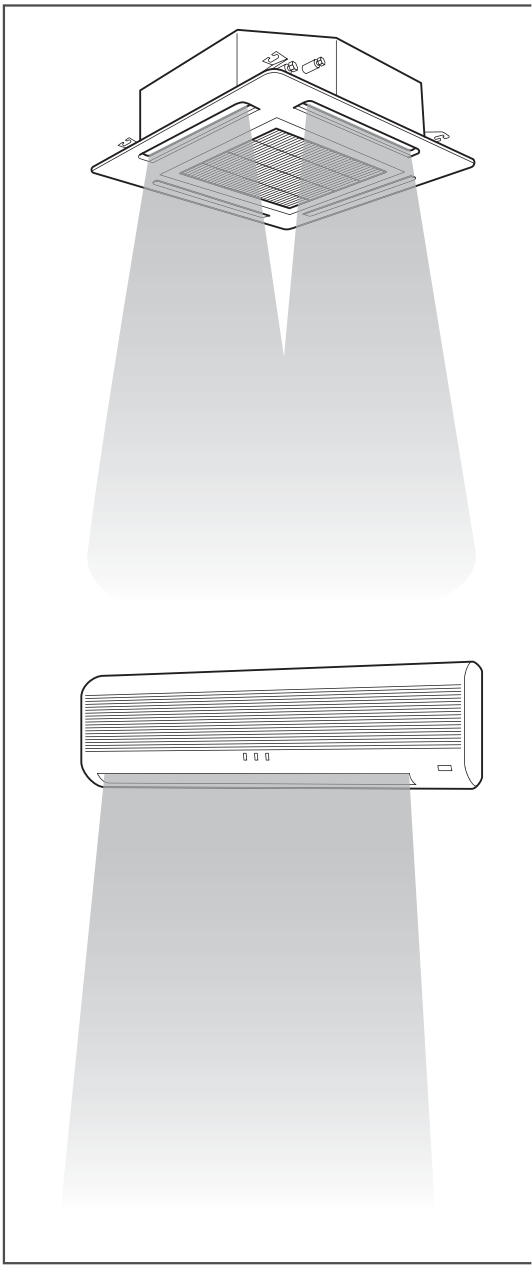
HITACHI
Inspire the Next

INDOOR UNITS SYSTEM FREE SERIES
& Complementary Systems
FSN(H)(2/3/4)(E/M)(i)(-DU)



Service Manual

RCI	RPK
RCIM	RPF
RCD	RPFI
RPC	KPI
RPI	DX - Interface
RPIM	

HITACHI
Inspire the Next

Index

Index

HITACHI
Inspire the Next

1. General information

Index

1.1 General information

Within the policy of continuous improvement of its products, HITACHI Air Conditioning Products Europe, S.A. reserves the right to make changes at any time without prior notification and without being compelled to introducing them into products subsequently sold. This document may therefore have been subject to amendments during the life of the product.

HITACHI makes every effort to offer correct, up-to-date documentation. Despite this, printing errors cannot be controlled by HITACHI and are not its responsibility.

As a result, some of the images or data used to illustrate this document may not refer to specific models. No claims will be accepted based on the data, illustrations and descriptions included in this manual.

No type of modification must be made to the equipment without prior, written authorisation from the manufacturer.

1.1.1 Introduction

HITACHI offers the SYSTEM FREE range of indoor units, the main advantage of which is that they can be combined with UTOPIA and SET-FREE series outdoor units.

This eliminates the need to duplicate models of indoor units and reduces stock.

Outdoor units	SYSTEM FREE Indoor units	Complementary systems
UTOPIA series	RCI RCIM RCD RPC RPI RPIM RPK RPF RPFI	KPI DX-Interface
SET-FREE series		

NOTE

- ***These indoor unit and outdoor unit series are the last updated at time of the issuing; other previous models and coming developments could be available for combination.***
- ***For RCI-FSN3 with motion sensor is recommended to connect with IVX Premium and IVX Standard series in order to obtain the maximum performance.***

1.1.2 Environment-friendly units

The new range of HITACHI indoor units uses environmentallyfriendly R410A gas refrigerant, and the RoHS and Green Dot regulations are applied throughout the manufacturing and installation process to reflect HITACHI's awareness of environmental respect and commitment..

1.2 Applied symbols

During normal air conditioning system design work or unit installation, greater attention must be paid in certain situations requiring particular care in order to avoid damage to the unit, the installation or the building or property.

Situations that jeopardise the safety of those in the surrounding area or that put the unit itself at risk will be clearly indicated in this manual.

To indicate these situations, a series of special symbols will be used to clearly identify these situations.

Pay close attention to these symbols and to the messages following them, as your safety and that of others depends on it.

DANGER

- ***The text following this symbol contains information and instructions relating directly to your safety and physical wellbeing.***
- ***Not taking these instructions into account could lead to serious, very serious or even fatal injuries to you and others in the proximities of the unit.***

In the texts following the danger symbol you can also find information on safe procedures during unit installation.

CAUTION

- ***The text following this symbol contains information and instructions relating directly to your safety and physical wellbeing.***
- ***Not taking these instructions into account could lead to minor injuries to you and others in the proximities of the unit.***
- ***Not taking these instructions into account could lead to unit damage.***

In the texts following the caution symbol you can also find information on safe procedures during unit installation.

NOTE

- ***The text following this symbol contains information or instructions that may be of use or that require a more thorough explanation.***
- ***Instructions regarding inspections to be made on unit parts or systems may also be included.***

1.3 Product guide

1.3.1 Classification of indoor unit models

Unit type (indoor unit): RCI, RCIM, RCD, RPC, RPI, RPIM, RPK, RPF, RPFI									
	Position-separating hyphen (fixed)								
		Capacity (HP): 0.8, 1.0, 1.5, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.0							
			FS = SYSTEM FREE						
				N = R410A refrigerant					
					H = Hotel (RPK-(0.8/1.5) only)				
						2/3/4 = series			
							E = Made in Europe M = Made in Malaysia – = Made in Japan		
								i = Version up (RCI only)	
									DU = Drain Up (RPIM only)
XXX	–	X.X	FS	N	(H)	X	(X)	(i)	(-DU)

1.3.2 Classification of KPI models

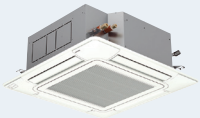
KPI energy / heat recovery unit							
	Position-separating hyphen (fixed)						
		Capacity (m^3/h): 250, 500, 800, 1000, 1500, 2000, 3000					
			2 = 1 ~ 230V 50Hz				
				E = energy recovery H = Heat recovery X = Active (Energy recovery + DX section)			
					3 = series		
						E = Made in Europe	
KPI	–	(Y)YY	2	Y	3	E	

1.3.3 Classification of DX-Interface models

DX-Interface type					
	Position-separating hyphen (fixed)				
		Capacity (HP): 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.0			
			E = Made in Europe		
				1 = series	
EXV	–	X.X	E	1	

1.3.4 Product guide: indoor units

◆ RCI and RCIM indoor units

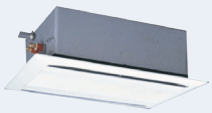
FSN(2/3)(E)(i) indoor units					
RCI				RCIM	
					
4-way cassette				4-way cassette (compact)	
Unit	Code	Unit	Code	Unit	Code
				RCIM-0.8FSN2	60278010
RCI-1.0FSN3Ei	7E403014	RCI-1.0FSN3	60278119	RCIM-1.0FSN2	60278011
RCI-1.5FSN3Ei	7E403015	RCI-1.5FSN3	60278120	RCIM-1.5FSN2	60278013
RCI-2.0FSN3Ei	7E403016	RCI-2.0FSN3	60278121	RCIM-2.0FSN2 (*)	60278014
RCI-2.5FSN3Ei	7E403017	RCI-2.5FSN3	60278122		
RCI-3.0FSN3Ei	7E403018	RCI-3.0FSN3	60278123		
RCI-4.0FSN3Ei	7E403020	RCI-4.0FSN3	60278124		
RCI-5.0FSN3Ei	7E403021	RCI-5.0FSN3	60278125		
RCI-6.0FSN3Ei	7E403022	RCI-6.0FSN3	60278126		

Panels (Optional)					
					
P-N23NA	70531000	P-AP160NA1	60297215	P-N23WAM	60197160
		P-AP160NAE (With motion sensor)	60297217		

NOTE

- ***The RCI and RCIM models must be used in combination with the panels indicated above.***
- ***(*): Single combinations with IVX Premium / Standard series not allowed.***

◆ RCD and RPC indoor units

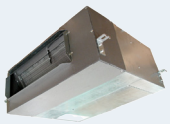
FSN2(E) indoor units					
RCD				RPC	
					
2-way cassette				Ceiling type	
Unit	Code			Unit	Code
RCD-1.0FSN2	60278029				
RCD-1.5FSN2	60278030				
RCD-2.0FSN2	60278031			RPC-2.0FSN2E	7E440003
RCD-2.5FSN2	60278032			RPC-2.5FSN2E	7E440004
RCD-3.0FSN2	60278033			RPC-3.0FSN2E	7E440005
		RCD-4.0FSN2	60278034	RPC-4.0FSN2E	7E440007
		RCD-5.0FSN2	60278035	RPC-5.0FSN2E	7E440008
				RPC-6.0FSN2E	7E440009

Panels (Optional)			
			
P-N23DNA	60297211	P-N46DNA	60297212

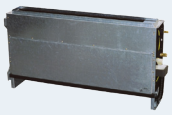
NOTE

The RCD models must be used in combination with the panels indicated above.

◆ RPI and RPIM indoor units

FSN(3/4)E indoor units					
RPI				RPIM	
					
Indoor ducted unit					
Unit	Code	Unit	Code	Unit	Code
RPI-0.8FSN4E	7E424013			RPIM-0.8FSN4E	7E430013
				RPIM-0.8FSN4E -DU	7E431013
RPI-1.0FSN4E	7E424014			RPIM-1.0FSN4E	7E430014
				RPIM-1.0FSN4E -DU	7E431014
RPI-1.5FSN4E	7E424015			RPIM-1.5FSN4E	7E430015
				RPIM-1.5FSN4E -DU	7E431015
RPI-2.0FSN4E	7E424016				
RPI-2.5FSN4E	7E424017				
RPI-3.0FSN4E	7E424018				
RPI-4.0FSN4E	7E424020				
RPI-5.0FSN4E	7E424021				
RPI-6.0FSN4E	7E424022				
		RPI-8.0FSN3E	7E424010		
		RPI-10.0FSN3E	7E424011		

◆ RPK, RPF and RPFI indoor units

FSN(H)(2/3)(E/M) indoor units					
RPK		RPF		RPFI	
					
Wall type		Floor type		Floor concealed type	
Unit	Code	Unit	Code	Unit	Code
RPK-0.8FSN3M	60278146				
RPK-0.8FSNH3M	60278154	RPF-1.0FSN2E	7E450001	RPFI-1.0FSN2E	7E460001
RPK-1.0FSN3M	60278147				
RPK-1.0FSNH3M	60278155	RPF-1.5FSN2E	7E450002	RPFI-1.5FSN2E	7E460002
RPK-1.5FSN3M	60278148				
RPK-1.5FSNH3M	60278156	RPF-2.0FSN2E (*)	7E450003	RPFI-2.0FSN2E (*)	7E460003
RPK-2.0FSN3M	60278149	RPF-2.5FSN2E (*)	7E450004	RPFI-2.5FSN2E (*)	7E460004
RPK-2.5FSN3M	60278150				
RPK-3.0FSN3M	60278151				
RPK-4.0FSN3M	60278152				
EV-1.5N1(1)	60921791				

NOTE

- *(1) For RPK-(0.8-1.5)FSNH3M models only.*
- *(*): Single combinations with IVX Premium / Standard series not allowed.*

1.3.5 Product guide: complementary systems

◆ KPI energy / heat recovery unit

Complementary systems					
KPI					
					
Energy recovery		Heat recovery		Active (Energy Recovery+DX section)	
Unit	Code	Unit	Code	Unit	Code
KPI-252E3E	70602000				
KPI-502E3E	70602001	KPI-502H3E	70602101	KPI-502X3E	70602201
KPI-802E3E	70602002	KPI-802H3E	70602102	KPI-802X3E	70602202
KPI-1002E3E	70602003	KPI-1002H3E	70602103	KPI-1002X3E	70602203
KPI-1502E3E	70602004	KPI-1502H3E	70602104		
KPI-2002E3E	70602005	KPI-2002H3E	70602105		

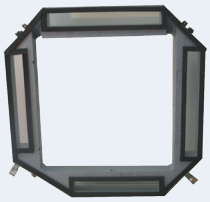
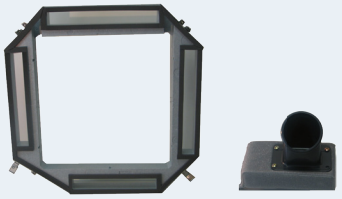
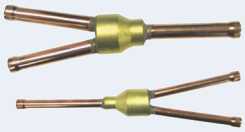
◆ DX-Interface

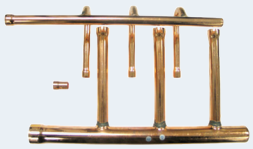
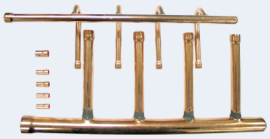
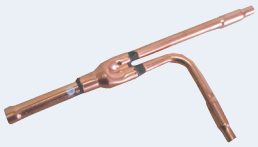
Complementary systems	
Control box	Expansion valve box
	

DX-Interface	
Unit	Code
EXV-2.0E1	7E610900
EXV-2.5E1	7E610901
EXV-3.0E1	7E610902
EXV-4.0E1	7E610903
EXV-5.0E1	7E610904
EXV-6.0E1	7E610905
EXV-8.0E1	7E610906
EXV-10.0E1	7E610907

1.3.6 Accessory code list

HITACHI has a wide range of accessories and remote control systems that can be used with the SET FREE and UTOPIA outdoor units. Consult the Technical Catalogue for controls and for the corresponding outdoor units.

Name	Description	Code	Figure
B-23H4	Adapter for deodorising filter	60199790	
B-160H2		60291759	
F-23L4-K	Anti-bacteria filter	60199791	
F-23L4-D	Deodorising filter	60199793	
F-46L4-D		60199794	
F-71L-D1		60291757	
F-160L-D1		60291758	
F-160L-K	Long life filter	60291760	
PDF-23C3	Duct connecting flange	60199795	
PDF-46C3		60199796	
OACI-232	Outdoor air inlet kit	60199797	
OACI-160K2		60291761	
PD-75	Outdoor air inlet kit	60199798	
PD-75A		60291763	
PI-23LS5	3-way outlet parts	60199799	
PI-160LS1		60291756	
TKCI-232	T-shaped duct connection kit	60199801	
TKCI-160K		60291762	
TE-03N1	Branch pipe UTOPIA (pipe kit)	70527012	
TE-04N1		70527013	
TE-56N1		70527014	
TE-08N		70800003	
TE-10N		70800004	
TW-22AN		60291815	
TW-52AN		60291816	
TW-102AN		60291817	
TG-53AN		60291818	
TG-103AN		60291819	
MW-102AN		70522001	
MW-162AN		70522002	

Name	Description	Code	Figure
TRE-46N1	Distributor UTOPIA	70527015	
TRE-812N1		70527016	
QE-812N1	Distributor UTOPIA	70527017	
E-102SN2	Branch pipe (multikit)	70524001	
E-162SN2		70524002	
E-242SN2		70524004	
E-302SN2		70524005	
E-52XN2		70525000	
E-102XN2		70525001	
E-162XN2		70525002	
E-202XN2		70525003	
E-242XN2		70525004	
E-322XN2		70525005	
MH-84AN	Distributor SET FREE	70522007	
MH-108AN		70522008	
MH-108XN		70523108	
SLT-30-200-L600	Noise damper	70550200	
SLT-30-250-L600		70550201	
SLT-30-300-L600		70550202	
SLT-30-355-L600		70550203	
HEF-252	High efficiency filter	70552201	
HEF-502		70552202	
HEF-802		70552203	
HEF-1002		70552204	
HEF-1502		70552205	
HEF-2002		70552206	

2. Unit installation

Index

2.1 RCI - 4-way cassette

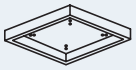
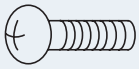
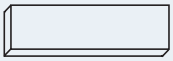
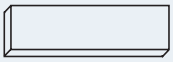
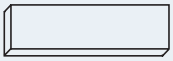
2.1.1 Accessories supplied with the unit

Check that the following accessories are supplied with the unit.

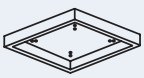
NOTE

Please contact your HITACHI distributor if any of the accessories has not been supplied with the unit.

◆ **RCI-FSN3 indoor unit**

Accessory		Quantity	Purpose
Pattern (Carton Board)		1	For adjusting space of false ceiling opening and position of the unit
Checking pattern (Cut out from the carton board)		1	
Cross recessed head screws (M6)		4	For fitting paper pattern
Washer with insulation (M10)		4	For unit installation
Washer (M10)		4	
Drain hose		1	For drain hose connection
Wire clamp		1	
Pipe insulation		1	For refrigerant piping connection
Pipe insulation		1	
Cord band		2	For fixing remote control switch wiring, louver sensor and insulation of piping
Cord band		6	
Insulation (5Tx50x200)		1	For covering wiring connection
Insulation (5Tx100x200)		1	For covering drain connection
Insulation (5Tx25x500)		1	

◆ **RCI-FSN3Ei indoor unit**

Accessory		Quantity	Purpose
Pattern (Carton board)		1	For adjusting space of false ceiling opening and position of the unit
Cross recessed head screws		4	For fitting paper pattern
Washer with insulation		4	For unit installation
Washer (M10)		4	

Accessory		Quantity	Purpose
Drain hose		1	For drain hose connection
Wire clamp		2	
Checking pattern (Cut out from the carton board)		1	For adjusting space of false ceiling opening and position of the unit

Applicable panel

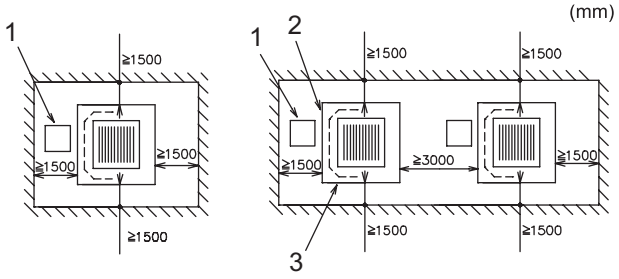
Indoor unit	Applicable panel
RCI-(1.0-6.0)FSN3	P-AP160NA1 P-AP160NAE (with motion sensor)
RCI-(1.0-6.0)FSN3Ei	P-N23NA

2.1.2 Unit installation

Initial checks

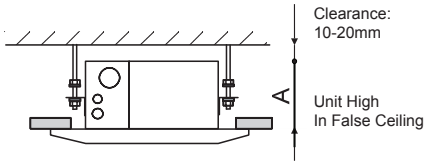
Install the indoor unit with a proper clearance around it paying careful attention of installation direction for the piping, wiring and maintenance working space, as shown below.

Provide a service access door near the unit piping connection area on the ceiling.



Check space between ceiling and false ceiling is enough as indicated below.

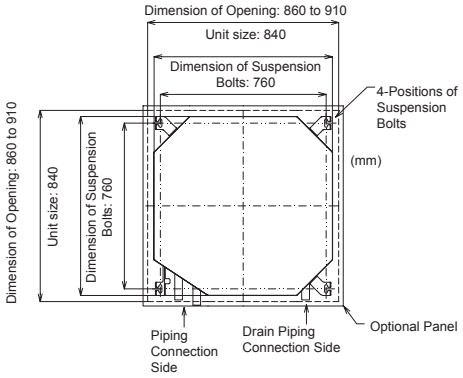
Check the ceiling surface is flat for the air panel installation work.



Unit HP	A(mm)
RCI-1.0 to 2.5HP	248
RCI-3.0 to 6.0HP	298

Opening of false ceiling

Cut out the area for the indoor unit in the false ceiling and install suspension bolts, as shown below:

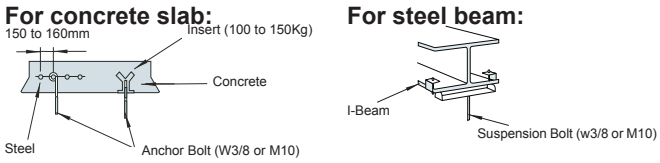


Check to ensure that the ceiling is horizontally level, otherwise water can not flow.

Strengthen the opening parts of the false ceiling.

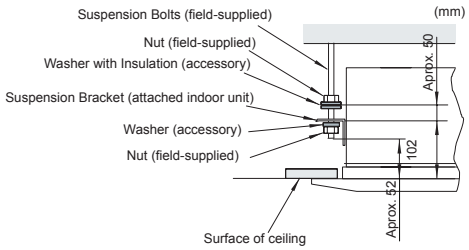
Mounting of suspension bolts

Mount suspension bolts using M10 (W3/8) as size, as shown.



Mounting of indoor unit

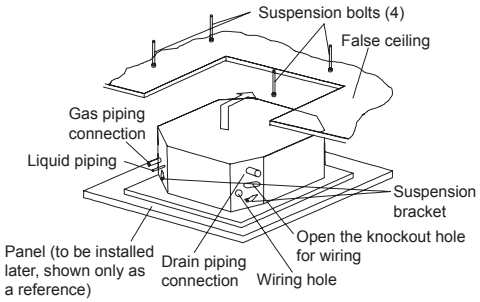
Mount the nuts and the washers to the suspension bolts. Put the washer so that the surface with insulation can faces downwards as shown below:



Consider piping connection side before lift indoor unit.

Lift the indoor unit by hoist, and do not put any force on the drain pain.

Secure the indoor unit using the nuts, washers.

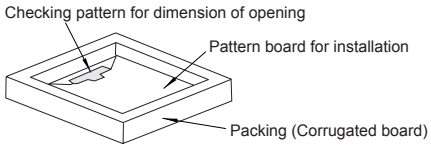


NOTE

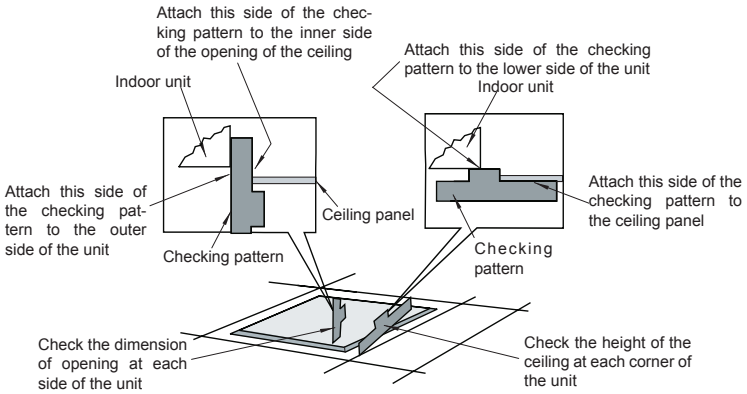
- ***If a false ceiling has already been installed, complete all piping and wiring work inside the ceiling before hooking-up the indoor unit.***
- ***Secure the indoor unit using the nuts, flat washers and spring washers. (These nuts and washers are supplied, 4 pieces each)***

Adjusting the space between indoor units and false ceiling opening

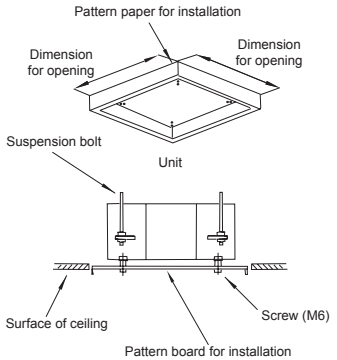
Adjust the indoor unit to the correct position while checking with the pattern for installation.



For ceiling already completed with panels.



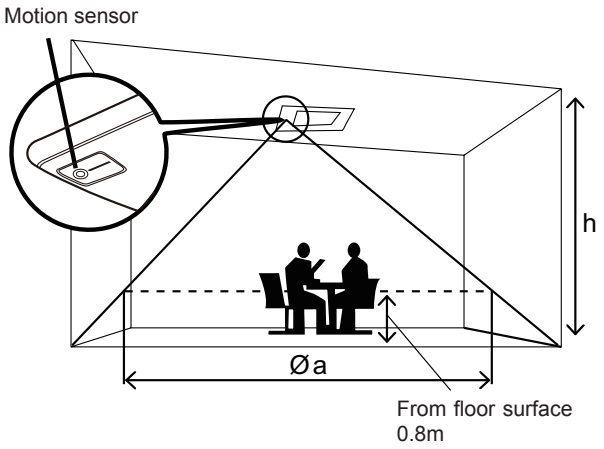
Ceiling not completed with panels yet.



Tighten the nuts of the suspension brackets after the adjustment is completed. Apply LOCK-TIGHT paint to the bolts and nuts in order to prevent them from loosening. If not done, abnormal noises or sounds may occur and the indoor unit may come loose.

Sensing area for the motion sensor (only for air panel model P-AP160NAE)

The sensing area for the motion sensor is shown in the figure below when applying the motion sensor with the air panel.



Installation Height of Indoor Unit h (m)	2.7	3.2
Sensing Area for Motion Sensor Øa (m)	Approx. 7.0	Approx. 8.8
Motion Detection	Human Motion	

NOTE

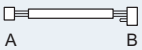
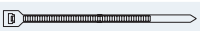
The motion sensor may detect as absence in the case that the indoor unit with the motion sensor is installed to a high ceiling (higher than 4m) even if someone is in a room.

2.1.3 Accessories supplied with the air panel: P-AP160NA1 / P-AP160NAE

Check that the following accessories are supplied with the unit.

NOTE

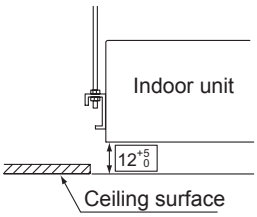
Please contact your HITACHI distributor if any of the accessories has not been supplied with the unit.

Accessory		P-AP160NA1	P-AP160NAE	Purpose
Long screw (M6 Cross Screw)		4	4	For fixing air panel
Relay wire A: 3 poles / B: 5 poles		-	1	For motion sensor
Wiring cover		-	1	For protection of relay connector
Cord band		-	3	For clamping wiring cover and relay connector

2.1.4 Air panel installation

Check the indoor unit height from the false ceiling surface

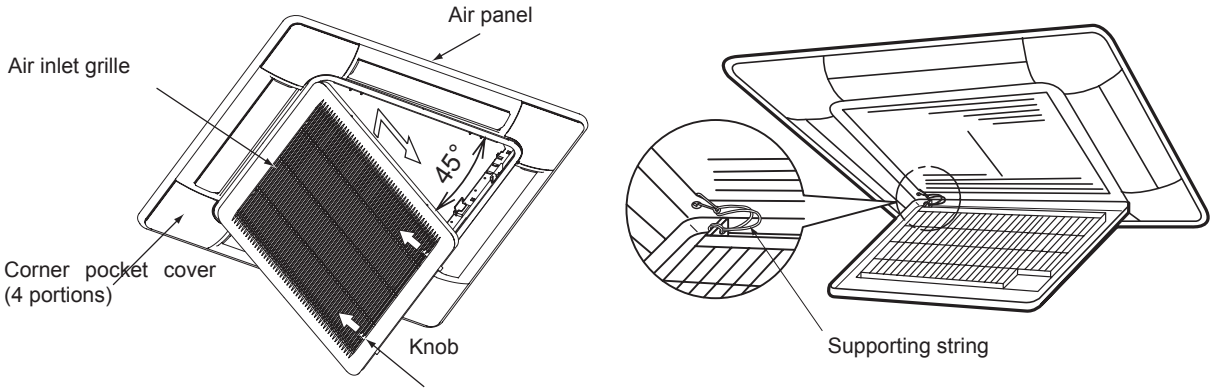
Check the distance between the indoor unit and the false ceiling. It is 12+5mm as shown below.



If not, adjust the distance by using the checking scale with maintaining the levelness of the indoor unit.

Removing Air Intake Grille from Air Panel.

1 Push both ends of knobs at the air inlet grille toward the arrow direction, open the air inlet grille until the angle of approximately 45° from the air panel surface. After lifting the air inlet grille keeping it inclined, draw the air inlet grille forward. (Remove the filament tape (4 portions) fixing the air filter.).



2 Lift the grille keeping it inclined

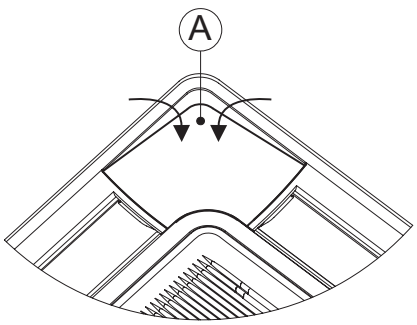
3 Draw the grille towards the open space after lifting.

NOTE

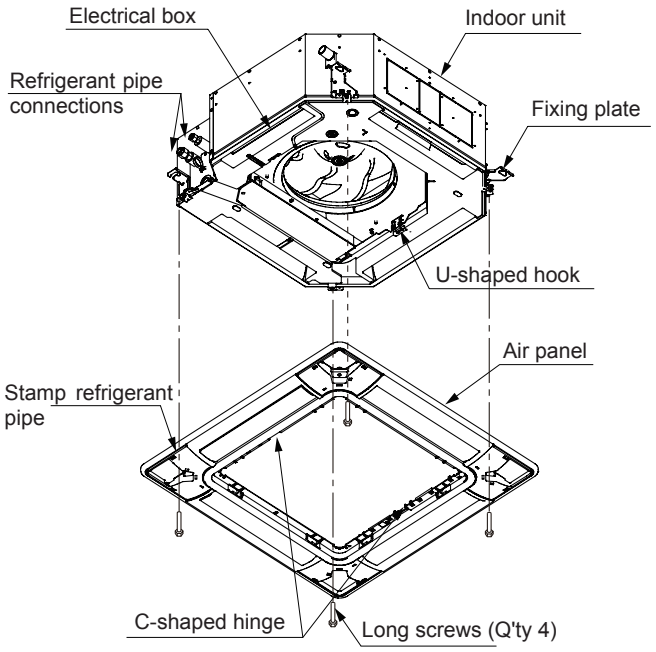
Perform the attaching work in the reverse procedure of removing for install the air intake grille. The air inlet grille can be attached from any 4 directions by rotating it. The air intake grille direction can be selected freely.

Installing Air Panel

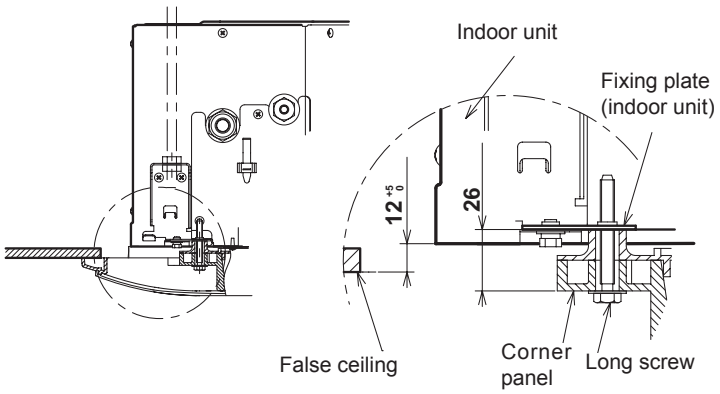
1 Remove the cover of the corner pocket (4 portions). Remove pulling A part toward the arrow direction.



2 Pull down the U-shaped hook (at 2 positions) located at the indoor unit side.
3 Mount the air panel temporarily. Fit the corner position of the refrigerant pipe connection at the indoor unit and the position stamped as “Ref. Pipe ”. Then, catch the C-shaped hinges (2 portions) onto the U-shaped hooks (2 portions).
4 Fix the air panel to the fixing plate by factory supplied long screws (M6 cross screws).

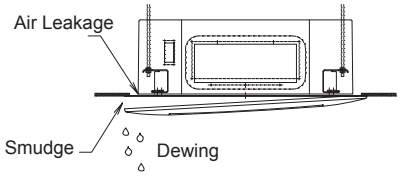


5 Tighten the long screws until touching the stopper to the fixing plate. Check to ensure that the distance between the fixing plate undersurface and the corner panel undersurface is 26mm.
6 When tightening the long screws to prevent air leakage and to be no gap between the false ceiling surface and the indoor unit, the inner circumference of the air panel (the position to attach the air inlet grille) may be slightly deformed. However, it is not abnormality.

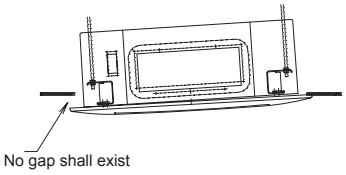


CAUTION

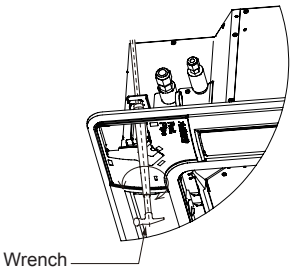
- ***If tighten long screws insufficient, may cause something wrong as below.***



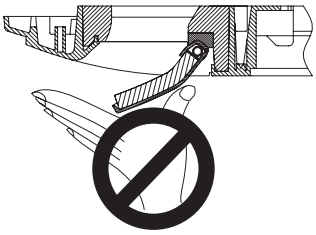
- ***If any gap has even though tighten long screws sufficient, readjust the height of indoor unit.***



- ***It's able to adjust the indoor unit height by using wrench from the corner pocket.***



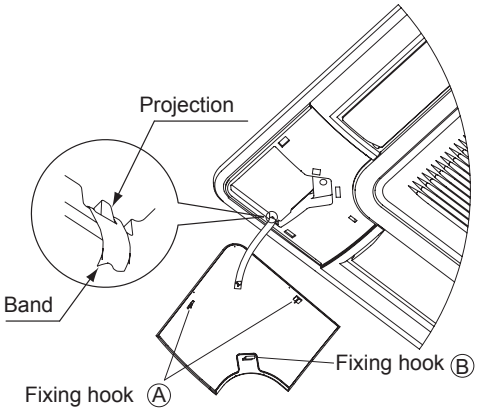
- ***Too considerable adjustment of height cause dewing from drain-pan.***
- ***Do not turn the air louver by hand. If moved, the louver mechanism would be damaged.***



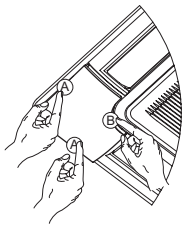
Attachment of Corner Pocket Cover

Attach the corner pocket covers after the air panel is mounted completely.

a. Catch the band at the rear side of the corner pocket cover onto the projection at the air panel as shown.



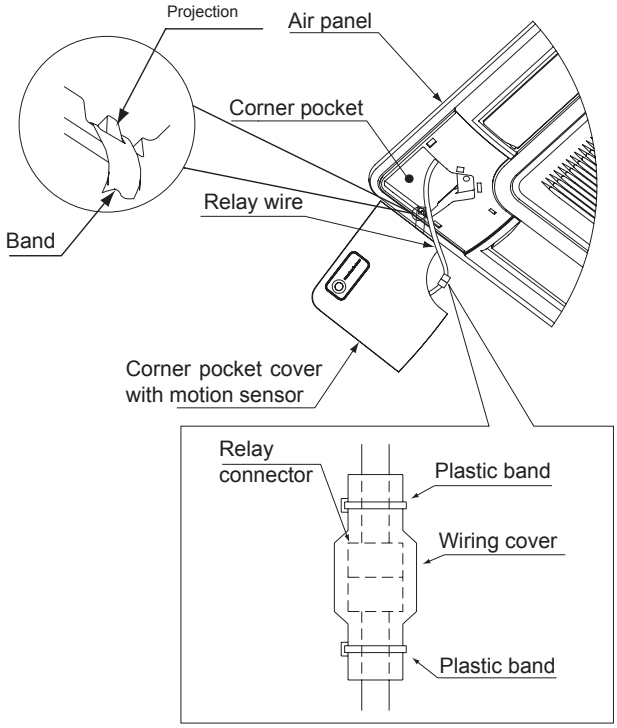
b. Insert and push the fixing hooks (2 portions) at Ⓐ to the air panel and insert and push the fixing hook (1 portion) at Ⓑ to the air panel.



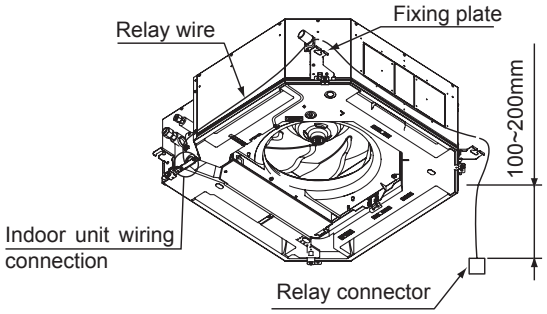
Attachment of corner pocket cover with motion sensor of air panel model P-AP160NAE

The corner pocket cover with motion sensor can be attached to any of corners. Determine the attaching place as user's request.

c. Connect the relay wire (attached in the air panel) to CN10 in the electrical box.



Run the relay wire to the corner pocket cover with motion sensor through the top of fixing plate for the indoor units. Set a length of 100mm to 200mm from the indoor unit to the relay connector.



Clamp the extra length of the relay wire by the cord band and store it at inside the ceiling.

d. Draw out the relay wire from the corner pocket of the air panel. Connect the wiring for motion sensor at the corner pocket cover to the relay connector. After connecting, cover the relay connector connection by the wiring cover and fix the wiring cover by the plastic bands.

e. Catch the band at the rear side of the corner pocket cover with motion sensor onto the projection at the air panel.

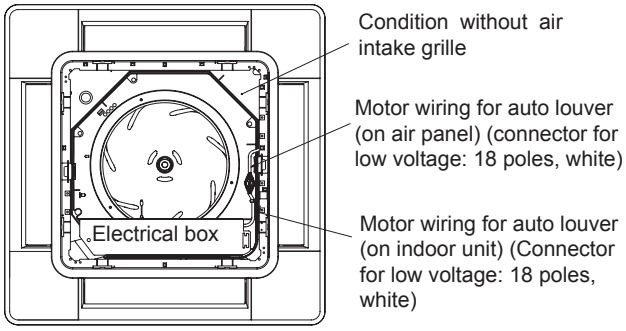
f. While pushing the wiring into the corner pocket, insert the fixing hooks (2 portions) at Ⓐ to the square hole at the air panel, and push the corner pocket cover. Then, insert and push the fixing hook (1 portion) at Ⓑ to the square hole at the air panel.

NOTE

- ***Catch securely the band onto the projection. If not, the comer pocket cover may fall down when removing it so that may cause injury.***
- ***Catch securely the fixing hooks of the corner pocket cover to the air panel. If not, the fixing hooks will be damaged.***

Electrical connection of the air panel

1 The following connectors are used in the air panel. Remove the tape fixing the wiring connectors on the air panel and pull out them as shown in the figure below. Connect them with the wiring connectors on the indoor unit.



2 After completing the wiring connection of the air panel, attach the air inlet grille. Perform the attaching work in the reverse procedure of removing.

2.1.5 Accessories supplied with the air panel: P-N23NA

Check that the following accessories are supplied with the unit.

NOTE

Please contact your HITACHI distributor if any of the accessories has not been supplied with the unit.

Accessory	Appearance	Quantity	Purpose
Long bolt (M6 x 50)		4	For panel fixing.

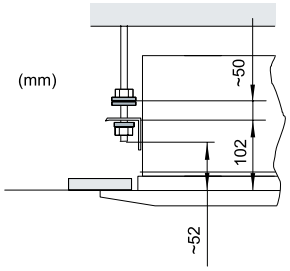
2.1.6 Air panel installation

CAUTION

Take care while the air panel is unpacked and protect it by placing it on insulating or soft material so as not to scratch the sealant insulation.

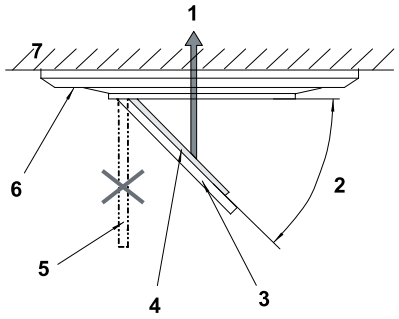
Location of the suspension brackets

Make sure the suspension brackets on the indoor unit are approximately 102 mm in height above the false ceiling.



Remove the air inlet grille from the air panel

Nº	Part
1	Take up the grille keeping it inclined
2	45° (correct)
3	Air intake grille
4	Air filter
5	Wrong
6	Air panel
7	Ceiling



Open the air inlet grille until it is at an angle of approximately 45° in relation to the air panel surface.

Lift the grille while keeping it tilted.

CAUTION

Do not allow the grille to swing freely or the securing mechanism will break.

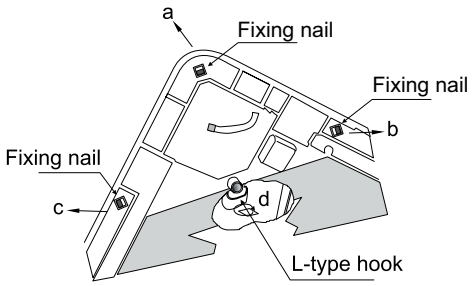
Air panel installation

Remove the hood from the 4 corners.

Press the securing tabs in the direction of the arrow, following the order -a-, -b- and -c- and lift the corner of the cover. Then move it in direction -d-, press the L-type hook and remove the cover.

Pull the U-shaped hook (in 2 positions) located on the side of the indoor unit downwards.

Adjust the corner of the indoor unit at the refrigerant connection part to the position marked as Ref. Pipe, and attach the C-shaped hinge (2 positions) to the U-shaped hooks (2 positions) in a temporary position.



1 Indoor unit

2 Hook

3 Fixing plate

4 Air panel

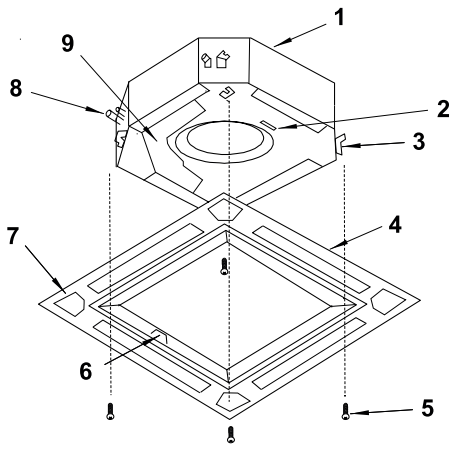
5 Long screw (4)

6 U-shaped hook (2)

7 Stamp “Ref.pipe”

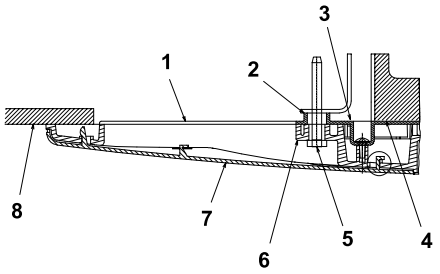
8 Refrigerant pipe connections

9 Electrical control box



Fit the air panel in the attachment position using the set screws supplied (M6 x 50).

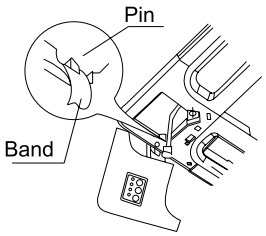
Nº	Part
1	Indoor unit undersurface
2	Fix screw until this end touches it
3	Fixing plate (Indoor unit side)
4	Sealing gasket
5	Long screw
6	Fixing plate (air panel side)
7	Panel
8	False ceiling



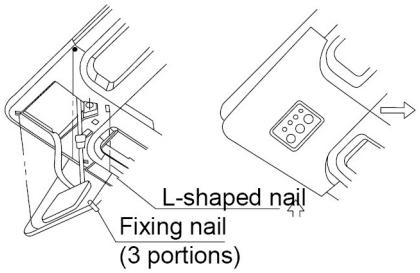
Check that there are no gaps in the touching surface between the indoor unit and the air panel. Gaps may cause air leaks or condensation.

Secure the corner covers after fitting the air panel:

a) Attach the tab at the rear of the corner cover to the panel pin.

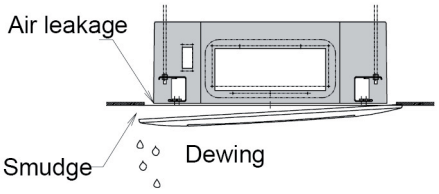


b) Attach the L-shaped stop located on the rear of the corner cover to the square hole in the air panel.

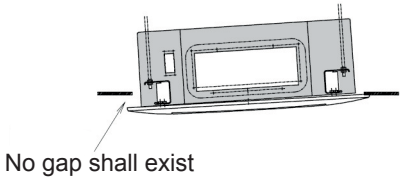


Considerations following air panel installation

Tighten the long bolts appropriately. Otherwise, installation faults may be caused.

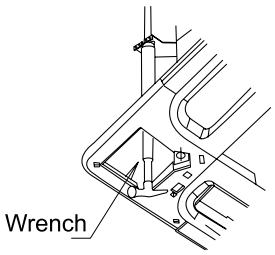


Readjust the height of the indoor unit if gaps are seen around it. Use long bolts and nuts for readjustment, as indicated below.



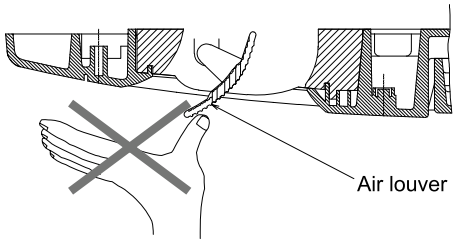
Once the air panel is installed, the final height of the indoor unit can be adjusted using a wrench through the corner cover.

Excessively adjusting the height leads to condensation leaks from the drain pan.



CAUTION

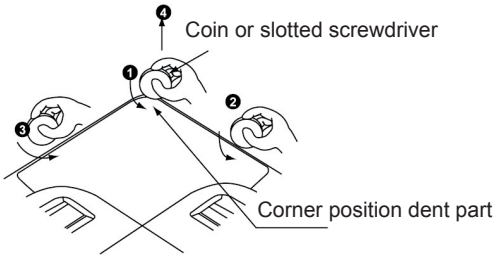
Do not move the air louver by hand. The drive mechanism may be damaged.



Removal of the corner cover after the air panel installation

Insert a coin or a flat-tipped screwdriver into the groove -1- and turn it gently downwards. Perform the same operation in grooves -2- and -3-.

Lift the receiver and, once the securing tabs (3 positions) have been removed, remove it.

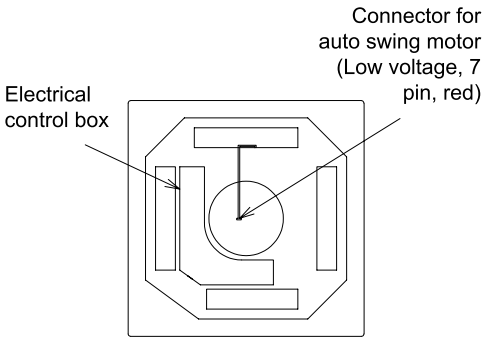


Electrical connection of the air panel

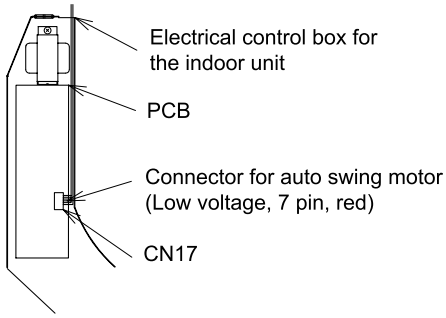
CAUTION

Switch off the power supply to the unit before coupling the connectors, otherwise the automatic louver will not work.

The following connector is used with the air panel (see from the lower surface of the air panel without the air inlet grille).



Couple the connectors as indicated in the figure (view of the electrical box from above).



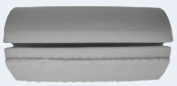
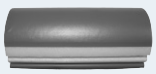
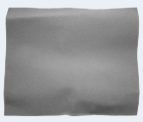
2.2 RCIM - 4-way cassette (compact)

2.2.1 Accessories supplied with the unit

Check that the following accessories are supplied with the unit.

NOTE

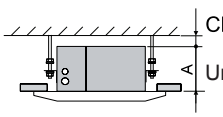
Please contact your HITACHI distributor if any of the accessories has not been supplied with the unit.

Accessory	Appearance	Quantity	Purpose
Checking pattern (Cut out from the carton board)		1	To define the position of the unit and adjust the necessary opening in the false ceiling.
Washer with insulation (M10)		4	For unit installation
Washer (M10)		4	
Drain hose		1	For the drain hose connection.
Wire clamp		1	
Insulation (big size)		1	For the refrigerant pipe connection.
Insulation (small size)		1	
Insulation (5t)		1	For drain hose insulation.
Cord clamp		6	For fixing refrigerant piping insulation.

2.2.2 Unit installation

Initial checks

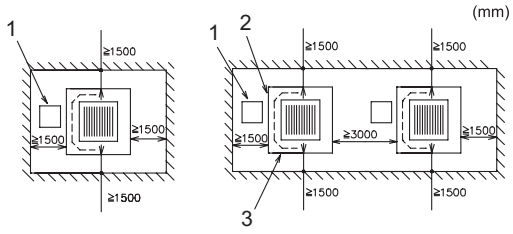
Check that there is enough space between the false ceiling and the ceiling of the room to house the unit. Its height must be less than the measured distance. Consult the corresponding chapter of the Technical Catalogue for information on the unit measurements.



Before starting installation, plan the direction of the pipes and wiring required. Also bear in mind that there must be enough space around the unit for installation and maintenance.

Install a service hatch near the pipe connection area and electrical junction box for installation and maintenance work.

1. Piping connection.
2. Drain piping connection.
3. Service access door.



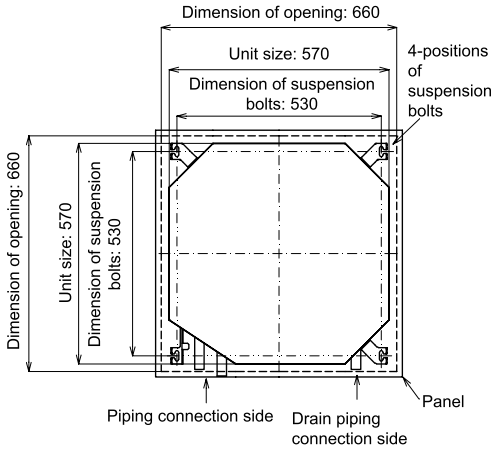
Check that the drain hose can be installed maintaining the necessary down-slope.

Check that the ceiling surface where the air panel is to be installed is completely horizontal.

Installation

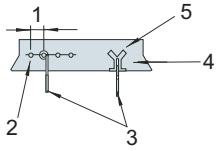
Cut the area of the unit in the false ceiling and reinforce the opening made.

Install the M10 (3/8”) suspension bolts depending on the type of surface:

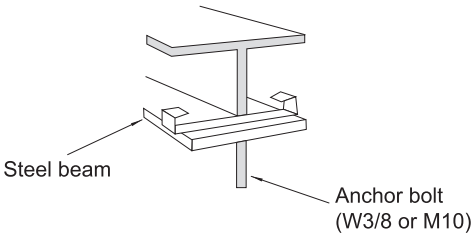


Concrete beams

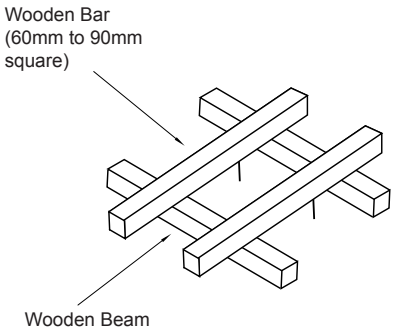
1 150 to 160 mm
2 Steel
3 Anchor bolt (W3/8 or M10)
4 Concrete
5 Insert (100 to 150 kg)



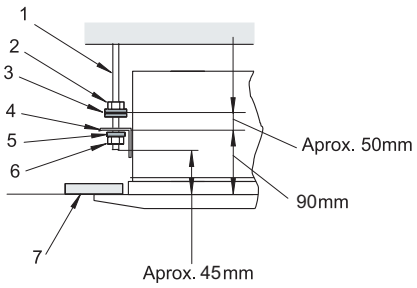
Steel beams



Wooden beams



1 Suspension bolts (field-supplied)
2 Nut (field-supplied)
3 Washer with insulation accessory
4 Suspension bracket (attached indoor unit)
5 Washer (accessory)
6 Nut (field-supplied)
7 Ceiling



Thread on the nuts and fit the washers for all the bolts, as shown in the figure.

Fit two suspension brackets onto the nut and washer of each bolt, starting on one side.

Check that the nuts and washers are correctly secured with the suspension bracket retainers and fit the brackets onto their nuts and washers on the other side.

Fit the washers with the insulation facing downwards, as shown in the figure. Bear in mind the position of the side for pipe connection before lifting the indoor unit.

Where a false ceiling is already installed, install and prepare the pipes and cables on the indoor unit before lifting it.

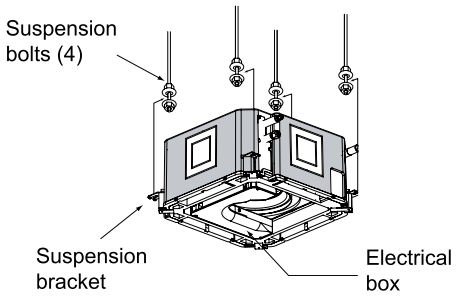
CAUTION

- ***Before lifting the unit, prepare any necessary means (ladders, scaffolding, elevator platform, etc.) and check that the current safety regulations in the place where the installation is taking place are met.***
- ***Check that the lifting work can be carried out without the risk of injuries to you or others in the surrounding area.***
- ***Request the assistance of another person to lift the unit.***

Lift the unit carefully, without exercising pressure on the drain pan.

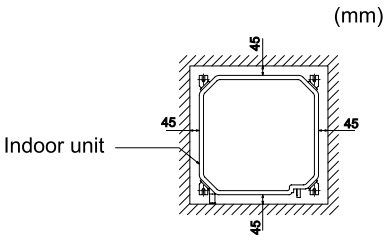
Fit the nuts, flat washers and spring washers supplied (4 of each) to secure the indoor unit.

Check that the condensate discharge system in the indoor unit works correctly. To do so, check the level of the drain pan using a spirit level.

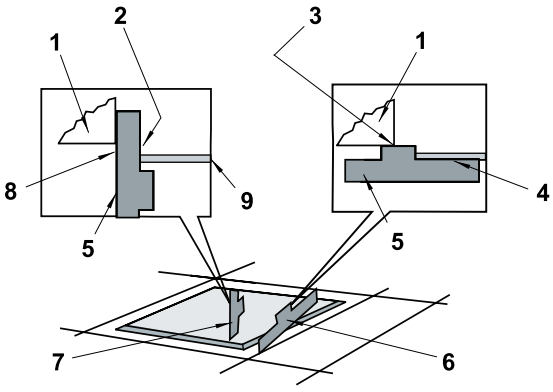


Adjusting the space between the indoor unit and the opening in the false ceiling

Adjust the indoor unit to the correct position using the pattern for the installation.



1 Indoor unit
2 Attach this side of the checking pattern to the inner side of the opening of the ceiling
3 Attach this side of the checking pattern to the lower side of the unit
4 Attach this side of the checking pattern to the ceiling panel
5 Cheking checking pattern
6 Check the height of the ceiling at each corner of the unit
7 Check the dimension of the opening at each side of the unit
8 Attach this side of the checking pattern to the outer side of the opening
9 Ceiling Panel



For panelled ceilings.

Once adjusted, tighten the suspension bracket nuts.

Apply a thread-locking product to the bolts and nuts to prevent them from loosening. Otherwise, abnormal noise may be caused by mechanical vibrations and the indoor unit may become loose.

2.2.3 Accessories supplied with the air panel: P-N23WAM

Check that the following accessories are supplied with the unit.

NOTE

Please contact your HITACHI distributor if any of the accessories has not been supplied with the unit.

Accessory	Appearance	Quantity	Purpose
Long bolt (M5)		4	For panel fixing.

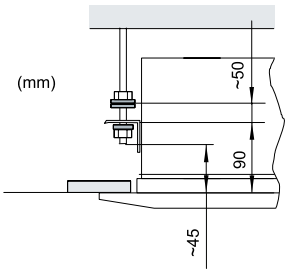
2.2.4 Air panel installation

CAUTION

Take care while the air panel is unpacked and protect it by placing it on insulating or soft material so as not to scratch the sealant insulation.

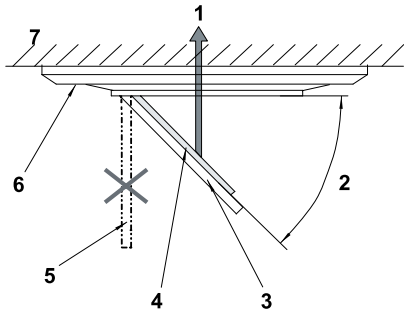
Location of the suspension brackets

Make sure the suspension brackets on the indoor unit are approximately 90 mm in height above the false ceiling.



Remove the air inlet grille from the air panel

Nº	Part
1	Take up the grille keeping it inclined
2	45° (correct)
3	Air intake grille
4	Air filter
5	Wrong
6	Air panel
7	Ceiling



Open the air inlet grille until it is at an angle of approximately 45° in relation to the air panel surface.

Lift the grille while keeping it tilted.

CAUTION

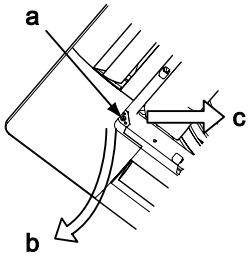
Do not allow the grille to swing freely or the securing mechanism will break.

Air panel installation

Remove the screw located next to mark -a-.

Press the securing tabs in the direction of the arrow -b-.

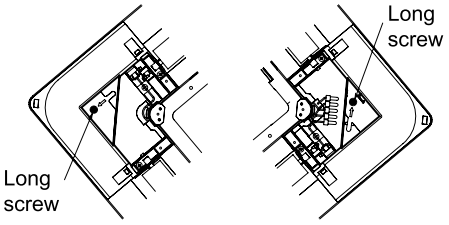
Remove the corner cover by pulling it in direction -c-.



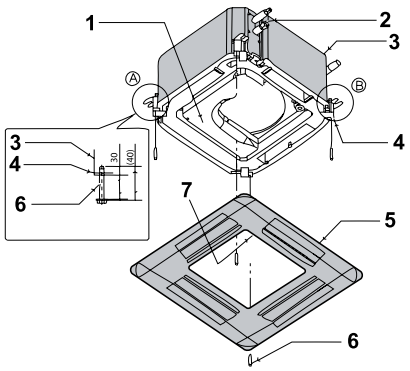
Thread the long screw to secure the air panel temporarily.

Adjust the corner of the indoor unit at the refrigerant connection part to the position marked as PIPE SIDE.

Attach the air panel to the long screw (2 position) so that it can be temporarily fitted and adjusted.

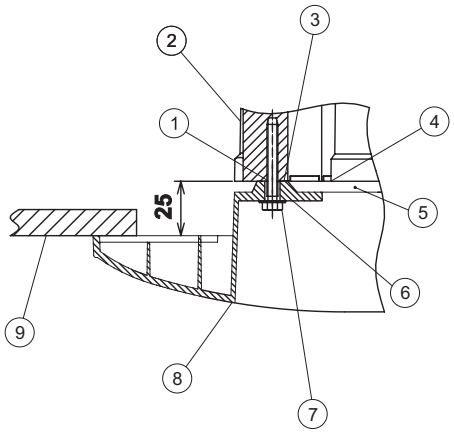


Nº	Part
1	Electric control box
2	Refrigerant pipe connections
3	Indoor unit
4	Fixing plate
5	Air panel
6	Long screw (4)
7	Indication “PIPE SIDE”



Fit the air panel in the attachment position using the screws supplied (M5). First secure the screws in positions -A- and -B- and then the rest.

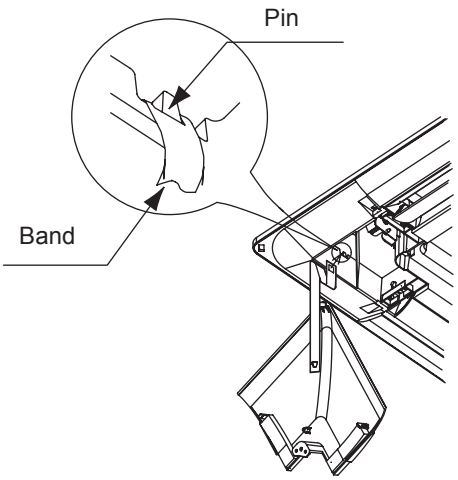
1 Tighten the fixing screw completely
2 Indoor unit
3 Fixing sheet for air panel (indoor unit side)
4 Bottom side of indoor unit
5 Sealing gasket
6 Fixing sheet for air panel (panel side)
7 Fixing screw for air panel
8 Air panel
9 Fase ceiling



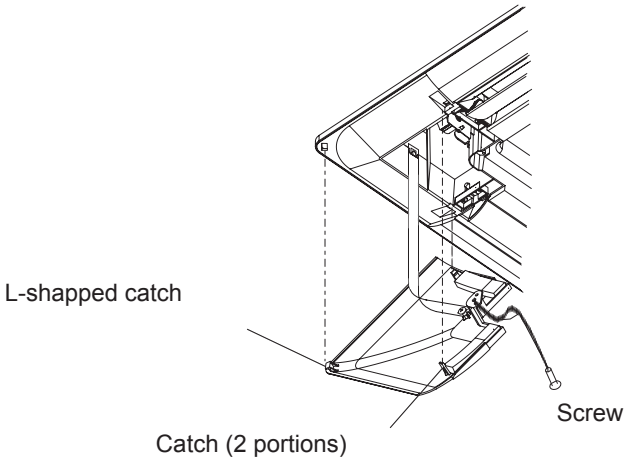
Check that there are no gaps in the touching surface between the indoor unit and the air panel. Gaps may cause air leaks or condensation.

Secure the corner covers after fitting the air panel:

a) Attach the tab at the rear of the corner cover to the panel pin.

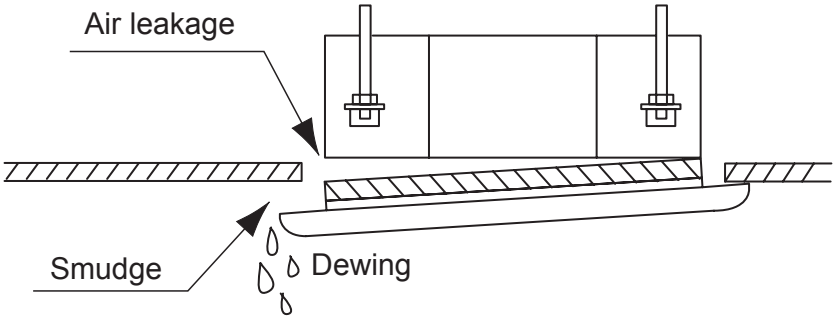


b) Attach the L-shaped stop located on the rear of the corner cover to the square hole in the air panel.



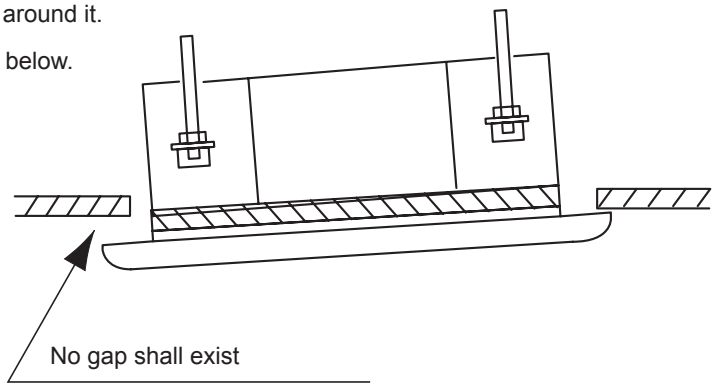
Considerations following air panel installation

Tighten the long bolts appropriately. Otherwise, installation faults may be caused.



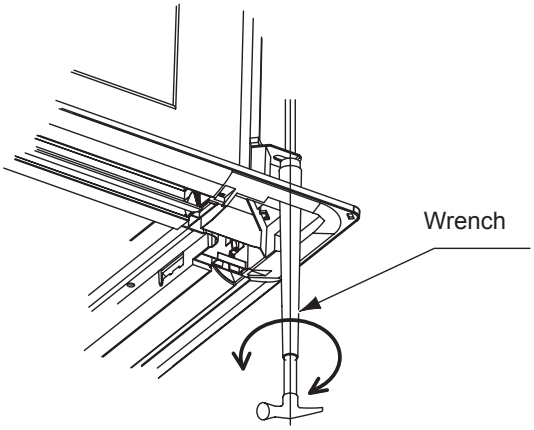
Readjust the height of the indoor unit if gaps are seen around it.

Use long bolts and nuts for readjustment, as indicated below.



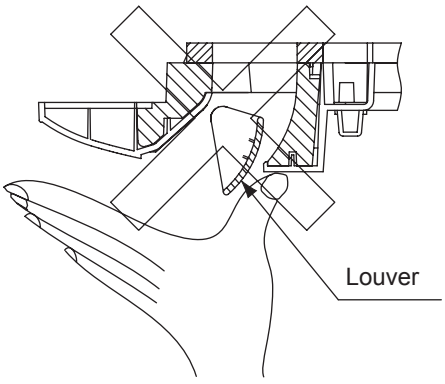
Once the air panel is installed, the final height of the indoor unit can be adjusted using a wrench through the corner cover.

Excessively adjusting the height leads to condensation leaks from the drain pan.



CAUTION

Do not move the air louver by hand.
The drive mechanism may be damaged.



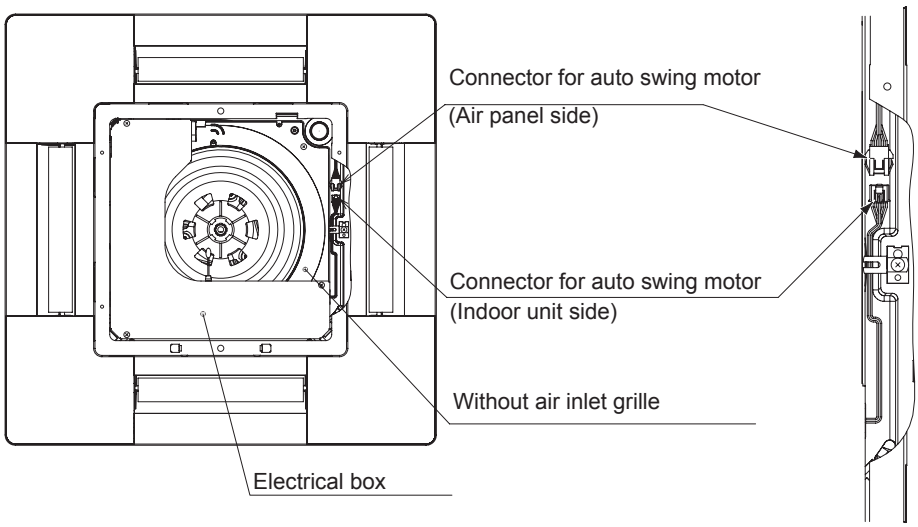
Electrical connection of the air panel

CAUTION

Switch off the power supply to the unit before coupling the connectors, otherwise the automatic louver will not work.

The following connector is used with the air panel (see from the lower surface of the air panel without the air inlet grille).

Connect the connectors for auto-swing motor (Low voltage 5pin, white).



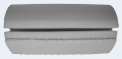
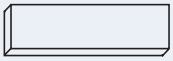
2.3 RCD - 2-way cassette

2.3.1 Accessories supplied with the unit

Check that the following accessories are supplied with the unit.

NOTE

Please contact your HITACHI distributor if any of the accessories has not been supplied with the unit.

Accessory	Appearance	Quantity	Purpose
Pattern (Carton board)		1	To define the position of the unit and adjust the necessary opening in the false ceiling.
Checking pattern (Cut out from the carton board)		1	
Cross recessed head screws (M6)		6	For fitting paper pattern.
Flat washer		8	For unit suspension.
Wire clamp		1	For the drain hose connection.
Insulation (26ID x 100 mm)		1	For the refrigerant pipe connection.
Insulation (26ID x 85 mm)		1	
Cord band		8	To attach the refrigerant pipe insulation
Insulation (5Tx50x200)		1	For covering wiring connection

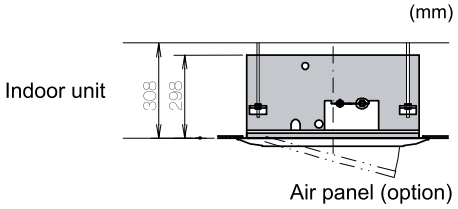
Applicable air panel

Indoor unit	Applicable air panel
RCD-(1.0-3.0)	P-N23DNA
RCD-(4.0-5.0)	P-N26DNA

2.3.2 Unit installation

Initial checks

Check that there is enough space between the false ceiling and the ceiling of the room to house the unit. Its height must be less than the measured distance. Consult the corresponding chapter of the Technical Catalogue for information on the unit measurements.

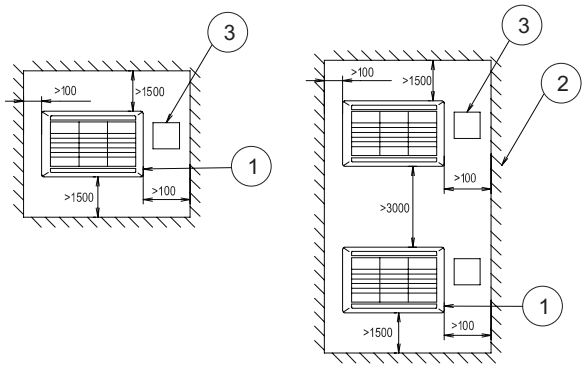


Before starting installation, plan the direction of the pipes and wiring required. Also bear in mind that there must be enough

space around the unit for installation and maintenance.

Install a service hatch near the pipe connection area and electrical junction box for installation and maintenance work.

1. Piping connection.
2. Wall.
3. Service access panel.



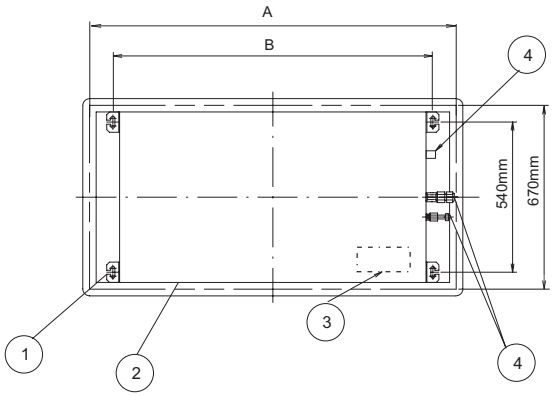
Check that the ceiling surface where the air panel is to be installed is completely horizontal.
Check that the drain hose can be installed maintaining the necessary down-slope.

Installation

Cut the area of the unit in the false ceiling and reinforce the opening made.

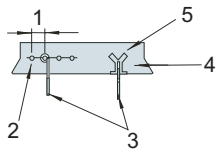
Install the M10 (3/8”) suspension bolts depending on the type of surface:

Model	A (Opening)	B (Suspension)
RCD-1.0	1060	890
RCD-1.5		
RCD-2.0		
RCD-2.5		
RCD-3.0		
RCD-4.0	1620	1450
RCD-5.0		



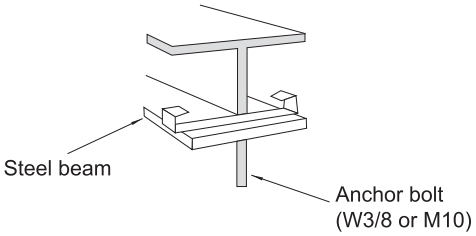
1 Suspension
2 Panel
3 Wireless receiver
4 Piping

Concrete beams

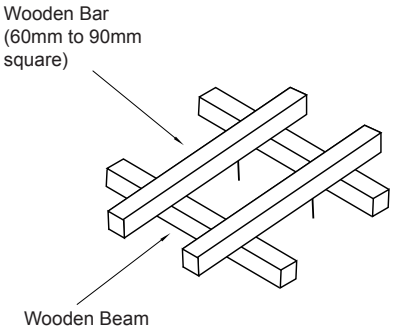


1 150 to 160 mm
2 Steel
3 Anchor bolt (W3/8 or M10)
4 Concrete
5 Insert (100 to 150 kg)

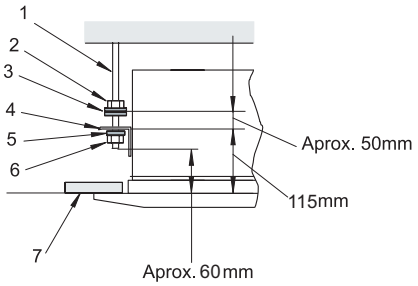
Steel beams



Wooden beams



1 Suspension bolts (field-supplied)
2 Nut (field-supplied)
3 Washer with insulation accessory
4 Suspension bracket (attached indoor unit)
5 Washer (field-supplied)
6 Nut (field-supplied)
7 Ceiling



Thread on the nuts and fit the washers for all the bolts, as shown in the figure.

Fit two suspension brackets onto the nut and washer of each bolt, starting on one side.

Check that the nuts and washers are correctly secured with the suspension bracket retainers and fit the brackets onto their nuts and washers on the other side.

Fit the washers with the insulation facing downwards, as shown in the figure. Bear in mind the position of the side for pipe connection before lifting the indoor unit.

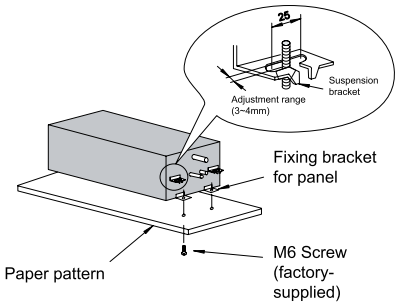
Where a false ceiling is already installed, install and prepare the pipes and cables on the indoor unit before lifting it.

CAUTION

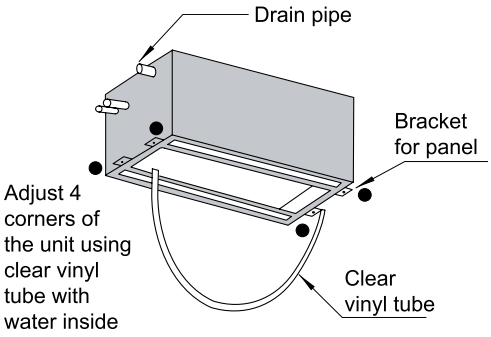
- ***Before lifting the unit, prepare any necessary means (ladders, scaffolding, elevator platform, etc.) and check that the current safety regulations in the place where the installation is taking place are met.***
- ***Check that the lifting work can be carried out without the risk of injuries to you or others in the surrounding area.***
- ***Request the assistance of another person to lift the unit.***

Lift the unit carefully, without exercising pressure on the drain pan.

Fit the nuts, flat washers and spring washers supplied (4 of each) to secure the indoor unit.



Check that the condensate discharge system in the indoor unit works correctly. To do so, check the level of the drain pan using a spirit level or a clear flexible pipe full of water. The side of the unit on which the drain hose is located must be around 5 mm lower than the other sides.

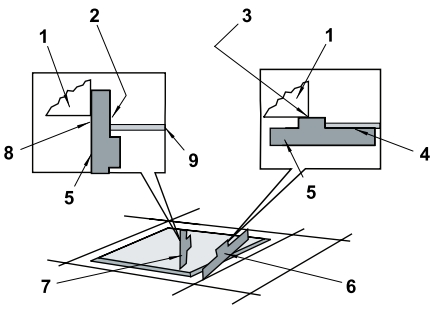


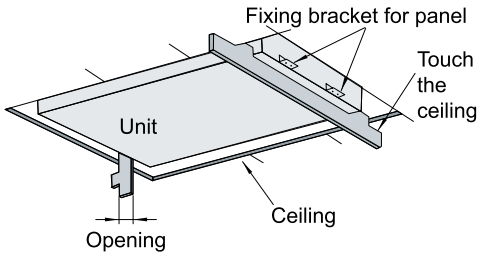
Adjusting the space between the indoor unit and the opening in the false ceiling

Adjust the indoor unit to the correct position using the pattern and checking pattern for the installation.

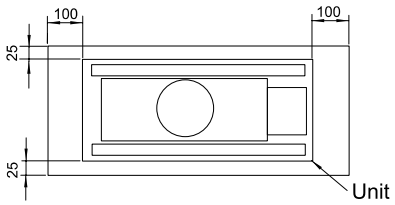
For panelled ceilings.

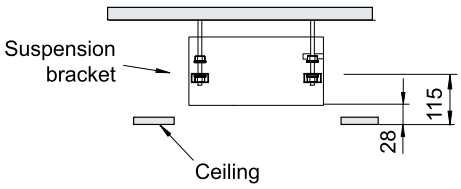
1 Indoor unit
2 Attach this side of the checking pattern to the inner side of the opening of the ceiling
3 Attach this side of the checking pattern to the lower side of the unit
4 Attach this side of the checking pattern to the ceiling panel
5 Cheking checking pattern
6 Check the height of the ceiling at each corner of the unit
7 Check the dimension of the opening at each side of the unit
8 Attach this side of the checking pattern to the outer side of the opening
9 Ceiling Panel





For ceilings without panels.





Once adjusted, tighten the suspension bracket nuts.

Apply a thread-locking product to the bolts and nuts to prevent them from loosening. Otherwise, abnormal noise may be caused by mechanical vibrations and the indoor unit may become loose.

2.3.3 Accessories supplied with the air panel: P-N23DWA / P-N46DWA

Check that the following accessories are supplied with the unit.

NOTE

Please contact your HITACHI distributor if any of the accessories has not been supplied with the unit.

Accessory	Appearance	Quantity	Purpose
Long screw (A) (M6 x 50)		4	For panel fixing.
Long screw (B) (M6 x 30)		2	For panel fixing (only for air panel P-N46DNA)

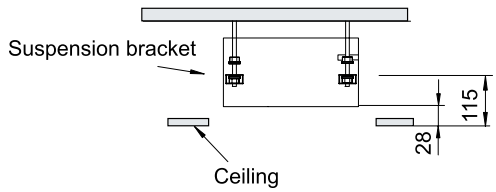
2.3.4 Air panel installation

CAUTION

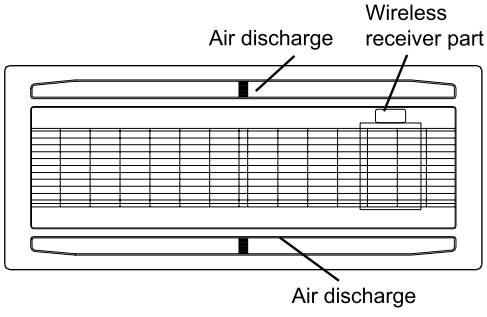
Take care while the air panel is unpacked and protect it by placing it on insulating or soft material so as not to scratch the sealant insulation.

Location of the suspension brackets

Make sure the suspension brackets on the indoor unit are approximately 115 mm in height above the false ceiling.

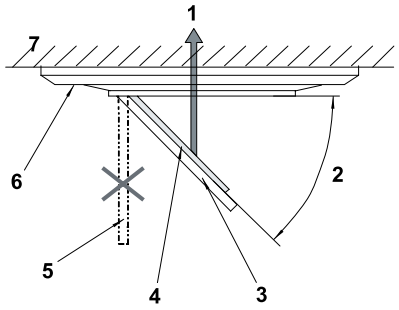


(mm)



Remove the air inlet grille from the air panel

Nº	Part
1	Take up the grille keeping it inclined
2	Approx. 40° (correct)
3	Air inlet grille
4	Air filter
5	Wrong
6	Air panel
7	Ceiling



Open the air inlet grille until it is at an angle of approximately 40° in relation to the air panel surface.

Lift the grille while keeping it tilted.

CAUTION

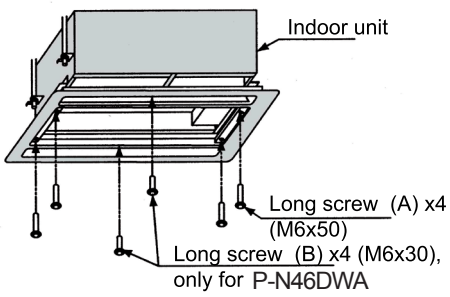
Do not allow the grille to swing freely or the securing mechanism will break.

