

4.3.7.7 Replacing the Radar interface circuit: RIF CQD-2273

[Required Tools]

The tools shown in the following table are required for replacement work.

Table Required Tools

No.	Name	Size	Appearance
1	Flat head screwdriver	2 mm, 4 mm*1, 6 mm	
2	Phillips screwdriver	Size #2	
3	Diagonal pliers	—	
4	Cable-tie *2	—	

*1 Use for TB840 on the RIF if NKE-2254-6HS or NKE-2103-6/-6H type scanner unit has been installed.

*2 A number of cable-ties may be required.



Before conducting replacement work, turn OFF the circuit breaker for the power supply of the display unit.



Before replacement work, be sure that all the LEDs on the front of the PSU NBD-913 are unlit. Charged electricity may still remain in the internal capacitor.



Do not lose the screws as they will be needed again.



To prevent damage to the Unit during the replacement work, cut off cable-ties that fasten the cable of the unit beforehand.

Step 1 Remove the front cover of the display unit mount kit and the lid of the JB.

Remove the front cover of the display unit mount kit and the lid of the JB. For more information about the removal procedure, refer to "Replacing the Fuses of the Serial LAN Interface Circuit: SLC CMH-2370."

Step 2 Remove the wires of the RIF.

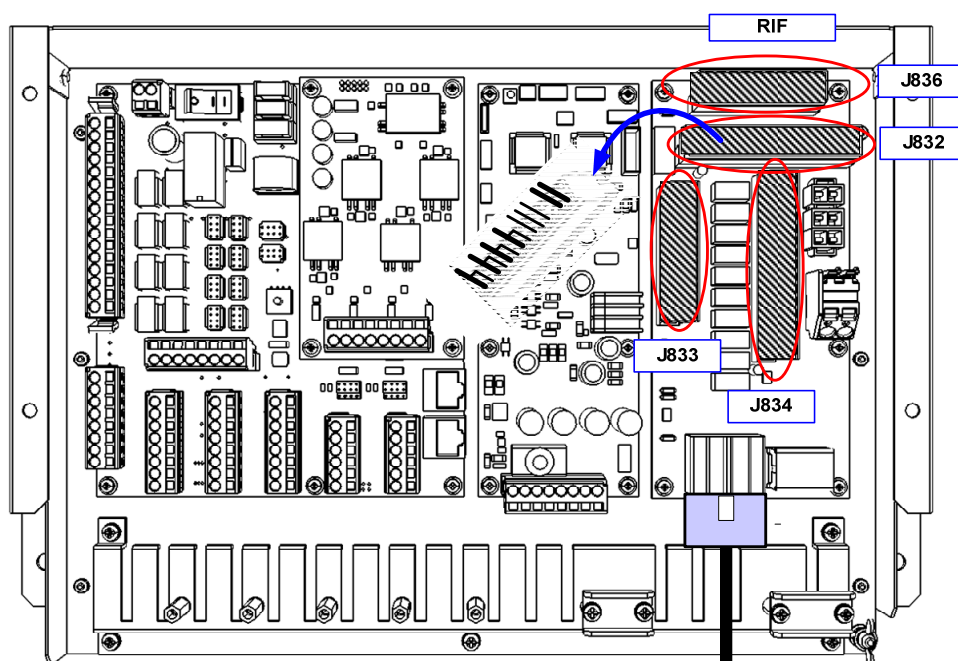
Remove the wires of the RIF according to the following order.

- 2-1 • Tow-piece terminal blocks (J832, J833, J834, J836)
- 2-2 • Terminal block (TB838 ANT side or TB840)
- 2-3 • Interconnections (J831, J837 or J839, TB838 PSU side)
- 2-4 • GIF cable (J835: only if a GIF has been installed)

2-1 Remove the two-piece terminal blocks.

Remove the two-piece terminal blocks together with wires if wires are connected to them. They can be removed by pulling them out.

Tow-piece terminal blocks: J832, J833, J834, J836



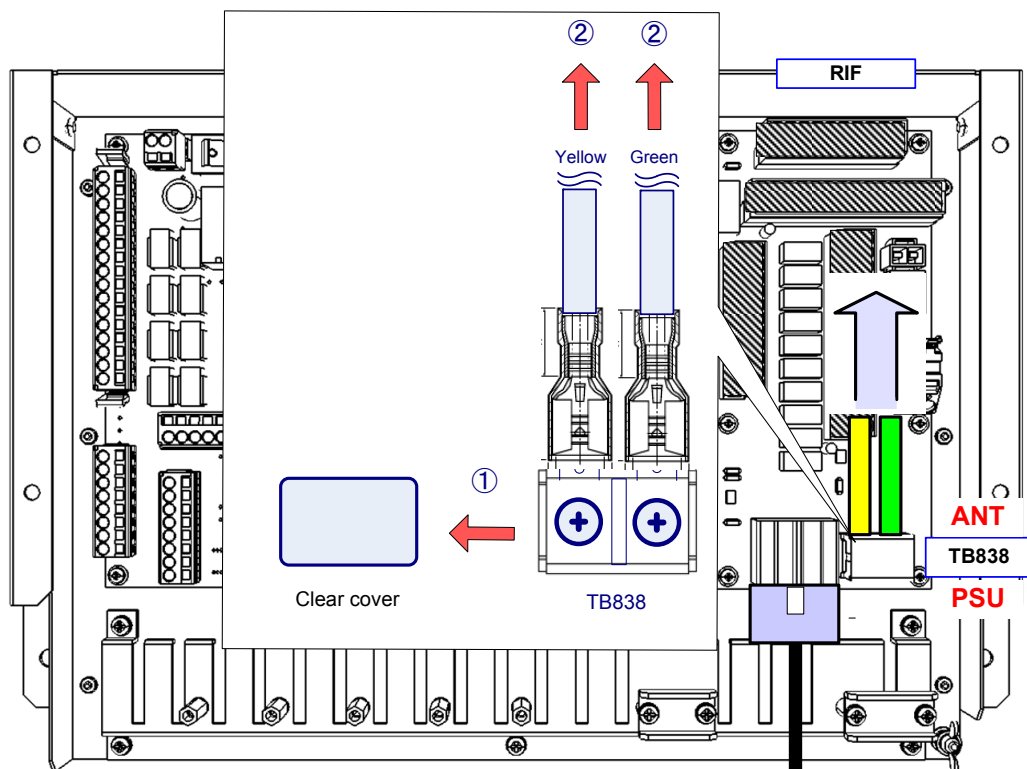
2-2 Remove the wiring from the terminal blocks.

There are two types of terminal board wiring depending on the scanner unit installed.

If the 2695110056 cable has been used, disconnect the yellow and green cables being connected to the TB838 ANT side. The y can be removed by pulling them out.

Scanner units and transmitter-receiver units which installed with 2695110056 cable are:

NKE-1130	(JMR-9230-S, JMR-7230-S)
NKE-1125	(JMR-9225-6X/9X, JMR-7225-6X/9X)
NTG-3230	(JMR-9230-S3, JMR-7230-S3)
NTG-3225	(JMR-9225-7X3/9X3, JMR-7225-7X3/9X3)
NKE-1632	(JMR-9272-S, JMR-7272-S)
NKE-2632/-H	(JMR-9282-S/SH, JMR-7282-S/SH)

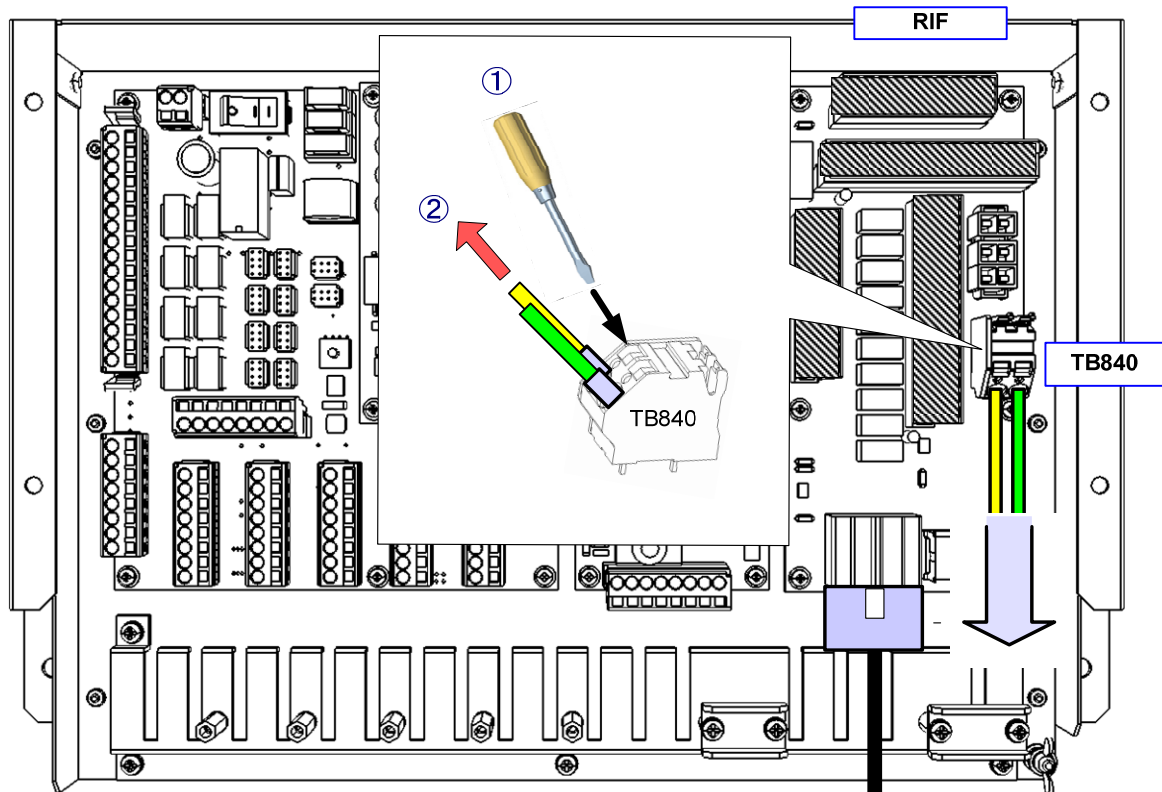


If the CFQ-6912 cable has been used, disconnect the cables being connected to the TB840. They can be released by inserting a 4 mm width flat head screwdriver into the driver slots above the cable slots.

Scanner units which installed with CFQ-6912 cable are:

NKE-2254-6HS (JMR-9225-6XH, JMR-7225-6XH)

NKE-2103-6/6HS (JMR-9210-6X/6XH, JMR-7210-6X/6XH)



2-3 Remove the internal wiring

There are two types of internal wiring depending on the scanner unit installed.

If the W851 or W852 cable has been installed, remove the following terminal blocks, connector and screw.

TB838: Loosen the screws (M4) and remove the crimp terminal with "U" stamp seal of W851/W852.

TB838: Loosen the screws (M4) and remove the crimp terminal with "V" stamp seal of W851/W852.

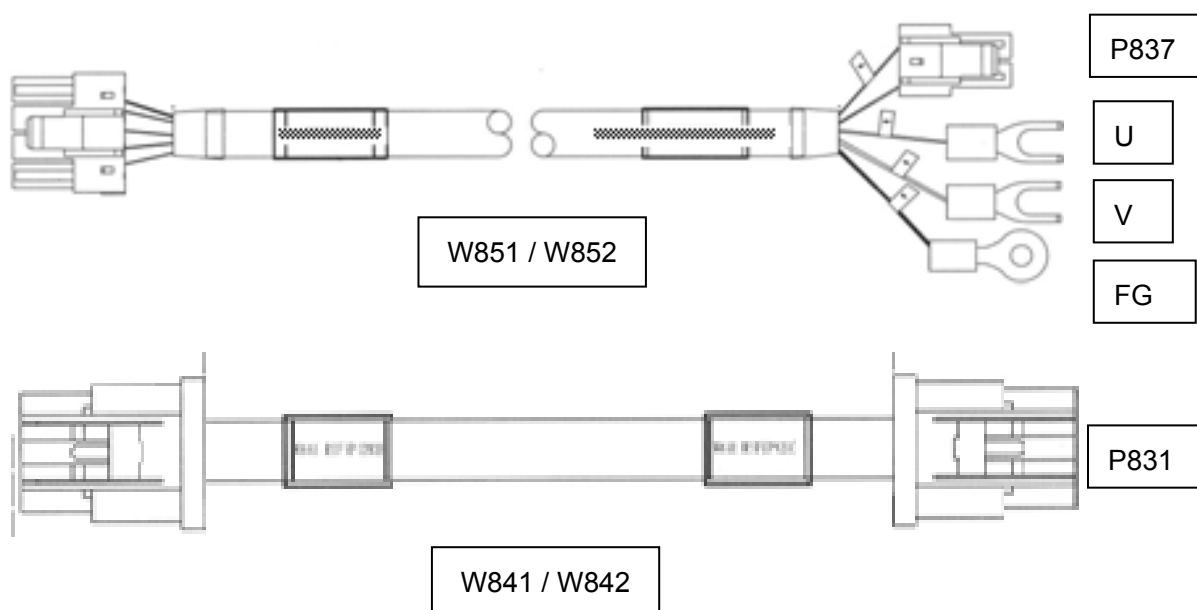
J837: Using a flat head screwdriver, hold down the tab of the connector with a "P837" stamp seal of W851/W852 and pull it out.

