming Saved Information
Refer to the Robot Controller Safety Function Manual
4.2.6 Confirming Saved Information (Saved States Viewer)



3.6 Procedure for Verifying Safety board

This chapter describes Procedure for Verifying of the robot system after replacing the Safety board.

Follow the steps below to check.

- (1) Connect all the necessary cables for the system.
- (2) Check the LED status during the time from the Controller is turned ON until the Controller boots up by referring to the list below.
- (6) Operate the safeguard with the motor ON and confirm that "-SO-" is displayed on the 7-segment LED of the controller.
- (7) Execute a movement command such as JUMP and confirm that it operates normally without errors, vibration or abnormal noise.

	From power-on to boot	While running	
LED	All blink	LED for current operation mode (TEST, TEACH, AUTO, PROGRAM)	
7 segment	All lights out		READY (Normal)
			Emergency Stop
			Safety door opened
		Four digits	Error

For details of the display, refer to “RC800-A Manual the LED and Seven-segment LED Display”.

For error numbers, refer to “Status Code / Error Code List Manual”.

- (3) Confirm Safety Function Parameters. Refer to 3.4/3.5 Setup Procedure After Parts Replacement.
- (4) Execute MOTOR ON and check the following:
 - No error is displayed.
 - There is servo excitation, and the Manipulator operates normally.
 - Confirmation of Origin Position of the Manipulator.
(Do the same when changing the Hofs value)

- (5) Press the emergency stop with the motor ON and confirm that "-EP-" is displayed on the 7-segment LED of the controller.



Warning

When verifying the robot system operation, prepare for failures with initial settings or wiring. If the Manipulator operates abnormally because of incorrect initial settings or wiring, press the Emergency Stop switch immediately to stop the Manipulator.
Verify the robot system operation in the restricted mode (low speeds and low power) status. Verifying the robot system operation at high speeds may damage the robot system and/or cause serious safety problems as the Manipulator cannot stop operating immediately in case of abnormal operation of the Manipulator.



Caution

The serial number of the Manipulator that should be connected is indicated on the Connection Check Label on the Controller. Connect the Controller and the Manipulator correctly. Improper connection between the Controller and the Manipulator may cause not only improper function of the robot system but also serious safety problems.

3.7 Safety Related Parts Checklist

Date

:

Checker

:

Replaced part

:

Controller serial No.:

Operation	Check Item	Description of Check Item	Result
DPU Replacement	Emergency stop operation	When the emergency stop is pressed with the motor ON, "-EP-" is displayed on the 7-segment LED of the controller.	OK/NG
Safety Board Replacement	Safety Function setting	Check the Safety function settings before maintenance and after maintenance.	OK/NG
	Emergency stop operation	When the emergency stop is pressed with the motor ON, "-EP-" is displayed on the 7-segment LED of the controller.	OK/NG
	Safety door operation	When the safeguard is operated with the motor ON, "-SO-" is displayed on the 7-segment LED of the controller.	OK/NG
	Origin position	Check the origin position of the manipulator is correct.	OK/NG
Changing Hofs Value	Origin position	Check the origin position of the manipulator is correct.	OK/NG

When replacing the DPU or Safety board designated as a safety related part, check the operation after replacement using the checklist to ensure that there are no omissions in the work and record the details on a check sheet and keep it in a safe place by customer.