Air panel installation

Hang the air panel from the indoor unit, attaching the cables in a U-shape from the panel to the unit hook cables.

Check that the position of the electrical junction box on the indoor unit coincides with the position of the air panel wiring outlet.

Position the panel on the indoor unit and secure using the long screws supplied.



CAUTION

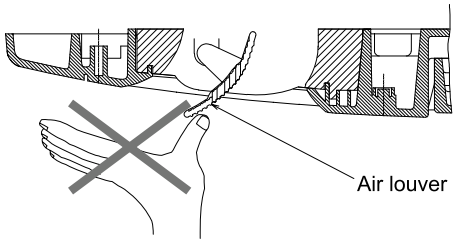
- ***To avoid damaging the panel, the long screws securing it are fitted with stops to stop tightening at the set position.***
- ***Where the air panel does not reach the ceiling surface or in the event of air leaks on the touching surface, readjust the installation height of the indoor unit.***

Check that there are no gaps in the touching surface between the indoor unit and the air panel. Gaps may cause air leaks or condensation.

Considerations following air panel installation

CAUTION

Do not move the air louver by hand. The drive mechanism may be damaged.

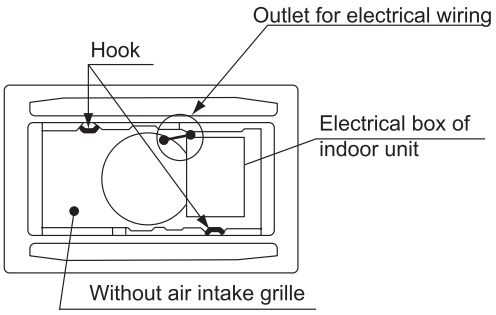


Electrical connection of the air panel

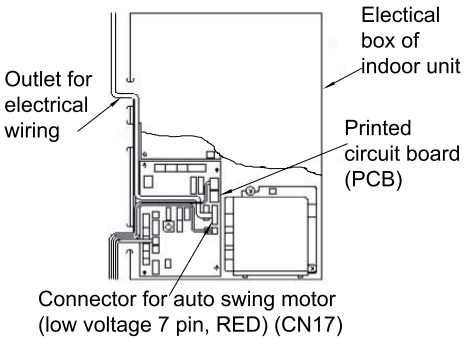
CAUTION

Switch off the power supply to the unit before coupling the connectors, otherwise the automatic louver will not work.

The following connector is used with the air panel (see from the lower surface of the air panel without the air inlet grille).



Couple the connectors as indicated in the figure (view of the electrical box from above).



2.4 RPC - Ceiling

2.4.1 Accessories supplied with the unit

Check that the following accessories are supplied with the unit.

NOTE

Please contact your HITACHI distributor if any of the accessories has not been supplied with the unit.

Accessory	Appearance	Quantity	Purpose
Suspension bracket		2	For unit suspension.
Fixing screw (M4 x10mm)		2	For the sealing plate.
Drain hose		1	For the drain hose connection.
Wire clamp		2	
Insulation material (5T x 200 x 200mm)		1	For the drain hose connection.
Sealing plate (0.8T × 118 × 42mm)		1	To seal the die-cut hole.

2.4.2 Unit installation

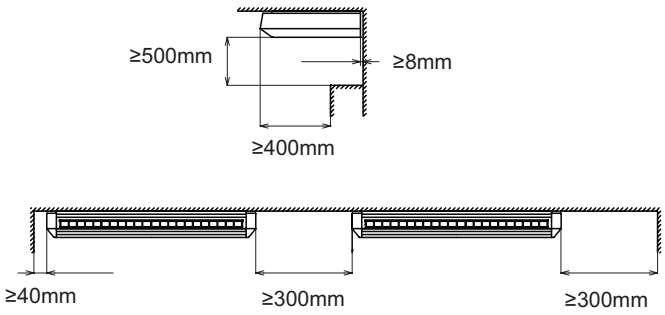
Initial checks

Check that there is enough space around the unit. Consult the corresponding chapter of the Technical Catalogue for information on the unit measurements.

Before starting installation, plan the direction of the pipes and wiring required. Also bear in mind that there must be enough space around the unit for installation and maintenance.

Check that the ceiling surface where the unit is to be installed is completely horizontal.

Check that the drain hose can be installed maintaining the necessary down-slope.

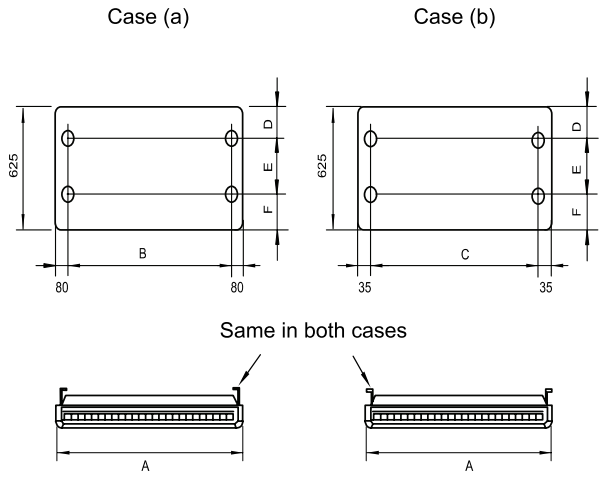


2.4.3 Suspension bracket installation

Cut out the printed pattern on the inside of the unit's cardboard packaging and follow the instructions printed on it.

The following information is also included on the pattern:

1 Separation of the sling bolt for installation positions (a) and (b).
2 Positions of the holes for the refrigerant pipes.
3 Positions of the holes for the drain pipes.



The suspension bracket can be hung in two positions:

Model	A	B	C	D	E	F
RPC-2.0FSN2E	1094	920	1010	150	220	255
RPC-(2.5/3.0)FSN2E	1314	1140	1230	150	220	255
RPC-4.0FSN2E	1314	1140	1230	110	280	235
RPC-(5.0/6.0)FSN2E	1574	1400	1490	110	280	235

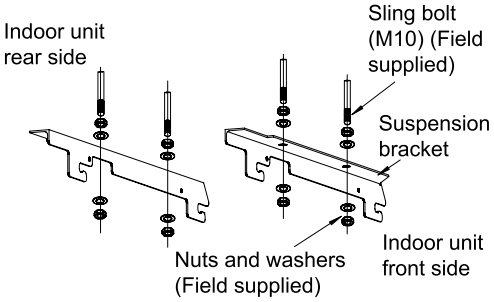
Select the suspension bracket system in line with installation requirements.

NOTE

Installation position (a) is recommended for a partially hidden installation.

Fit the suspension brackets on the sling bolts or the anchor bolts and securing using the nuts and washers supplied.

Apply a thread-locking product to the bolts and nuts to prevent them from loosening. Otherwise, abnormal noise may be caused by mechanical vibrations and the indoor unit may become loose.



2.4.4 Indoor unit installation

CAUTION

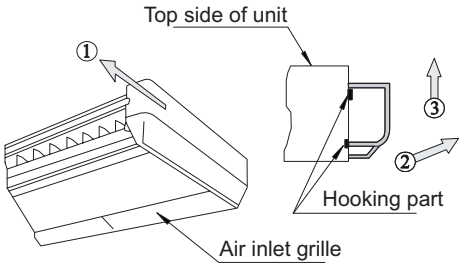
To avoid damage to the resin side covers, remove them before lifting or moving the indoor unit.

Thread the nuts and fit the washers on all the bolts.

Fit the securing bolts onto the nut and washer of each bolt, starting on one side.

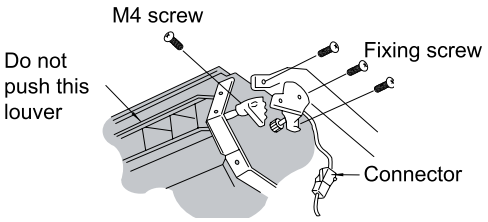
Check that the nuts and washers are correctly secured with the suspension bracket retainers and fit the brackets onto their nuts and washers on the other side.

Bear in mind the position of the side for pipe connection before lifting the indoor unit.



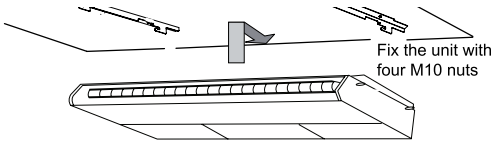
CAUTION

Do not move the air louver by hand. The drive mechanism may be damaged.



Suspended unit installation

CAUTION



- ***Before lifting the unit, prepare any necessary means (ladders, scaffolding, elevator platform, etc.) and check that the current safety regulations in the place where the installation is taking place are met.***
- ***Check that the lifting work can be carried out without the risk of injuries to you or others in the surrounding area***
- ***Request the assistance of another person to lift the unit.***

Hang the indoor unit on the suspension brackets, inserting the unit assembly bolts on the notches in the brackets.

Fit the nuts, flat washers and spring washers supplied to secure the indoor unit.

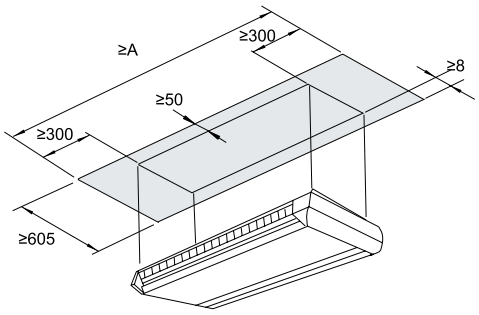
Partially built-in unit installation

Where a false ceiling is already installed, install and prepare the pipes and cables on the indoor unit before lifting it.

Cut the area of the unit in the false ceiling and reinforce the opening made.

CAUTION

- ***Before lifting the unit, prepare any necessary means (ladders, scaffolding, elevator platform, etc.) and check that the current safety regulations in the place where the installation is taking place are met.***
- ***Check that the lifting work can be carried out without the risk of injuries to you or others in the surrounding area***
- ***Request the assistance of another person to lift the unit.***



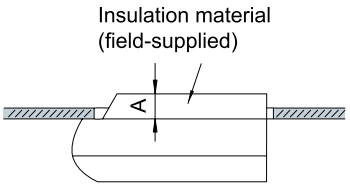
Model	A
RPC-2.0FSN2E	1560
RPC-(2.5-4.0)FSN2E	1780
RPC-(5.0-6.0)FSN2E	2040

Hang the indoor unit on the suspension brackets, inserting the unit assembly bolts on the notches in the brackets.

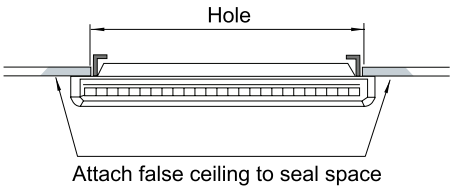
Fit the nuts, flat washers and spring washers supplied to secure the indoor unit.

Insulate the top of the unit that will be hidden in the ceiling. Gaps may cause air leaks or condensation.

Model	A
RPC-(2.0-3.0)FSN2E	13
RPC-(4.0-6.0)FSN2E	75



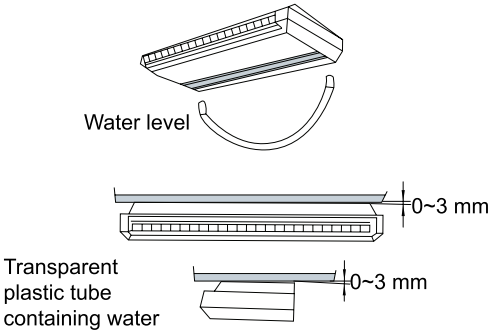
Fit the false ceiling panels along the unit.



Continue for all installation types:

Check that the condensate discharge system in the indoor unit works correctly. To do so, check the level of the drain pan using a spirit level or a clear flexible pipe full of water. The rear of the unit where the drain hose is located must be around 3 mm lower than the front side.

Secure the drain hose with the clamp and adhesive supplied.



2.5 RPI(M) - Ducted indoor unit (0.8-6.0)FSN(4)E(-DU)

2.5.1 Accessories supplied with the unit

Check that the following accessories are supplied with the unit.

NOTE

Please contact your HITACHI distributor if any of the accessories has not been supplied with the unit.

Accessory	Appearance	Quantity	Purpose
Wire clamp		1	For the drain hose connection. (only for RPI-(0.8-1.5)FSN4E)
Drain hose		1	For drain connection (only for RPIM)

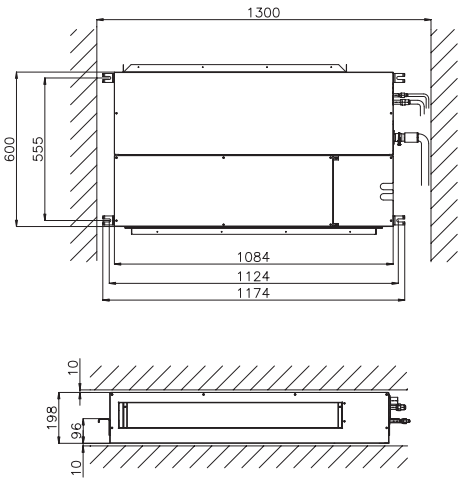
2.5.2 Unit installation

Initial checks

Check that there is enough space around the unit. Consult the corresponding chapter of the Technical Manual for information on the unit measurements.

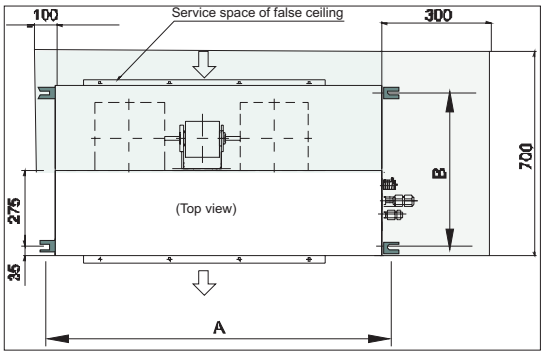
RPI - Ducted indoor unit (0.8-1.5)FSN4E

(mm)



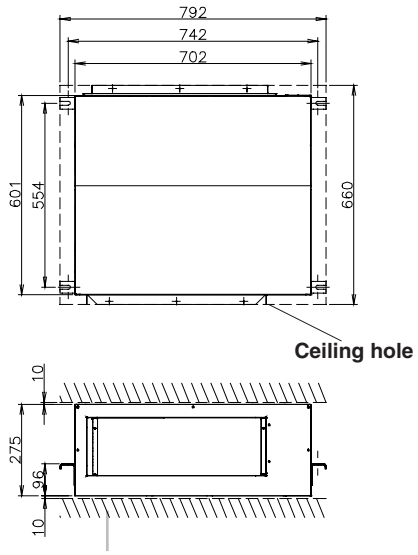
RPI - Ducted indoor unit (2.0-6.0)FSN4E

(mm)



RPIM - Ducted indoor unit (0.8-1.5)FSN4E(-DU)

(mm)



Before starting installation, plan the direction of the pipes and wiring required. Also bear in mind that there must be enough space around the unit for installation and maintenance.

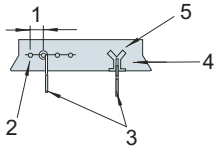
Check that the ceiling surface where the unit is to be installed is completely horizontal.

Check that the drain hose can be installed maintaining the necessary down-slope.

Installation

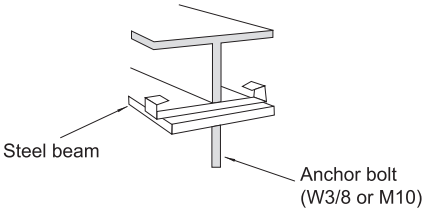
Install the M10 (3/8) suspension bolts depending on the type of surface:

Concrete beams

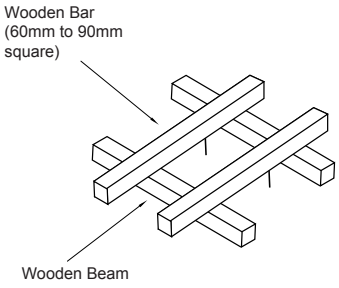


1 150 to 160 mm
2 Steel
3 Anchor bolt (W3/8 or M10)
4 Concrete
5 Insert (100 to 150 kg)

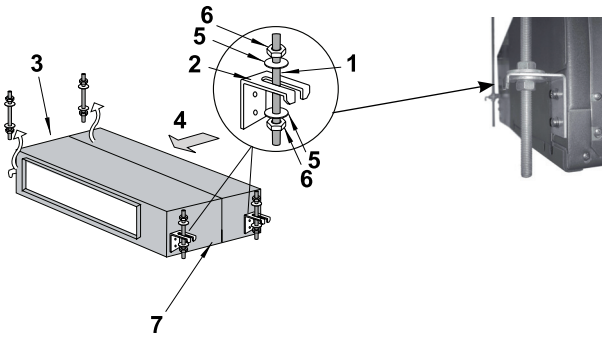
Steel beams



Wooden beams



1 Suspension bolt
2 Suspension bracket
3 Left side
4 Inlet air
5 Washer
6 Nut
7 Right side (service cover)



Thread on the nuts and fit the washers for all the bolts, as shown in the figure.

Fit two suspension brackets onto the nut and washer of each bolt, starting on one side.

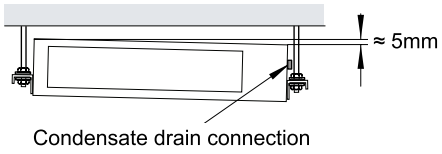
Check that the nuts and washers are correctly secured with the suspension bracket retainers and fit the brackets onto their nuts and washers on the other side.

Bear in mind the position of the side for pipe connection before lifting the indoor unit.

⚠CAUTION

- ***Before lifting the unit, prepare any necessary means (ladders, scaffolding, elevator platform, etc.) and check that the current safety regulations in the place where the installation is taking place are met.***
- ***Check that the lifting work can be carried out without the risk of injuries to you or others in the surrounding area.***
- ***Request the assistance of another person to lift the unit.***

Check that the condensate discharge system in the indoor unit works correctly. To do so, check the level of the drain pan using a spirit level or a clear flexible pipe full of water. The side of the unit on which the drain hose is located must be around 5 mm lower than the front side.



NOTE

The drainage connection on the RPIM unit is located at the rear.

Once adjusted, tighten the suspension bracket nuts.

Apply a thread-locking product to the bolts and nuts to prevent them from loosening. Otherwise, abnormal noise may be caused by mechanical vibrations and the indoor unit may become loose.

Apply protective paint to the bolts and nuts to prevent rusting.

Secure the drain hose with the clamp and adhesive supplied.

CAUTION

Completely cover the unit with a sheet of plastic to protect it during installation work.

2.5.3 Air duct connection

NOTE

- ***Use field-supplied flexible ducts to avoid abnormal acoustic vibrations.***
- ***RPI units are supplied with a standard air filter on the suction side. This filter is supplied for cases where no suction duct is applied (or when the duct is very short).***

Secure the flexible air duct to the outsides of the hoses supplied with the unit.

1 Inlet air

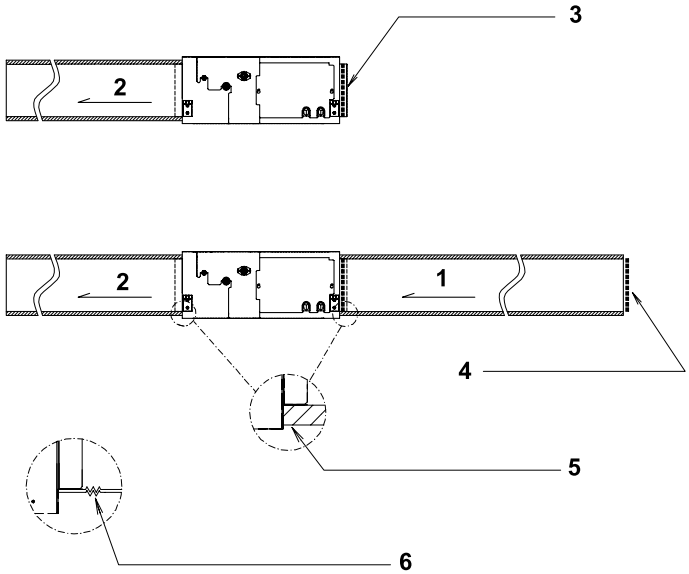
2 Outlet air

3 Standard air filter (factory-supplied)

4 Optional air filter (Field-supplied or adapted factory-supplied one)

5 Insulated duct (Installed on the outer side of the flanges)

6 Flexible duct installation (Rubber or textil material)



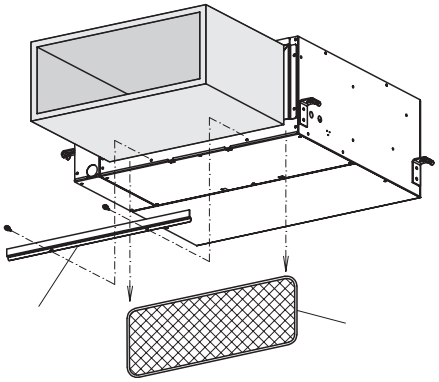
Bear in mind the following instructions depending on the installation type:

1 Where the suction duct is not used, keep the standard air filter.
2 Where the suction duct is used, fit the air filter at the suction duct inlet point, removing the standard air filter from the unit. This air filter must be field-supplied or a factory-adapted one must be used.
3 In the case of the RPIM unit, low static pressure is produced in the suction duct and, therefore, a short duct must be used.

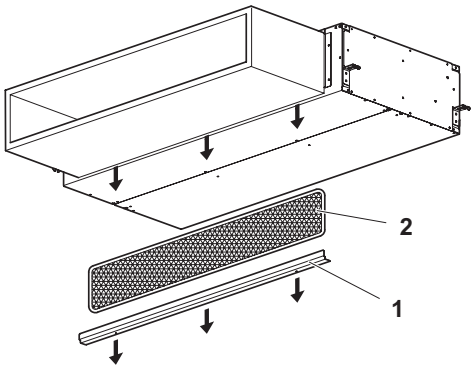
2.5.4 Maintenance of the suction air filter

Simply remove the set screws from the bar -1- (RPIM units: 2 screws, RPI units: 3 screws) and remove it to pull the filter downwards.

RPIM

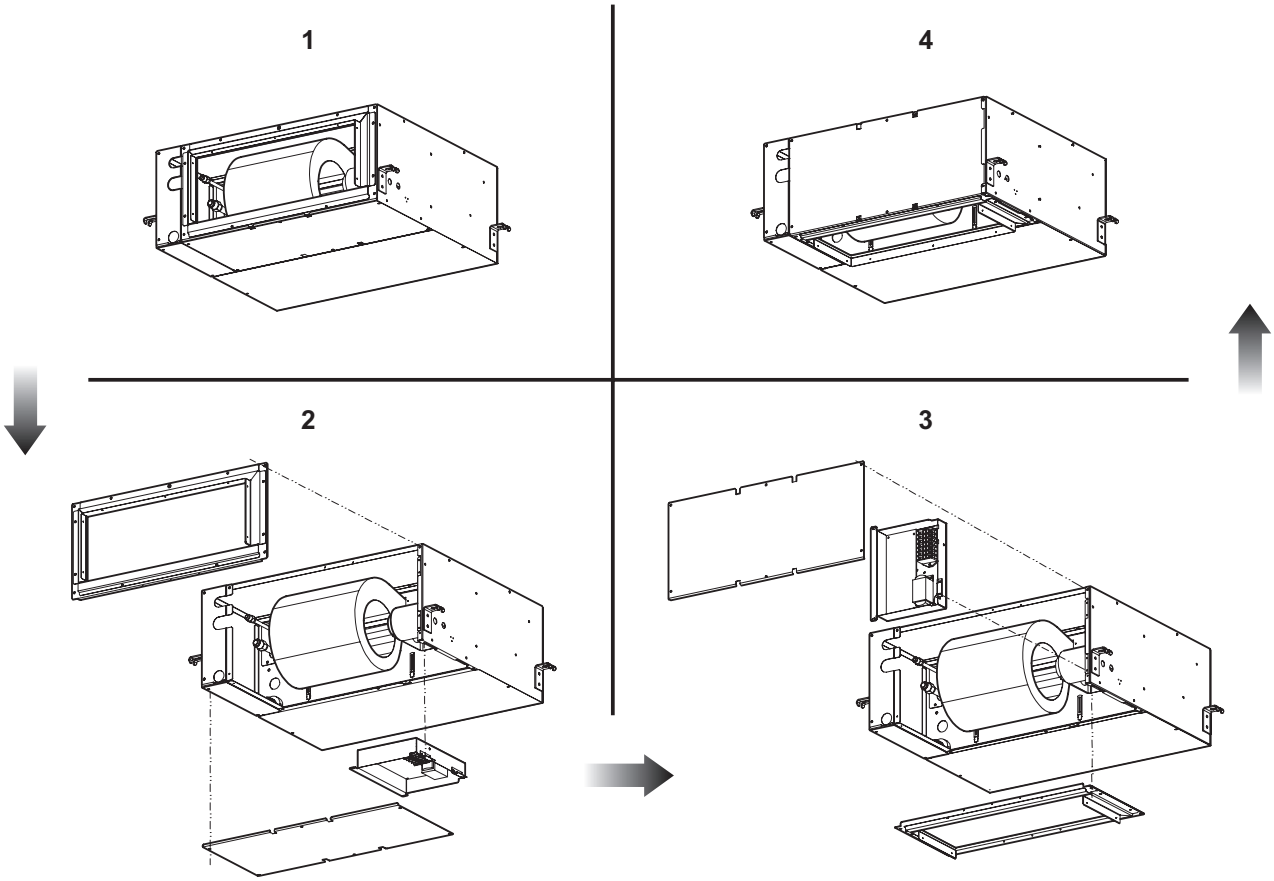


RPI



Change in the air suction direction RPIM-(0.8-1.5)FSN2E (-DU)

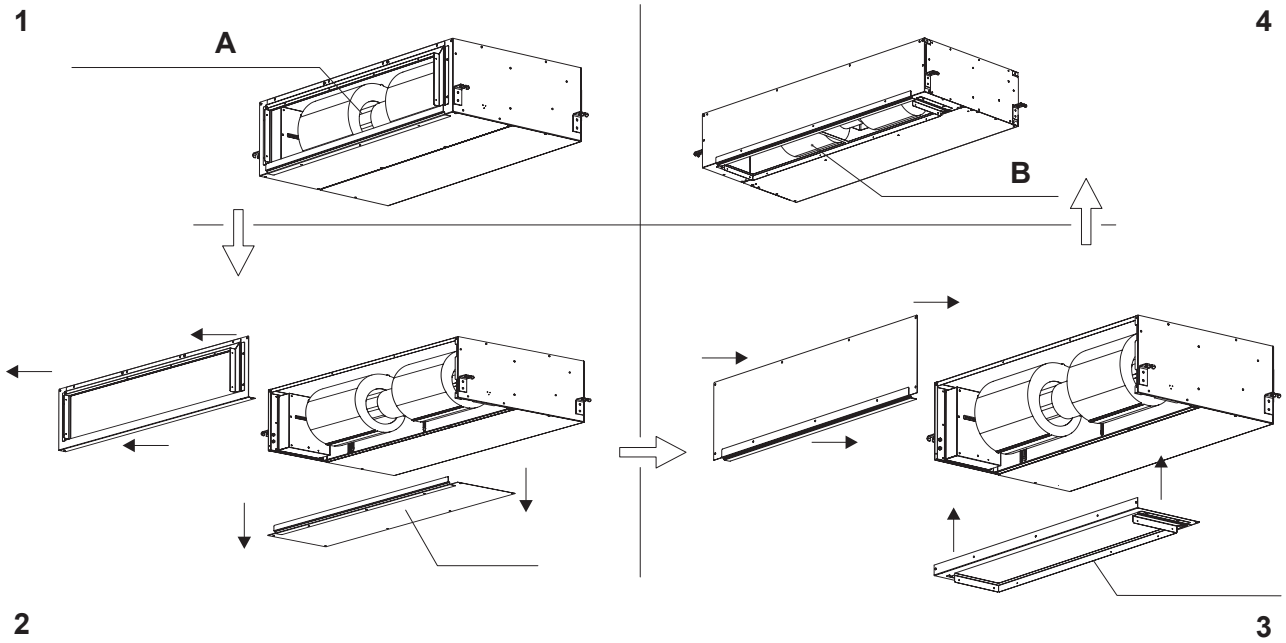
Change in position of the air inlet on RPIM-(0.8-1.5)FSN2E(-DU) models: the position of the air inlet and, therefore, its direction can be modified by changing the position of the rear cover, as shown in the illustrations.



1. Initial position of the air inlet (factory-supplied).
2. Remove the front and rear covers and the electrical box from the unit.
3. Switch the position of the front and rear covers. Change the position of the electrical box on the unit as indicated in the illustration.
4. Final position of the air inlet.

RPI-(2.0-6.0)FSN4E

Change in position of the air inlet on RPI-(2.0-6.0)FSN4E models: the position of the air inlet and, therefore, its direction can be modified by changing the position of the rear cover, as shown in the illustrations.



1 Initial position -A- of the air inlet (factory-supplied).

2 Air inlet and bottom cover away from the unit.

3 Interchange air inlet and cover position.

4 Final position -B- of the air inlet.

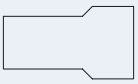
2.6 RPI - Ducted indoor unit (8-10)FSN3E

2.6.1 Accessories supplied with the unit

Check that the following accessories are supplied with the unit.

NOTE

Please contact your HITACHI distributor if any of the accessories has not been supplied with the unit.

Accessory	Appearance	Quantity	Purpose
Piping adapter (Ø19.05 x Ø25.4) (For 8 HP only)		1	Reducer boss for refrigerant piping on the indoor unit
Piping adapter (Ø22.2 x Ø25.4) (For 10 HP only)			
Piping adapter (Ø9.52 x Ø12.7) (For 10 HP only)			

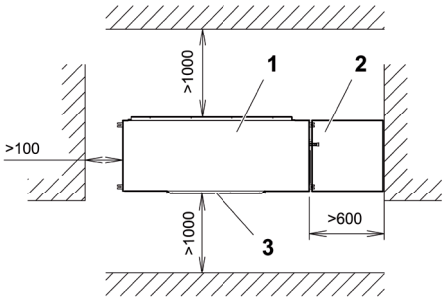
2.6.2 Unit installation

Initial checks

RPI - Ducted indoor unit (8.0/10.0)FSN3E

1. Rear.
2. Unit inspection and maintenance access.
3. Front side.

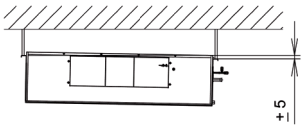
Check that there is enough space around the unit. Consult the corresponding chapter of the Technical Catalogue for information on the unit measurements.



Before starting installation, plan the direction of the pipes and wiring required. Also bear in mind that there must be enough space around the unit for installation and maintenance.

Check that the ceiling surface where the unit is to be installed is completely horizontal.

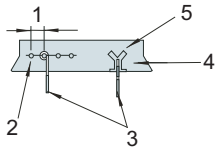
Check that the drain hose can be installed maintaining the necessary down-slope.



Installation

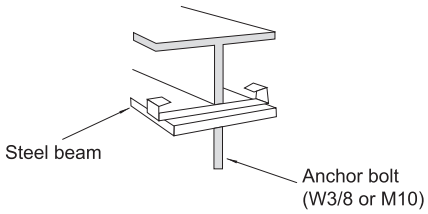
Install the M10 (3/8) suspension bolts depending on the type of surface:

Concrete beams

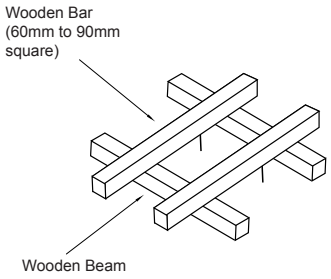


1 150 to 160 mm
2 Steel
3 Anchor bolt (W3/8 or M10)
4 Concrete
5 Insert (100 to 150 kg)

Steel beams



Wooden beams

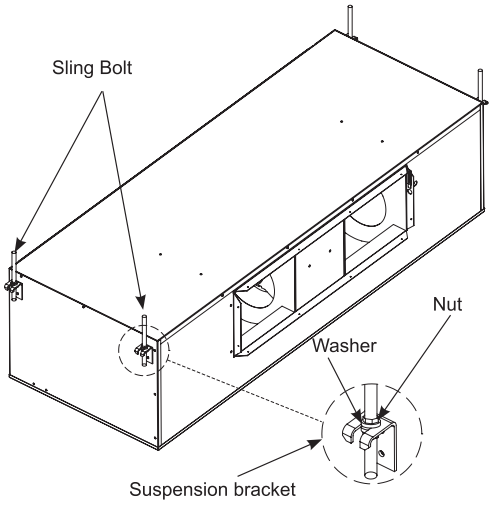


2

Thread the suspension bracket onto the nut and washer of each bolt, starting on one side.

Check that the nut and washer are correctly secured with the suspension bracket retainers.

Attach the top of the suspension bracket with another nut and washer.



CAUTION

- ***Before lifting the unit, prepare any necessary means (ladders, scaffolding, elevator platform, etc.) and check that the current safety regulations in the place where the installation is taking place are met.***
- ***Check that the lifting work can be carried out without the risk of injuries to you or others in the surrounding area.***
- ***Request the assistance of another person to lift the unit.***

Lift the unit carefully.

Check that the condensate discharge system in the indoor unit works correctly. To do so, check the level of the drain pan using a spirit level or a clear flexible pipe full of water. The side of the unit on which the drain hose is located must be around 5 mm lower than the front side.

Once adjusted, tighten the suspension bracket nuts.

Apply a thread-locking product to the bolts and nuts to prevent them from loosening. Otherwise, abnormal noise may be caused by mechanical vibrations and the indoor unit may become loose.

Apply protective paint to the bolts and nuts to prevent rusting.

Secure the drain hose with the clamp and adhesive supplied.

CAUTION

Completely cover the unit with a sheet of plastic to protect it during installation work.

2.6.3 Air duct connection

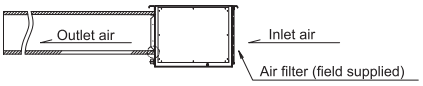
NOTE

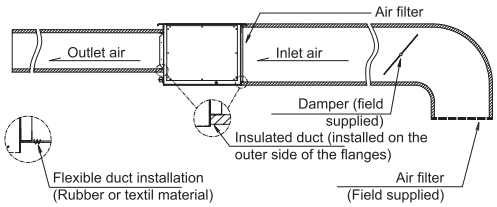
- ***Use field-supplied flexible ducts to avoid abnormal acoustic vibrations.***
- ***RPI units are supplied with a standard air filter on the suction side. This filter is supplied for cases where no suction duct is applied (or when the duct is very short).***

Secure the flexible air duct to the outsides of the hoses supplied with the unit.

Bear in mind the following instructions depending on the installation type:

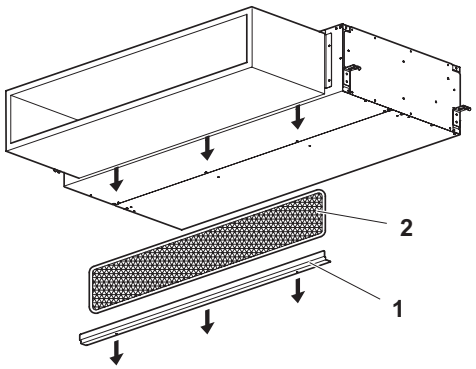
1 Where the suction duct is not used, keep the standard air filter.
2 Where the suction duct is used, fit the air filter at the suction duct inlet point, removing the standard air filter from the unit. This air filter must be field-supplied or a factory-adapted one must be used.





2.6.4 Maintenance of the suction air filter

Simply remove the set screws from the bar -1- (4 screws) and remove it to pull the filter downwards.



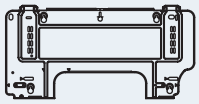
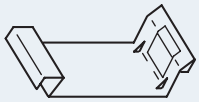
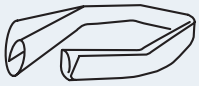
2.7 RPK - FSN(H)3M Wall mounted

2.7.1 Accessories supplied with the unit

Check that the following accessories are supplied with the unit.

NOTE

Please contact your HITACHI distributor if any of the accessories has not been supplied with the unit.

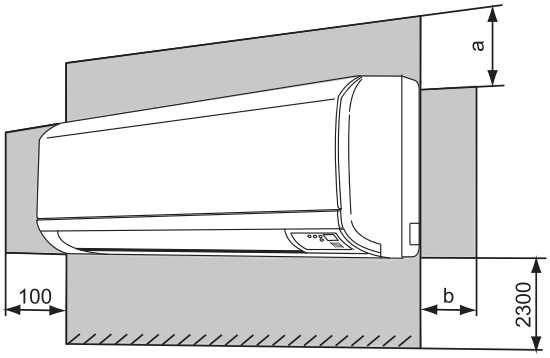
Accessory		Q'ty			Purpose
		0.8-1.0	1.5	2.0-4.0	
Suspension bracket		1	1	1	For mounting indoor unit
Screw (Ø4 x 25L)		6		8	For fixing suspension bracket
Screw (Ø4 x 40L)		2		4	
Fixing plate		-		1	For fixing piping
Thermal Insulation pipe		1		1	For insulating refrigerant piping

2.7.2 Unit installation

Initial checks

Check that there is enough space around the unit. Consult the corresponding chapter of the Technical Manual for information on the unit measurements.

Before starting installation, plan the direction of the pipes and wiring required. Also bear in mind that there must be enough space around the unit for installation and maintenance.



Unit: mm

Model	a	b
RPK-(0.8-1.5)FSN(H)3M	150	100
RPK-(2.0-4.0)FSN3M	100	200

NOTE

Bear in mind the air distribution from the unit to the room and select a suitable place for an even air temperature in the room.

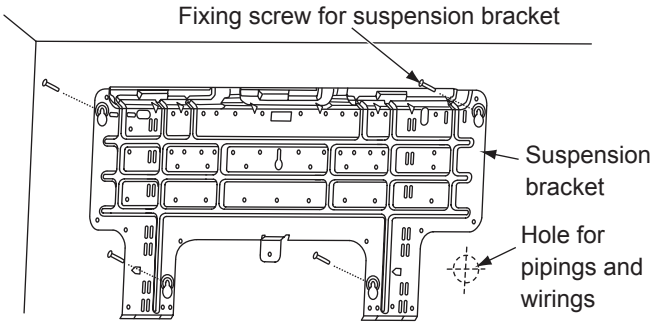
Check that the drain hose can be installed maintaining the necessary down-slope.

Installation

CAUTION

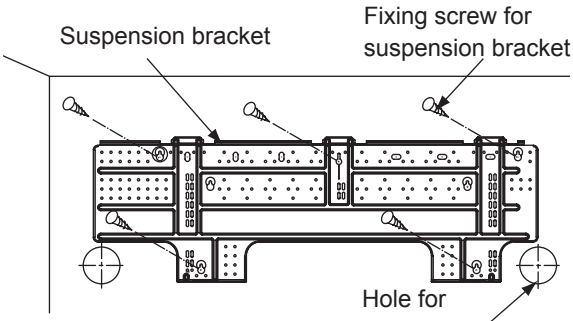
- ***Where the mounting bracket must be installed on a wooden or concrete wall, make sure it is resistant enough to withstand a weight of 200 kg.***
- ***Do not fit the mounting bracket to a pillar.***
- ***The place where the indoor unit is to be installed must be a flat surface with enough space to fully house the unit. The weight of the unit must be evenly distributed over the surface.***

RPK-(0.8-1.5)FSN(H)3M



Fix the suspension bracket by more than 4 fixing screws.

RPK-(2.0-4.0)FSN3M



Fix the suspension bracket by more than 5 fixing screws.

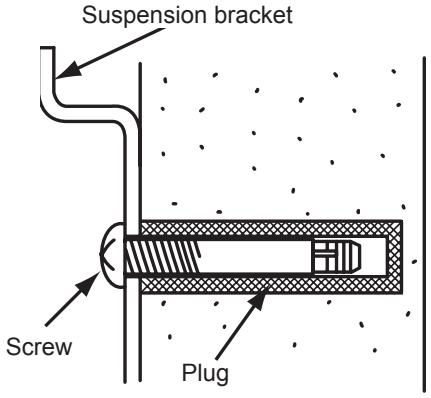
Check that the mounting bracket is installed so that the drain pipe side is slightly lower (around 3 mm) than the other side for easier condensate discharge.

NOTE

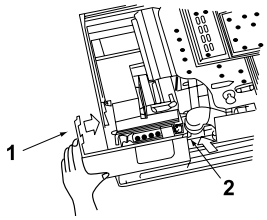
The drain hose connection can be made on the right or the left of the unit.

Installation on a concrete wall or a concrete block: fit the mounting bracket to the wall using anchor bolts, as shown in the figure.

	Q'ty	
Plug size	RPK-(0.8-1.5)FSN(H)3M	RPK-(2.0-4.0)FSN3M
M4-M5	4	5



Remove the bottom cover by pressing -1- and -2-.



CAUTION

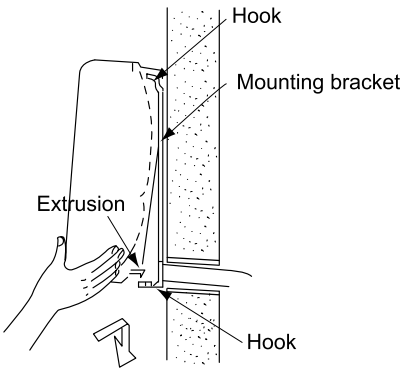
- ***Before lifting the unit, prepare any necessary means (ladders, scaffolding, elevator platform, etc.) and check that the current safety regulations in the place where the installation is taking place are met.***
- ***Check that the lifting work can be carried out without the risk of injuries to you or others in the surrounding area.***
- ***Request the assistance of another person to lift the unit.***

Lift the unit carefully.

Hang the indoor unit on the mounting bracket, keeping it vertical. Secure the bottom cover and the mounting bracket with three screws.

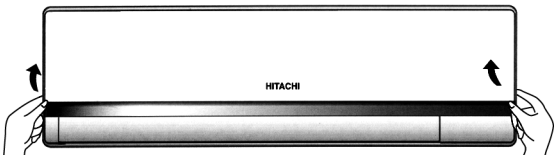
CAUTION

Make sure the unit is hanging correctly on the mounting bracket. Otherwise, the bracket could fall.



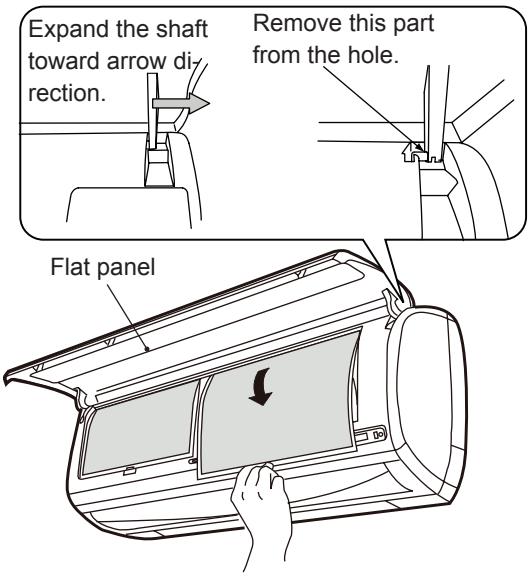
Removal of the front panel for RPK-(0.8-1.5)FSN(H)3M

Hold both sides of flat panel and open it fully.



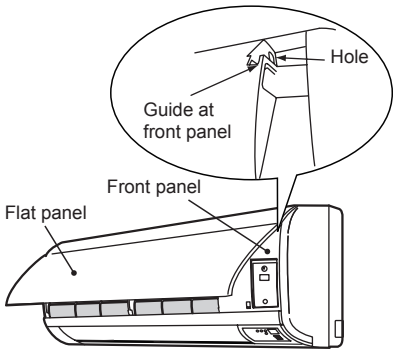
Lift up the air filter, detach the catches from the indoor unit and remove the air filter downward.

After the right arm shaft is expanded outward and the shafts are removed from the front panel, pull the flat panel frontward while the right arm shaft is slightly expanded outward.



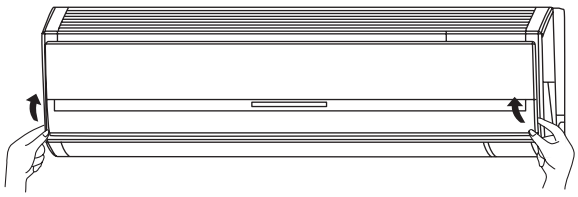
Attaching flat panel for RPK-(0.8-1.5)FSN(H)3M

Insert completely the left and right arm shafts of flat panel into the holes along the guide at the front panel. After the flat panel is attached completely, insert the catches for air filter to fix.



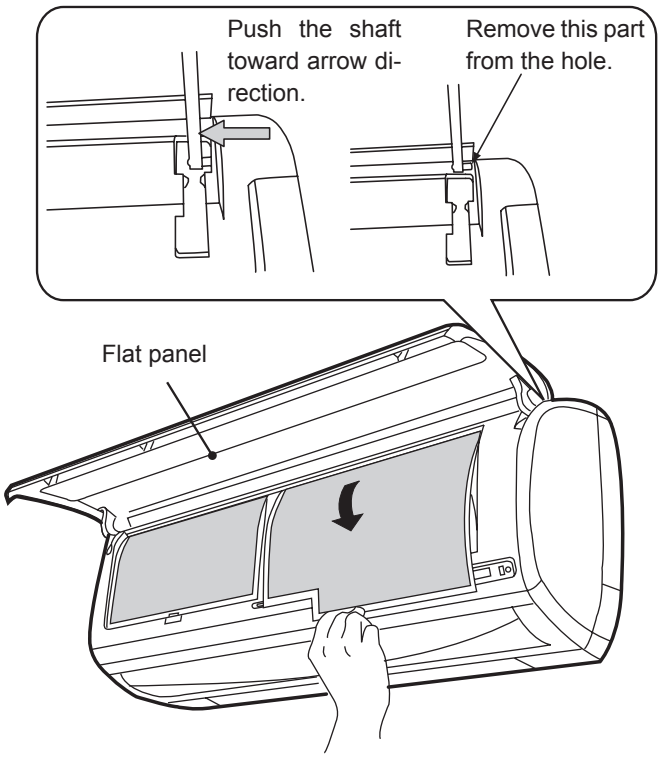
Removal of the front panel for RPK-(2.0-4.0)FSN3M

Hold both sides of flat panel and open it fully.



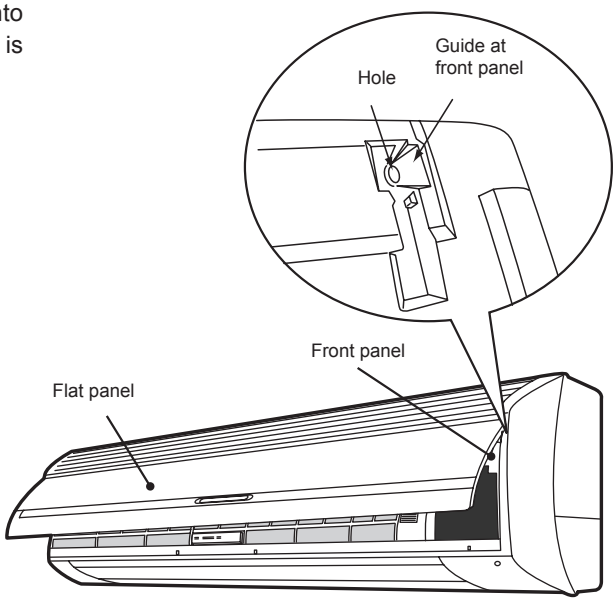
Lift up the air filter, detach the catches from the indoor unit and remove the air filter downward.

After the right arm shaft is pushed inward and the shafts are removed from the front panel, pull the flat panel frontward while the right arm shaft is slightly pushed inward.



Attaching flat panel for RPK-(2.0-4.0)FSN3M

Insert completely the left and right arm shafts of flat panel into the holes along the guide at the front panel. After the flat panel is attached completely, insert the catches for air filter to fix.

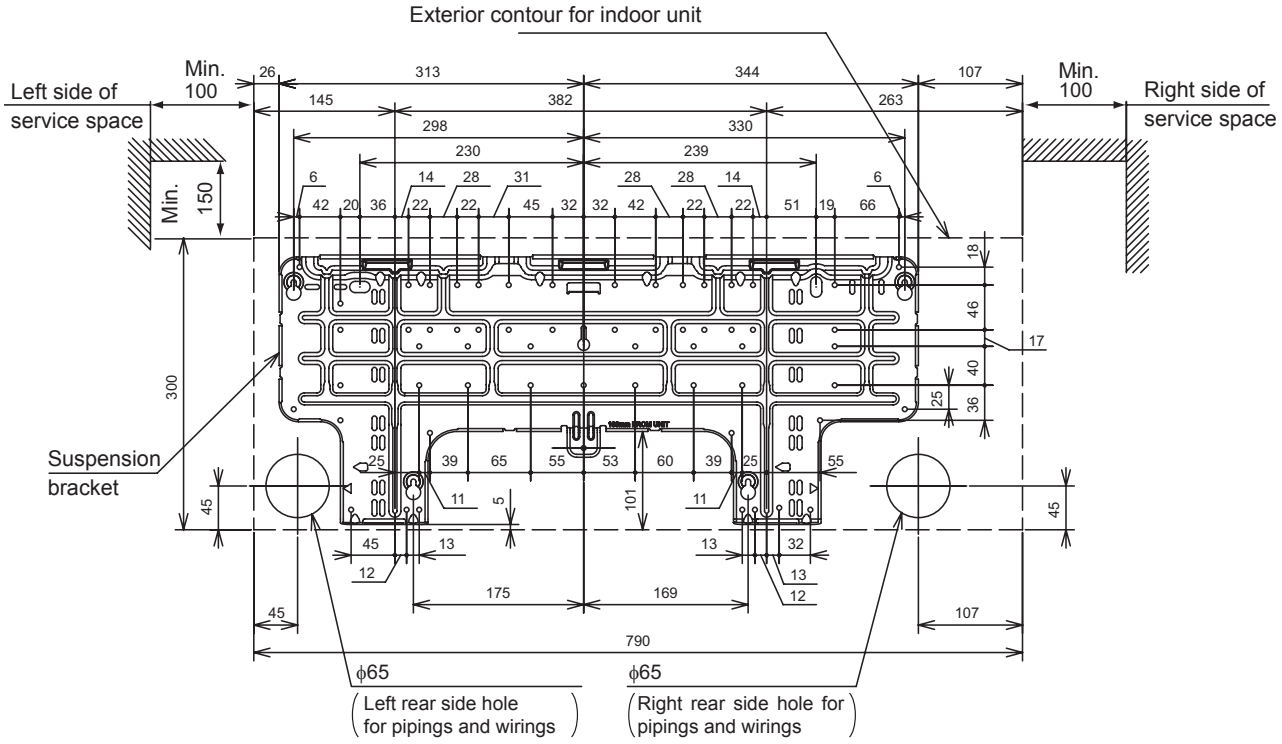


CAUTION

When removing front panel, do not apply an excessive force by hitting, etc. It may break the unit body.

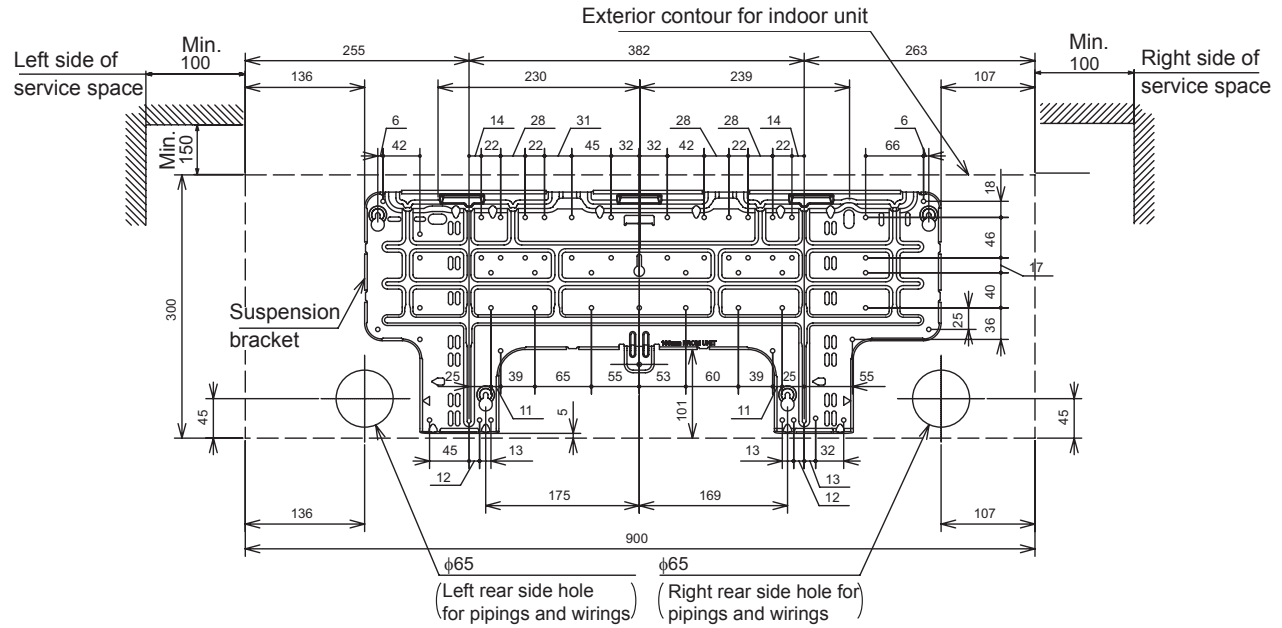
2.7.3 Mounting bracket dimensions

RPK-(0.8-1.5)FSN(H)3M unit suspension bracket



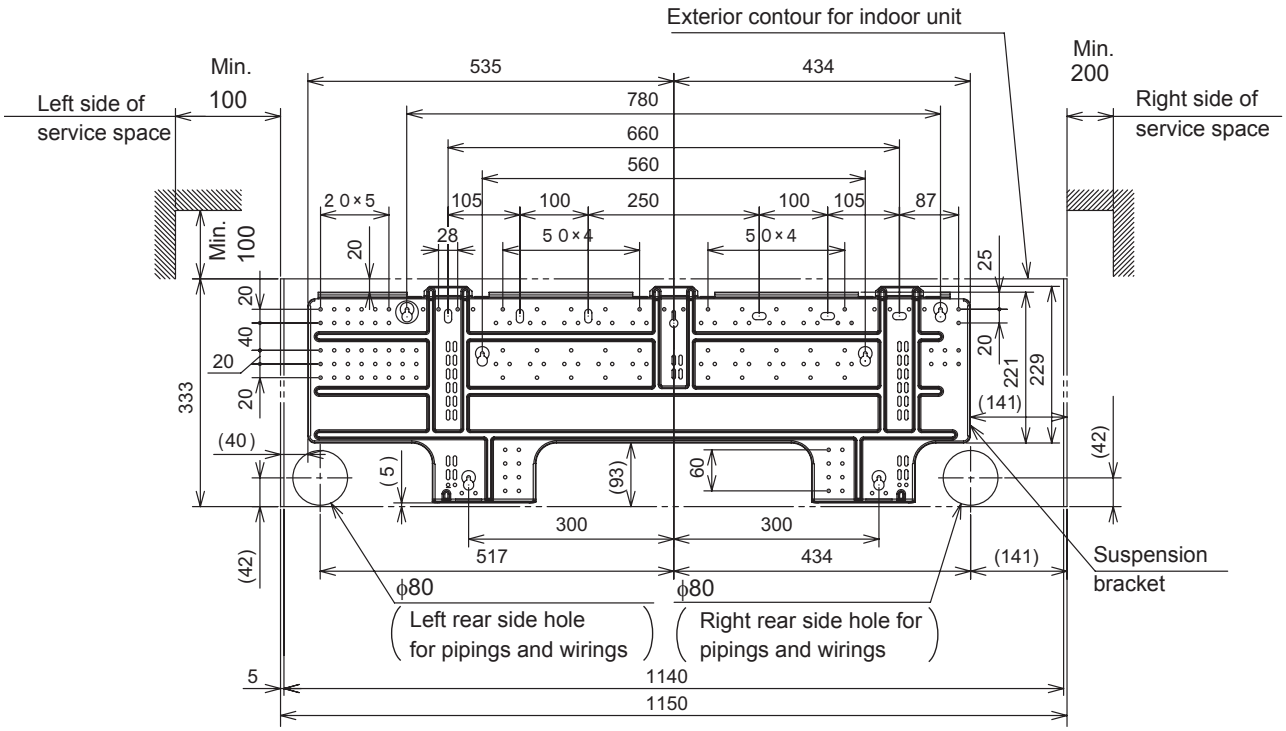
For RPK-(0.8-1.0)FSNH3M units it is recommended to connect the piping at the right rear side of the body to avoid the sound from the refrigerant running through.

RPK-1.5FSN(H)3M unit suspension bracket



For RPK-1.5FSNH3M it is recommended to connect the piping at the right rear side of the body to avoid the sound from the refrigerant running through.

RPK-(2.0-4.0)FSN3M unit suspension bracket



2.8 RPF - Floor type, RPFI - Floor concealed type

2.8.1 Accessories supplied with the unit

Check that the following accessories are supplied with the unit.

NOTE

Please contact your HITACHI distributor if any of the accessories has not been supplied with the unit.

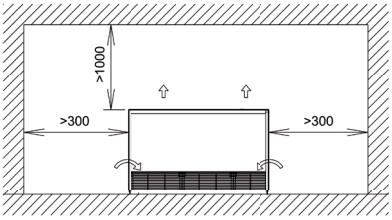
Accessory	Appearance	Quantity	Purpose
Installation adjustment screw		4	To adjust the flat level of the unit.
Philips head screw		2	For PC-ART

2.8.2 Unit installation

Initial checks

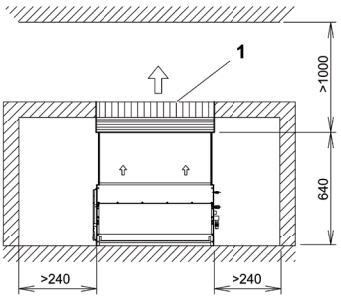
Check that there is enough space around the unit. Consult the corresponding chapter of the Technical Catalogue for information on the unit measurements.

RPF - Floor type (1.0-2.5)FSN2E

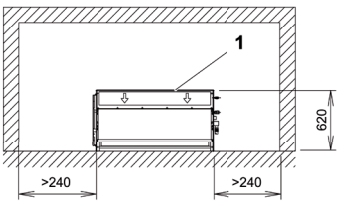


RPFI - Floor concealed type (1.0-2.5)FSN2E

1. Vertical air outlet.



1. Horizontal air outlet.



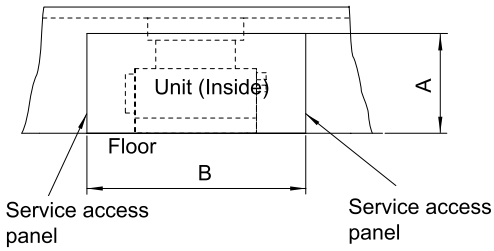
Before starting installation, plan the direction of the pipes and wiring required. Also bear in mind that there must be enough space around the unit for installation and maintenance.

Check that the floor surface where the unit is to be installed is completely horizontal.

NOTE

Bear in mind the air distribution from the unit to the room and select a suitable place for an even air temperature in the room.

Install a service hatch near the pipe connection area and electrical junction box for installation and maintenance work.



Model	A (mm)		B (mm)	
	RPF	RPFI	RPF	RPFI
RPF(I)-1.0FSN2E	630	620	1479	1359
RPF(I)-1.5FSN2E				
RPF(I)-2.0FSN2E			1729	1609
RPF(I)-2.5FSN2E				

Check that the drain hose can be installed maintaining the necessary down-slope.

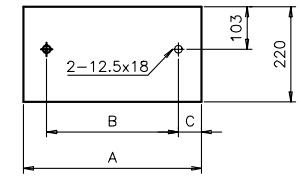
Installation

CAUTION

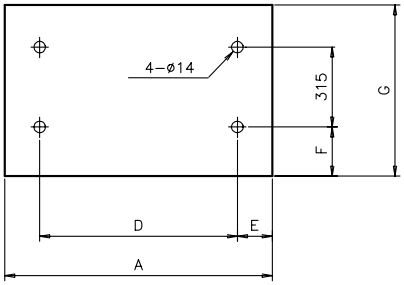
The place where the indoor unit is to be installed must be a flat surface with enough space to fully house the unit. The weight of the unit must be evenly distributed over the surface.

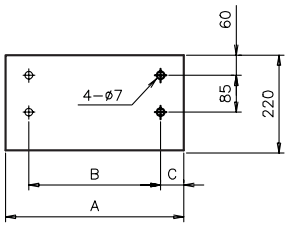
Handle and position the unit carefully.

Fixing onto floor using wood screws (2-M8) (View from top side)



Fixing onto wall (View from front side)





Fixing onto floor using wood screws (4-M5) (View from top side)

Check that the attachment position (in mm) of the unit is as indicated in the figure.

Model	A	B	C	D	E	F	G
RPF-1.0FSN2E	1045	754	217	732	228	140	360
RPF-1.5FSN2E	1170	879		857	228	140	630
RPFI-1.5FSN2E	988	879	66	857	77	138	620
RPF-2.0FSN2E	1420	1129	11	1107	228	140	630
RPF-2.5FSN2E							
RPFI-2.0FSN2E	1234	1129	11	1107	53	139	620
RPFI-2.5FSN2E							

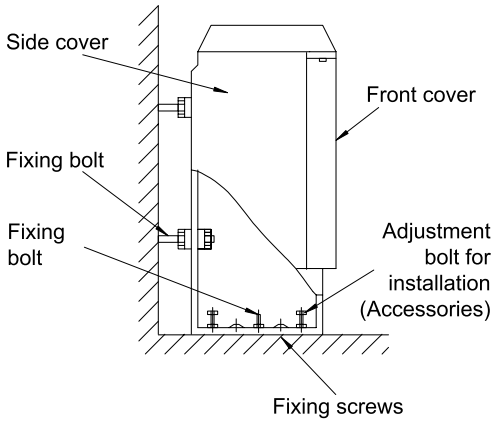
Adjust the horizontal level of the unit by loosening or tightening the unit installation bolts.

Check that the condensate discharge system in the unit works correctly. To do so, check the level of the drain pan using a spirit level. The side of the unit on which the drain hose is located must be around 3 mm lower than the opposite side.

Secure the base plate and the rear plate of the unit using field-supplied bolts and screws.

NOTE

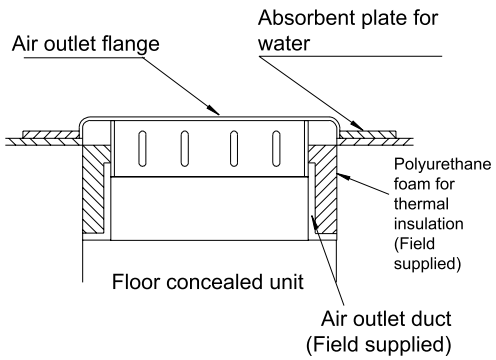
- ***RPFI units: remove the electrical wiring box when fitting the installation bolts.***
- ***RPF units: carry out the above operation after removing the front and side covers of the unit.***



RPFI unit: install the optional air outlet grille as indicated in the figure.

NOTE

- ***Condensation may be accumulated if the unit is installed in a very damp place. Install a porous, water-absorbent plastic plate to absorb and retain water around the grille.***
- ***The optional air outlet grille of the RPFI unit cannot be used in very damp places, such as a kitchen or bathroom, as condensation may settle on its surface.***

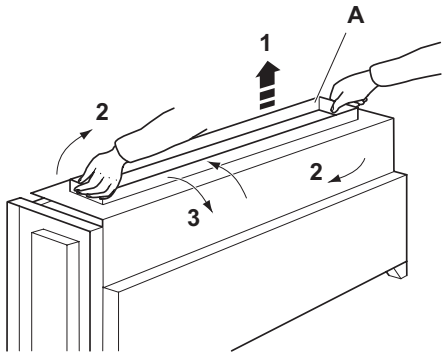


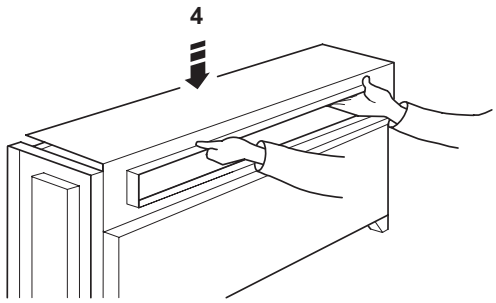
RPFI units: Install an additional access cover attached with screws so as not to touch the fan duct directly.

2.8.3 Change in the air outlet direction (RPFI units)

The air outlet direction of the unit can be modified to adapt it to installation requirements, as shown in the illustration.

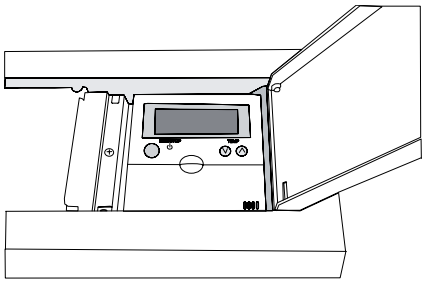
1. Lift air outlet -A-.
2. Turn the air outlet on itself until it is opposite its initial position.
3. Tilt the air outlet so that the nozzle is facing forwards.
4. Refit air outlet -A-.





2.8.4 RPF: Optional PC-ART remote control location

It is possible to install the PC-ART remote control below the plastic cover, as shown in the figure.



2.9 KPI energy / heat recovery unit and KPI active unit

2.9.1 Accessories supplied with the unit

Check that the following accessories are supplied with the unit.

NOTE

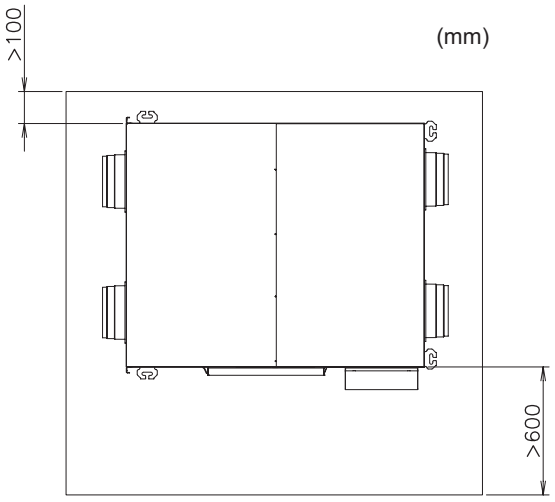
Please contact your HITACHI distributor if any of the accessories has not been supplied with the unit.

Accesory	Appearance	Quantity
Duct adapter		4
Screw		24
Washer		8
Nut		12
Vibration Abs.Rubber		4
Rubber duct joint		4

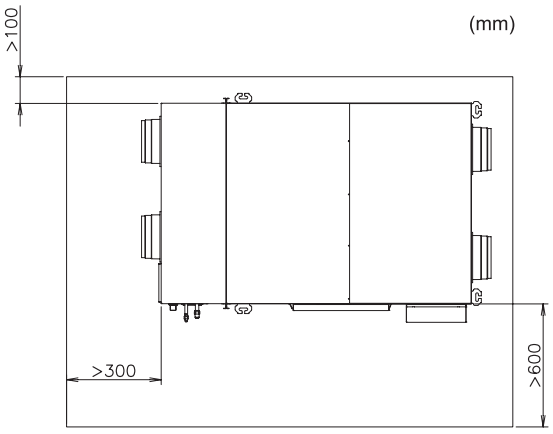
2.9.2 Unit installation

Initial checks

KPI-(252-2002)E3E / KPI-(502-2002)H3E energy / heat recovery unit



KPI-(502-1002)X3E active unit



Check that there is enough space around the unit. Consult the corresponding chapter of the Technical Catalogue for information on the unit measurements.

Before starting installation, plan the direction of the pipes and wiring required. Also bear in mind that there must be enough space around the unit for installation and maintenance.

Check that the ceiling surface where the unit is to be installed is completely horizontal.

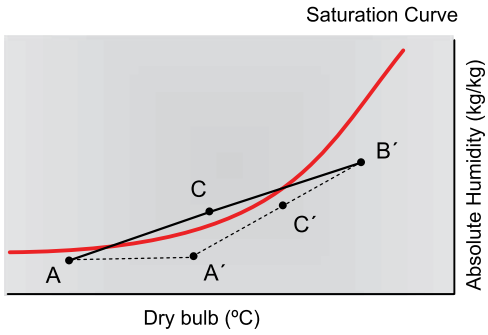
Installation

Avoid obstacles that could block the air inlet or outlet flow.

Choose a position in which the unit does not take in outdoor air mixed with combustion or exhaust fumes.

The unit must not be covered in snow.

Do not use the unit in the winter when the weather conditions may lead to the formation of condensation in the heat exchanger.



NOTE

- ***The formation of condensation arises if the line connecting the outdoor and indoor temperature points and the conditions of humidity cross the saturation curve in the psychrometric chart.***
- ***Raising the temperature at point A (outdoor air) to point A' gives improved conditions in which the line connecting the outdoor and indoor temperature points and the conditions of humidity do not cross the saturation curve. In this case, the total heat exchanger can be used.***

The limit for ambient conditions in which the total heat exchanger is used is shown in the table below as an example, at an outdoor air temperature of 0 °C, -5 °C and -10 °C and an indoor air temperature of 30 °C. Where the indoor or outdoor air humidity is higher, condensation may accumulate and flow outside the unit.

The method for raising the temperature of A (outdoor temperature) must be determined according to current law in the place where the unit is installed.

Outdoor Air Temperature (DB)	Indoor Air Temperature (DB)	Indoor Air Relative Humidity (%)	Indoor Air Absolute Humidity (kg/kg)
0ºC	30ºC	50	0.0133
-5ºC	30ºC	36	0.0095
-5ºC	25ºC	45	0.0089

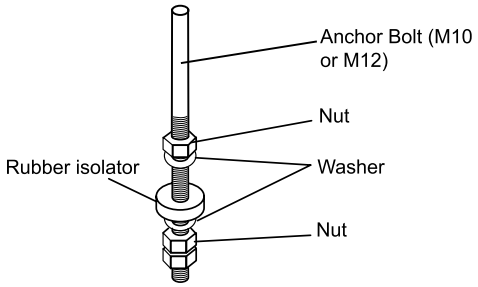
Prepare the sling bolts.

Fit the anchor bolts on the suspension bracket and adjust to ensure the unit is installed horizontally.

Thread on the nuts and fit the washers for all the bolts, as shown in the figure.

Fit two suspension brackets onto the nut and washer of each bolt, starting on one side.

Check that the nuts and washers are correctly secured with the suspension bracket retainers and fit the brackets onto their nuts and washers on the other side.

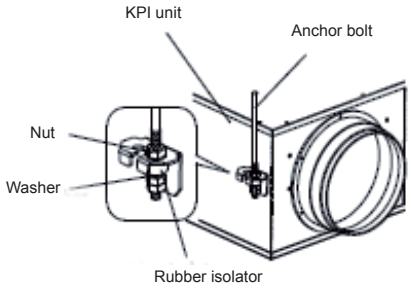


CAUTION

The unit control box is fragile. Do not apply force to the control box.

Where the sling bolts are too short, fit the suspension bracket in an alternative position.

1 Remove the bolts from the upper installation position.
2 Remove the suspension brackets and fit in a higher installation position.
3 Tighten the bolts in the holes from which the suspension brackets have been removed to avoid air leaks.



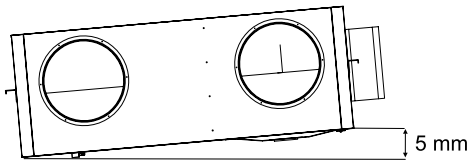
CAUTION

- ***Before lifting the unit, prepare any necessary means (ladders, scaffolding, elevator platform, etc.) and check that the current safety regulations in the place where the installation is taking place are met.***
- ***Check that the lifting work can be carried out without the risk of injuries to you or others in the surrounding area.***
- ***Request the assistance of another person to lift the unit.***

Lift the unit carefully.

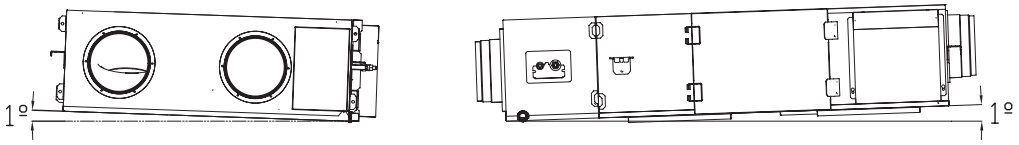
◆ **For KPI-(502-2002)H3E**

Check that the condensate discharge system in the unit works correctly. To do so, check the level of the drain pan using a spirit level or a clear flexible pipe full of water. The side of the unit on which the drain hose is located must be around 5 mm lower than the opposite side.



◆ **For KPI-(502-1002)X3E**

The unit should be installed so that one side of the unit is slightly 1º for KPI-(502-1002)X3E lower than the other side, in order to avoid the incorrect position of the drain discharge.



Apply a thread-locking product to the bolts and nuts to prevent them from loosening. Otherwise, abnormal noise may be caused by mechanical vibrations and the indoor unit may become loose.

Apply protective paint to the bolts and nuts to prevent rusting.

CAUTION

Completely cover the unit with a sheet of plastic to protect it during installation work.

2.9.3 Duct connection

NOTE

- ***Use field-supplied flexible ducts to avoid abnormal acoustic vibrations.***
- ***The unit is fitted with a pre-drilled hose to connect the supply duct.***

Check that there is no dust, sawdust or other foreign particles inside the ducts before connecting them.

CAUTION

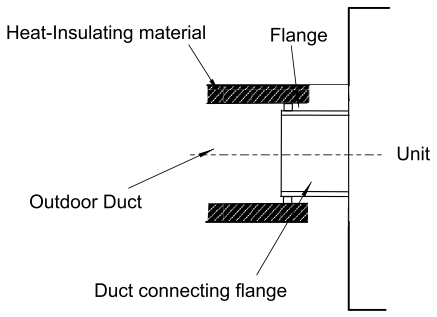
When connecting the ducts, do not touch the damper plate located behind the main unit.

Position and secure the ducts in the connection hoses and apply aluminium tape (field-supplied) around the connection to avoid air leaks. The duct connection hoses have a previously installed sealing system.

Suspend the ducts from the ceiling so that the weight does not rest on the unit.

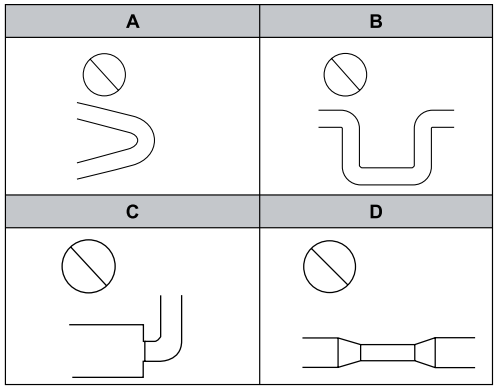
Cover the two outdoor ducts with suitable heat insulation material to prevent the formation of condensation.

Secure the flexible air duct to the outsides of the hoses supplied with the unit.

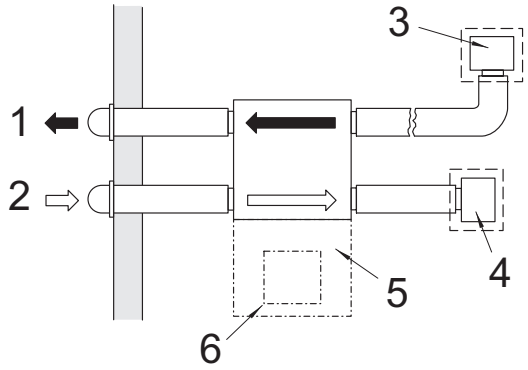


Do not install ducts along complex layouts or sharp bends. The volume of air may be reduced, leading to abnormal circulation noises. Particularly avoid the following situations:

- A: extremely tight bends.
- B: multiple bends.
- C: bends next to the outlet.
- D: extreme reduction of the diameter of the connected ducts.

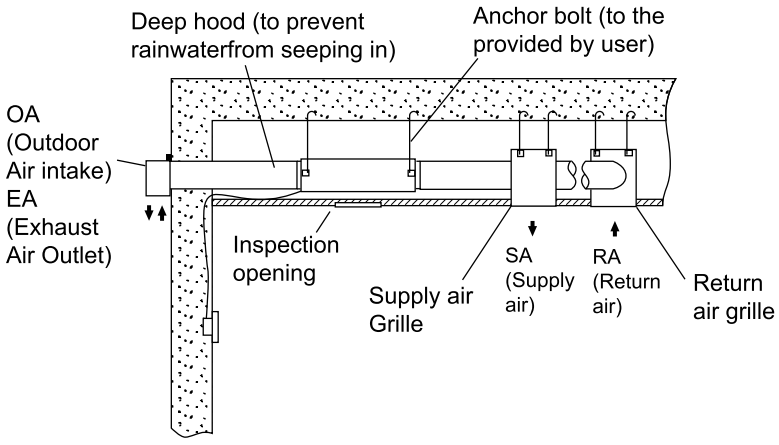


Example of installation:



No.	Name
1	EA (exhaust air outlet)
2	OA (outside air intake)
3	Return air grille
4	Supply air grille
5	Service space
6	Service access panel

Example of installation:



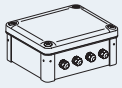
2.10 DX-Interface

2.10.1 Accesories supplied with the unit

Check that the following accessories are supplied with the unit.

NOTE

Please contact your HITACHI distributor if any of the accessories has not been supplied with the unit.

Accessory	Appearance	Quantity	Purpose
Control box		1	System control box
Expansion valve box		1	Expansion valve for refrigerant cycle control
Thermistor		4	Temperature sensing: inlet air (blue) outlet air (red) gas line (yellow) liquid line (black)
Control box fixing accessory		4	Control box cover lock
Harness jumper		1	Motor alarm connection jumper

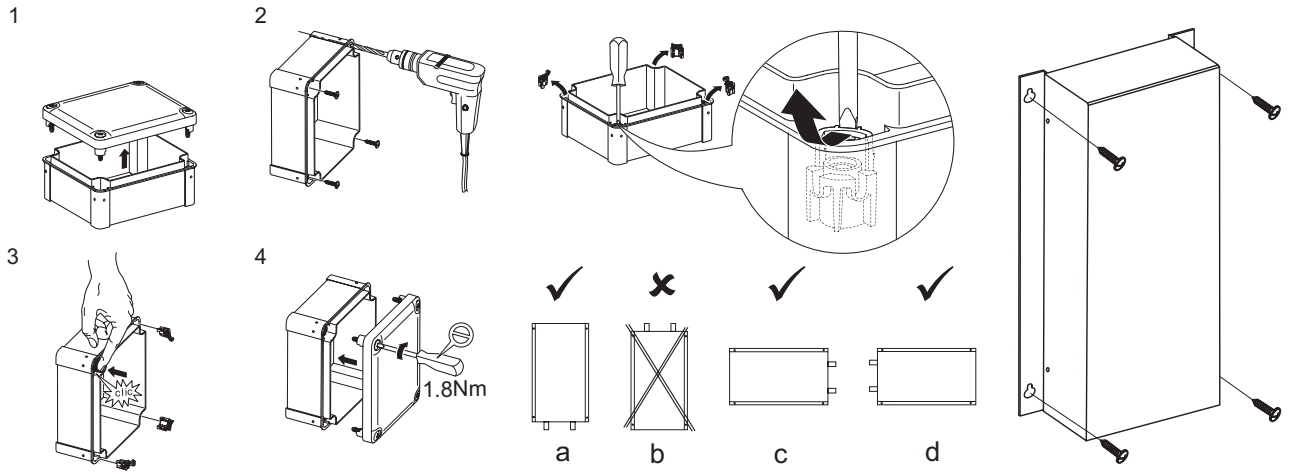
2.10.2 Unit installation

- The installation of a specific remote controller is necessary during the installation comissioning. Once the installation commissioning is finished, this remote controller can be removed if the pin 7 is switched to ON position. In this case, pay attention to all the setting details related with the remote controller because after remove it, they cannot be changed.
- Do not install the DX-Interface where electromagnetic wave is directly radiated to the control box or expansion valve box.
- Install a noise filter when noise is emitted from power supply.
- Do not install the DX-Interface where generation, flowing, staying or leakage of flammable gas may occur.
- When the false ceiling contains high humidity, dew condensation water may occur on the outer surface of the expansion valve box. Therefore utilize the insulation on the outer surface of the expansion valve box.