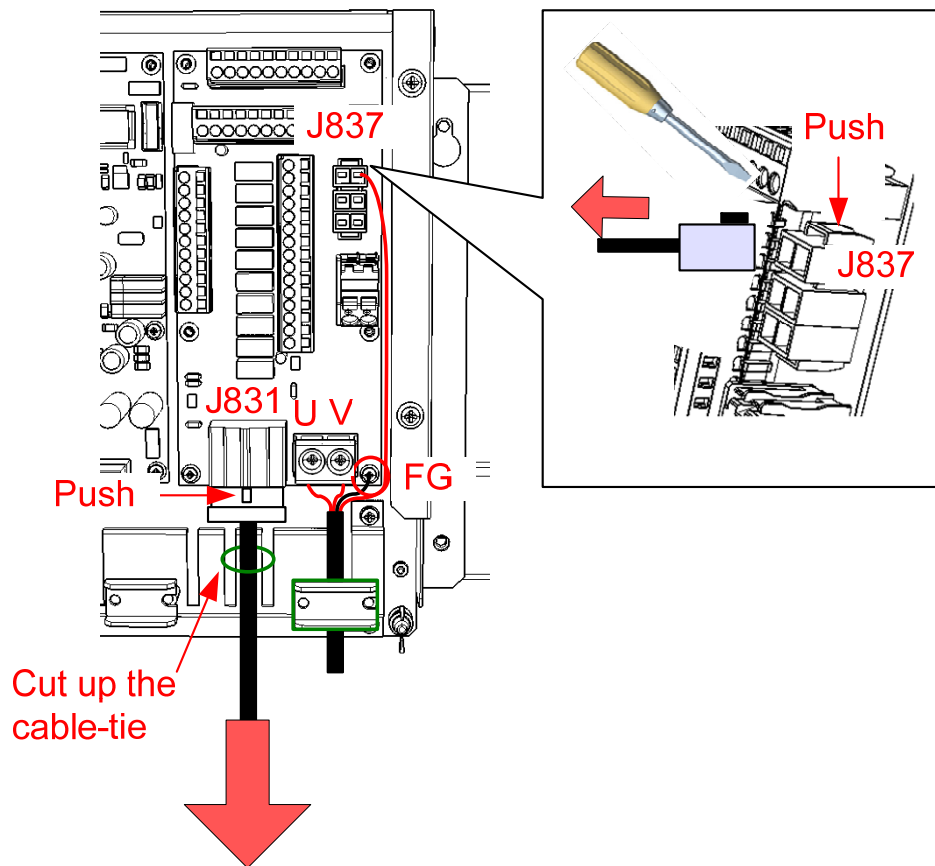
Screw at the lower right of the RIF board: Remove the screw (M3) and then disconnect the crimp terminal with "FG" stamp seal of W851/W852.

Next, disconnect the connection cable with the CCU, either the W841 or the W842, from the J831. The W841/W842 cable can be disconnected by cutting off the cable-tie that fastens the J841/J842 cable to the cable clamp of the JB first and pulling out the W841/W842 cable while pressing down the tab of the P831 connector next.

Scanner units and transmitter-receiver units using the W851/W852 cable:

NKE-1130	(JMR-9230-S, JMR-7230-S)
NKE-1125	(JMR-9225-6X/9X, JMR-7225-6X/9X)
NTG-3230	(JMR-9230-S3, JMR-7230-S3)
NTG-3225	(JMR-9225-7X3/9X3, JMR-7225-7X3/9X3)
NKE-1632	(JMR-9272-S, JMR-7272-S)
NKE-2632/-H	(JMR-9282-S/SH, JMR-7282-S/SH)





CAUTION



Before conducting Unit replacement work, always be sure that every cable-tie that fastens the cable has been removed.

Replacement work without the above may lead Unit/cable breakage.

If the W853 or W854 cable has been installed, remove the following connector and screw.

J839: Using a flat head screwdriver, hold down the tab of the connector with a “P839” stamp seal of W853/W854 and pull it out.

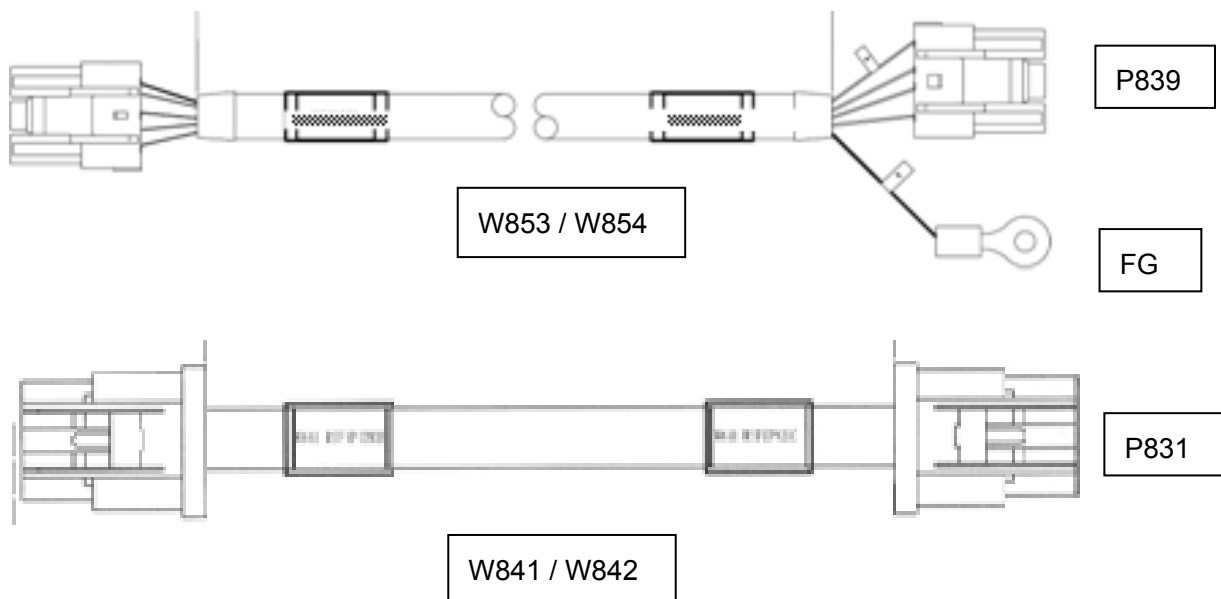
Screw at the lower right of the RIF board: Remove the screw (M3) and then disconnect the crimp terminal with “FG” stamp seal of W853/W854.

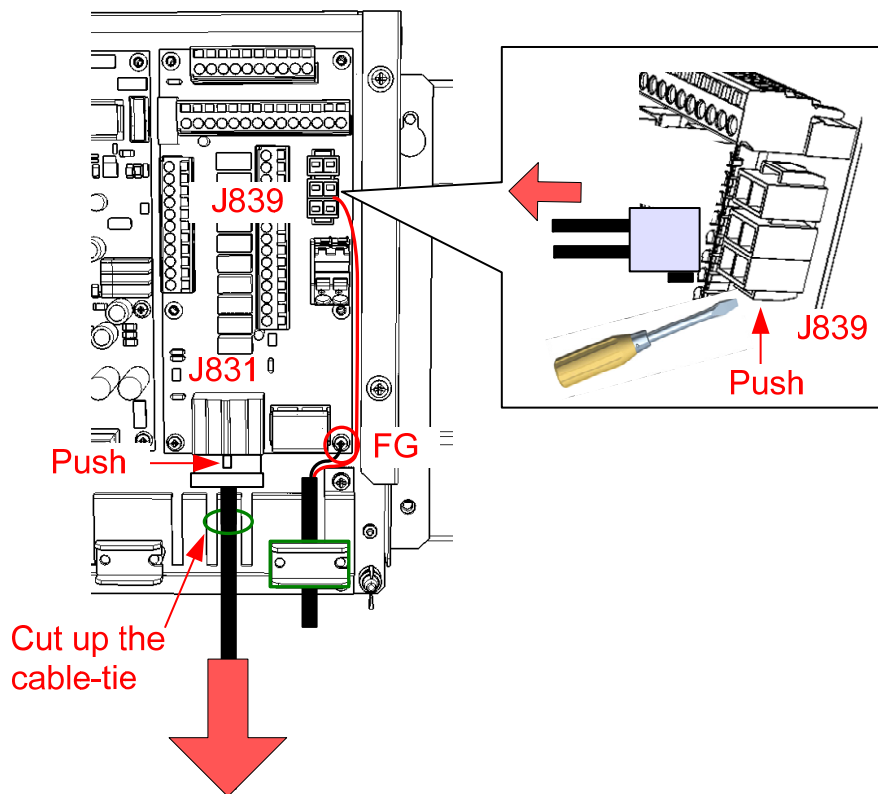
Next, disconnect the connection cable with the CCU, either the W841 or the W842, from the J831 connector. The W841/W842 cable can be disconnected by cutting off the cable-tie that fastens the W841/W842 cable to the cable clamp of the JB first and pulling out the W841/W842 cable while pressing down the tab of the P831 connector next.

Scanner units using the W853/W854 cable:

NKE-2254-6HS (JMR-9225-6XH, JMR-7225-6XH)

NKE-2103-6/6HS (JMR-9210-6X/6XH, JMR-7210-6X/6XH)





CAUTION

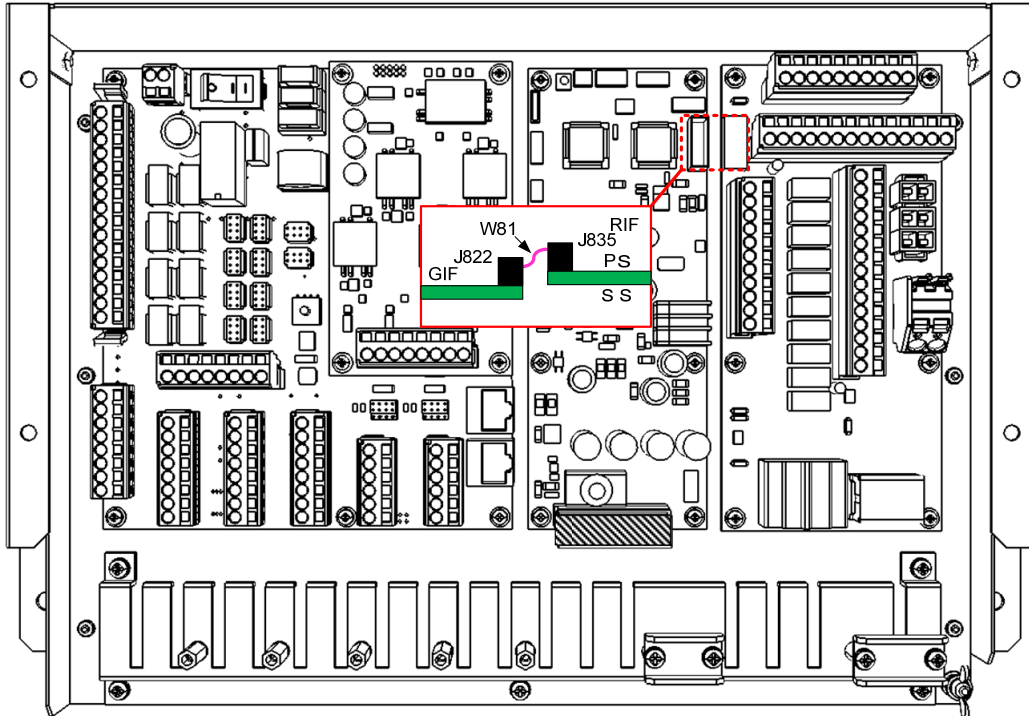


Before conducting Unit replacement work, always be sure that every cable-tie that fastens the cable has been removed.