CHAPTER

4

Option Parts

4.1 Option Parts Replacement Procedures

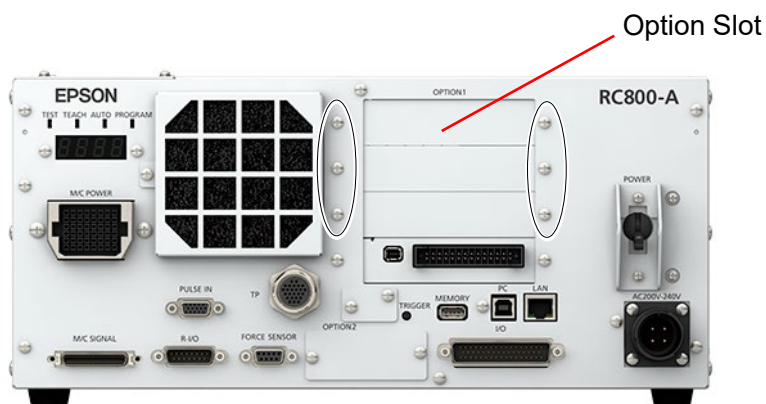
4.1.1 Option Board

Addition of Option Board

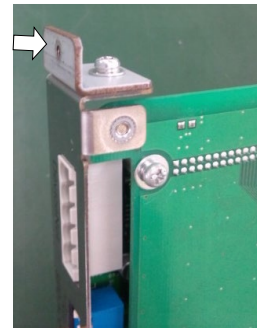
- (1) Turn OFF the Controller.
- (2) Disconnect the power plug.
- (3) Remove the Top Panel. (Mounting screw (M3x6) x 6)



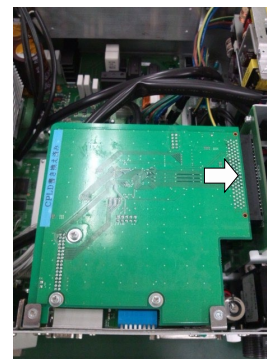
- (4) Remove the top panel.
- (5) Remove the screws of the Option Slot Panels.
Remove as many Option Panels as the Option Boards to add.



- (6) Mount the L-shaped plate to the Option Board.



- (7) Install the Option Board as shown in the picture.
Insert the board to the Option Slot. (in the direction of the arrow)



- (8) Mount the attachment L-shaped plate with a screw from the front side.
At this point, one screw for the Option Slot Panel is left unused.

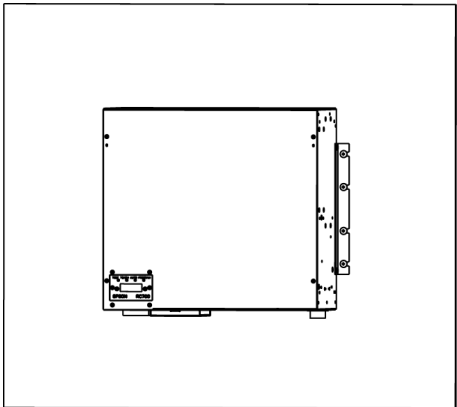


- (9) Mount the Top Panel. (Mounting screw x 6)
- (10) After connecting the power plug, turn ON the Controller and check it works normally without vibration and abnormal sound.
- (11) Install Controller Options.
For further instructions, see section 24 (Installing Controller Options) of the EPSON RC+ User's Guide.

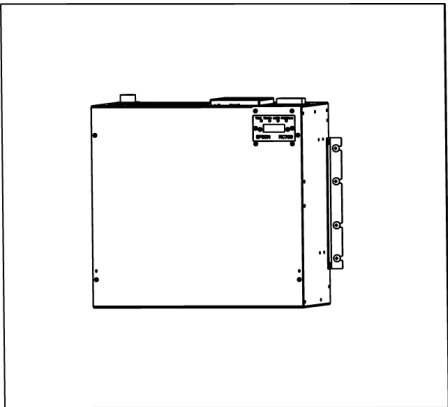
4.1.2 Wall Mounting Option

The Control Unit has a Wall Mounting Option. This section describes the mounting procedure.

(Figure/Picture: RC800-A)



Wall mounting with the front side down



Wall mounting with the front side up

Included items of the Wall Mounting Option

- WALL FIXING BRACKET	2 brackets	- Screw (M3x6 mm)	4 screws
- LED DISPLAY FIXING PLATE	1 plate	- Screw (M4x8 mm)	4 screws
- LED DISPLAY PLATE	1 plate		