Installation Location

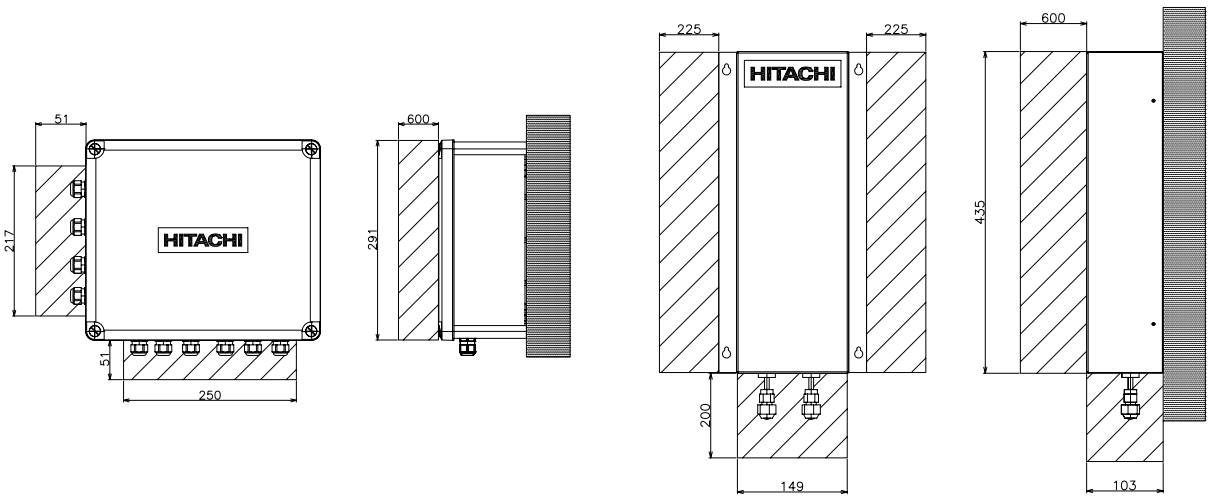
1 Installation methods are selectable according to the dimension of the false ceiling.
2 Keep the distance between the unit or device with heat exchanger and the expansion valve box for the piping length up to 5m. Also the elevation difference between the unit or device with heat exchanger and the expansion valve box must be no more than 2m.
3 Check the ceiling slab is strong enough. If the ceiling slab is too weak to support the weight of the expansion valve box, noise and vibration may occur.
4 Secure proper space around the control box and expansion valve box for operation and maintenance work. Also a service access door should be prepared in order to remove the DXInterface without getting rid of the ceiling plate.
5 Select a suitable and convenient location for the refrigerant piping connection.
6 Do not install the DX-Interface in a kitchen where vapor or mist flows. Dew condensation water may occur on the expansion valve box while cooling operation. In this case, utilize the insulation.
7 Do not install the DX-Interface in a organic solvent (thinner or benzine) environment. Synthetic resin parts may dissolve.
8 Do not install the DX-Interface where generation, flowing or staying of flammable gas may occur.
9 The sound of refrigerant running through from the expansion valve box may be heard. Therefore install the expansion valve box where the sound will not leak such as in the false ceiling of a hall way.
10 Use ceiling material with sound-proof such as plaster board.

2.10.3 Mounting method



NOTE

In case of installation positions "c" and "d", make sure to insulate the copper pipes inlet on the expansion valve box cover to avoid any liquid filtration and accumulation.



Minimum sizes (mm).

2.10.4 Thermistor installation

◆ Liquid and gas pipes thermistor

Two type thermistors are supplied inside the control box. The purpose and identification of each one is as follow:

Item	PCB socket / Thermistor connector color	PCB socket number	Thermistor length (mm)
Liquid pipe thermistor	Black	THM 3	650
Gas pipe thermistor	Yellow	THM 5	600

CAUTION

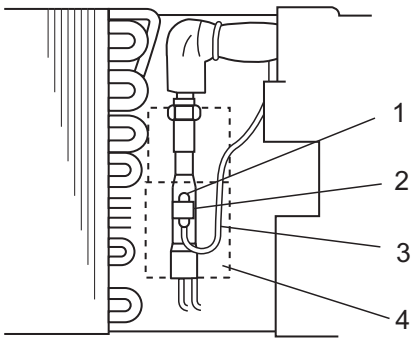
In case that the thermistors supplied with the Dx-Interface are not long enough, please make sure that the length extension is properly done avoiding the sensing distortion and that the joint is properly insulated to avoid any electrical failure.

NOTE

When fitting the thermistors, remember that they must be secured correctly by the special clamp, ensuring the perfect contact between the pipe and thermistor. Cover it completely with insulation, like cork tape or pipe insulation, depending on the location. Replace them if damaged during maintenance work.

◆ Thermistor installation example

1	Liquid / gas pipe thermistor (factory supplied)
2	Thermistor holder (field supplied)
3	Thermistor lead wire (field supplied)
4	Insulation (field supplied)

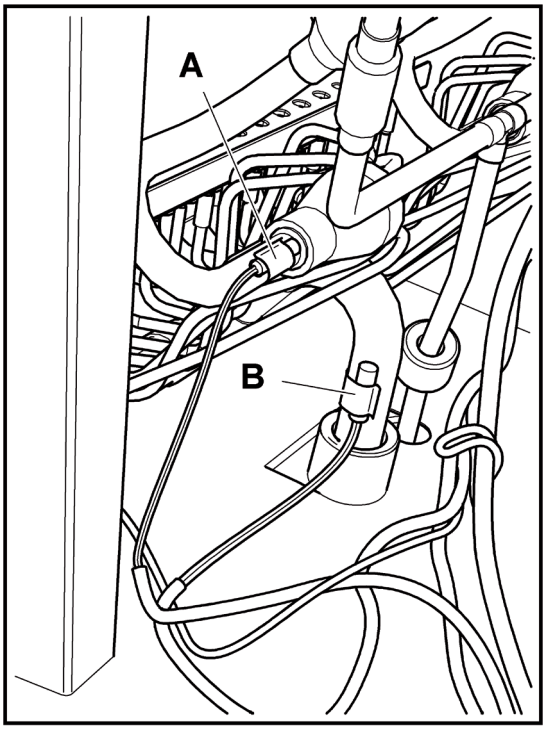


CAUTION

The thermistor must be installed properly in order to avoid water onto the thermistor.

◆ Typical installation location

A	Liquid pipe thermistor	Must be installed in the coldest liquid line point in the heat exchanger (prior the distributor).
B	Gas pipe thermistor	Must be installed as close as possible to the heat exchanger refrigerant outlet.



◆ Air thermistor

Two air thermistors are supplied inside the control box. The purpose and identification of each one is as follow:

Item	PCB socket / Thermistor connector color	PCB socket number	Thermistor length (mm)
Inlet air thermistor	Blue	THM 1	1200
Outlet air thermistor	Red	THM 2	1200

CAUTION

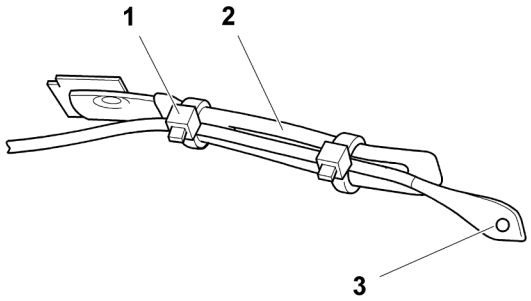
In case that the thermistors supplied with the Dx-Interface are not long enough, please make sure that the length extension is properly done avoiding the sensing distortion and that the joint is properly insulated to avoid any electrical failure.

NOTE

When fitting the air thermistor, remember that they must be secure correctly, in an adequate place to avoid external influences, like ambient conditions, and where the air temperature is significant.

◆ Cable clamp example

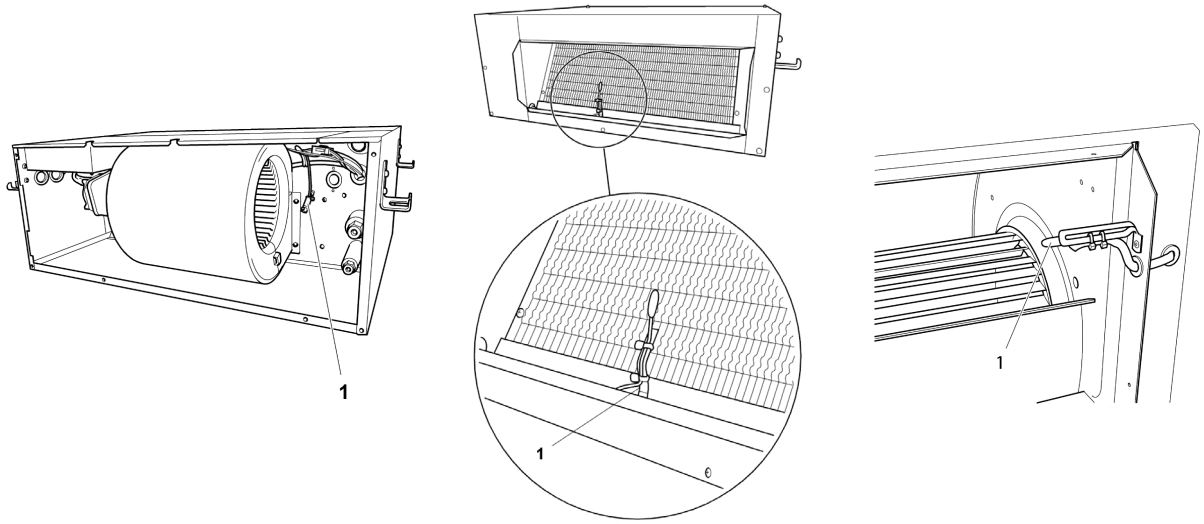
1	Tie (Field supplied)
2	Cable clamp (Field supplied)
3	Thermistor (supplied)



CAUTION

The thermistor must be installed properly in order to avoid water onto the thermistor.

◆ Typical installation



1 Thermistor.

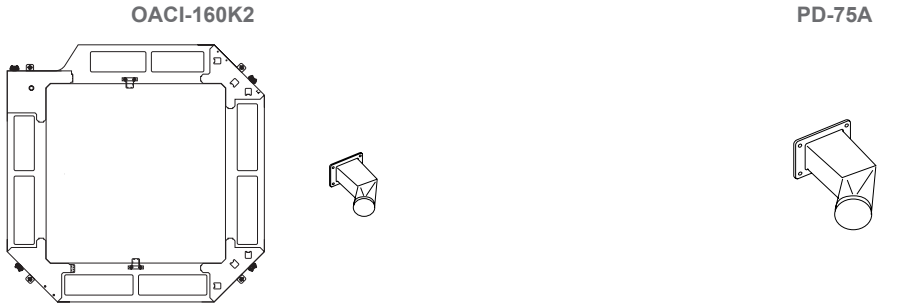
2.11 Optional accessories

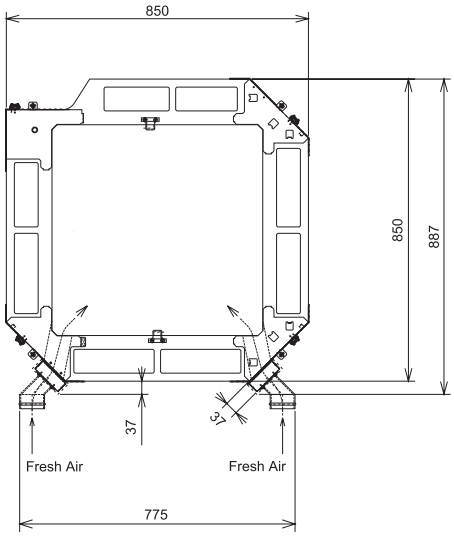
2.11.1 Outdoor air inlet

◆ Outdoor air inlet duct connection position

For RCI-FSN3 indoor units: OACI-160K2 and PD-75

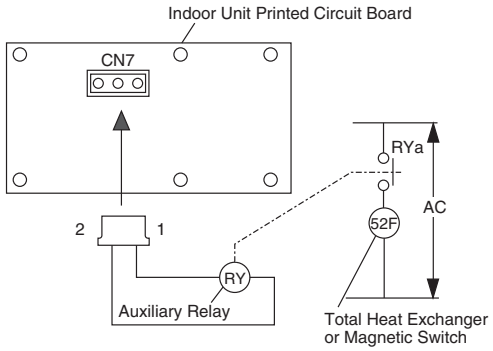
The inlet of outdoor air is possible through the PD-75 or the OACI-160K2 duct connection in the position shown in the figure.





This kit can not supply the fresh air by itself. Therefore, connect the duct and supply the fresh air from the total heat exchanger or the duct fan.

When connecting this kit to the total heat exchanger or the duct fan, make an interlock to the fan of the indoor unit. The example is shown below.



NOTE

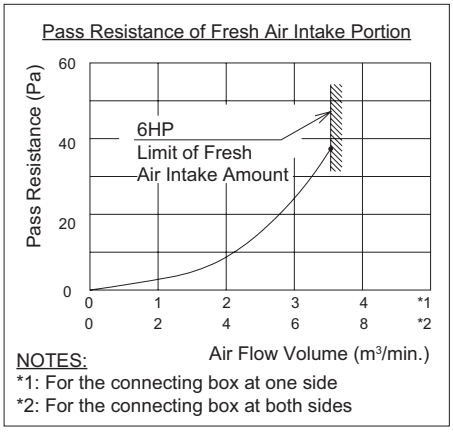
- ***The total height of the unit is increased by around 55 mm when the outdoor air inlet duct (OACI-160K2) is installed. Take this measurement into account when installing the unit.***
- ***Use a cable with a three-terminal connector (PCC-1A) for the CN7 connector on the indoor PCB.***

The standard maximum air volume of fresh air intake when using the total heat exchanger is within 20% of the rated air volume of the indoor unit (at “HIGH” mode). In the case without total heat exchanger, use the fresh air intake kit within the range which dewing does not occur at this kit, duct and inside the indoor unit.

With or without the total heat exchanger, follow the countermeasure according to the temperature difference between the supply air from the room air and the outside air as shown in the table below.

Temperature Difference between Supply Air from Room Air and Outside Air	Countermeasure
Below 10 deg.	No Countermeasure Required
Below 15 deg.	Perform Insulation
Over 15 deg.	Use with Total Heat Exchanger or Operation is Not Permissible.

The outdoor air inlet duct resistance is indicated in the following figure. Use as a guide for fan selection.

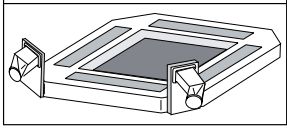
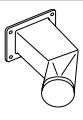


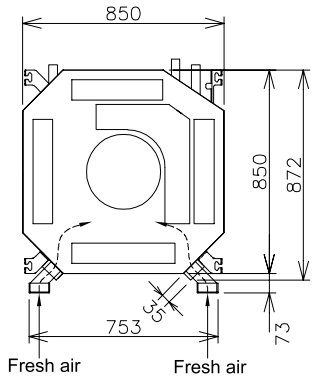
NOTE

This chart showns the value when the kit is used by itself. In the case that the kit is installed with T-tube connecting kit, refer the value to its the chart .

For RCI-FSN3Ei indoor units: OACI-232 or PD-75

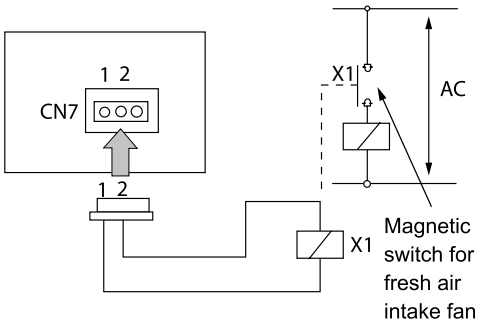
The inlet of outdoor air is possible through the PD-75 (RCI, RCIM) or the OACI-232 (RCI) duct connection in the position shown in the figure

OACI-232 (Only RCI)	PD-75 (RCI, RCIM)
	



This unit cannot take in outdoor air by itself and must be connected to a duct fitted with a fan and a control damper.

The duct must be controlled to ensure it only works when the unit is running. The figure shows an example of electrical control.

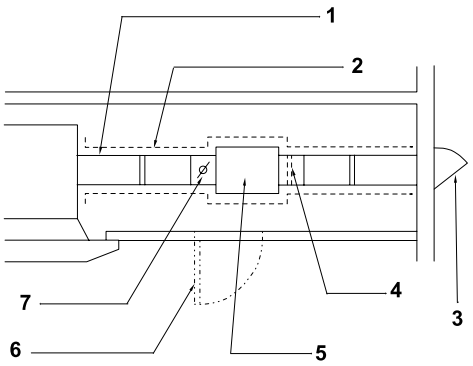


NOTE

- ***The total height of the unit is increased by around 80 mm when the outdoor air inlet duct (OACI-232) is installed. Take this measurement into account when installing the unit.***
- ***Use a cable with a three-terminal connector (PCC-1A) for the CN7 connector on the indoor PCB.***

The maximum amount of incoming outdoor air is 20% of the air flow rate of the indoor unit. If the amount of incoming outdoor air exceeds this value, condensation may be produced on the inner surface of the drain pan (air inlet hole) and, in some cases, dew may form. Always limit yourself to the values indicated in the figure below.

Nº	Part
1	Duct (made of only non-combustible materials)
2	Thermal insulation (non-combustible materials)
3	Outdoor air inlet hood with gallery (attached drip-proof hood type)
4	Air filter
5	Duct fan
6	Service panel
7	Damper



Fit an air filter to the suction side of the outdoor air inlet duct in a position that allows for easy maintenance operations.

Insulate the duct and its connection using fireproof insulating materials only.

NOTE

The parts shown in the above figure will be field-supplied.

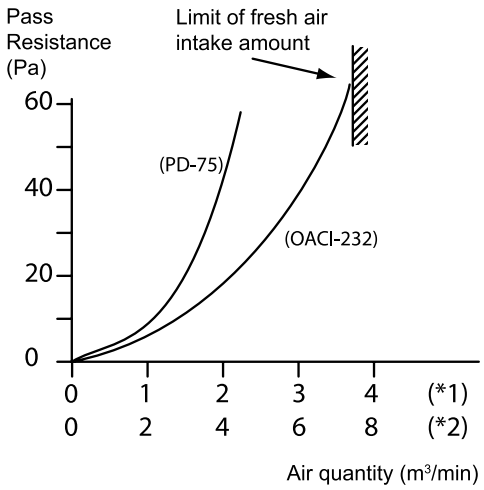
Install an inspection panel -6- below the duct fan so that maintenance operations can be carried out on the air filter and the damper.

Always use a damper and adjust the amount of air where a fan with a supply volume higher than the outdoor air inlet volume limit is used.

The outdoor air inlet duct resistance is indicated in the following figure. Use as a guide for fan selection.

(*1): installation of the junction box on one side.

(*2): installation of the junction box on both sides.

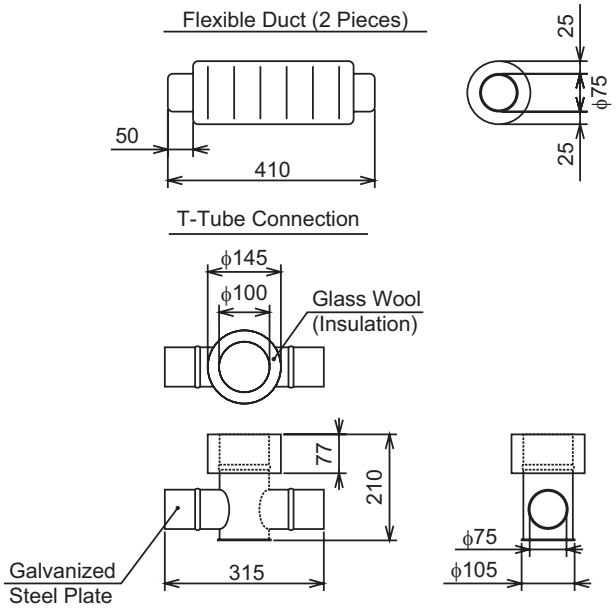


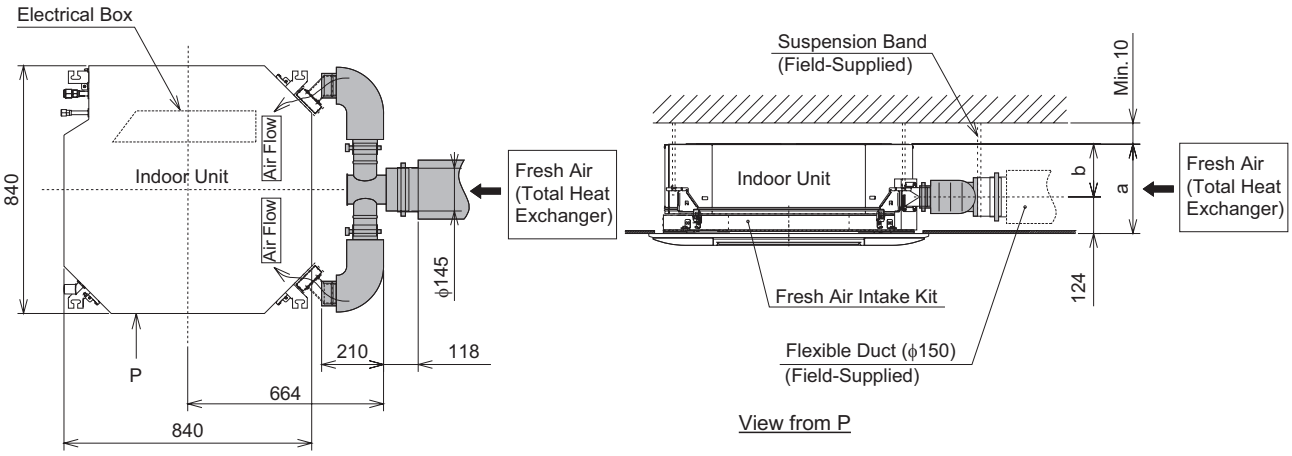
◆ T-duct connection position

For RCI-FSN3 indoor units: TKCI-160K

The T-duct connection is designed for easier connections between the outdoor air inlet and the connection duct.

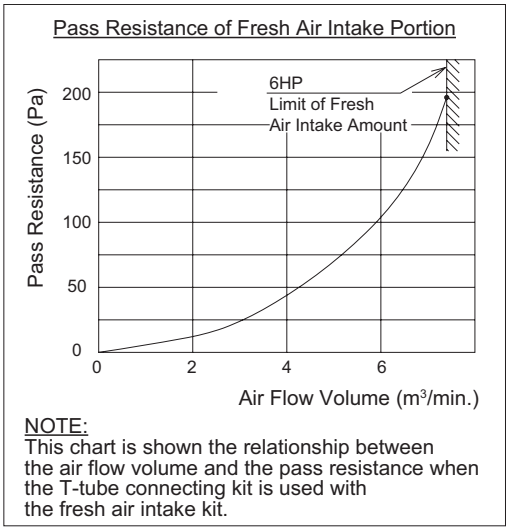
The T-duct connection can only be installed when using the outdoor air inlet kit (optional) or the filter box (optional).





	Dimension	
Model	a	b
1.0 - 2.5	303	179
3.0 - 6.0	353	229

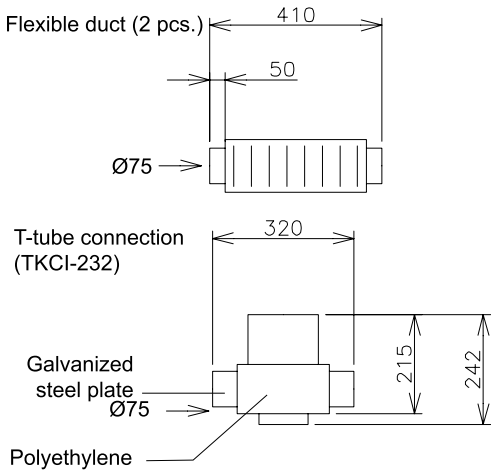
The outdoor air inlet duct resistance increases as indicated in the following figure when using the T-duct connection. Use it as a guide for fan selection.



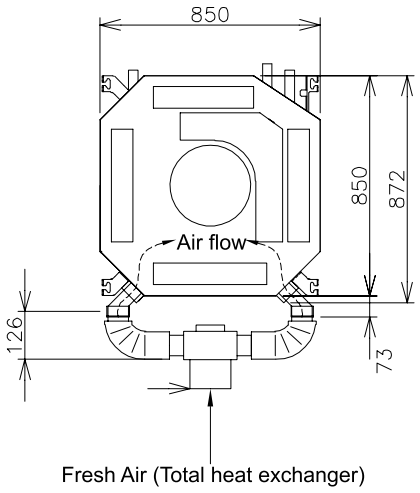
For RCI-FSN3Ei indoor units: TKCI-232

The T-duct connection is designed for easier connections between the outdoor air inlet and the connection duct.

The T-duct connection can only be installed when using the outdoor air inlet kit (optional) or the filter box (optional).



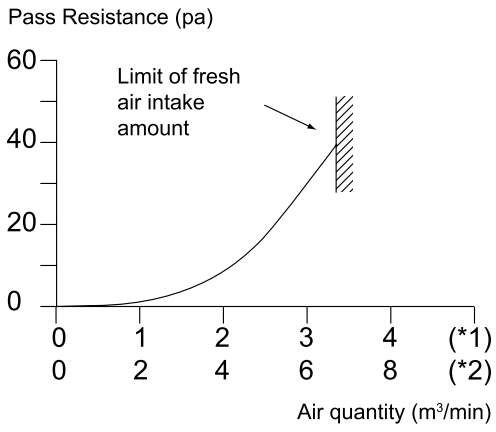
RCI unit with T-duct connection. The diameter of the T has increased (Ø90).



The outdoor air inlet duct resistance increases as indicated in the following figure when using the T-duct connection. Use it as a guide for fan selection.

(*1): installation of the junction box on one side.

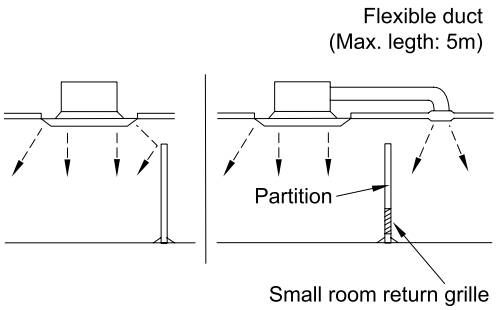
(*2): installation of the junction box on both sides.



◆ Branch pipe (PDF 23C3, PDF 46C3)

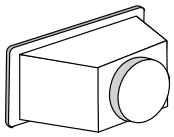
If there are obstacles such as partitions inside the room that prevent the air from circulating correctly, branches can be installed to provide an even air temperature.

Suitable return air grilles must be installed in line with the volume of return air. If air conditioning is provided in an adjoining room, always install a return grille.



Example of a branch pipe.

Example of branched duct



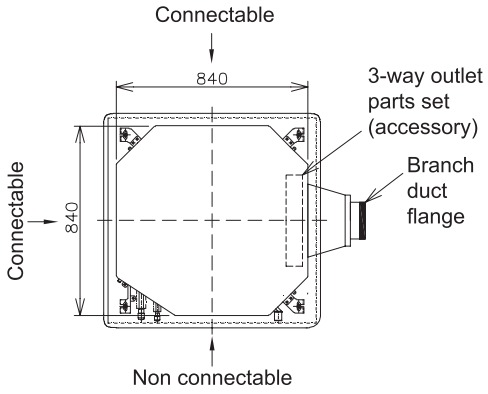
Branch duct flange

Branch pipe installation

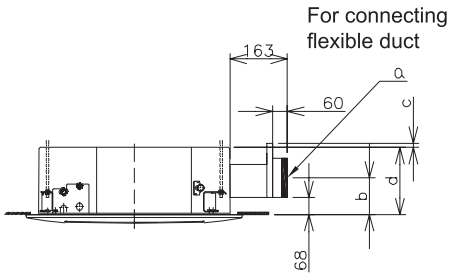
The connections for the branch pipe are indicated in the following figure.

There are six knockout holes. Cut the insulation material on the outer surface in a circle and line up the notches at the four corners. Use a screwdriver or similar and remove.

Prepare the square connection duct (field-supplied) or use a flexible duct with a diameter of 150 or 200 mm.



Duct connection dimensions



Model	Units	a	b	c	d
PDF-23C3	RCI-(1.0-2.5)FSN3Ei	150	155	9	248
PDF-46C3	RCI-(3.0-6.0)FSN3Ei	200	180	6	298

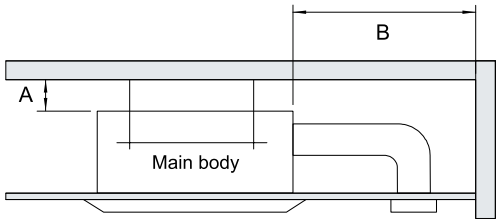
Fit enough insulation to the connection between the pipe and the main body of the indoor unit and to the connection between the duct and the pipe.

Use a set of three-way outlet parts (optional parts) and completely block the air outlet on the branched duct side of the panel (to avoid condensation and direct the air towards the branched duct).

Model	Units	Remarks
PI-23LS5	RCI-(2.0-6.0)FSN3Ei	To connect to the panel outlet.

The quantity of air from the branched duct side is shown in the table below as the air quantity index of the unit. If two branched ducts are connected to the unit, the amount of air from the branched duct side will be greater and the speed of the air on the 3-way outlet side will decrease. Therefore, the hot air projection distance will be reduced.

1 Where the branch duct is installed from this viewpoint, apply the dimensions indicated in the figure below to avoid accidents.
2 Use ducts with non-combustible insulating materials.
3 Fit enough heat insulation to the duct to avoid condensation.
4 Follow the regulations in force regarding this matter in the place of installation or use the dimensions indicated in the figure below if there are no applicable regulations.



Measurement	Wall and pillar material	
	Combustible materials	Non-combustible materials
A	≥ 100 mm	≥ 50 mm
B	≥ 100 mm	≥ 60 mm

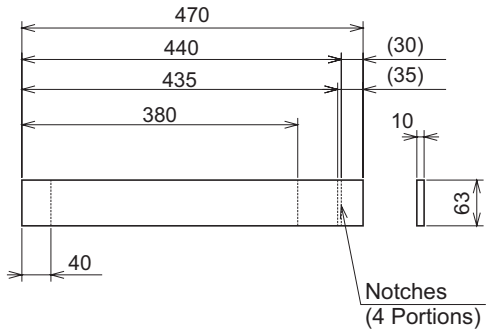
◆ Outlet air flow interlock

For RCI-FSN3 indoor units: PI-160SL1

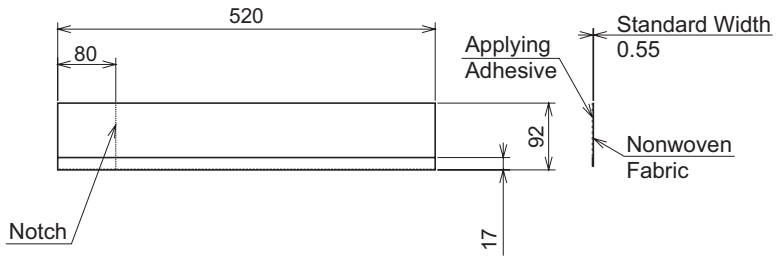
If only three outlets are necessary, use the PI-160SL1 3-way outlet part set.

The dimensions of the blocking plate and the sheet are:

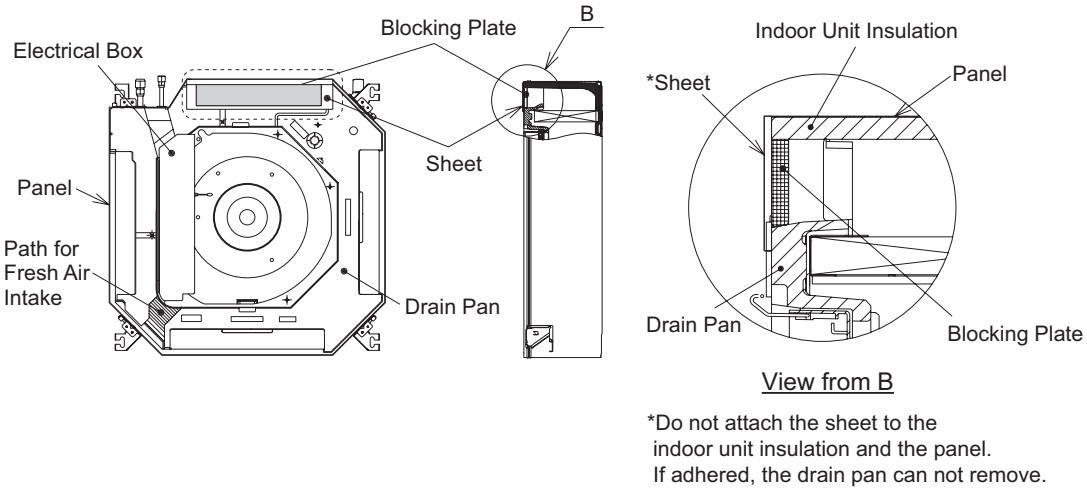
< Blocking Plate >



< Sheet >



Install the interlock plates as indicated in the figure.



*Do not attach the sheet to the indoor unit insulation and the panel. If adhered, the drain pan can not remove.

◆ **For RCI-FSN3Ei indoor units: PI-23LS5**

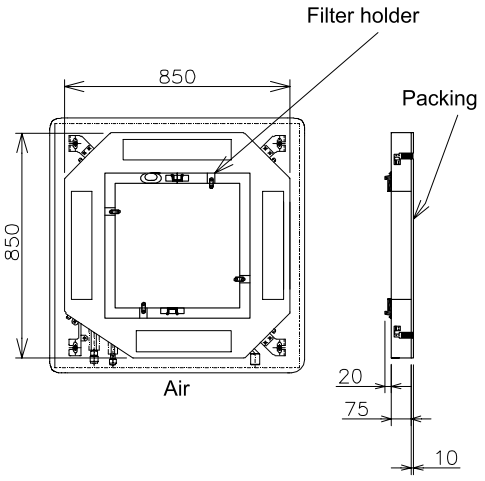
If only three outlets are necessary, use the PI-23LS5 3-way outlet part set.

Install the interlock plates as indicated in the figure.

Only one of the 4 outlets can be blocked.

NOTE

If three outlet ways are used, the quantity of air will decrease by between 3% and 5% and there will be no significant differences within the unit working range in comparison with the four-way outlet. However, the operating noise level will increase from 1 to 2 dB.

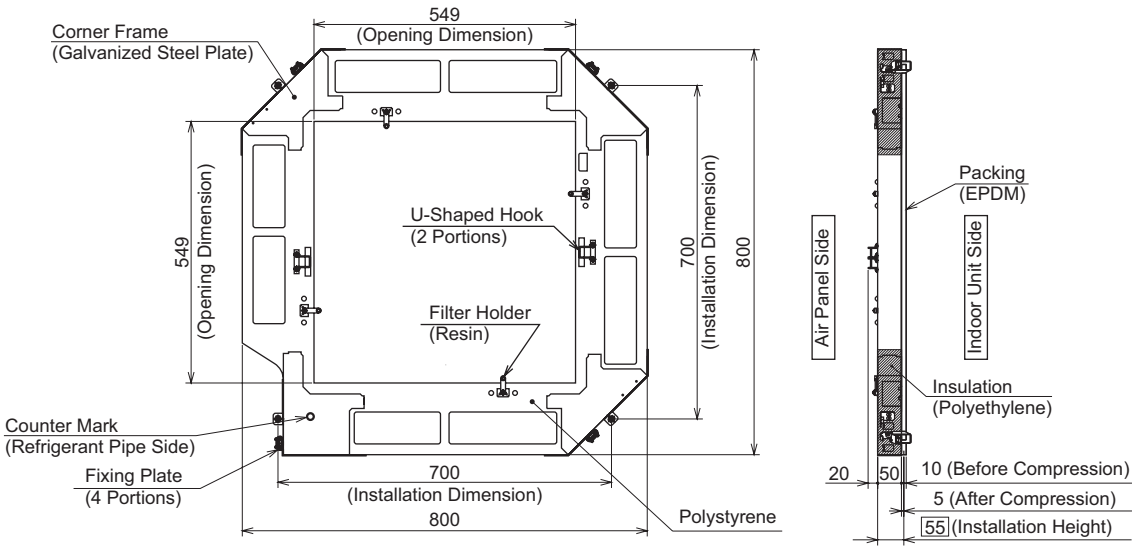


2.11.2 Filters

◆ Filter box

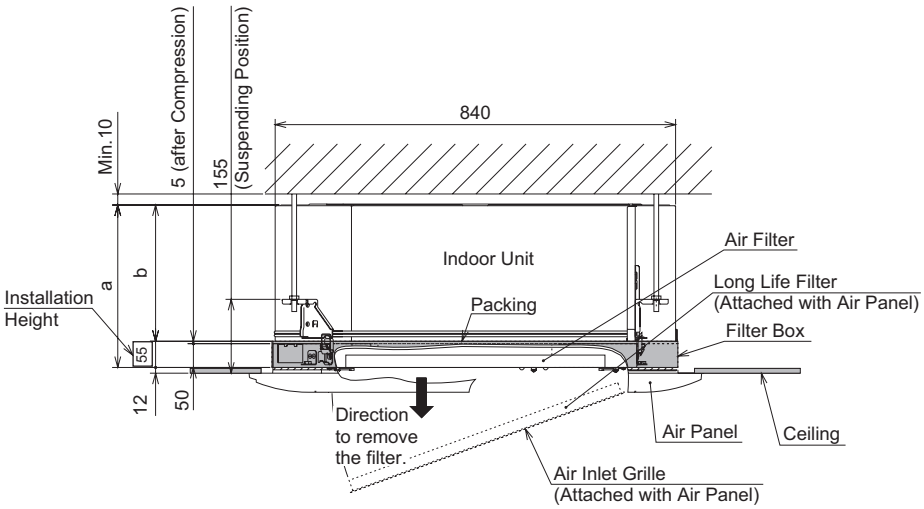
For RCI-FSN3 indoor units: B-160H2

The dimensions of the filter box are shown in the following figure.



When the filter box is installed, the total height of the unit increases by approximately 55 mm. Therefore, pay attention to the installation space.

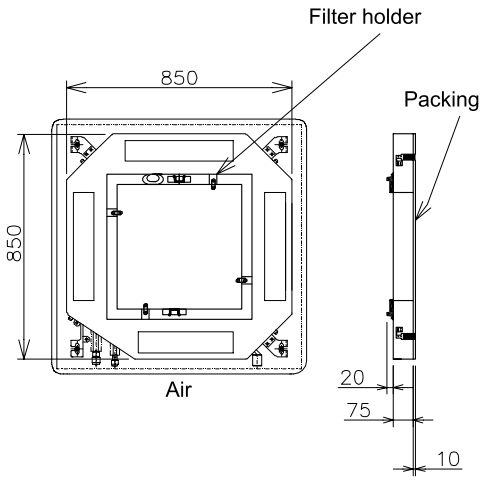
Bear in mind that the size before compression is 10 mm, but the size is reduced after compression to 5mm.



	Dimensions	
Model	a	b
1.0 - 2.5	291	236
3.0 - 6.0	341	286

For RCI-FSN3Ei indoor units: B-23H4

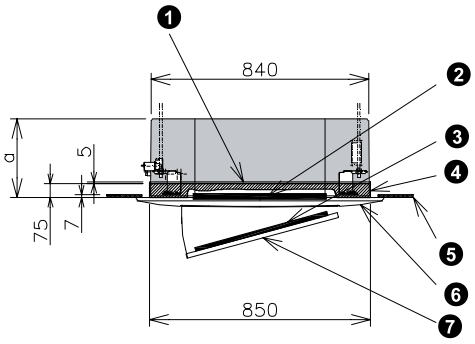
The dimensions of the filter box are shown in the following figure.



When the filter box is installed, the total height of the unit increases by approximately 85 mm. Therefore, pay attention to the installation space.

Bear in mind that the size before compression is 10 mm, but the size is reduced after compression to 5mm.

Nº	Part
1	Air panel
2	Air filter
3	Long-lasting air filter
4	Filter box
5	Ceiling
6	Air panel (optional)
7	Suction grille

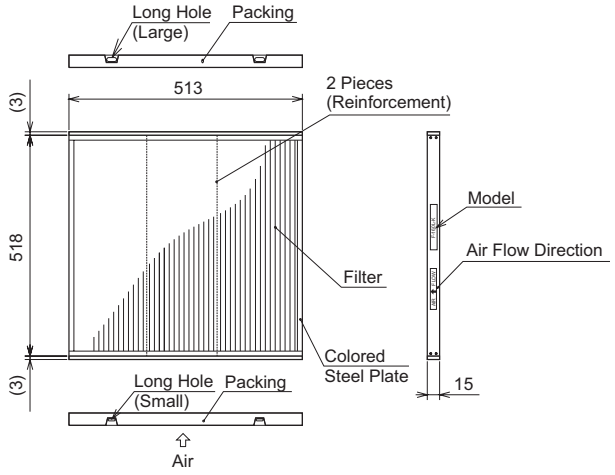


Model	a (mm)
RCI-(1.0-2.5)FSN3Ei	248
RCI-(3.0-6.0)FSN3Ei	298

◆ Anti-bacteria filter

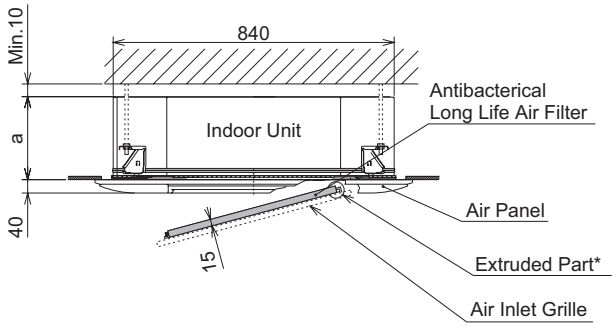
For RCI-FSN3 indoor units: F-160L-K

The dimensions of the long-lasting anti-bacteria filter are shown in the following figure.



To fit the filter, insert the tab on the suction grille into the large hole in the filter, as shown in the figure below.

Model	a (mm)
RCI-(1.0-2.5)FSN3	248
RCI-(3.0-6.0)FSN3	298



*Put the square holes into the extruded parts of air inlet grille.

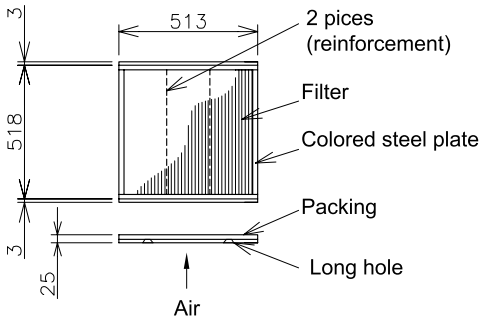
- Specifications

Part		RCI-(1.0-6.0)
Dust collection efficiency (%)		50 (gravimetric method)
Air flow rate (m^3/min)		35.0
Initial pressure loss Pa		28.0
Final pressure loss Pa		62.0
Filter/Frame colour		White/Brown
Working life		4 years (with maintenance every 1250 hours)
Cleaning		Available (*)
Weight (kg)		0.6
Performance		Avoids the multiplication of bacteria and mold
Filter material	Antibacterial fiber	Modified acrylic fibre 1 (containing inorganic anti-bacterial substance) Modified acrylic fibre 2 (containing organic anti-bacterial substance)
	Reinforce net	PP

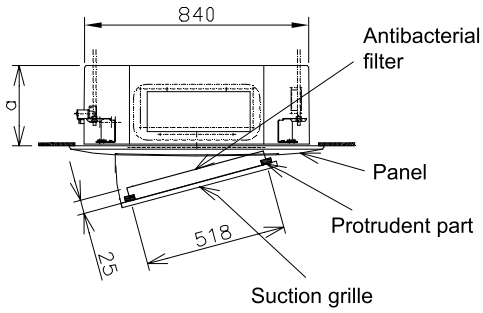
(*) This is the standard working life of the filter and its duration may vary depending on the conditions of use. Clean the filter with water or neutral detergent.

For RCI-FSN3Ei indoor units: F-23L4-K

The dimensions of the long-lasting anti-bacteria filter are shown in the following figure.



To fit the filter, insert the tab on the suction grille into the large hole in the filter, as shown in the figure below.



Model	a (mm)
RCI-(1.5-2.5)FSN3Ei	248
RCI-(3.0-6.0)FSN3Ei	298

NOTE

When using this filter, set the air flow to high speed using the remote control to maintain the necessary volume of air.

Specifications

Part	RCI-(1.0-6.0)
Dust collection efficiency (%)	50 (gravimetric method)
Air flow rate (m^3/min)	37.0
Initial pressure loss Pa (mmAq)	17.7 (1.8)
Final pressure loss Pa (mmAq)	44.1 (4.5)
Filter/Frame colour	White/Brown
Working life	4 years (with maintenance every 1250 hours)
Cleaning	Available (*)
Weight (kg)	0.7
Performance	Avoids the multiplication of bacteria and mould
Filter material:	Modified acrylic fibre 1 (containing inorganic anti-bacterial substance)
Support net	Modified acrylic fibre 2 (containing organic anti-bacterial substance)

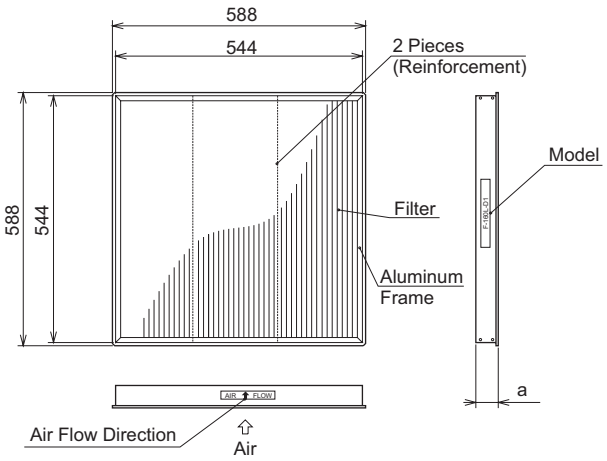
(*) This is the standard working life of the filter and its duration may vary depending on the conditions of use. Clean the filter with water or neutral detergent.

◆ Deodorising filter

For RCI-FSN3 indoor units: F-71L-D1 and F-160L-D1

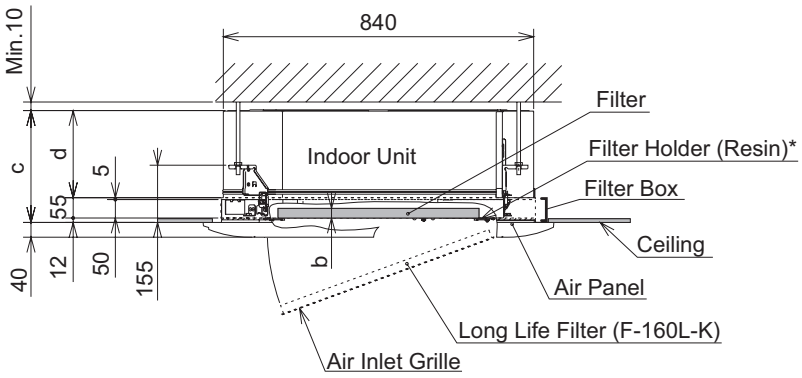
The dimensions of the deodorising filter are indicated in the following figure.

Remember that the filter thickness depends on the model.



	Model	
Dimension	F-71L-D1	F-160L-D1
a	25	45

The position of the deodorising filter is shown below:



*Insert the air filter into the filter box and fix the air filter by filter holder.

	Dimension		
Model	b	c	d
1.0 - 2.5	25	303	236
3.0 - 6.0	45	353	286

Specifications

Part		F-71L-D1	F-160L-D1
Applicable indoor unit model		1.0 to 2.5	3.0 to 6.0
Dust collection efficiency (%)		50 (gravimetric method)	
Air flow rate (m^3/min)		22.0	35.0
Initial pressure loss Pa		19.0	36.0
Final pressure loss Pa		48.0	78.0
Filter/frame colour		Pink/Silver	
Working life		3 years (with maintenance every 3-6 months)	
Reuse		Available (dried by sunlight) (*1)	
Cleaning		Available (washed with water) (*2)	
Weight (kg)		0.8	1.2
Performance		Absorbs smoke, body odour, etc.	
Filter material	Antibacterial fiber	Acrylate Fiber 1 (Absorbed fiber for basic gas) Acrylate Fiber 2 (Absorbed fiber for acidic gas)	
	Reinforce net	PP/PE	
	Reinforce sheet	PP	
Applicable filter box (option)		B-160H2	
Restrictions of use		Washing with detergents is forbidden	

(*1) This is the standard working life of the filter and its duration may vary depending on the conditions of use. Clean the filter with water or neutral detergent.

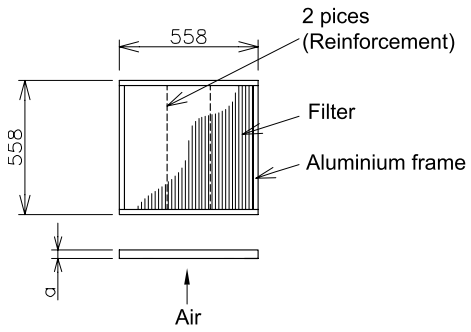
(*2) Wash the filter with water or neutral detergent to avoid reducing the absorption capacity.

For RCI-FSN3Ei indoor units: F-23L4-D and F-46L4-D

The dimensions of the deodorising filter are indicated in the following figure.

Remember that the filter thickness depends on the model.

Model	a (mm)
RCI-(1.5-2.5)FSN2E	26
RCI-(3.0-6.0)FSN2E	42



To fit the filter, you must install the filter box.

NOTE

When using this filter, set the air flow to high speed using the remote control to maintain the necessary volume of air.

Specifications

Part	RCI-(1.0-2.5) F-23L4-D	RCI-(3.0-6.0) F46-L4D
Dust collection efficiency (%)	50 (gravimetric method)	
Air flow rate (m^3/min)	20.0	37.0
Initial pressure loss Pa (mmAq)	15.7 (1.6)	16.7 (1.7)
Final pressure loss Pa (mmAq)	42.2 (4.3)	33.3 (3.4)
Working life	3 years (with maintenance every 3-6 months)	
Reuse	Available (dried by sunlight) (*1)	
Cleaning	Available (washed with water) (*2)	
Weight (kg)	0.9	1.0
Dimensions a (mm)	0.9	1.0
Performance	Absorbs smoke, body odour, etc.	
Restrictions of use	Washing with detergents is forbidden	

(*1) This is the standard working life of the filter and its duration may vary depending on the conditions of use. Clean the filter with water or neutral detergent.

(*2) Wash the filter with water or neutral detergent to avoid reducing the absorption capacity.

NOTE

- ***Some special smells (such as that of organic solvents and sulphur gas) cannot be eliminated.***
- ***This filter is reusable. Clean as indicated in the table and allow to dry in the sun.***
- ***This filter can be used with the long-lasting deodorising filter (optional).***
- ***This filter is supplied individually.***

3. Piping work and refrigerant charge

Index

3.1 Refrigerant pipe selection

3.1.1 Refrigerant pipe selection

NOTE

Consult the corresponding Technical Catalogue for outdoor units from the UTOPIA or SET FREE Series.

◆ Pipe size selection

Select the pipe size in line with the following instructions:

1 Between the outdoor unit and the branch pipe (multikit): select the same pipe connection size as for the outdoor unit.
2 Between the branch pipe (multikit) and the indoor unit: select the same pipe connection size as for the indoor unit.

CAUTION

- ***Do not use refrigerant pipe sizes other than those indicated in the corresponding Technical Catalogue for outdoor units. The diameter of the refrigerant pipes depends directly on the power of the outdoor unit.***
- ***If larger diameter refrigerant pipes are used, the circuit lubrication oil tends to separate from the gas carrying it. The compressor will be seriously damaged due to a lack of lubrication.***
- ***If smaller diameter refrigerant pipes are used, the gas or liquid refrigerant will have serious difficulties in circulating. System performance will be affected. The compressor will run under more severe conditions than foreseen and will be damaged in a short space of time.***

◆ Multikit or distributor selection

NOTE

- ***Pipe connection sizes on outdoor units, indoor units and the multikit or distributor vary depending on the system. Consult the Service Manual for the UTOPIA or SET FREE Series.***
- ***The sizes of the indoor and outdoor units are different. Adjust the flare adapter (accessory) to the indoor pipe connection.***

3.2 Copper pipes, sizes, connection and insulation

3.2.1 Copper pipes and sizes

CAUTION

- ***The copper pipe used in the refrigeration installations is different to the copper pipe used in installations carrying domestic or heating water.***
- ***The copper pipe for refrigeration installations is especially treated for outdoors and indoors. The interior surface finish makes it easier for the refrigerant to circulate and withstands the action of the lubricant oil applied to outdoor equipment.***

Prepare the copper pipes provided by the supplier.

Select the pipe with the appropriate diameter and thickness. Use the table below to select the most appropriate pipe:

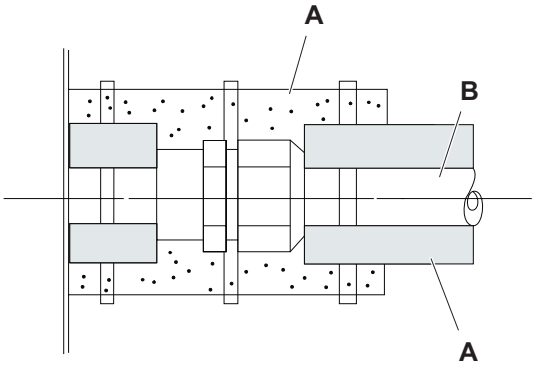
Nominal diameter		Thickness mm	Supply
mm	Inches		
Ø6.35	1/4	0.80	Roll
Ø9.52	3/8	0.80	Roll
Ø12.7	1/2	0.80	Roll
Ø15.88	5/8	1.00	Roll
Ø19.05	3/4	1.00	Pipe
Ø22.20	7/8	1.00	Pipe
Ø25.40	1	1.00	Pipe
Ø28.60	1-1/8	1.00	Pipe

Always use clean copper pipes with no signs of knocks or cracks. Make sure there is no dust or dampness on the inside. Before you install the pipes, clean the inside with oxygen-free nitrogen gas to eliminate any remains of dust or other substances.

CAUTION

- ***Do not use hand saws, circular saws, abrasive grinders or other tools that generate shavings.***
- ***Strictly follow national or local regulations regarding occupational health and safety.***
- ***Wear appropriate means of protection during cutting or brazing operations and installation (gloves, eye protection, etc).***

On completing the installation of the refrigerant pipes -B-, insulate them appropriately using suitable insulating material -A- and seal the open space between the holes made and the pipe, as shown in the figure.

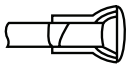


3.2.2 Pipe connection

End of refrigerant pipe protected correctly.

Cover the end of the pipe appropriately when it is to be inserted through holes in walls and roofs, etc.

Keep the ends of the pipes covered while other installation work is being carried out to avoid the entry of dampness or dirt.



End of refrigerant pipe unprotected.

Do not place the pipes directly on the ground without appropriate protection or adhesive vinyl tape to cover the ends.

Where the pipe installation is not completed for a certain amount of time, weld the ends of the pipe to seal. Then fill it with oxygen-free nitrogen gas through a Schrader valve to avoid the accumulation of humidity and/or contamination through dirt.

Secure the connection pipe as indicated in the image. Use the indoor unit's insulation.

A: flare nut on the indoor unit.

B: insulation on the pipe connection to the indoor unit using the insulating material supplied.

C: secure the insulation using the flange supplied or using suitable adhesive tape.

D: Installation refrigerant gas pipe.

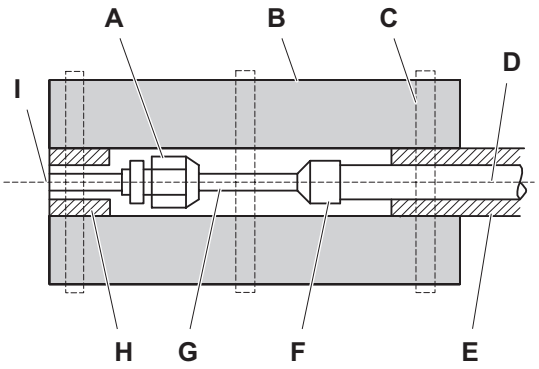
E: installation insulation (field-supplied).

F: brazing.

G: flare the pipe after inserting the flare nut.

H: indoor unit insulation.

I: indoor unit.



NOTE

- ***Where polyethylene foam insulation is used, a 10 mm thick layer should be used for the liquid pipe and between 15 and 20 mm for the gas pipe.***
- ***Install the insulation after the pipe surface temperature has dropped to the room temperature, otherwise the insulation may melt.***

Do not use insulating material that contains NH_3 (ammonium), as it could damage the copper in the pipe and subsequently cause leaks.

Where the fitter has supplied his own branches, these should be appropriately insulated to avoid decreases in capacity in line with to environmental conditions and condensation on the surface of the piping due to low pressure.

3.2.3 Insulation of multikits and/or branches

Install the insulation packages in the multikits and/or branches using suitable vinyl tape.

3.3 General instructions on the installation of refrigerant pipes

The copper pipe used for the installation must be specific for refrigeration systems as is indicated in section Copper pipes and sizes.

The diameter of the refrigerant pipes depends directly on the power of the outdoor unit. The pipe diameter allocated must be respected, in line with the instructions given in chapter Refrigerant pipe selection.

The location of the units and the pipe layout must be carried out in line with the instructions given in the Service Manual corresponding to the outdoor units of the UTOPIA or SET FREE systems, especially when the outdoor unit is situated at a different height than the indoor units.

System performance depends on the distance between the outdoor and indoor unit. This aspect must be taken into account for the installation of the refrigerant pipe. The outdoor units are factory-charged with sufficient refrigerant for a standard installation of certain characteristics. Where the system installation requirements involve an increase in the distance between the outdoor and indoor unit, refrigerant must be added to the installation in line with the instructions given in the Technical Catalogue and the Service Manual corresponding to the outdoor units of the UTOPIA or SET FREE systems.

3.4 Copper refrigerant pipe

3.4.1 Three principles on work with refrigerant pipes

The basic refrigerant pipe installation work must be carried out paying particular attention to avoid the infiltration of humidity or dust while working with the refrigerant piping. Otherwise, rust may appear inside the system or the units and cause serious faults.

Therefore, all work carried out on the copper pipes for refrigerant must follow the three principles described below.

Principle	Cause of the fault	Possible fault	Preventive measure
1. Absence of humidity Ensure the atmosphere remains totally dry	• Water infiltration due to insufficient protection on the ends of the pipes. • Condensation on the inside of the pipes. • Insufficient vacuum.	Ice on the inside of the pipe, on the expansion valve (water obstruction) + Absorption of oil humidity and oxidation ↓ Filter clogging, insulation and compressor fault	Pipe protection: 1. Seal the ends of the pipes. 2. Protect and insulate the ends of the pipes. ↓ Wash ↓ Vacuum dry (*)
2. Cleaning Absence of dust on the inside of the piping	• Dust or other elements entering the ends of the pipes. • Film of rust formed during brazing without nitrogen injection. • Insufficient nitrogen wash after brazing.	Expansion valve, capillary tube and filter clogging. Oil oxidation. Compressor fault ↓ Compressor fault, insufficient cooling or heating	Pipe protection: 1. Fit caps to the ends of the pipes. 2. Protect and insulate the ends of the pipes. ↓ Wash
3. Absence of leaks There must be no leaks	• Brazing fault. • Flaring fault and insufficient torque. • Insufficient torque on compressor connectors.	Lack of refrigerant Drop in performance Compressor fault Oil oxidation. ↓ Compressor overheating	Carry out basic brazing work carefully ↓ Carry out basic flaring work carefully ↓ Carry out basic connection work carefully ↓ Airtight test ↓ Preserving of vacuum in the installation

(*) One gram of water becomes approximately 1000 l of steam at 1 Torr. (1 Torr = 1 mmHg = 133.32 Pa). Therefore, a long time must be spent on vacuum work using a small pump.

3.4.2 General information on copper refrigeration pipes

CAUTION

- ***The copper pipe used in the refrigeration installations is different to the copper pipe used in installations carrying domestic or heating water.***
- ***The copper pipe for refrigeration installations is especially treated for outdoors and indoors. The interior surface finish makes it easier for the gas refrigerant to circulate and withstands the action of the lubricant oil applied to outdoor equipment.***

3.4.3 Diameters of the copper refrigeration pipes

Nominal diameter		Thickness mm	Supply
mm	Inches		
Ø6.35	1/4	0.80	Roll
Ø9.52	3/8	0.80	Roll
Ø12.70	1/2	0.80	Roll
Ø15.88	5/8	1.00	Roll
Ø19.05	3/4	1.00	Pipe
Ø22.20	7/8	1.00	Pipe
Ø25.40	1	1.00	Pipe
Ø28.60	1-1/8	1.00	Pipe

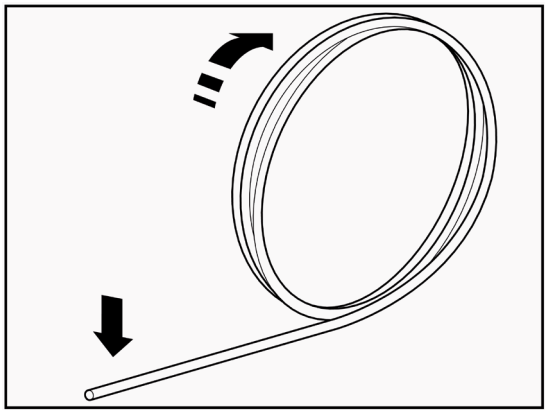
3.4.4 Preparing and cutting copper refrigeration pipes

Preparation

Clean the area where the copper refrigeration pipe preparation work is to be carried out. It must particularly be free of waste, soil, wood or metal shavings and, in general, any substance that could enter the ends of the pipe during handling.

The copper pipe must be clean and have no remains of adhesive, cement, dust or other substances adhered to it.

Where the copper pipe is supplied in rolls, fit a cap on the end and unwind it while it is resting on the ground so that the turning movement of the roll as it is unwound forms a straight pipe.



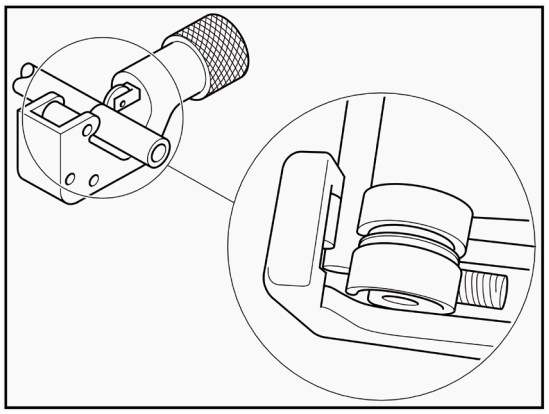
NOTE

- ***The rolls of copper refrigeration pipe are normally supplied with caps on their ends.***
- ***Where the roll of pipe does not come supplied with caps, check that the inside of the pipe is clean. If it is not, use a new roll of pipe.***
- ***It is also possible to cover the end of the pipe temporarily using high quality adhesive tape.***
- ***Do not wind and unwind the pipe continuously, as the properties of the copper for refrigeration pipes are altered, making it more rigid and brittle.***

Cutting

Define the necessary length of pipe and add a few more centimetres to give yourself enough margin in case the cut has to be repeated.

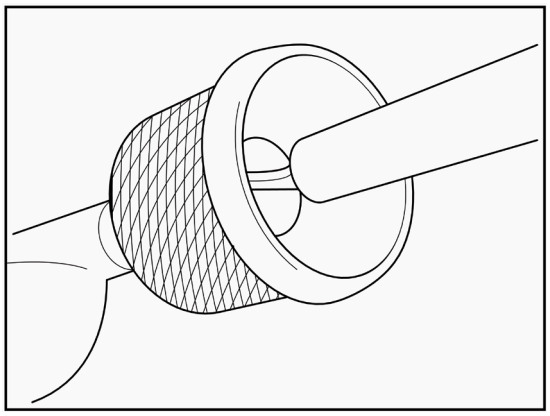
Cut the pipe using a pipe cutter.



CAUTION

Ensure the pipe cutter rollers remain perfectly seated on the copper pipe.

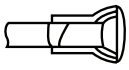
Remove any internal burrs arising from the pipe cutter using a pipe reamer.



CAUTION

- ***While making the cut, slant the pipe downwards to prevent burrs or shavings from falling inside the pipe.***
- ***Do not use hand saws, circular saws, abrasive grinders or other tools that generate shavings.***
- ***Strictly follow national or local regulations regarding occupational health and safety.***
- ***Wear appropriate means of protection during cutting or brazing operations and installation (gloves, eye protection, etc).***

If the pipe is not to be immediately flared, protect the end of the pipe using a suitable cap or high quality insulation tape.



CAUTION

Do not leave the ends of flared pipes unprotected.

3.4.5 Bending copper pipes

Where the refrigerant pipes are to be bent, always use a bending tool or a spring, both of a diameter that is adapted to the pipe to be bent.

The bending radii must be as wide as possible so that the gas or liquid refrigerant flow is not altered and no circulation noise is generated during operation.

NOTE

- ***Bends in refrigerant pipes reduce system performance due to changes in the flow of gas and liquid refrigerant circulation.***
- ***Do not use any other tool to bend pipes, as the pipe may be excessively bent or crushed and its inner diameter reduced.***

CAUTION

Never bend pipes with radii of less than 90°.

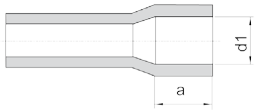
3.4.6 Brazing copper refrigeration pipes

Brazing is the most important job in the installation of refrigeration pipes. In the event of an accidental leak due to negligence during the brazing process, the capillary tubes will be obstructed or the compressor seriously damaged.

To guarantee correct brazing between pipe surfaces, prepare them for widening according to the data in the following table.

CAUTION

- ***It is important to check the pipe fitting measurement as indicated in the following table.***
- ***If a tool is used to widen the copper pipe, the dimensions indicated must be respected.***



Copper pipe size	Ød1	Tolerance	a
Ø6.35 $^{+0.08}$ / $_{-0.08}$	Ø6.5 $^{+0.1}$ / $_{0}$	$^{+0.33}$ / $_{0.07}$	6
Ø9.52 $^{+0.08}$ / $_{-0.08}$	Ø9.7 $^{+0.1}$ / $_{0}$	$^{+0.35}$ / $_{0.09}$	8
Ø12.7 $^{+0.08}$ / $_{-0.08}$	Ø12.9 $^{+0.1}$ / $_{0}$	$^{+0.38}$ / $_{0.19}$	8
Ø15.88 $^{+0.09}$ / $_{-0.09}$	Ø16.1 $^{+0.1}$ / $_{0}$	$^{+0.41}$ / $_{0.13}$	8
Ø19.05 $^{+0.09}$ / $_{-0.09}$	Ø19.3 $^{+0.1}$ / $_{0}$	$^{+0.44}$ / $_{0.16}$	10
Ø22.22 $^{+0.09}$ / $_{-0.09}$	Ø22.42 $^{+0.1}$ / $_{0}$	$^{+0.39}$ / $_{0.11}$	10
Ø25.4 $^{+0.12}$ / $_{-0.12}$	Ø25.6 $^{+0.1}$ / $_{0}$	$^{+0.42}$ / $_{0.08}$	12
Ø28.58 $^{+0.12}$ / $_{-0.12}$	Ø28.78 $^{+0.1}$ / $_{0}$	$^{+0.42}$ / $_{0.08}$	12
Ø31.75 $^{+0.12}$ / $_{-0.12}$	Ø32.0 $^{+0.1}$ / $_{0}$	$^{+0.47}$ / $_{0.13}$	12
Ø38.1 $^{+0.12}$ / $_{-0.12}$	Ø38.3 $^{+0.1}$ / $_{0}$	$^{+0.52}$ / $_{0.18}$	14

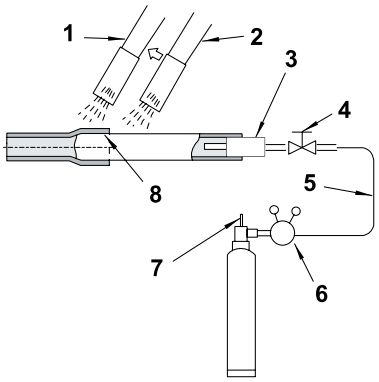
The necessary brazing must be done by brazing, using a copper and silver alloy.

Before you start brazing, install a dry nitrogen gas injection system inside the pipes to prevent the copper from being exposed to the air while it is subjected to high temperatures.

CAUTION

- ***Do not braze on refrigerant pipes without a dry nitrogen gas injection system.***
- ***Otherwise, a layer of rust will form that may become detached when the refrigeration system is started, causing filter or compressor blockages.***
- ***NEVER USE oxygen, acetylene or fluorocarbonated gas to replace nitrogen gas: this will cause an explosion or will generate toxic gas.***

1. Heat the outer pipe previously to ensure the filler metal flows more easily.
2. Heat the inner pipe evenly.
3. Rubber cap.
4. Valve with no packing.
5. High pressure pipe.
6. 0.03 to 0.05 MPa (0.3 to 0.5 kg/cm^2 G).
7. Reducer valve: only open the valve when gas is required.
8. Nitrogen gas flow, 0.05 m^3/h or less.

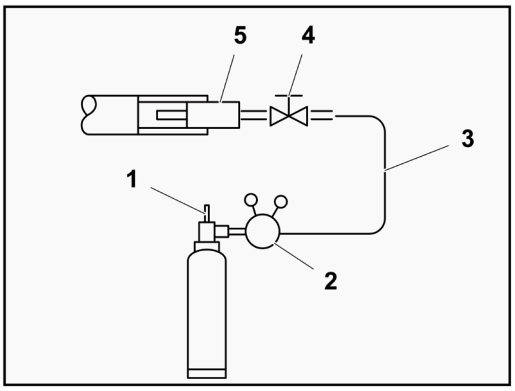


CAUTION

Keep the nitrogen gas pressure within the indicated values. A rise in pressure in the pipe could cause an explosion.

3.4.7 Flared connection mounting

Line up the end of the flared pipe to face the fitting to which it is to be threaded.



Gently rest the female cone on the male cone and check that the measurement is correct. Keep the connection lined up with one hand and gently thread on the flare nut with the other.

Tighten the connection to the corresponding tightening torque indicated in the table below.

Nominal diameter		Tightening torque
mm	Inches	
Ø6.35	1/4	20 Nm
Ø9.52	3/8	40 Nm
Ø12.7	1/2	60 Nm
Ø15.88	5/8	80 Nm
Ø19.05	3/4	100 Nm
Ø22.20	7/8	–
Ø25.40	1	–
Ø28.60	1-1/8	–

CAUTION

- ***Secure the fixed connection with a suitable wrench and use a torque wrench to tighten the flare nut on the threaded connections.***
- ***Do not exceed the torque value indicated in the table. The fitting can become misshapen and the connection may leak.***

3.4.8 Refrigerant pipe insulation

The refrigerant circulates through the pipes at a very low temperature (several degrees below zero, depending on the time of year and the installation). The difference in temperature with the ambient air is extremely large and causes two significant phenomena to be taken into account:

- Cold irradiation along the entire pipe.
- Condensation of the humidity in the surrounding air.

Actually, cold irradiation is the temperature gain experienced by the gas, as when it circulates under pressure and at such low temperatures along the inside of the pipes, it is actually liquid and obtains the outdoor temperature (boiling at a very low temperature) to turn into gas.

As a result of the temperature gain (although it is actually perceived as cold emission), the loses its capacity to cool and the system does not perform as expected. Furthermore, the humidity in the surrounding air condenses on the pipe and the greater the temperature difference and the longer the pipe, the more water is produced.

In view of this, the refrigerant pipes must be fitted with a suitable insulation system that prevents the increase in temperature of the refrigerant and the subsequent loss of energy and the condensation of water along the entire pipe.

Refrigerant pipes must always be separately insulated, using closed cell insulation foam designed especially for refrigeration. This insulation foam, supplied by the installer, can be obtained in different formats. The most common is in the form of sheets and rolls of tubes of different diameters.

Furthermore, all connections between the different sections of insulation tubes must be reinforced with adhesive tape of the same characteristics.

Once all of the unit installation and adjustment work is complete, all threaded joints and valves must also be covered with adhesive tape.

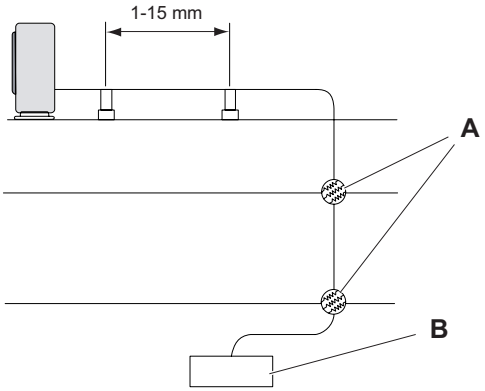
3.4.9 Refrigerant pipe suspension

Only suspend the refrigerant pipes at specific points of the building. Whenever possible, avoid suspending them from parts subject to structural movement, e.g. places close to expansion joints or outer walls, etc.

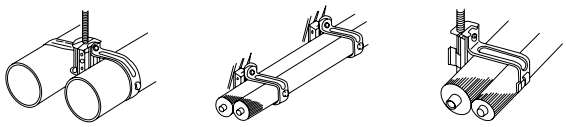
Prevent the refrigerant pipes from touching weak parts of the building, such as walls (non-structural), partition walls, ceilings, etc. Otherwise, operating noise may be caused by pipe vibrations (pay special attention in the case of short pipes).

A: points where the refrigerant pipes pass through the different structural parts of the building.

B: indoor unit.



Use suitable suspension systems for refrigeration pipes or clamps to suspend the pipes, as shown in the diagram.

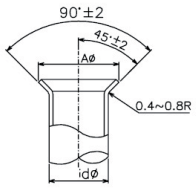


3.5 Refrigerant and drain hose installation

◆ General notes

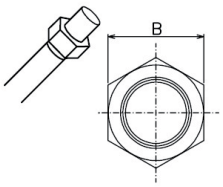
Dimensions of the flare and thickness of the copper pipe

Nominal diameter		Thickness mm	Measurement $A^{+0}_{-0.4\ mm}$
mm	inches		
Ø6.35	1/4	0.80	9.1
Ø9.52	3/8	0.80	13.2
Ø12.70	1/2	0.80	16.6
Ø15.88	5/8	1.00	19.7



Dimensions of the flare nuts for flared connections

Nominal diameter		Measurement B mm
mm	inches	
Ø6.35	1/4	17
Ø9.52	3/8	22
Ø12.70	1/2	26
Ø15.88	5/8	29

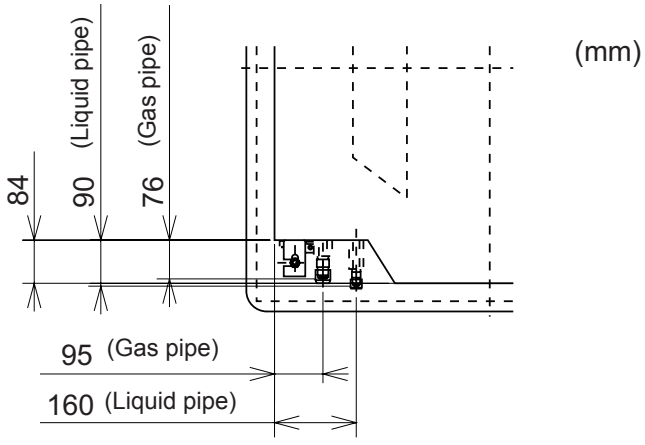


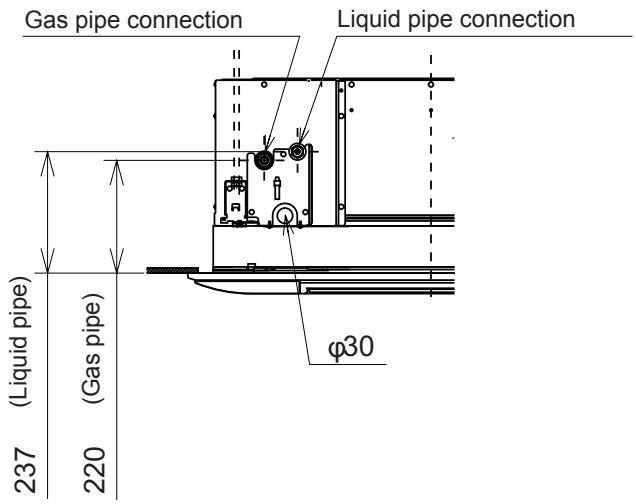
3.5.1 RCI - 4-way cassette (1.0-6.0)FSN3

◆ Refrigerant pipe installation

The correct position for the refrigerant pipe connection is shown below. The pipe connection must be accessible from all directions

(above, left or right).



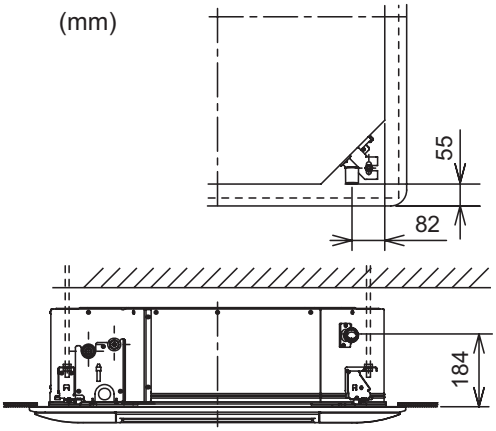


mm (in)

	Liquid piping	Gas piping
RCI-(1.0/1.5)FSN3	Ø 6.35 (1/4)	Ø 12.70 (1/2)
RCI-2.0FSN3		Ø 15.88 (5/8)
RCI-(2.5-6.0)FSN3	Ø 9.52 (3/8)	

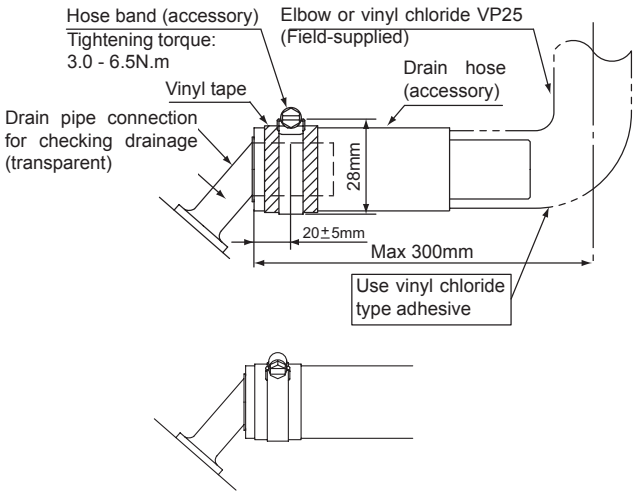
◆ Drain pipe installation

The position of the drain pipe connection is shown below

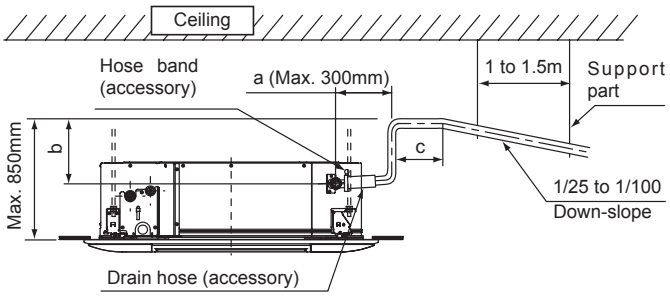


Prepare a polyvinyl chloride pipe with a 32mm outer diameter.

Fasten the tubing to the drain hose with an adhesive and the factory-supplied clamp.



The drain piping must be performed with a down-slope pitch of 1/25 to 1/100.

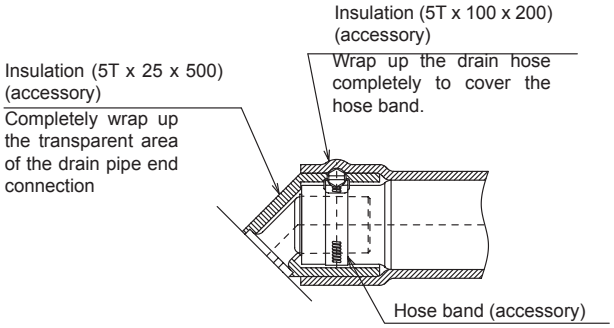


Do not apply excessive force to the Drain Pipe connection. It could cause a damage.