Replacement work without the above may lead Unit/cable breakage.

2-4 Disconnect the GIF cable.

If a GIF is installed, turn OFF the S1 switch of the GIF and then remove the connection cable with the GIF (W81: J835). For more information about the S1 switch of the GIF, refer to "Replacing the Fuses of the Gyro Interface Circuit: GIF CMJ-554."



Step 3 **Change the RIF.**

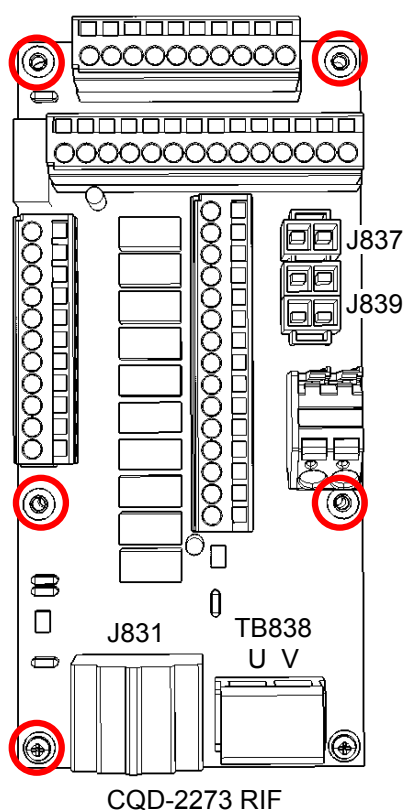
Remove the remaining screws (M3: 5 locations) that fasten the RIF and change the RIF. After replacing the RIF, assemble to the original condition by repeating the same procedure in the reverse order. Please make sure to tighten all the screws and connect all the cables back in place.



Securely install the clear cover of the TB838 to prevent it from dropping.



Be careful not to forget to fasten the J841/J842 connector to the cable clamp of the JB with a cable-tie



Step 4 **Check operation.**

After the replacement of the RIF is completed, turn ON the circuit breaker for the power supply of the display unit and check the operation as follows.

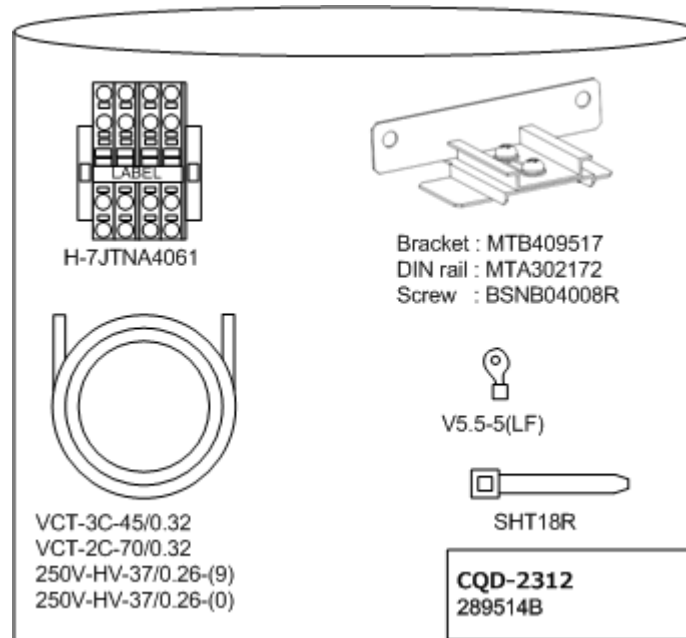
- (1) Check that a cable open error has not occurred.
- (2) Start [RADAR] on the Task menu, perform transmission, and check that normal radar images are displayed.

This completes RIF replacement.

4.3.8 Relay Terminal Block: CQD-2312

4.3.8.1 Packing List

Relay Terminal Block CQD-2312 is composed of the following.



Name	Code	Remark
Relay terminal block	H-7JTNA4061	-
DIN rail bracket assy.	Bracket : MTB409517 DIN rail : MTA302172 Screws : BSNB04008R	-
2-core cabtyre cable	VCT-2C-70/0.32	Length : 900mm Cross section : 5.5 mm2
3-core cabtyre cable	VCT-3C-45/0.32	Length : 1200mm Cross section : 3.5 mm2
White PVC coated wire	250V-HV-37/0.26-(9)	Length : 4000mm Cross section : 2.0 mm2
Black PVC coated wire	250V-HV-37/0.26-(0)	Length : 4000mm Cross section : 2.0 mm2
Insulated ring terminal	V5.5-5(LF)	-
Cable-tie	SHT18R	-

4.3.8.2 Wire processing

【Required Tools】

The tools shown in the following table are required for replacement work.

Table Required Tools

No	Name	Size	Appearance
1	Knife	—	
2	Ruler *1	—	
3	Crimping tool	For Insulated ring terminal (Yellow, 5.5sq)	

*1 Either a ruler or a tape measure is mandatory.



Be careful not to hurt yourself during wire processing.

The following table shows the list of cutting / stripping length. They shall be processed within tolerance of +/- 10%.

Table. List of cutting / stripping length for Relay terminal block CQD-2312

Destination			Name and Length	Relay terminal block		
For	Insulation strip length [mm]	Sheath strip length [mm]	Name	Sheath strip length [mm]	Insulation strip length [mm]	Relay terminal block
			Cutting Length [mm]			
PSU AC IN	12	150	VCT-2C 5.5sq	100	12	AC
			550			
PSU DC IN	12	-	White PVC Black PVC	-	12	DC
			700			
UPS AC IN	8	100	VCT-3C 3.5sq	200	12	AC
			1000			
UPS DC OUT	8	-	White PVC Black PVC	-	12	DC
			900			
26" Sensor LAN DC IN	8	-	White PVC Black PVC	-	12	DC
			1200			
19" Sensor LAN DC IN	8	-	White PVC Black PVC	-	12	DC
			500			
SLC #1 DC IN	8	-	White PVC Black PVC	-	12	DC
			700			

* Tolerance: +/- 10%

Wiring between PSU AC IN and CQD-2312 AC

Cut and strip the 2-core cabtyre cable off as follows.

Table. List of cutting / stripping length of the cable between PSU AC IN and CQD-2312 AC

Destination			Name and Length	Relay terminal block		
For	Insulation strip length [mm]	Sheath strip length [mm]	Name	Sheath strip length [mm]	Insulation strip length [mm]	Relay terminal block
			Cutting length [mm]			
PSU AC IN	12	150	VCT-2C 5.5sq	100	12	AC
			550			

* Tolerance: +/- 10%



Wiring between UPS AC IN and CQD-2312 AC

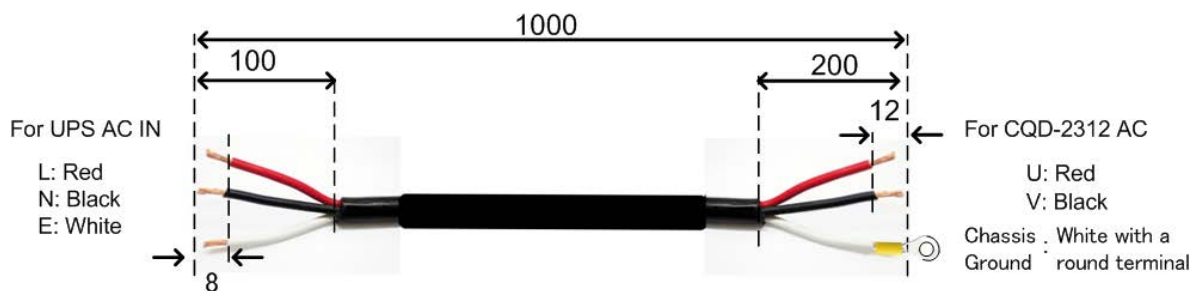
Cut and strip the 2-core cabtyre cable off as follows.

Crimp the ring terminal to the conductor with white insulation of CQD-2312 side.

Table. List of cutting / stripping length of wires between UPS AC IN and CQD-2312 AC

Destination			Name and Length	Relay terminal block		
For	Insulation strip length [mm]	Sheath strip length [mm]	Name	Sheath strip length [mm]	Insulation strip length [mm]	Relay terminal block
			Cutting Length [mm]			
UPS AC IN	8	100	VCT-3C 3.5sq	200	12	AC
			1000			

* Tolerance: +/- 10%



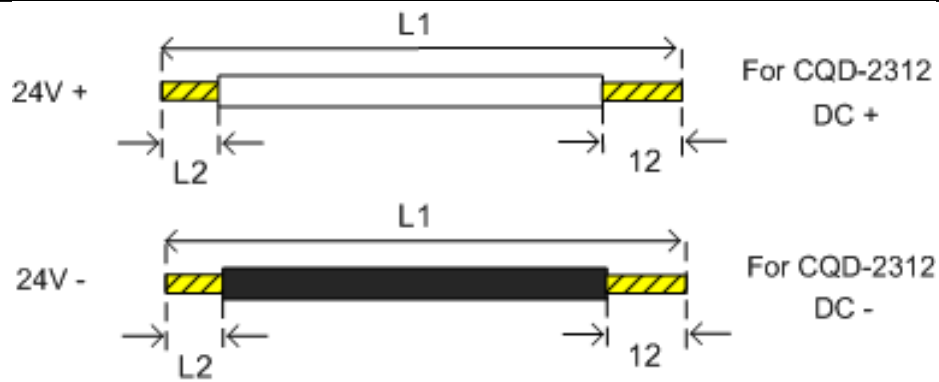
Wiring between each unit and CQD-2312 DC

Cut and strip off each white / black PVC coated wire for DC power. For cutting length L1 and Insulation strip length of each Unit L2, refer the table below.

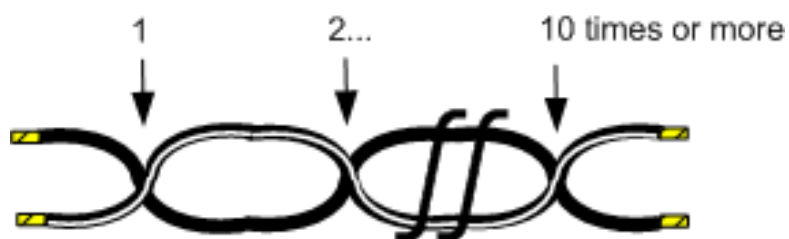
Table. List of cutting / stripping length of wires between Units and CQD-2312 DC

Destination		Name and Length		Relay terminal block	
For	Insulation strip length L2 [mm]	Name	Insulation strip length [mm]	Relay terminal block	
		Cutting length L1 [mm]			
PSU DC IN	12	White PVC	12	DC	
		Black PVC			
		700			
UPS DC OUT	8	White PVC	12	DC	
		Black PVC			
		900			
26" Sensor LAN DC IN	8	White PVC	12	DC	
		Black PVC			
		1200			
19" Sensor LAN DC IN	8	White PVC	12	DC	
		Black PVC			
		500			
SLC #1 DC IN	8	White PVC	12	DC	
		Black PVC			
		700			

* Tolerance: +/- 10%



The each wire pair shall be twisted at least ten times for the sake of common mode noise reduction.



This completes wire processing.

4.3.8.3 Replacing the Relay Terminal Block: CQD-2312

 WARNING	
	AC and DC power supplies have been connected to the Relay terminal block. Before replacement work, be sure to turn OFF the applicable power circuit breaker. Not following this instruction will cause electric shock and/or malfunction.
	When UPS has been connected to the Relay terminal block, be sure to set the "Bat-Select" rotary switch at "Service" on the UPS controller. Furthermore, be sure to eject the fuse of the UPS battery. Not following this instruction will cause electric shock and/or malfunction.

【Required Tools】

The tools shown in the following table are required for replacement work.

Table Required Tools

No	Name	Size	Appearance
1	Flat head screwdriver	3mm, 4mm, 6mm	
2	Phillips screwdriver	Size #2	
3	Diagonal pliers	—	
4	Cable-tie *1	—	

*1 A number of cable-ties may be required.



Before conducting replacement work, turn OFF the circuit breaker for the power supply of the display unit.