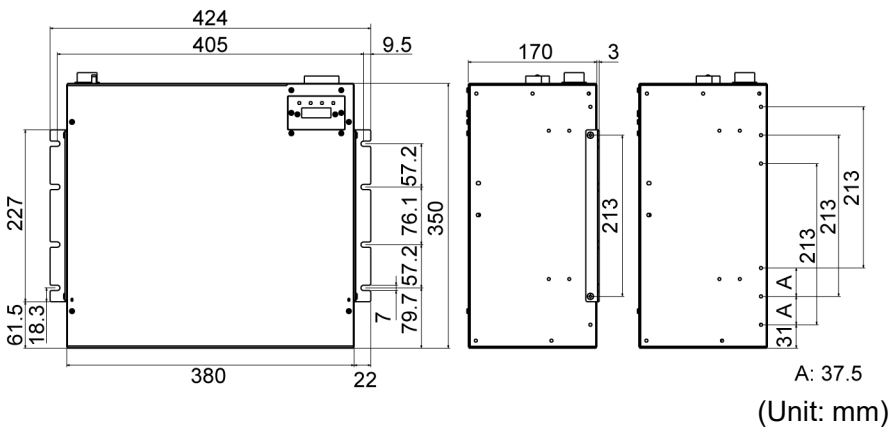


Warning

- Before installing the Control Unit with this option, always make sure that the main power of the Controller is turned OFF and that the power plug is disconnected. Performing any installation procedure while the main power is ON or the high voltage charged area is not discharged completely is extremely hazardous and may result in electric shock and/or cause serious safety problems.
- When opening the front side, make sure to disconnect the power plug. Touching the power supply terminal block inside the Control Unit while the power supply is ON is extremely hazardous and may result in electric shock and/or cause serious safety problems.
- Be careful not to damage the cables.
- Be sure not to drop any screws into the Controller.

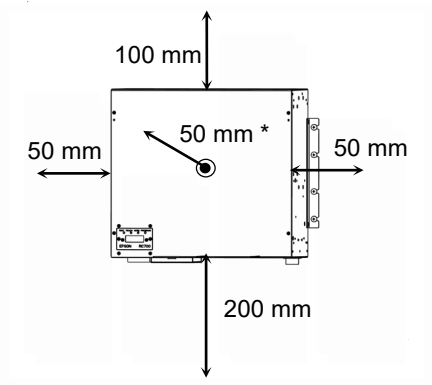
Controller outer dimensions when using the Wall Mounting Option

Dimensions of the mounting holes for the wall

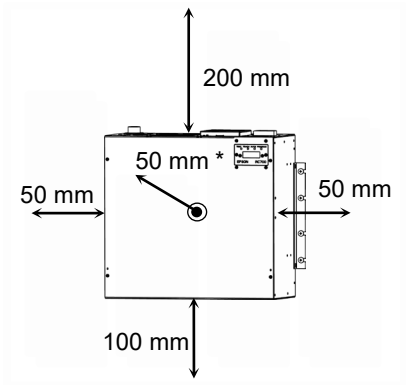


Ensure the air flow around the supply and exhaust ports and install the Controller while leaving space from other equipment or walls as below.

* Keep the space about 200 mm or more on the top when considering maintainability.



Wall mounting with the front side down



Wall mounting with the front side up

Installing the Wall Mounting Option

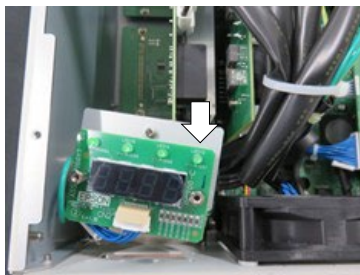
- (1) Remove the Top Panel mounting screws of the Controller.
(Mounting screw x 6)



- (2) Remove the Top Panel
- (3) Remove the screws fixing the 7-segment display.
(Controller front side: Mounting screw x 2)



- (4) Remove the LED/7 segment board from the Controller.



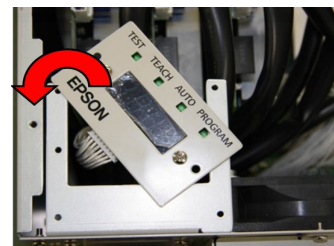
POINT

For RC800-A:

The LED/7 segment board has the ferrite core
(Reference: 2.4.11 MAIN-LED)

If the LED DISPLAY PLATE is installed with “wall mounting with the front side up” described in step (7) below, the cable which passes the ferrite core will be an opposite direction. Remove the latch of the ferrite core and change the cable direction, and then install the ferrite core again.