Do not use a bent or twisted Drain Hose. It will cause water leakage.

Insulate the drain pipe after connecting the drain hose.

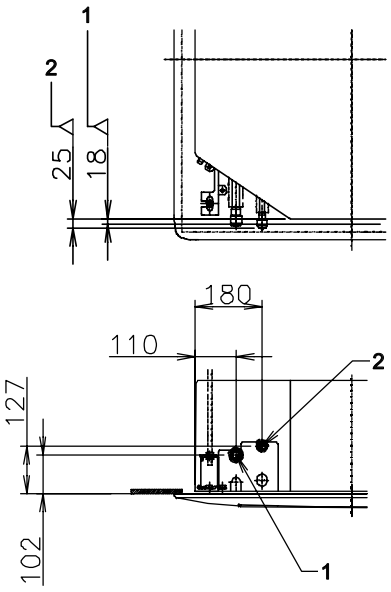
(mm)



3.5.2 RCI - 4-way cassette (1.0-6.0)FSN3Ei

◆ Refrigerant pipe installation

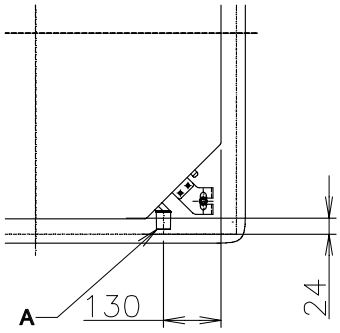
The correct position for the refrigerant pipe connection is shown below. The pipe connection must be accessible from all directions (above, left or right).



Models	(1) Gas pipe mm (inches)	(2) Liquid pipe mm (inches)
RCI-(1.0/1.5)FSN3Ei	Ø12.70 (1/2)	Ø6.35 (1/4)
RCI-2.0FSN3Ei	Ø15.88 (5/8)	
RCI-(2.5–6.0)FSN3Ei		Ø9.52 (3/8)

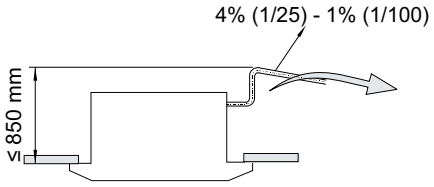
◆ Drain pipe installation

The correct position for the drain hose connection -A- is shown below.

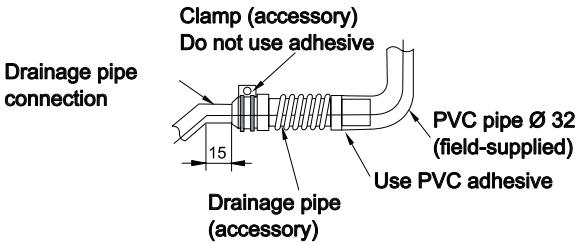


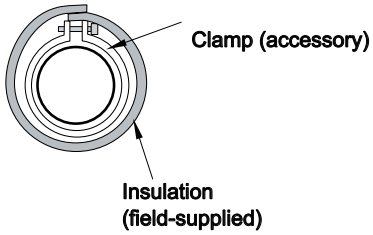
Prepare a polyvinyl chloride (PVC) pipe with an outer diameter of 32 mm.

Secure the pipe with the clamp and adhesive supplied.



The drain hose must have a gradient of 4% (1/25) to 1% (1/100).





CAUTION

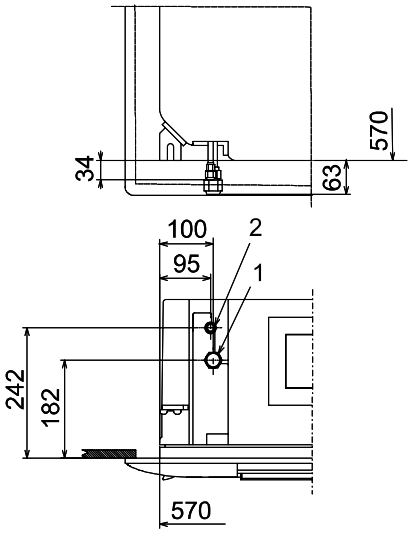
- ***Do not apply too much force when making the drain hose connection as this could damage it.***
- ***Do not use bent or twisted drain pipes as these will cause water leaks.***

Then insulate the drain hose appropriately.

3.5.3 RCIM-4-way cassette (compact) (0.8-2.0)FSN2

◆ Refrigerant pipe installation

The correct position for the gas refrigerant pipe connection is shown below. The pipe connection must be accessible from all directions (above, left or right).



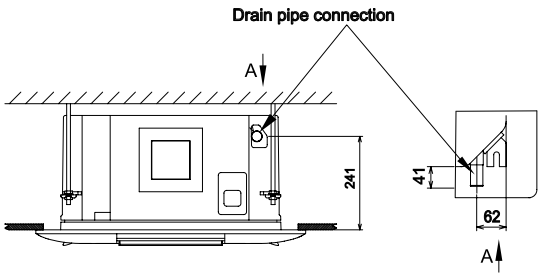
Models	(1) Gas pipe mm (inches)	(2) Liquid pipe mm (inches)
RCIM-(0.8-1.5)FSN2E	Ø12.70 (1/2)	Ø6.35 (1/4)
RCIM-2.0FSN2E	Ø15.88 (5/8)	

◆ Drain pipe installation

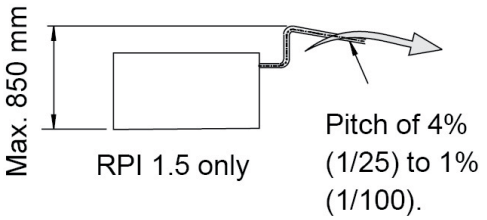
The correct position for the drain hose connection is shown below.

Prepare a polyvinyl chloride (PVC) pipe with an outer diameter of 32 mm.

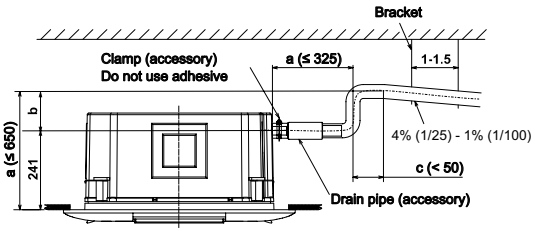
Secure the pipe with the clamp and adhesive supplied.

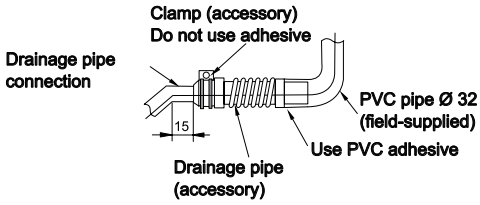


The drain hose must have a gradient of 1% (1/100) to 4% (1/25).



Consider the following sizes: a + b + c ≤ 780 mm.



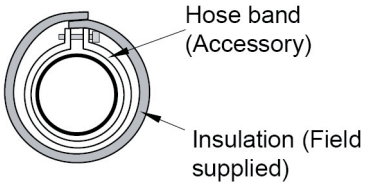


3

CAUTION

- ***Do not apply adhesive between the drain hose connection and the drain hose.***
- ***Do not apply too much force when making the drain hose connection as this could damage it.***
- ***Do not use bent or twisted drain pipes as these will cause water leaks.***

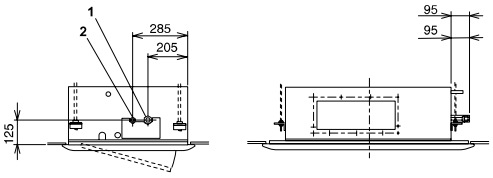
Then insulate the drain hose appropriately.



3.5.4 RCD - 2-way cassette (1.0-5.0)FSN2

◆ Refrigerant pipe installation

The correct position for the refrigerant pipe connection is shown below. The pipe connection must be accessible from all directions (above, left or right).



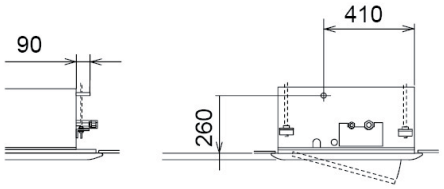
Models	(1) Gas pipe mm (inches)	(2) Liquid pipe mm (inches)
RCD-(1.0/1.5)FSN2	Ø12.70 (1/2)	Ø6.35 (1/4)
RCD-2.0FSN2	Ø15.88 (5/8)	
RCD-(2.5–5.0)FSN2		Ø9.52 (3/8)

◆ Drain pipe installation

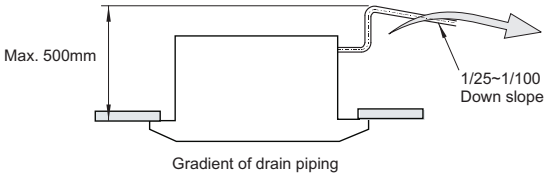
The correct position for the drain hose connection is shown below.

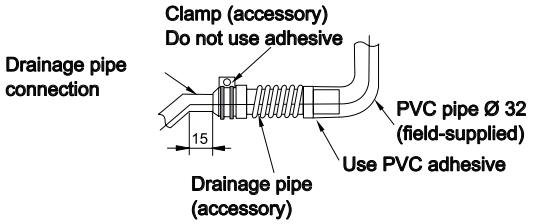
Prepare a polyvinyl chloride (PVC) pipe with an outer diameter of 32 mm.

Secure the pipe with the clamp and adhesive supplied.



The drain hose must have a gradient of 1% (1/100) to 4% (1/25).

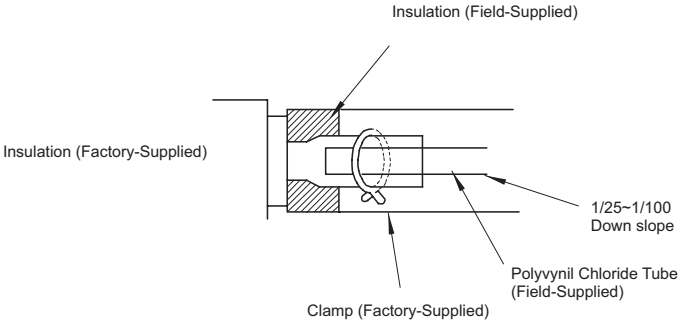




CAUTION

- ***Do not apply adhesive between the drain hose connection and the drain hose.***
- ***Do not apply too much force when making the drain hose connection as this could damage it.***
- ***Do not use bent or twisted drain pipes as these will cause water leaks.***

Then insulate the drain hose appropriately.

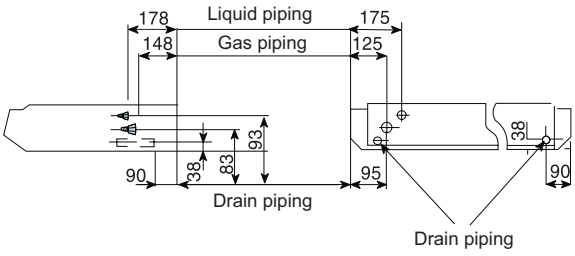


3.5.5 RPC - Ceiling type (2.0-6.0)FSN2E

◆ Refrigerant pipe installation

The correct position for the refrigerant pipe connection is shown below. The refrigerant piping can be connected to the top or rear of the unit.

Each part has a die-cut hole as is indicated in chapter Unit installation.

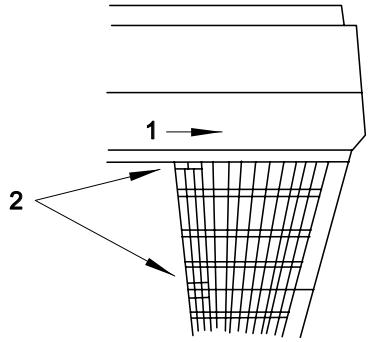


Models	(1) Gas pipe mm (inches)	(2) Liquid pipe mm (inches)
RPC-2.0FSN2E	Ø15.88 (5/8)	Ø6.35 (1/4)
RPC-(2.5–6.0)FSN2E		Ø9.52 (3/8)

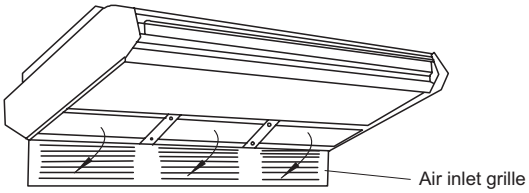
The piping must be installed from the bottom of the unit.

1 Remove the air inlet grille and slide the buttons on the grille backwards.

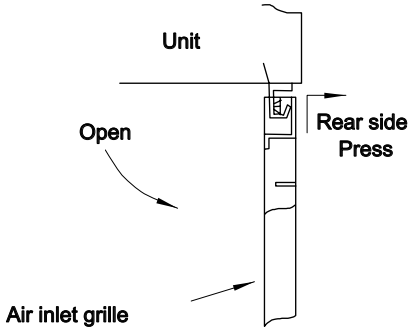
1	Slide
2	Knob



2 Open the air inlet grille



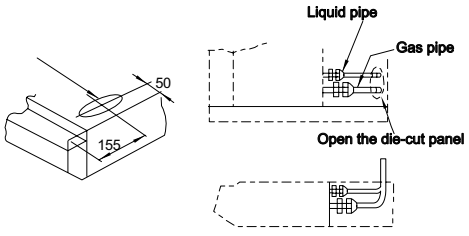
3 Push and slide the air inlet grille backwards and open it.



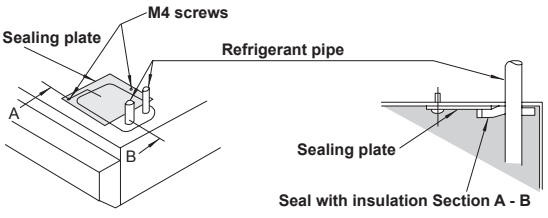
4 Remove the die-cut panel from the required part of the unit to install the refrigerant pipes.

Upper side.

Open the Knockout hole



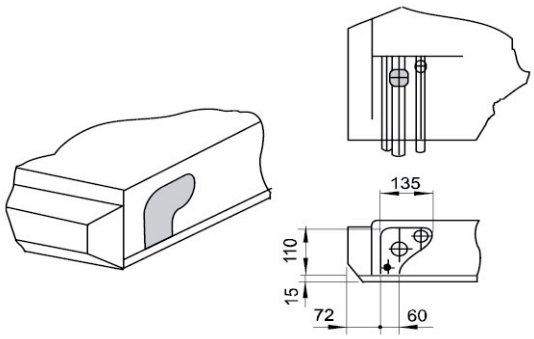
Seal piping.



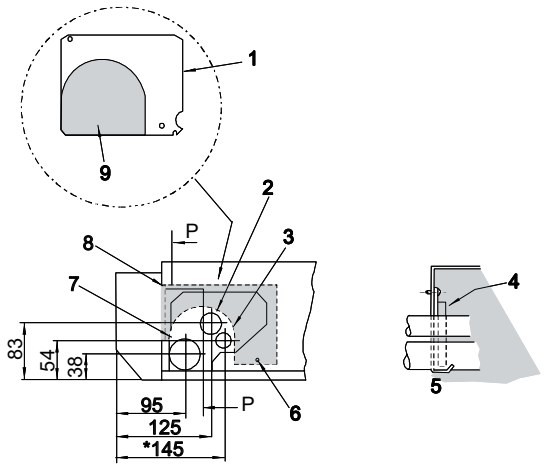
5 Install the pipes through it and seal them using the insulation supplied, as indicated below.

Rear side.

Open the Knockout hole



Seal piping.



1	Sealing plate supplied (0.8x118x142 mm)
2	Gas refrigerant pipe
3	Liquid refrigerant pipe
4	Seal with insulation
5	Sec. P.P.
6	M4 screw
7	Sealing plate
8	M4 screw
9	Knockout hole

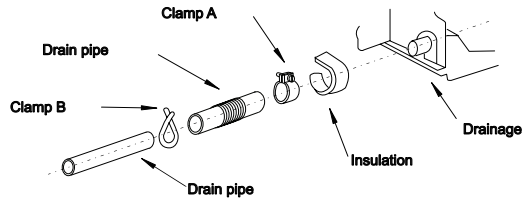
◆ Drain pipe installation

NOTE

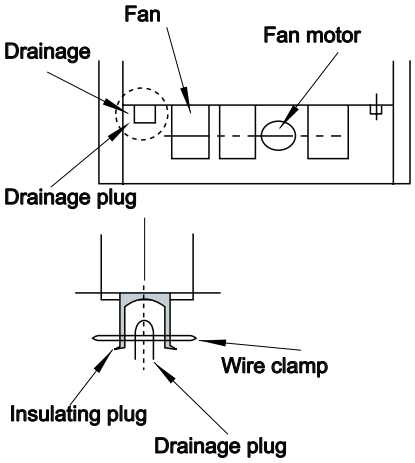
The normal direction for connecting the drain hose is on the right side (when the unit is seen from the outlet grille side). The connection can be made from the left side if there are construction elements of the building around it.

Connection on the right-hand side

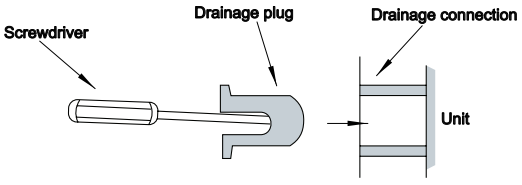
1 Insert the drain hose in the clamp “A”.
2 Push the drain hose towards the boss until it reaches the end of the pan.
3 Tighten the screw on the wire clamp to secure the pipe around the drain connection without causing water leaks.
4 Insulate the drain hose around the wire clamp to avoid condensation.
5 Insert the drain pipe into the drain hose and secure it using the wire clamp “B”.



Connection on the left-hand side

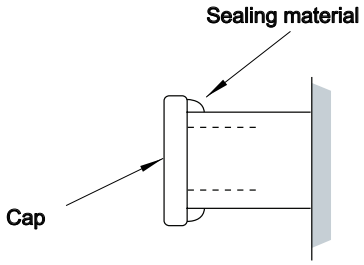


1 Remove the plug from the drain hose by cutting the securing clip.
2 Remove the insulating material.
3 Remove the drain plug and insert the pipe into the wire clamp.
4 Insert the drain plug into the right-hand boss using a screwdriver.



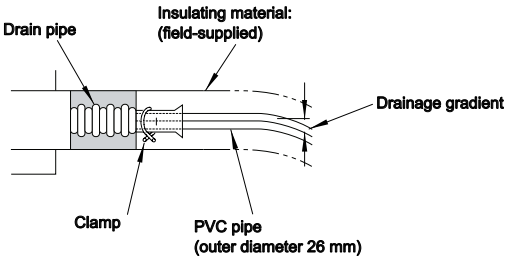
5 Seal the connection using waterproof chloride sealing material and secure with the pin.

6 Place the insulating material around the drain connection.



Drain hose connection

The correct position for the drain hose connection is shown below.



Prepare a polyvinyl chloride (PVC) pipe with an outer diameter of 26 mm.

The drain hose must have a gradient of 1% (1/100) to 4% (1/25).

The drain hose cannot be installed on an upwards line, not even on one section of the installation. In this case, the condensate water accumulates at the lowest point immediately before the raised section of the installation.

Seal the connection using waterproof chloride sealing material.

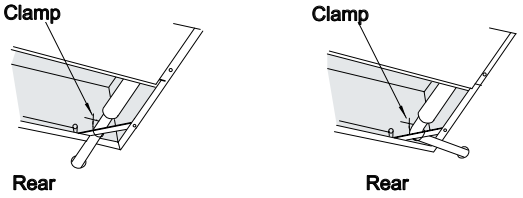
Insulate the connection part carefully.

Secure the drain pipe to the connection part using the clamp supplied.

CAUTION

- ***Do not apply too much force when making the drain hose connection as this could damage it.***
- ***Do not use bent or twisted drain pipes as these will cause water leaks.***

Insulate the drain pipe and suspend it individually as indicated in the figure.



CAUTION

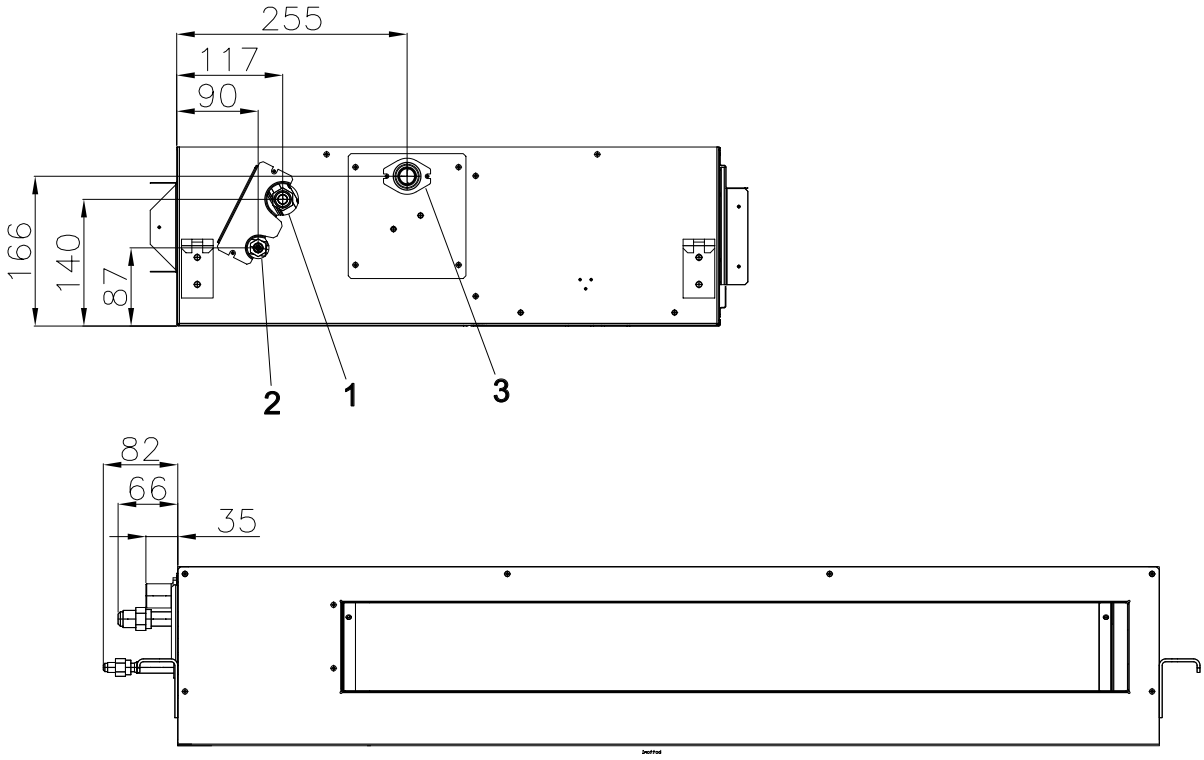
- ***Do not apply adhesive between the drain hose connection and the drain hose.***
- ***Do not install the condensate discharge pipe next to the gas refrigerant pipes. Any accumulated water could freeze and block the discharge system.***

Check the correct working order of the drainage system.

3.5.6 RPI - Ducted indoor unit (0.8-1.5)FSN4E

◆ Refrigerant pipe installation

The correct position for the gas refrigerant pipe connection is shown below.



1	Gas piping connection
2	Liquid piping connection
3	Drain piping

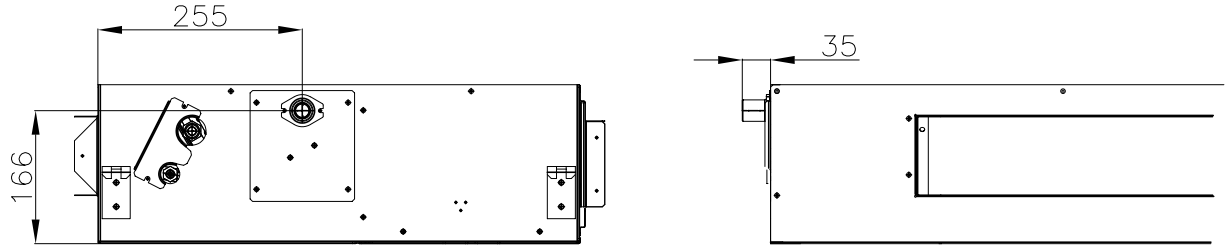
Models	Gas pipe mm (inches)	Liquid pipe mm (inches)
RPI	Ø12.7 (1/2)	Ø6.35 (1/4)

NOTE

When installing the pipes, leave enough space for maintenance work in the electrical box of the unit.

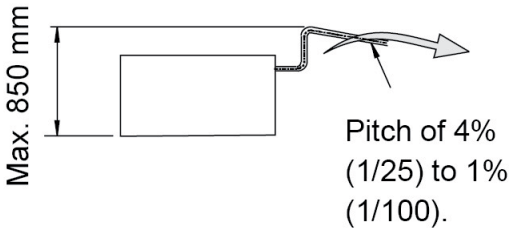
◆ Drain pipe installation

The correct position for the drain hose connection is shown below.

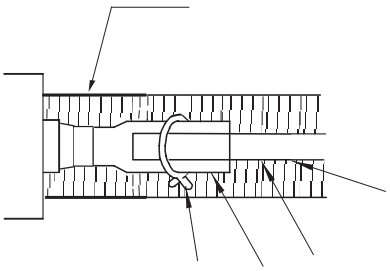


Prepare a polyvinyl chloride (PVC) pipe with an outer diameter of 32 mm.

Fasten the tubing to the drain hose with an adhesive and the factory-supplied clamp. The drain piping must be performed with a down-slope pitch of 1/25 to 1/100.

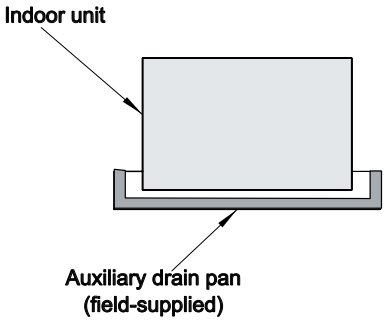


Insulate the drain pipe after connecting the drain hose.



NOTE

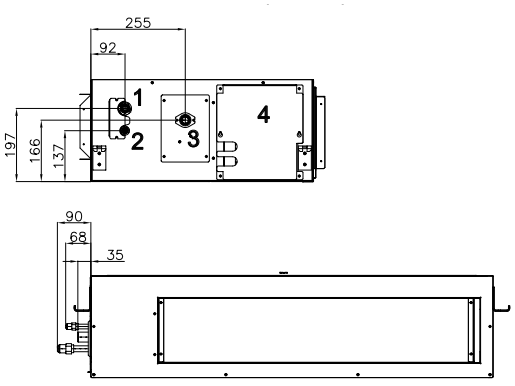
If the relative humidity of the inlet air or the ambient air exceeds 80% in the place where the unit is installed, fit an auxiliary drain pan (field-supplied) below the indoor unit, as indicated in the figure.



3.5.7 RPI - Ducted indoor unit (2.0-6.0)FSN4E

◆ Refrigerant pipe installation

The correct position for the refrigerant pipe connection is shown below.



1	Gas pipe
2	Liquid pipe
3	Drain hose
4	Electrical box

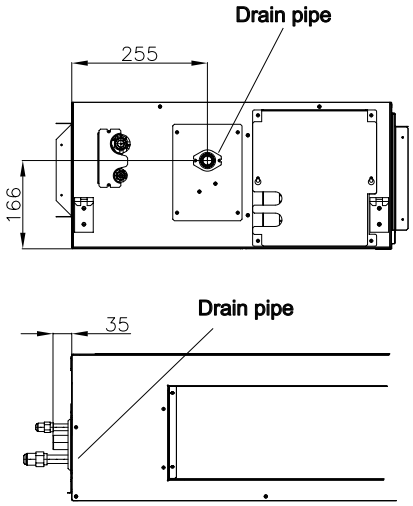
Models	Gas pipe mm (inches)	Liquid pipe mm (inches)
RPI-2.0FSN4E	Ø15.88 (5/8)	Ø6.35 (1/4)
RPI-(2.5/3.0)FSN4E		Ø9.52 (3/8)
RPI-(4.0-6.0)FSN4E		

NOTE

When installing the pipes, leave enough space for maintenance work in the electrical box of the unit.

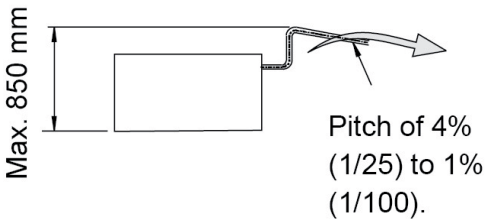
◆ Drain pipe installation

The correct position for the drain hose connection is shown below.

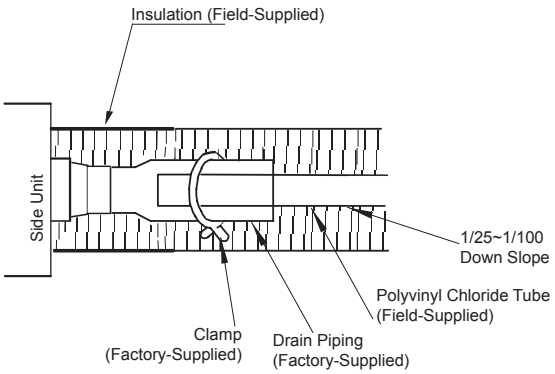


Prepare a polyvinyl chloride (PVC) pipe with an outer diameter of 32 mm.

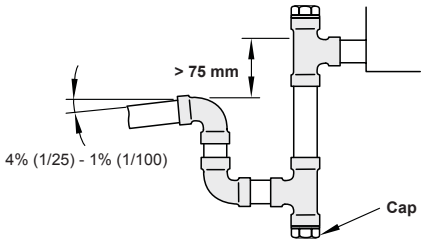
Fasten the tubing to the drain hose with an adhesive and the factory supplied clamp. The drain piping must be performed with a down-slope pitch of 1/25 to 1/100.



Then insulate the drain hose appropriately.

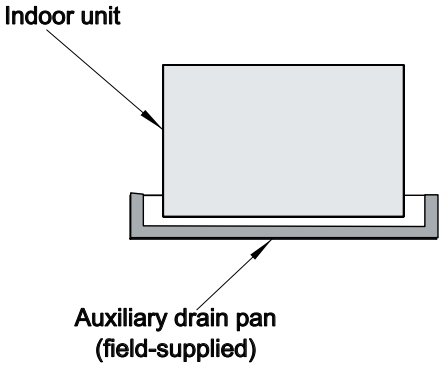


Connect a trap to the drain hose at the angle indicated, as indicated in the figure (for RPI-(8.0/10.0)FSN3E).



NOTE

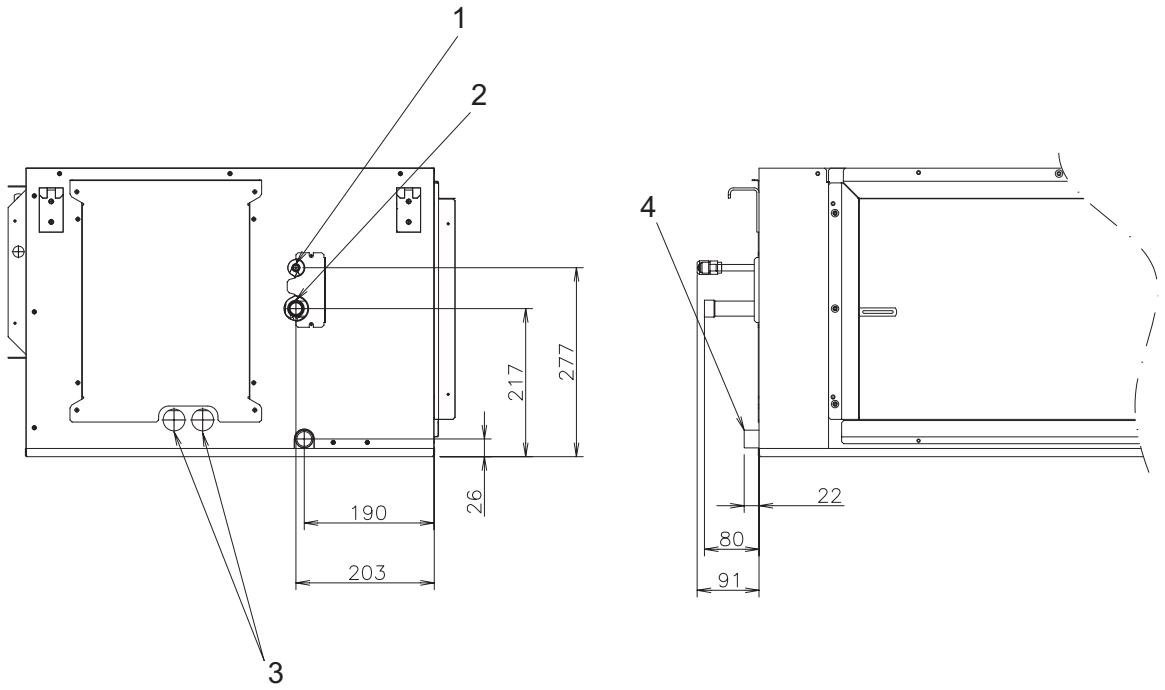
If the relative humidity of the inlet air or the ambient air exceeds 80% in the place where the unit is installed, fit an auxiliary drain pan (field-supplied) below the indoor unit, as indicated in the figure.



3.5.8 RPI- Ducted indoor unit (8.0/10.0)FSN3E

◆ Refrigerant pipe installation

The location of the refrigerant pipe connections are shown below.



1	Liquid pipe
2	Gas pipe
3	Electrical connection
4	Drain pipe

Model	Gas pipe mm (inches)	Liquid pipe mm (inches)
RPI-8.0FSN3E	Ø19.05 (3/4)	Ø9.52 (3/8)
RPI-10.0FSN3E	Ø22.2 (7/8)	Ø9.52 (3/8)

NOTE

When installing the pipes, leave enough space for maintenance work in the electrical box of the unit.

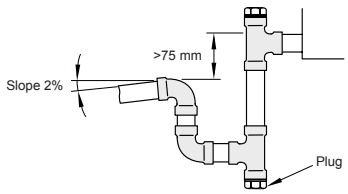
◆ Drain pipe installation

For condense draining, prepare a polyvinyl chloride pipe with a Ø25mm (outer diameter).

Fasten the field supplied pipe to the drain hose with adhesive.

The drain piping should be perfomed with a down-slope pitch of 1/25 to 1/100.

Connect a syphon, as shown at the figure below.



NOTE

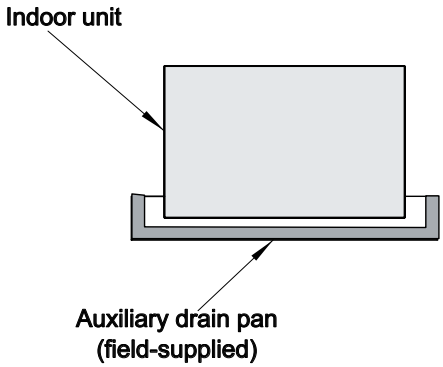
Keep Electrical Box and Drain Pipe connection free of refrigerant pipes.

CAUTION

It is very important the syphon installation in order to guarantee the proper condensate draining.

NOTE

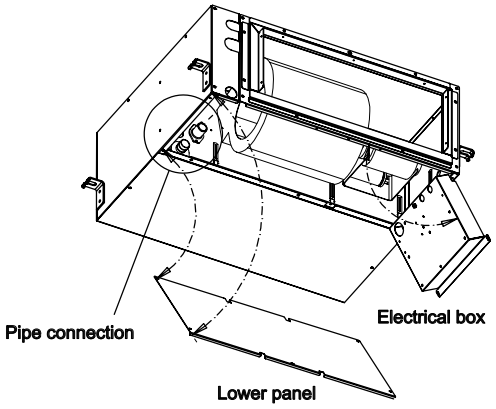
If the relative humidity of the inlet air or the ambient air exceeds 80% in the place where the unit is installed, fit an auxiliary drain pan (field-supplied) below the indoor unit, as indicated in the figure.



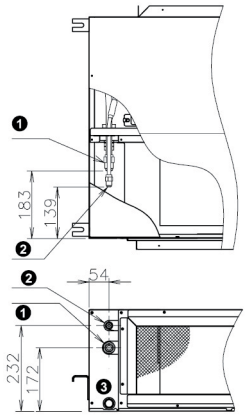
3.5.9 RPIM - Ducted indoor unit (0.8-1.5)FSN4E(-DU)

◆ Refrigerant pipe installation

The pipe connections are inside the unit. Access the refrigerant pipe connection by removing the fan cover on the unit.



❶ Gas piping
❷ Liquid piping
❸ Drain pipe



The correct position for the refrigerant pipe connection is shown below.

Models	Gas pipe mm (inches)	Liquid pipe mm (inches)
RPIM(0.8–1.5)FSN4E	Ø12.70 (1/2)	Ø6.35 (1/4)

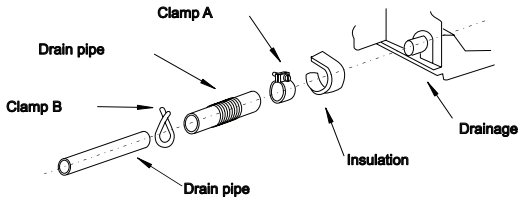
NOTE

When installing the pipes, leave enough space for maintenance work in the electrical box of the unit.

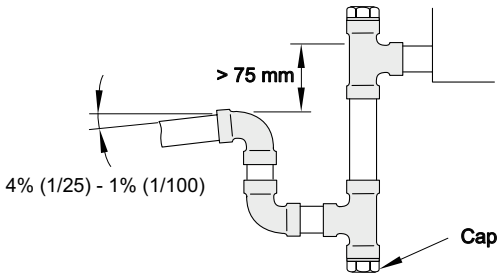
◆ Drain pipe installation

Drain hose installation:

1. Insert the drain hose in the clamp “A”.
2. Push the drain hose towards the boss until it reaches the end of the pan.
3. Tighten the screw on the wire clamp to secure the pipe around the drain connection without causing water leaks.
4. Insulate the drain hose around the wire clamp to avoid condensation.
5. Insert the drain pipe into the drain hose and secure it using the wire clamp “B”.

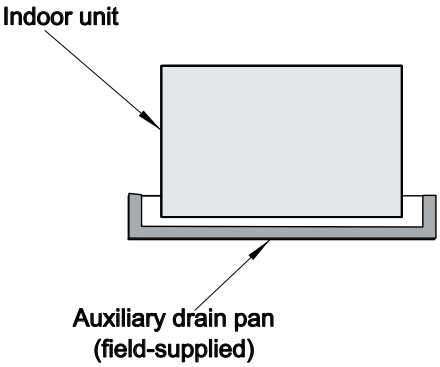


Connect a trap to the drain hose at the angle indicated, as indicated in the figure.

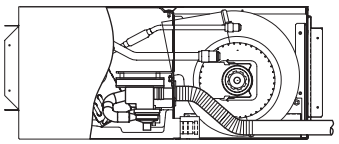


NOTE

If the relative humidity of the inlet air or the ambient air exceeds 80% in the place where the unit is installed, fit an auxiliary drain pan (field-supplied) below the indoor unit, as indicated in the figure.



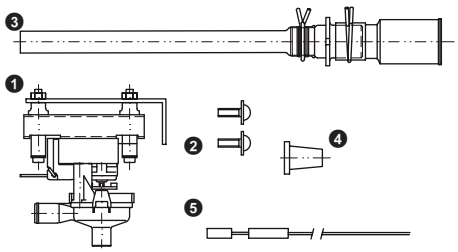
Drainage installation for (-DU) units:



Optional drainage kit (for units without drain pump)

For special cases those installation design finally requires draining up (and was not desgined from the beginning of the installation project), it is available the optional drain kit.

Optional drain up mechanism kit



❶ Drain pump

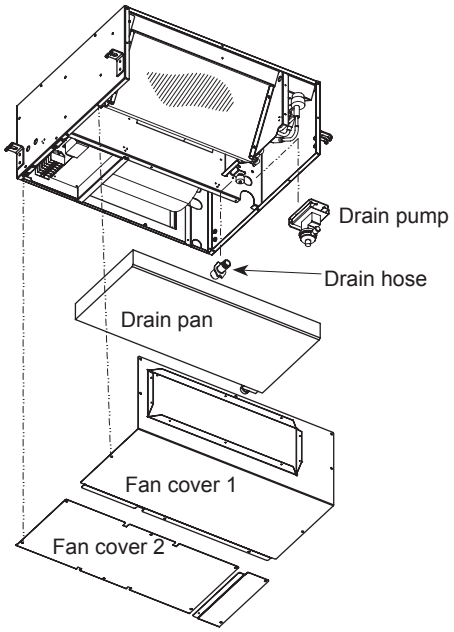
❷ Screw (2 units)

❸ Drain hose

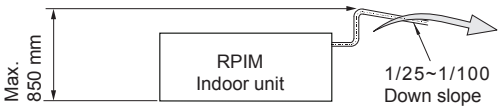
❹ Rubber plug

❺ Drain pump wire

Kit installation:



Maximum water head height in case of units with drain pump (-DU models or units with drain up mechanism kit).



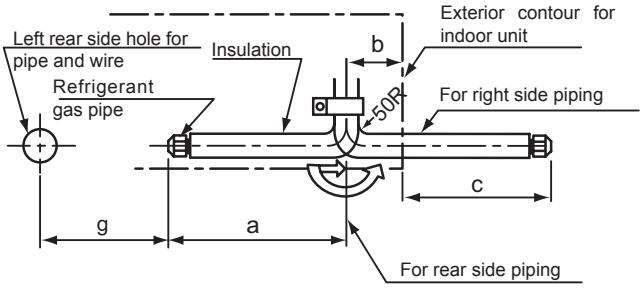
3.5.10 RPK - Wall type (0.8-4.0)FSN(H)3M

◆ Refrigerant pipe installation

Gas pipe connection

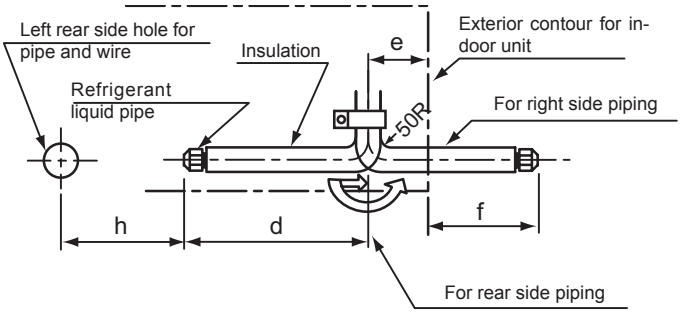
The position of the gas pipe connection is possible in all directions (above, left or right).

Model	Measurements (mm)			
	a	b	c	g
RPK-(0.8-1.0)FSN(H)3M	395	107	288	243
RPK–1.5FSN(H)3M	395	107	288	262
RPK-(2.0-4.0)FSN3M	480	141	339	471



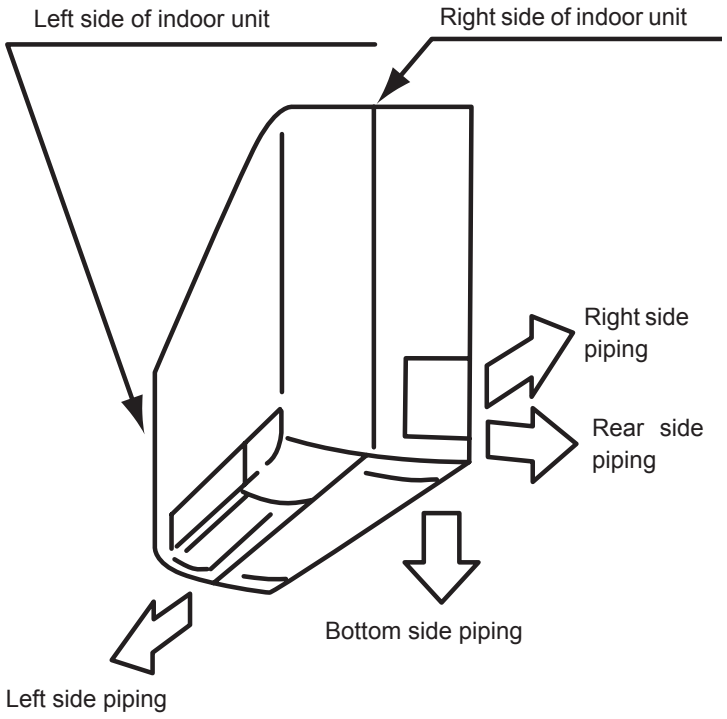
Liquid pipe connection

Model	Measurements (mm)			
	d	e	f	h
RPK-(0.8-1.0)FSN(H)3M	450	107	343	188
RPK–1.5FSN(H)3M	450	107	343	207
RPK-(2.0-4.0)FSN3M	540	141	399	418



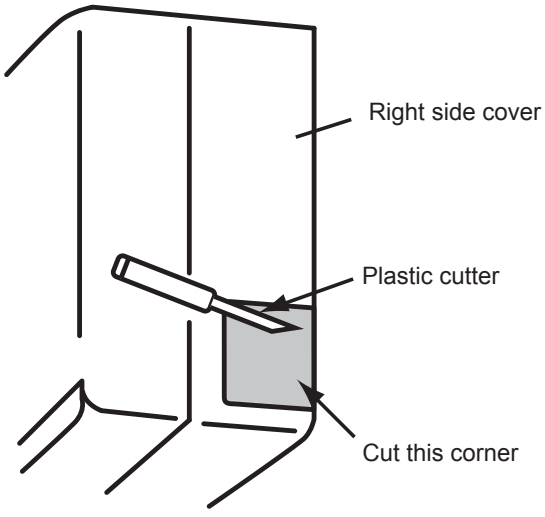
Direction of piping connection

Direction of piping connection is shown in the figure below.



- Right Side Piping

Cut the corner by plastic cutter as shown below and remove sharp edge completely.



- Left Side Piping

Cut the corner by plastic cutter as same as the right side piping. (Perform this procedure before the indoor unit is hung onto the wall.)

a. When the left side piping is selected, the drain pipe outlet should be changed from right side to left side. If it is not changed to left side and the suspension bracket is fixed onto the fall with right down slope, the drain water flows back so that may cause water leakage from the drain pan.

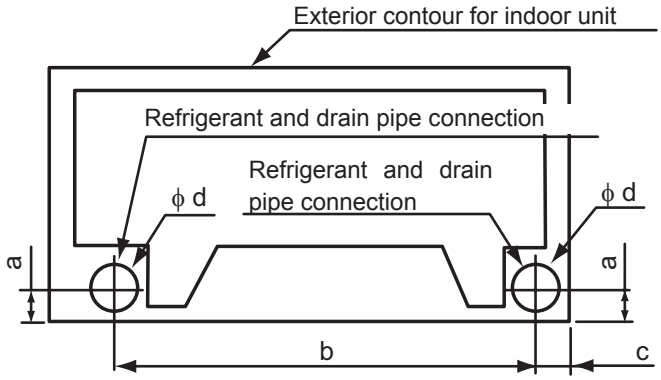
b. For the pipe installation embedded in the wall, the positions of piping are as follows.

NOTE

For RPK-(0.8-1.5)FSN(H)3M, it is recommended to connect the piping at the right rear side of the body to avoid the sound from the refrigerant running through.

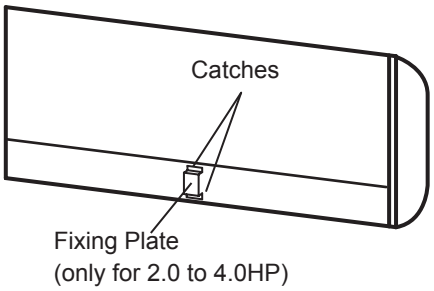
Unit: mm

Model	Liquid piping			
	a	b	c	Ød
RPK-(0.8-1.0)FSN(H)3M	45	638	107	Ø65
RPK-1.5FSN(H)3M	45	657	107	Ø65
RPK-(2.0-4.0)FSN3M	42	951	141	Ø80



Fix the fixing plate for pipes (accessory) as shown in the figure below.

Fix the fixing plate onto upper and lower catches.



Models	Gas pipe mm (inches)	Liquid pipe mm (inches)
RPK-(0.8-1.5)FSN(H)3M	Ø12.70 (1/2)	Ø9.52 (3/8) (FSNH3M) Ø6.35 (1/4) (FSN3M)
RPK-2.0FSN3M	Ø15.88 (5/8)	Ø6.35 (1/4)
RPK-(2.5-4.0)FSN3M	Ø15.88 (5/8)	Ø9.52 (3/8)

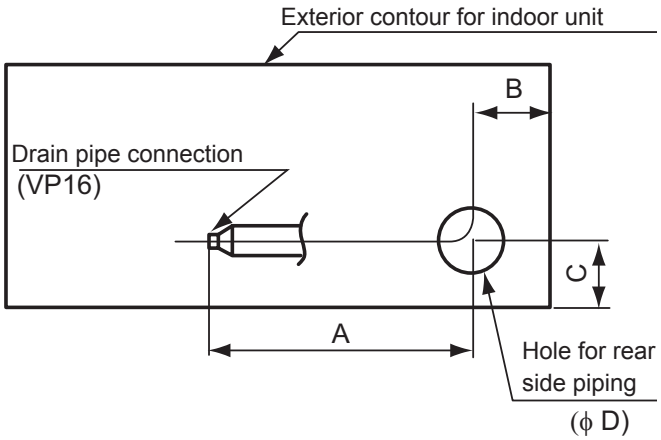
◆ Drain pipe installation

NOTE

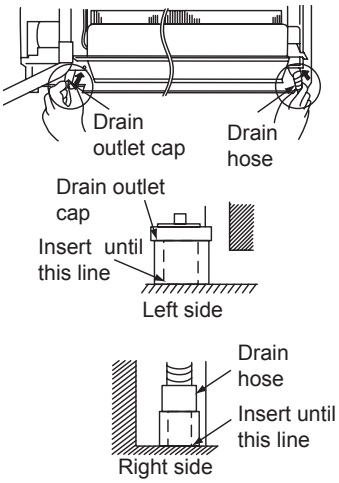
The normal direction for connecting the drain hose is on the right side (when the unit is seen from the outlet grille side). The connection can be made from the left side or from the rear if there are construction elements of the building around it.

Unit: mm

Model	A	B	C	ØD
RPK-(0.8-1.5)FSN(H)3M	568	107	45	65
RPK-(2.0-4.0)FSN3M	550	141	42	80

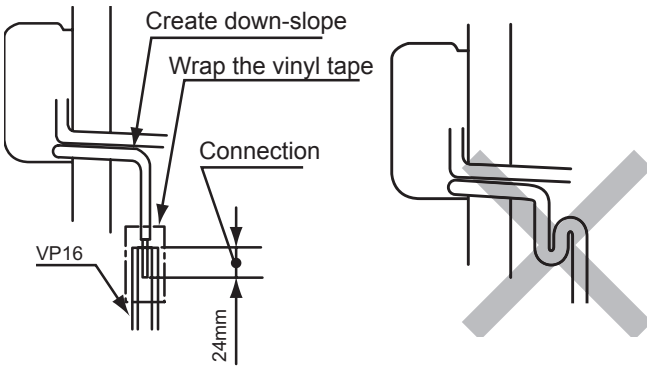


When the left side drain piping connection is performed, remove the cap of left side drain pipe, and then attach this cap to the right side drain pipe in order to change drain piping connection from right side to left side. If the cap is fixed tightly, remove the cap by using the plier. (Perform this procedure before the indoor unit is hung onto the wall.)



Provide a vinyl chloride pipe, VP16.

When the drain hose is used, do not create rising part or twist.



Wrap surely the vinyl tape around the drain piping connection.

Insulate surely the drain pipe after the vinyl chloride pipe connection is completed.

6 Do not connect the drain pipe with sanitary or sewage piping or any other drainage piping.

7 After the drain piping work is completed, check that water flows smoothly by pouring water into the drain pan by a cup.

8 Wrap the field-supplied insulation around the drain pipe running through the indoor.

9 When installing the pipe, do not tie the drain pipe and refrigerant pipe together.

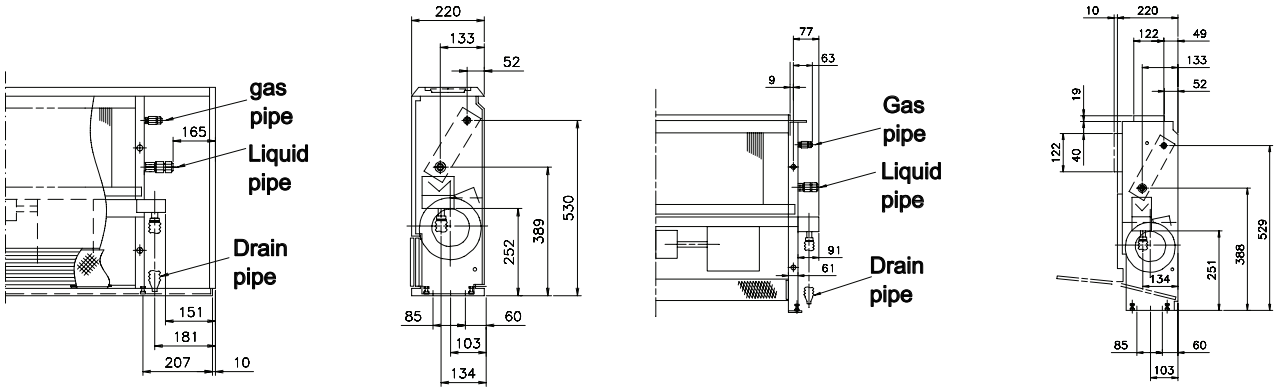
CAUTION

- ***Pay attention not to splash water to the electrical parts such as the fan motor or thermistors.***
- ***When the common drain piping is connected with other indoor units, the connected position of each indoor unit must be higher than the common piping. The size of common drain pipe must be large enough according to the unit size and number of units.***

3.5.11 RPF(I)-Floor type (1.0-2.5)FSN2E

◆ Refrigerant pipe installation

The correct position for the refrigerant pipe connection is shown below.



Models	Gas pipe mm (inches)	Liquid pipe mm (inches)	Drain hose mm
RPF(I)-1.5FSN2E	Ø12.70 (1/2)	Ø6.35 (1/4)	Ø18.5
RPF(I)-2.0FSN2E	Ø15.88 (5/8)		
RPF(I)-2.5FSN2E		Ø9.52 (3/8)	

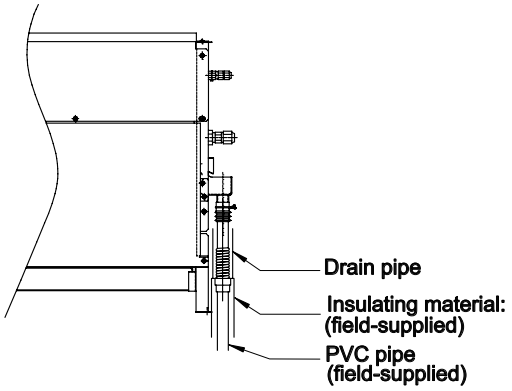
◆ Drain pipe installation

The correct position for the drain hose connection is shown below.

Prepare a polyvinyl chloride (PVC) pipe with an outer diameter of 18.5 mm.

Secure the pipe with the adhesive supplied.

Insulate the drain hose after connecting the pipe, as indicated in the figure.



3.6 Refrigerant charge

NOTE

For matters relating to the refrigerant charge in the installation, consult the Technical Catalogue and Service Manual corresponding to the outdoor units of the UTOPIA or SET FREE systems.

3.7 Precautions in the event of refrigerant leaks

DANGER

Fitters and the designers of the installations must strictly observe local and national legislation, and local codes regarding safety requirements in the event of refrigerant leaks.

3.7.1 Maximum permissible concentration of hydrofluorocarbon (HFC)

The R410A refrigerant gas, used in the equipment, is non-flammable and non-toxic.

DANGER

In the event of a leak, the gas will spread around the room, displacing the air, and could therefore result in asphyxia.

According to Standard EN378-1, the maximum permissible concentration of HFC R410A gas in the air is 0.44 kg/m^3. Therefore, effective measures must be adopted to maintain the concentration of R410A gas in the air below 0.44 kg/m^3 in the event of a leak.

3.7.2 Calculation of the concentration of refrigerant

1. Calculate the total quantity of refrigerant *R* (kg) charged in the system; to do so, connect all the indoor units of the rooms in which you wish to have air conditioning.
2. Calculate the volume *V* (m^3) of each room.
3. Calculate the refrigerant concentration *C* (kg/m^3) of the room in accordance with the following formula:

$$R / V = C$$

R: total quantity of refrigerant charged (kg).

V: volume of the room (m^3).

C: refrigerant concentration (= 0.44 kg/m^3 for R410A gas).

3.7.3 Countermeasures in the event of refrigerant leaks

The room should have the following characteristics in case of a leak of refrigerant:

1. Opening without shutter to permit the circulation of fresh air in the room.
2. Opening without door measuring 0.15%, or greater, of the floor surface.
3. A fan with a capacity of at least 0.4 m^3/minute per ton of Japanese refrigeration (=volume moved by the compressor / 5.7 m^3/h) or above, connected to a gas sensor in the air conditioning system that uses refrigerant.

DANGER

Special attention should be given to areas where the refrigerant may be deposited and stay in the room, such as basements or similar, as the gas is heavier than air.

4. Electrical wiring

Index

4.1 Unit electrical wiring and connection

4.1.1 Wiring and main switch selection

Minimum size of the power supply cable wires

NOTE

- ***Follow local code and regulations to select the installation cables.***
- ***The maximum current value is used to calculate the size of the cables in line with European Standard EN60 335-1. Use normal, flexible coated neoprene (polychloroprene) cables (code H05RN-F) with a diameter no less than that indicated in the table.***
- ***The size of the earth wire must be in line with local code IEC 245, no. 571.***
- ***Use a shielded twisted pair cable or shielded pair cable with a diameter of over 0.75 mm^2 (equivalent to KPEV-S) for the operation wiring between the outdoor and the indoor unit and for operation wiring between the indoor units.***
- ***Use a shielded twisted pair cable or shielded pair cable for communications between the indoor and outdoor units. Connect the shielding to the earthing screw in the indoor unit electrical box.***

If the power cables are connected in series, use the maximum current value and select the cables according to the following tables.

- For indoor units:

Model	Power supply	Max. current (A)	Power supply cable size	Transmission cable size
			EN60 335-1	EN60 335-1
Indoor units (0.8-6.0) HP	1~ 230V 50Hz or 1~ 220-240V 50Hz	5.0	0.75 mm^2	0.75 mm^2
Indoor units (8.0-10.0) HP		10.0	1.5 mm^2	

- For KPI units:

Model	Power source	Maximum current (A)	Cable Size
			EN60 335-1 (*1) (mm2)
KPI-252E3E	1~ 230V50Hz	4	1
KPI-502(E/H)3E KPI-502X3E		4	1
KPI-802(E/H)3E KPI-802X3E		4	1
KPI-1002(E/H)3E KPI-1002X3E		8	1.5
KPI-1502(E/H)3E		8	2.5
KPI-2002(E/H)3E		8	2.5

Cable size in relation to current

NOTE

- ***Use shielded transmission cables between indoor and outdoor units.***
- ***Use normal, flexible coated neoprene (polychloroprene) cables (code H05RN-F) with a diameter no less than that indicated in the table.***
- ***If the current exceeds 63 A, do not connect the cables in series.***

Type of main switch

Select the main switch according to the following table:

Model	Power source	Maximum current (A)	CB (A)	ELB (nº poles/A/mA) (mm2)
All indoor units (*)	1~ 230V50Hz	5	6	2/40/30
KPI-252E3E		4	6	
KPI-502(E/H)3E KPI-502X3E		4	6	
KPI-802(E/H)3E KPI-802X3E		4	6	
KPI-1002(E/H)3E KPI-1002X3E		8	10	
KPI-1502(E/H)3E		8	16	
KPI-2002(E/H)3E		8	16	

(*) Except RPI-(8.0/10.0)FSN3E

4.1.2 Electrical connection of RCI units

Work prior to the electrical connection

1 Turn off the power supply switches before starting work and fit the appropriate locks and safety warnings.
2 Wait 5 minutes after turning off the power supply switches.
3 Check that the fans on the indoor and outdoor units are at a standstill before starting work.

NOTE

- ***The electrical power for the unit must involve a specific power line, with an exclusive power control switch and residual current breaker, installed in line with local or national safety regulations.***
- ***Check that the electrical power line has enough capacity to supply the unit. Its length, the cable diameter and their protection (sleeve or jacket) must be appropriate for the unit.***
- ***For further information, always consider the current regulations in the country where the unit is to be installed.***

CAUTION

- ***Risk of fire: cables must never touch the refrigerant pipes, printed circuit boards (PCB), sharp edges or electrical components inside the unit to avoid damaging them.***
- ***Loose connection terminals may lead to cable and terminal overheating. The unit may operate incorrectly, leading to a risk of fire. Check that the cables are firmly secured to the connection terminals.***

Electrical connection

Check that the power supply for the RCI indoor unit is 230 V. If not, replace the CN connectors on the TF transformers in the electrical box.

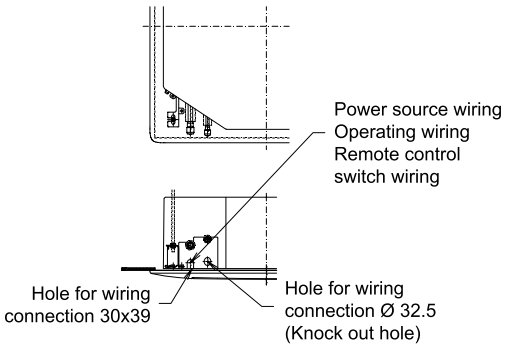
Make the connection between the indoor unit and the air panel.

NOTE

- ***To prevent the screws from falling from the terminal strip, do not remove them completely, hold onto the terminal and check that the screw is secure through the hole.***
- ***Use the following screws for the terminal strip:***
  - ***M4 screw for the power supply.***
  - ***M3.5 screw for the communication line.***

Follow the steps below to connect the remote control cable or the optional extension wire:

1 Pass the cable through the knockout hole in the cabinet.
2 Connect the cable to terminals A and B of the terminal strip (TB1).
3 Tighten the screw on terminals A and B.
4 Check that the cables are correctly secured.



Follow the steps below to connect the power cables to the terminal strip (TB1):

NOTE

- ***To connect a power supply to neutral, connect the cables to terminals L1 and N on the terminal strip (TB1).***
- ***To connect a power supply without neutral: make the connection to terminals L1 and L2 on the terminal strip (TB1).***

1 Where necessary, loosen the screws on terminals L1 and N or L1 and L2, as applicable, on the terminal strip (TB1).
2 Connect the power cables to terminals L1 and N or L1 and L2, as applicable.
3 Tighten the screws on terminals L1 and N or L1 and L2, as applicable.
4 Check that the cables are correctly secured.

Follow the steps below to connect the communication cables between the outdoor and indoor unit to the terminal strip (TB1):

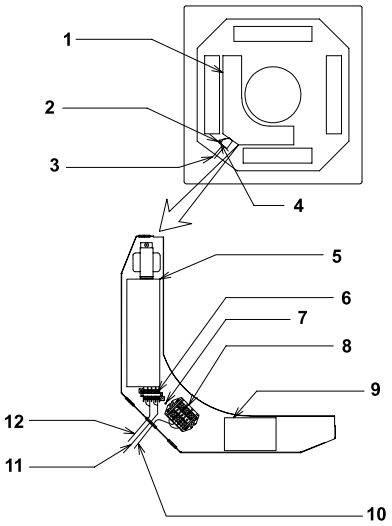
1 Where necessary, loosen the screws on terminals 1 and 2 on the terminal strip (TB1).
2 Connect the communication cables to terminals 1 and 2.
3 Tighten the screw on terminals 1 and 2.
4 Check that the cables are correctly secured.

Follow the steps below to connect the earthing cables to the earthing connection in the electrical box:

1 Where necessary, loosen the screw on the earthing connection in the electrical box.
2 Connect the shielded part of the power supply earth wire to the earth connection.
3 Connect the shielded part of the signal earth wire to the earth connection.
4 Tighten the screw on the earthing connection in the electrical box.
5 Check that the cables are correctly secured.

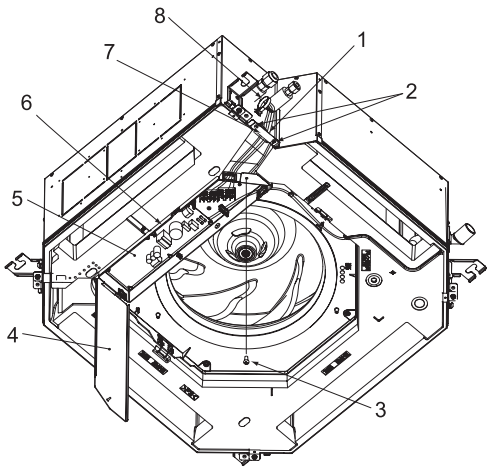
◆ For RCI-FSN3Ei

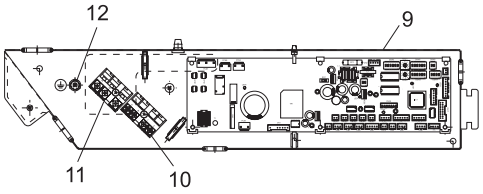
No.	Part
1	Electrical box
2	Stop (metal)
3	Power supply, signal and remote control wiring
4	Screw
5	Printed circuit board (PCB)
6	Terminal strip (TB2)
7	Earthing screw
8	Terminal strip (TB1)
9	Printed circuit board (PCB)
10	Power supply wiring and signal wiring between the outdoor and indoor unit
11	Remote control wiring
12	Communication wiring between the indoor and outdoor unit



◆ For RCI-FSN3

No.	Part
1	Wiring connection hole
2	Screw for wiring support plate under piping cover
3	Screw (for electrical box cover)
4	Electrical box cover
5	PCB (Printed circuit board)
6	Electrical box
7	Wiring support plate
8	Cord clamp
9	Electrical box
10	Terminal board (TB2)
11	Terminal board (TB1)
12	Earth terminal

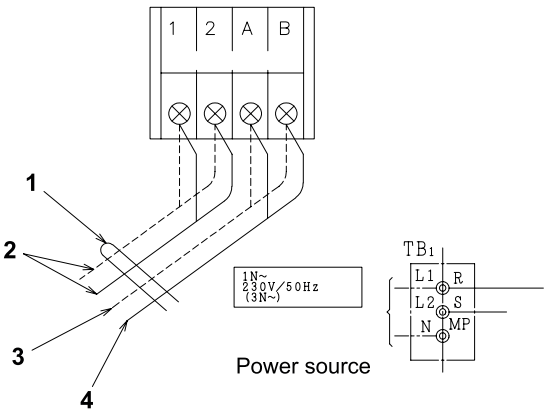




Part	No.
1	Tie
2	Communication wiring between the indoor and outdoor units and between indoor units
3	Operation control wiring (for group operations with remote control only)
4	Remote control wiring

Firmly secure the cables using a tie inside the electrical box.

Cover the cables and the hole using a sealant to protect them from condensation and insects.



Test runs

CAUTION

- ***Be careful during the test runs, as some of the safety functions remain disabled: the units operate for two hours without switching off via the thermostat. The three-minute compressor protection is not enabled during the test.***
- ***Secure the rubber bushes to the panel using adhesive when the outdoor unit ducts are not used.***
- ***The compressor remains at a standstill during forced stoppage.***

4.1.3 Electrical connection of RCIM units

Work prior to the electrical connection

1 Turn off the power supply switches before starting work and fit the appropriate locks and safety warnings.
2 Wait 5 minutes after turning off the power supply switches.
3 Check that the fans on the indoor and outdoor units are at a standstill before starting work.

NOTE

The electrical power for the unit must involve a specific power line, with an exclusive power control switch and residual current breaker, installed in line with local or national safety regulations.

Check that the electrical power line has enough capacity to supply the unit. Its length, the cable diameter and their protection (sleeve or jacket) must be appropriate for the unit.

For further information, always consider the current regulations in the country where the unit is to be installed.

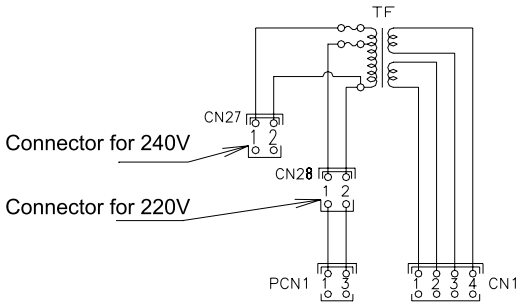
CAUTION

Risk of fire: cables must never touch the refrigerant pipes, printed circuit boards (PCB), sharp edges or electrical components inside the unit to avoid damaging them.

Loose connection terminals may lead to cable and terminal overheating. The unit may operate incorrectly, leading to a risk of fire. Check that the cables are firmly secured to the connection terminals.

Electrical connection

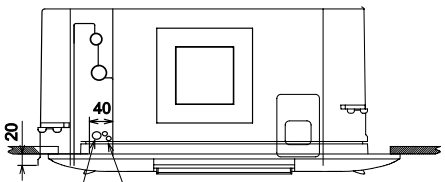
Check that the power supply for the RCIM indoor unit is 220 - 240 V. If not, replace connectors CN27 and CN28 of the TF transformers in the electrical box.



Make the connection between the indoor unit and the air panel.

NOTE

- ***To prevent the screws from falling from the terminal box, do not remove them completely, hold onto the terminal and check that the screw is secure through the hole in the terminal.***
- ***Use the following screws for the terminal box:***
  - ***M4 screw for the power supply.***
  - ***M3.5 screw for the operating line.***



Power source wiring.
Operation wiring.
Remote control switch wiring.

Hole for wiring connection (Knock-out hole).

Follow the steps below to connect the remote control cable or the optional extension wire:

1 Pass the cable through the knockout hole in the cabinet.
2 Connect the cable to terminals A and B of the terminal strip (TB1).
3 Tighten the screw on terminals A and B.
4 Check that the cables are correctly secured.

Follow the steps below to connect the power cables to the terminal strip (TB1):

CAUTION

- ***To connect a power supply with neutral, connect the cables to terminals L1 and N on the terminal strip (TB1).***
- ***To connect a power supply without neutral: make the connection to terminals L1 and L2 on the terminal strip (TB1).***

1 Where necessary, loosen the screws on terminals L1 and N or L1 and L2, as applicable, on the terminal strip (TB1).
2 Connect the power cables to terminals L1 and N or L1 and L2, as applicable.
3 Tighten the screws on terminals L1 and N or L1 and L2, as applicable.
4 Check that the cables are correctly secured.

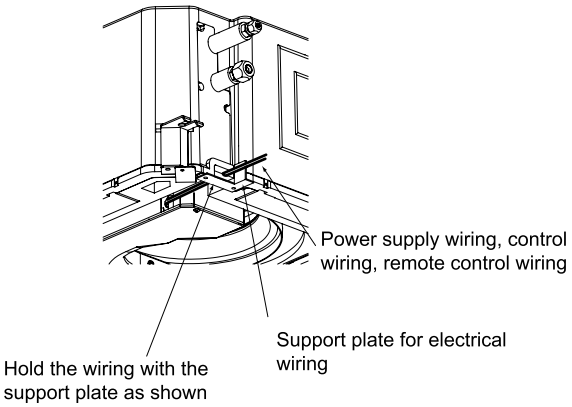
Follow the steps below to connect the communication cables between the outdoor and indoor unit to the terminal strip (TB1):

1 Where necessary, loosen the screws on terminals 1 and 2 on the terminal strip (TB1).
2 Connect the communication cables to terminals 1 and 2.
3 Tighten the screw on terminals 1 and 2.
4 Check that the cables are correctly secured.

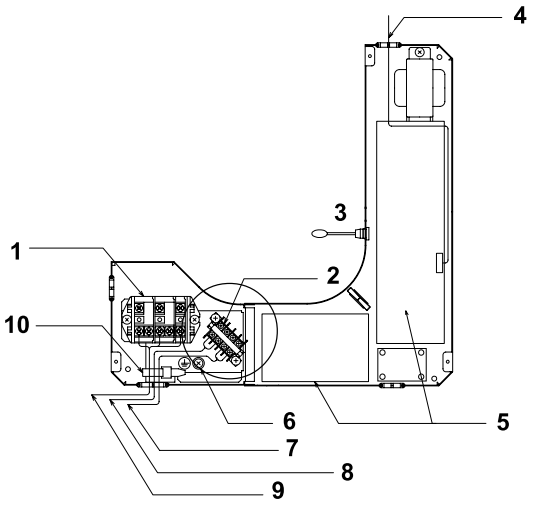
Follow the steps below to connect the earth wire to the earth connection in the electrical box:

1 Where necessary, loosen the screw on the earthing connection in the electrical box.
2 Connect the shielded part of the power supply earth wire and the signal wiring earth wire to the earth connection.
3 Tighten the screw on the earthing connection in the electrical box.
4 Check that the shielded part of the earthing cables are correctly secured.

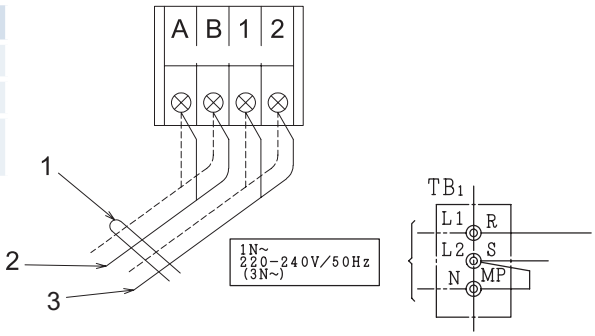
Firmly secure the cables using a tie inside the electrical box.
Cover the cables and the hole using a sealant to protect them from condensation and insects.



Nº	Part
1	Terminal box (TB1)
2	Terminal box (TB2)
3	Outlet air thermistor
4	Connector for the swing louver motor
5	Printed circuit board (PCB)
6	Earthing screw
7	Remote control wiring
8	Communication wiring
9	Power wiring
10	Tie



Nº	Part
1	Cord clamp
2	Remote control switch cable
3	Transmission wiring (outdoor unit to indoor unit and viceversa)



Test runs

CAUTION

- ***Be careful during the test runs, as some of the safety functions remain disabled: the units operate for two hours without switching off via the thermostat. The three-minute compressor protection is not enabled during the test.***
- ***Secure the rubber bushes to the panel using adhesive when the outdoor unit ducts are not used.***
- ***The compressor remains at a standstill during forced stoppage.***

4.1.4 Electrical connection of RCD units

Work prior to the electrical connection

1 Turn off the power supply switches before starting work and fit the appropriate locks and safety warnings.
2 Wait 5 minutes after turning off the power supply switches.
3 Check that the fans on the indoor and outdoor units are at a standstill before starting work.

NOTE

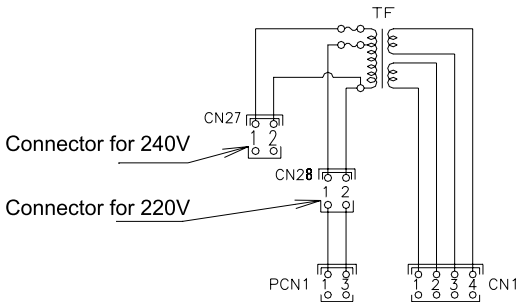
- ***The electrical power for the unit must involve a specific power line, with an exclusive power control switch and residual current breaker, installed in line with local or national safety regulations.***
- ***Check that the electrical power line has enough capacity to supply the unit. Its length, the cable diameter and their protection (sleeve or jacket) must be appropriate for the unit.***
- ***For further information, always consider the current regulations in the country where the unit is to be installed.***

CAUTION

- ***Risk of fire: cables must never touch the refrigerant pipes, printed circuit boards (PCB), sharp edges or electrical components inside the unit to avoid damaging them.***
- ***Loose connection terminals may lead to cable and terminal overheating. The unit may operate incorrectly, leading to a risk of fire. Check that the cables are firmly secured to the connection terminals.***

Electrical connection

Check that the power supply for the RCD indoor unit is 220 - 240 V. If not, replace connectors CN27 and CN28 on the TF transformers in the electrical box.



Follow the steps below to connect the remote control cable or the optional extension wire:

1 Pass the cable through the knockout hole in the cabinet.
2 Connect the cable to terminals A and B of the terminal strip (TB2).
3 Tighten the screw on terminals A and B.
4 Check that the cables are correctly secured.

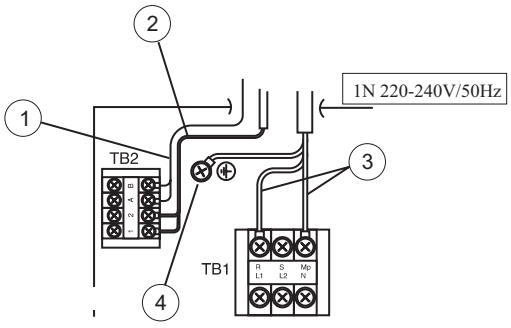
Follow the steps below to connect the power cables to the terminal strip (TB1):

1 Where necessary, loosen the screws on terminals L1 and N on the terminal strip (TB1)
2 Connect the power cables to terminals L1 and N.
3 Tighten the screws on terminals L1 and N.
4 Check that the cables are correctly secured.

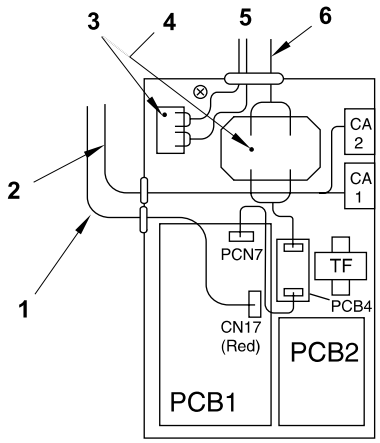
Follow the steps below to connect the communication cables between the outdoor and indoor unit to the terminal strip (TB2):

1 Where necessary, loosen the screws on terminals 1 and 2 on the terminal strip (TB2).
2 Connect the communication cables to terminals 1 and 2.
3 Tighten the screw on terminals 1 and 2.
4 Check that the cables are correctly secured.

Nº	Part
1	Control Cable
2	Remote Control Cable
3	Power Source Cable
4	Earth Screw

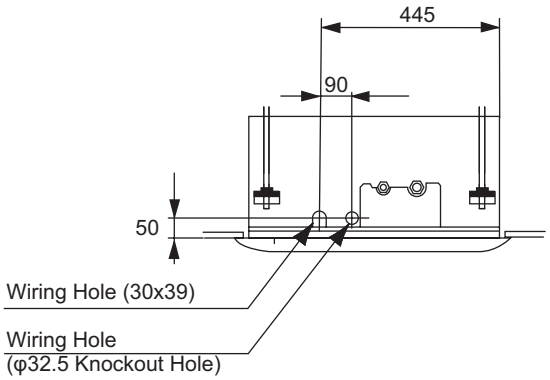


Nº	Part
1	Connector for the swing louver motor
2	Fan motor connector
3	Terminal strip (TB2)
4	Terminal strip (TB1)
5	Wiring
6	Power wiring

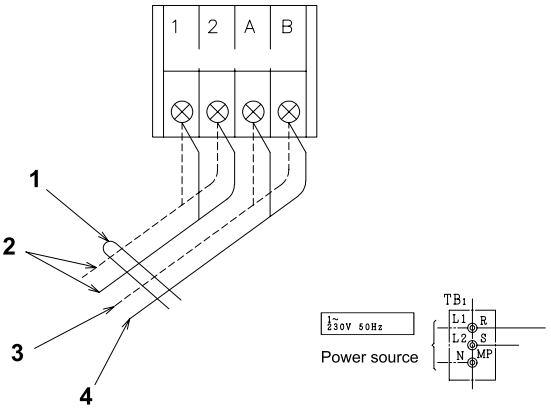


Follow the steps below to connect the earth wire to the earth connection in the electrical box:

1. Where necessary, loosen the screw on the earthing connection in the electrical box.
2. Connect the shielded part of the power supply earth wire and the signal wiring earth wire to the earth connection.
3. Tighten the screw on the earthing connection in the electrical box.
4. Check that the shielded part of the earthing cables are correctly secured.