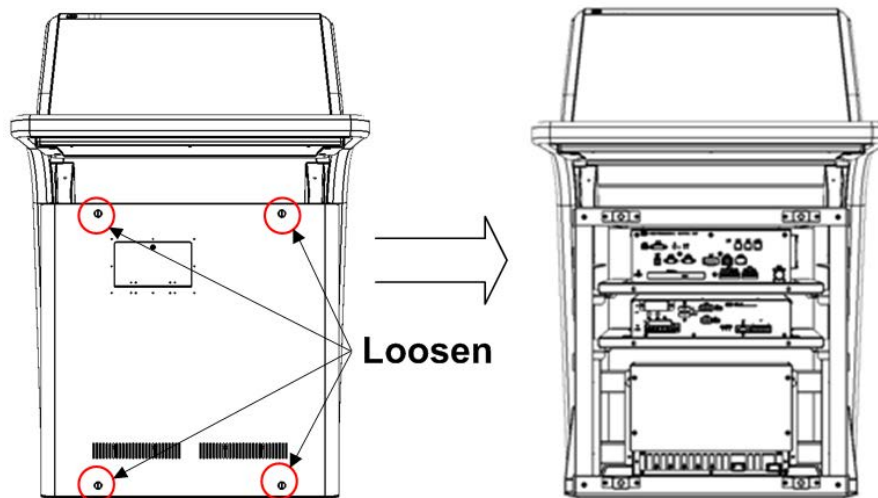
Do not lose the screws as they will be needed again.



To prevent damage to the Unit during the replacement work, cut off cable-ties that fasten the cable of the unit beforehand.

Step 1 Remove the front cover of the display unit mount kit.

Loosen the screws that fasten the front cover of the display unit mount kit with a flat head screwdriver and then take out the front cover.

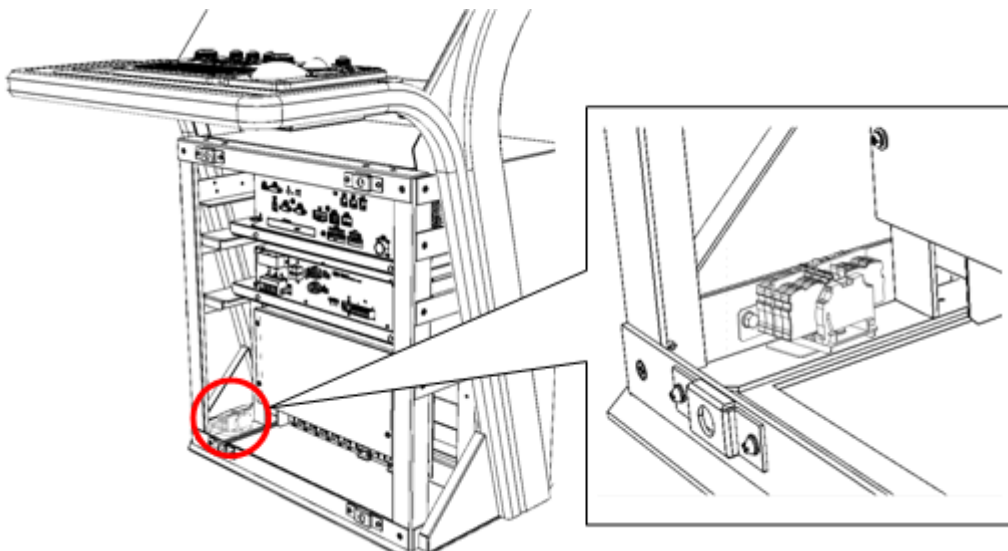


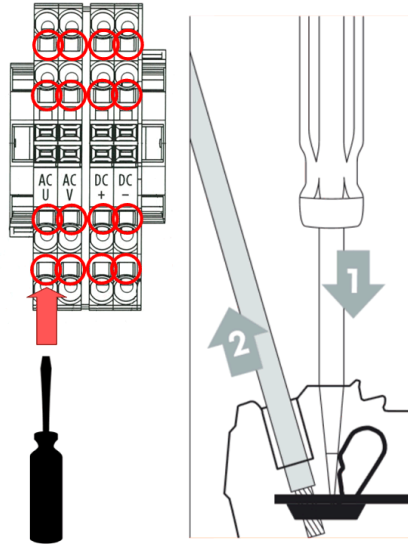
Step 2 Stop the UPS. (If it has been installed)

If the UPS has been installed, disable its operation. To stop the UPS operation, first, remove the Junction box and then set the “Bat-select” rotary-switch to “Service”. Last, eject the blade fuse from the battery. For further information, see “4.3.10 Replacing the UPS”.

Step 3 Disconnect all cables / wires from CQD-2312

Disconnect all cables / wires from Relay terminal block: CQD-2312. They can be released by inserting a 3 mm width flat head screwdriver into the driver slots above the cable slots.



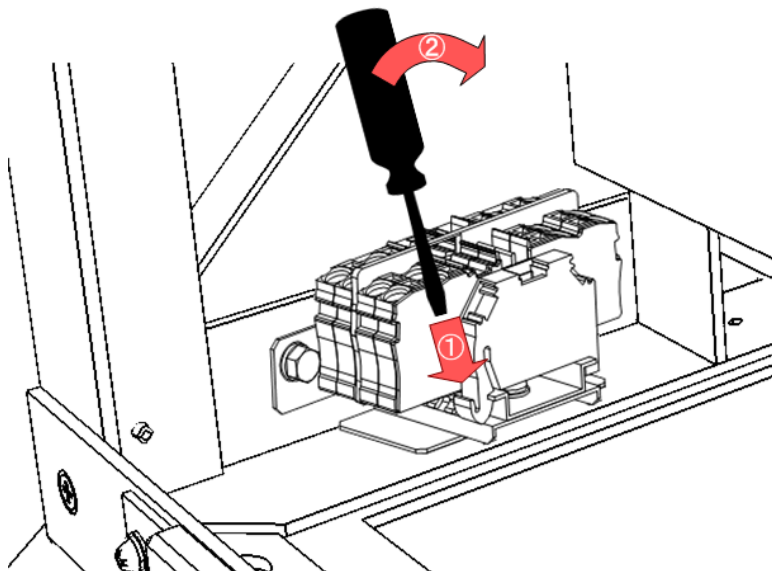


When UPS has been connected to the Relay terminal block, be sure to set the "Bat-Select" rotary switch at "Service" on the UPS controller. Furthermore, be sure to eject the fuse of the UPS battery.

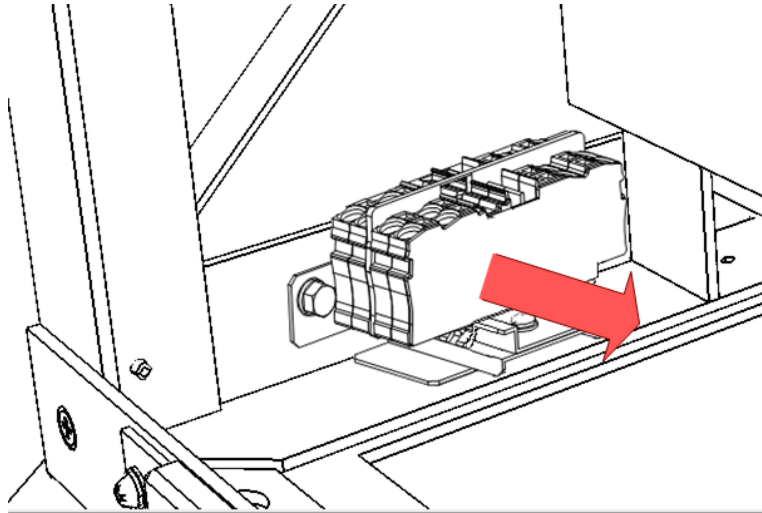
Not following this instruction will cause electric shock and/or malfunction.

Step 4 Dismount the terminal block from DIN rail bracket

At first, dismount the right-side endplate. It can be removed from the DIN rail using the principle of leverage, by inserting a 3 mm width flat head screwdriver into its groove.



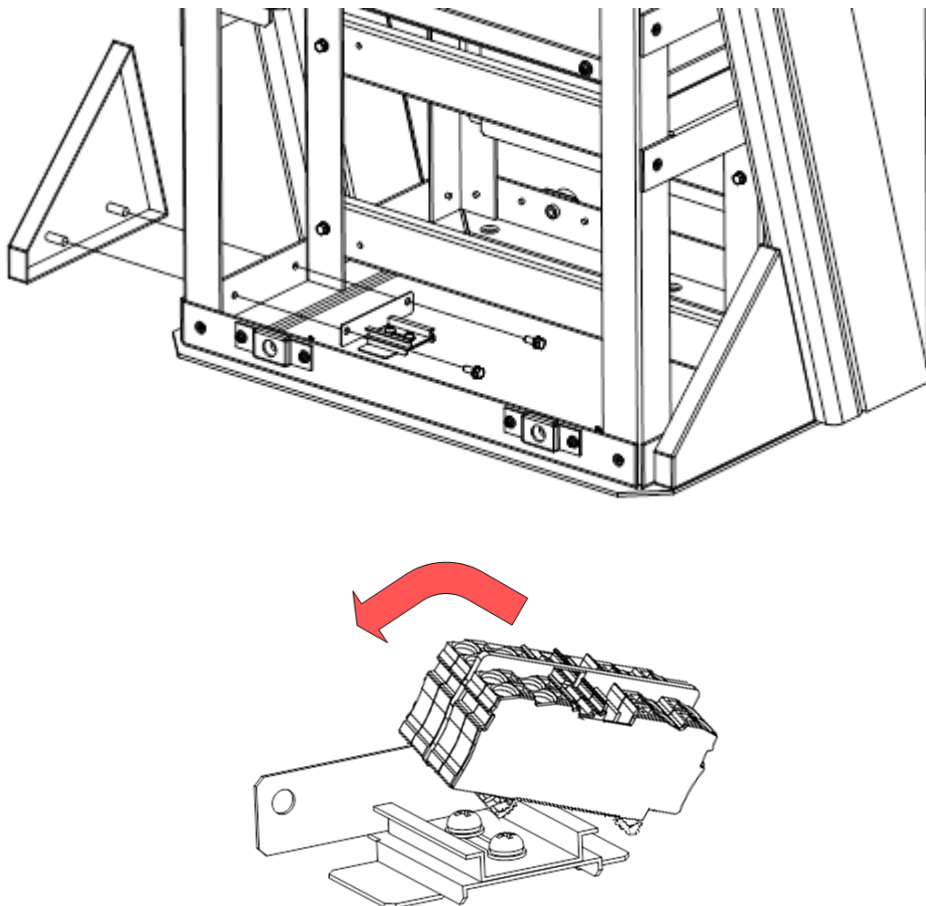
Next, dismount the terminal block. It can be removed by sliding itself along the DIN rail.



Dismount the left-side endplate by using a flat head screwdriver as well

Step 5 Remove the DIN rail bracket and Change to New CQD-2312

Remove the screws that fasten the DIN rail bracket (M4: 2 locations) and then change it to New CQD-2312.



After replacing the relay terminal block, assemble to the original condition by repeating the same procedure in the reverse order. Please make sure to tighten all the screws and connect all the cables back in place.



Cables / wires must be connected to the same slot as before replacement.



Be aware not to make reverse connection of DC+ and DC-.



When UPS has been installed, make sure that the rotary switch of UPS is being set at the same position as before replacement. Do not forget inserting the fuse into UPS battery.

Step 6 Check operation.

After the replacement of the Relay terminal block is completed, turn ON the circuit breaker for the main power supply and for the power supply of the display unit. Check the operation as follows.

- (1) Turn ON the power to the display unit, make sure that screen display is normal, and there are no abnormalities in operation and processing.
- (2) If a scanner unit is being connected, start [RADAR] on the Task menu, perform transmission, and check that normal radar images are displayed.

This completes Relay terminal block replacement.

4.3.9 Sensor LAN Switch Unit: NQA-2443

4.3.9.1 Replacing the Sensor LAN Switch Unit: NQA-2443 in 26 inch display unit mount kit

WARNING

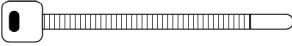


A DC power supply has fed to sensor LAN switch unit. Before replacement work, be sure to turn OFF the DC power circuit breaker.
Not following this instruction will cause electric shock and/or malfunction.

[Required Tools]

The tools shown in the following table are required for replacement work.

Table Required Tools

No.	Name	Size	Appearance
1	Flat head screwdriver	2 mm, 3mm, 4 mm, 6 mm	
2	Phillips screwdriver	Size #2	
3	Phillips stubby screwdriver	Size #2	
4	Diagonal pliers	—	
5	Cable-tie *1	—	

*1 A number of cable-ties may be required.



Before conducting replacement work, turn OFF the circuit breaker for the power supply of the display unit.



Do not lose the screws as they will be needed again.