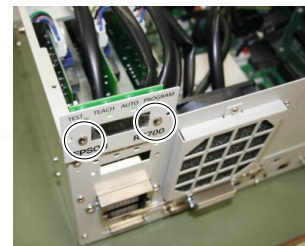
Wall mounting with the front side down



Wall mounting with the front side up



- (5) Mount the LED DISPLAY PLATE to the LED/7 segment board.
(Mounting screw x 2)



NOTE

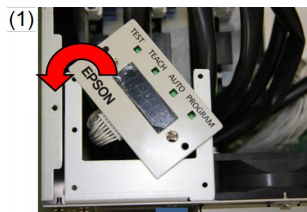
When installing the LED DISPLAY PLATE, be careful not to drop any screw inside the Controller.

- (6) When installing the LED DISPLAY PLATE, be careful not to drop any screw inside the Controller.
Use the two removed mounting screws in step (7).



- (7) Mount the LED DISPLAY PLATE to the LED DISPLAY FIXING PLATE. (Mounting screw x 2)
There are two installation methods.
Turn the LED DISPLAY PLATE horizontally to the Top Panel in the direction indicated by a red arrow.

Wall mounting with the front side down

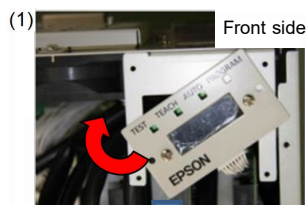


Front side

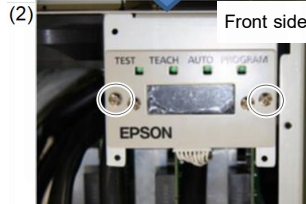


Front side

Wall mounting with the front side up



Front side



Front side

NOTE Be careful not to pull the cable.

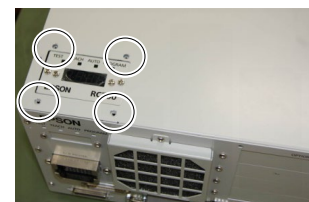
- (8) Remove the plate from the Top Panel.
(Mounting screw x 4)



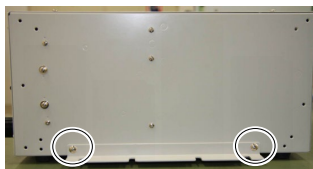
NOTE The removed plate is not necessary when using this option.
The plate may be needed when the installation type is changed. Please keep the plate for future use.

- (9) Mount the Top Panel.
(Mounting screw x 6)

- (10) Fix the Top Panel to the LED DISPLAY FIXING PLATE.
(Mounting screw x 4)



- (11) Mount the WALL FIXING BRACKET.
(Mounting screw x 2 on both sides)



NOTE The bracket has 6 screw holes.
There are three ways of installation.



- (12) Remove the rubber feet on the Controller's back side.
(Mounting screw x 4)



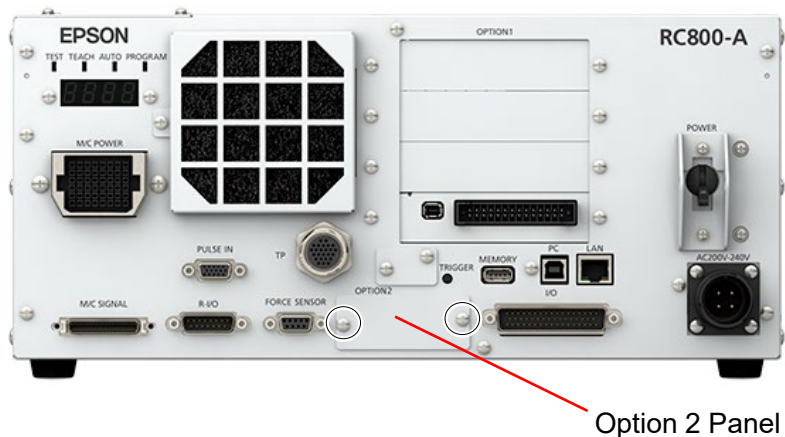
NOTE The removed rubber feet are not necessary
when using this option.
The rubber feet may be needed when the
installation type is changed. Please keep the
rubber feet for future use.

- (13) Mount the Controller to the wall.
(Mounting screw x 8, M5x8 mm or longer)
Tightening torque 80 to 110 N·cm

- (14) Make sure that the LED and 7-Segment LED light up.