Nº	Part
1	Tie
2	Communication wiring between the indoor and outdoor units and between indoor units
3	Operating control wiring. In the case of group operations using a remote control
4	Remote control wiring



Test runs

CAUTION

- ***Be careful during the test runs, as some of the safety functions remain disabled: the units operate for two hours without switching off via the thermostat. The three-minute compressor protection is not enabled during the test.***
- ***Secure the rubber bushes to the panel using adhesive when the outdoor unit ducts are not used.***
- ***The compressor remains at a standstill during forced stoppage.***

4.1.5 Electrical connection of RPC units

Work prior to the electrical connection

1 Turn off the power supply switches before starting work and fit the appropriate locks and safety warnings.
2 Wait 5 minutes after turning off the power supply switches.
3 Check that the fans on the indoor and outdoor units are at a standstill before starting work.

NOTE

- ***The electrical power for the unit must involve a specific power line, with an exclusive power control switch and residual current breaker, installed in line with local or national safety regulations.***
- ***Check that the electrical power line has enough capacity to supply the unit. Its length, the cable diameter and their protection (sleeve or jacket) must be appropriate for the unit.***
- ***For further information, always consider the current regulations in the country where the unit is to be installed.***

CAUTION

- ***Risk of fire: cables must never touch the refrigerant pipes, printed circuit boards (PCB), sharp edges or electrical components inside the unit to avoid damaging them.***
- ***Loose connection terminals may lead to cable and terminal overheating. The unit may operate incorrectly, leading to a risk of fire. Check that the cables are firmly secured to the connection terminals.***

Electrical connection

Check that the power supply for the RPC indoor unit is 230 V. If not, replace connectors CN on the TF transformers in the electrical box.

NOTE

- ***To prevent the screws from falling from the terminal box, do not remove them completely, hold onto the terminal and check that the screw is secure through the hole in the terminal.***
- ***Use the following screws for the terminal box:***
  - ***M4 screw for the power supply.***
  - ***M3.5 screw for the operating line.***

Follow the steps below to connect the remote control cable or the optional extension wire:

1 Pass the cable through the knockout hole in the cabinet.
2 Connect the cable to terminals A and B of the terminal strip (TB).
3 Tighten the screw on terminals A and B.
4 Check that the cables are correctly secured.

Follow the steps below to connect the power cables to the terminal strip (TB):

1 Where necessary, loosen the screws on terminals L1 and N on the terminal strip (TB).
2 Connect the power cables to terminals L1 and N.
3 Tighten the screws on terminals L1 and N.
4 Check that the cables are correctly secured.

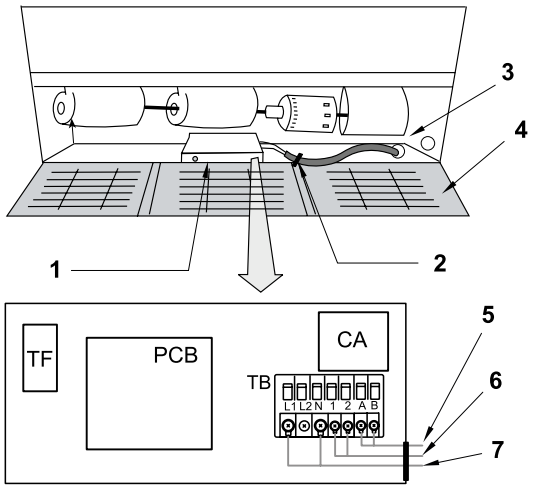
Follow the steps below to connect the communication cables between the outdoor and indoor unit to the terminal strip (TB):

1 Where necessary, loosen the screws on terminals 1 and 2 on the terminal strip (TB).
2 Connect the communication cables to terminals 1 and 2.
3 Tighten the screw on terminals 1 and 2.
4 Check that the cables are correctly secured.

Follow the steps below to connect the earth wire to the earth connection in the electrical box:

1 Where necessary, loosen the screw on the earthing connection in the electrical box.
2 Connect the shielded part of the power supply earth wire and the signal wiring earth wire to the earth connection.
3 Tighten the screw on the earthing connection in the electrical box.
4 Check that the shielded part of the earthing cables are correctly secured.

Nº	Part
1	Electrical box
2	Tie
3	Die-cut wiring hole
4	Grille
5	Remote control wiring (optional)
6	Communication wiring
7	Power wiring



Test runs

CAUTION

- ***Be careful during the test runs, as some of the safety functions remain disabled: the units operate for two hours without switching off via the thermostat. The three-minute compressor protection is not enabled during the test.***
- ***Secure the rubber bushes to the panel using adhesive when the outdoor unit ducts are not used.***
- ***The compressor remains at a standstill during forced stoppage.***

4.1.6 Electrical connection of RPI units

Work prior to the electrical connection

1 Turn off the power supply switches before starting work and fit the appropriate locks and safety warnings.
2 Wait 5 minutes after turning off the power supply switches.
3 Check that the fans on the indoor and outdoor units are at a standstill before starting work.

NOTE

- ***The electrical power for the unit must involve a specific power line, with an exclusive power control switch and residual current breaker, installed in line with local or national safety regulations.***
- ***Check that the electrical power line has enough capacity to supply the unit. Its length, the cable diameter and their protection (sleeve or jacket) must be appropriate for the unit.***
- ***For further information, always consider the current regulations in the country where the unit is to be installed.***

CAUTION

- ***Risk of fire: cables must never touch the refrigerant pipes, printed circuit boards (PCB), sharp edges or electrical components inside the unit to avoid damaging them.***
- ***Loose connection terminals may lead to cable and terminal overheating. The unit may operate incorrectly, leading to a risk of fire. Check that the cables are firmly secured to the connection terminals.***

Electrical connection

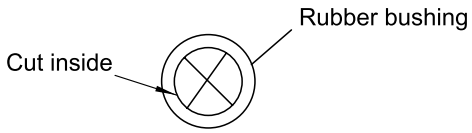
Check that the power supply for the RPI indoor unit is 230 V. If not, replace connectors CN on the TF transformers in the electrical box.

NOTE

The service panel for the indoor unit fan motor is at the bottom of the unit and the electrical box service panel is on the right-hand side.

Open the service panel.

Cut the centre of the rubber bushing in the wiring connection hole.

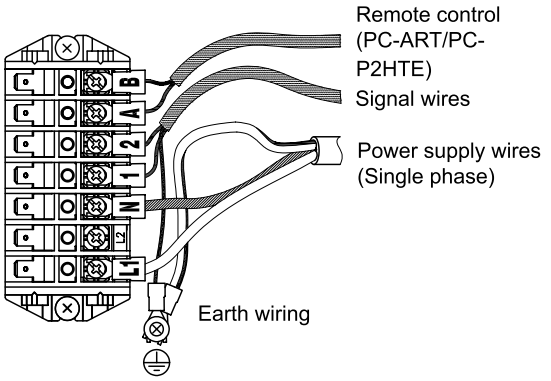


NOTE

- ***To prevent the screws from falling from the terminal box, do not remove them completely, hold onto the terminal and check that the screw is secure through the hole in the terminal.***
- ***Use the following screws for the terminal box:***
  - ***M4 screw for the power supply.***
  - ***M3.5 screw for the operating line.***

Follow the steps below to connect the remote control cable or the optional extension wire:

1 Pass the cable through the knockout hole in the cabinet.
2 Connect the cable to terminals A and B of the terminal strip (TB).
3 Tighten the screw on terminals A and B.
4 Check that the cables are correctly secured.



Follow the steps below to connect the power cables to the terminal strip (TB):

1 Where necessary, loosen the screws on terminals L1 and N on the terminal strip (TB).
2 Connect the power cables to terminals L1 and N.
3 Tighten the screws on terminals L1 and N.
4 Check that the cables are correctly secured.

Follow the steps below to connect the communication cables between the outdoor and indoor unit to the terminal strip (TB):

1 Where necessary, loosen the screws on terminals 1 and 2 on the terminal strip (TB).
2 Connect the communication cables to terminals 1 and 2.
3 Tighten the screw on terminals 1 and 2.
4 Check that the cables are correctly secured.

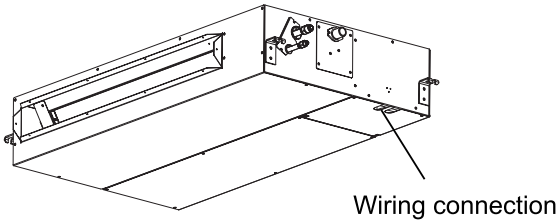
Follow the steps below to connect the earth wire to the earth connection in the electrical box:

1 Where necessary, loosen the screw on the earthing connection in the electrical box.
2 Connect the shielded part of the power supply earth wire and the signal wiring earth wire to the earth connection.
3 Tighten the screw on the earthing connection in the electrical box.
4 Check that the shielded part of the earthing cables are correctly secured.

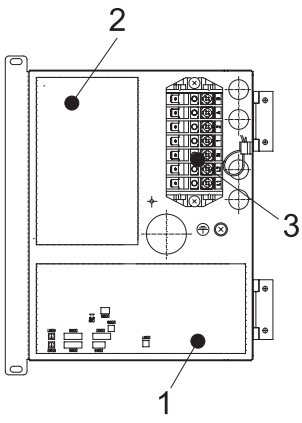
Firmly secure the cables using a tie inside the electrical box.

RPI-(0.8-1.5)FSN4E Terminal board location

Cover the cables and the hole using a sealant to protect them from condensation and insects.

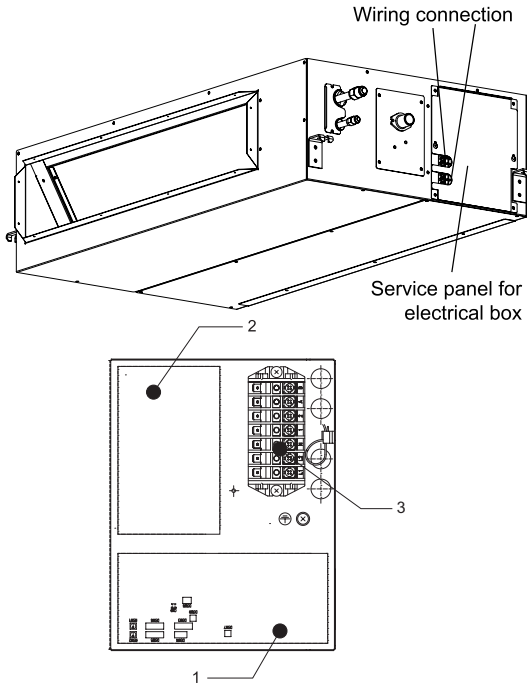


Nº	Part
1	Printed circuit board 1 (PCB1)
2	Printed circuit board 2 (PCB2)
3	Terminal board (TB)



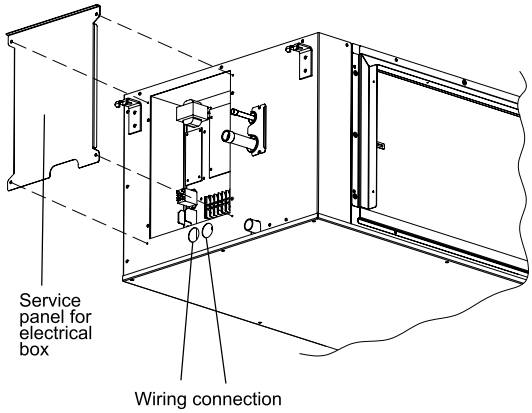
RPI-(2.0-6.0)FSN4E. Terminal board connections

Nº	Part
1	Printed circuit board 1 (PCB1)
2	Printed circuit board 2 (PCB2).
3	Terminal board (TB)



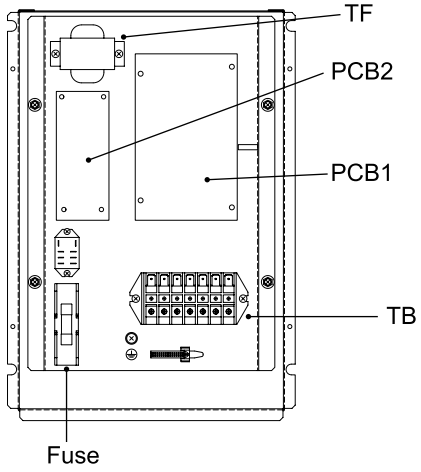
RPI-(8.0/10.0)FSN3E Terminal board connections

RPI-8~10



Nº	Part
PCB1	Printed circuit board.
PCB2	Printed circuit board.
TF	Transformer.
TB3	Terminal strip.
FUSE	Fuse

RPI-8~10



Test runs

CAUTION

- ***Be careful during the test runs, as some of the safety functions remain disabled: the units operate for two hours without switching off via the thermostat. The three-minute compressor protection is not enabled during the test.***
- ***Secure the rubber bushes to the panel using adhesive when the outdoor unit ducts are not used.***
- ***The compressor remains at a standstill during forced stoppage.***

RPI-(8.0/10.0)FSN3E static pressure setting

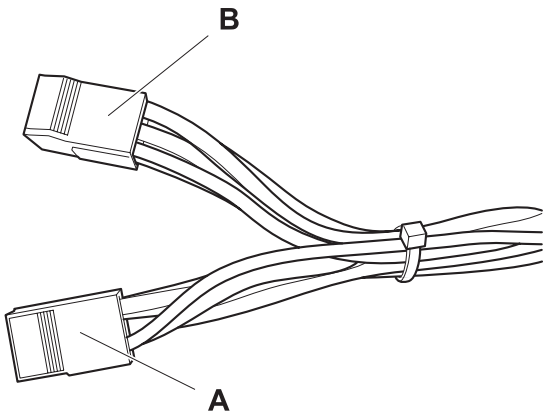
RPI units have been provided by two Static Pressure levels regulation depending on the installation requirements. High Static

Pressure and Low Static Pressure (Std. Factory Setting) connectors are available into the Electrical Box.

Setting of Static Pressure shall be made by changing the Fan Unit connector.

- A: connector CN24 LSP (Low Static Pressure); (factory supplied).
- B: connector CN25 HSP (High Static Pressure).

To do so, simply replace the motor power connector identified as CN24 (factory-connected for operation at low static pressure, LSP) with the high-pressure connector CN25 (operation at high static pressure, HSP).



4.1.7 Electrical connection of RPIM units

Work prior to the electrical connection

1 Turn off the power supply switches before starting work and fit the appropriate locks and safety warnings.
2 Wait 5 minutes after turning off the power supply switches.
3 Check that the fans on the indoor and outdoor units are at a standstill before starting work.

NOTE

- ***The electrical power for the unit must involve a specific power line, with an exclusive power control switch and residual current breaker, installed in line with local or national safety regulations.***
- ***Check that the electrical power line has enough capacity to supply the unit. Its length, the cable diameter and their protection (sleeve or jacket) must be appropriate for the unit.***
- ***For further information, always consider the current regulations in the country where the unit is to be installed.***

CAUTION

- ***Risk of fire: cables must never touch the refrigerant pipes, printed circuit boards (PCB), sharp edges or electrical components inside the unit to avoid damaging them.***
- ***Loose connection terminals may lead to cable and terminal overheating. The unit may operate incorrectly, leading to a risk of fire. Check that the cables are firmly secured to the connection terminals.***

Electrical connection

Check that the power supply for the RPIM indoor unit is 230 V. If not, replace connectors CN on the TF transformers in the electrical box.

NOTE

The service access panel for the indoor unit fan motor is at the bottom of the unit.

Remove the service access panel.

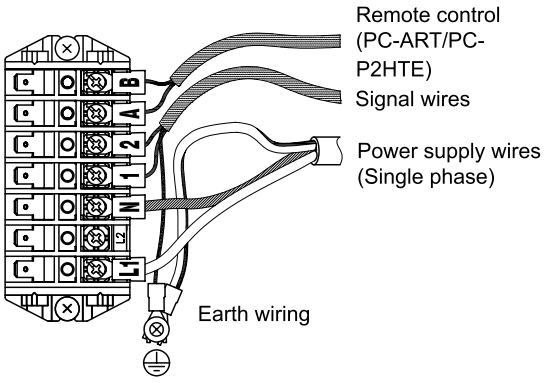
Cut the centre of the rubber bushing in the wiring connection hole.

NOTE

- ***To prevent the screws from falling from the terminal box, do not remove them completely, hold onto the terminal and check that the screw is secure through the hole in the terminal.***
- ***Use the following screws for the terminal box:***
  - ***M4 screw for the power supply.***
  - ***M3.5 screw for the operating line.***

Follow the steps below to connect the remote control cable or the optional extension wire:

1 Pass the cable through the knockout hole in the cabinet.
2 Connect the cable to terminals A and B of the terminal strip (TB1).
3 Tighten the screw on terminals A and B.
4 Check that the cables are correctly secured.



Follow the steps below to connect the power cables to the terminal strip (TB):

1 Where necessary, loosen the screws on terminals L1 and N on the terminal strip (TB).
2 Connect the power cables to terminals L1 and N.
3 Tighten the screws on terminals L1 and N.
4 Check that the cables are correctly secured.

Follow the steps below to connect the communication cables between the outdoor and indoor unit to the terminal strip (TB):

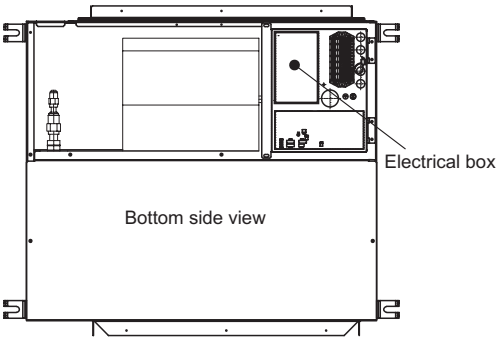
1 Where necessary, loosen the screws on terminals 1 and 2 on the terminal strip (TB).
2 Connect the communication cables to terminals 1 and 2.
3 Tighten the screw on terminals 1 and 2.
4 Check that the cables are correctly secured.

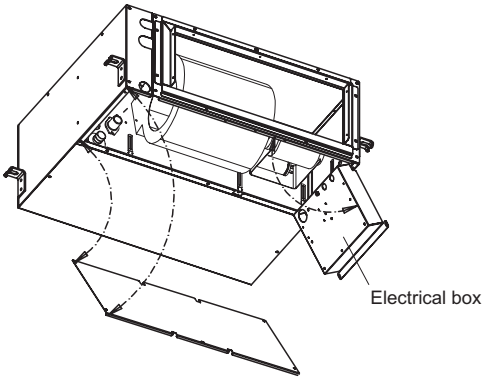
Follow the steps below to connect the earth wire to the earth connection in the electrical box:

1 Where necessary, loosen the screw on the earthing connection in the electrical box.
2 Connect the shielded part of the power supply earth wire and the signal wiring earth wire to the earth connection.
3 Tighten the screw on the earthing connection in the electrical box.
4 Check that the shielded part of the earthing cables are correctly secured.

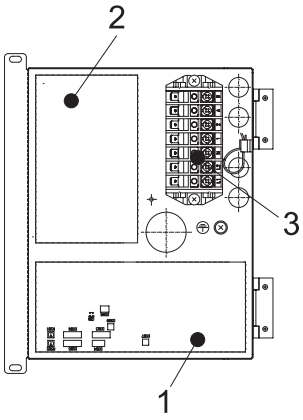
Firmly secure the cables using a tie inside the electrical box.

Cover the cables and the hole using a sealant to protect them from condensation and insects.





Nº	Part
1	Printed circuit board 1 (PCB1)
2	Printed circuit board 2 (PCB2)
3	Terminal board (TB)



Test runs

CAUTION

- ***Be careful during the test runs, as some of the safety functions remain disabled: the units operate for two hours without switching off via the thermostat. The three-minute compressor protection is not enabled during the test.***
- ***Secure the rubber bushes to the panel using adhesive when the outdoor unit ducts are not used.***
- ***The compressor remains at a standstill during forced stoppage.***

4.1.8 Electrical connection of RPK units

Work prior to the electrical connection

1 Turn off the power supply switches before starting work and fit the appropriate locks and safety warnings.
2 Wait 5 minutes after turning off the power supply switches.
3 Check that the fans on the indoor and outdoor units are at a standstill before starting work.

NOTE

- ***The electrical power for the unit must involve a specific power line, with an exclusive power control switch and residual current breaker, installed in line with local or national safety regulations.***
- ***Check that the electrical power line has enough capacity to supply the unit. Its length, the cable diameter and their protection (sleeve or jacket) must be appropriate for the unit.***
- ***For further information, always consider the current regulations in the country where the unit is to be installed.***

CAUTION

- ***Risk of fire: cables must never touch the refrigerant pipes, printed circuit boards (PCB), sharp edges or electrical components inside the unit to avoid damaging them.***
- ***Loose connection terminals may lead to cable and terminal overheating. The unit may operate incorrectly, leading to a risk of fire. Check that the cables are firmly secured to the connection terminals.***

4

Electrical connection

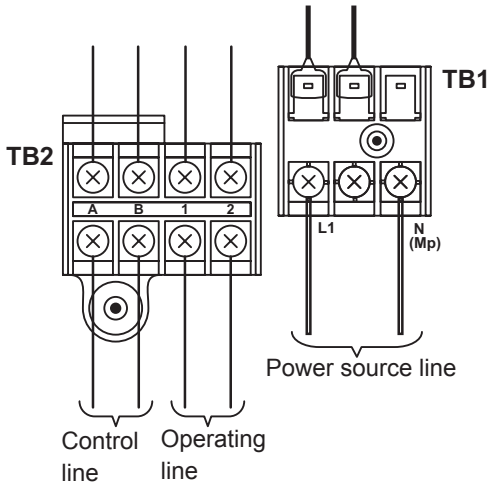
CAUTION

- ***Make sure that the field-selected electrical components (main power switches, circuit breakers, wires, conduit connectors and wire terminals) have been properly selected according to the electrical data given in "Technical Catalog". Make sure that the components comply with National Electrical Code (NEC).***
- ***Use the shielded twist pair cable for the control cable between the outdoor unit and the indoor unit, the control cable between indoor units and the remote control switch cable of PC-ARF.***
- ***Check to ensure that the power supply voltage is 230V.***
- ***Check the capacity of the electrical wires. If the power source capacity is too low, the system cannot be started due to the voltage drop.***
- ***Check to ensure that the earth wire is connected.***

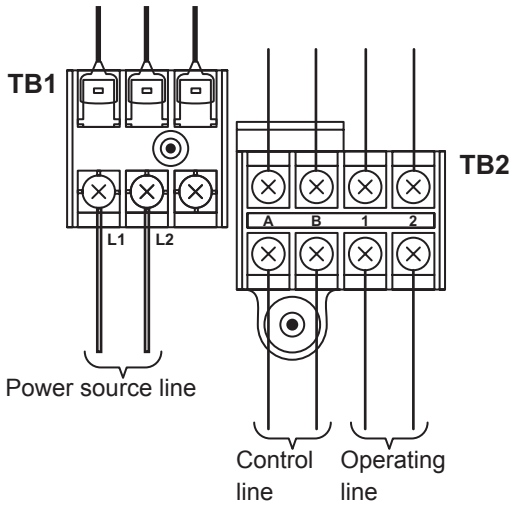
The electrical wiring capacity of the outdoor unit should be referred according to "Installation & Operation Manual" of the outdoor unit. Setting dip switch may be required depending on the combination with the outdoor unit.

1 Connect the power source cables (L1 and L2 (N) phases) to the terminal board correctly.

RPK-(0.8-1.5)FSN(H)3M



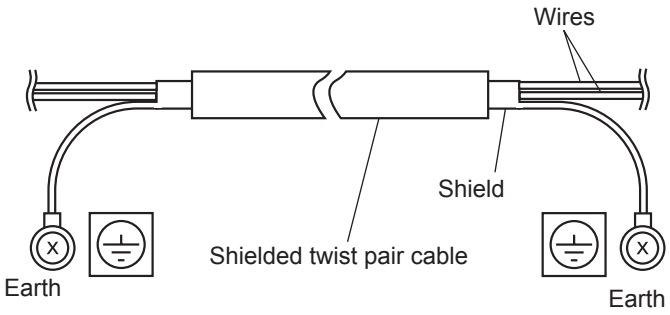
RPK-(2.0-4.0)FSN3M



2 Connect the control cables between the indoor unit and the outdoor unit correctly. Check to ensure that the terminal for power source cable (Terminals “L1” to “L1” and “N” to “N” of each terminal board: AC220-240V) between the indoor unit and the outdoor unit coincide correctly. If not, some component will be damaged.

3 Use the shielded twist pair cable for control between the outdoor unit and the indoor units. They are connected to the terminals 1 and 2 of the terminal boards. The remote control switch cable is connected to the terminals A and B of each indoor unit terminal board.

4 When installing the unit in Australia, connect the both ends of shielded twist pair cable (remote control switch cable and control cable) to the earth as shown below.



NOTE

- ***When the total wiring length for control cable between the outdoor unit and the indoor unit and between indoor units is less than 100m, the normal wiring (more than 0.75mm²) except the twist pair cable is available. (except for Australia)***
- ***The total wiring length for the remote control switch can be extended up to 500m. If the total wiring length less than 30m, the normal wiring (0.3mm²) except the twist pair cable is available. (except for Australia)***

DANGER

- ***Tightly secure wirings to the terminal board according to the specified torque. If tightening the terminals is not completed, heat generation, an electric shock or a fire will occur at the terminal connection.***
- ***Make sure that the wires are securely fixed in order not to apply an external force to the terminal connections of the wirings. If fixing is not completed, heat generation or a fire will occur.***
- ***Fix the terminals that do not touch to the electrical box surface. If the terminals are closed to the surface, it may cause activation of ELB, heat generation at terminal connection, a fire or an electric shock.***

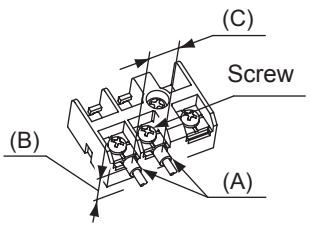
CAUTION

- ***Do not connect the main power source cables to the control line (Terminals A, B, 1 and 2 of TB2). If connected, the printed circuit board (PCB) will be broken.***
- ***Pay attention to followings when wires are connected to terminal board.***

  (A) Attach an insulation tape or a sleeve to each terminal.

  (B) Maintain the distance between the electrical box and the terminals to prevent a short circuit.

  (C) Maintain the distance between the terminals.

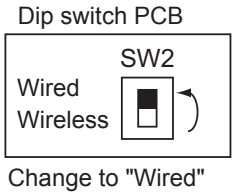


NOTE

In case of using optional wired remote control switch (PC-ARF) or optional receiver Kit (PC-ALHZF)

The following setting is required when the optional wired remote control switch (PC-ARF) or the optional receiver kit (PC-ALHZF) is used.

- ***The setting before shipment is "Wireless". Set the SW2 to "Wired". If not, the operation is not available.***
- ***Connect the remote control switch cables to the terminals A and B at the terminal board TB2.***



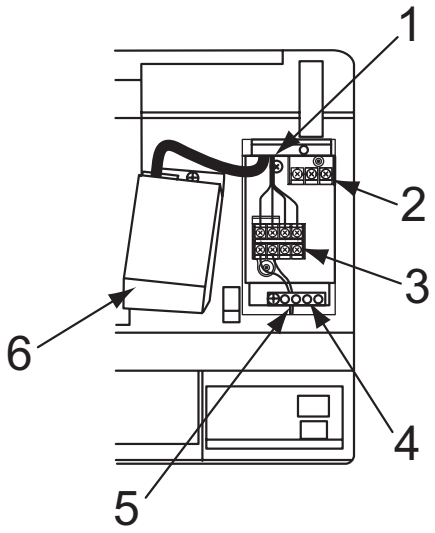
In case of using optional wireless remote control switch (PC-LH3B)

- ***The SW2 switch setting is NOT required when the wireless remote control switch (PC-LH3B) is used with the receiver built in the indoor unit. However, the simultaneous indoor units operation is not available when this wireless remote control switch is used with the receiver built in the indoor unit. If the simultaneous indoor units operation is required with this wireless remote control switch, use the optional receiver kit (PC-ALHZF).***
- ***For the identifying of indoor units installed side by side operation, the wireless remote control switch should be set at "b mode". (Refer to "Installation and Operation Manual" for the wireless remote control switch about "b mode" setting.)***

4

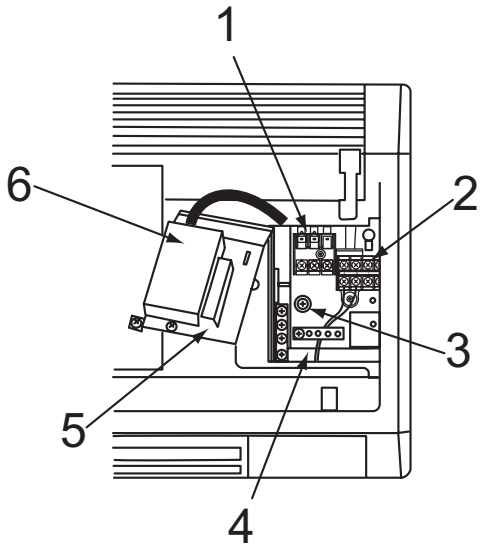
RPK-(0.8-1.5)FSN(H)3M terminal board connections

Nº	Part
1	Screw for earth wiring connection
2	Terminal board for power source
3	Terminal board for remote control switch cable
4	Fix the wires by cord clamp
5	Wire for receiver kit
6	Electrical box cover



RPK-(2.0-4.0)FSN3M terminal board connections

Nº	Part
1	Terminal board for power source
2	Terminal board for remote control switch cable
3	Screw for earth wiring connection
4	Wire for receiver kit
5	Electrical box cover
6	Switch cover



Test runs

CAUTION

- ***Be careful during the test runs, as some of the safety functions remain disabled: the units operate for two hours without switching off via the thermostat. The three-minute compressor protection is not enabled during the test.***
- ***Secure the rubber bushes to the panel using adhesive when the outdoor unit ducts are not used.***
- ***The compressor remains at a standstill during forced stoppage.***

4.1.9 Electrical connection of RPF(I) units

Work prior to the electrical connection

1 Turn off the power supply switches before starting work and fit the appropriate locks and safety warnings.
2 Wait 5 minutes after turning off the power supply switches.
3 Check that the fans on the indoor and outdoor units are at a standstill before starting work.

NOTE

- ***The electrical power for the unit must involve a specific power line, with an exclusive power control switch and residual current breaker, installed in line with local or national safety regulations.***
- ***Check that the electrical power line has enough capacity to supply the unit. Its length, the cable diameter and their protection (sleeve or jacket) must be appropriate for the unit.***
- ***For further information, always consider the current regulations in the country where the unit is to be installed.***

CAUTION

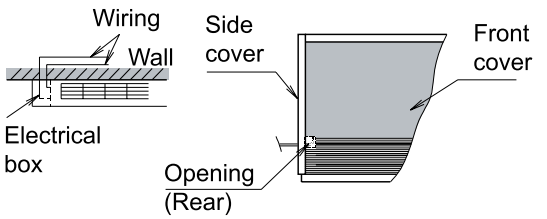
- ***Risk of fire: cables must never touch the refrigerant pipes, printed circuit boards (PCB), sharp edges or electrical components inside the unit to avoid damaging them.***
- ***Loose connection terminals may lead to cable and terminal overheating. The unit may operate incorrectly, leading to a risk of fire. Check that the cables are firmly secured to the connection terminals.***

Electrical connection

Check that the power supply for the RPF/RPFI indoor unit is 230 V. If not, replace connectors CN on the TF transformers in the electrical box.

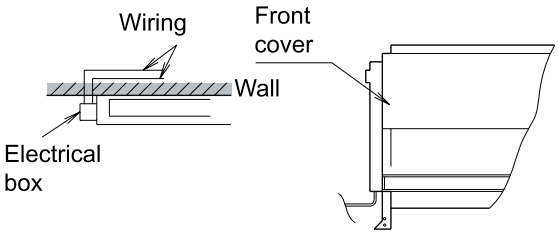
NOTE

For RPF units, the correct wiring is connected from the rear left side.

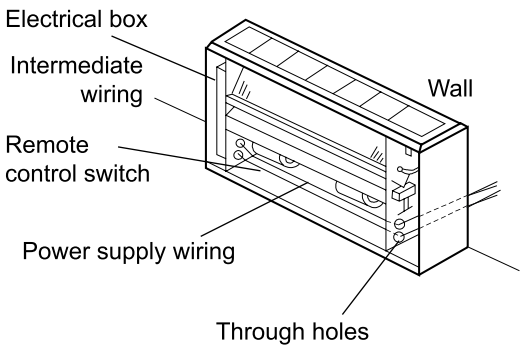


NOTE

For RPFI units, the correct wiring is connected from the rear right side.



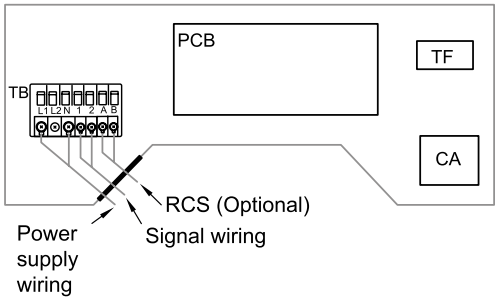
Open the front and side panels.



NOTE

- ***To prevent the screws from falling from the terminal box, do not remove them completely, hold onto the terminal and check that the screw is secure through the hole in the terminal.***
- ***Use the following screws for the terminal box:***
  - ***M4 screw for the power supply.***
  - ***M3.5 screw for the communication line.***

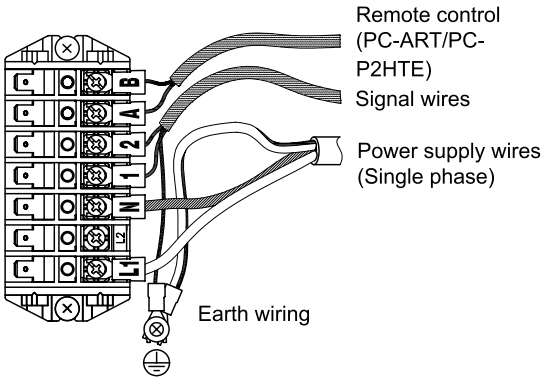
Nº	Part
PCB	Printed circuit board.
TF	Transformer.
TB	Terminal box.
CA	Capacitor.



4

Follow the steps below to connect the cable of the remote control (PC-ART/PC-P2HTE) or the optional extension wire:

1 Pass the cable through the knockout hole in the cabinet.
2 Connect the cable to terminals A and B in the electrical box.
3 Tighten the screw on terminals A and B in the electrical box.
4 Check that the cables are correctly secured.



Follow the steps below to connect the power cables to the power terminals in the electrical box:

1 Where necessary, loosen the screws on the power terminals in the electrical box.
2 Connect power cables L1 and N to the power terminals in the electrical box.
3 Tighten the screws on the power terminals in the electrical box.
4 Check that the power cables are correctly secured.

Follow the steps below to connect the communication cables between the outdoor and indoor unit to the terminals in the electrical box:

1 Where necessary, loosen the screws on the communication terminals in the electrical box.
2 Connect the communication cables to communication terminals 1 and 2 in the electrical box.
3 Tighten the screws on the communication terminals in the electrical box.
4 Check that the communication cables are correctly secured.

Follow the steps below to connect the earth wire to the earth terminal in the electrical box:

1 Where necessary, loosen the screw on the earthing terminal in the electrical box.
2 Connect the shielded part of the power supply and signal wiring earthing cables to the earthing terminal.
3 Tighten the screw on the earth terminal in the electrical box.
4 Check that the shielded part of the earthing cables are correctly secured.

Test runs

CAUTION

- ***Be careful during the test runs, as some of the safety functions remain disabled: the units operate for two hours without switching off via the thermostat. The three-minute compressor protection is not enabled during the test.***
- ***Secure the rubber bushes to the panel using adhesive when the outdoor unit ducts are not used.***
- ***The compressor remains at a standstill during forced stoppage.***

4.1.10 Electrical connection of KPI units

Work prior to the electrical connection

1 Turn off the power supply switches before starting work and fit the appropriate locks and safety warnings.
2 Wait 5 minutes after turning off the power supply switches.
3 Check that the fans on the indoor and outdoor units are at a standstill before starting work.

NOTE

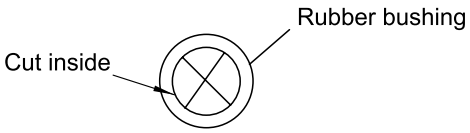
- ***The electrical power for the unit must involve a specific power line, with an exclusive power control switch and residual current breaker, installed in line with local or national safety regulations.***
- ***Check that the electrical power line has enough capacity to supply the unit. Its length, the cable diameter and their protection (sleeve or jacket) must be appropriate for the unit.***
- ***For further information, always consider the current regulations in the country where the unit is to be installed.***

CAUTION

- ***Risk of fire: cables must never touch the refrigerant pipes, printed circuit boards (PCB), sharp edges or electrical components inside the unit to avoid damaging them.***
- ***Loose connection terminals may lead to cable and terminal overheating. The unit may operate incorrectly, leading to a risk of fire. Check that the cables are firmly secured to the connection terminals.***

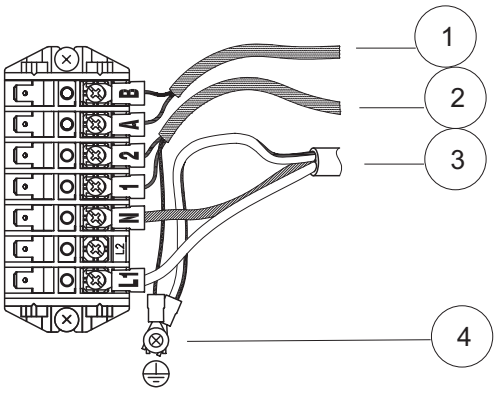
Electrical connection

Cut the centre of the rubber bushing in the wiring connection knockout hole.



Follow the steps below to connect the remote control cable or the optional extension wire:

1 Pass the cable through the knockout hole in the cabinet.
2 Connect the cable to the terminals on the printed circuit board (PCB) located inside the electrical box.
3 Tighten the screw on terminals A and B in the electrical box.
4 Check that the cables are correctly secured.



Nº	Part
1	Remote Control
2	Transmission Wires
3	Power supply wires (Single phase)
4	Earth Screw

CAUTION

If the power cables are to be connected in series, check that the current is below 50 A.

Follow the steps below to connect the power cables to the power terminals in the electrical box:

1 Where necessary, loosen the screws on the power terminals in the electrical box.
2 Connect the power cables to the power terminals in the electrical box.
3 Tighten the screws on the power terminals in the electrical box.
4 Check that the power cables are correctly secured.

Follow the steps below to connect the earth wire to the earth terminal in the electrical box:

1 Where necessary, loosen the screw on the earthing terminal in the electrical box.
2 Connect the shielded part of the earth wire to the earth terminal.
3 Tighten the screw on the earth terminal in the electrical box.
4 Check that the shielded part of the earthing cables are correctly secured.

Firmly secure the cables using a tie inside the electrical box.

Cover the cables and the hole using a sealant to protect them from condensation and insects.

Test runs

CAUTION

- ***Be careful during the test runs, as some of the safety functions remain disabled: the units operate for two hours without switching off via the thermostat. The three-minute compressor protection is not enabled during the test.***
- ***Secure the rubber bushes to the panel using adhesive when the outdoor unit ducts are not used.***
- ***The compressor remains at a standstill during forced stoppage.***

4.1.11 DX-Interface electrical wiring

- Connect the electrical wires between the indoor unit and the outdoor unit, as shown in the next diagram.
- Follow the local codes and regulations when performing the electrical wiring.
- Use shielded wires for intermediate wiring to protect the units from noise obstacle at length of less than 300 m and size in compliance with local codes.
- In the event that a conduit tube for field-wiring is not used, fix rubber bushes to the panel with adhesive.
- All the field wiring and equipment must comply with local and international codes.
- When a cable gland is not used, it must be sealed properly in order to ensure the correct control box sealing.

CAUTION

Pay attention to the connection of the operating line. Incorrect connection may cause PCB failure.

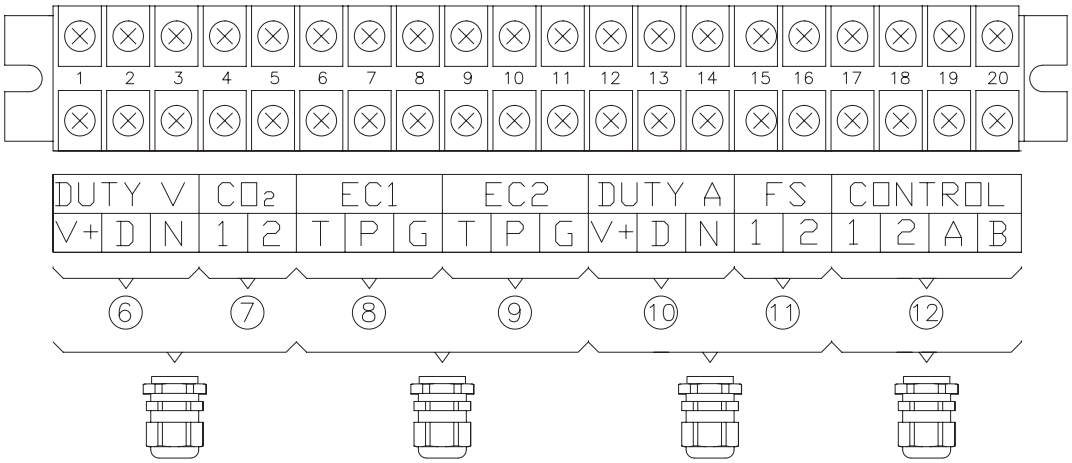
NOTE

Packing gland diameter specification: 6.0 mm (min) to 12.0 mm (max). If needed, install additional tube insulation or wind with insulation tape around the wire to make the wire thicker.

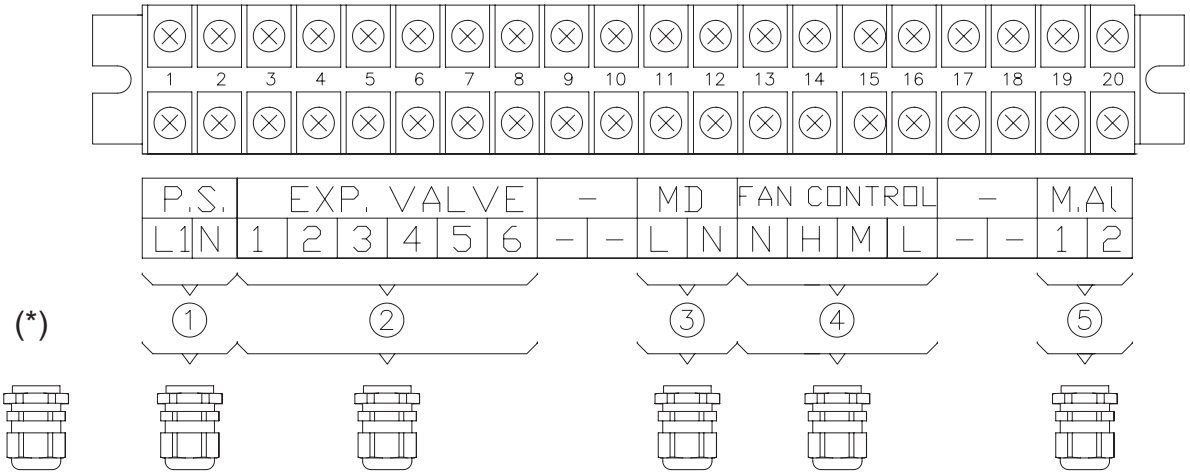
◆ Control box terminal board

DX-Interface EXV-(2.0-10.0)E1

Terminal board 1



Terminal board 2

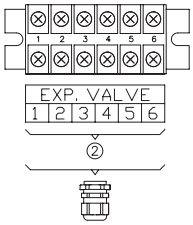


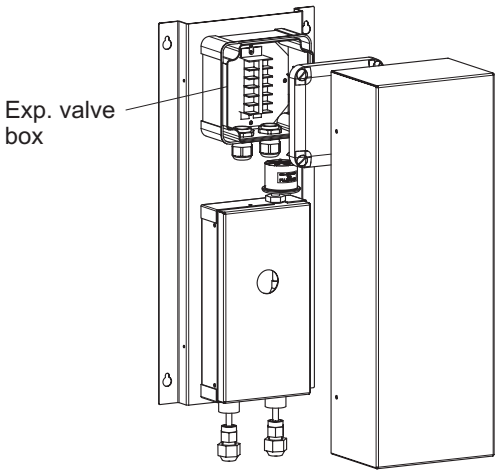
NOTE

(*) Packing gland for thermistor installation

◆ Expansion valve box terminal board

DX-Interface EXV-(2.0-10.0)E1





◆ Terminal board connections and remarks

Terminal board 1

Mark	Item	Name	Description	Wire and maximum current specification (EN60335-1)
⑥	1	V+	**DUTY V: Duty control by voltage (0~10V) (0~5V) (optional):** V+: Output power to device (+24Vdc)	Wire section: 3x0,5mm2 Note: Maximum power by 24Vdc output: 3watts
	2	D	D: Voltage input (0~10V) (0~5V)	
	3	N	N: GND	
⑦	4	1	**CO2 signal (optional):** Free contact: By closing the signal, the fan speed is set to High mode.	Wire section: 2x0,5mm2
	5	2		
⑧	6	T	**EC1: PWM Output control for EC FAN 1 (optional):** T: Tach input signal (Hz)	Wire section: 3x0,5mm2 (*1)
	7	P	P: PWM output signal (0-100%)	
	8	G	G: GND	
⑨	9	T	**EC2: PWM Output control for EC FAN 2 (optional):** T: Tach input signal (Hz)	Wire section: 3x0,5mm2 (*1)
	10	P	P: PWM output signal (0-100%)	
	11	G	G: GND	
⑩	12	V+	**DUTY A: Duty control by current (4~20mA) (optional):** V+: Output power to device (+24Vdc)	Wire section: 3x0,5mm2 Note: Maximum power by 24Vdc output: 3watts
	13	D	D: Current input (4~20mA)	
	14	N	N: GND	
⑪	15	1	**FS: Flow switch (optional):** Free contact between terminals 1(15) and 2(16)	Wire section: 2x0,5mm2
	16	2		
⑫	17	1	**CONTROL: H-LINK and remote controller comunication (Necessary):** The H-LINK transmission between outdoor unit and indoor unit is 2 wired to terminals 1-2.	Wire section: 2x0,5mm2
	18	2		
	19	A	The Remote controller must be connected between pins A and B (non polarity)	Wire section: 2x0,5mm2
	20	B		

NOTE

(*1): If fan wiring length is higher than 3m, use shielded wires in compliance with local codes.

Terminal board 2

Mark	Item	Name	Description	Wire and maximum current specification (EN60335-1)
①	1	L1	**P.S.: Power supply (necessary):** The mains power supply connection (230 Vac) is wired to terminals L1 and N.	1~230V 50Hz, Max current. 5A Wire section: 3x0,75mm2
	2	N		
②	3	1	**EXP. VALVE: Expansion valve connection (necessary):** Link to expansion valve assembly. Number links from 1 to 6 must match in e-box terminal board and expansion valve terminal board	Wire section: 6x0,5mm2
	4	2		
	5	3		
	6	4		
	7	5		
	8	6		
-	9	-	Not used	-
	10	-		
③	11	L	**MD: Motor Drain discharge (optional):** A drain water pump (field supplied) can be connected to DX-kit interface.	1-230V 50Hz Max current: 1A (output) Wire section: 2x0,75mm2
	12	N		
④	13	N	**FAN CONTROL: Fan tap speed control by HITACHI remote controller (optional):** N-Neutral phase connection (common)	Maximum current allowed: 3,5A Wire section: 4x0,75mm2 (*1)
	14	H	H: High fan speed signal	
	15	M	M: Medium fan speed signal	
	16	L	L: Low fan speed signal	
-	17	-	Not used	-
	18	-		
⑤	19	1	**M. AL: Motor alarm signal:** Alarm input signal can be used for alarm link between the DX-Kit interface and the unit connected. If the jumper between terminal 1 (19) and 2 (20) is open, unit will be switched to alarm condition. Connect again to restart the system	Wire section: 2x0,75mm2 (*2)
	20	2		

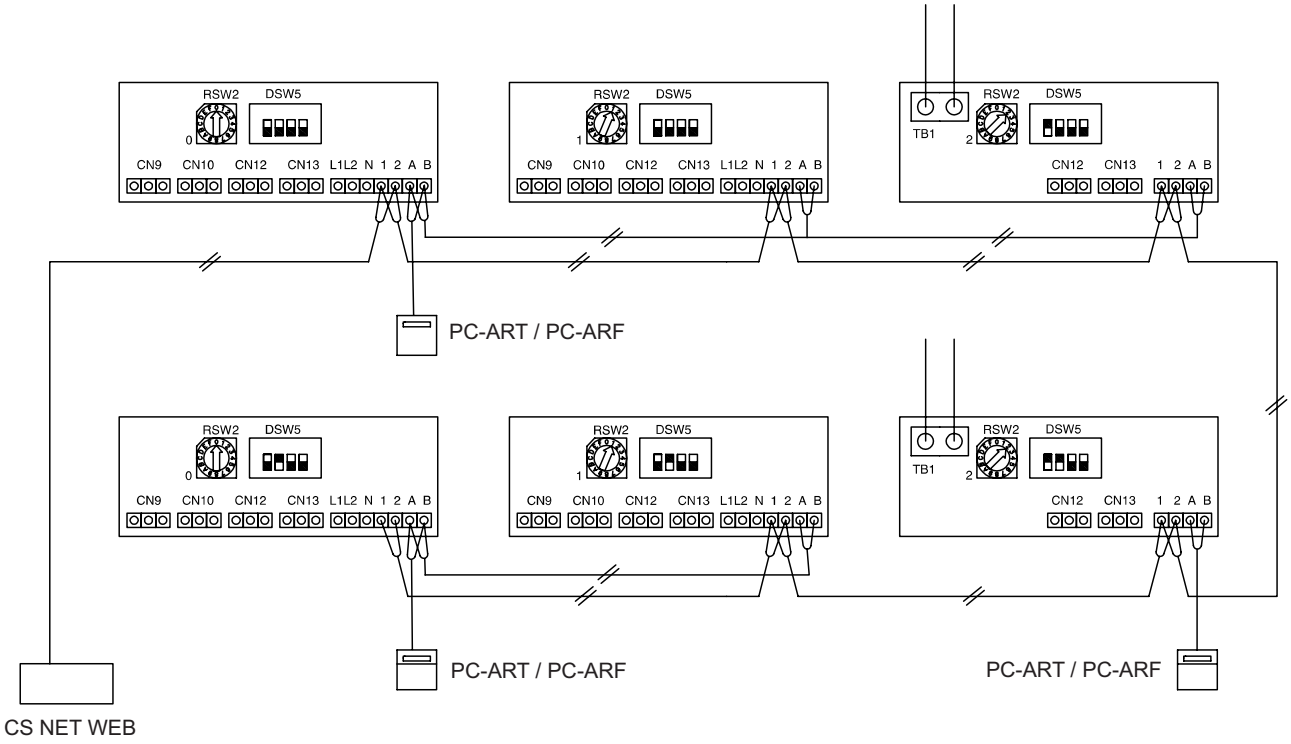
NOTE

- • ***(*1): Locked rotor amperage (LRA) must be lower than 8A.***
- • ***(*2): Alarm signal with high voltage (1~ 230V 50Hz): Connection in M.AL. terminals is mandatory. In case that motor alarm detection were not necessary, make sure to connect the harness jumper provided with the DX-Interface.***

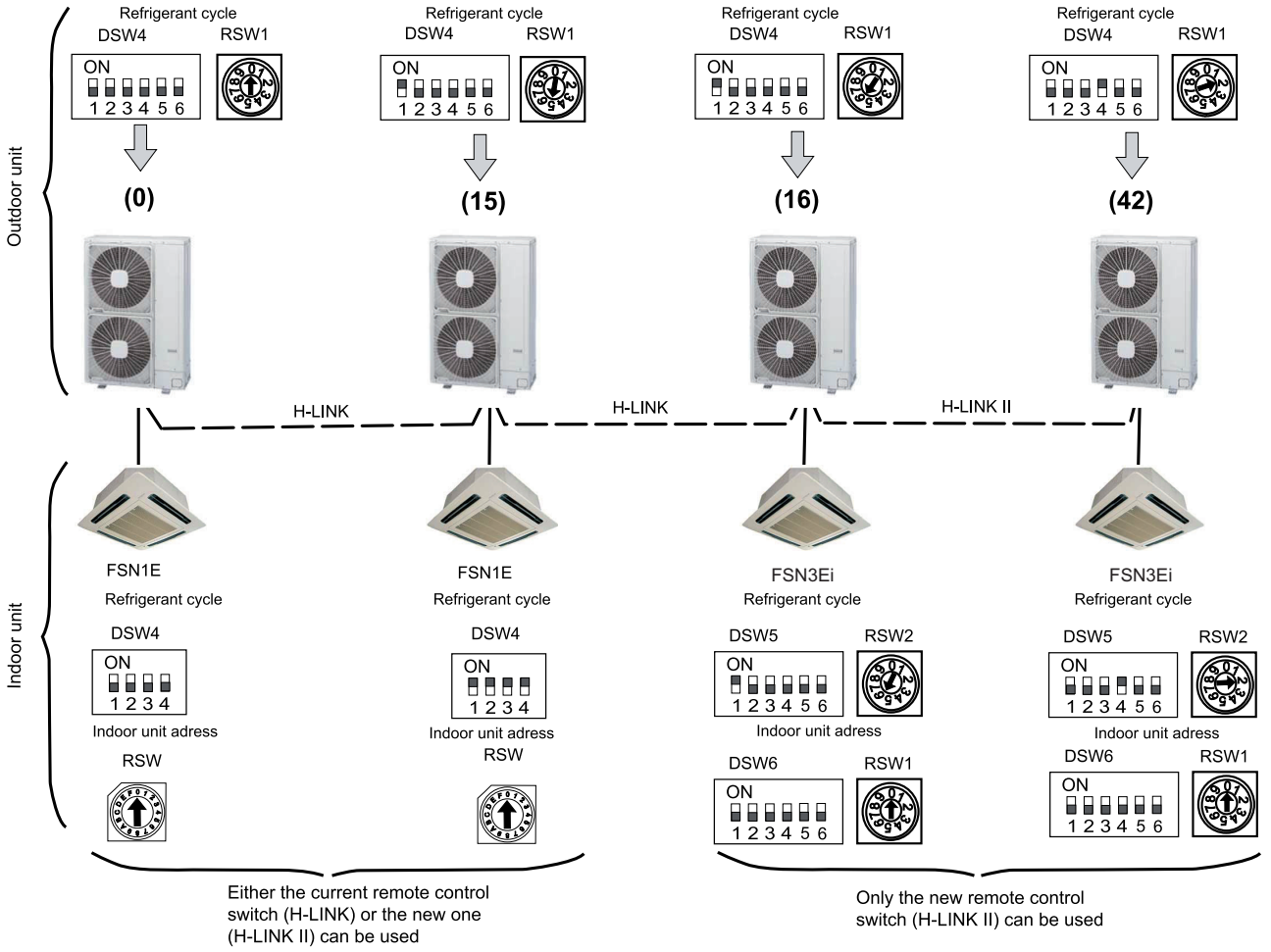
Expansion valve box

Mark	Item	Name	Description	Wire and maximum current specification (EN60335-1)
②	1	1	**Control connection (necessary):** Link to control assembly. Number links from 1 to 6 must match in expansion valve terminal board and control terminal board.	Wire section: 6x0,5mm2
	2	2		
	3	3		
	4	4		
	5	5		
	6	6		

4.1.12 Network system connection (CS-NET WEB)



4.1.13 Connection between units H-LINK and H-LINK II

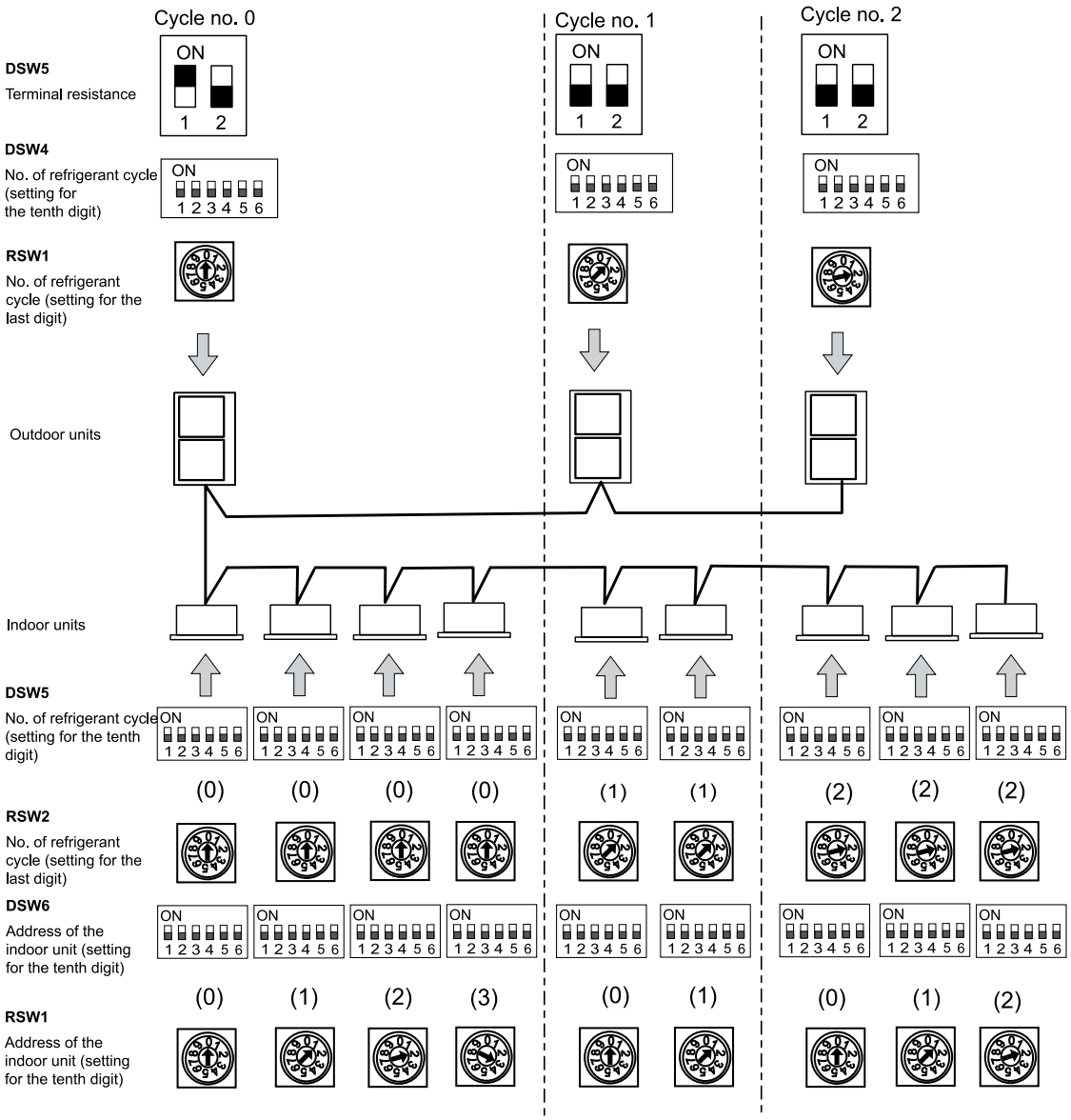


For mixed H-LINK and H-LINK II systems, set the H-LINK units in the first 16 positions of the system, as shown in the following figure. There are 26 systems with FSN(2/3/4)E indoor units.

NOTE

- ***H-LINK is able to manage up to 160 indoor units.***
- ***When PSC-5S and CSNET WEB 2.0 (only compatible with H-LINK), are used, remember that only 16 indoor units and 16 outdoor units can be managed.***

4.2 Setting of DIP switches and RSW switches



1 Turn off the power supply before setting the DIP switches. Otherwise, the switch settings are invalid.

2 To set the position of the RSW rotary switches, insert a screwdriver into the groove of the RSW.

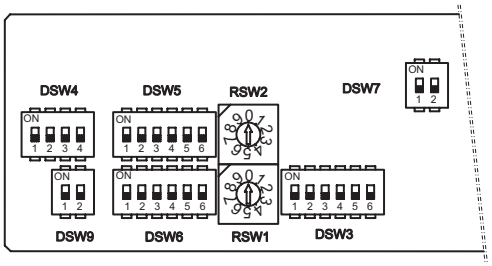
NOTE

The DIP and RSW switches of each indoor and outdoor unit must be set, although they do not all have to be set. Read the following sections carefully for information on which ones must be set.

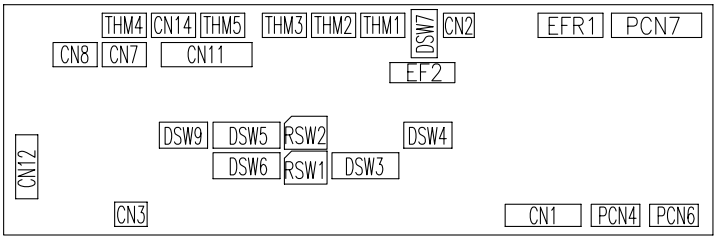
4.2.1 Location of DIP switches and RSW switches

Location of DIP switches and RSW rotary switches

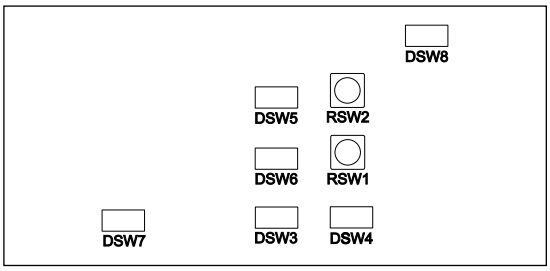
- **RCI-(1.0-6.0)FSN3 units**



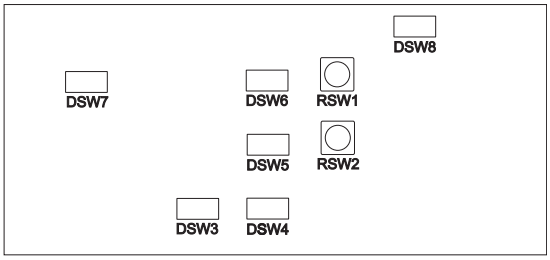
- **RCI-(1.0-6.0)FSN3Ei units**



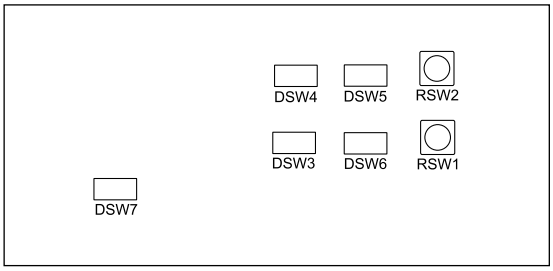
- **RCIM-(0.8-2.0)FSN2 units**



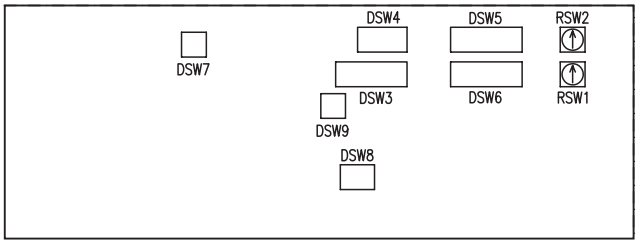
- **RCD-(1.0-3.0)FSN2 units**



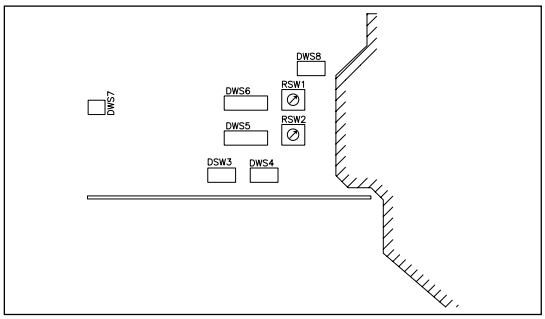
- **RPC-(2.0-6.0)FSN2E units**
- **RPF(I)-(1.0-2.5)FSN2E units**



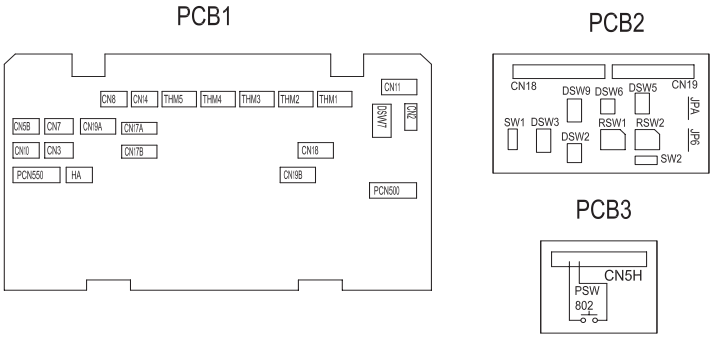
- **RPI(M)-(0.8-6.0)FSN4E(-DU) units**



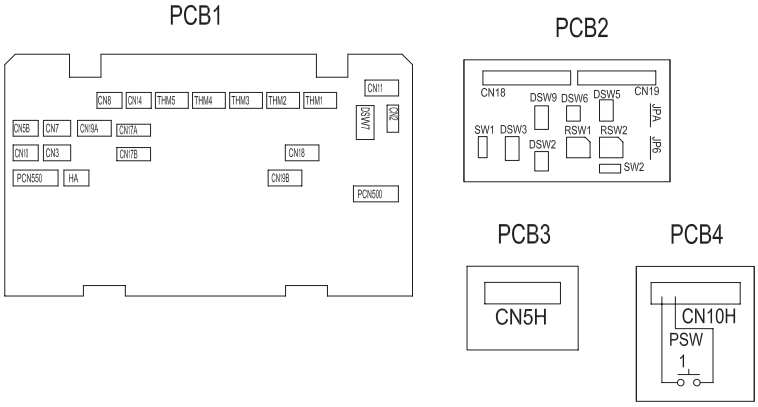
- **RPI-(8.0/10.0)FSN3E units**



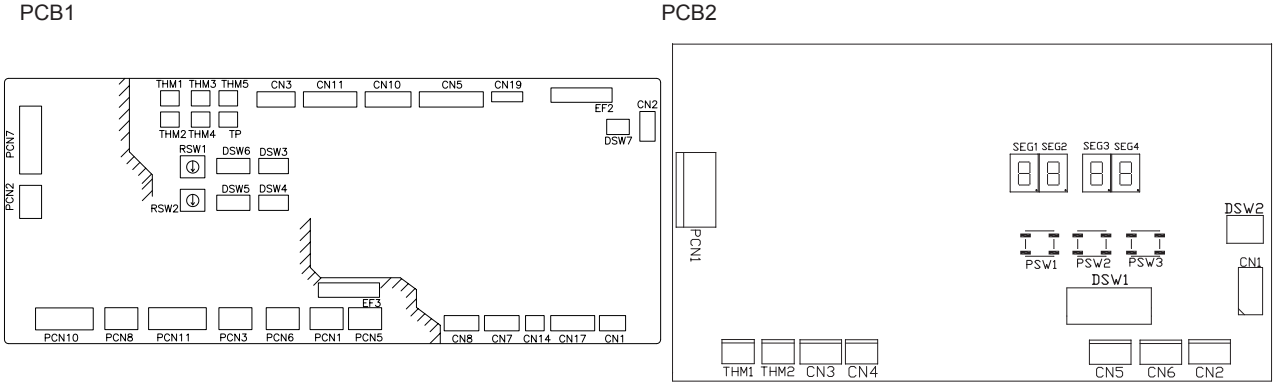
- **RPK-(0.8-1.5)FSN(H)3M units**



- **RPK-(2.0-4.0)FSN3M units**

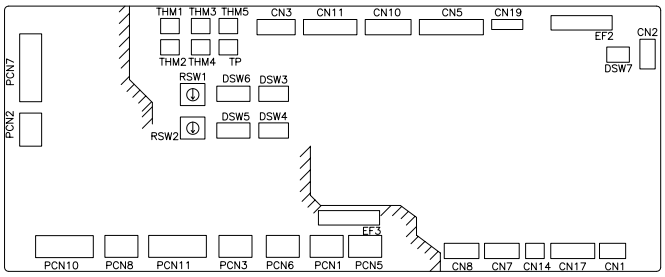


- **KPI-(252-2002)(E/H)3E and KPI-(502-1002)X3E units**

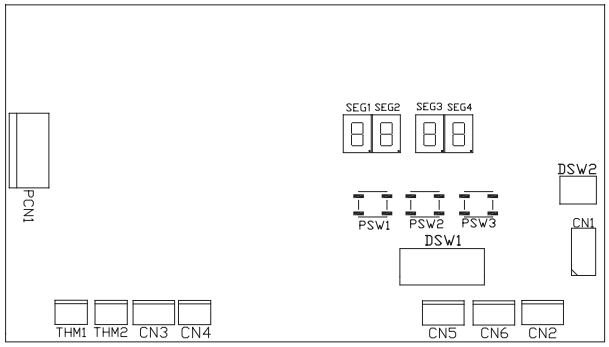


- **DX-Interface**

PCB1



PCB2



4.2.2 Functions of the DIP switches and RSW switches

CAUTION

Turn off the power supply before setting the DIP switches. If not, the settings will not be valid.

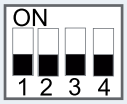
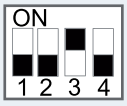
NOTE

- ***The symbol "■" indicates the position of the DIP switches. The figures show the setting before transmission or after selection.***
- ***If the "■" mark is not displayed, this indicates that the position of the pin is not affected.***

DSW2 switch: optional functions setting (only for RPK-FSN(H)3M)

CAUTION

Do not set the DSW2 switch, as it is factory-set prior to delivery.

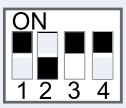
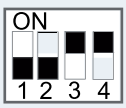
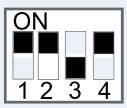
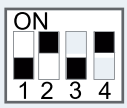
RPK-(0.8-4.0)FSN(H)3M	
Factory setting	
Setting for indoor units installed side by side when wireless remote control switch is used..	

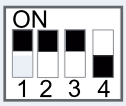
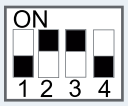
DSW3 switch: capacity code setting

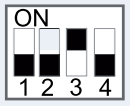
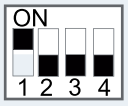
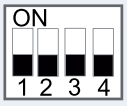
This is used to set the capacity code corresponding to the power of the indoor unit.

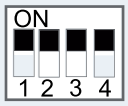
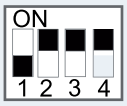
CAUTION

Do not set the DSW3 switch, as it is factory-set prior to delivery.

HP	0.8	1.0	1.3	1.5
Setting position				

HP	1.8	2.0	2.3	2.5
Setting position				

HP	3	4	5	6
Setting position				

HP	8.0	10.0
Setting position		

DSW4 switch: unit model code setting (except RPK-(0.8-4.0)FSN(H)3M units)

This is used to set the model code corresponding to the type of indoor unit

CAUTION

Do not set the DSW4 switch, as it is factory-set prior to delivery.

Indoor unit model code	RCI-(1.0-6.0)	RCIM-(0.8-2.0)	RCD-(1.0-5.0)	RPC-(2.0-6.0)	RPIM-(0.8-1.5)	RPI-(0.8-6.0)	RPI-(8.0/10.0)	RPF(I)-(1.0-2.5)
DSW4 setting								

DSW5 switch / RSW2 rotary switch: refrigerant cycle number setting

This is used to set the refrigerant cycle number.

NOTE

- ***The factory setting of DSW5 switches is OFF.***
- ***The rotary switches are set by inserting a screwdriver of the appropriate size into the centre groove.***

	Setting position (DSW5)		Setting position (RSW2)
Tens setting (second digit)		Unit setting (first digit)	
Example for number 5		+	

DSW6 switch / RSW1 rotary switch: Unit no. setting

Set DSW6 and RSW1 to modify the indoor unit address. The setting must be made so that it does not overlap the setting of other indoor units in the same refrigerant cycle. If the setting is not made manually, the automatic address function will be enabled.

	Setting position (DSW6)		Setting position (RSW1)
Tens setting (second digit)		Unit setting (first digit)	

	Setting position (DSW6)		Setting position (RSW1)
Example for number 16		+	

DSW7 switch: Fuse recovery and remote control selection

No settings are required. All switches are factory-set to OFF. PC-ART remote control selection.	

If a high voltage is applied to TB1 terminals 1 and 2, the fuse on PCB1(M) is deactivated. Should this occur, correct the TB1 wiring and activate contact 1.

If a high voltage is applied to TB1 terminals 1 and 2, the fuse on PCB1(M) is deactivated. Should this occur, correct the TB1 wiring and activate contact 1.	

◆ KPI

CAUTION

Turn off the power supply before setting the DIP switches. If not, the settings will not be valid.

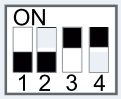
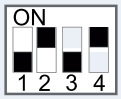
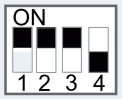
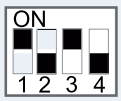
NOTE

- ***The symbol "■" indicates the position of the DIP switches. The figures show the setting before transmission or after selection.***
- ***If the "■" mark is not displayed, this indicates that the position of the pin is not affected.***

PCB1 settings

DSW3: Capacity Code Setting

No setting is required, due to setting before shipment. This dip switch is utilized for setting the capacity code.

DSW3		
KPI-252	KPI-502	KPI-802
		
KPI-1002	KPI-1502	KPI-2002
		

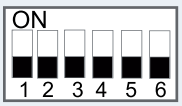
DSW4: unit model code setting

No setting is required. This switch is utilized for setting the model code.

DSW4	
KPI (E3E/H3E)	Active KPI (X3E)
	

DSW6 switch / RSW1 rotary switch: Unit no. setting

Set DSW6 and RSW1 to modify the indoor unit address. The setting must be made so that it does not overlap the setting of other indoor units in the same refrigerant cycle. If the setting is not made manually, the automatic address function will be enabled.

	Setting position (DSW6)		Setting position (RSW1)
Tens setting (second digit)		Unit setting (first digit)	
Example for number 16		+	

DSW7 switch: Fuse recover

No setting is required. Setting position before shipment.	
In case of applying high voltage to the terminal 1,2 of TB1, the fuse on the PCB1(M) is cut. In such a case, firstly correct the wiring to TB1 and then turn ON #1 (as showing beside)	

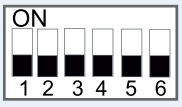
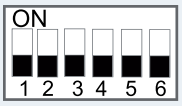
4

DSW5 switch / RSW2 rotary switch: refrigerant cycle number setting

This is used to set the refrigerant cycle number.

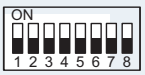
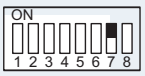
NOTE

- ***The factory setting of DSW5 switches is OFF.***
- ***The rotary switches are set by inserting a screwdriver of the appropriate size into the centre groove.***

	Setting position (DSW5)		Setting position (RSW2)
Tens setting (second digit)		Unit setting (first digit)	
Example for number 5		+	

PCB2 settings

DSW1: Optional functions

Factory setting	
Pin 7: Common operation of remote control switch	

CAUTION

If there is an indoor unit connected in the same RCS line as DX-Interface EXV-(2.0-10.0)E1 or KPI-(E/H/X)3E, then pin 7 must be ON to disable the power supply to RCS line. If there is no indoor unit connected to the same RCS line but there are more than one DX-Interface EXV-(2.0-10.0)E1 or KPI-(E/H/X)3E, then only one DX-Interface EXV-(2.0-10.0)E1 or KPI-(E/H/X)3E should have pin 7 OFF while all other units must have pin 7 set to ON. Failure to perform this setting correctly will result in bad communication and can even cause physical damage to the PCB.

DSW2: End resistance

No setting is required.

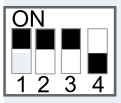
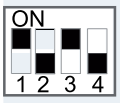
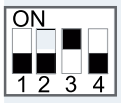
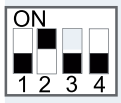
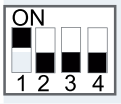
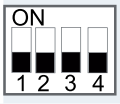
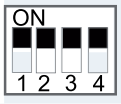
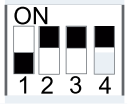
All units


◆ DX-Interface

PCB1 Settings

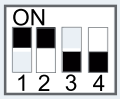
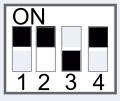
DSW3: Capacity code setting

No setting is required. This DIP switch is used to set the capacity code corresponding to the DX-Interface power (HP).

HP	2.0	2.5	3.0	4.0
Factory setting				
HP	**5.0**	**6.0**	**8.0**	**10.0**
Factory setting				

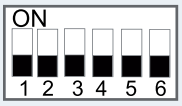
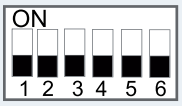
DSW4: Unit model code setting and optional setting

No setting is required.

Factory setting	
Enabled EC fan motor alarm by tachometer input	

DSW5 and RSW2: Refrigerant cycle No. setting

Setting is required. This switch is used to set the refrigerant cycle number

	Setting Position (DSW5)		Setting position (RSW2)
Tens setting (second digit)		Unit setting (first digit)	
Example for number 6		+	

DSW6 and RSW1: Unit No. setting

Set DSW6 and RSW1 to modify the indoor unit address. The setting must be made so that it does not overlap the setting of other indoor units in the same refrigerant cycle. If the setting is not made manually, the automatic address function will be enable.

Factory-set to a value of up to 63.

DSW6	RSW1
	xxx

Example of setting for unit no. 16

DSW6	RSW1
	xxx

DSW7 switch: Fuse recovery and remote control selection

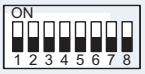
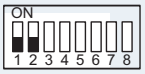
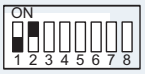
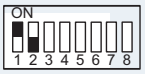
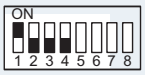
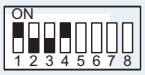
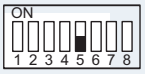
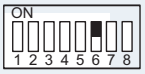
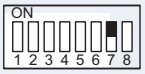
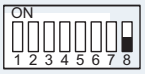
No settings are required. All switches are factory-set to OFF. PC-ART remote control selection.	
If high voltage is applied to P.S. terminal L1 and N, the fuse on PCB1 (M) is deactivated. Should this occur, correct the TB1 wiring and active contact 1.	

NOTE

- ***The "■" mark indicates position of dips switches. Figures show setting before shipment or after selection.***

PCB2 settings

DSW1: Optional functions

Factory setting		
Switch 1 and 2: Capacity control setting	Discharge air control (Control by outlet temperature)	
	Indoor air control (Control by inlet temperature)	
	External duty control (*1)	
Switch 3 and 4: Duty signal setting (*1)	4~20 mA	
	0~10 V	
	0~5 V	
Switch 5: Not used		
Switch 6: Thermo ON/OFF external input enabled (*2)		
Switch 7: Common operation of remote control switch		
Switch 8: Not used		

(*1): If external duty control is selected (switch 1-2), check the proper selection for the duty signal (switch 3-4).

(*2): The thermo ON/OFF control can be driven externally by an input signal connected to the CN3 socket of the PCB1. The switch 6 of DSW1 in PCB2 must be switched on, then the input "i1" of CN3 is automatically set for thermo ON/OFF control. The setting of input "i2" is kept as set on the remote controller.

CAUTION

If there is an indoor unit connected in the same RCS line as DX-Interface EXV-(2.0-10.0)E1 or KPI-(E/H/X)3E, then pin 7 must be ON to disable the power supply to RCS line. If there is no indoor unit connected to the same RCS line but there are more than one DX-Interface EXV-(2.0-10.0)E1 or KPI-(E/H/X)3E, then only one DX-Interface EXV-(2.0-10.0)E1 or KPI-(E/H/X)3E should have pin 7 OFF while all other units must have pin 7 set to ON. Failure to perform this setting correctly will result in bad communication and can even cause physical damage to the PCB.