To prevent damage to the Unit during the replacement work, cut off cable-ties that fasten the cable of the unit beforehand.

Step 1 Remove the front cover of the display unit mount kit and the lid of the JB.

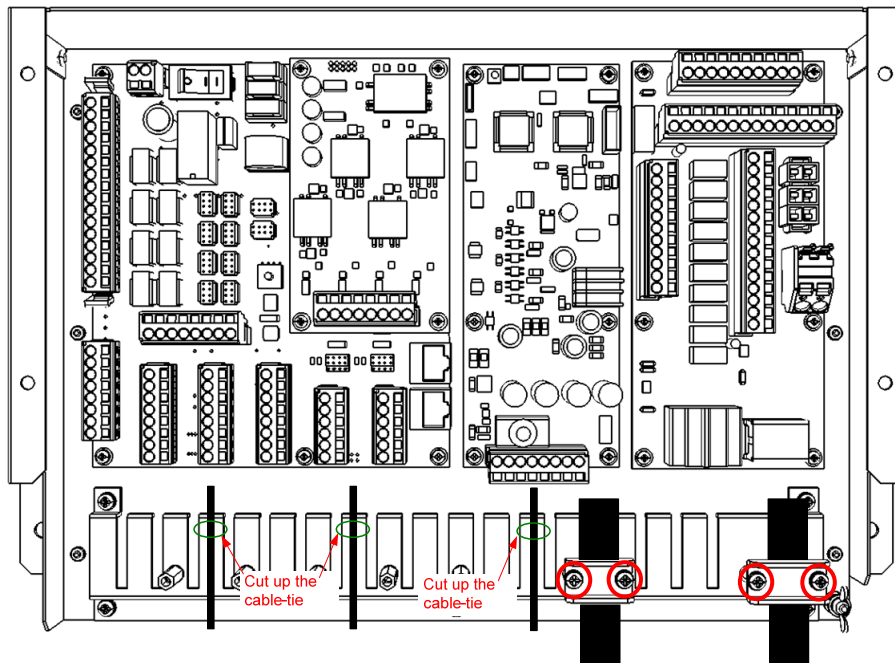
Remove the front cover of the display unit mount kit and the lid of the JB. For more information about the removal procedure, refer to "Replacing the Fuses of the Serial LAN Interface Circuit: SLC CMH-2370."

If an SLC is installed, turn OFF the power S1 switch of the SLC. For more information about the S1 switch of the SLC, refer to "Replacing the Fuses of the Serial LAN Interface Circuit: SLC CMH-2370."

If a GIF has been installed, turn OFF the power S1 switch of the GIF. For more information about the S1 switch of the GIF, refer to "Replacing the Fuses of the Gyro Interface Circuit: GIF CMJ-554."

Step 2 Remove all the cable-ties and cable retainers.

Disconnect all the cables that are fastened to the cable clamps of the JB. To disconnect the bottom right cables in the JB that are fastened with cable retainers, remove the screws (M4: 2 locations each) of the cable retainers. To disconnect the cables that are fastened with cable-ties, cut off all the cable-ties.



CAUTION

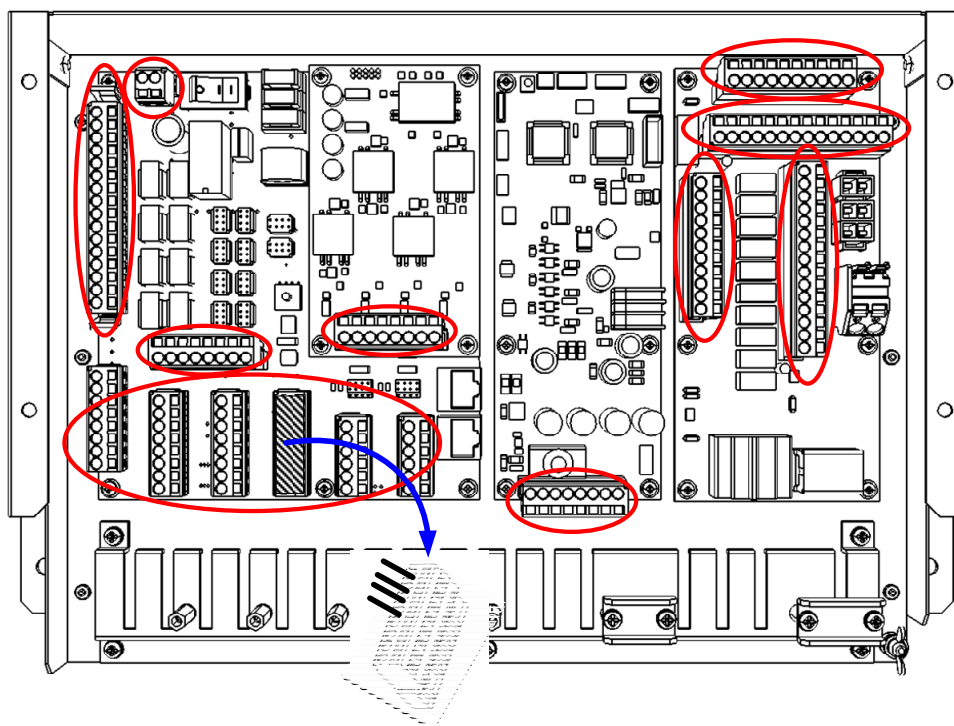


Before conducting Unit replacement work, always be sure that every cable-tie that fastens the cable has been removed.

Replacement work without the above may lead Unit/cable breakage.

Step 3 Remove the two-piece terminal blocks on the internal circuits of the JB.

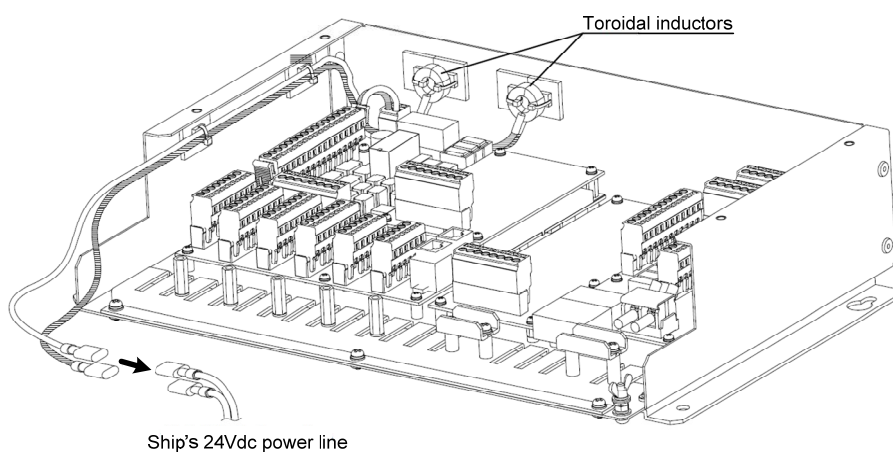
Among the two-piece terminal blocks on the internal circuits (SLC, AOC, GIF & RIF) in the JB, remove the terminal blocks together with wires if wires are being connected. The terminal blocks can be removed by pulling them out.



Step 4 Remove the internal wiring.

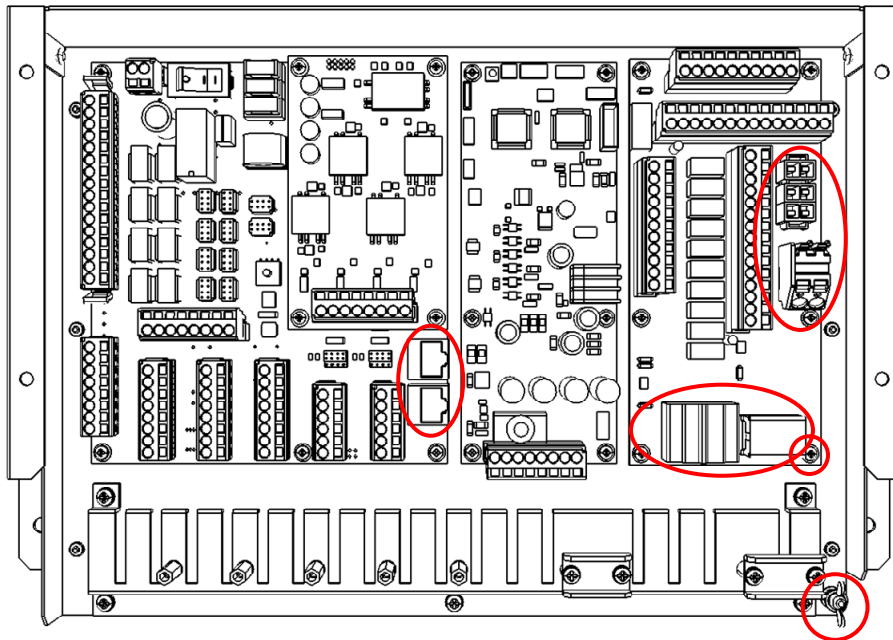
If an SLC has been installed, disconnect the Ethernet cables from the J8111 and J8112 connectors.

Furthermore, if the toroidal inductors have been installed, disconnect their crimp terminal with ship's 24Vdc power line.



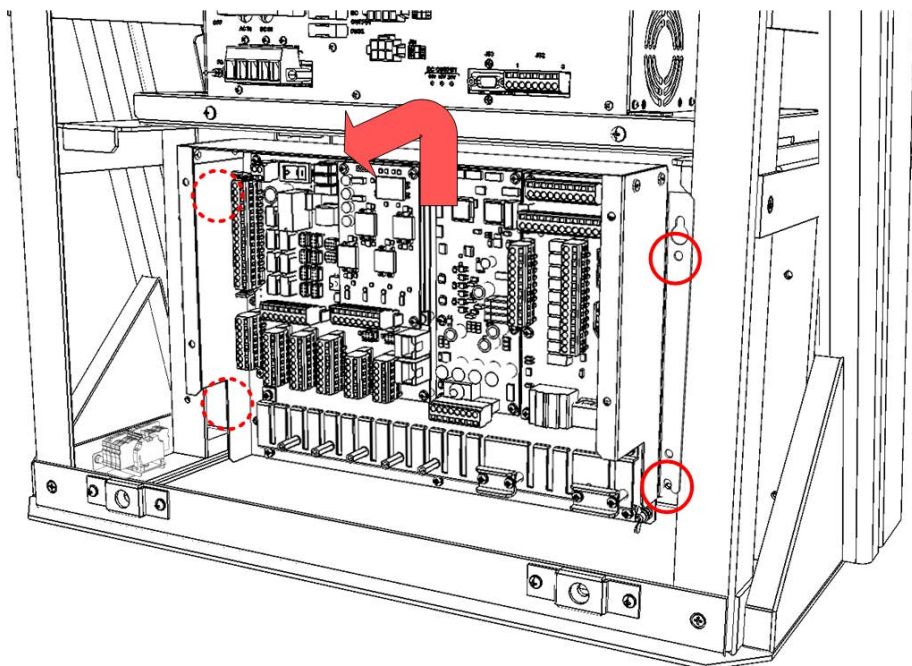
If an RIF has been installed, refer to the "4.3.7.7 Replacing the Radar interface circuit: RIF CQD-2273" and disconnect all the cables for interconnection that are being connected to the RIF.

Remove the wing screw at the right bottom corner of the JB and disconnect the ground cable.



Step 5 Remove the JB.

Among the screws (M5: 4 locations) that fasten the JB to the display unit mount kit, loosen the upper two screws, remove the lower two screws, and then take out the JB.



Step 6 Remove the Relay terminal block: CQD-2312

Disconnect all cables / wires from Relay terminal block by using a 3 mm width flat head screwdriver. Then, dismount the Relay terminal block from the DIN rail. For the details of dismounting, refer to the "Replacing the Relay Terminal Block: CQD-2312".