4.1.3 Fieldbus I/O module

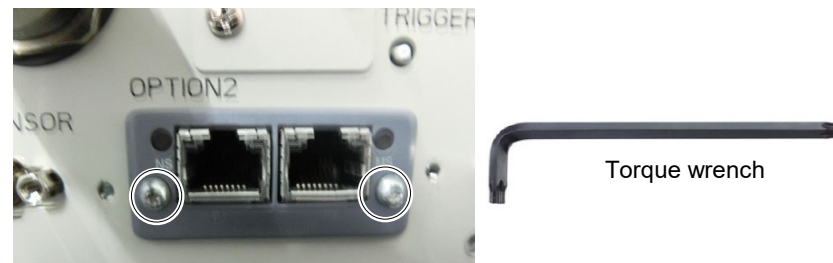
- (1) Turn OFF the Controller.
- (2) Disconnect the power plug.
- (3) Remove the two screws of the Option 2 Panel.



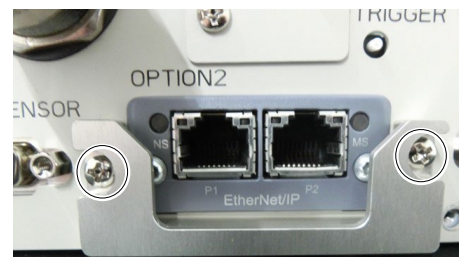
- (4) Plug the fieldbus I/O module into option 2 panel.



- (5) Tighten the two screws on the fieldbus I/O module using the included torque wrench.



- (6) Attach the fieldbus I/O module plate and tighten the two screws.



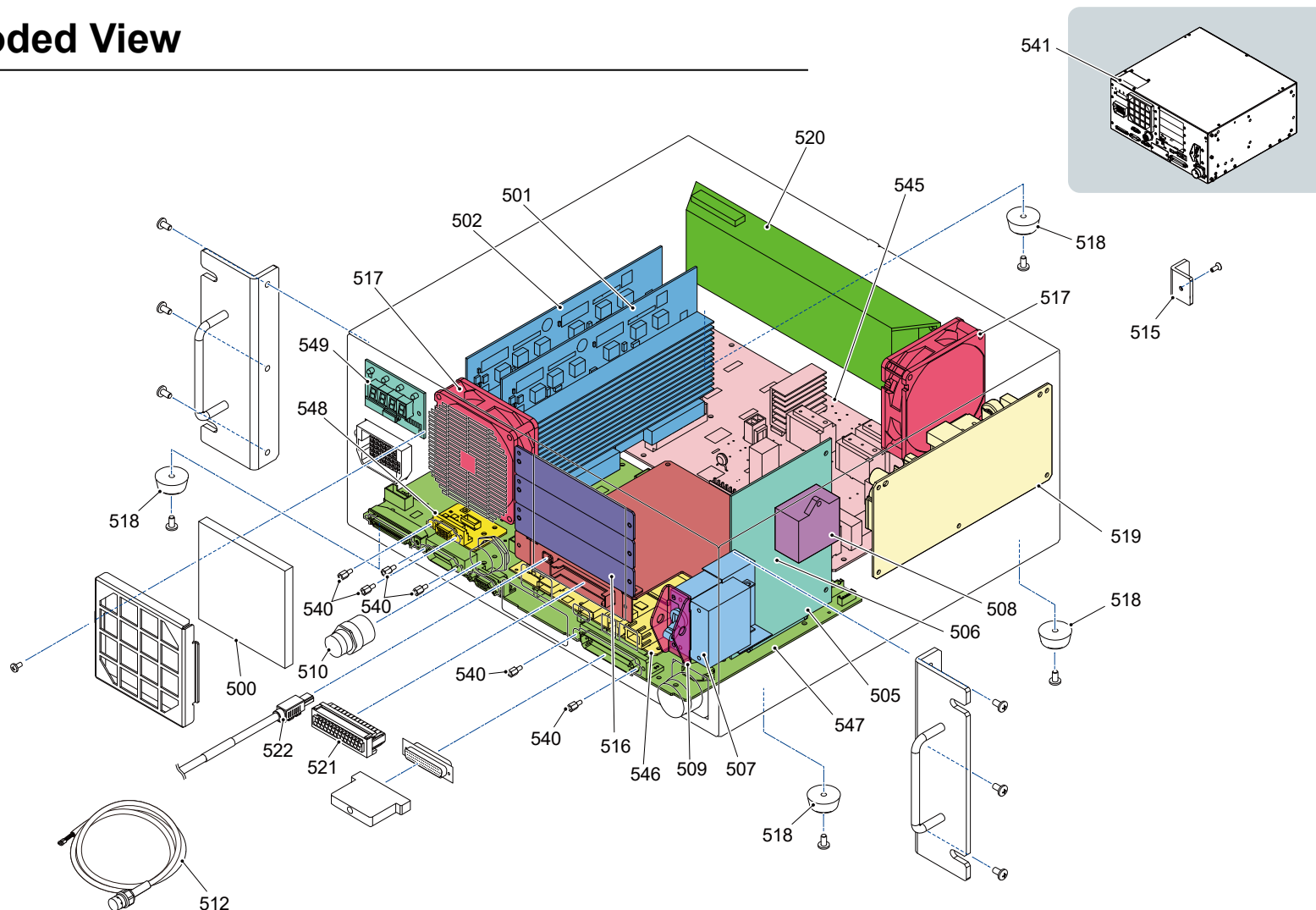
- (7) After connecting the power plug, turn ON the Controller and check it works normally without vibration and abnormal sound.
- (8) Install Controller Options. For further instructions, see section 24 (Installing Controller Options) of the EPSON RC+ User's Guide.