DSW2: End resistance

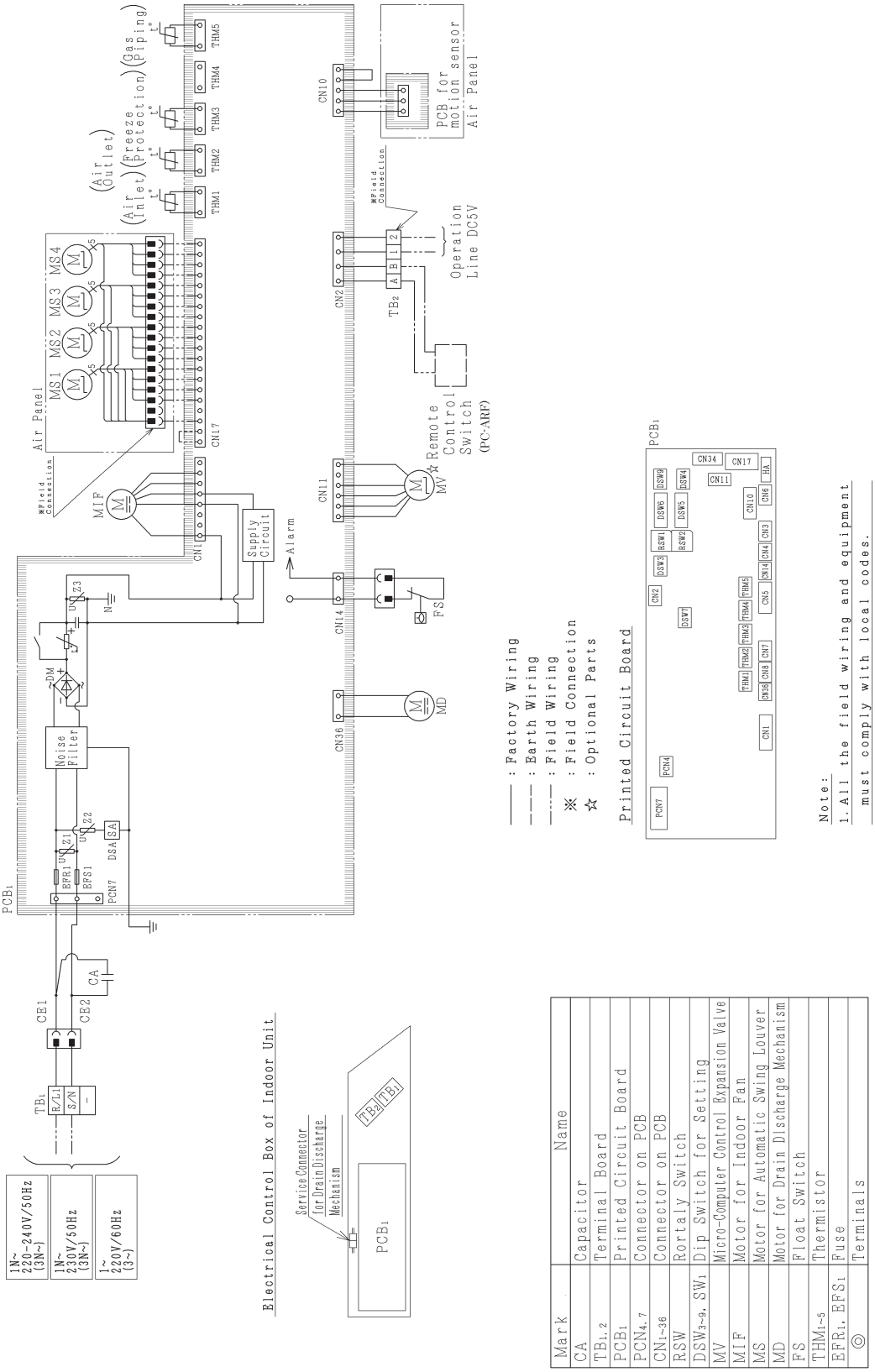
No setting is required.

All units


4.3 Wiring diagrams for indoor units and complementary systems

4.3.1 Wiring diagrams for indoor units

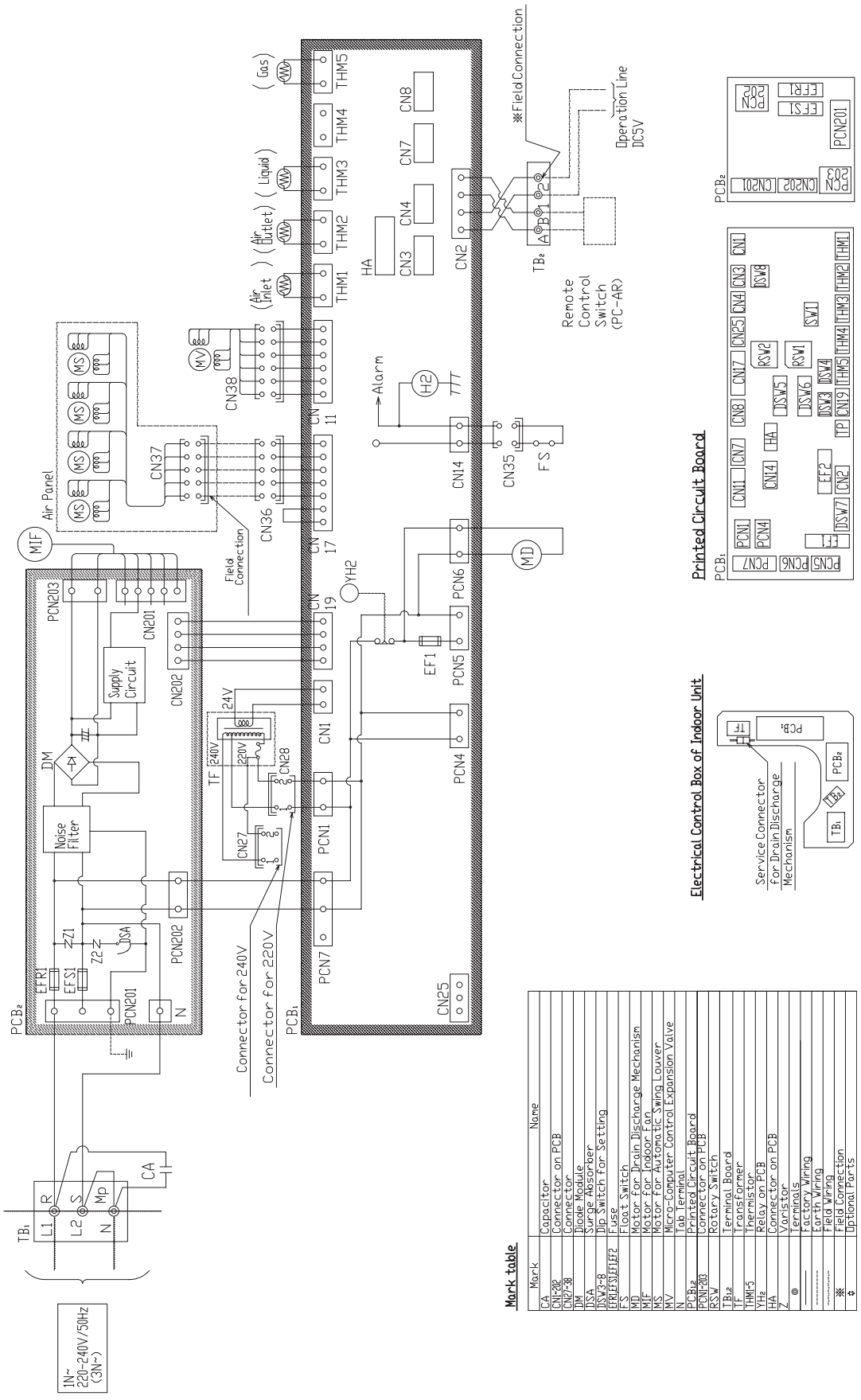
◆ **Wiring diagrams for the RCI-(1.0-6.0)FSN3 indoor units**



Mark	Name
CA	Capacitor
TB1, 2	Terminal Board
PCB1	Printed Circuit Board
PCN4, 7	Connector on PCB
CN1~36	Connector on PCB
RSW	Rortaly Switch
DSW3~9, SW1	Dip Switch for Setting
MV	Micro-Computer Control Expansion Valve
MIF	Motor for Indoor Fan
MS	Motor for Automatic Swing Louver
MD	Motor for Drain Discharge Mechanism
FS	Float Switch
THM1~5	Thermistor
EFR1, EFS1	Fuse
◎	Terminals

HITACHI
Inspire the Next

◆ Wiring diagrams for RCIM-(0.8-2.0)FSN2



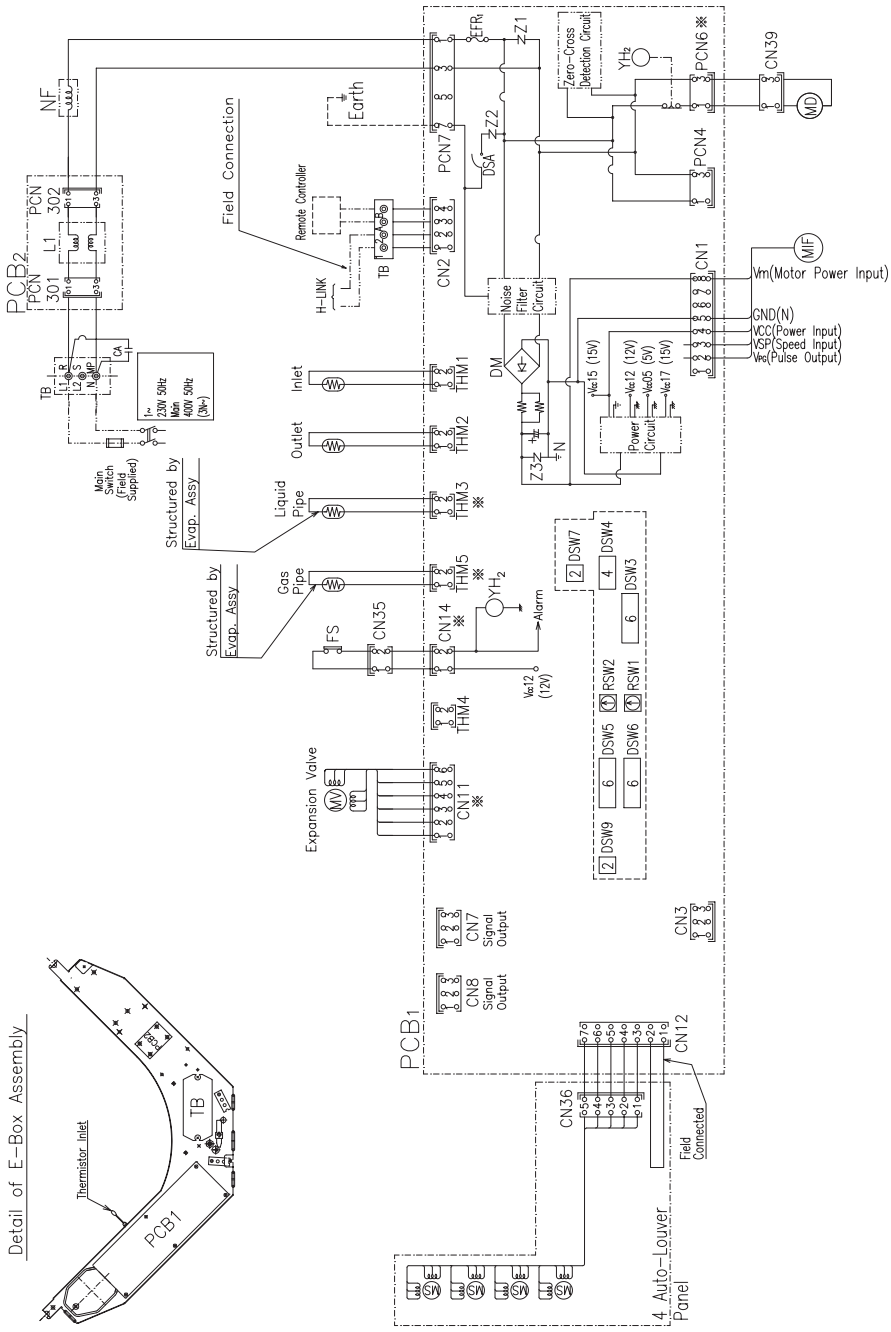
Mark table

Mark	Name
CA	Capacitor
CN1-2, 8	Connector on PCB
CN27-38	Connector
DM	Diode Module
DSA	Surge Absorber
DSW3-8	Dip Switch for Setting
EFR1,EFS1,EF2	Fuse
FS	Float Switch
MD	Motor for Drain Discharge Mechanism
MIF	Motor for Indoor Fan
MS	Motor for Automatic Swing Louver
MV	Micro-Computer Control Expansion Valve
N	Tab Terminal
PCB1,2	Printed Circuit Board
PCN1-203	Connector on PCB
RSW	Rotary Switch
TB1,2	Terminal Board
TF	Transformer
THM1-5	Thermistor
YH2	Relay on PCB
HA	Connector on PCB
Z	Varistor
⊗	Terminals
———	Factory Wiring
- - - - -	Earth Wiring
———	Field Wiring
※	Field Connection
◆	Optional Parts

◆ Wiring diagrams for the RCI-(1.0-6.0)FSN3Ei indoor units

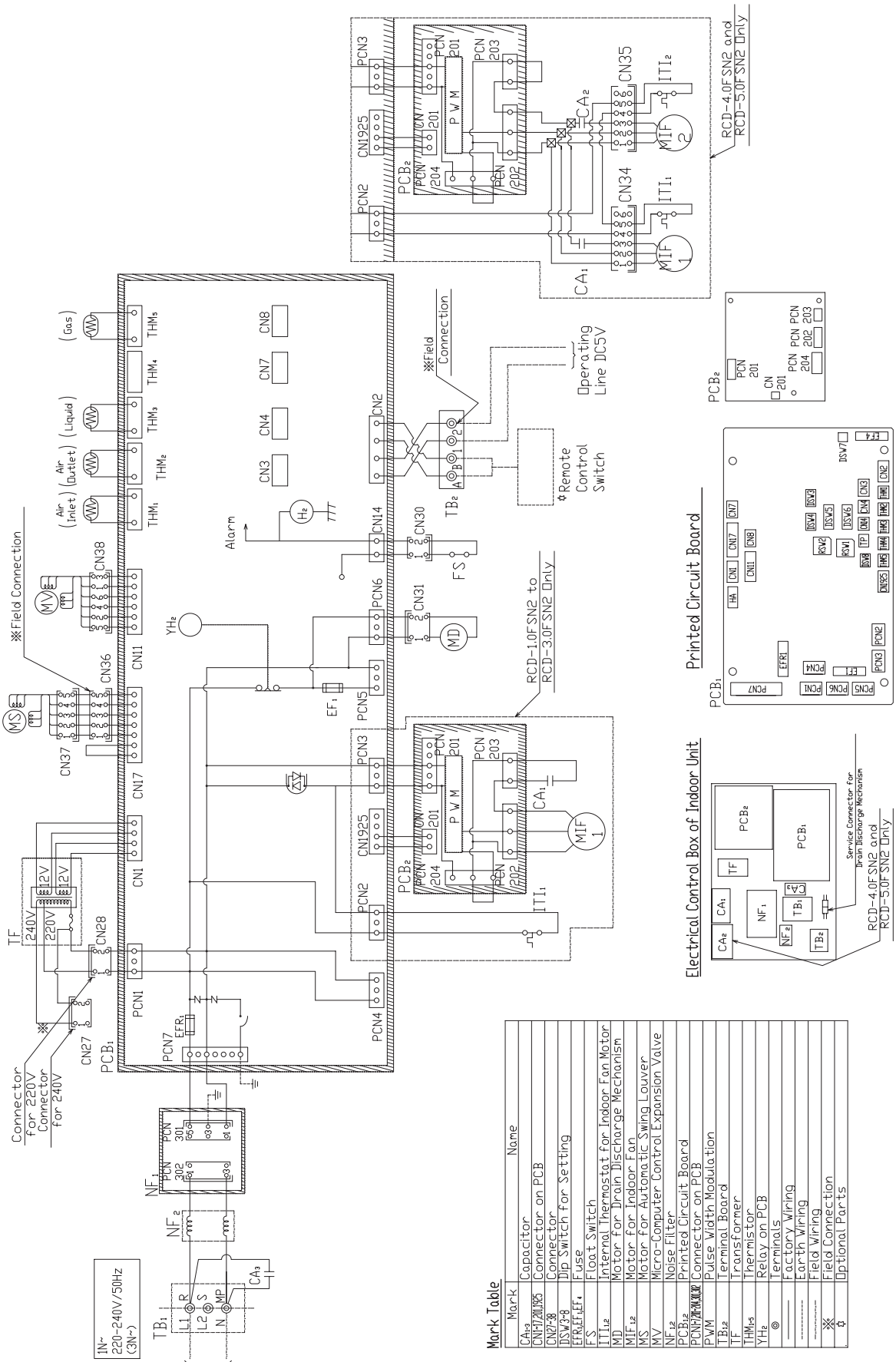
Mark Table

Mark	Part Name
TB	Terminal board
PCB1,2	Printed Circuit Board
EFR,EF2	Fuse
PCN1,6,7	Connector on PCB
CN1~28	Connector on PCB
CN 35,36,39	
MIF	Motor for Indoor Fan
MD	Drain Pump
MS	Motor for Auto-louver
MV	
NF	Noise Filter
CA	Capacitor
THM1,2,3,4,5	Thermistor
DM	Diode Module
YH2	Auxiliary Relay for Condensate Dew Protection
Z1~3	Varistor
DSA	Surge Absorber
DSW1,2,3,4,6,7,9	Dip Switch for Setting
RSW1,2	Rotary Switch for Setting
FS	Float Switch
⊕	Terminals
	Earth Wiring
---	Factory Wiring
——	Field Wiring
-.-.-	

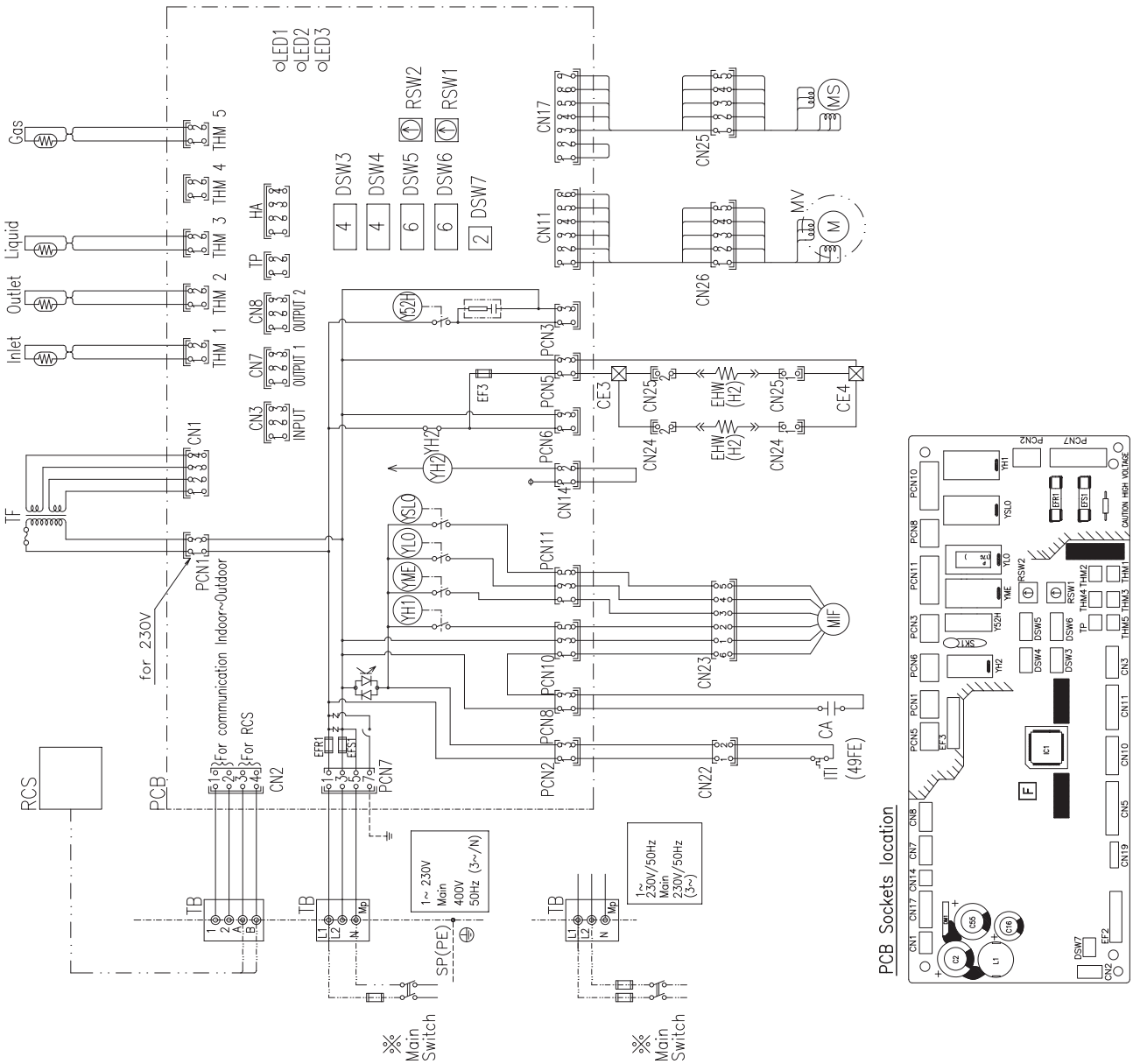


HITACHI
Inspire the Next

◆ Wiring diagrams for the RCD-(1.0-5.0)FSN2 indoor units



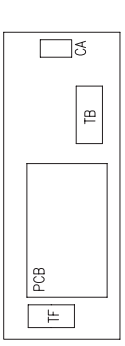
◆ Wiring diagrams for the RPC-(2.0-6.0)FSN2E indoor units



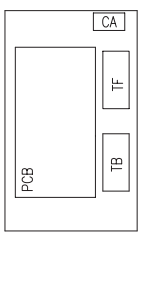
Mark Table

Mark	Part Name
CA	Capacitor for Indoor Fan
CN21~26	Connector
DSW3	Unit Capacity Code
DSW4	Model
DSW5	Refrigerant Cycle n°
DSW6	Unit Code
DSW7	Fuse Recover / Remot Controller Selector
EFR1	Fuse
EFS1	Fuse
EHW(H2)	Electric Heater for Condensate Air Protection
FS	Float Switch
ITI	Internal Thermostat for Indoor Fan Motor
MD	Motor for Drain Discharge Mechanism
MIF	Motor for Indoor Fan
MS	Motor for Automatic Swing Louver
MV	Expansion Valve
LED1~3	Alarm Code
PCB	Printed Circuit Board
RCS	Remote Control Switch
RSW1	Indoor Unit no. Settings
RSW2	Refrigerant Cycle n°
SA	Surge Absorber
TB	Terminal Board
TF	Transformer
THM1	Inlet Air Thermistor
THM2	Outlet Air Thermistor
THM3	Liquid Pipe Thermistor
THM5	Gas Pipe Thermistor
YH2	Relay for Drain Motor
YH1	Relay for HI Fan Motor Tap
YME	Relay for ME Fan Motor Tap
YLO	Relay for LO Fan Motor Tap
YSLO	Relay for SLO Fan Motor Tap
Y52H	Relay for Electric Heater
⊗	Terminals
—⊠—	Close-end Connector
※	Field Supplied
·-·-·-·	Field Wiring
-----	Earth Wiring
——	Factory Wiring

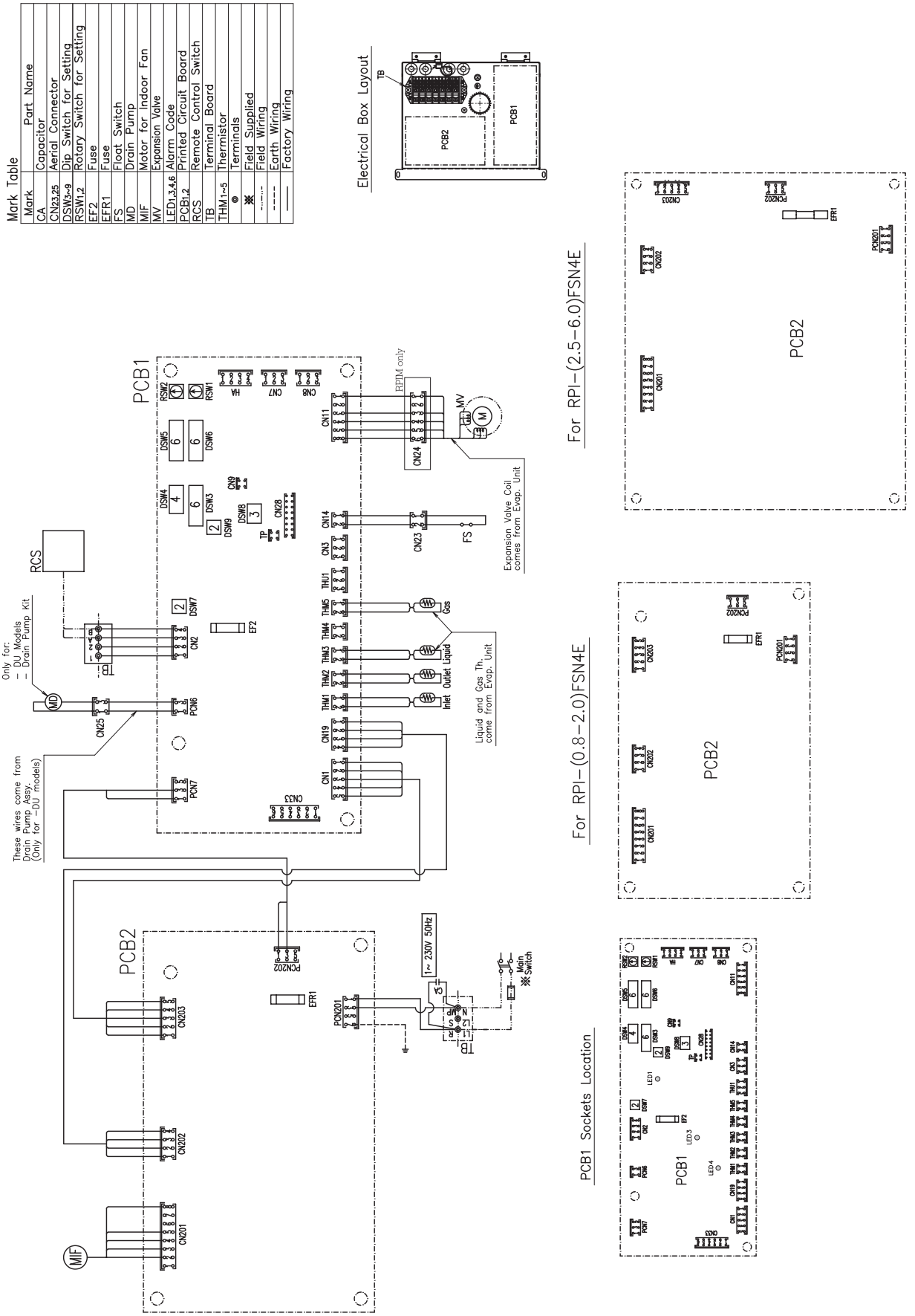
Electrical Control Box RPC-(2.0~3.0)FSN2E



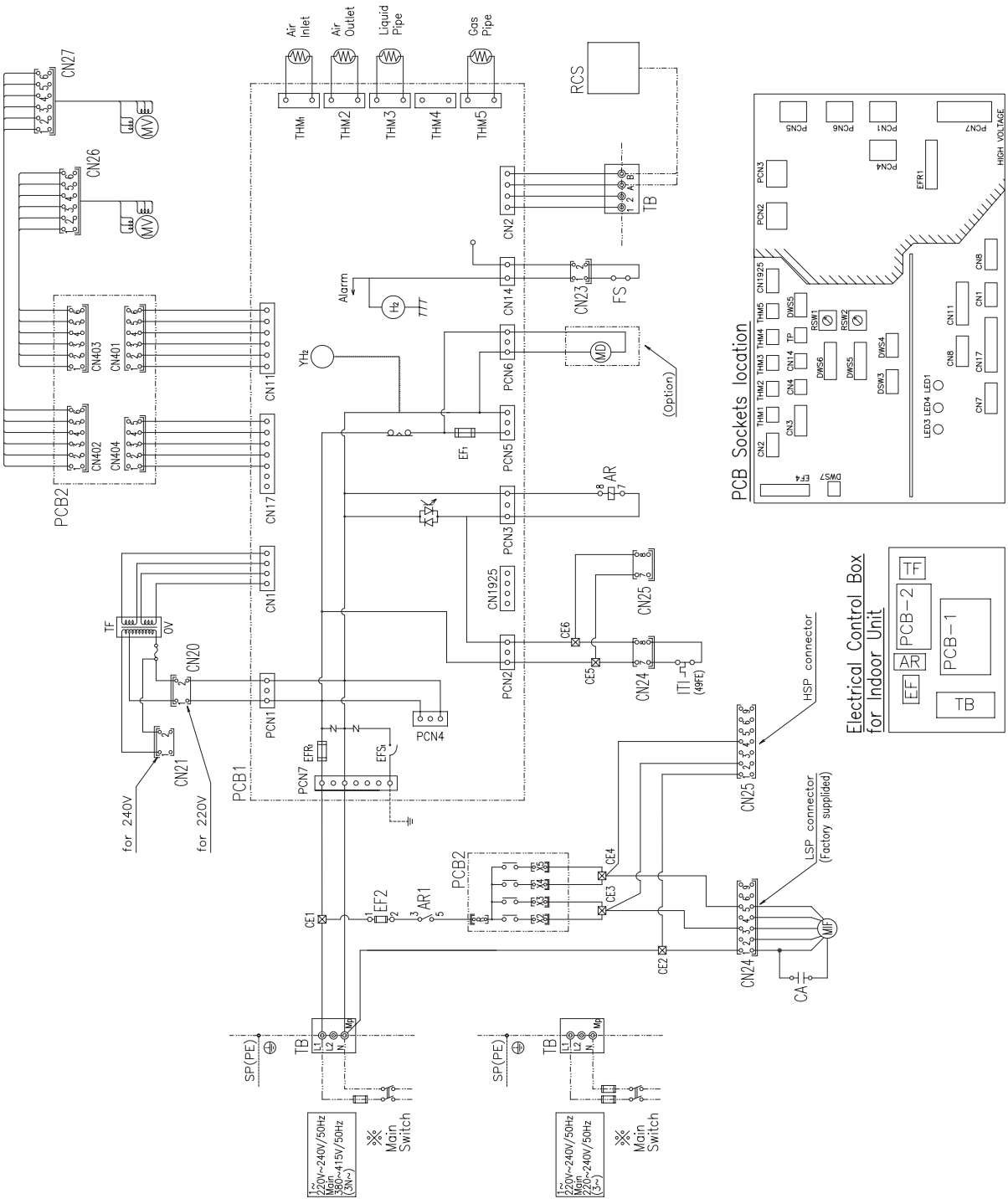
Electrical Control Box for RPC-(4.0~6.0)FSN2E



◆ Wiring diagrams for the RPI(M)-(0.8-6.0)FSN4E indoor units

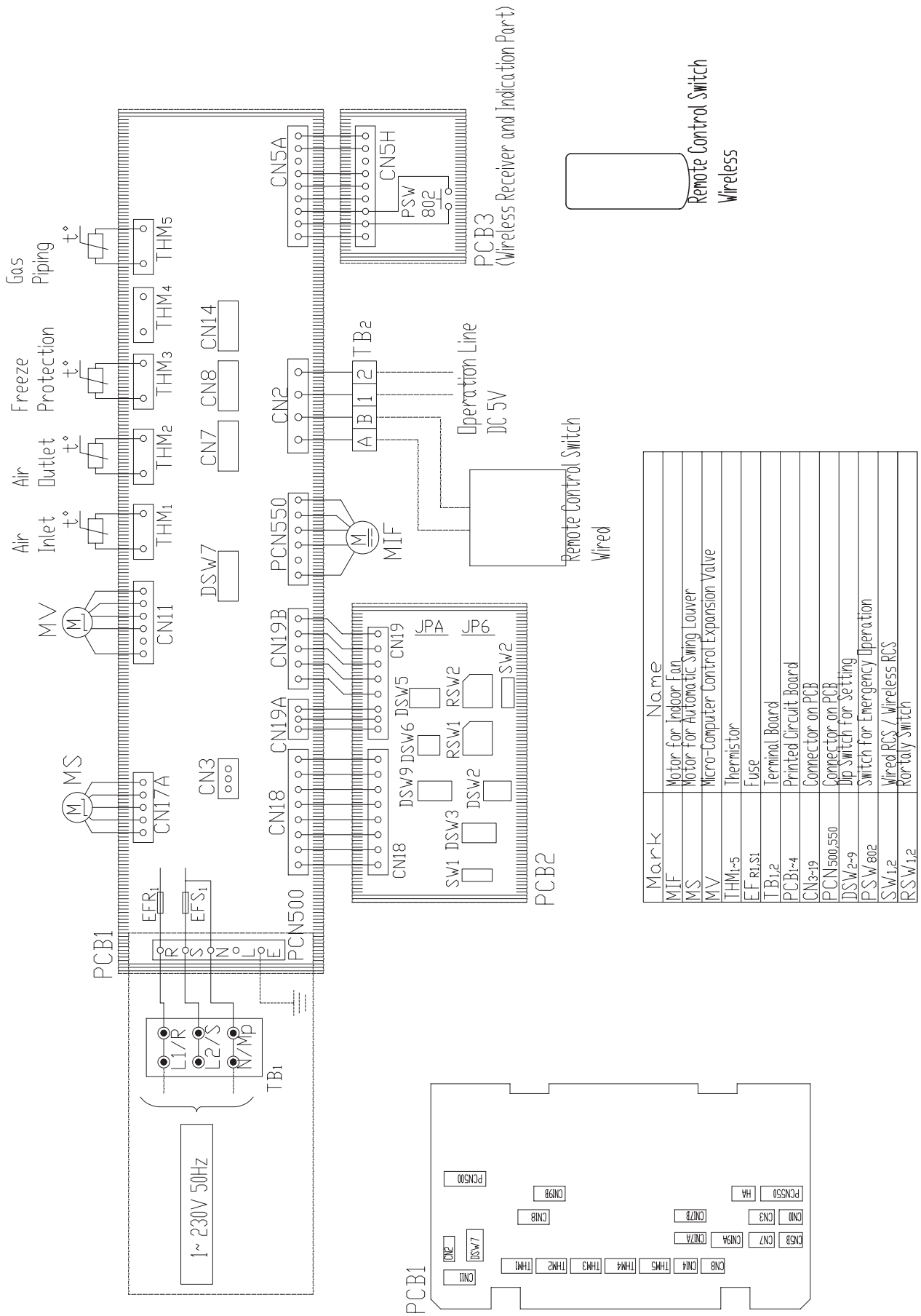


◆ Wiring diagrams for the RPI-(8.0/10.0)FSN3E indoor units

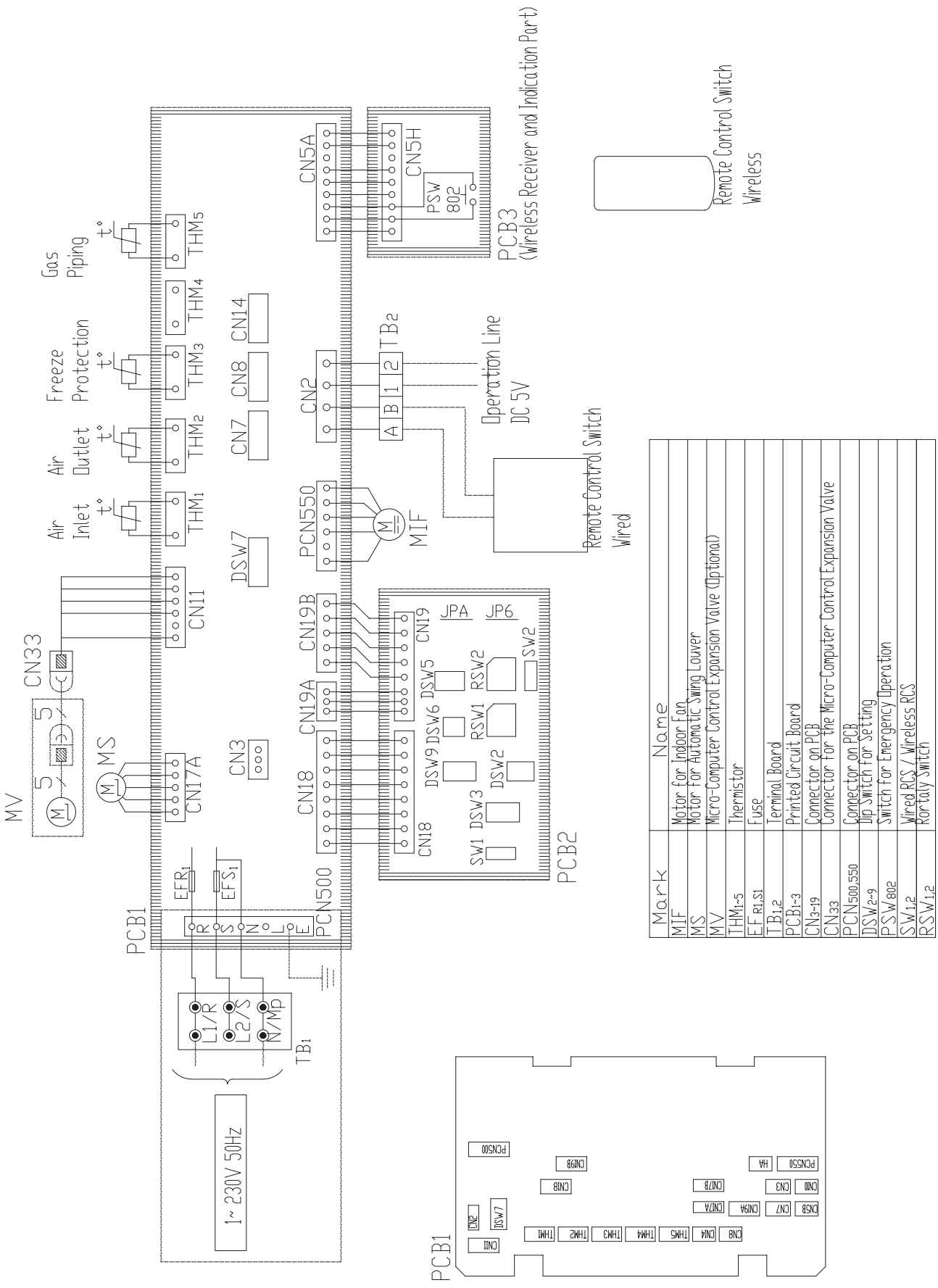


Mark Table	
Mark	Part Name
AR	Auxiliary Relay
CA	Capacitor for Indoor Fan
CN20~n	Connector
DSW3	Unit Capacity Code
DSW4	Unit Model Code
DSW5	Refrigerant Cycle n°
DSW6	Indoor Unit Setting
DSW7	Fuse Recover/Remote Controller Selector
DSW8	Not Used
EF2	Fuse
EFR1	Fuse
FS	Float Switch
ITI	Internal Thermostat for Indoor Fan Motor
MD	Motor for Drain Discharge Mechanism
MIF	Motor for Indoor Fan
MV	Micro-Computer Control Exp. Valve
LED1~3	Alarm Code
PCB-1	Main Printed Circuit Board
PCB-2	Relay Printed Circuit Board
X2	High Speed Terminal
X3	Medium Speed Terminal
X4	Low Speed Terminal
X5	S-Low Speed Terminal
RCS	Remote Control Switch
RSW1	Indoor Unit no. Settings
RSW2	Refrigerant Cycle no. Settings
TB	Terminal Board
TF	Transformer
THM1	Inlet Air Thermistor
THM2	Outlet Air Thermistor
THM3	Liquid Pipe Thermistor
THM5	Gas Pipe Thermistor
◎	Terminals
-⊠-	Close-end Connector
※	Field Supplied
------	Field Wiring
------	Earth Wiring
——	Factory Wiring

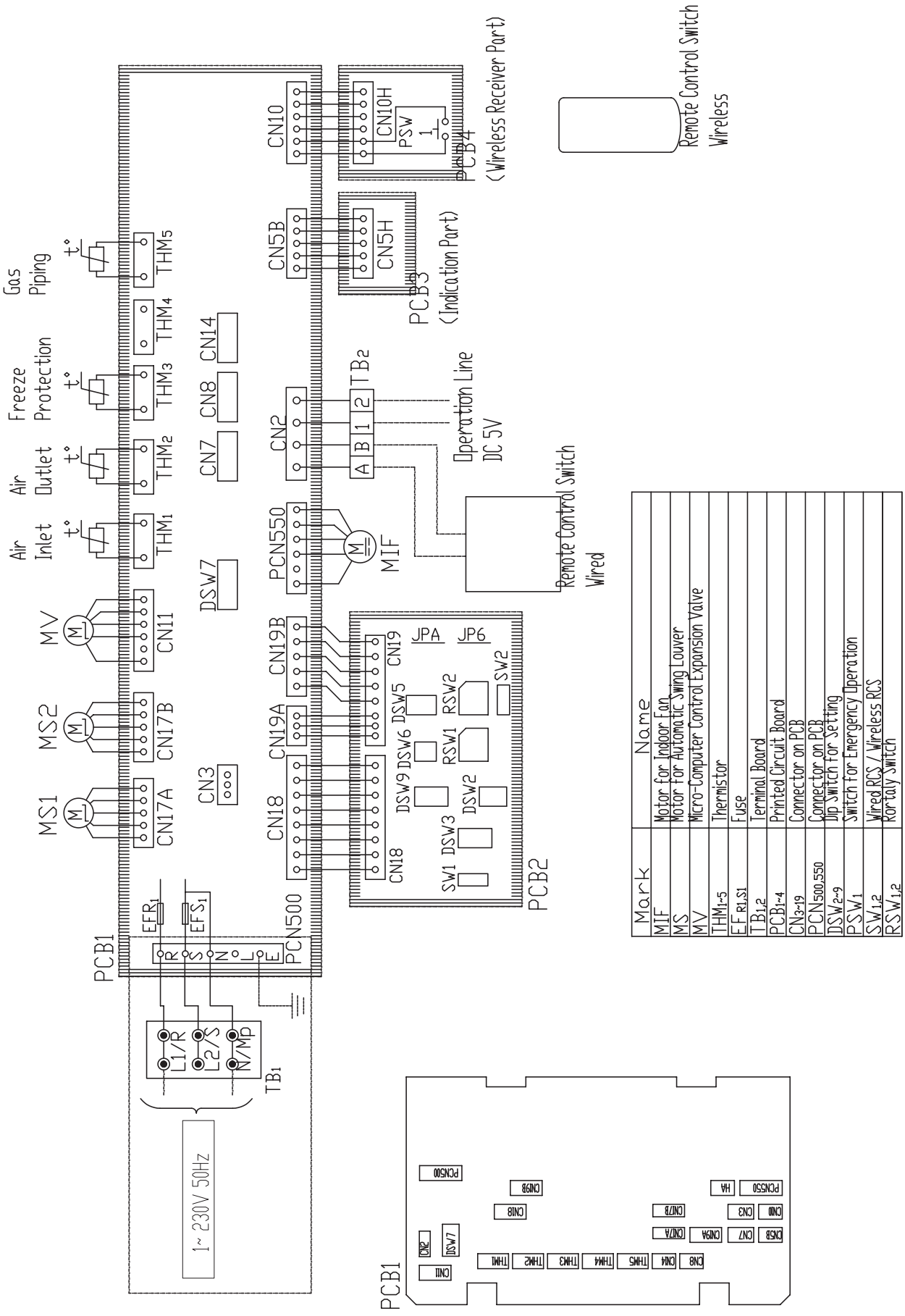
◆ Wiring diagrams for the RPK-(0.8-1.5)FSN3M indoor units



◆ Wiring diagrams for the RPK-(0.8-1.5)FSNH3M indoor units

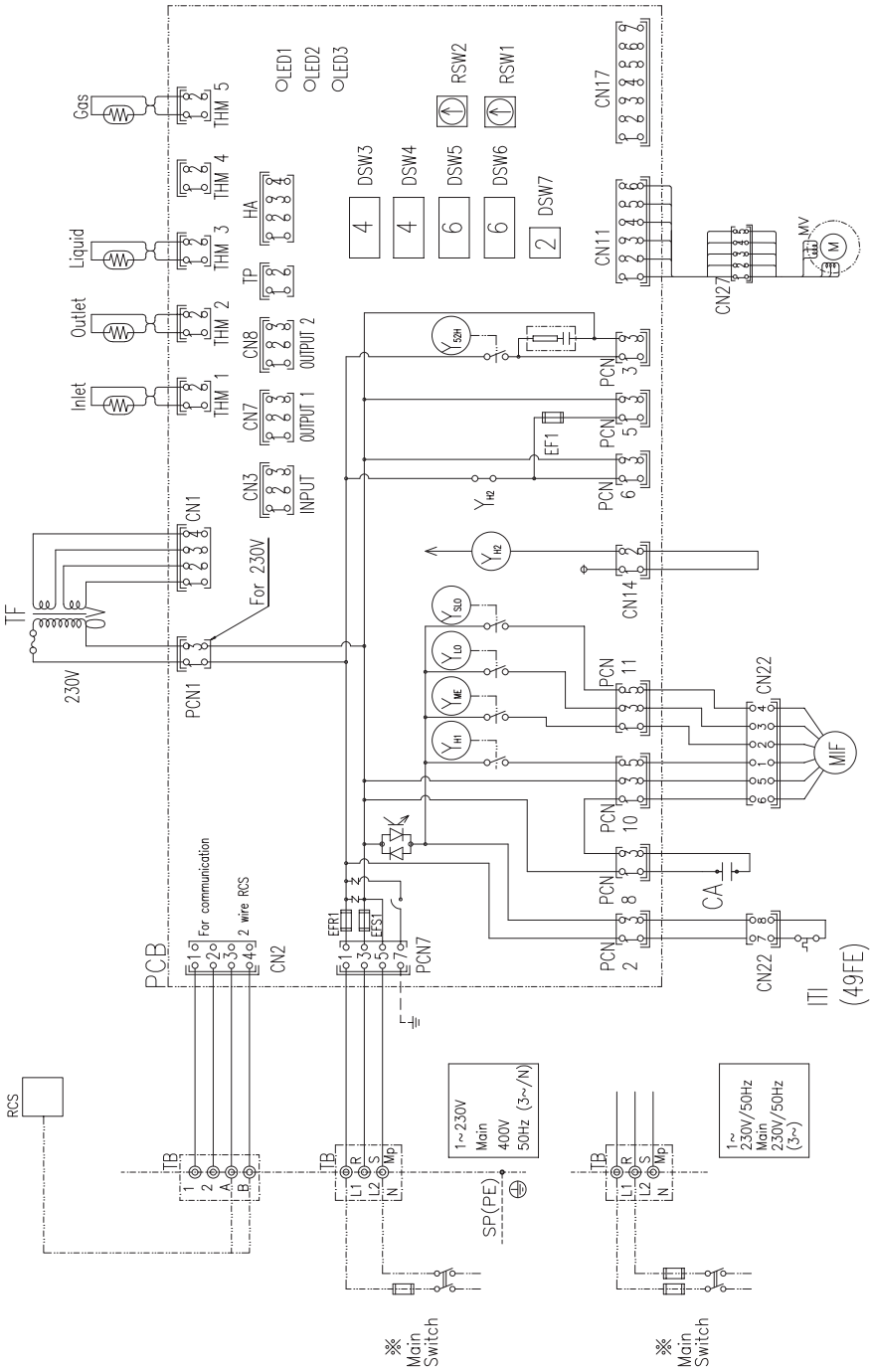


◆ **Wiring diagram for the RPK-(2.0-4.0)FSN3M indoor unit**

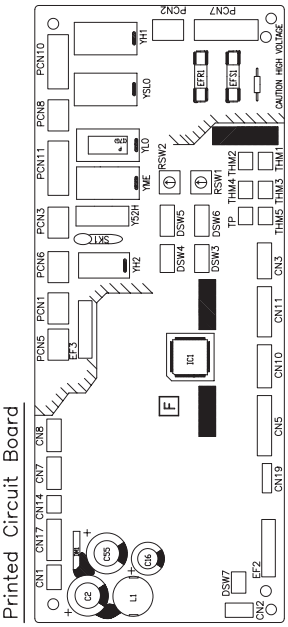


Mark	Name
MIF	Motor for Indoor Fan
MS	Motor for Automatic Swing Louver
MV	Micro-Computer Control Expansion Valve
THM1~5	Thermistor
EF R1,S1	Fuse
TB1,2	Terminal Board
PCB1~4	Printed Circuit Board
CN3~19	Connector on PCB
PCN500,550	Connector on PCB
DSW2~9	Dip Switch for Setting
PSW1	Switch for Emergency Operation
SW1,2	Wired RCS / Wireless RCS
RSW1,2	Rotary Switch

◆ Wiring diagrams for the RPF(I)-(1.0-2.5)FSN2E indoor units



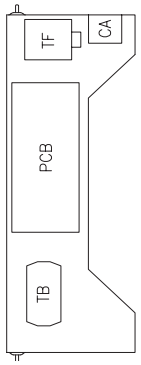
Printed Circuit Board



Mark Table

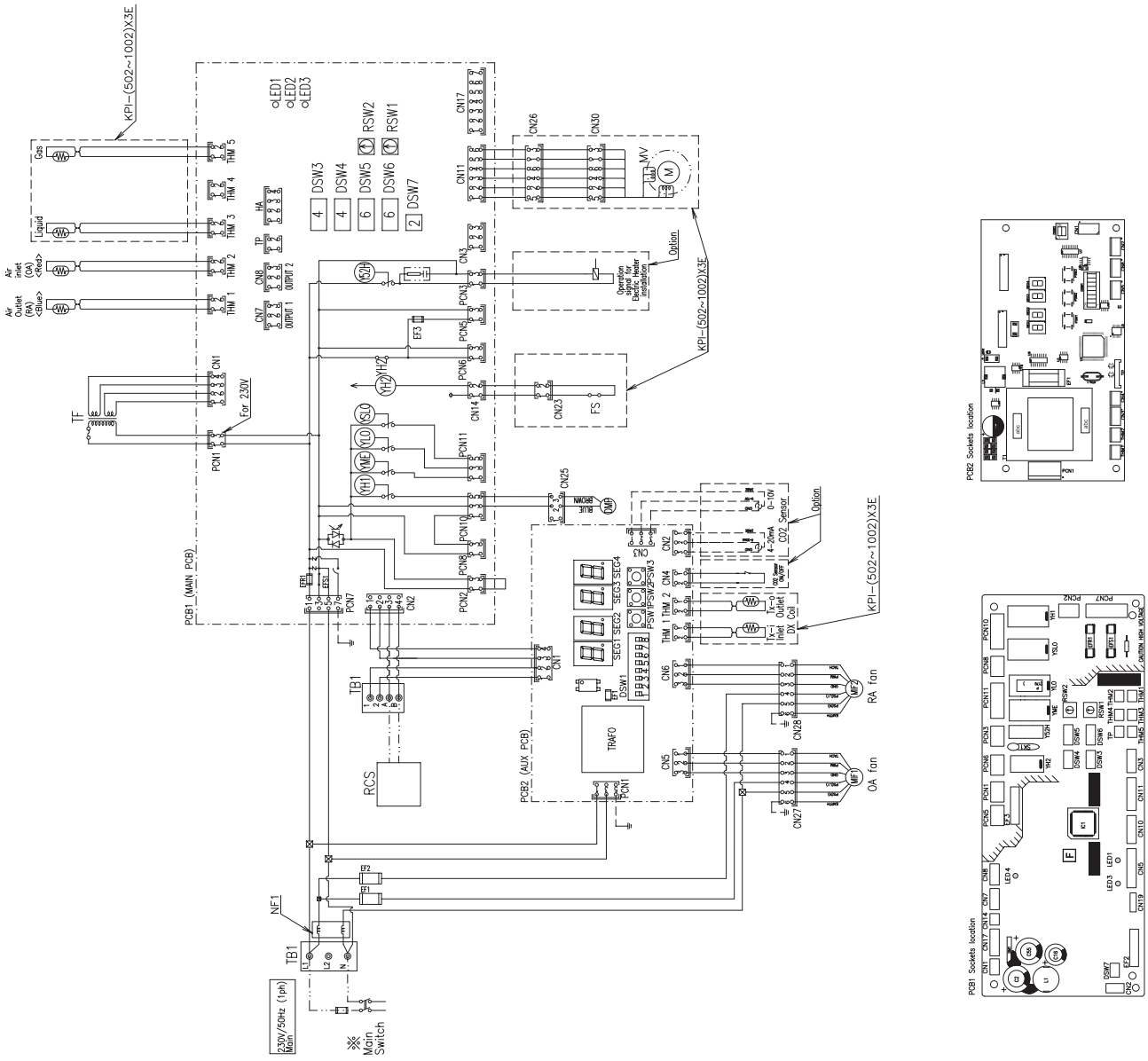
Mark	Part Name
CA	Capacitor for Indoor Fan
CN1~n	Connectors
DSW3	Unit Capacity Code
DSW4	Model
DSW5	Refrigerant Cycle n°
DSW6	Unit Code
DSW7	Fuse Recover/Remot Controller Selector
EFR1	Fuse
EFS1	Fuse
ITI	Internal Thermostat for Indoor Fan Motor
LD1~3	Alarm Code
MIF	Motor for Indoor Fan
MV	Expansion valve
PCB	Printed Circuit Board
RCS	Remote Control Switch
RSW1	Indoor Unit no. Settings
RSW2	Refrigerant Cycle n°
SSW	Slide Switch
TB	Terminal Board
THM1	Inlet Air Thermistor
THM2	Outlet Air Thermistor
THM3	Liquid Pipe Thermistor
THM5	Gas Pipe Thermistor
TF	Transformer
YME	Relay for ME Fan Motor Tap
YLO	Relay for LO Fan Motor Tap
YSLO	Relay for SLO Fan Motor Tap
YH1	Relay for Hi Fan Motor Tap
◎	Terminals
———	Factory Wiring
-------	Earth Wiring
-·-·-·-	Field Wiring
※	Field Connection

Electrical Control Box of Indoor Unit



4.3.2 Wiring diagrams for complementary systems

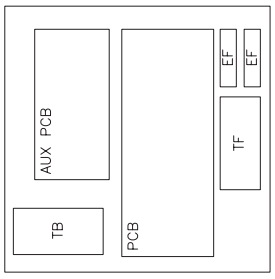
◆ KPI-(252-2002)(E/H)2E energy / heat recovery unit and KPI-(502-1002)XE3 active unit



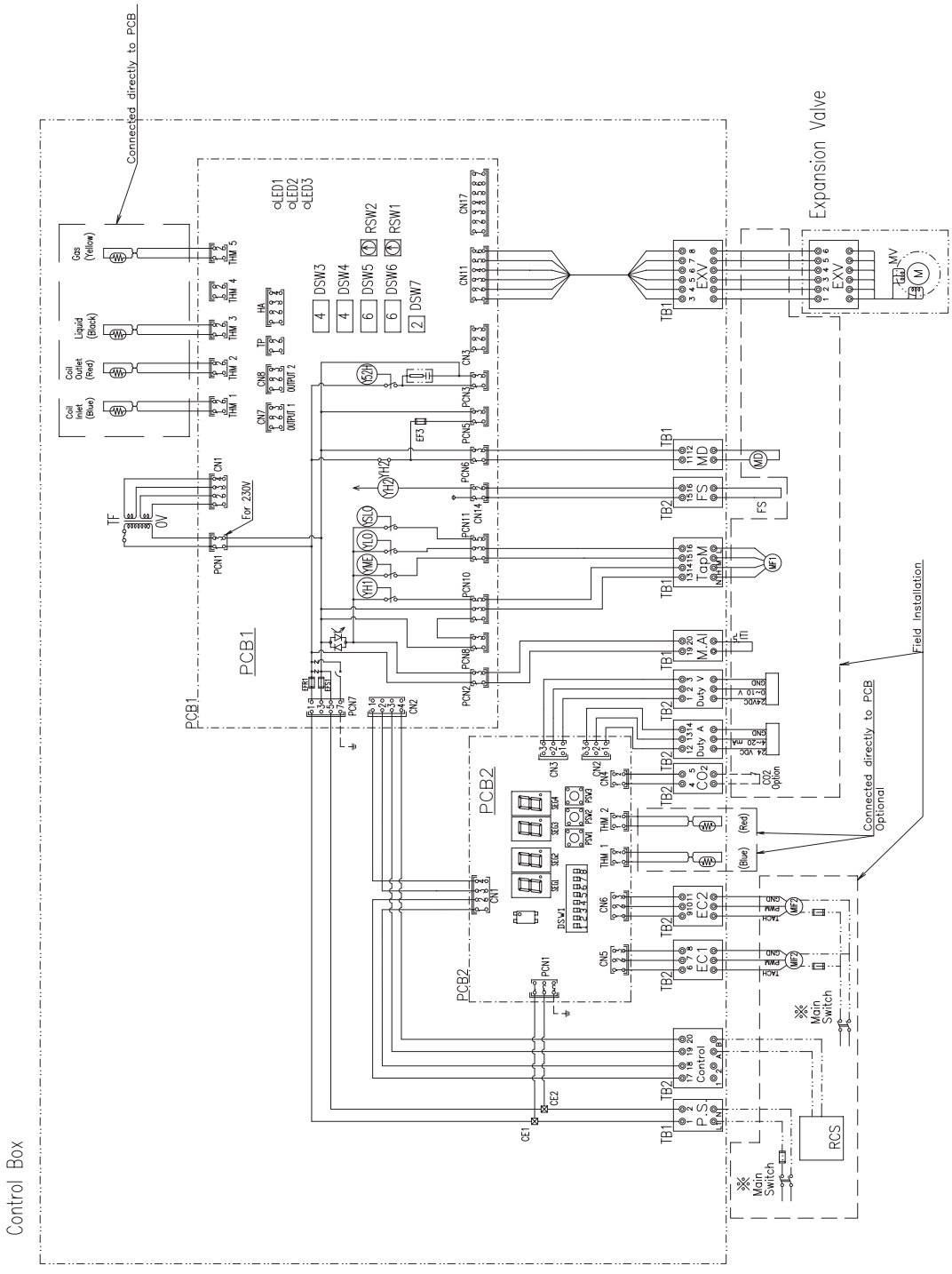
Mark Table

Mark	Part Name
DSW1~8	Dip Switch for Setting
RSW1,2	Rotary Switch for Setting
EF1,2	
EFR1	Fuse
EF1	Fuse
PCNn	Power Connector
CNn	Connector
SEG1	Display
MIF1	Motor for Fan
LED1~4	Alarm Code
PCB1,2	Printed Circuit Board
RCS	Remote Control Switch
TB	Terminal Board
TF	Transformer
THM1	Thermistor
DMP	Damper
PSW1	Push Button
NF1	Noise Filter
MV	Expansion Valve
OA	Outdoor Air
RA	Return Air
◎	Terminals
☒	Close-end Connector
※	Field Supplied
----------	Field Wiring
———	Earth Wiring
———	Factory Wiring

Electrical Box Lay-out



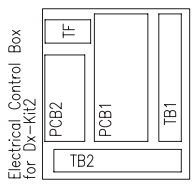
◆ DX-Interface EXV-(2.0-10.0)E1



Mark Table

Mark	Part Name
CN∗	Connector
PCN	Power Connector
DSW1∼4	Dip Switch for Setting
EFR1	Fuse
LED1∼4	Alarm Code
PCB1,2	Printed Circuit Board
RCS	Remote Control Switch
RSW1,2	Rotary Switch for Setting
TB1,2	Terminal Board
TF	Transformer
THM1∼5	Thermistor
YH2	Relay for Drain Motor
YH1	Relay for HI Fan Motor Tap
YME	Relay for ME Fan Motor Tap
YLO	Relay for LO Fan Motor Tap
YSLO	Relay for SLO Fan Motor Tap
Y52H	Relay for Electric Heater
SEG1∼7	Segment Display
PSW1∼3	Push Button Motor
MD	Drain Pump
DMP	Damper
MF1	Top Fan Motor
MF2	EC Fan Motor
MV	Expansion Valve
ITI	Internal Thermostat for Indoor Fan Motor

Electrical Control Box for Dx-Kit2



5. Control system

Index

5.1 Device control system

Purpose of control	Use		
	Cooling operation	Heating operation	Defrost mode
Compressor control frequency with Inverter	Frequency control is determined with the following parameters: • Difference between the air inlet temperature and the set air temperature. • Calculate the width of the change using the amount of the change.	Frequency control is determined with the following parameters: • Difference between the air inlet temperature and the set air temperature. • Calculate the width of the change using the amount of the change.	Fixed frequency (stop the compressor for 30 s. once defrost is complete).
Degree of opening of the outdoor unit expansion valve	Fully open	The control range for the degree of opening of the expansion valve is determined to optimise the temperature at the top of the compressor.	Fully open
Degree of opening of the indoor unit expansion valve	The control range for the degree of opening of the expansion valve is determined to optimise the difference in temperature of the I.U. gas pipe (Tg) - the temperature of the I.U. liquid piping (Tl).	Degree of opening specified at the start of normal control. Then controlled to optimise the temperature of the I.U. liquid pipe (Tl).	Specified degrees of opening controlled by the temperature at the top of the compressor. (Td).
Outdoor fan	The fan speed operates to control the stabilisation of the O.U. liquid pipe temperature (Te); (Te) stabilisation control	The fan speed is controlled in line with the temperature of the O.U. liquid pipe and the temperature at the top of the compressor.	Fan stoppage.
4-way valve (RVR)	Off	On	Off
Solenoid valve (SVS) (Balanced pressure valve)	Enabled on starting (4-10)H(V) RNSE	Enabled on starting (4-10)H(V) RNSE	Enabled by defrost
High/low pressure balance	• Control by the indoor expansion valve (2-3 HVRN(1)(S) • SVA activation before the compressor is started (4-10)H(V)RNSE	• Control by the outdo-or expansion valve (2-3 HVRN(1)(S) • SVA activation before the compressor is started (4-10)H(V)RNSE	

I.U.: indoor unit.

Tc/Te: condensing temperature / evaporating temperature.

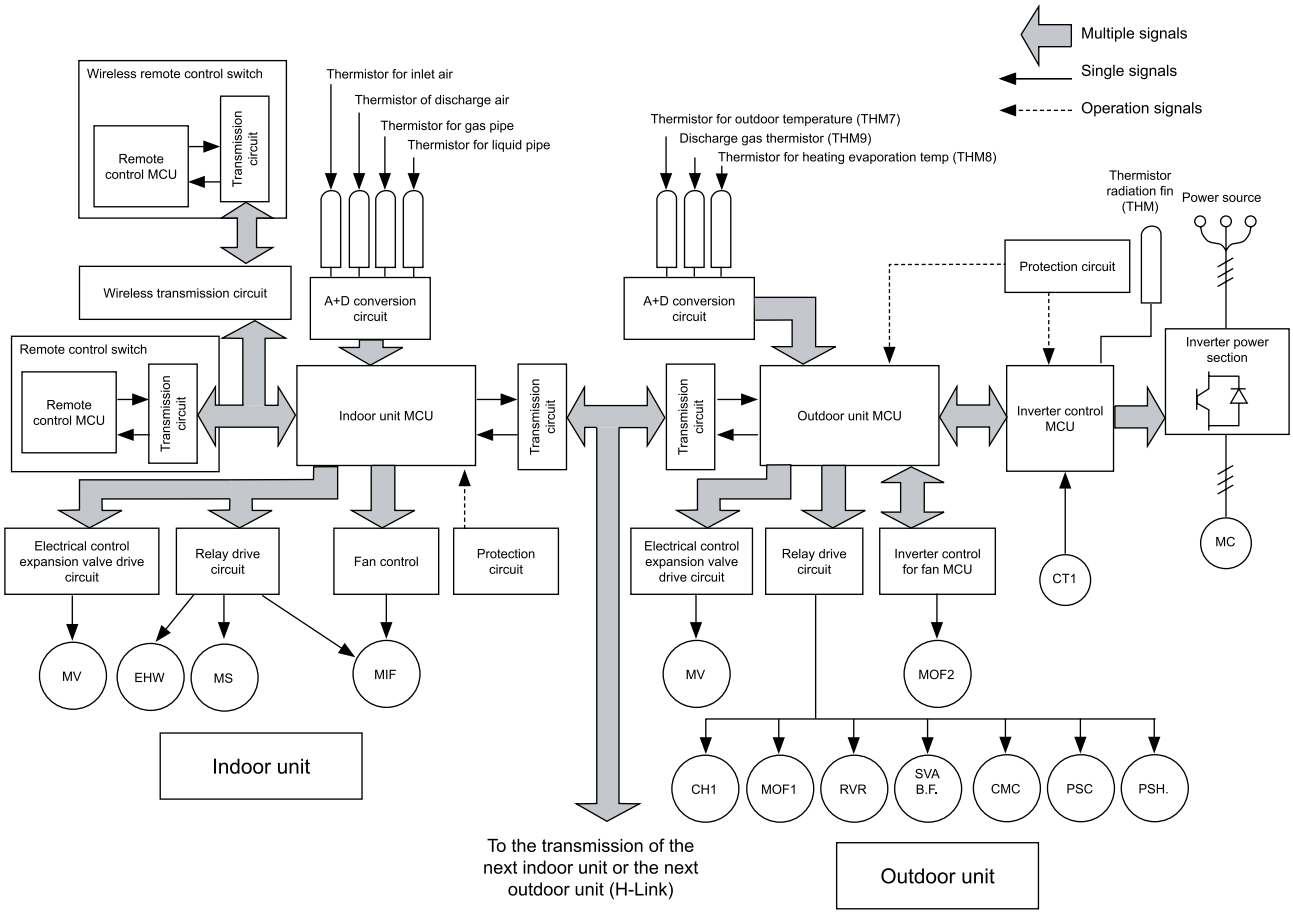
Td: Discharge temperature.

Tl: liquid temperature.

Tg: gas temperature.

Cap: capacity.

Temp.: condenser temperature.



Identifier	Name
MC	Motor (for the compressor)
MIF	Motor (for the indoor fan)
MOF1, 2	Motor (for the outdoor fan)
MS	Motor (for the automatic louver)
MV	Electronic expansion valve
CMC	Magnetic compressor contactor
CH	Crankcase heater
CT1	Current transformer
PSH	High pressure switch
RVR	4-way valve
SVA, B, F	Solenoid valve
PSC	Control pressure switch
EHW	Electric heater
MCU	Microcomputer

5.1.1 Printed circuit boards for RCI-FSN3 indoor units

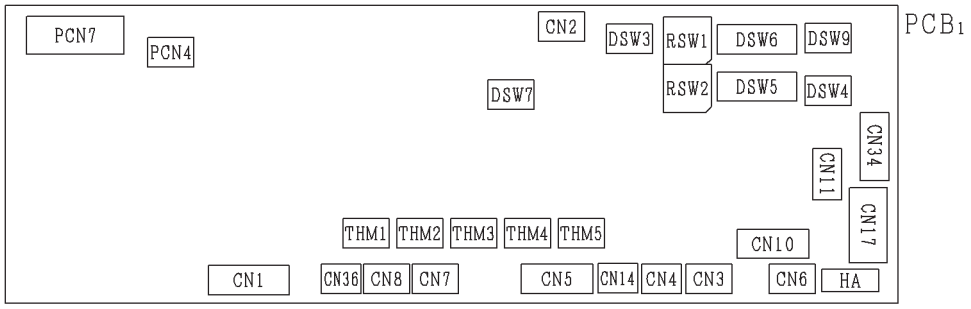
CAUTION

Turn off the power supply before setting the DIP switches. If not, the settings will not be valid.

NOTE

- ***The symbol "■" indicates the position of the DIP switches. The figures show the setting before transmission or after selection.***
- ***If the "■" mark is not displayed, this indicates that the position of the pin is not affected.***

The indoor unit PCB operates with five types of DIP switches and two rotary switches. The position is as follows:



LED indicator		
LED1	Red	This LED indicates the transmission status between the indoor unit and the remote control.
LED3	Yellow	This LED indicates the transmission status between the indoor unit and the outdoor unit.
LED4	Red	PCB power supply

Connector indication	
PCN4	Not used
PCN7	Terminal board 1
THM1	Air inlet thermistor
THM2	Air outlet thermistor
THM3	Freeze protection thermistor
THM4	Not used
THM5	Gas piping thermistor
CN1	Motor for indoor fan
CN2	Terminal board 2
CN3	Not used
CN4	Not used
CN5	Not used
CN6	Not used
CN7	Not used
CN8	Not used
CN10	Air panel PCB
CN11	Micro-computer control expansion valve
CN14	Float switch
CN17	Air panel motor for automatic swing louver
CN34	Not used

Connector indication	
CN36	Motor for drain discharge mechanism
EFR1	PCB1 fuse
EFS1	PCB1 fuse
HA	Not used

Switch indication	
DSW3	Capacity code
DSW4	Unit model code
DSW5, RSW2	Refrigerant cycle number
DWS6, RSW1	Indoor unit number settings
DSW7	Fuse re-establishing
DSW9	Not used

5.1.2 Printed circuit boards for RCI-(1.0-6.0)FSN3Ei

CAUTION

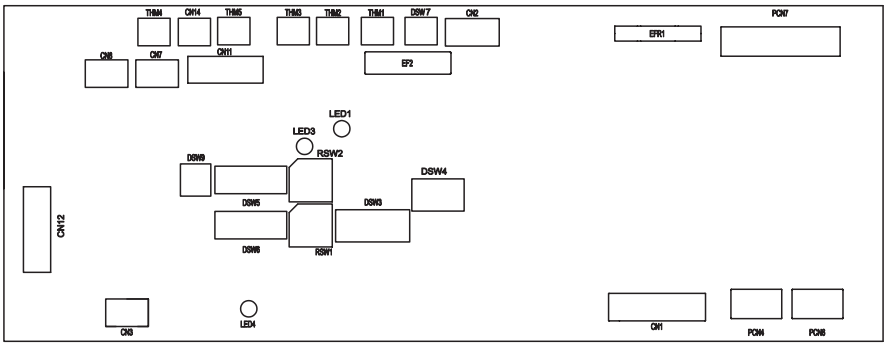
Turn off the power supply before setting the DIP switches. If not, the settings will not be valid.

NOTE

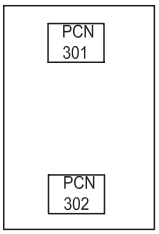
- ***The symbol "■" indicates the position of the DIP switches. The figures show the setting before transmission or after selection.***
- ***If the ■ mark is not displayed, this indicates that the position of the pin is not affected.***

The indoor unit PCB operates with five types of DIP switches and two rotary switches. The position is as follows:

PCB 1



PCB 2



LED indicator		
LED1	Red	This LED indicates the transmission status between the indoor unit and the remote control.
LED3	Yellow	This LED indicates the transmission status between the indoor unit and the outdoor unit.
LED4	Red	PCB power supply

Connector indication	
PCN4	Not used
PCN6	Drain pump
PCN7	Printed circuit board 2
PCN301	Terminal board
PCN302	Printed circuit board 1
THM1	Air inlet thermistor

Connector indication	
THM2	Air outlet thermistor
THM3	Liquid pipe thermistor
THM4	Not used
THM5	Gas pipe thermistor
CN1	Motor for fan indoor
CN2	Terminal board
CN3	Not used
CN7	Not used
CN8	Not used
CN11	Expansion valve
CN12	Air panel motor for auto-louver
CN14	Float switch
EFR1	PCB1 fuse
EF2	Not used

Switch indication	
DSW3	Capacity code
DSW4	Unit model code
DSW5, RSW2	Refrigerant cycle number
DWS6, RSW1	Indoor unit number settings
DSW7	Fuse re-establishing
DSW9	Not used

5.1.3 Printed circuit boards for RCIM-FSN2 indoor units

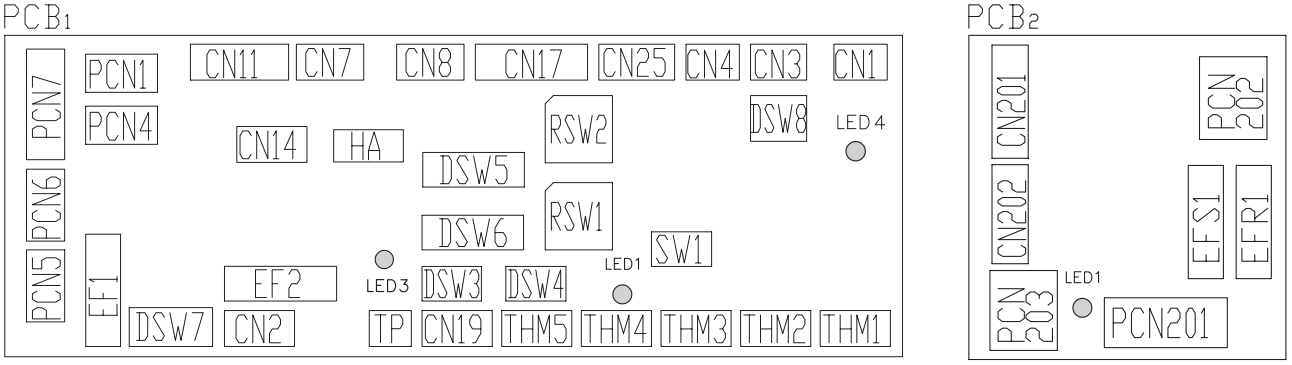
CAUTION

Turn off the power supply before setting the DIP switches. If not, the settings will not be valid.

NOTE

- ***The symbol "■" indicates the position of the DIP switches. The figures show the setting before transmission or after selection.***
- ***If the ■ mark is not displayed, this indicates that the position of the pin is not affected.***

The indoor unit PCB operates with five types of DIP switches and two rotary switches. The position is as follows:



LED indicator		
LED1	Red	This LED indicates the transmission status between the indoor unit and the remote control.
LED3	Yellow	This LED indicates the transmission status between the indoor unit and the outdoor unit.
LED4	Red	PCB power supply

Connector indication	
PCN1	220-240V transformer
PCN4	Not used
PCN5	Not used
PCN6	Motor for drain discharge mechanism
PCN7	Printed circuit board 2
PCN201	Terminal board 1
PCN202	Printed circuit board 1
PCN203	Motor for indoor fan
THM1	Air inlet thermistor
THM2	Air outlet thermistor
THM3	Freeze protection thermistor
THM4	Not used
THM5	Gas piping thermistor
CN1	24V transformer
CN2	Terminal board 2
CN3	Not used
CN4	Not used
CN7	Not used
CN8	Not used
CN11	Micro-computer control expansion valve
CN14	Float switch
CN17	Air panel
CN19	Printed circuit board 2
CN25	Not used
CN201	Motor for indoor fan
CN202	Printed circuit board 1
EFR1	PCB2 fuse
EFS1	PCB2 fuse
EF1	PCB1 fuse
EF2	Not used
TP	Not used
HA	Not used

Switch indication	
DSW3	Capacity code
DSW4	Unit model code
DSW5, RSW2	Refrigerant cycle number
DWS6, RSW1	Indoor unit number settings
DSW7	Fuse re-establishing
DSW8	Not used

5.1.4 Printed circuit boards for RCD indoor units

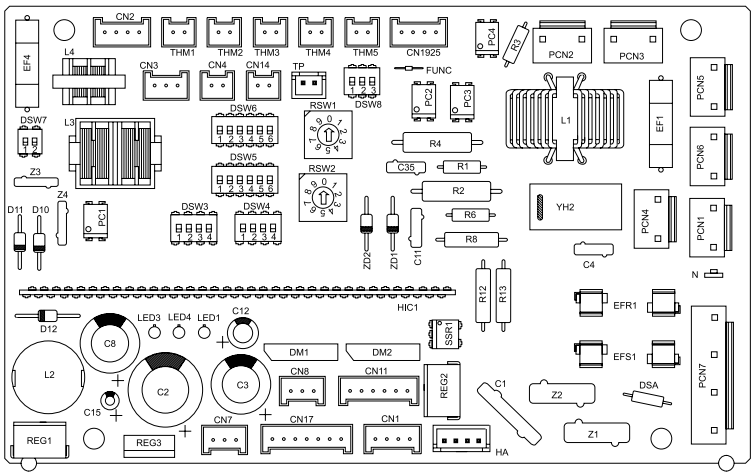
CAUTION

Turn off the power supply before setting the DIP switches. If not, the settings will not be valid.

NOTE

- ***The symbol "■" indicates the position of the DIP switches. The figures show the setting before transmission or after selection.***
- ***If the ■ mark is not displayed, this indicates that the position of the pin is not affected.***

The indoor unit PCB operates with five types of DIP switches and two rotary switches. The position is as follows:



LED indicator		
LED1	Red	This LED indicates the transmission status between the indoor unit and the remote control.
LED3	Yellow	This LED indicates the transmission status between the indoor unit and the outdoor unit.
LED4	Red	PCB power supply

Connector indication	
PCN1	220 V transformer
PCN5	Electric heater for dew protection
PCN6	Drain pump motor
PCN7	Power supply (1-R, 3-S)
PCN201	Power supply (1-R, 3-S)
PCN202	Power supply (1-R, 3-S)
PCN203	DC motor control
THM1	Air inlet thermistor
THM2	Air outlet thermistor
THM3	Liquid pipe thermistor
THM4	Remote thermistor
THM5	Gas pipe thermistor
CN1	Transformer (pins 1-2: 17.3 V/pins 3-4: 20.8 V)
CN2	Outdoor unit H-LINK II control circuit
CN3	Optional input functions
CN4	Not used
CN7	Optional output functions

Connector indication	
CN8	Optional output functions
CN11	Expansion valve control
CN14	Float switch
CN17	Swing louver motor 4
CN201	PCB1 connection
EFS1	PCB2 fuse
EFR1	PCB2 fuse
EF1	PCB1 fuse
EF4	PCB1 fuse

Switch indication	
DSW3	Capacity code
DSW4	Unit model code
DSW5, RSW2	Refrigerant cycle number
DSW7	Fuse re-establishing
DWS6, RSW1	Indoor unit number settings

5.1.5 Printed circuit board for RPC, RPF(I), units

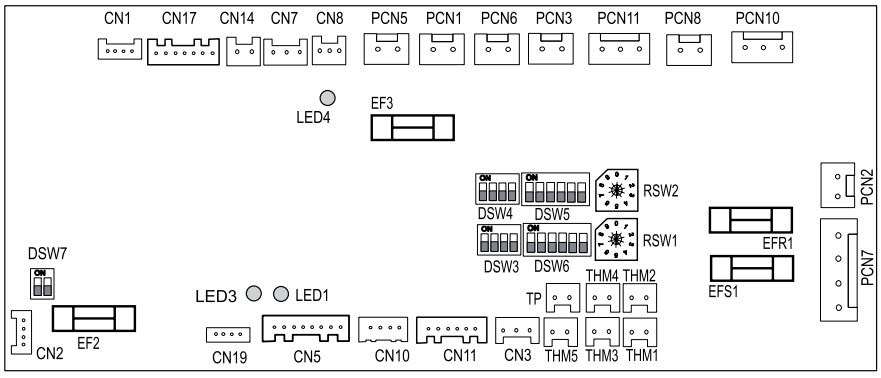
CAUTION

Turn off the power supply before setting the DIP switches. If not, the settings will not be valid.

NOTE

- ***The symbol "■" indicates the position of the DIP switches. The figures show the setting before transmission or after selection.***
- ***If the "■" mark is not displayed, this indicates that the position of the pin is not affected.***

The indoor unit PCB operates with four types of DIP switches, a slide switch and a rotary switch. The position is as follows:



LED indicator		
LED1	Red	This LED indicates the transmission status between the indoor unit and the remote control.
LED3	Yellow	This LED indicates the transmission status between the indoor unit and the outdoor unit.
LED4	Green	PCB power supply

Connector indication	
PCN1	220 V transformer
PCN2	Indoor fan motor internal thermostat

Connector indication	
PCN3	Not used
PCN5	Not used
PCN6	Drain pump motor (RPI)
PCN7	Power supply (1-R, 2-S, 3-N, 4-E)
PCN8	Capacitor
PCN10	Fan motor power supply
PCN11	Fan motor speed control
PCN301	Terminal board connections
PCN302	PCB2 connection
THM1	Air inlet thermistor
THM2	Air outlet thermistor
THM3	Liquid pipe thermistor
THM4	Remote thermistor (THM-R2 AE)
THM5	Gas pipe thermistor
TP	Not used
EF3	Fuse
EF2	Fuse
EFS1	Fuse
EFR2	Fuse
CN1	Transformer (pins 1-2: 17.3 V/pins 3-4: 20.8 V)
CN2	Outdoor unit H-LINK control circuit
CN3	Optional input functions (only 2)
CN7	Optional output functions (only 2)
CN8	Optional output functions (no. 1, no. 2, only 1)
CN11	Expansion valve control
CN12	Remote control jumper connection for several units
CN13	SW remote control
CN14	Float switch
CN17	Swing louver motor

Switch indication	
DSW3	Capacity code
DSW4	Unit model code
DSW5, RSW2	Refrigerant cycle number
DSW7	Fuse recovery and remote control selector
DWS6, RSW1	Indoor unit number settings

5.1.6 Printed circuit board for RPI(M)-(0.8-6.0)FSN4E

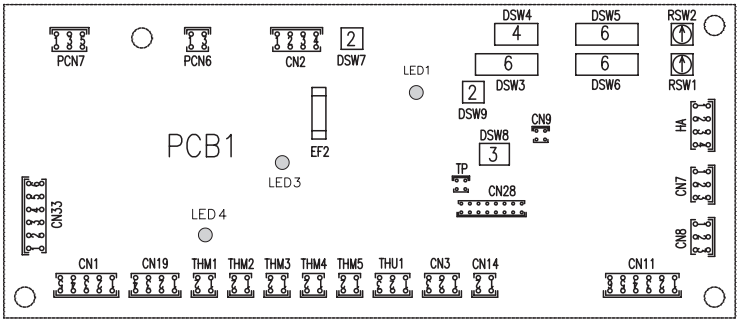
CAUTION

Turn off the power supply before setting the DIP switches. If not, the settings will not be valid.