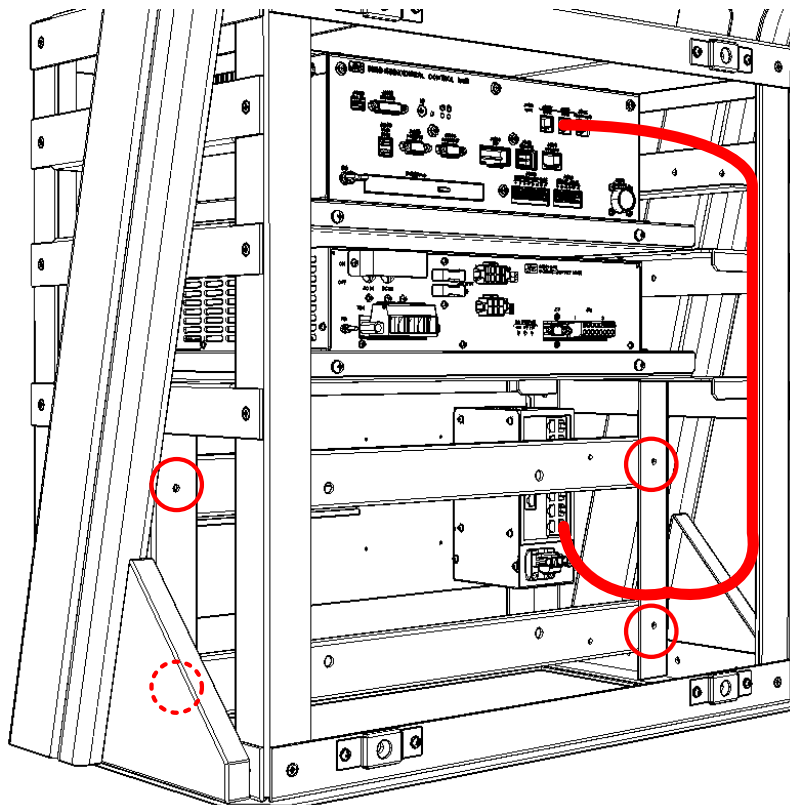
AC and DC power supplies have been connected to the Relay terminal block. Before replacement work, be sure to turn OFF the applicable power circuit breaker. Not following this instruction will cause electric shock and/or malfunction.



When UPS has been connected to the Relay terminal block, be sure to set the "Bat-Select" rotary switch at "Service" on the UPS controller. Furthermore, be sure to eject the fuse of the UPS battery. Not following this instruction will cause electric shock and/or malfunction.

Step 7 Remove the two metal planks.

Using a Phillips stubby screwdriver, remove the screws (M5: total of 4 locations) that fasten the two top and bottom metal planks and take out both of them.



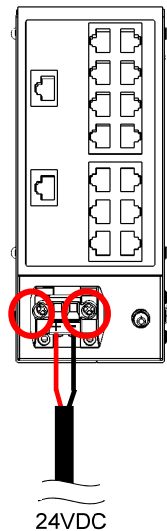
Step 8 Disconnect the sensor LAN switch unit cables.

Disconnect all the LAN cables being connected to the sensor LAN switch unit.



Use the same LAN cable connection ports after replacement.

Remove the screw (M4: 2 locations) from the power supply port terminal block of the sensor LAN switch unit and take out the power cable together with the terminal block.



If a UPS is installed, remove the fuse of the UPS battery first, and then disconnect the power connector of the UPS. The power connector of the UPS can be removed using the principle of leverage, by inserting a 2 mm width flat head screwdriver into the groove at the root of the terminal block in the upper part of the input filter ME-NAX-NEF/QUINT20. For more information, refer to "4.3.10.1 Replacing the UPS Input Filter: ME-NAX-NEF/QUINT20."

WARNING



An AC power supply has been fed to UPS. Before replacement work, be sure to turn OFF the circuit breaker of the main power line.
Not following this instruction will cause electric shock and/or malfunction.

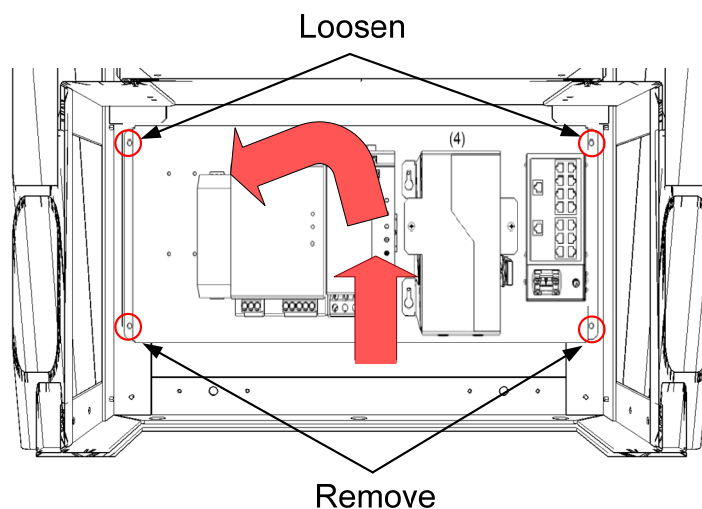
Step 9 Remove the rear panel.

Among the screws (M5: 4 locations) that fasten the rear panel, loosen the upper two screws, remove the lower two screws, and then take out the rear panel together with the sensor LAN switch unit.



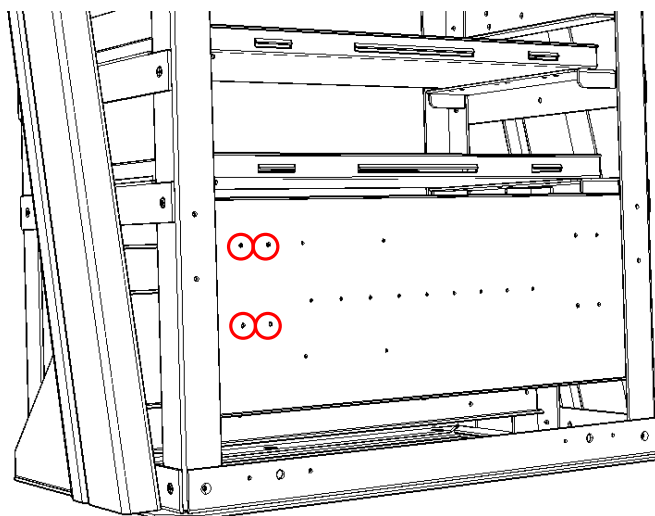
If a UPS is installed, the weight of the rear panel increases to 10 kg or more.

Be careful not to catch your hands while removing the rear panel.



Step 10 Change the sensor LAN switch unit.

Remove the screws (M3: 4 locations on the back of the rear panel) that fasten the sensor LAN switch unit onto the rear panel and change the sensor LAN switch unit. After replacing the sensor LAN switch unit, assemble to the original condition by repeating the same procedure in the reverse order. Please make sure to tighten all the screws and connect all the cables back in place.



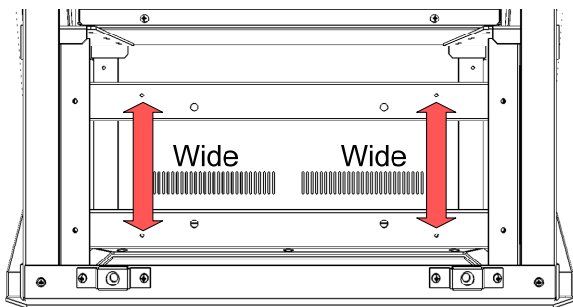
Connect the Ethernet cables to the same connection ports after replacement.



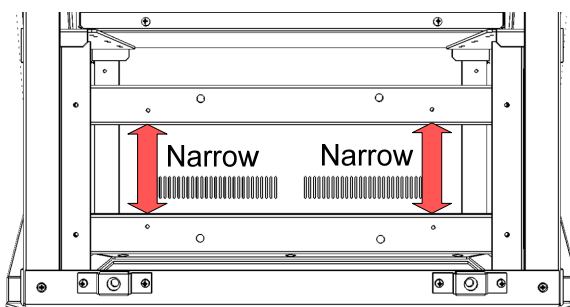
When reinstalling the two metal planks, be careful with vertical direction.



Right



Wrong



To reconnect the cables and the two-piece terminal blocks, connect them to the same locations as before removing them.

Step 11 Check operation.

After the replacement of the sensor LAN switch unit is completed, turn ON the circuit breaker for the power supply of the display unit and check the operation as follows.

- (1) Check that the values of the sensor being connected are displayed on the screen.

This completes sensor LAN switch unit replacement.

4.3.9.2 Replacing the Sensor LAN Switch Unit: NQA-2443 in 19 inch display unit mount kit

WARNING



A DC power supply has been fed to the sensor LAN switch unit. Before replacement work, be sure to turn OFF the DC power circuit breaker. Not following this instruction will cause electric shock and/or malfunction.

[Required Tools]

The tools shown in the following table are required for replacement work.

Table Required Tools

No.	Name	Size	Appearance
1	Flat head screwdriver	2 mm, 4 mm, 6 mm	
2	Phillips screwdriver	Size #2	
3	Phillips stubby screwdriver	Size #2	
4	Diagonal pliers	—	
5	Cable-tie *1	—	

*1 A number of cable-ties may be required.



Before conducting replacement work, turn OFF the circuit breaker for the power supply of the display unit.



Do not lose the screws as they will be needed again.



To prevent damage to the Unit during the replacement work, cut off cable-ties that fasten the cable of the unit beforehand.

Step 1 Remove the JB from the display unit mount kit.

Remove the JB from the display unit mount kit. For more information about the JB removal procedure, refer to "4.3.9.1 Replacing the Sensor LAN Switch Unit: NQA-2443."

Step 2 Remove the Relay terminal block: CQD-2312

Disconnect all cables / wires from Relay terminal block by using a 3 mm width flat head screwdriver. Then, dismount the Relay terminal block from the DIN rail. For the details of dismounting, refer to the "Replacing the Relay Terminal Block: CQD-2312".



AC and DC power supplies have been connected to the Relay terminal block. Before replacement work, be sure to turn OFF the applicable power circuit breaker. Not following this instruction will cause electric shock and/or malfunction.



When UPS has been connected to the Relay terminal block, be sure to set the "Bat-Select" rotary switch at "Service" on the UPS controller. Furthermore, be sure to eject the fuse of the UPS battery. Not following this instruction will cause electric shock and/or malfunction.

Step 3 Remove the two metal planks.

Remove the screws (M5: total of 4 locations) that fasten the two top and bottom metal planks and take out both of them. For more information, refer to "4.3.9.1 Replacing the Sensor LAN Switch Unit: NQA-2443."

Step 4 Disconnect the sensor LAN switch unit cables and the UPS power supply cables.

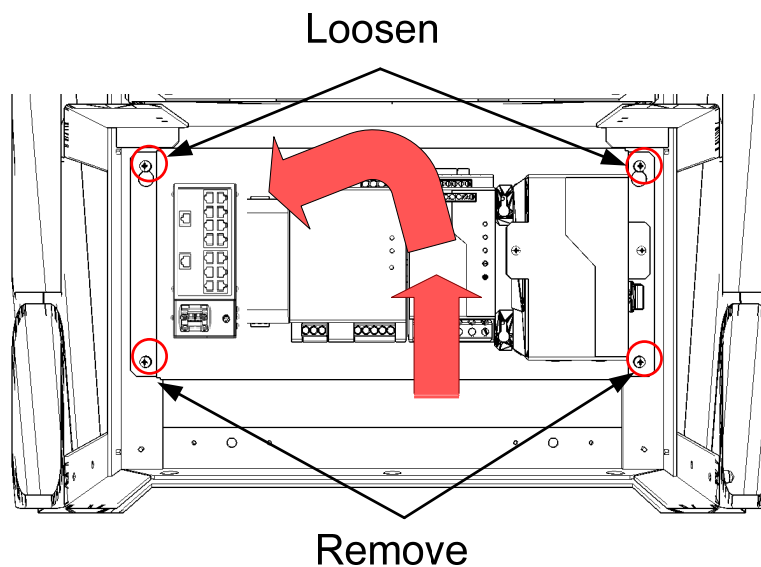
Disconnect the sensor LAN switch unit cables. If a UPS is installed, remove the fuse of the UPS first, and then take out the power line together with the terminal block. For more information, refer to "4.3.9.1 Replacing the Sensor LAN Switch Unit: NQA-2443."

Step 5 Remove the rear panel.

Among the screws (M5: 4 locations) that fasten the rear panel, loosen the upper two screws, remove the lower two screws, and then take out the rear panel together with the sensor LAN switch unit.

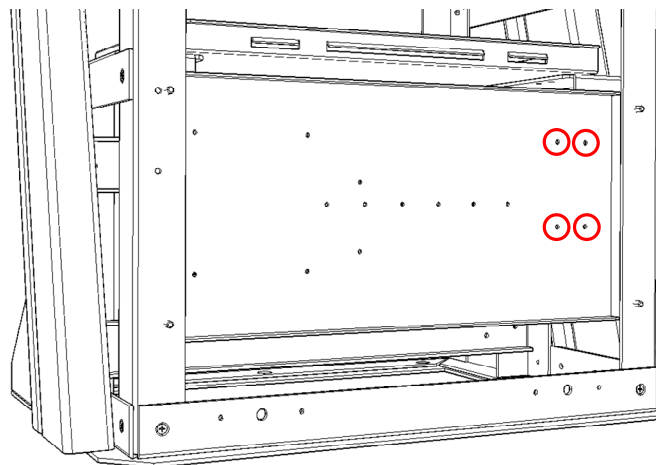


If a UPS is installed, the weight of the rear panel increases to 10 kg or more. Be careful not to catch your hands while removing the rear panel.