CHAPTER

5

Appendix

5.1 Exploded View


NOTE

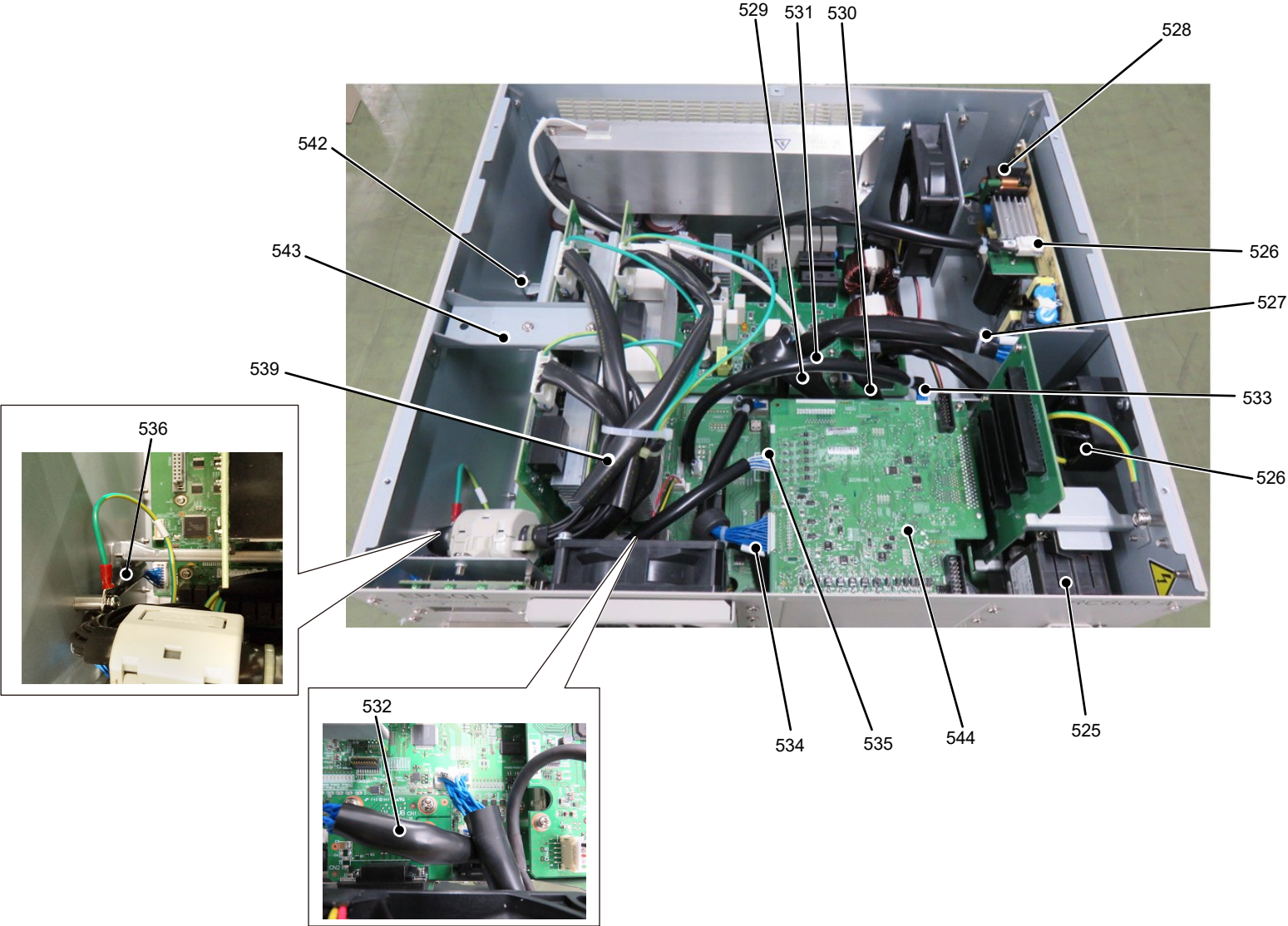
Scara robot do not have MDB3(503).
The G1-C model does not have a Front fan, Rear fan, and Cement Resistor Assembly..