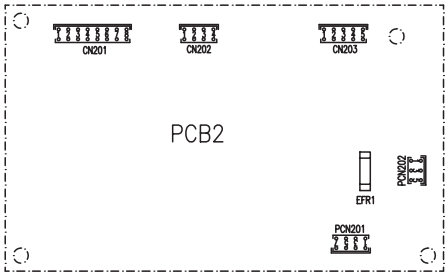
NOTE

- ***The symbol "■" indicates the position of the DIP switches. The figures show the setting before transmission or after selection.***
- ***If the "■" mark is not displayed, this indicates that the position of the pin is not affected.***

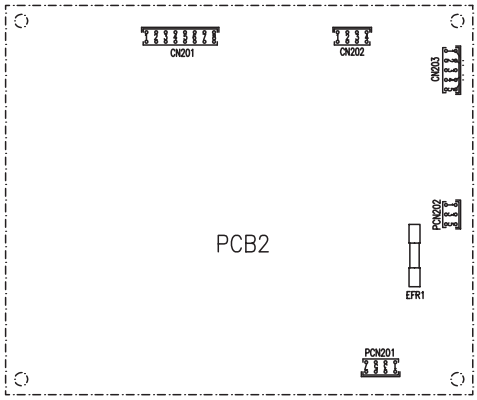
The indoor unit PCB operates with four types of DIP switches, a slide switch and a rotary switch. The position is as follows:



For RPI-(0.8-2.0)FSN4E



For RPI-(2.5-6.0)FSN4E



PCB1 LED indicator		
LED1	Red	This LED indicates the transmission status between the indoor unit and the remote control.
LED3	Yellow	This LED indicates the transmission status between the indoor unit and the outdoor unit.
LED4	Red	PCB power supply
PCB2 LED indicator		
LED1	Yellow	PCB power supply
Connector indication		
PCN6	Drain pump	
PCN7	Printed circuit board 2	
PCN201	Terminal board	
PCN202	Printed circuit board 1	

Connector indication	
THM1	Air inlet thermistor
THM2	Air outlet thermistor
THM3	Liquid pipe thermistor
THM4	Not used
THM5	Gas pipe thermistor
THU1	Not used
CN1	Printed circuit board 2
CN2	Terminal board
CN3	Not used
CN7	Not used
CN8	Not used
CN9	Not used
CN11	Expansion valve
CN14	Float switch
CN19	Printed circuit board 2
CN28	Not used
CN33	Not used
CN201	Motor for indoor fan
CN202	Printed circuit board 1
CN203	Printed circuit board 1
EFR1	PCB2 fuse
EF2	PCB1 fuse
HA	Not used
TP	Not used

Switch indication	
DSW3	Capacity code
DSW4	Unit model code
DSW5, RSW2	Refrigerant cycle number
DWS6, RSW1	Indoor unit number settings
DSW7	Fuse re-establishing
DSW8	Additional functions
DSW9	0.6HP capacity setting

5.1.7 Printed circuit board for RPI-(8.0/10.0) FSN3E units

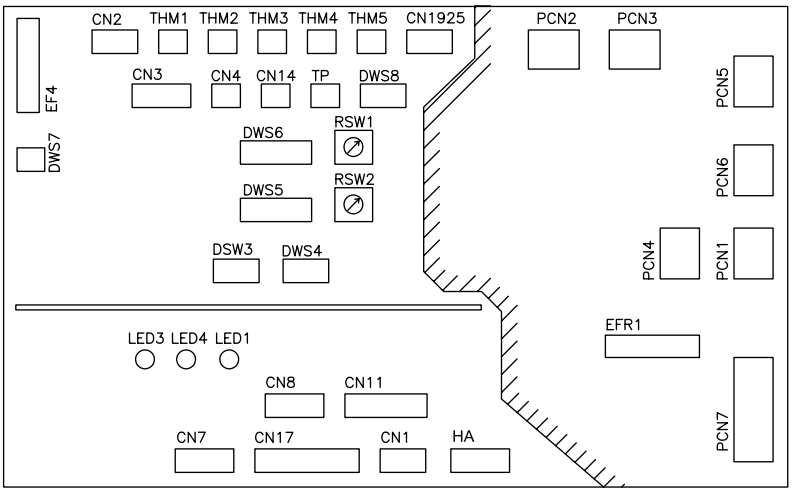
CAUTION

Turn off the power supply before setting the DIP switches. If not, the settings will not be valid.

NOTE

- ***The symbol "■" indicates the position of the DIP switches. The figures show the setting before transmission or after selection.***
- ***If the "■" mark is not displayed, this indicates that the position of the pin is not affected.***

The indoor unit PCB operates with four types of DIP switches, a slide switch and a rotary switch. The position is as follows:



LED indicator		
LED1	Red	This LED indicates the transmission status between the indoor unit and the remote control.
LED3	Yellow	This LED indicates the transmission status between the indoor unit and the outdoor unit.
LED4	Green	PCB power supply

Connector indication	
PCN1	220 V transformer
PCN2	Indoor fan motor internal thermostat
PCN3	Fan stoppage alarm signal
PCN6	Drain pump motor (RPI)
PCN7	Power supply (1-R, 2-S, 3-N, 4-E)
THM1	Air inlet thermistor
THM2	Air outlet thermistor
THM3	Liquid pipe thermistor
THM4	Remote thermistor (THM-R2 AE)
THM5	Gas pipe thermistor
TP	Not used
EFR1	Fuse
EF4	Fuse
CN1	Transformer (pins 1-2: 17.3 V/pins 3-4: 20.8 V)
CN2	Outdoor unit H-LINK control circuit
CN3	Optional input functions (only 2)
CN7	Optional output functions (only 2)
CN8	Optional output functions (no. 1, no. 2, only 1)
CN11	Expansion valve control
CN14	Float switch (RPI)
CN17	Swing louver motor

Switch indication	
DSW3	Capacity code
DSW4	Unit model code
DSW5, RSW2	Refrigerant cycle number
DSW7	Fuse recovery and remote control selector
DWS6, RSW1	Indoor unit number settings
DWS8	Not used

5.1.8 Printed circuit board for RPK-FSN(H)3M units

◆ **For RPK-(0.8-1.5)FSN(H)3M**

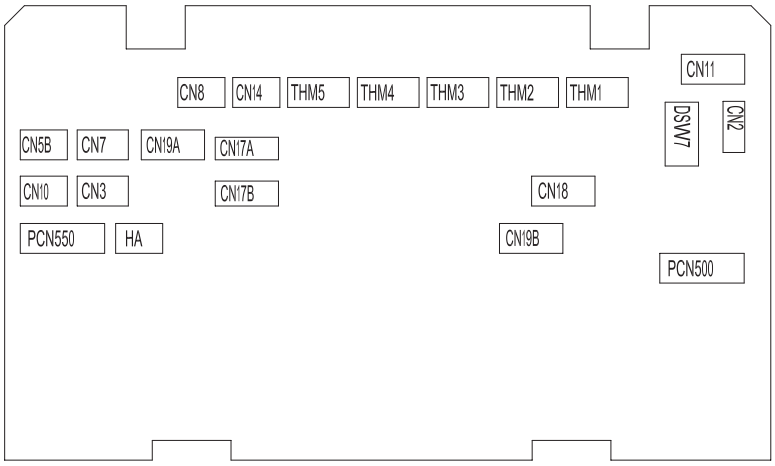
CAUTION

Turn off the power supply before setting the DIP switches. If not, the settings will not be valid.

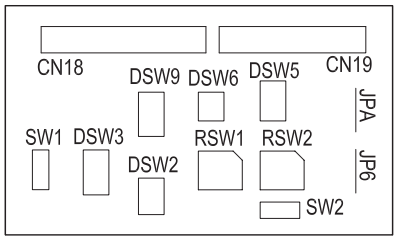
NOTE

- ***The symbol "■" indicates the position of the DIP switches. The figures show the setting before transmission or after selection.***
- ***If the ■ mark is not displayed, this indicates that the position of the pin is not affected.***

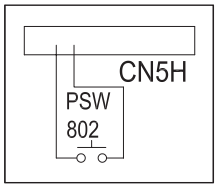
PCB1



PCB2



PCB3



LED indicator		
LED1	Red	This LED indicates the transmission status between the indoor unit and the remote control.
LED3	Yellow	This LED indicates the transmission status between the indoor unit and the outdoor unit.
LED4	Green	PCB power supply

Connector indication	
PCN500	Terminal board 1
PCN550	Motor for indoor fan
THM1	Air inlet thermistor
THM2	Air outlet thermistor
THM3	Freeze protection thermistor
THM4	Not used
THM5	Gas piping thermistor
CN2	Terminal board 2
CN3	Not used
CN5A	Printed circuit board 3
CN5B	Not used
CN7	Not used
CN8	Not used

Connector indication	
CN10	Not used
CN11	Micro-computer control expansion valve
CN14	Not used
CN17A	Motor for automatic swing louver
CN17B	Not used
CN18	Printed circuit board 2
CN19A	Printed circuit board 2
CN19B	Printed circuit board 2
HA	Not used

Switch indication	
DSW3	Capacity code
DSW4	Unit model code
DSW5, RSW2	Refrigerant cycle number
DWS6, RSW1	Indoor unit number settings
DSW7	Fuse re-establishing
DSW9	Not used

◆ For RPK-(2.0-4.0)FSN3M

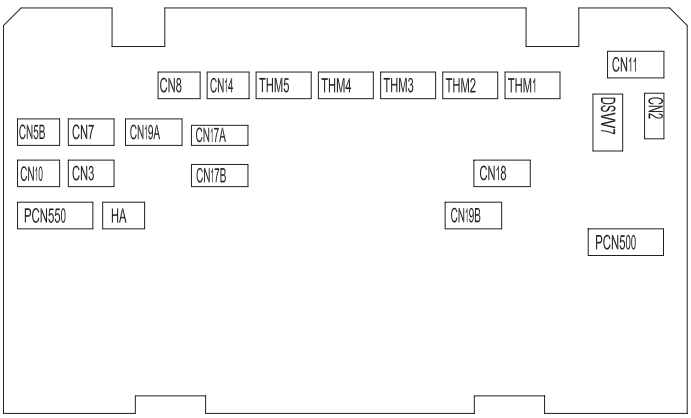
CAUTION

Turn off the power supply before setting the DIP switches. If not, the settings will not be valid.

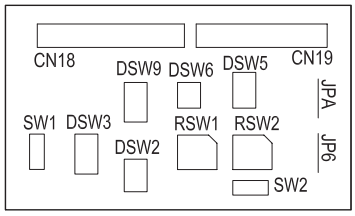
NOTE

- ***The symbol "■" indicates the position of the DIP switches. The figures show the setting before transmission or after selection.***
- ***If the ■ mark is not displayed, this indicates that the position of the pin is not affected.***

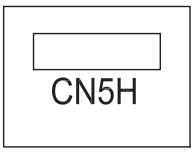
PCB1



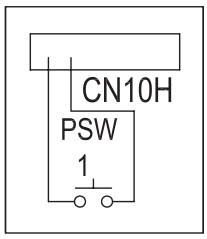
PCB2



PCB3



PCB4



LED indicator		
LED1	Red	This LED indicates the transmission status between the indoor unit and the remote control.
LED3	Yellow	This LED indicates the transmission status between the indoor unit and the outdoor unit.
LED4	Green	PCB power supply

Connector indication	
PCN500	TB1
PCN550	Motor for indoor fan
THM1	Air inlet thermistor
THM2	Air outlet thermistor
THM3	Freeze protection thermistor
THM4	Not used
THM5	Gas piping thermistor
CN2	TB2
CN3	Not used
CN5A	Not used
CN5B	PCB3
CN7	Not used
CN8	Not used
CN10	PCB4
CN11	Micro-computer control expansion valve
CN14	Not used
CN17A	Motor for automatic swing louver
CN17B	Motor for automatic swing louver
CN18	PCB2
CN19A	PCB2
CN19B	PCB2
HA	Not used

Switch indication	
DSW3	Capacity code
DSW4	Unit model code
DSW5, RSW2	Refrigerant cycle number
DWS6, RSW1	Indoor unit number settings
DSW7	Fuse re-establishing
DSW9	Not used

5.1.9 Printed circuit board for KPI complementary systems

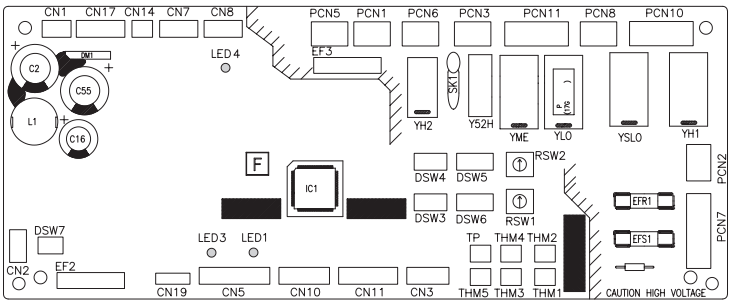
CAUTION

Turn off the power supply before setting the DIP switches. If not, the settings will not be valid.

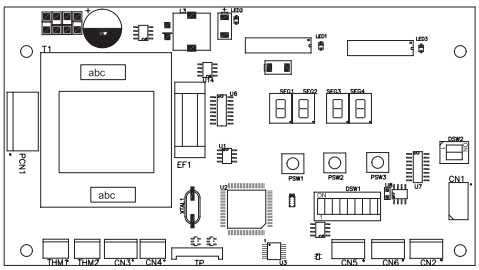
NOTE

- ***The symbol "■" indicates the position of the DIP switches. The figures show the setting before transmission or after selection.***
- ***If the "■" mark is not displayed, this indicates that the position of the pin is not affected.***

PCB1 Sockets location



PCB2 Sockets location



PCB1 LED indicator		
LED1	Red	This LED indicates the transmission status between the indoor unit and the remote control.
LED3	Yellow	This LED indicates the transmission status between the indoor unit and the outdoor unit.
LED4	Green	PCB power supply

PCB2 LED indicator		
LED1	Yellow	H-LINK transmission 1
LED2	Green	PCB power supply
LED3	Yellow	H-LINK transmission 2

PCB1 Connector indication	
PCN1	230V transformer
PCN2	Not used
PCN3	Operation signal for electric heater installation
PCN5	Not used
PCN6	Not used
PCN7	TB1 and PCB2
PCN8	Not used
PCN10	Damper
PCN11	Not used
THM1	Air outlet thermistor
THM2	Air inlet thermistor
THM3	Liquid pipe thermistor
THM4	Not used
THM5	Gas pipe thermistor
CN1	Transformer
CN2	TB1 and PCB2
CN3	Not used
CN5	Not used
CN7	Not used

PCB1 Connector indication	
CN8	Not used
CN10	Not used
CN11	Expansion valve
CN14	Float switch
CN17	Not used
CN19	Not used
EFR1	PCB1 fuse
EFS1	PCB1 fuse
EF2	Not used
EF3	PCB1 fuse
TP	Not used

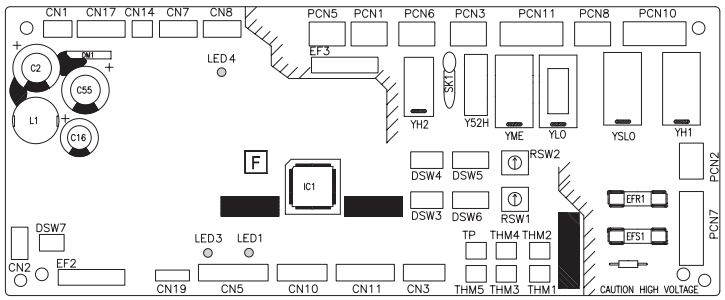
PCB2 Connector indication	
PCN1	TB1 and PCB1
THM1	Coil inlet thermistor
THM2	Coil outlet thermistor
CN1	TB1 and PCB1
CN2	CO2 sensor 4-20 mA
CN3	CO2 sensor 0-10 V
CN4	CO2 sensor ON/OFF
CN5	Motor for fan 1
CN6	Motor for fan 2
EF1	PCB2 fuse
TP	Not used

Switch indication	
DSW1	Not used
DSW2	Not used
DSW3	Capacity code
DSW4	Unit model code
DSW5, RSW2	Refrigerant cycle number
DWS6, RSW1	Indoor unit number settings
DSW7	Fuse re-establishing

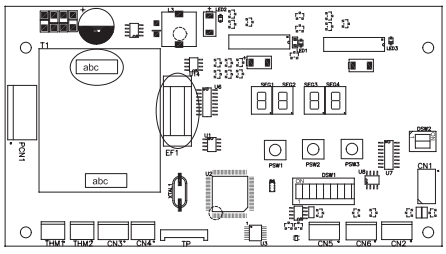
5.1.10 Printed circuit board for DX-Interface complementary systems

Dips switches location is the following:

PCB1 Sockets location



PCB2 Sockets location



CAUTION

Before setting DIP switches, firstly turn off power source and set the position of the dips switches. If the switches are set without turning off the power source, the contents of the setting are invalid.

PCB1 LED indicator		
LED1	Red	This LED indicates the transmission status between the indoor unit and the remote control.
LED3	Yellow	This LED indicates the transmission status between the indoor unit and the outdoor unit.
LED4	Green	PCB power supply

PCB2 LED indicator		
LED1	Yellow	H-LINK transmission 1
LED2	Green	PCB power supply
LED3	Yellow	H-LINK transmission 2

PCB1 Connector indication	
PCN1	230V transformer
PCN2	TB1
PCN3	Not used
PCN5	Not used
PCN6	TB1
PCN7	TB1 and PCB2
PCN8	Not used
PCN10	TB1
PCN11	TB1
THM1	Coil inlet thermistor
THM2	Coil outlet thermistor
THM3	Liquid pipe thermistor
THM4	Not used
THM5	Gas pipe thermistor
CN1	Transformer
CN2	TB2 and PCB2
CN3	Not used
CN5	Not used
CN7	Not used
CN8	Not used
CN10	Not used
CN11	TB1
CN14	TB2
CN17	Not used
CN19	Not used
EFR1	PCB1 fuse
EFS1	PCB1 fuse
EF2	Not used
EF3	Not used
TP	Not used
HA	Not used

PCB2 Connector indication	
PCN1	TB1 and PCB1
THM1	Optional air temperature sensing
THM2	Optional air temperature sensing
CN1	TB2 and PCB1
CN2	TB2
CN3	TB2

PCB2 Connector indication	
CN4	TB2
CN5	TB2
CN6	TB2
EF1	PCB2 fuse

Switch indication	
DSW1	Optional functions
DSW2	End resistance
DSW3	Capacity code
DSW4	Unit model code
DSW5, RSW2	Refrigerant cycle number
DWS6, RSW1	Indoor unit number settings
DSW7	Fuse re-establishing

5.2 Safety protection and control

Compressor protection

The compressor is protected by the following devices:

- **High pressure switch:** this stops the compressor when the discharge pressure exceeds the set value.
- **Oil heater:** this prevents oil from being lost during cold starts, as it is enabled while the compressor is at a standstill.
- **Fan motor protection:** internal thermostat located in the fan motor winding. This stops the fan motor when the winding temperature exceeds the set value.

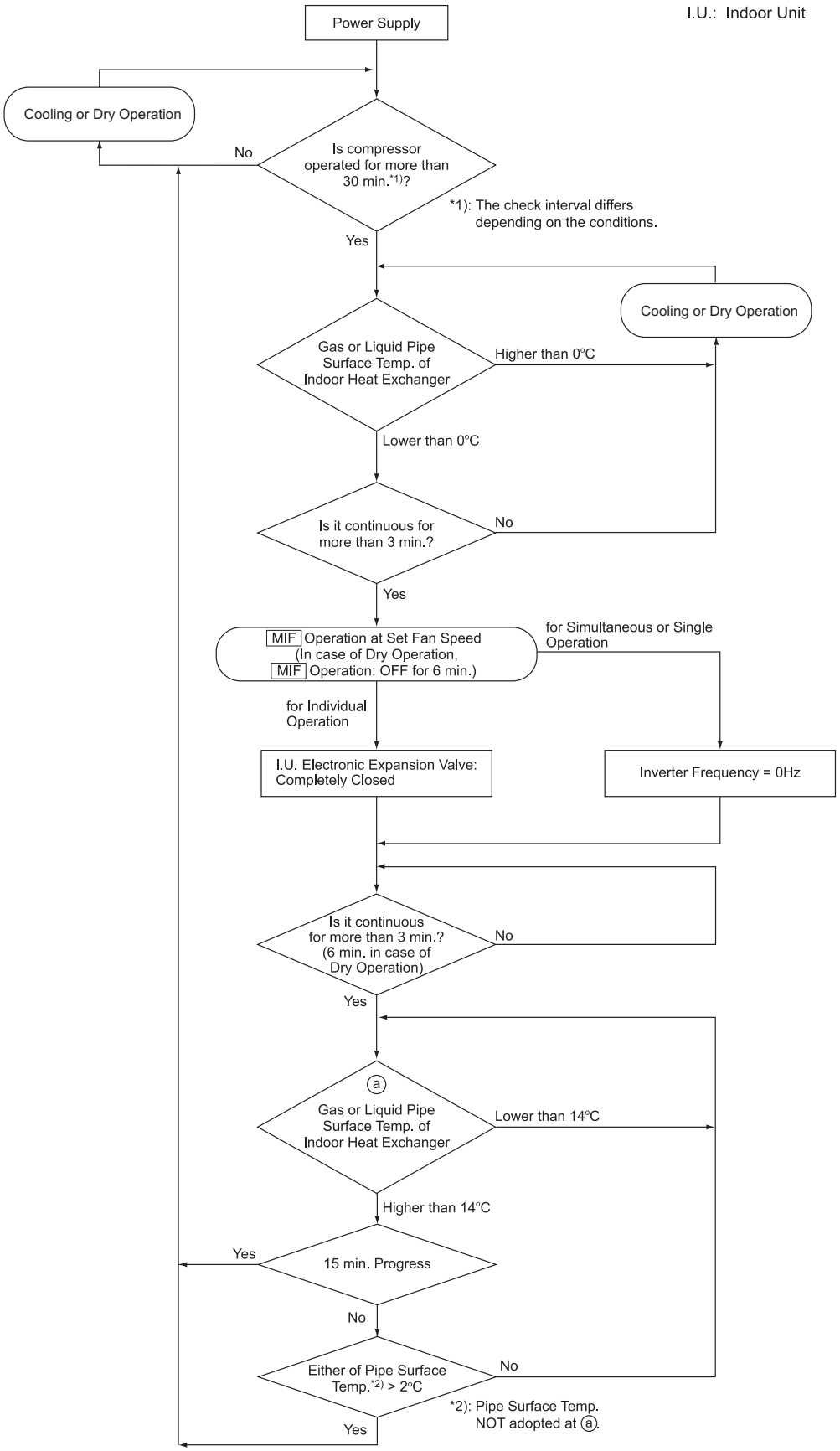
Setting control and safety devices for indoor units

Model			RCI-(1.0-3.0)FSN3	RCI-(4.0-6.0)FSN3	RCI-FSN3Ei	RCIM-FSN2	RCD
For the evaporator fan motor: internal thermostat	Switch off	ºC	100±4	100_{-10}^{+15}	145±5	145±5	130±5
	Switch on	ºC	90±4	100_{-10}^{+15}	90±15	90±15	83±15
For the control circuit: fuse capacity	-	A	5	5	5	5	5

Model			RPC	RPI(M)	RPK	RPF(I)
For the evaporator fan motor: internal thermostat	Switch off	ºC	135±5	-	130±5	130±5
	Switch on	ºC	90±15	-	83±15	93±15
For the control circuit: fuse capacity	-	A	5	6,3	5	5

5.3 Standard control functions

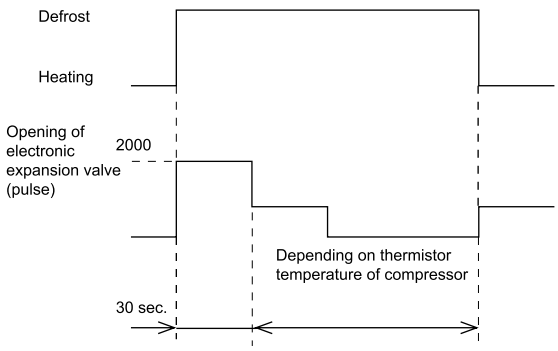
5.3.1 Freeze protection during the cooling or dehumidification process



5.3.2 Indoor electronic expansion valve control

1 After supplying power, the electronic expansion valve closes fully before starting to open.
2 When the compressor stops, the electronic expansion valve closes fully to set its opening.
3 When it starts (the compressor is activated), the electronic expansion valve opens to a specific degree during cooling operation, 1 minute.
4 During heating operation, the electronic expansion valve opens to a specific degree.
5 During defrost, the electronic expansion valve opens to a specific degree, as indicated in the graph.
6 Normal opening of the electronic expansion valve.

Time Chart



Cooling operation

1 Superheat temperature setting required:

a. Heat exchanger SH:

- 3 HP => SH = 0 °C
- 4 HP=> SH = -4 °C

b. Heat exchanger SH = Tg - TL

Tg: Indoor gas pipe temperature.

TL: Indoor liquid pipe temperature.

SH: Superheat.

2 Simulated PI control for the electronic expansion valve. the opening of this valve is controlled so that the SH temperature of the heat exchanger can reach the set temperature.

Heating operation

1 Definition of the set temperature:

a. Heat exchanger SH:

Ti < TL < 45 + 0.5 x Ta

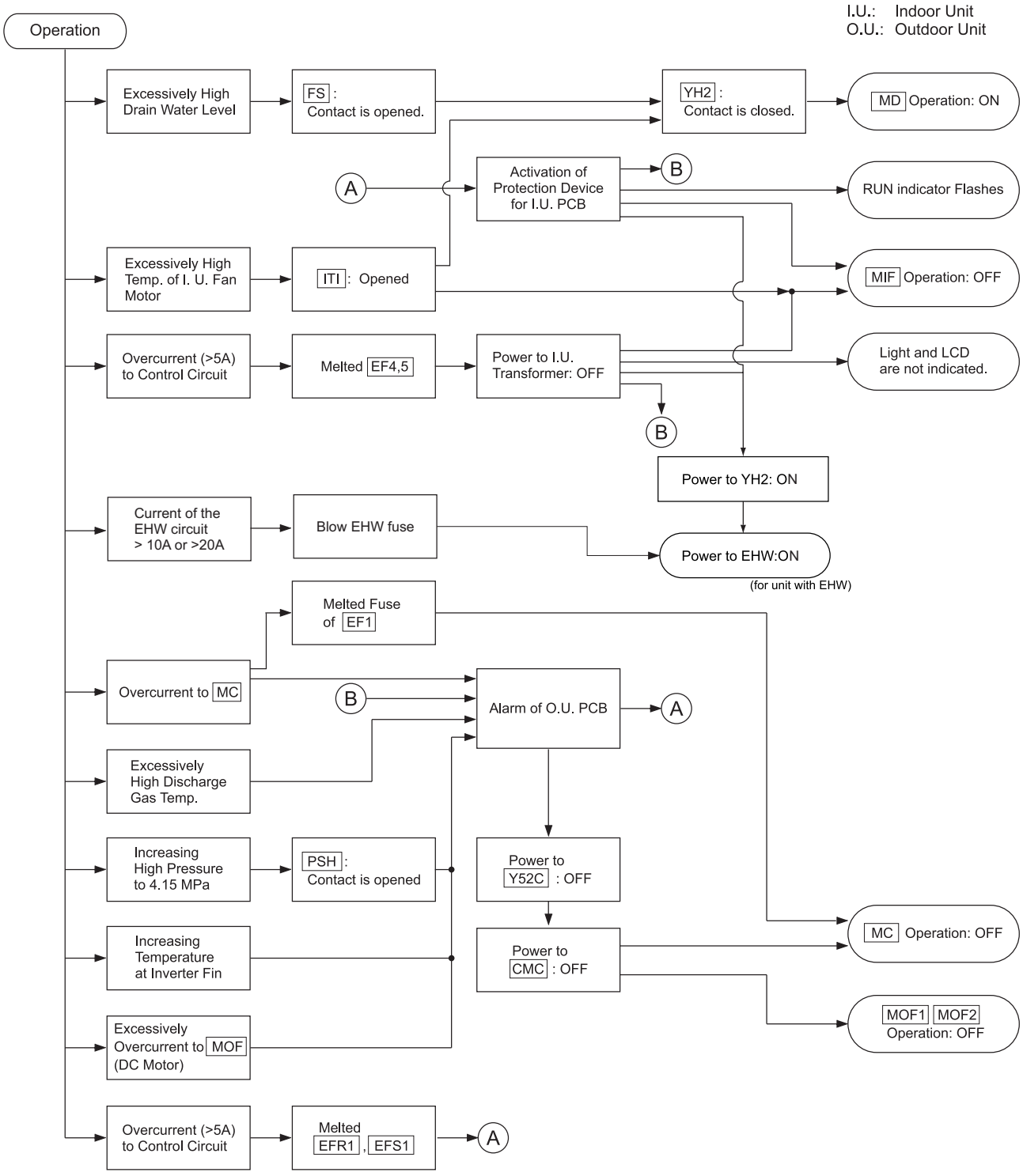
TL: Indoor liquid pipe temperature.

Ti: Indoor air inlet temperature.

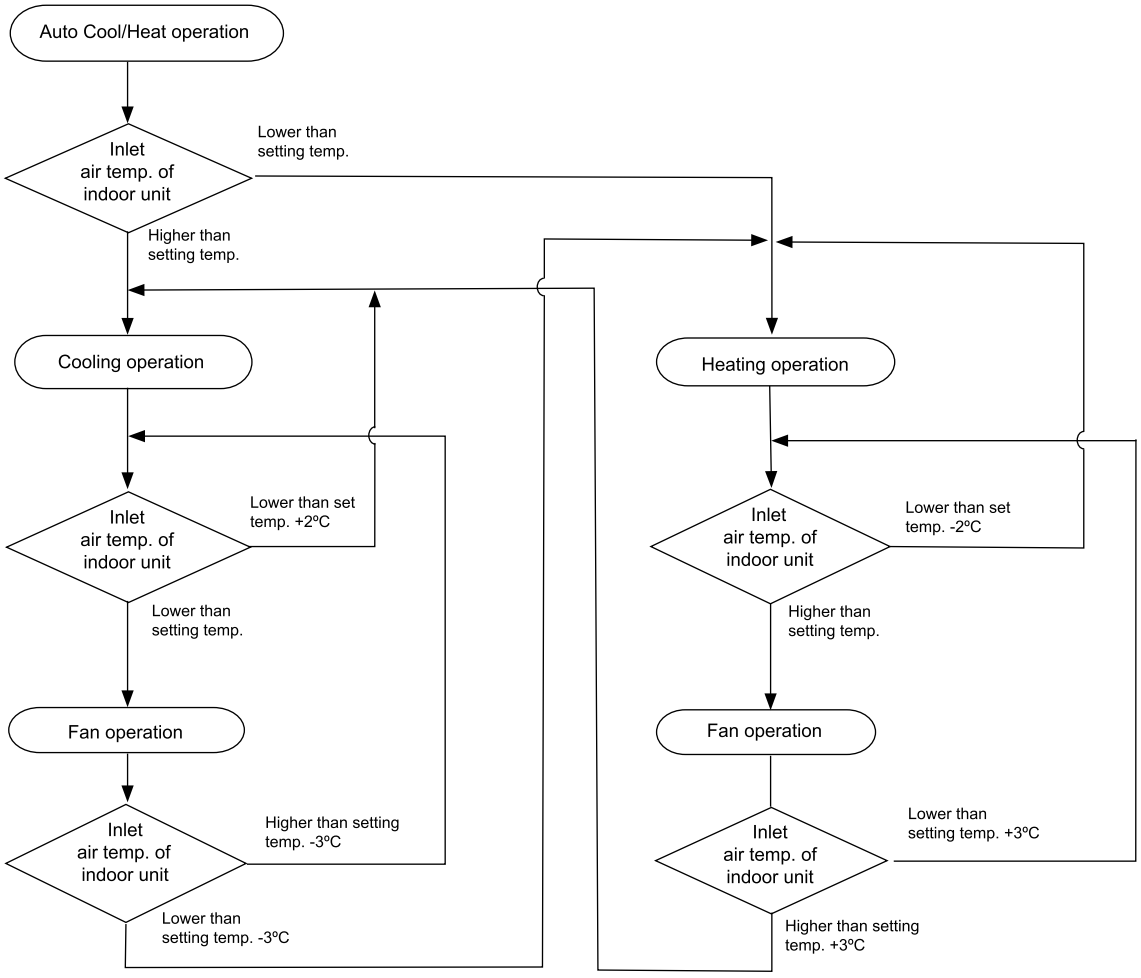
Ta: Outdoor temperature.

2 Simulated PI control for the electronic expansion valve. the opening of the electronic expansion valve is controlled so that the temperature of the indoor liquid pipe can reach the set temperature.

5.3.3 Activation of the control with protection device



5.3.4 Automatic cooling/heating operation control



5.3.5 Preventive high-pressure increase control

This function is used to avoid an abnormal condition (alarm: 02) when the outdoor air flow drops due to seasonal winds blowing against the air outlet. When CMC is enabled in cooling operation, PSC is enabled and Tc is greater than Tc1+4 °C, operations with forced thermostat disabling are started.

Tc: Outdoor pipe temperature.

Tc1: Outdoor pipe temperature when the PSC is enabled.

PSC enabled: 3.60 MPa.

However, if this occurs more than 6 times during operations, thermostat stoppage is not forced. The cause of the stoppage will be 13.

HITACHI
Inspire the Next

6. Optional functions

Index

6.1 Indoor units

6.1.1 Available ports

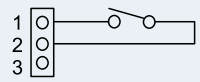
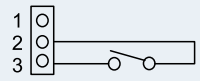
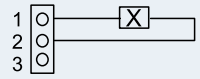
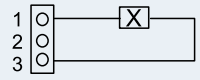
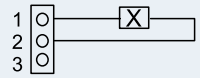
The system has eight optional input signals and six output signals. Both types of signal are programmed into the indoor unit PCB: connector CN3 for input signals and connectors CN7 and CN8 for output signals.

Output connector CN7 has two ports and output connector CN8 has one port, which are used to configure three output options of the eight available in the system.

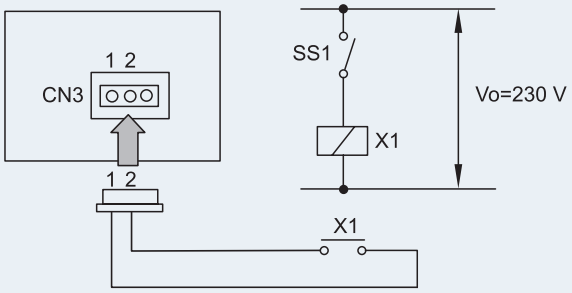
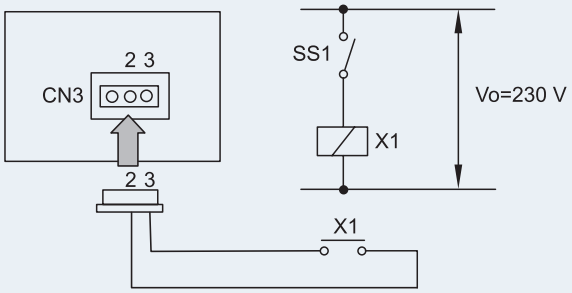
NOTE

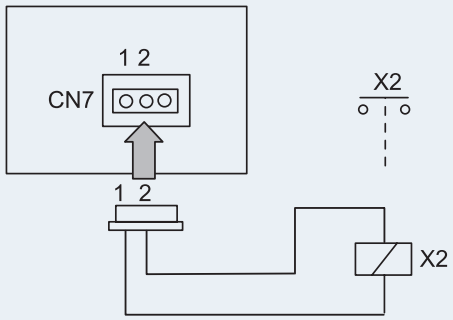
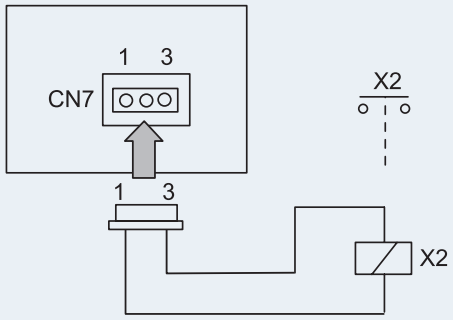
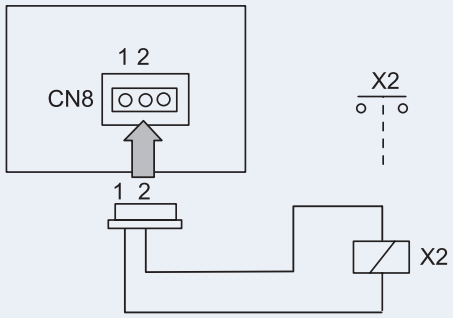
The output signal connection is a mere example.

The system has the following input and output ports:

Indication		Port setting on the indoor unit PCB	Remarks	Outlet
Inlet	i1	CN3 1-2		Contact
	i2	CN3 2-3		Contact
Outlet	o1	CN7 1-2		12 Vdc
	o2	CN7 1-3		12 Vdc
	o3	CN8 1-2		12 Vdc

The system has the following input connections:

Indication	Connections
i1	
i2	

Indication	Connections
o1	
o2	
o3	

Component		Manufacturer or specifications	Remarks
Auxiliary relay (X2)		Reduced power relay model OMRON: MY1F or equivalent	Voltage between the relay terminals 12 Vdc, 75 mA
Contact (SS1) (x1) (example)		Manual type	Voltage between the contactor terminals 230 V, 5 mA
3-pin connector cable		Optional part PCC-1A (capable of connecting the connector (JST XHP-3)	Five cables with connectors in one group
Cable (control)	Voltage: 12 Vdc	0.5 mm^2	
Cable (power)	Voltage: 230 V	2.0 mm^2	

Recommendations for wiring installation

- Keep the CN3 connector cables as short as possible.
- Try not to pull on the cable along the power line. The cables should be laid separately at a distance of over 30 cm. Cable crossing is feasible.
- Where the cable along the power line is pulled, insert the cables through a metal pipe, earth one end of the pipe and install a safety device such as an earth leakage breaker or smoke detector.

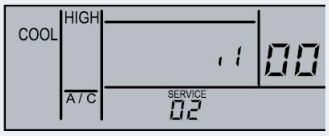
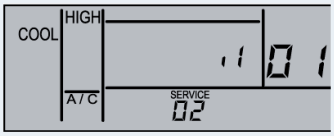
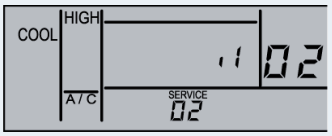
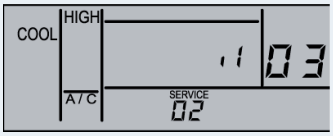
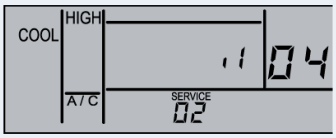
6.1.2 Optional signal configuration

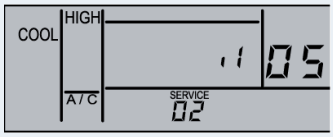
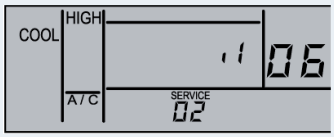
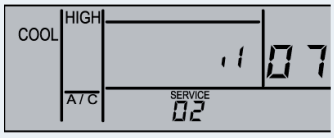
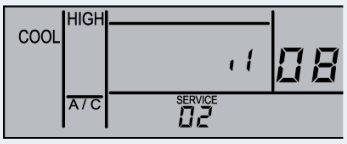
The following tables describe the optional signals available on indoor units. Optional signals are configured using the remote control, except for RPK-(0.8-4.0)FSN3M units in which they are configured using the DIP switches.

Optional input signals (PC-ART example)

NOTE

If an input signal is set, the on-screen display on the remote control automatically changes to the following.

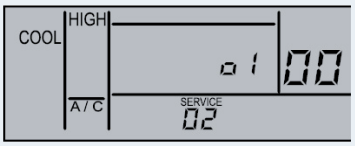
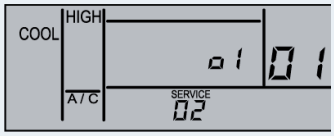
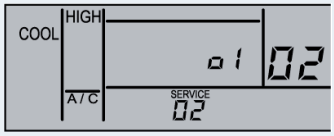
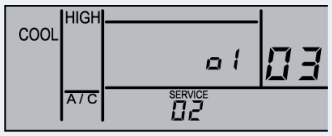
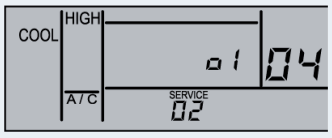
Indication	Input signal	Application	Remote control screen (input signal)	Port
00	Not set	Not set		CN3
01	Control by field-supplied room thermostat (cooling)	This signal controls the unit through an external thermostat. **NOTE** ***It can reduce summer cooling problems in certain applications***		CN3
02	Control by field-supplied room thermostat (heating)	This signal controls the unit through an external thermostat. **NOTE** ***It can reduce problems caused by indoor air stratification.***		CN3
03	Function 1: remote on/off of the unit (by contact)	This signal controls the starting and stopping of the system from a remote location. **NOTE** ***It is extremely practical in hotels and offices to control the indoor units from the building management system.***		CN3
04	Function 2: unit on (by pulse)	This signal controls the starting of the system from a remote location. **NOTE** ***It is extremely practical in hotels and offices to control the indoor units from the building management system.***		CN3

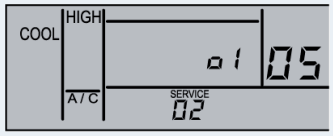
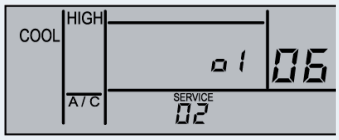
Indication	Input signal	Application	Remote control screen (input signal)	Port
05	Function 2: unit stoppage (by pulse)	This signal controls the stoppage of the system from a remote location. **NOTE** ***It is extremely practical in hotels and offices to control the indoor units from the building management system.***		CN3
06	Cancellation of commands from the remote control after a forced stoppage	This signal stops the indoor unit and cancels the commands from the remote control while it is enabled.		CN3
07	Cooling or heating mode setting	This function controls operating mode changes from a remote location.		CN3
08	Up/down input signal for grille (not available)	Not available		CN3

Optional output signals (PC-ART example)

NOTE

If an input signal is set, the on-screen display on the remote control automatically changes to the following.

Indication	Output signal	Application	Remote control screen (input signal)	Port
00	Not set	Not set		• CN7 or CN8 • Only CN7 for RPK units
01	Operation signal	This signal permanently controls the status of the unit. **NOTE** ***It is extremely useful for centralised applications.***		• CN7 or CN8 • Only CN7 for RPK units
02	Alarm signal	This signal enables devices that protect and indicate any faults in the unit. **NOTE** ***It is extremely useful for rooms in which air conditioning must remain on at all times.***		• CN7 or CN8 • Only CN7 for RPK units
03	Cooling signal	This signal controls the status of the compressor. **NOTE** ***It is extremely useful for controlling the thermostat switched off on indoor units.***		• CN7 or CN8 • Only CN7 for RPK units
04	Thermo-ON signal during cooling	It is extremely useful for controlling requests by the indoor unit to enable the compressor.		• CN7 or CN8 • Only CN7 for RPK units

Indication	Output signal	Application	Remote control screen (input signal)	Port
05	Heating signal	This signal controls the status of the compressor. It is extremely useful for controlling the thermostat switched off on indoor units.		• CN7 or CN8 • Only CN7 for RPK units
06	Thermo-ON signal during heating	It is extremely useful for controlling requests by the indoor unit to enable the compressor.		• CN7 or CN8 • Only CN7 for RPK units

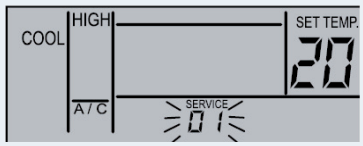
6.1.3 Programming with remote control (PC-ART example)

Programming and setting mode

Check that the unit is stopped, if not switch it off.

Press the OK and RESET buttons on the remote control at the same time for more than 3 seconds.

The screen will display SERVICE and the following indication will flicker: 01.

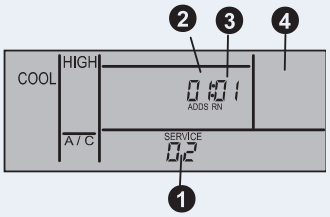


Selection of SERVICE 02

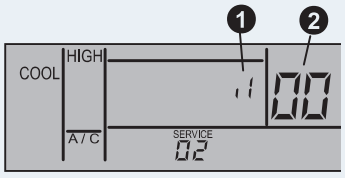
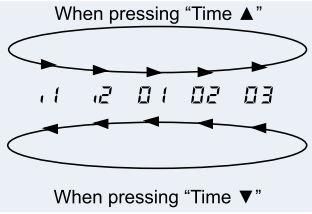
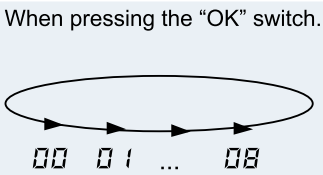
Press TEMP▲ or TEMP▼ to change the value of the number flickering below the SERVICE display.

Select 02 and press the OK button, or maintain the indication for 7 seconds for the remote control to change to the optional setting mode.

Indoor unit selection

a.	In SERVICE 02 mode, the indication changes as shown in the figure. **1** Indication 02 enabled. **2** Indication of the indoor unit on which the optional function is to be set (displayed in the time indication segments for the timer setting and the ADDS indication is displayed below). **3** Indication of the refrigerant cycle number of the outdoor unit on which the optional function is to be set (displayed in the time indication segments for the timer setting and the RN indication is displayed below). **4** The temperature setting display disappears.	
b.	In the previous step (a), press TEMP ▲ or TEMP ▼ on the remote control to select the indoor unit on which the optional function is to be set. **NOTE** • ***The indoor unit can be selected from the indoor units connected to the remote control.*** • ***If the direction and refrigerant cycle number indication is AA, the settings of all the indoor units are the same.***	
c.	After selecting the indoor unit, press the OK button, or maintain the indication for 7 seconds for the remote control to change to the optional setting mode.	

Changing the optional signals and setting conditions

a.	In optional setting mode, the remote control indication changes as shown below: **1** The assigned port for the input signal and the output signal are displayed in the time indication segments for the timer setting. See the following table for the indicated port and the PCB connector of the indoor unit. **2** The input and output signal codes are indicated in the temperature setting segments.	
b.	Press the TIME▲ or TIME▼ button on the remote control to select the port to which the input and output signals are to be assigned.	
c.	Press the OK button. The port indication in the timer setting time indication segments changes as shown in the figure below.	

Returning from optional function setting mode

Press RESET to store the optional function settings and return to normal mode.

Indoor unit selection

In optional function setting mode, press TEMP ▲ or TEMP ▼ to select the indoor unit on which the optional function is to be set.

Connectors CN3, CN7 and CN8 are factory-set with the following optional functions.

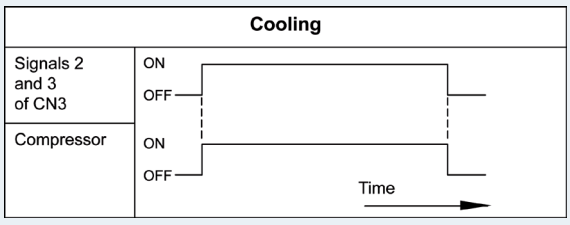
	Connector no.	Connector terminal	Function	Factory settings
Inlet	CN3	1–2	03	Function 1. Remote unit On/Off
		2–3	06	Cancellation of commands from the remote control after a forced stoppage
Outlet	CN7	1–2	01	Operation signal
		1–3	02	Alarm signal
	CN8 (Not for RPK)	1–2	06	Thermostat enabled signal during heating

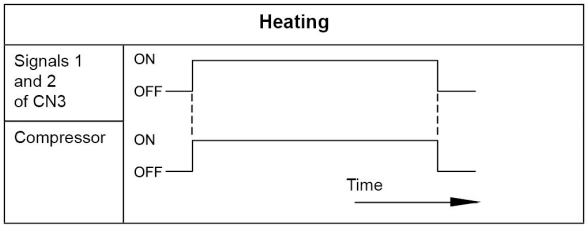
6.1.4 Description of optional input signals

Control by field-supplied room thermostat

On-screen display: 01 or 02.

When a field-supplied room thermostat is used instead of the inlet thermistor on the indoor unit, connect the wiring and use the materials as indicated in Available ports.





Specifications for field-supplied room thermostat:

- Manufacturer or type: equivalent to YAMAKATE R7031P005, R7031Q005.
- Contactor charge: 12 Vdc

- Difference of over 1.5 degrees.
- Do not use a mercury thermostat.
- The remote control must remain connected to the unit. When the power supply is reconnected, start the unit by pressing the on button. The compressor will then run under the control of the field-supplied thermostat. All other functions are controlled in the normal manner via the remote control.

Function 1: remote on/off of the unit

On-screen display: 03.

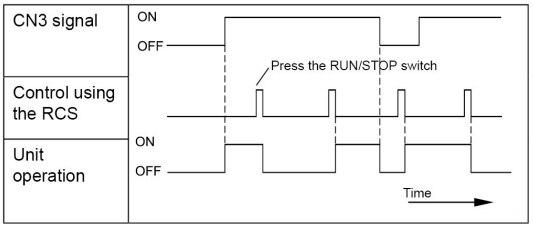
This is an optional on/off signal that uses the signal levels ON and OFF. Connect the wiring and use the materials as indicated in Available ports.

NOTE

When the unit is started using the remote ON/OFF switch, the fan speed depends on the mode stored in the remote control.

NOTE

- ***The collection of signals during the first 10 seconds after connecting the power supply is not available due to component initialisation.***
- ***Operation priority is given to the remote on/off signal or to the remote control, whichever is transmitted last.***



Function 2: remote switching on of the unit (pulse signal input)

On-screen display: 04.

This is an optional remote on/off signal that uses the pulse signal.

Connect the wiring and use the materials as indicated in Available ports.

Function 2: remote switching off of the unit (pulse signal input)

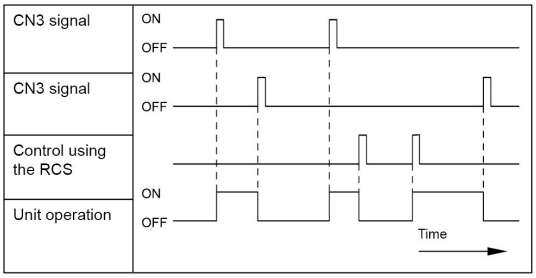
On-screen display: 05.

This is an optional remote off signal that uses the pulse signal.

Connect the wiring and use the materials as indicated in Available ports.
A time chart with the uses of functions 04/05 is shown below.

NOTE

The collection of signals during the first 10 seconds after connecting the power supply is not available due to component initialisation.

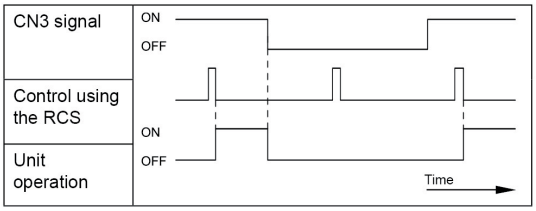


Cancellation of commands from the remote control after a forced stoppage

On-screen display: 06.

It is possible to stop the air conditioning systems using the signal from a building management system. In this case, the individual commands transmitted from the remote control are cancelled.

Connect the wiring and use the materials as indicated in Available ports.

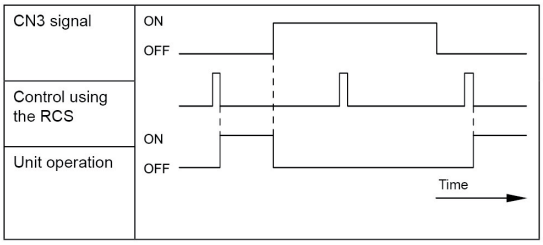


A time chart with the uses of the function is shown below.

NOTE

The collection of signals during the first 10 seconds after connecting the power supply is not available due to component initialisation.

With this optional function, contact B can be used through the optional setting of the remote control. The time chart is shown below, which provides information on when contact B can be used. See Optional remote control functions for further details on contacts A and B.



Cooling or heating mode setting

On-screen display: 07.

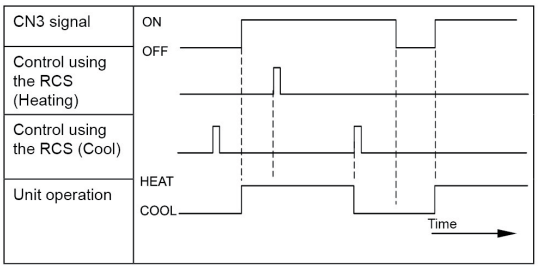
This optional signal can be used to change the heating or cooling operating mode by sending a contact signal from outside the unit. The operating mode is controlled by the field-supplied switch or by the remote control, whichever is used last.

Connect the wiring and use the materials as indicated in Available ports.

A time chart with the uses of the functions is shown below

NOTE

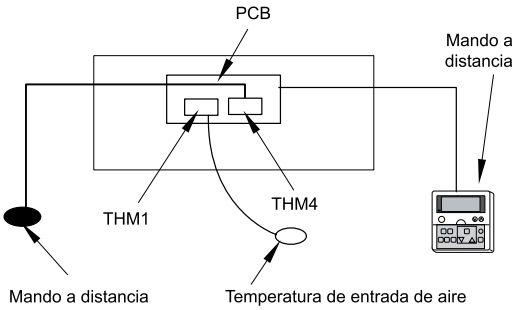
The collection of signals during the first 10 seconds after connecting the power supply is not available due to component initialisation.



Control by use of a remote temperature sensor

On-screen display: 08.
The following functions are available when an optional remote temperature sensor is used:

- The unit is controlled by the average temperature of the air inlet thermistor and the remote temperature sensor.
- When the discharge air temperature exceeds 60 °C, the fan speed increases from medium to high or from low to medium.



NOTE

- ***The remote control thermistor cannot be used if a remote temperature sensor is used.***
- ***The heating temperature calibration function is automatically cancelled in heating operation.***
- ***If a remote temperature sensor is used, it must be positioned according to the following requirements:***
  - ***It must be in a position where the average room temperature can be detected and where the outdoor air generated when doors are opened and closed does not affect the room temperature.***
  - ***It must be in a position where the thermistor is not directly exposed to sunlight or where there are no heat sources nearby.***

6.1.5 Description of optional output signals

Picking up of the operation signal

On-screen display: 01.

This optional signal is used to pick up the operation signal. Thanks to this function, the operation signal can be checked from a remote location and the outdoor air intake fan operation can be locked.

Connect the wiring and use the materials as indicated in Available ports.

NOTE

The auxiliary relay contact X2 closes when an operation signal is transmitted.

Alarm signal

On-screen display: 02.

This optional signal is used to pick up the activation of safety devices. The signal is normally displayed on the remote control. This function is not available under abnormal transmission conditions.

Connect the wiring and use the materials as indicated in Available ports.

NOTE

The auxiliary relay contact X2 closes when an operation signal is transmitted.

Cooling operation signal

On-screen display: 03.

This optional signal is used to pick up the cooling operation signal.

Connect the wiring and use the materials as indicated in Available ports.

NOTE

The X2 auxiliary relay contact closes when the cooling operation signal is enabled, regardless of whether the thermostat signal is enabled or disabled.

Thermostat enabled signal during the cooling process

On-screen display: 04.

This optional signal is used to pick up the thermostat enabled signal for the compressor operating during the cooling process.

Connect the wiring and use the materials as indicated in Available ports.

NOTE

The X1 auxiliary relay contact closes when the thermostat signal is enabled during cooling mode.

Heating operation signal

On-screen display: 05.

This optional signal is used to pick up the heating operation signal. The X2 auxiliary relay contact closes when the heating operation signal is enabled, regardless of whether the thermostat signal is enabled or disabled.

Connect the wiring and use the materials as indicated in Available ports.

NOTE

The X2 auxiliary relay contact closes when the cooling operation signal is enabled, regardless of whether the thermostat signal is enabled or disabled.

Thermostat enabled signal during the heating process

On-screen display: 06.

This optional signal is used to pick up the thermostat enabled signal for the compressor operating during the heating process and to control a circulation pump or humidifier.

Connect the wiring and use the materials as indicated in Available ports.

NOTE

The X2 auxiliary relay contact closes when the thermostat signal is enabled during heating mode.

6.2 Complementary systems

6.2.1 KPI

Optional functions

The following optional functions as shown in next table are available by setting of PC-ART. Contact your distributor or dealer of HITACHI for the detailed information.

Where	Code	Function	KPI-(E/H)3E	KPI-X3E	Setting Status	Remarks
RCS setting	b3	Compressor 3min off guard	-	O	00: Valid 01: Invalid	-
	b4	Filter sign	O	O	00: Indoor setting 01: 100h 02: 1200h 03: 2500h 04: no indication	-
	b5	Run mode fix	-	O	00: Normal 01: Fix	-
	b6	Setting temperature fix	O	O	00: Normal 01: Fix	-
	b7	Cooling only fix	-	O	00: Normal 01: Fix	-
	b8	Auto Cool/Heat	-	O	00: Invalid 01: Valid	-
	b9	Air flow fix (Fixed air fan speed)	-	O	00: Normal 01: Fix	-
	C1	Electrical heater signal	O	O	00: Disabled 01: Enabled	-
	C3	Fan stoppage delay	O	O	00: Disabled (Default) 01: 60 minutes	-
	C5	Static pressure selection	O	O	00: Standard 01: High pressure 02: Low pressure	-
	C7	CO2 sensor enabled	O	O	00: Disabled (Default) 01: Enabled	-
	Cb	Forced stop logic selection	O	O	00: A contact 01: B contact	-
	CC	High ventilation speed	O	O	00: Disabled 01: Enabled	-
	CF	Fan stoppage delay	O	O	00: Not available 01: 60 min	-
	d1	Power ON/OFF 1	O	O	00: Invalid 01: Valid	-
	d3	Power ON/OFF 2	O	O	00: Invalid 01: Valid	-
	E1	Ventilation mode	O	O (*)	00: Automatic ventilation 01: Heat exchanger ventilation 02: Bypass ventilation	*Bypass not available for KPI-Active
	E2	Air Volume increasing	O	O	00: Not activated 01: Activated	This function is used to make higher the room pressure than the sorrounded rooms. One of the fans increases its speed while the other runs accordint to the remote controller. Hi/Me/Lo --> Hi/Hi/Me
	E3	E2 Fan mode selection	O	O	00: Activated for supply fan 01: Activated for exhaust fan	-
	E4	Precooling / Preheating period	O	O	00: 0 minutes 01: 30 minutes 02: 60 minutes	The unit starting is delayed a certain time while A/C system starts working.

Where	Code	Function	KPI-(E/H)3E	KPI-X3E	Setting Status	Remarks
PCB1 & RCS	i1	CN3 1#-2# input	O	O	00:No setting 01:Room Thermo (Cooling) 02:Room Thermo (Heat) 03:Remote ON/OFF 1 (Contact) 04: Remote ON/OFF 2 (Pulse) 05:Remote ON/ OFF2(Stoppage/Pulse) 06:Forced Stop	When Thermo ON/OFF input enabled (PCB2-DSW16=ON), i1 optional signal is not available
	i2	CN3 2#-3# input	O	O	07:Remote H/C changeover	-
	o1	CN7 1#-2# output	O	O	00:No setting 01:Run 02:Alarm 03:Cooling 04:Thermo ON 05:Heating 06:Defrost	-
	o2	CN7 1#-3# output	O	O		-
	o3	CN8 1#-2# output	O	O		-
PCB1 (PSW)	Ct	CO2 sensor type	O	O	00: ON/OFF CO2 signal 01: Activated 4-20mA signal 02: Activated 0-10V signal	-
		S1: Set minimum	O	O	Default (00: 4 / 01: 0) Range (00:4~S2 / 01: 0~S2)	-
		S2: Set maximum	O	O	Default (00: 20 / 01: 10) Range (00: S1~20 / 01: S1~10)	-
	dF	Defrost Fan	-	O	00: Fan Low operation (Default) 01: Fan kept operation 02: Fan stopped operation	-

NOTE

**** CO_2 sensor signal must be an ON/OFF signal.***

CO_2 sensor must be connected to CN3, pins 1-2, for I1 input signal (refer to outdoor unit technical catalogue for further information about the connection specs).

When using this option. I1 std. functions become deactivated. I2 input signal is not affected.

6.2.2 DX-Interface

◆ Main optional functions on DX-Interface series 1

Optional function	Explanation
EC Fan or Tap Fan	The control of tap fans and EC fans is possible from the DX-Interface series 1.
Defrost signal	Output signal get from the DX-Kit when the system is in defrost mode.
Fan operation during defrost	During defrost operation three different fan speed settings are possible: fan speed kept as set, fan speed reduced to low speed and fan stoppage.
Thermo-on / thermo-off by an external input	Instead of typical control logic.
Operation delay	Once the system is turned on, the unit is kept in off during an specific time. Useful for applications where the DX-Kit is focused in comfort and not room conditioning
Thermistor selection	Option to select between inlet thermistor, external thermistor or remote controller thermistor to perform the cycle control (as inlet temperature) (Only if demand control is based on inlet temperature).
Fan Stoppage delay	Once the system is switched off, the unit keeps running for a suitable period of time, to for example, perform the air renovation once the activity is conclude.
CO2 sensor	By the action of an ON/OFF CO2 sensor, the DX-Kit switches the fan speed to high while the CO2 concentration exceeds the sensor detection threshold.

DX-Interface series 1 - Input / Output signals

Input signal	Available from DX-Interface series 1
1	Control using the field-supplied room thermostat (cooling).
2	Control using the field-supplied room thermostat (heating).
3	Function 1 - remote ON/OFF of the unit (by contact).
4	Function2 - turns unit ON.(by pulse).
5	Function2 - turns unit OFF.(by pulse).
6	Cancellation of commands from remote control switch after forced stoppage.
7	Setting of the cooling mode or the heating mode.

Output signal	Available from DX-Interface series 1
1	Operation signal.
2	Alarm signal.
3	Cooling signal.
4	Thermo-ON signal.
5	Heating signal.
6	Defrost signal.

Input signal	Available from Outdoor unit
1	Control using the field-supplied room thermostat (cooling).
2	Control using the field-supplied room thermostat (heating).
3	Function 1 – remote ON/OFF of the unit (by contact).
4	Function2 - turns unit ON (by pulse).
5	Function2 - turns unit OFF (by pulse).
6	Cancellation of commands from remote control switch after forced stoppage.
7	Setting of the cooling mode or the heating mode.

Output signal	Available from Outdoor unit
1	Operation signal.
2	Alarm signal.
3	Cooling signal.
4	Thermo-ON signal.
5	Heating signal.
6	Defrost signal.

Thermo - On / Off control option

With DX-Interface series 1 it is possible to perform the thermo-On/thermo-Off control by three different ways.

- Standard thermo-On / thermo-Off control (Default setting).
  Suitable for installations controlled by suction or discharge temperature.
  The thermo-On / thermo-Off logic is decided based on the difference between the inlet temperature to the coil and the set temperature on the remote controller or central controller.
- By an external input.
  The thermo-On / thermo-Off control can be driven externally by an input signal connected to the CN3 socket of the PCB1 of the DX-Kit.
  Setting note: DIP Switch 1 – Pin 6 of DX-Kit PCB2 (small PCB) must be switched on (PCB2-DSW1#6 switched ON).
  Once the PCB DSW has been set, the input “i1” of CN3 is automatically set for thermo-On / thermo-Off control. The setting of input “i2” is kept as set on the remote controller.
  Please refer to Hitachi Indoor Units Service Manual for further information about the setting and connection of the auxiliary inputs to CN3 socket.
- By the duty signal.
  For systems controlled by a duty signal it is possible to force the thermo-Off by the duty signal itself. When the duty signal becomes the minimum of its range (0 V or 4 mA) the system will be switched to thermo-Off condition. To be switched to thermo-On condition the duty must become higher than the 8% of its range.

Setting note: No additional setting is required once the demand control setting has been set as Duty control.

Type	Description
Standard thermo-On / thermo-Off control (Default setting)	Suitable for installations controlled by suction or discharge temperature. The thermo-On / thermo-Off logic is decided based on the difference between the inlet temperature to the coil and the set temperature on the remote controller or central controller.
By an external input	The thermo-On / thermo-Off control can be driven externally by an input signal connected to the CN3 socket of the PCB1 of the DX-Kit. Setting note: DIP Switch 1 – Pin 6 of DX-Kit PCB2 (small PCB) must be switched on (PCB2- DSW1#6 switched ON). Once the PCB DSW has been set, the input “i1” of CN3 is automatically set for thermo-On / thermo-Off control. The setting of input “i2” is kept as set on the remote controller. Please refer to Hitachi Indoor Units Service Manual for further information about the setting and connection of the auxiliary inputs to CN3 socket.
By the duty signal	For systems controlled by a duty signal it is possible to force the thermo-Off by the duty signal itself. When the duty signal becomes the minimum of its range (0 V or 4 mA) the system will be switched to thermo-Off condition. To be switched to thermo-on condition the duty must become higher than the 8% of its range. Setting note: No additional setting is required once the demand control setting has been set as Duty control.

6.3 Remote controls

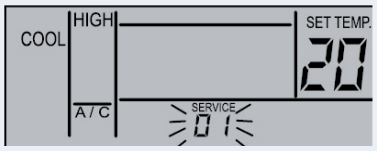
6.3.1 Optional remote control functions (PC-ART example)

Programming and setting mode

Check that the unit is stopped, if not switch it off.

Press the OK and RESET buttons on the remote control at the same time for more than 3 seconds.

The screen will display SERVICE and the following indication will flicker: 01.



Selection of SERVICE 01

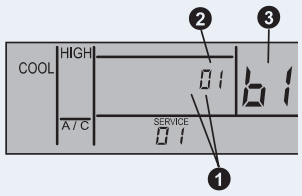
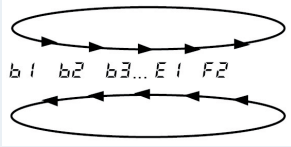
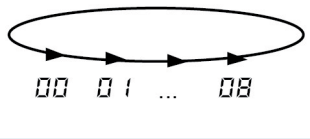
Press TEMP▲ or TEMP▼ to change the value of the number flickering below the SERVICE display.

Select 01 and press the OK button, or maintain the indication for 7 seconds for the remote control to change to the optional setting mode.

Indoor unit selection

a.	In SERVICE 01 mode, the indication changes as shown in the figure. **1** Indication 01 enabled. **2** Indication of the indoor unit on which the optional function is to be set (displayed in the time indication segments for the timer setting and the ADDS indication is displayed below). **3** Indication of the refrigerant cycle number of the outdoor unit on which the optional function is to be set (displayed in the time indication segments for the timer setting and the RN indication is displayed below). **4** The temperature setting display disappears.
b.	In the previous step (a), press TEMP ▲ or TEMP ▼ on the remote control to select the indoor unit on which the optional function is to be set. **NOTE** • ***The indoor unit can be selected from the indoor units connected to the remote control.*** • ***If the direction and refrigerant cycle number indication is AA, the settings of all the indoor units are the same.***
c.	After selecting the indoor unit, press the OK button, or maintain the indication for 7 seconds for the remote control to change to the optional setting mode.

Changing the optional signals and setting conditions

a.	In optional setting mode, the remote control indication changes as shown below: **1** The ADDS and RN indications are off. **2** The optional function setting condition is displayed in the time indication segments for the timer setting. **3** The optional function number is indicated in the temperature setting segments.	
b.	Press the DAY▲ or SCHEDULE▼ button on the remote control to select the port to which the input and output signals are to be assigned.	
c.	Press the OK button. The port indication in the temperature indication segments change as shown in the figure below.	

Returning to normal mode from optional function setting mode

Press RESET to store the optional function settings and return to normal mode.

Selection of another indoor unit

In optional function setting mode, press TEMP ▲ or TEMP ▼ on the remote control to select the indoor unit on which the optional function is to be set.

6.3.2 List of optional remote control functions

Element	Optional function	Individual setting	Settings	Condition setting	Description
b1	Removal of heating temperature compensation	O	00	Standard setting. It increase the temperature +4ºC	This function is used when the temperature setting displayed on the remote control and the supply air temperature of the indoor unit must be the same.
			01	Removal	
			02	It increase the temperature +2ºC (1).	
b2	Circulator function at heating Thermo- OFF	O	00	Not activated function	This function means that the unit fan remains running after the air conditioning system has stopped to prevent the air in the room from stratifying.
			01	Activated function	
b3	Forced compressor operation for at least three minutes	O	00	Not activated function	This function is used to protect the compressor, preventing it from being started or stopped for periods of less than three minutes.
			01	Activated function	
b4	Pre-determined filter cleaning period change	O	00	Standard	This function is used to modify the period which the remote control indicates the air filter replacement.
			01	100 hours	
			02	1200 hours	
			03	2500 hours	
			04	Not used	
b5	Fixing of operation mode	X	00	Not activated function	Once the unit operating mode has been selected, this function prevents it from being modified from the remote remote control.
			01	Activated function	
b6	Fixing of setting temperature	X	00	Not activated function	Once the unit temperature has been selected, this function prevents it from being modified from the remote control.
			01	Activated function	
b7	Fixing of cooling operation	X	00	Not activated function	This function is available to use cooling mode only and to prevent heating mode from being enabled.
			01	Activated function	
b8	Automatic COOL/HEAT operation	X	00	Not activated function	This function allows the automatic change from the cooling to the heating mode for the units with the same refrigerant cycle.
			01	Activated function	
b9	Fixing of fan speed	X	00	Not activated function	Once the unit fan speed has been selected, this function prevents it from being modified from the remote control.
			01	Activated function	
bA	Not available	X	"- -" permanent	Not available	–

Element	Optional function	Individual setting	Settings	Condition setting	Description
bb	Cooling temperature compensation	X	00	Standard setting. No compensation	This function is used to obtain longer cooling periods.
			01	It decrease the temperature -1ºC	
			02	It decrease the temperature -2ºC	
bC	Not available	–	00	Not available Use at 00 conditions	–
			01		–
bd	Not available	–	00	Not available Use at 00 conditions	–
			01		–
bE	Not available	–	00	Not available Use at 00 conditions	–
			01		–
C1	Not available	–	00	Not available Use at 00 conditions	–
			01		–
C2	Not available	–	"- -" permanent	Not available	–
C3	HA function (only for Japanese market)	O	00	Not available Use at 00 conditions	–
			01		–
C4	Drain pump in heating mode	O	00	Not activated function	This function is used to activate the drain pump in heating mode.
			01	Activated function	
C5	Static pressure selection (RPI)	O	00	Standard static pressure (factory set)	This function is used to increase the fan speed on the indoor ducted units.
			01	High static pressure	
			02	Low static pressure	
	Increasing fan speed (RCI, RCIM, RCD)		00	Not available	This function is used to change the indoor units fan speed installed in high ceilings.
			01	Hi Speed 1(2)	
			02	Hi Speed 2(2)	
C6	PC-ART: increasing fan speed PC-ARF: Hi speed at heating Thermo-OFF	O	00	Not activated function	PC-ARF: This function is used to increase the fan speed when the thermostat reaches the set temperature in heating using function C5.
			01	Activated function	
C7	Cancellation of the forced compressor operation for at least three minutes	O	00	Activated function	Cancels function b3.
			01	Not activated function	

Element	Optional function	Individual setting	Settings	Condition setting	Description
C8	Thermistor of remote control switch	O	00	Not available	This function determines the thermistor to control the air temperature.
			01	Air temperature control using the remote control thermistor	
			02	Air temperature control using the average value of the air inlet thermistor and the remote control thermistor	
C9	Not available	–	"- -" permanent	Not available	–
CA	Not available	–	"- -" permanent	Not available	–
Cb	Selection of forced stoppage logic	X	00	Forced stoppage inlet: A contact	This function determines the logic operation for the forced stoppage contacts.
			01	Forced stoppage inlet: B contact	
CC	Not available	X	00	Not available Use at 00 conditions	–
			01		–
Cd	Not available	O	00	Not available Use at 00 conditions	–
			01		–
CE	Not available	O	00	Not available Use at 00 conditions	–
			01		–
CF	Change of louver swing angle	O	00	Standard (7 steps)	This function adjusts the angle of the air outlet louver.
			01	Draught prevention (5 steps)	
			02	High ceilings (5 steps)(3)	
d1	Power supply ON/OFF 1	O	00	Not activated function	This function stores the unit settings in the event of a power cut. The unit is restarted when the power is re-established.
			01	Activated function	
d2	Not available	X	"- -" permanent	Not available	–
d3	Power supply ON/OFF 2	O	00	Not activated function	This function is used to restart the unit after a power cut taking more than 2 seconds.
			01	Activated function	
d4	Cooling air temperature drop prevention.	O	00	Not activated function	This function changes the cooling operating conditions to avoid cold draughts.
			01	Activated function	
d5	Heating air temperature drop prevention.	O	00	Not activated function	This function prevents a drop in the air temperature by decreasing the fan speed, apart from the settings on the remote control.
			01	Activated function	
d6	Room temperature control for energy saving	O	00	Not activated function	This function saves energy when the outdoor temperature is lower than the air conditioning charge.
			01	Activated function	

Element	Optional function	Individual setting	Settings	Condition setting	Description
d7	Only PC-ARF: Fall distance of elevating panel	O	00	200 cm	(Standard)
			01	100 cm	–
			02	150 cm	–
			03	200 cm	–
			04	250 cm	–
			05	300 cm	–
			06	350 cm	–
			07	400 cm	–
E1	KPI: ventilation mode	O	00	Automatic ventilation	This function is used to set the unit ventilation mode with energy / heat recovery.
			01	Ventilation with total heat exchanger	
			02	Ventilation with bypass (no total heat exchange)	
E2	KPI: Increasing air supply volume	O	00	Not activated function	This function is used to increase the air supply pressure in the room.
			01	Activated function	
			00	Not activated function	This function selects the enthalpy sensor input.
			01	Activated function	
E3	Not available	O	00	Not available Use at 00 conditions	–
			01		
E4	Pre-cooling / pre-heating period	O	KPI:		This function delays the unit start-up with energy / heat recovery
			00	Standard	
			01	30 minutes	
			02	60 minutes	
E5	Not available	O	00	Not available Use at 00 conditions	–
			01		
E6	Indoor fan operation time after cooling operation stoppage	O	00	Not activated function	This function prevents the condensation accumulation in the unit by keeping the fan running after it is switched off.
			01	60 minutes	
			02	120 minutes	
E7	Not available	O	00	Not available Use at 00 conditions	–
			01		
E8	Fan operation control at heating Thermo - OFF	O	00	Not activated function	This function reduces the unit fan speed to prevent cold draughts.
			01	Activated function	
E9	Not available	O	00	Not available Use at 00 conditions	–
			01		

Element	Optional function	Individual setting	Settings	Condition setting	Description
EA	Not available	O	00	Not available Use at 00 conditions	–
			01		
Eb	Fan operation control at cooling Thermo-OFF	O	00	Not activated function	This function reduces the unit fan speed to reduce the spreading of smells and humidity.
			01	Low	
			02	Slow	
EC	Forced Thermo-ON stoppage at cooling	O	00	Not activated function	This function is used to force stoppage when cooling is complete.
			01	Available	
Ed	Not available	O	00	Not available Use at 00 conditions	–
			01		
EE	Automatic fan speed control	O	00	Not activated function	This function limits the unit operation by automatically controlling the fan speed when the room temperature is close to the set temperature.
			01	Activated function	
F1	PC-ARF: Automatic OFF timer setting	X	00	Not activated function	This function is used to set the automatic timer to switch off when the unit has been started by remote control. Do not set the functions “0C”-”0F” when two remote control switches are used in the same remote control group.
			01	1 h	
			02	2 h	
			03	3 h	
			04-24	(04-24) h	
			0A	30 min	
			0B	90 min	
	PC-ART: Not available	–	00-0B	Not available	–
F2	Remote control main-sub setting	X	00	Main	This function is used when two remote controls are installed in a system.
			01	Sub	
F3	PC-ARF: Automatic reset of setting temperature(4)	X	00	Not activated function	This function releases the fixed temperature setting after a certain time to limit unit operations and save energy.
			01	Activated function	
	PC-ART: Not available	–	00-01	Not available	–
F4	PC-ARF: Automatic reset time	X	00	30 minutes (factory setting)	This function is used to set the automatic reset time with the temperature setting
			01	15 minutes	
			02	60 minutes	
			03	90 minutes	
	PC-ART: Not available	–	00-03	Not available	–

Element	Optional function	Individual setting	Settings	Condition setting	Description
F5	PC-ARF: Automatic reset temperature for cooling	X	19	19 °C	This function is used to set automatic temperature reset in FAN/COOL/DRY modes.
			20	20 °C	
			21-24	(21-24) °C	
			25	25 °C (factory setting)	
			26-28	(26-28) °C	
			29	29 °C	
			30	30 °C	
	PC-ART: Not available	–	19-30	Not available	–
F6	Automatic reset temperature for heating	X	17	17 °C	This function is used to set automatic temperature reset in HEAT mode.
			18-20	(18-20) °C	
			21	21 °C (factory setting)	
			25-28	(25-28) °C	
			29	29 °C	
			30	30 °C	
	PC-ART: Not available	–	17-30	Not available	–
F7	Operation stoppage prevention by remote control switch operational error[5]	X	00	Not activated function	–
			01	Activated function	
	PC-ART: Not available	–	00-01	Not available	–
F8	Lock function for operation mode selection	X	00	Not activated function	This function is used to prevent changes to the operating mode.
			01	Activated function (factory setting)	
F9	Lock function for temperature setting	X	00	Not activated function	This function is used to prevent changes to the temperature setting.
			01	Activated function (factory setting)	
FA	Lock function for fan speed selection	X	00	Not activated function	This function is used to prevent changes to the fan speed.
			01	Activated function (factory setting)	
Fb	Lock function for swing louver operation	X	00	Not activated function	This function is used to prevent changes to automatic louver operations.
			01	Activated function (factory setting)	

Element	Optional function	Individual setting	Settings	Condition setting	Description
FC	Cooling lower limit for setting temperature	X	00	Standard	This function is used to define a lower temperature setting limit for FAN/ COOL/DRY modes.
			01	Lower limit +1 °C	
			02	Lower limit +2 °C	
			03-08	Lower limit +(03-08) °C	
			09	Lower limit +9 °C	
			10	Lower limit +10 °C	
Fd	Heating upper limit for setting temperature	X	00	Standard	This function is used to define an upper temperature setting limit for HEAT mode. PC-ARF: up to -12 °C
			01	Lower limit -1 °C	
			02	Lower limit -2 °C	
			03-08	Lower limit -(03-08) °C	
			09	Lower limit -9 °C	
			10	Lower limit -10 °C	
FE	Not available	–	00	Not available Use at 00 conditions	–
			01		
			02		
FF	PC-ART: Lock function for timer	X	00	Not activated function	This function is used to lock timer activation.
			01	Activated function (factory setting)	
	PC-ARF: Not available	–	–	Not available Use at 00 conditions	–
H1	Maintenance alarms	O	00	Display	This function is used to display or hide maintenance alarms.
			01	Hide	
	PC-ARF: Not available	–	–	Not available Use at 00 conditions	–
H2	PC-ART: Automatic control indication PC-ARF: Indication of hot start	O	00	Display	This function is used to display or hide the automatic control indication.
			01	Hide	
H3	PC-ART: Operating mode change restriction	O	00	Operating mode change disabled (factory setting)	This function is used to configure restrictions to the HEAT mode.
			01	Operating mode set by the central control + FAN mode	
			02	Unlimited operating mode	–
	PC-ARF: Not available	–	–	Not available Use at 00 conditions	–
H4	PC-ART: Operating modes for the ventilation unit with energy / heat recovery	O	00	Air conditioning only	This function is only available for the ventilation unit with energy / heat recovery.
			01	Ventilation only	
			02	Air conditioning + ventilation	
	PC-ARF: Not available	–	–	Not available Use at 00 conditions	–

Element	Optional function	Individual setting	Settings	Condition setting	Description
H5	Central control available after forced stoppage	O	00	Not available	This function allows for central control after the forced stoppage of the unit.
			01	Available	
	PC-ARF: Not available	–	–	Not available Use at 00 conditions	–
J1	Temperature indication	X	00	Not available	PC-ARF only
			01	Available	PC-ARF only
J2	Not available	–	–	Not Used	PC-ARF only
J3	Run indicator color	X	00	Green	PC-ARF only
			01	Red	PC-ARF only
J4	Not available	–	–	Not available Use at 00 conditions	PC-ARF only
J5	Not available	X	–	Not available Use at 00 conditions	PC-ARF only
J6	Error sound	X	00	Once	PC-ARF only
			01	Sequence	PC-ARF only
J7	Not available	–	–	Not available	PC-ARF only
J8	Eco-operation[6]	X	00	Not activated function	PC-ARF only
			01	Activated function	PC-ARF only
J9	Not available	–	–	Not available Use at 00 conditions	PC-ARF only
JA	Not available	–	–	Not available Use at 00 conditions	PC-ARF only
Jb	Not available	–	–	Not available Use at 00 conditions	PC-ARF only
1-1	Not available	X	–	Not available Use at 00 conditions	PC-ARF only
1-2	Not available	X	–	Not available Use at 00 conditions	PC-ARF only
1-3	Not available	X	–	Not available Use at 00 conditions	PC-ARF only
1-4	Not available	–	–	Not available Use at 00 conditions	PC-ARF only
1-5	Human sensor detection level	–	00	Standard	PC-ARF only
			01	High	PC-ARF only
			02	Low	PC-ARF only

O: allows for individual setting.