Step 6 Change the sensor LAN switch unit.

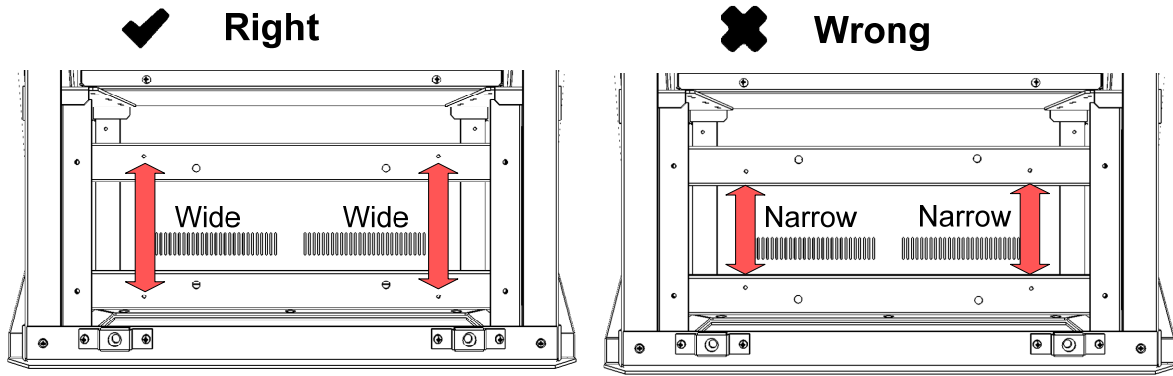
Remove the screws (M3: 4 locations on the back of the rear panel) that fasten the sensor LAN switch unit onto the rear panel and change the sensor LAN switch unit. After replacing the sensor LAN switch unit, assemble to the original condition by repeating the same procedure in the reverse order. Please make sure to tighten all the screws and connect all the cables back in place.



Connect the LAN cables to the same connection ports after replacement.



When reinstalling the two metal planks, be careful with vertical direction.



To reconnect the cables and the two-piece terminal blocks, connect them to the same locations as before removing them.

Step 7 Check operation.

After the replacement of the sensor LAN switch unit is completed, turn ON the circuit breaker for the power supply of the display unit and check the operation as follows.

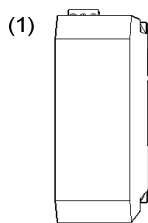
- (1) Check that the values of the sensor being connected are displayed on the screen.

This completes sensor LAN switch unit replacement.

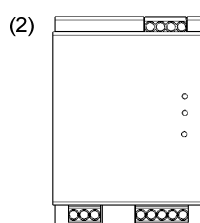
4.3.10 Replacing the UPS

The UPS consists of the following four devices.

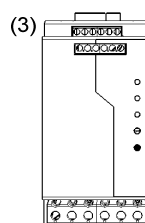
Input filter : ME-NAX-NEF/QUINT20
 AC-DC converter : QUINT-PS/1AC/24DC/20
 UPS controller : QUINT-DC-UPS/24DC/20
 Battery : QUINT-BAT/24DC/3.4AH



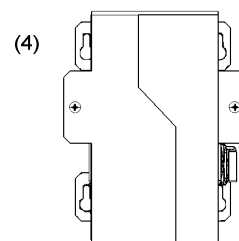
ME-NAX-NEF/QUINT20



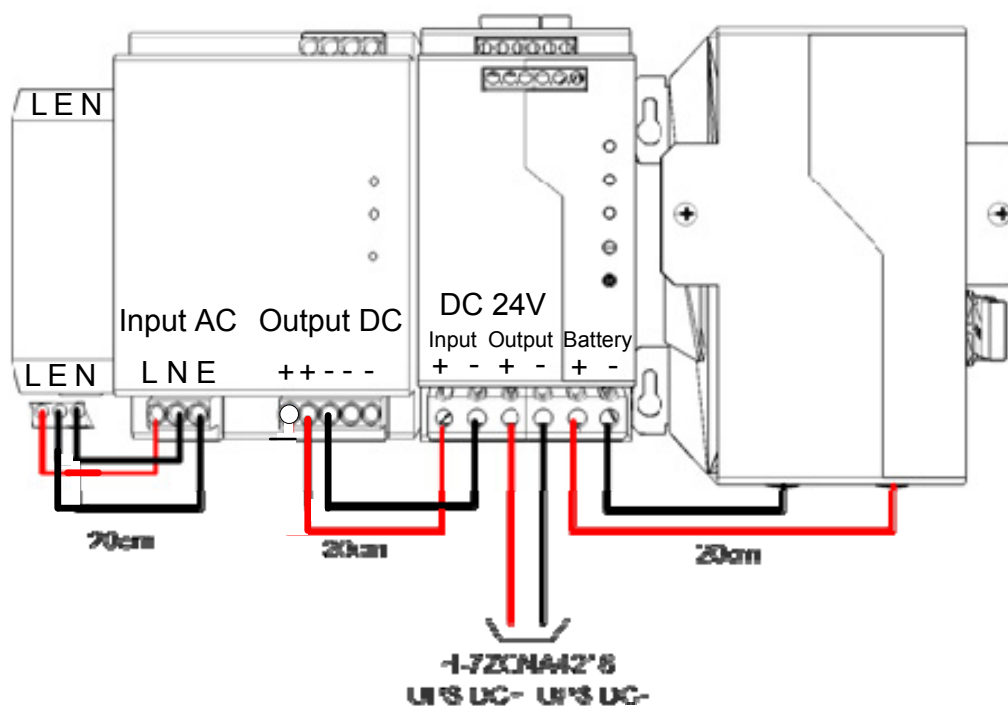
QUINT-PS/ 1AC/24DC/20



QUINT-DC-UPS/24DC/20



QUINT-BAT/24DC/ 3.4AH



4.3.10.1 Replacing the UPS Input Filter: ME-NAX-NEF/QUINT20

WARNING



An AC power supply has been fed to UPS. Before replacement work, be sure to turn OFF the circuit breaker of the main power line.

Not following this instruction will cause electric shock and/or malfunction.



Before starting UPS replacement work, be sure to remove the fuse of the UPS battery. Not following this instruction will cause electric shock and/or malfunction.

[Required Tools]

The tools shown in the following table are required for replacement work.

Table Required Tools

No.	Name	Size	Appearance
1	Flat head screwdriver	2 mm, 4 mm, 6 mm	
2	Phillips screwdriver	Size #2	
3	Phillips stubby screwdriver	Size #2	
4	Diagonal pliers	—	
5	Cable-tie *1	—	

*1 A number of cable-ties may be required.



Before conducting replacement work, turn OFF the circuit breaker for the power supply of the display unit.



Do not lose the screws as they will be needed again.



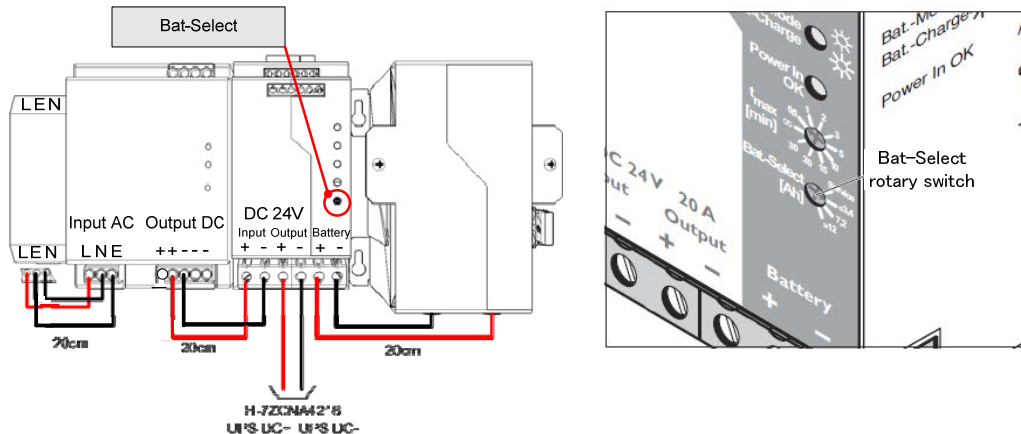
To prevent damage to the Unit during the replacement work, cut off cable-ties that fasten the cable of the unit beforehand.

Step 1 Remove the JB from the display unit mount kit.

Remove the JB from the display unit mount kit. For more information about the JB removal procedure, refer to "4.3.9.1 Replacing the Sensor LAN Switch Unit: NQA-2443."

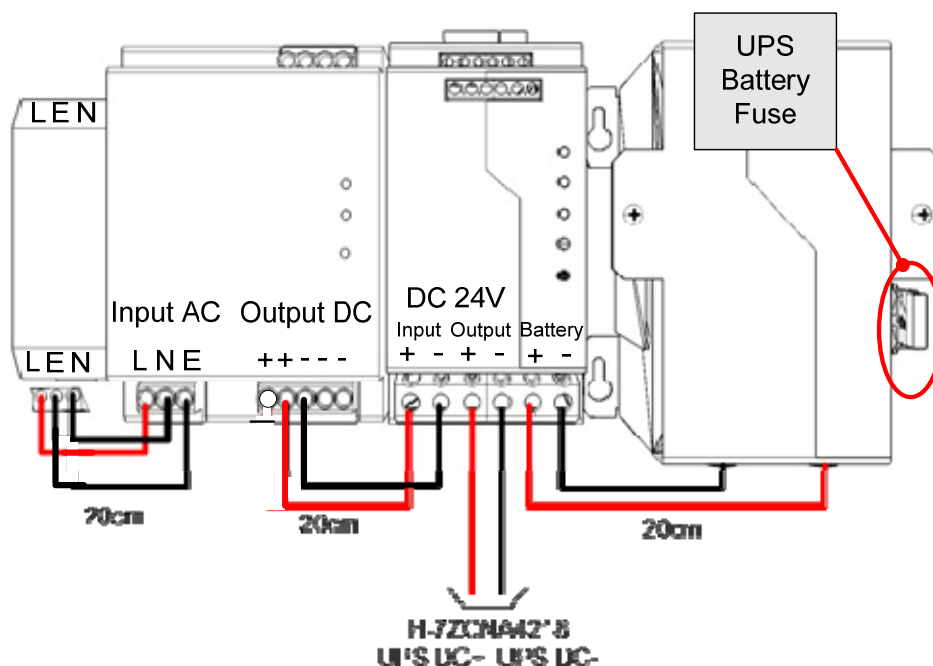
Step 2 Set "Bat-Select" of the UPS controller QUINT-DC-UPS/24DC/20 at "Service."

Set the "Bat-Select" rotary switch of the UPS controller at "Service."



Step 3 Remove the blade fuse of the UPS battery QUINT-BAT/24DC/3.4AH.

Remove the fuse of the UPS battery. After removing the fuse, leave it for at least 5 min until the electricity charged in the internal capacitor is discharged.



Step 4 Remove the Relay terminal block: CQD-2312

Disconnect all cables / wires from Relay terminal block by using a 3 mm width flat head screwdriver. Then, dismount the Relay terminal block from the DIN rail. For the details of dismounting, refer to the "Replacing the Relay Terminal Block: CQD-2312".



AC and DC power supplies have been connected to the Relay terminal block. Before replacement work, be sure to turn OFF the applicable power circuit breaker. Not following this instruction will cause electric shock and/or malfunction.

Step 5 Remove the two metal planks.