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NOTE

For details on the parts code, refer to [5.2 Maintenance Parts List](#).



5.2. Maintenance Parts List

Ref. No.	Parts Name	Parts Code	Note
500	Fan Filter	1596688	-
501	Motor Driver	*	Motor Driver uses different parts depending on manipulator models. Refer to the next page for Motor Driver selection.
502	Motor Driver		
505	MAIN-Option Board	2232106	-
506	SD CARD	2234983	-
507	Circuit Protector	2230128	-
508	Surge Protector	2229632	-
509	LOCKOUT	1920862	-
510	TP Bypass Plug	2168343	-
512	Harness	2217687	ACPOWER-ACCN
515	Option Panel Bracket Set	1937708	-
516	Option Slot Cover	1596684	-
517	Fan	2229629	DC (PROPELLER TYPE) FAN
518	RUBBER FOOTS	1585254	-
519	Switching Power Supply	2222943	AC/DC 24V
520	Cement Resistor	2215752	-
521	Connector	2222094	-

Motor Driver uses different parts depending on manipulator models.

Manipulator Model	Ref. No.	Parts Name	Parts Code	Note
GX4-C	501	Motor Driver	2194709	For J1/J2, 15A/15A-2
	502		2195537	For J3/J4, 10A/10A
	503	N/A		
GX8-C GX10-C GX20-C	501	Motor Driver	2191086	For J1/J2, 30A/30A
	502		2194709	For J3/J4, 15A/15A-2
	503	N/A		

Ref. No.	Parts Name	Parts Code	Note
522	Connector	2225861	E-STOP BYPASS PLUG
524	Harness	2216102	ACCN-CP
525	Harness	2228470	DPU-CP
526	Harness	2228471	DPU-PSU_A
527	Harness	2228472	DPU-PSU_B
528	Harness	2228473	DPU-PSU_C
529	Harness	2228474	MAIN-DPU_A
530	Harness	2229389	MAIN-DPU_B
531	Harness	2231394	MAIN-DPU_C
532	Harness	2228478	MAIN-SUB
533	Harness	2228475	MAIN—SAFE_A
534	Harness	2228476	MAIN—SAFE_B
535	Harness	2228477	MAIN—SAFE_C
536	Harness	2216095	MAIN-MAINLED
537	Harness	2216094	MAIN-TP
539	Harness	2234250	MDB-MCPOW(SCARA)
540	Stud	2212353	Hexagonal Stud

Ref. No.	Parts Name	Parts Code	Note
541	RC800-A	2231683	For GX4-C Series
		2231684	For GX8-C、GX10-C、GX20-C Series
542	MDB_Plate_B	1596676	-
543	MDB_Plate_C	1596677	-
544	Safety Board	2231930	Ver.00
545	DPU	2232103	Ver.00 For GX4-C, GX8-C, GX10-C, GX20-C Series
546	MAIN-AM Board	2233946	-
547	MAIN-SO Board	2233945	For GX4-C, GX8-C, GX10-C, GX20-C Series
548	SUB Board	2232104	-
549	LED/7segment Board	2218084	-