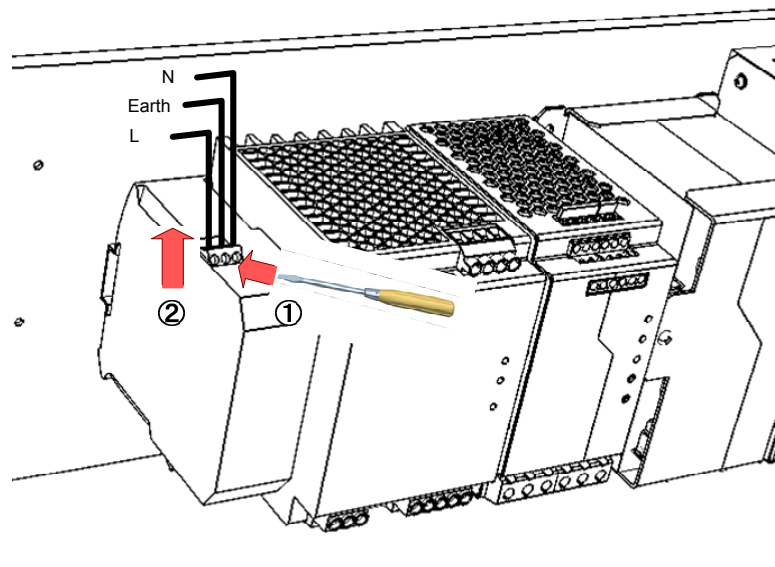
Remove the screws (M5: total of 4 locations) that fasten the two top and bottom metal planks and take out both of them. For more information, refer to "4.3.9.1 Replacing the Sensor LAN Switch Unit: NQA-2443."

Step 6 Remove the power wiring of the UPS.

Disconnect the power connector of the UPS. The power connector of the UPS can be removed using the principle of leverage, by inserting a 2 mm width flat head screwdriver into the groove at the root of the terminal block in the upper part of the input filter ME-NAX-NEF/QUINT20.



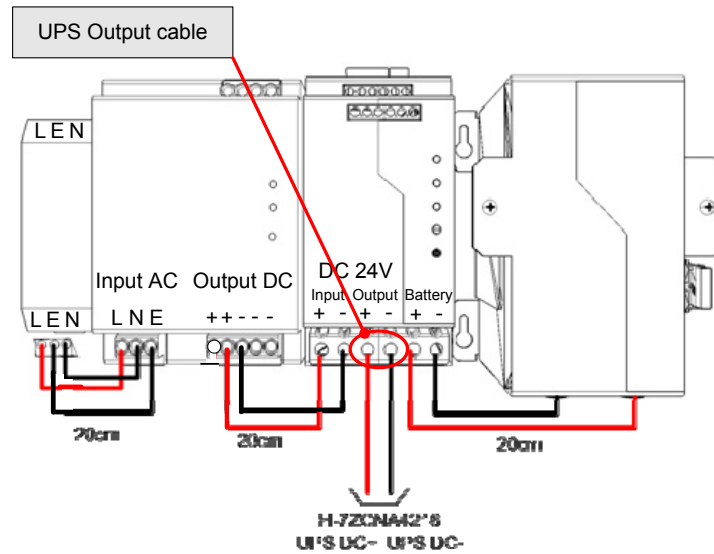
An AC power supply is connected to the UPS. Before starting replacement work, turn OFF the circuit breaker of the AC power supply.



If a sensor LAN switch unit is installed, disconnect the wiring of the sensor LAN switch unit. For more information, refer to "4.3.9.1 Replacing the Sensor LAN Switch Unit: NQA-2443."

Step 7 Remove the UPS output cables.

Using a 4 mm width flat head screwdriver, disconnect the output cables at the bottom of the UPS controller. The output cables are fastened using a European-style terminal block.



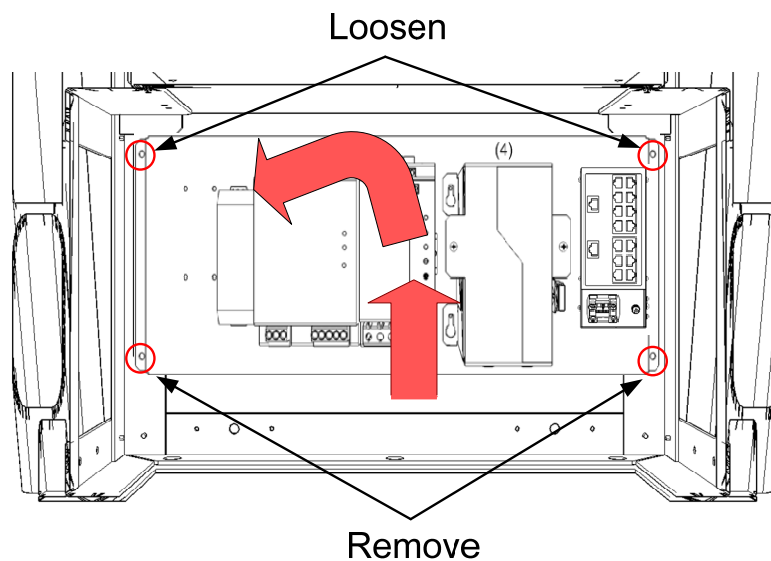
Step 8 Remove the rear panel.

Among the screws (M5: 4 locations) that fasten the rear panel, loosen the upper two screws, remove the lower two screws, and then take out the rear panel.



If a UPS is installed, the weight of the rear panel increases to 10 kg or more.

Be careful not to catch your hands while removing the rear panel.



CAUTION



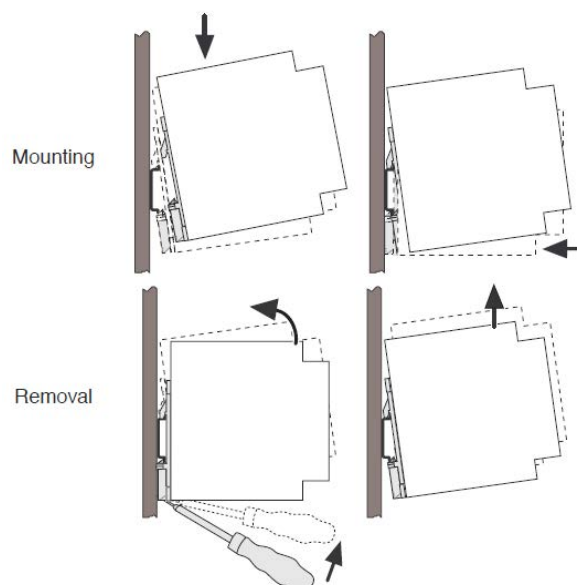
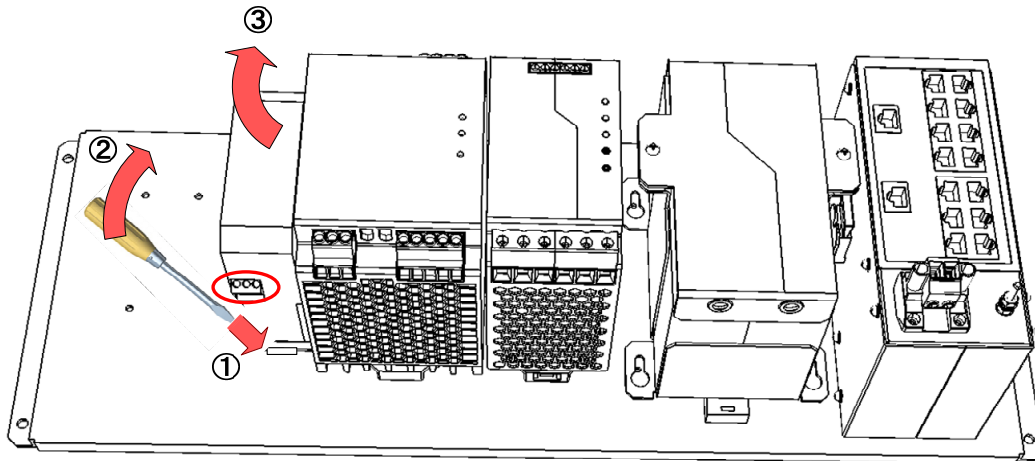
Before conducting Unit replacement work, always be sure that every cable-tie that fastens the cable has been removed.

Replacement work without the above may lead Unit/cable breakage.

Step 9 Change the USP Input Filter: ME-NAX-NEF/QUINT20

Loosen the European-style terminal blocks in the lower part of the UPS input filter ME-NAX-NEF/QUINT20 and disconnect the cables.

The UPS input filter is fastened to the DIN rail. The UPS input filter can be removed from the DIN rail using the principle of leverage, by inserting a 6 mm width flat head screwdriver into the groove of the metal fixture in the lower part of the UPS input filter.



Step 10 Put back the rear panel and check for LED lighting.

After replacing the UPS input filter, assemble to the original condition by repeating the same procedure in the reverse order. Put back the wiring and perform setting in the following sequence.

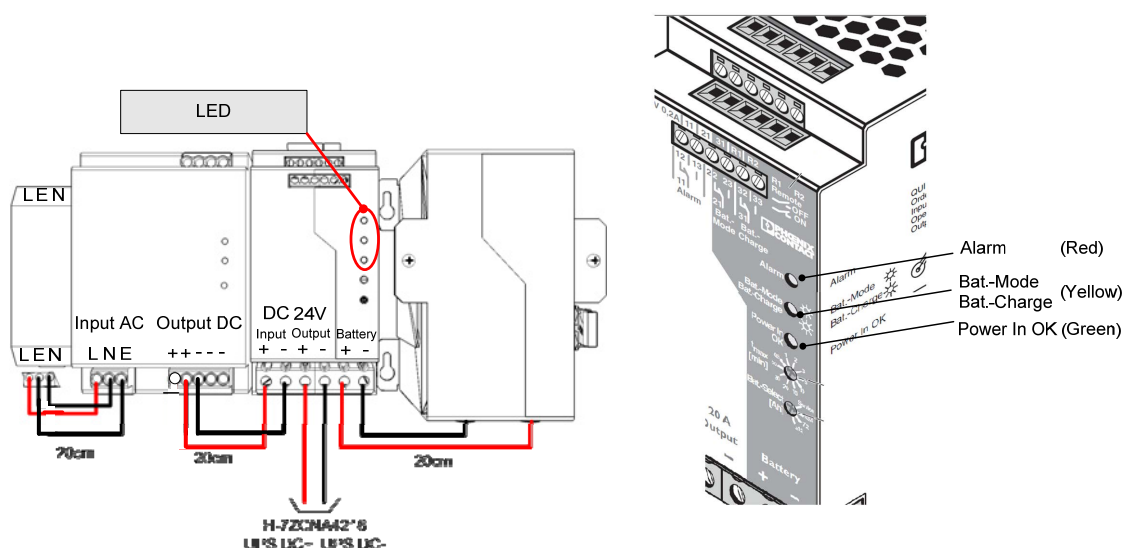
- (i) UPS output cable
- (ii) UPS power cable
- (iii) UPS battery blade fuse
- (iv) Setting "Bat-Select" to "3.4" on the UPS controller



Make sure that the ground cable of the European-style terminal block in the upper part of the input filter is connected with the ground of the ship.

While maintaining the OFF state of the circuit breaker for the power supply of the display unit, turn ON the circuit breaker of the main power line and check that the LEDs of the UPS controller turn ON/OFF as follows.

LED	Color	ON/OFF Status
Alarm	Red	OFF
Bat.-Mode	Yellow	Flashing or
Bat.-Charge		OFF
Power In OK	Green	ON



Step 11 Put back all other cables and covers.

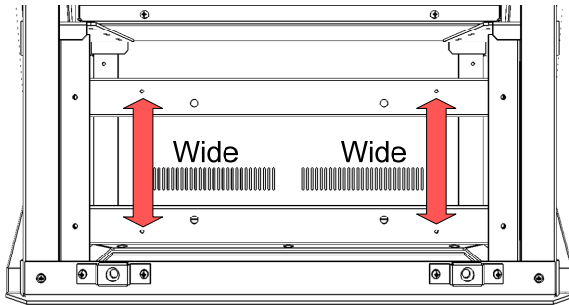
Turn OFF the circuit breaker of the main power line again. Put all the remaining cables and covers back in place by repeating the same procedure in the reverse order. Please make sure to tighten all the screws and connect all the cables back in place.



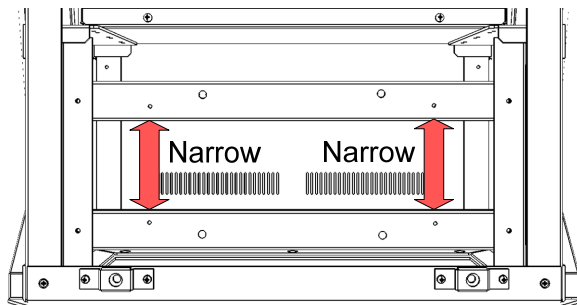
When reinstalling the two metal planks, be careful with vertical direction.



Right



Wrong



To reconnect the cables and the two-piece terminal blocks, connect them to the same locations as before removing them.

This completes the replacement of the UPS input filter.