X: the setting is made for all outdoor units.

–: not used.

(1) Setting 02 is not available on all indoor units.

(2) On RPI units: 00 Increases speed 1 (standard), 01 Increases speed 2 (high static pressure), 02 Standard speed (low static pressure).

(3) 00 standard (7-step operation); 01 draft prevention (cannot be set below two steps); 02 High ceilings (cannot be set above two steps).

(4) In case that the set temperature is changed and kept within the set time at “F4”, the temperature is automatically changed to “F5” and “F6”. In case that the set temperature is out of range at “F5” and “F6”, it is applied within upper and lower limit for the set temperature.

(5) Operation is stopped by pressing the run/stop switch for 3 seconds.

(6) When the unit is restared by the remote control switch, the temperature automatically changes to the setting temperature of “F5” or “F6”.

NOTE

- ***Makes the changes to the optional settings at least three minutes following start-up.***
- ***On modifying the ”CF” (air outlet louver angle change) setting, restore the power supply or allow the automatic louver to make a full cycle in automatic mode to apply the optional setting.***
- ***The optional function settings are different depending on the indoor or outdoor units. Check that the unit has the optional setting.***
- ***Save the optional settings made on each outdoor and indoor unit in the “Setting” column of the table.***

6.3.3 Description of the optional remote control functions

b1 – Removal of heating temperature compensation

This function is useful when the thermistor is removed from the suction area of the indoor unit and installed somewhere else. It is used when the temperature setting displayed on the remote control and the inlet air temperature of the indoor unit must be the same.

b2 – Circulator function at heating Thermo-OFF

This function is useful when the air in the room is stratified (hot air accumulates at the ceiling). Air stratification may occur if LOW has been selected with the heating thermostat off. This function prevents air stratification in the room after stopping the air conditioning system.

The circulation pump function maintains the fan speed, whether the thermostat is on or off. Hence, the air movement in the room is kept at the same level to ensure even air distribution.

NOTE

If the indoor unit has an automatic louver, this function also remains active when the heating thermostat is switched off.

Everyone has a different perception of coolness, heat and air flow and, therefore, this issue should be discussed with the client and the unit set according to the results of the conversation.

b3 – Forced compressor operation for at least three minutes

This function is used to protect the compressor preventing it from being started or stopped for periods of less than three minutes. On enabling this function, the mode enabling operations for a minimum of 3 minutes is added.

NOTE

In the case of SET-FREE units, this function is standard, even when the setting is not available.

The compressor stops immediately when the safety device is activated or ON/OFF is pressed.

To cancel this function, see C7 – Cancellation of the forced compressor operation for at least three minutes.

When this function is cancelled, the mode enabling operations for a minimum of 3 minutes remains available.

b4 – Pre-determined filter cleaning period change

This function is used to modify the period which the remote control indicates the air filter replacement. The filter cleaning period can be changed depending on the condition of the filter, as shown in the table below:

NOTE

The remaining number of hours before cleaning the filter is factory-set for all indoor unit models.

(*)for RPK units, the factory setting is 200 hours.

b5 – Fixing of operation mode

This function is used when the operating mode does not have to be changed. Once the unit operating mode has been selected, this function prevents it from being modified from the remote control.

b6 – Fixing of setting temperature

This function is used when the temperature setting does not have to be changed. Once the unit temperature has been selected, this function prevents it from being modified from the remote control.

b7 – Fixing of cooling operation

This function is available to use refrigeration mode only and to prevent heating mode from being enabled. When this function is selected, heating operation and the automatic COOL/HEAT operation are cancelled.

b8 – Automatic COOL/HEAT operation

This function allows the automatic change from the cooling to the heating mode for the units with the same refrigerant cycle.

NOTE

This function is not valid when the outdoor unit is an exclusive cooling model or when the function to set operations as an exclusive cooling unit is enabled.

b9 – Fixing of fan speed

Once the unit fan speed has been selected, this function prevents it from being modified from the remote control.

NOTE

When this function is enabled, the fan speed cannot be changed using the remote control.

bA – Not available

bb – Cooling temperature compensation

This function is used to obtain longer cooling periods. When this function is enabled, the air conditioning system is switched on/off with the temperature condition below the temperature indicated on the remote control.

NOTE

The lower set temperature limit after offset is 19 °C.

bC – Not available

bd – Not available

bE – Not available

C1 – Not available

C2 – Not available

C3 – Not available

C4 – Drain pump in heating mode

This function is used to activate the drain pump in heating mode.

C5 – Increasing speed

The fan speed increase selection function is only available for RCI(M) and RCD units. It is used to increase the indoor units fan speed installed in high ceilings.

NOTE

In the case of RPI units, this setting is used to select the static pressure from remote control.

C6 – Increasing fan speed (PC-ART) / Hi speed at heating Thermo-OFF (PC-ARF)

The fan speed increase selection function is only available for RCD units. This function is used to increase the fan speed when the thermostat reaches the set temperature in heating with function

(PC-ART).

This function is used to increase the fan speed when the thermostat reaches the set temperature in heating using function C5.

NOTE

The fan speed does not increase when the thermostat is switched off with the function setting (C5)

C7 – Cancellation of the forced compressor operation for at least three minutes

This function is used when b3 – forced compressor operation for at least 3 minutes must be cancelled.

NOTE

In the case of SET-FREE units, the forced compressor operation for at least 3 minutes described (b3) is the standard function.

C8 – Thermistor of remote control switch

This function is useful when the unit is to be controlled by the thermistor included in the remote control instead of by the suction air thermistor. It determines the thermistor to control the air temperature.

NOTE

When the function is set to "01" or "02", if the temperature detected by the remote control thermistor is abnormal due to a fault in the remote control thermistor or another fault, the intake air thermistor on the indoor unit is used automatically.

C9 – Not available

CA – Not available

Cb – Selection of forced stoppage logic

This function determines the operating logic for the forced stoppage contacts.

The setting conditions and contact logic are shown in the following table:

Setting condition				
Setting	Contact	Contact logic	Activation contact	
			Open	Closed
00	Contact A	Normally open	Normal	Forced stoppage
01	Contact B	Normally closed	Forced stoppage	Normal

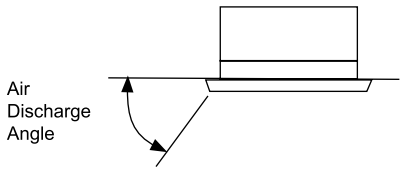
CC – Not available

Cd – Not available

CE – Not available

CF – Change of louver swing angle

This function is useful when the louver swing angle (air discharge angle) must be changed.



Setting condition	Louver swing angle
00	Approx. 30 to 60°
01	Approx. 30 to 50°
02	Approx. 40 to 60°

d1 – Power supply ON/OFF 1

This function stores the unit settings in the event of a power cut. The unit is restarted when the power is re-established.

CAUTION

When this function is used without anyone controlling the unit, set the system monitoring mode to avoid risks.

NOTE

In the event of an electrical fault, the unit starts and stops according to the on/off setting of the power supply. If the fault occurs during a stoppage enabled through the remote control, the unit will restart automatically once the power supply is reconnected.

d2 – Not available

d3 – Power supply ON/OFF 2

This function is used to restart the unit after a power cut taking more than 2 seconds. The standard unit starts automatically under the same operating conditions, such as the operating mode, etc. in the case of an electrical fault lasting for a maximum of 2 seconds.

The compressor unit restarts after three minutes plus the maximum 2 seconds of the fault.

⚠CAUTION

When this function is used without anyone controlling the unit, set the system monitoring mode to avoid risks.

d4 – Cooling air temperature drop prevention

This function is useful when the thermostat on/off conditions must be changed and a decrease in discharge air temperature must be avoided. As a result, the perception of draughts is prevented.

- Thermostat off conditions (thermostat switched off when the discharge air temperature is low):
  - Cooling operation (including dry operation).
  - Indoor air discharge temperature <11 °C maintained for 3 minutes.
- Thermostat on conditions (thermostat switched off when the discharge air temperature is low):
  - Indoor discharge air temperature >13 °C.
  - The thermostat will switch on depending on the indoor discharge air temperature.

d5 – Heating air temperature drop prevention.

This function prevents a drop in the air temperature by decreasing the fan speed, apart from the settings on the remote control.

d6 – Room temperature control for energy saving

This function is useful when energy must be saved automatically. The outdoor air temperature thermistor detects that the air conditioning charge is low, in line with the outdoor temperature.

d7 – Not used

E1 – KPI ventilation mode

This function is used to set the unit ventilation mode with energy / heat recovery

This function is useful to set the heat exchanger ventilation mode. The setting condition and ventilation mode are shown below:

Setting condition	
Setting	**Contents**
00	Effective ventilation mode selection (ventilation with total heat exchanger or ventilation bypass) to save energy by detecting the difference in temperature between indoors and outdoors.
01	Heat is exchanged continuously when the heat exchanger is started.
02	Heat is not continuously exchanged when the heat exchanger is started.

E2 – Increasing air supply volume

This function is useful when the air supply volume must be increased using the high-speed, one-way valve on the fan motor during total heat exchanger operations. This increases the pressure in the room with greatest air volume in relation to adjoining rooms and prevents the entry of contaminated air or unpleasant smells.

The following table shows the air flow rate setting using the remote control and the actual air flow rate of the total heat exchanger when this function is enabled.

E3 – Not available

E4 – Pre-cooling / pre-heating period

This function is useful to delay start-up of the total heat exchanger.

E5 – Not available

E6 – Indoor fan operation time after cooling operation stoppage

This functions prevents the condensation accumulation in the unit by keeping the fan running after it is switched off.

E7 – Not available

E8 – Fan operation control at heating Thermo-OFF

This function is useful to avoid the perception of cold draughts by reducing the indoor fan speed with the heating thermostat off.

E9 – Not available

EA – Not available

Eb – Fan operation control at heating Thermo-OFF

This function reduces the unit fan speed to reduce the spreading of smells and humidity.

EC – Forced Thermo-ON stoppage at cooling

This function is used to force stoppage when cooling is complete. It is effective for avoiding unpleasant smells, as the heat exchanger remains clean, e.g. it is rinsed with drainage water.

Ed – Not available

EE – Automatic fan speed control

This function is useful to economise the operating time and limit the unit operation by automatically controlling the fan speed when the room temperature is close to the set temperature.

NOTE

This function is available for PC-ART and all indoor units except RPI(8.0/10.0)FSN2E

F1 – Automatic OFF timer setting (PC-ARF)

This function is used to switch off the timer automatically when the unit is started using the remote control.

It is not possible to cancel or change the timer off setting during automatic timer off setting. However, it can be cancelled when the unit is stopped. When the unit is restarted, the off timer setting period is established according to the optional setting. Do not set the functions “0C”-”0F” when two remote control switches are used in the same remote control group.

NOTE

This function is not available for control using CS-NET or 7-day timer.

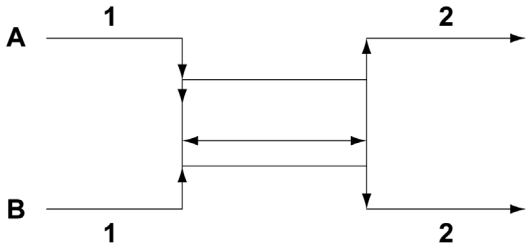
F2 – Remote control main-sub setting

This function is useful when configuring two remote controls for the same installation: one in main mode and the other in secondary mode.

F3 – Automatic reset of setting temperature (PC-ARF) / Not available (PC-ART).

However, the temperature configuration does not perform the automatic Reset when operating in Automatic COOL/HEAT mode or operations using the remote control for the central unit are forbidden.
This function is used to economise the operation. When this function is valid, the temperature configuration is automatically initialised for Cooling/Heating (55/56) under the following conditions:

- If the automatic temperature Reset (54) is not performed during temperature configuration.
- If it is effective for optimum temperature configuration and energy is saved.



NOTE

In case that the set temperature is changed and kept within the set time at "F4", the temperature is automatically changed to "F5" and "F6". In case that the set temperature is out of range at "F5" and "F6", it is applied within upper and lower limit for the set temperature.

F4 – Automatic reset time (PC-ARF) / Not available (PC-ART)

This function is used to set the automatic reset time with the temperature setting.

F5 – Automatic reset temperature for cooling (PC-ARF) / Not available (PC-ART)

This function is used to set automatic temperature reset in FAN/COOL/DRY modes.

F6 – Automatic reset temperature for heating / Not available (PC-ART)

This function is used to set automatic temperature reset in HEAT mode.

F7 – Operation stoppage prevention by remote control switch operational error / Not available (PC-ART)

NOTE

Operation is stopped by pressing the run/stop switch for 3 seconds.

F8 – Lock function for operation mode selection

This function is used to prevent changes to the operating mode.

F9 – Lock function for temperature setting

This function is used to prevent changes to the temperature setting.

FA – Lock function for fan speed selection

This function is used to prevent changes to the fan speed.

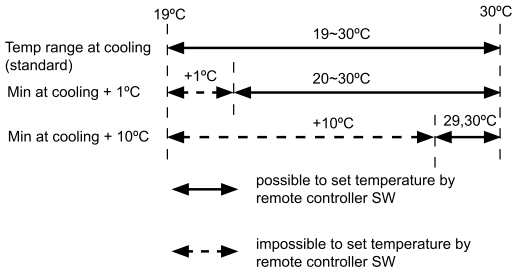
Fb – Lock function for swing louver operation

This function is used to prevent changes to automatic louver operations.

FC – Cooling lower limit for setting temperature

This function is useful to set the temperature range in cooling mode. It enables the cooling range to be reduced for configuration using the remote control.

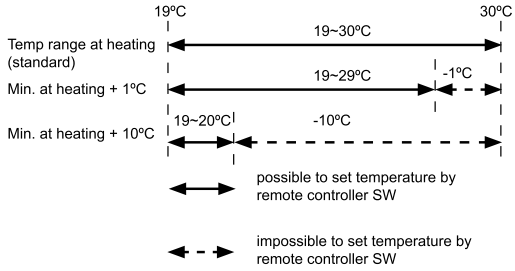
An example is shown in the following figure:



Fd – Heating upper limit for setting temperature

This function is used to define an upper temperature setting limit for the HEAT function. This function enables the heating range to be reduced for configuration using the remote control.

An example is shown in the following figure:



FE – Not available

FF – Lock function for timer (PC-ART) / Not available (PC-ARF)

This function is used to lock timer activation.

H1 – Maintenance alarms (PC-ART) / Not available (PC-ARF)

This function is used to display or hide maintenance alarms.

H2 – Automatic control indication (PC-ART) / Indication of hot start (PC-ARF)

This function is used to display or hide the automatic control indication.

H3 – Operation mode change restriction (PC-ART) / Not available (PC-ARF)

This function is used to configure restrictions to the HEAT mode.

H4 – Operation modes for the ventilation unit with energy / heat recovery (PC-ART) / Not available (PC-ARF)

This function is only available for the ventilation unit with energy / heat recovery.

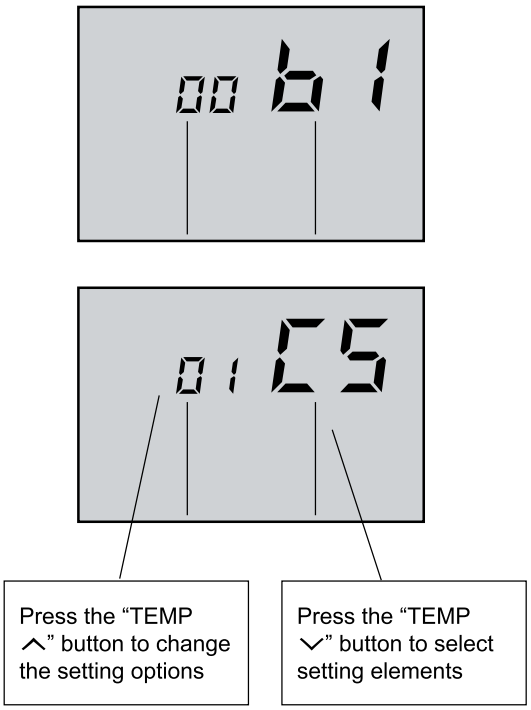
H5 – Central control available after forced stoppage / Not available (PC-ARF)

This function allows for central control after the forced stoppage of the unit.

6.3.4 Optional functions for PC-ARH remote controls

Optional setting function

1 To access the optional setting mode with the unit at a standstill, press the MODE and FAN SPEED buttons at the same time for over 3 seconds until the image displayed on the screen changes:
2 Press TEMP▼ to change the setting elements and press TEMP▲ to change the setting options. See the table below for the setting elements and options.
3 To complete the optional setting mode, press the MODE and FAN SPEED buttons at the same time.



Code	Part	Setting options
b1	Heating temperature setting cancellation	00: Normal (temperature setting +4 °C)
		01: Cancelled (temperature setting)
		02: Temperature setting +2 °C *(1)
b8	Simultaneous cooling/ heating mode	00: Disabled
		01: Enabled
C5	Increase of indoor fan	00: Disabled
		01: High 1
		02: High 2
C8	Remote control thermostat (*2)	00: Disabled
		01: Change from indoor inlet thermistor to remote control thermostat
		02: Unit control using the average value of the indoor inlet thermistor and the remote control thermostat
F2	Main and secondary remote control setting	00: Main
		01: Secondary
FC	Minimum cooling temperature setting (*3)	00: Normal temperature range
		01-10: Maximum heating limit +1 °C - +10 °C
Fd	Maximum heating temperature setting (*4)	00: Normal temperature range
		01-10: Maximum heating limit -1°C - 10°C
H1	Maintenance alarm	00: Display
		01: Hide
H2	Non-automatic control indication	00: Display
		01: Hide

Code	Part	Setting options
H3	Operating mode change restriction	00: Operating mode change disabled (hide operating mode) (factory setting)
		01: Operating mode set by the central control unit + FAN mode
		02: Unlimited operation
H4	Ventilation exchange (total heat exchanger only)	00: Air conditioning only
		01: Ventilation only
		02: Air conditioning + Ventilation
H5	Central control available after forced stoppage	00: Disabled
		01: Enabled

*(1): Some indoor units do not accept setting 02.

*(2): If installed next to a bedside table, use setting 00.

*(3): Applicable to FAN, COOL and DRY modes.

*(4): Applicable to HEAT mode.

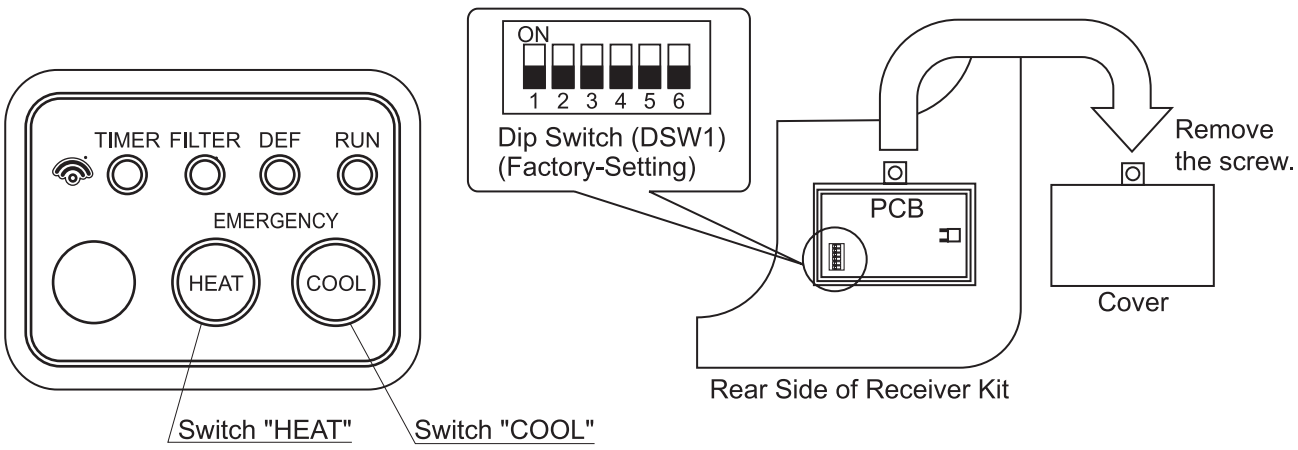
*(5): Setting 01 is only available when a remote control is used. Do not use this setting when two controls (main/secondary) are used.

NOTE

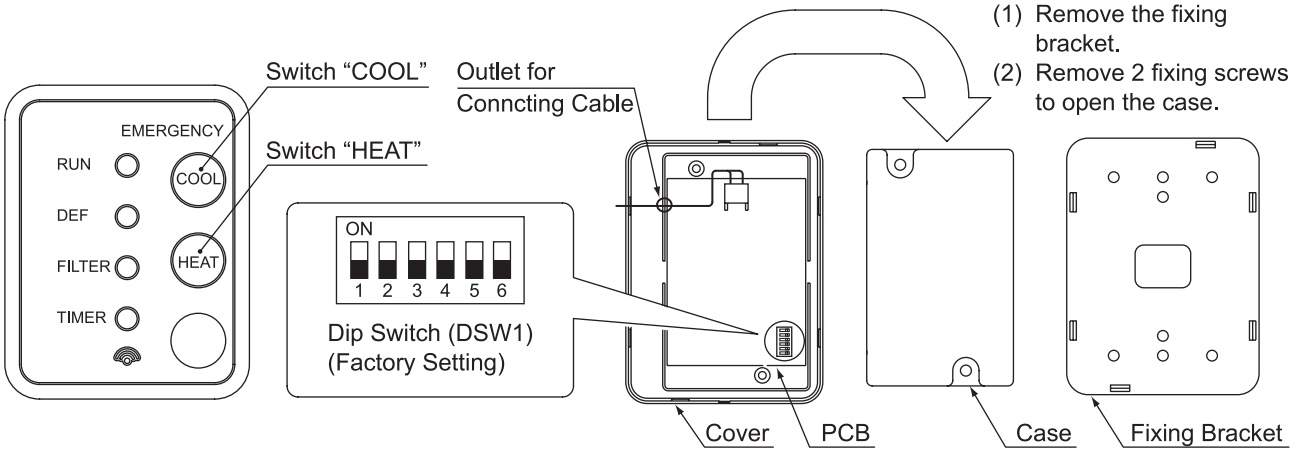
- ***When several indoor units are connected, the same settings apply to them all.***
- ***To change the settings, wait for over 3 minutes after switching on the power supply.***
- ***Some indoor and outdoor units do not accept certain settings or do not include functions corresponding to the enabled settings. Check the available settings beforehand.***

6.3.5 Optional functions on wireless remote controls

PC-ALH3



PC-ALHZF



Secondary receiver setting

To enable this setting, enable terminal 1 on the DIP switch.

HITACHI
Inspire the Next

7. Test run

Index

7.1 Checks prior to the test run

- Once installation is complete, carry out the test run in line with the procedure described below. The system can be handed over to the client once the test has been correctly completed.
- Prior instructions to carry out the test run:

1 Verify the check points described in Check points.
2 Carry out the check procedure described in Check procedure.
3 Carry out the test run on the indoor units individually and in order.
4 Check that the wiring and refrigerant piping connections are connect.
5 Start the indoor units individually and in order. Check that they are correctly numbered.
6 Carry out the test in line with the instructions given in section Test procedure using the remote control.

CAUTION

- ***Bear the following in mind while the system is running:***

1 ***Do not touch any component in the discharge gas area. The compressor chamber and the piping are at temperatures of over 90°C. They may cause burns.***
2 ***Do not touch the magnetic breakers. This could cause a serious accident.***

- ***Wait for more than three minutes before touching electrical components after turning off the main switch.***
- ***Check that the gas and liquid line stop valves are fully open.***

7.1.1 Check points

- Do not start the system until all of the check points have been verified.

1 Use a multimeter to measure the resistance between earth and the electrical component terminal. Check that the resistance is above 1 MΩ. Otherwise, do not start the system, locate the electrical leak and repair. Do not apply voltage to transmission terminals 1 and 2.
2 Check that the outdoor unit stop valves are fully open. If so, start the system.
3 Check that the power supply switch has been on for over 12 hours to heat up the compressor oil.

7.1.2 Check procedure

Check:

1 The gas and liquid line stop valves are fully open.
2 That there are no refrigerant leaks.

NOTE

Flare nuts may sometimes loosen due to vibrations during transportation.

3 Refrigerant piping and wiring form part of the same system.
4 The number of the DSW1, DSW6 and RSW1 units corresponds to the system.
5 The setting of the DIP switches on the printed circuit board of the indoor units is correct. Pay particular attention to the set different in height between the indoor and outdoor units. See the wiring diagrams for further details.
6 The power supply switch has been on for over 12 hours to heat up the compressor oil.
7 The wiring is correctly connected. See the wiring diagrams for further details.
8 Each terminal (L1, L2, L3, N or L1 and N) is correctly connected to the power supply.
9 The field-supplied electric components (main power switch protection fuse, circuit breaker without fuse, residual current breaker, wires, piping connectors and wire terminals) have been selected correctly in line with the electrical data given in the technical catalogue and in national and local regulations.
10 The power supply wiring terminal connection (L1 to L1 and N to N). Check the connection of the terminal boards running at 380 Vac. An incorrect connection may damage components.
11 Intermediate wire terminals between the indoor unit (operational line: terminals of every terminal board for 12 V) fit correctly. An incorrect connection may damage components.
12 The crankcase checker has been on for more than four hours. The device will not work unless it has been on for more than four hours.

13 The operating temperature:

- Cooling operation
  - **a.** Indoor DB2 1.5 °C and higher.
  - **b.** Indoor WB 16 °C and higher.
  - **c.** Outdoor DB 0 °C and higher.
- Heating operation
  - **a.** Indoor DB27 °C and below.

14 Use shielded cables for the installation to avoid electrical noise. This must be less than 1000 m in length and meet with national and local regulations.

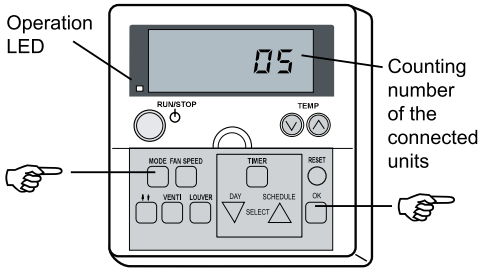
15 Disconnect the KPI unit if it is connected to the indoor unit control. Otherwise the unit will not carry out the test run.

7.2 Test procedure using the remote control

7.2.1 PC-ART remote control

Switch on the power supply to the indoor and outdoor units.

Select the TEST RUN mode using the remote control: press MODE and OK buttons at the same time for more than 3 seconds.



1 If the indication TEST RUN or the counter number of the units connected to the control (e.g. 05) is displayed on the remote control, the remote control cable connection is correct and you may go on to point 4.

2 If no indication is displayed or 00 is displayed or if the number of units indicated is below the actual number, this indicates a fault. In this case, go to point 3.

Remote control indication	Fault	Inspection points after switching off the power supply
No display.	• The power supply is not on • The remote control cable connection is incorrect. • The power line connection wires are incorrect or loose.	**a.** The connection between the remote control and the unit is correct **b.** Remote control cable connection points. **c.** Remote control cable connector contact. **d.** Adjustment of the screws on each terminal board.
The number on the connected unit counter is incorrect.	• The unit number setting is incorrect. • The control cable connection between each indoor unit is incorrect (when a remote control controls several units).	**a.** Settings of the DIP switches on the printed circuit board. **b.** Connection order of the jumper connection cable wires. **c.** Jumper connection cable connection points. **d.** Jumper connection cable connector contact.

3 Go back to point 1 after the check.

4 Select the TEST RUN mode by pressing MODE (COOL or HEAT).

5 Press RUN/STOP.

a. The test run will begin. (The TEST RUN will take two hours. It can also be stopped by pressing RUN/STOP again).

b. If the unit does not start or the on/off LED on the remote control flickers, this indicates a fault. Go to step 6.

6 Check the indication on the remote control:

Indication on the remote control	Unit status	Fault	Inspection points after switching off the power supply
The on/off LED flickers (once a second), along with the unit no. and alarm code 03.	The unit does not start.	The operating line connection wires are incorrect or loose.	**a.** Connection order of each terminal board. The fuse on the PCB is likely to have been disabled during a incorrect wiring. The fuse can only be recovered once using the DSW on the PCB. Go to point **7**. **b.** Adjustment of the screws on each terminal board. **c.** Connection order of the power supply cables between the indoor and outdoor units.
The on/off LED flickers (once every 2 seconds).	The unit does not start.	The remote control cable connection is incorrect.	As in point 3 A, B and C
The flickering display is different to that indicated above.	The unit does not start. The unit starts and then stops.	The thermistor connection or that of other connectors is incorrect. The trip switch is triggered.	Use the alarm code table in the service manual to check this (service personnel are responsible for this check).
The on/off LED flickers (once every sec.). And the unit number 00, the alarm code dd and unit code E?00 flicker.	The unit does not start.	The remote control cable connection between the indoor units is correct	See the fault table in the technical catalogue (this must be performed by technical personnel).

Go back to point 1 after the check.

7 Instructions for recovery when the transmission circuit fuse is disabled

a. Correct the terminal board wiring.

b. Enable the 1st pin on DSW7 of the indoor unit PCB.

7.2.2 PC-ARF remote control

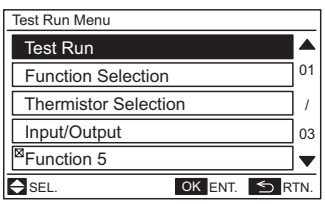
(1) Turn ON the power supply for all the indoor units.

(2) For the models with the auto-address function, wait for 3 minutes approximately. The addressing is automatically performed. (There is a case that 5 minutes is required according to the setting condition.) After that, select using language from “Menu”. Refer to the operation manual for details.

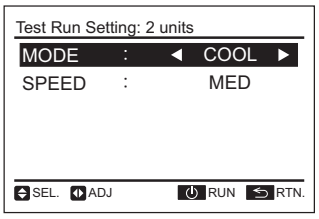
(3) Press and hold “☰” (menu) and “⮌” (return) simultaneously for at least 3 seconds.

a. The test run menu will be displayed.

Test run screen

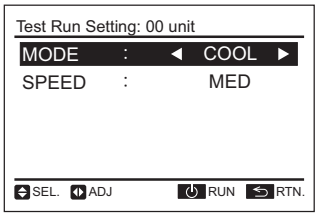


b. Select “Test Run” and press “OK”. The test run settings will be displayed.

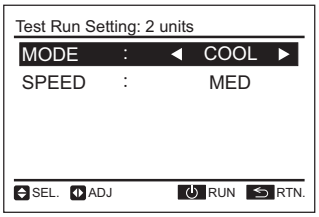


NOTE

When “00” is indicated, the auto-address function may be performing. Cancel “Test Run” mode and set it again.



(4) The total number of the indoor units connected is indicated on the LCD (liquid crystal display). The case of the twin combination (one (1) set with two (2) indoor units) is indicated “2 units”, and the triple combination (one (1) set with three (3) indoor units) is indicated “3 units”.



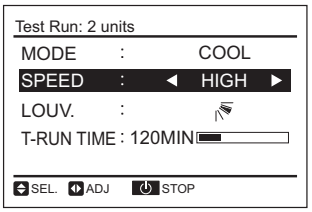
a. If the indicated number is not equal to the actual connected number of indoor unit, the auto-address function is not performed correctly due to incorrect wiring, the electric noise or etc. Turn OFF the power supply and correct the wiring after checking the following points; (Do not repeat turning ON and OFF within 10 seconds.)

- Power supply for indoor unit is not turned ON or incorrect wiring.
- Incorrect connectionn of connecting cable between indoor u nits or incorrect connection of controller cable.
- Incorrect setting of rotary switch and dip switch (the setting is overlapped) on the indoor units PCB.

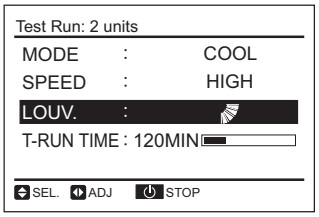
b. Press “⏻” (run/stop) to start the test run.

c. Press “△ ▽ ◁ ▷” and set each item.

(5) Press “⏻” (run/stop). Start the test run when indicatin the air flow volume “HIGH” (default setting) and light the operation lamp. At this time, 2-hour OFF timmer will be set automatically..



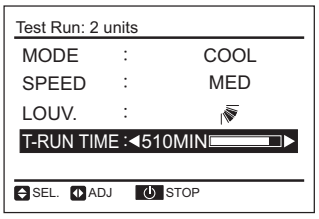
(6) Press “△” or “▽”, select “LOUV.” and select “” (auto swing) by pressing “◁” or “▷”. The auto swing operation will be started. Check the operating sound at the louvers. If abnormal sound is not generated, press “◁” or “▷” again to stop the auto swing operation.



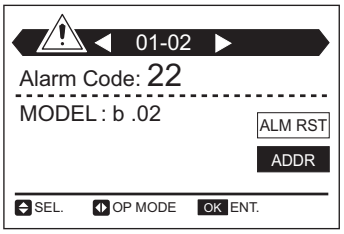
(7) The temperature detections by the thermistors are invalid though the protection devices are valid during the test run.

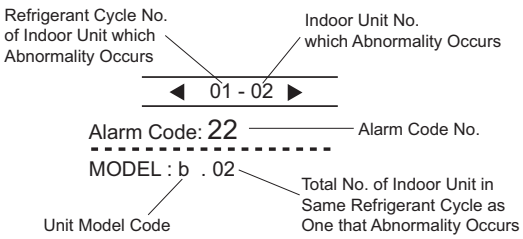
(8) For SET-FREE Series: According to the label “Checking of Outdoor Unit by 7-Segment Display on PCB1” attached to the rear side of the front cover of the outdoor unit, check temperature, pressure and the operation frequency, and connected indoor unit numbers by 7-segment displays.

(9) To finish the test run, press "⏻" (run/stop) again or pass over the set test run time. When changing the test run time, press "△" or "▽" to select "T-RUN TIME". Then, set the test run time (30 to 600 minutes) by pressing "◁" or "▷"



- The RUN indicator on the remote control switch flashes when some abnormalities such as protection devices activated occur during the test run as well as the RUN indicator (orange) on the indoor unit flashes (0.5 second ON/ 0.5 second OFF). Additionally, the alarm code, the unit model code and connected number of indoor units will be displayed on the LCD as shown in the figure below. If the RUN indicator on PC-ARF flashes (2 seconds ON/ 2 seconds OFF), it may be a failure in the transmission between the indoor unit and the remote control switch (loosening of connector, disconnecting wiring or breaking wire, etc.). In this case, check the item 8.3 "Alarm Code" and perform for troubleshooting. Consult to authorized service engineers if abnormality can not be recovered.





7.3 Test procedure using the wireless remote control

7.3.1 PC-LH3A / PC-LH3B wireless remote control

NOTE

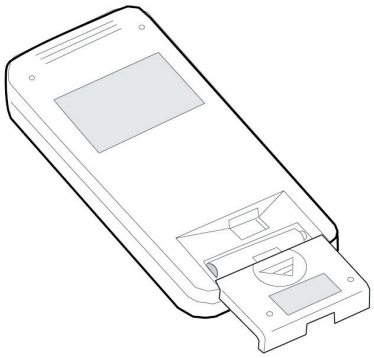
The test run cannot be carried out using the wireless remote control if the remote control is being used or if several units (SET-FREE and UTOPIA series) are running at the same time. In this case, carry out the test using the remote control.

Carry out the test run once the installation work is complete.

Fit the batteries in the remote control.

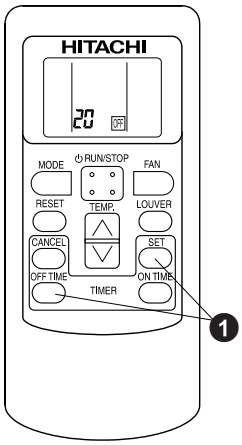
Switch on the power supply to the indoor and outdoor units.

The yellow LED on the indoor unit receiver flickers. While the LED is flickering, the indoor unit will not operate because it is starting up.



Select the TEST RUN mode

1 Press the SET and OFF TIME buttons at the same time for more than 3 seconds. The indication on the LCD screen of the remote control must be as follows. TEST RUN mode is not operational.

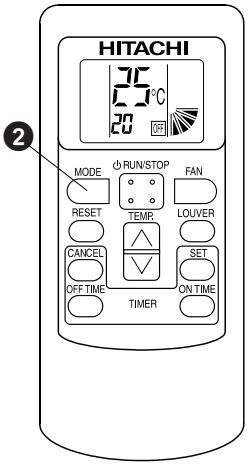


2 Set the operation mode by pressing the MODE button. TEST RUN mode is operational.

Start the test run using the RUN/STOP button. When the unit receives the commands, the yellow LED will light up for a moment.

Check that the device has received the commands and that the selected mode is correct.

In test run mode, the red LED lights up and the green TIMER LED flickers.



NOTE

In the case of the RPK model, the TIMER LED is off.

If the yellow LED does not light up, the remote control commands may not have reached the receiver. Send the commands again.

7.4 Test run check list

MODEL:	
SERIAL NO.	
COMPRESSOR MFG NO	
NAME AND ADDRESS OF CUSTOMER:	
DATE:	

1 Does the indoor unit fan turn in the correct direction? _____
2 Has the unit been running for at least twenty (20) minutes? _____
3 Check the temperature of the room:

Inlet:	No 1	DB/WB _____°C	No 2	DB/WB _____°C	No 3	DB/WB _____°C	No 4	DB/WB _____°C
Outlet:		DB/WB _____°C		DB/WB _____°C		DB/WB _____°C		DB/WB _____°C
Inlet:	No 5	DB/WB _____°C	No 6	DB/WB _____°C	No 7	DB/WB _____°C	No 8	DB/WB _____°C
Outlet:		DB/WB _____°C		DB/WB _____°C		DB/WB _____°C		DB/WB _____°C

4 Check the outside temperature:

Inlet	DB/WB _____°C
Outlet	DB/WB _____°C

5 Check the temperature of the refrigerant: Operating mode (cooling or heating).

Discharge gas temperature	Td = _____°C
Liquid pipe temperature	Te = _____°C

6 Check the pressure:

Discharge pressure	Pd = _____kg/cm²G
Suction pressure	Ps = kg/cm²G

7 Check the voltage:

Rated voltage	_____V	—	—
Service voltage	L1–L2 _____V	L1–L3 _____V	L2–L3 _____V
Initial voltage	_____V	—	—
Phase imbalance	1-(V/Vm) =	—	—

8 Check the compressor inlet operating current

Inlet	_____kW
Suction pressure	_____kW

9 Is the refrigerant charge OK? _____
10 Do the operating control devices work properly? _____
11 Do the safety devices work correctly? _____
12 Has the unit been checked for refrigerant leaks? _____
13 Is the unit clean? _____
14 Are all the panels of the unit fastened securely? _____
15 Are the panels of the cabinet fastened so that they do not make any noise? _____
16 Is the filter clean? _____
17 Is the heat exchanger clean? _____
18 Are the stop valves open? _____
19 Does the water flow freely through the drainage pipe? _____

8. Troubleshooting

Index

8.1 Self-check of the indoor unit PCB (for RPK only) - Preliminary information

- Self-check procedure using indoor PCB relays.
  - To check faults on the indoor unit PCB due to malfunctioning.
  - To check faults on the indoor unit PCB according to the results of the self-check using the CHECK button on the remote control and the auto-control function.

Enable switch 1 and disable switch 2

- Procedure

1 Turn off the main power supply switch.
2 Disconnect connectors CN7 and CN8.
3 Adjust the DIP DSWN switch as shown below.
4 Turn on the main power supply switch. Select the operating mode (see below).
  - Analogue test.
  - Relay test.
5 On completion of the self-check, switch off the power supply and restart the DIP switch.

Self-check procedures RPK-FN(H)2M

Check point	Mode status		Confirmation method
Start the expansion valve and the automatic louver	The expansion valve fully open → fully closed. Louver stopped horizontally.		
Analogue test	If the air inlet temperature thermistors, the air discharge temperature thermistors and the antifreeze protection are normal, go to the next step of the procedure.		
Test on each relay	Fan 52H1, 2, 3 Low: Part of the wireless receiver. Red: Part of the wireless receiver. Green: Part of the wireless receiver. Yellow		Check the ON/OFF sound of the relays and that the LED is on.
Conclusion	Switch all DIP switches off and on as shown above.		

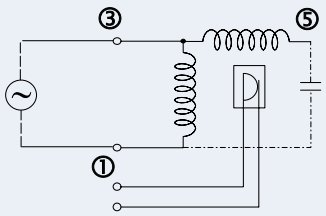
8.2 Electronic expansion valve check procedure

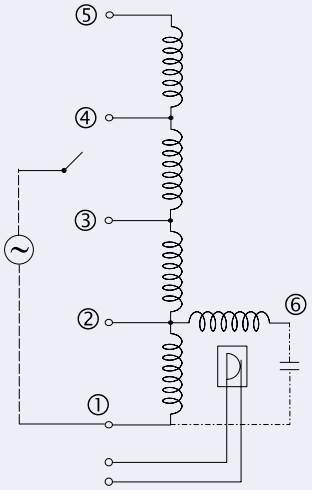
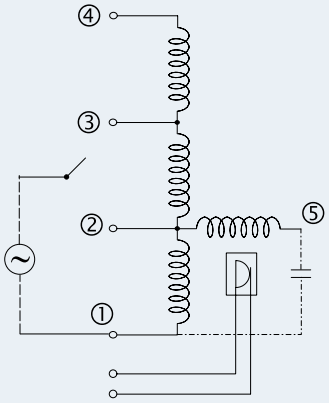
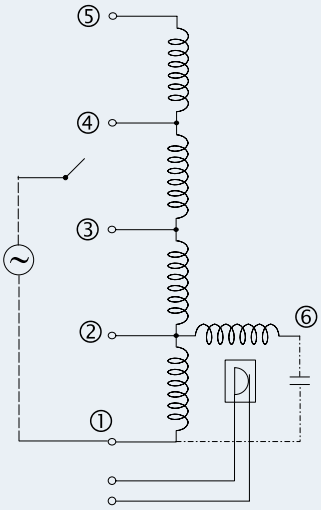
Valve position	Electronic expansion valve
Locked fully closed	Check the temperature of the piping in the heating process. Failure of the temperature to rise indicates a fault.
Locked slightly open	The following conditions indicate a fault: • Where the freeze protection thermistor temperature is lower than the intake air temperature. • Where the unit being inspected stops and other units continue operating in cooling mode.
Locked fully open	

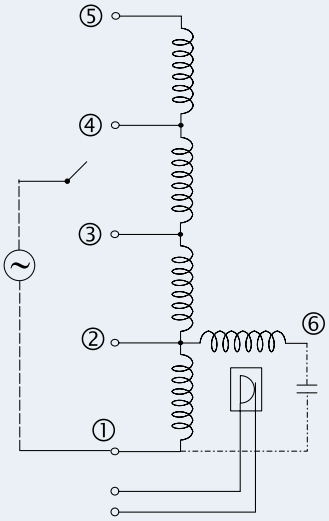
8.3 Procedure for checking fan motors in indoor units

Name and abbreviation of the cable colours used:

Black	Brown	Red	Yellow	Green	Blue	Grey	Orange	White
BLK	BRN	RED	YEL	GRN	BLU	GRY	ORN	WHT

Indoor units	Power output	Wiring diagram	Cable no.	Resistance (Ω)
RCI-1.0FSN3 RCI-1.5FSN3 RCI-2.0FSN3 RCI-2.5FSN3 RCI-3.0FSN3	57 W	DC motor	—	—
RCI-4.0FSN3 RCI-5.0FSN3 RCI-6.0FSN3	127 W	DC MOTOR	—	—
RCI-1.0FSN3Ei RCI-1.5FSN3Ei RCI-2.0FSN3Ei RCI-3.0FSN3Ei	56 W	DC motor	—	—
RCI-4.0FSN3Ei RCI-5.0FSN3Ei RCI-6.0FSN3Ei	108 W	DC motor	—	—
RCIM-0.8FSN2 RCIM-1.0FSN2 RCIM-1.5FSN2 RCIM-2.0FSN2	52 W	DC motor	—	—
RCD-1.0FSN2 RCD-1.5FSN2 RCD-2.0FSN2	35 W		BLK1-3RED RED3-5WHT	159.00 92.00 to 20 °C
RCD-2.5FSN2 RCD-3.0FSN2	55 W		BLK1-3RED RED3-5WHT	70.90 81.70 to 20 °C
RCD-4.0FSN2	35 W x 2		BLK1-3RED RED3-5WHT	159.00 92.00 to 20 °C
RCD-5.0FSN2	55 W x 2		BLK1-3RED RED3-5WHT	70.90 81.70 to 20 °C

Indoor units	Power output	Wiring diagram	Cable no.	Resistance (Ω)
RPC-2.0FSN2E RPC-2.5FSN2E RPC-3.0FSN2E	65 W		BLK1-2RED RED2-3YEL YEL3-4GRY GRY4-5BLU RED2-6WHT	59.90 16.90 15.80 15.80 63.60 to 20 °C
RPC-4.0FSN2E RPC-5.0FSN2E RPC-6.0FSN2E	180 W		BLK1-2RED RED2-3YEL YEL3-4GRY RED2-6WHT	32.10 24.50 24.50 44.70 to 25 °C
RPI(M)-0.8FSN4E-(DU) RPI(M)-1.0FSN4E(-DU) RPI(M)-1.5FSN4E(-DU) RPI-2.0FSN4E	60 W	DC motor	—	—
RPI-2.5FSN4E RPI-3.0FSN4E	150 W		—	—
RPI-4.0FSN4E RPI-5.0FSN4E RPI-6.0FSN4E	250 W		—	—
RPI-8/10FSN3E	1065 W		BLK1-2RED RED2-3BLU BLU3-4GRY GRY4-5YEL RED2-6WHT	5.00 0.75 0.75 0.75 9.20 to 20 °C

Indoor units	Power output	Wiring diagram	Cable no.	Resistance (Ω)
RPK-0.8FSN(H)3M RPK-1.0FSN(H)3M RPK-1.5FSN(H)3M RPK-2.0FSN3M RPK-2.5FSN3M RPK-3.0FSN3M RPK-4.0FSN3M	40 W	DC motor	—	
RPF(I)-1.0FSN2E RPF(I)-1.5FSN2E	28 W		BLK1-2RED RED2-3WHT WHT3-4BLU BLU4-5ORN ORN5-6YEL	231.70 198.70 136.20 71.20 202.40 to 20 °C
RPF(I)-2.0FSN2E RPF(I)-2.5FSN2E	45 W		BLK1-2RED RED2-3WHT WHT3-4BLU BLU4-5ORN ORN5-6YEL	97.90 138.10 61.60 35.20 61.00 to 20 °C

8.4 Inspection of other components

Component name	Unit model	Model code	Resistance (MΩ)
Drain motor	RCI-FSN3	TBC	TBC
	RCI-FSN3Ei	APD-1403S	100
	RCIM-FSN2	PSB-12(A)HHT-2	100
	RPI(M)-FSN4E		
	RCD-FSN2E	KJV-1004	347 to 21ºC

8.5 Outdoor and indoor alarm codes

Code number	Category	Abnormality	Cause
01	Indoor unit	Activation of the safety device	Failure of fan motor, drain discharge, PCB, relay, float switch activated
02	Outdoor unit	Activation of the safety device	Failure of fan motor, drain discharge, PCB, relay, float switch activated
03	Transmission	Abnormal transmission between outdoor and indoor units	Incorrect wiring, failure of PCB, tripping of fuse, power supply OFF
04		Abnormal transmission between inverter PCB (DIP-IPM) and outdoor unit PCB (PCB1)	Abnormal transmission between PCB
05	Power supply	Abnormal operation of picking up phase signal	Main power supply phase is reversely connected or one phase is not connected.
06	Voltage	Excessively low voltage or excessively high voltage for the inverter	Incorrect wiring or insufficient capacity of power supply wiring
07	Cycle	Decrease in discharge gas superheat	Discharge gas superheat less than 10 degrees is maintained for 30 minutes.
08		Excessively high discharge gas temperature at the top of compressor	Temperature of top compressor: Td Td > 132°C over 10 minutes, or Td >140°C over 5 minutes
11	Sensor on indoor unit	Air inlet thermistor	Failure of thermistor, sensor, connection.
12		Air outlet thermistor	
13		Freeze protection thermistor	
14		Gas piping thermistor	
16	Sensor on indoor unit	Remote thermistor	Failure of thermistor
17		Thermistor of RCS	Failure of thermistor
19		Activation of the protection device for the indoor fan motor	Failure of fan motor
20	Sensor on outdoor unit	Compressor thermistor	Failure of thermistor, sensor, connection.
21		High pressure sensor	Incorrect wiring, disconnected wiring, broken cable, short circuit.
22		Thermistor for outdoor ambient temperature (THM7)	Failure of thermistor, sensor, connection.
23		Thermistor for discharge gas temperature (THM9)	Incorrect wiring, disconnected wiring, broken cable, short circuit.
24		Thermistor for evaporating temperature (THM8)	Failure of thermistor, sensor, connection.
29		Low pressure sensor	Incorrect wiring, disconnected wiring, broken cable, short circuit.
31	System	Incorrect capacity setting or combined capacity between outdoor and indoor units	Incorrect setting of the capacity code.
35		Incorrect indoor unit number setting	Duplication of indoor unit number , number of indoor units over specifications.
36		Incorrect indoor unit combination	R22 indoor unit
38		Abnormality of picking up circuit for protection (Outdoor unit)	Failure of indoor unit PCB, incorrect wiring, connection to PCB in indoor unit.

Code number	Category	Abnormality	Cause
41	Pressure	Cooling overload (possible activation of high pressure device)	O.U. pipe thermistor temp. is higher than 55 ºC and the compressor top temp. is higher than 95 ºC, O.U. protection device is activated.
42		Heating overload (high-pressure device may be activated)	If I.U. freeze protection thermistor temp. is higher than 55 ºC and compressor top temp. is higher than 95 ºC, O.U. protection device is activated.
43		Activation of the safety device from compression ratio decrease	Abnormal compress (Compressor, Inverter damage)
44		Activation of the safety device from excessively high suction pressure	Overload during cooling, high temperature with heating, loked expansion valve
45		Activation of the safety device from excessively high discharge pressure	Overload (obstruction of HEX, short circuit) mixture of inert gas
47		Activation of the safety device from excessively low suction pressure (protection from vacuum operation)	Shortage or leakage of refrigerant, piping clogging, expansion valve close-locked, fan motor locked.
48	Inverter	Abnormality of current sensor for inverter	Failure of DIP-IPM, heat exchanger clogged, locked compressor, EVI/EVO failure or overcharge.
51		Abnormality of Current Sensor for Inverter	Failure of control PCB, inverter module.
53		Protection activation of inverter module	Inverter module abnormality. Failure of compressor, clogging of heat exchanger.
54		Inverter fin temperature increase	Abnormal inverter fin thermistor, clogging of heat exchanger, abnormal outdoor fan.
55		Inverter Module abnormality	Failure of inverter module.
57	Outdoor fan	Fan Motor abnormality	Disconnected wire of incorrect wiring between control PCB and inverter PCB. Incorrect wiring or fan motor abnormality.
b1	Indoor unit number setting	Incorrect setting of the unit and the refrigerant cycle number.	Over 64 indoor units setting by number or indoor unit address.
b5		Incorrect indoor unit connection number setting	There are more than 17 units not corresponding to H-Link II connected to one system
EE	Compressor	Compressor protection	Failure of compressor.

8.6 DX-Interface EXV-(2.0-10.0)E1 or KPI-(E/H/X)3E alarm codes

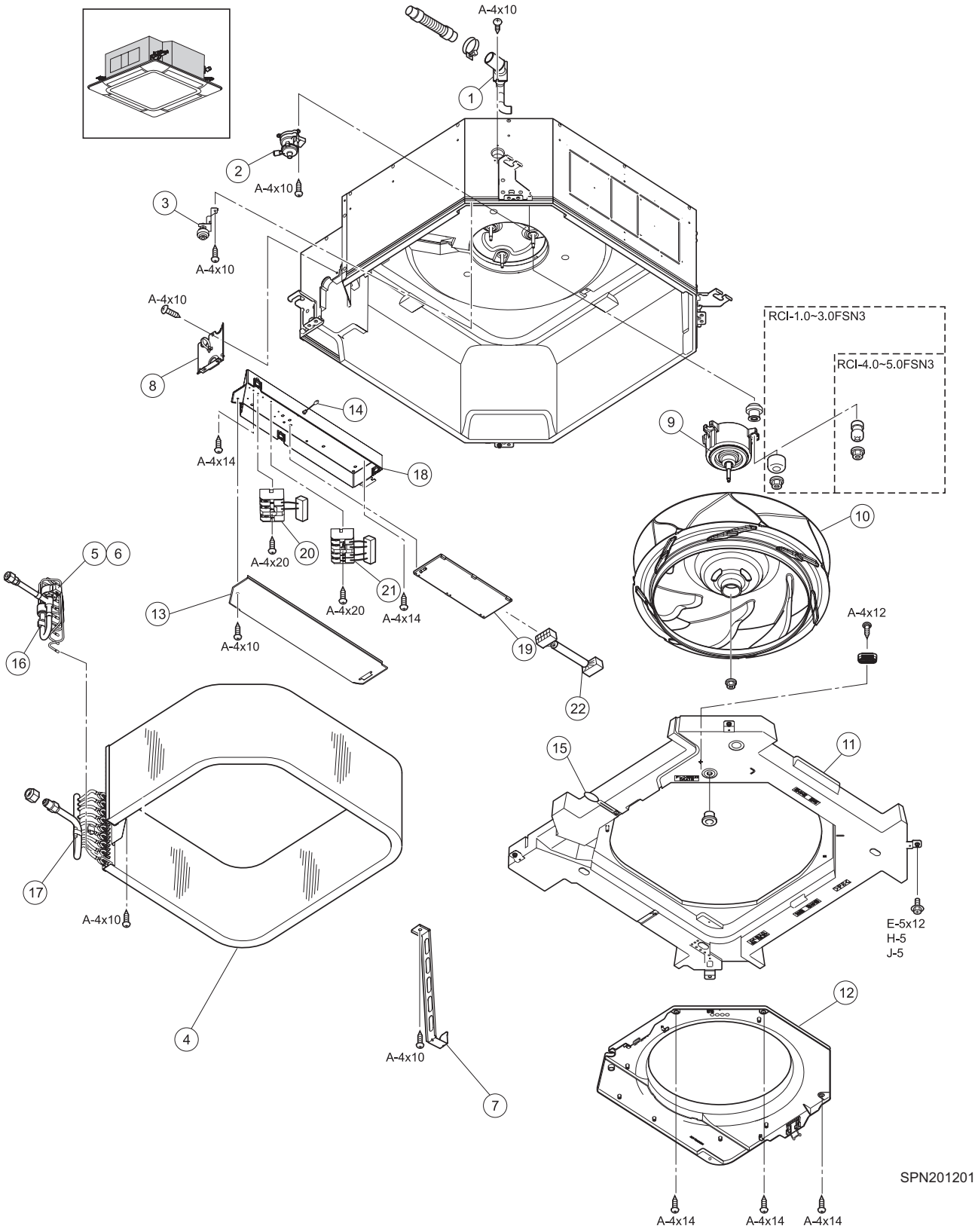
Code No.	DX-KIT2	KPI-S3	KPI-Active	Category	Type of Abnormality	Main cause
01	o	-	o	Indoor	Activation of protection device	Float switch activation (high water level in drain hose or abnormality in drain pipe, float switch or drain pan).
03	o	-	o	Transmission	Transmission Error	Outdoor fuse meltdown, Indoor/outdoor connection wiring (breaking, wiring error, etc.)
11	o	o	o	Indoor	Air inlet thermistor (RA for KPI)	Loose, disconnected, broken or short-circuited connector
12	o	o	o	Indoor	Air outlet thermistor (OA for KPI)	Loose, disconnected, broken or short-circuited connector
13	o	-	o	Indoor	Liquid pipe thermistor	Loose, disconnected, broken or short-circuited connector
14	o	-	o	Indoor	Gas pipe thermistor	Loose, disconnected, broken or short-circuited connector
15	-	-	-	Indoor	Fresh Outdoor Air Thermistor (Econofresh)	Loose, disconnected, broken or short-circuited connector
16	-	-	o	Indoor	Air inlet DX Coil thermistor (Tincoil)	Loose, disconnected, broken or short-circuited connector
17	-	-	o	Indoor	Air outlet DX Coil thermistor (Toutcoil)	Loose, disconnected, broken or short-circuited connector
18	(o)	o	o	Indoor	Indoor RA fan protection device activation for KP	Fan motor overheating, locking.
19	o	o	o	Indoor	Indoor OA fan protection device activation for KPI or DX-KIT2 Fan	Fan motor overheating, locking.,
31	o	-	o	System	Incorrect setting of outdoor and indoor units	Outdoor/Indoor Unit capacity setting error, Indoor total capacity excessively large/small
35	o	-	o	System	Indoor Unit Number Setting Error	Indoor units with the same number exist in a refrigerant piping system
70	o	o	o	Indoor	Abnormal transmission between PCB1 and PCB2	Loose, disconnected
71	o	o	o	Indoor	Incorrect PCBs setting	Wrong setting are performed in PCBs
EE	o	-	o	Compressor	Compressor protection alarm (cannot be reset from the remote controller)	This alarm code is displayed when the following alarms are triggered three times within six hours: 02,07,08,39,43 to 45, 47
74	-	-	-	Indoor	Remote sensor thermistor (Trem)	Loose, disconnected, broken or short-circuited connector

These alarm codes are displayed in the 7 segments on PCB2 corresponding to the ***DX-Interface EXV-(2.0-10.0)E1 or KPI-(E/H/X)3E.***

9. Spare parts

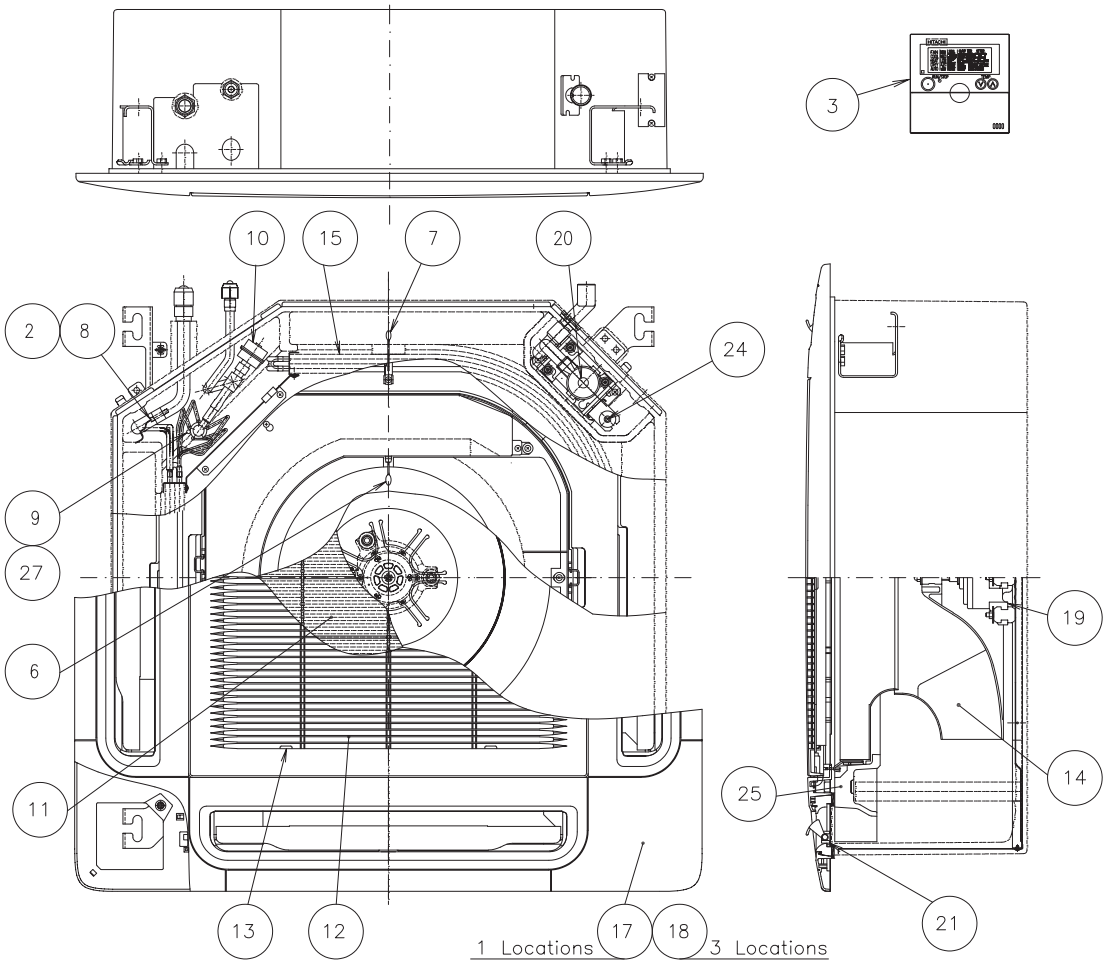
Index

9.1 RCI-(1.0-6.0)FSN3

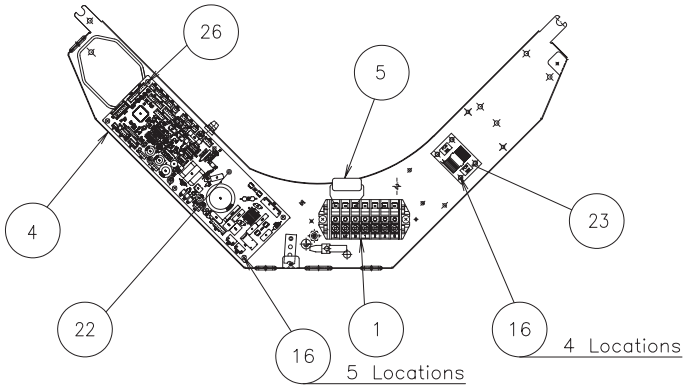


Number	Part name	Remarks
1	Drain hose assy	-
2	Pump assy	Drain discharge mechanism
3	Float switch assy	-
4	Heat exchanger assy	-
5	Expansion valve	-
6	EXPV Motor	For expansion valve
7	Support plate	-
8	Pipe cover assy	-
9	Fan motor	-
10	Turbo fan	-
11	Drain pan assy	-
12	Bell mouth assy	-
13	E-box cover	-
14	Thermistor	For air inlet (THM1)
15	Thermistor	For air outlet (THM2)
16	Thermistor	For freeze protection (THM3)
17	Thermistor	For gas pipe (THM5)
18	Electrical box	-
19	Printed circuit board	PCB1
20	Terminal board	TB1
21	Terminal board	TB2
22	Wiring AS	For connecting air panel

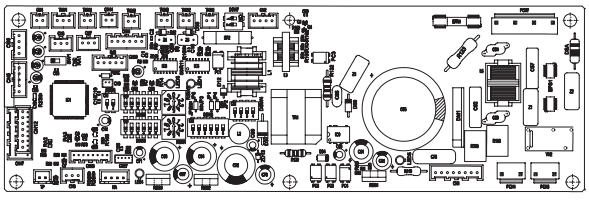
9.2 RCI-(1.0-1.6)FSN3Ei



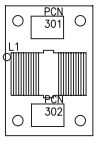
LOCATION OF ELECTRICAL EQUIPMENT IN THE ELECTRICAL CONTROL BOX



Location of Connectors on PCB for Indoor Units



(22)

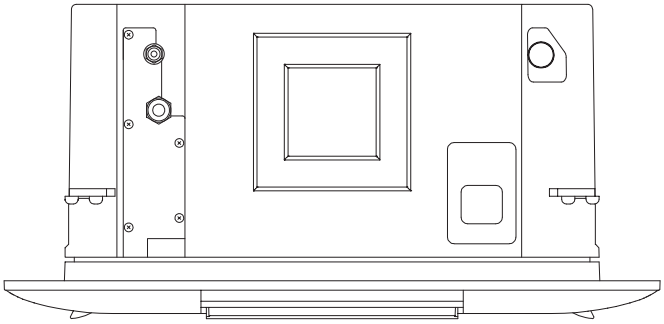


(23)

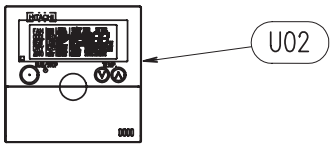
EPN-201204A

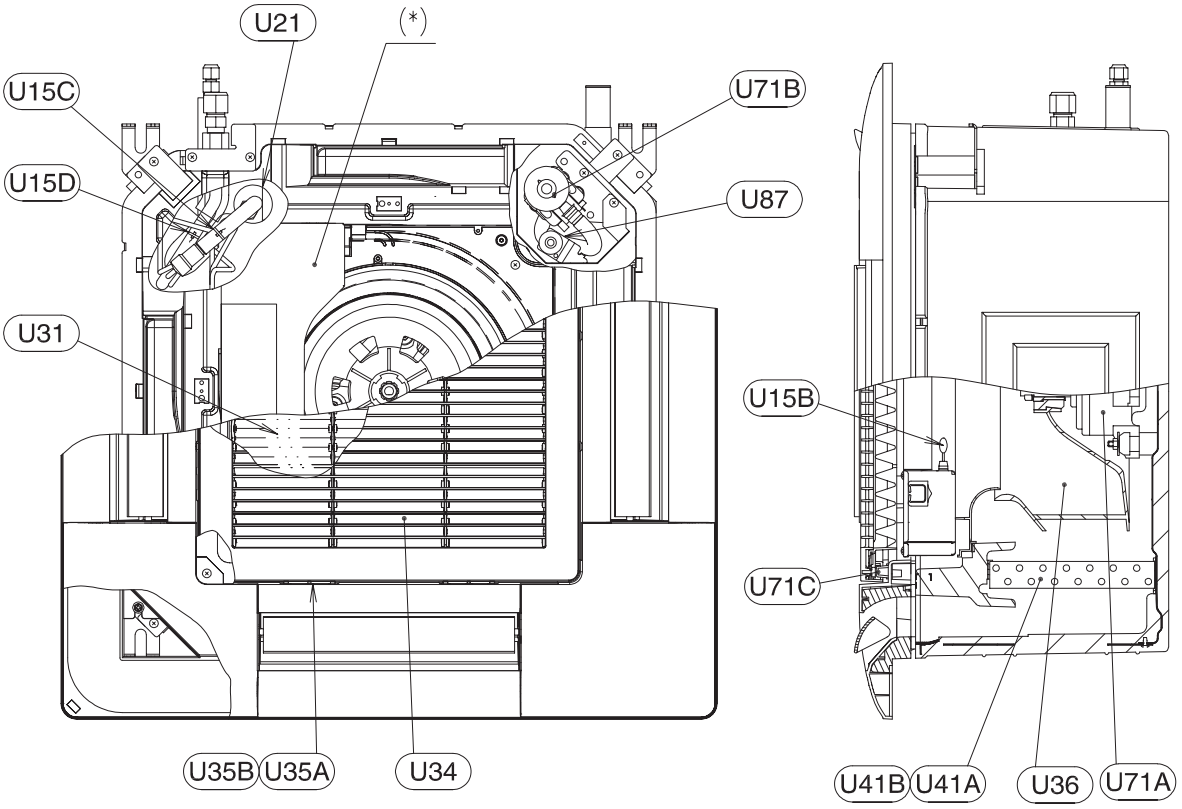
Number	Part name	Remarks
1	Terminal Board	-
2	P-Spring	For gas pipe
3	Remote Control SW	PC-ART (optional)
4	Electrical Box	Assembly (Components + Harness)
5	Condenser Assy	-
6	Thermistor	Air inlet
7	Thermistor	Air outlet
8	Thermistor	Gas pipe
9	Thermistor	Liquid pipe
10	Expansion Valve	-
11	Air Filter	-
12	Air Grille Assy	-
13	Grille Knob	-
14	Turbo Fan	Fan runner
15	Heat Exchanger	Assembly
16	Spacer	-
17	CP Cover	With logo
18	CP Cover	Without logo
19	Fan Motor	-
20	Drain Pump	Discharge mechanism
21	AS Motor	Assembly
22	Printed Circuit Board	PI113 Assy (main PCB)
23	Printed Circuit Board	PI979 Assy (for noise protection)
24	Float Switch	-
25	Drain Pan	Assembly
26	Push Spacer	-
27	P-Spring	For liquid pipe

9.3 RCIM-(0.8-2.0)FSN2

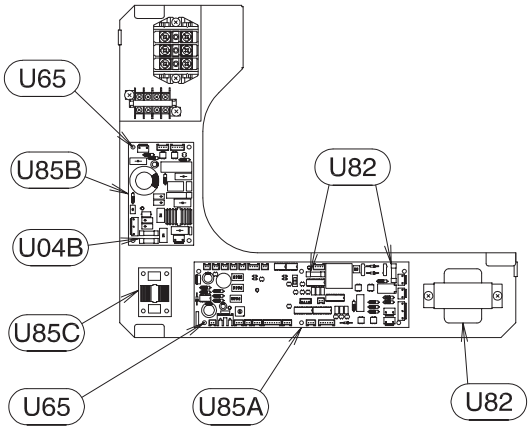


Optional





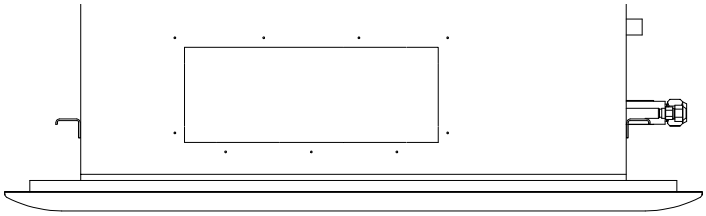
(*) Electrical parts

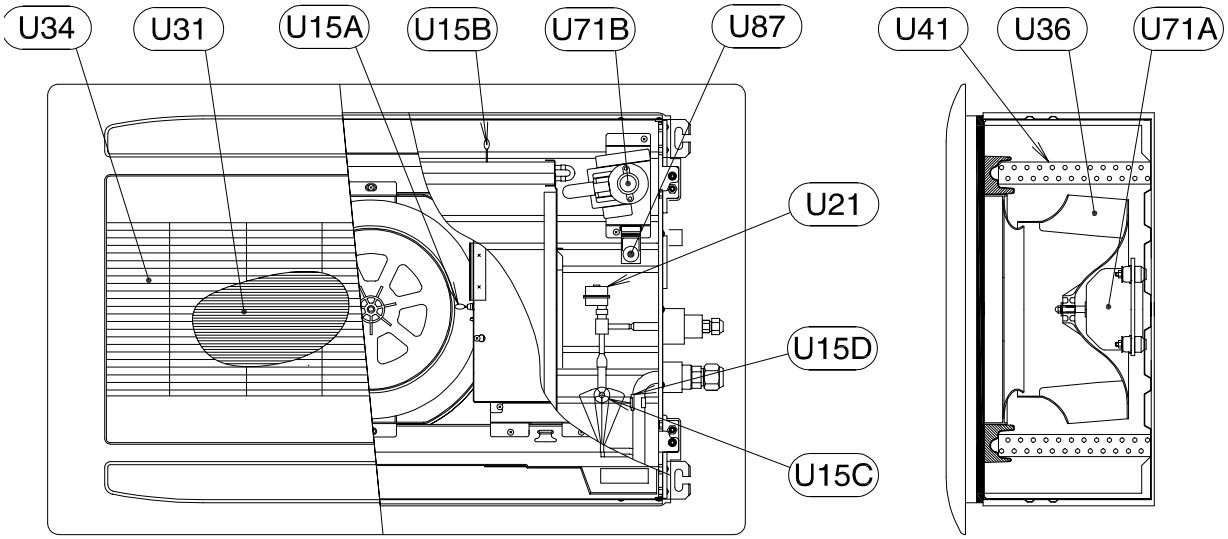


Drawing number: EPN-0606A-3B

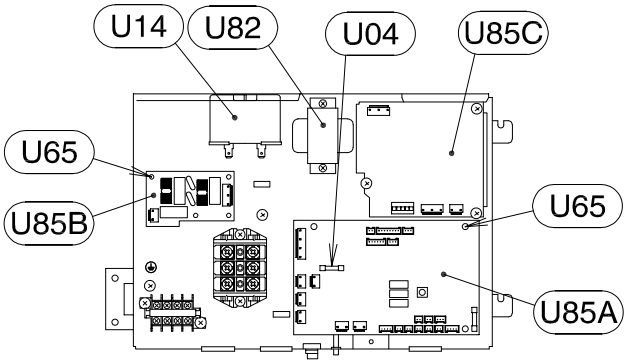
Number	Part name	Remarks
U02	Remote control swicth	PC-P2HTE / PC-ART (optional)
U04A	Fuse	0.5A for control circuit
U04B	Fuse	5A for power source
U15B	Thermistor	THM2 air outlet
U15C	Thermistor	THM3 freeze protection (Liquid)
U15D	Thermistor	THM5 gas
U21	Expansion valve	—
U31	Air filter	For air panel P-N23WAM
U34	Air grille	For air panel P-N23WAM
U35A	Knob	For air panel P-N23WAM
U35B	Knob	For air panel P-N23WAM
U36	Runner	—
U41A/B	Heat exchanger	Assembly
U65	Spacer	For PCB
U71A	Fan motor	52W
U71B	Fan motor	Discharge mechanism
U71C	AS motor	For air panel P-N23WAM
U82	Transformer	—
U85A	Printed circuit board	Main
U85B	Printed circuit board	Power supply
U85B	Printed circuit board	Noise protection
U87	Float switch	—

9.4 RCD-(1.0-3.0)FSN2





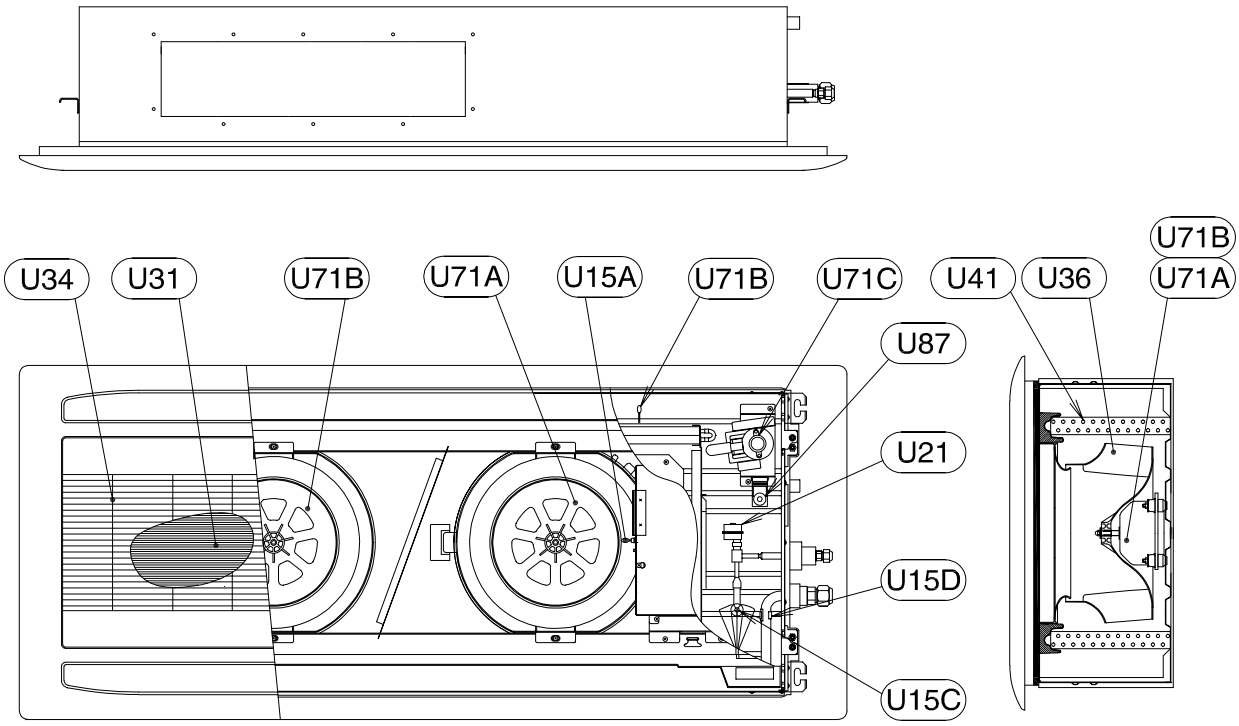
Electrical Parts



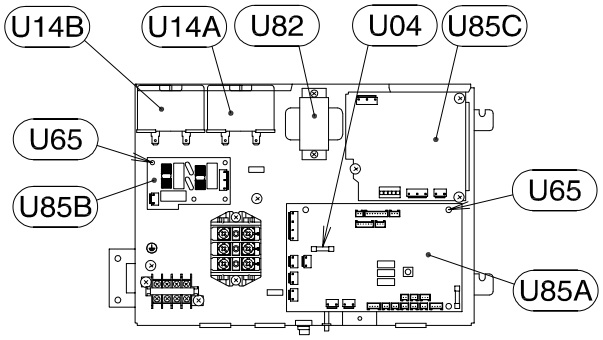
Drawing Number:SPN200506

Number	Part name	Remarks
U04	Fuse	5A for the control circuit
U14	Capacitor	4/5MF 440VAC
U15A	Thermistor	THM1 thermistor for air inlet
U15B	Thermistor	THM2 thermistor for air outlet
U15C	Thermistor	THM3 thermistor, protection against liquid freezing
U15D	Thermistor	THM5 thermistor for gas
U21	Expansion valve	—
U31	Air filter	For air panel P-N23DWA
U34	Air grille	For air panel P-N23DWA (with air filter)
U36	Fan	—
U41	Heat exchanger	—
U65	Plastic material	—
U71A	Motor	35W fan
U71B	Motor	For the discharge drain mechanism
U71C	Motor	For the P-N23DWA motor rotation assembly
U82	Transformer	—
U85A	Printed circuit board	Main PCB
U85B	Printed circuit board	Noise protection
U85C	Printed circuit board	Modulation band pulse
U87	Float sensor	—

9.5 RCD-(4.0/5.0)FSN2



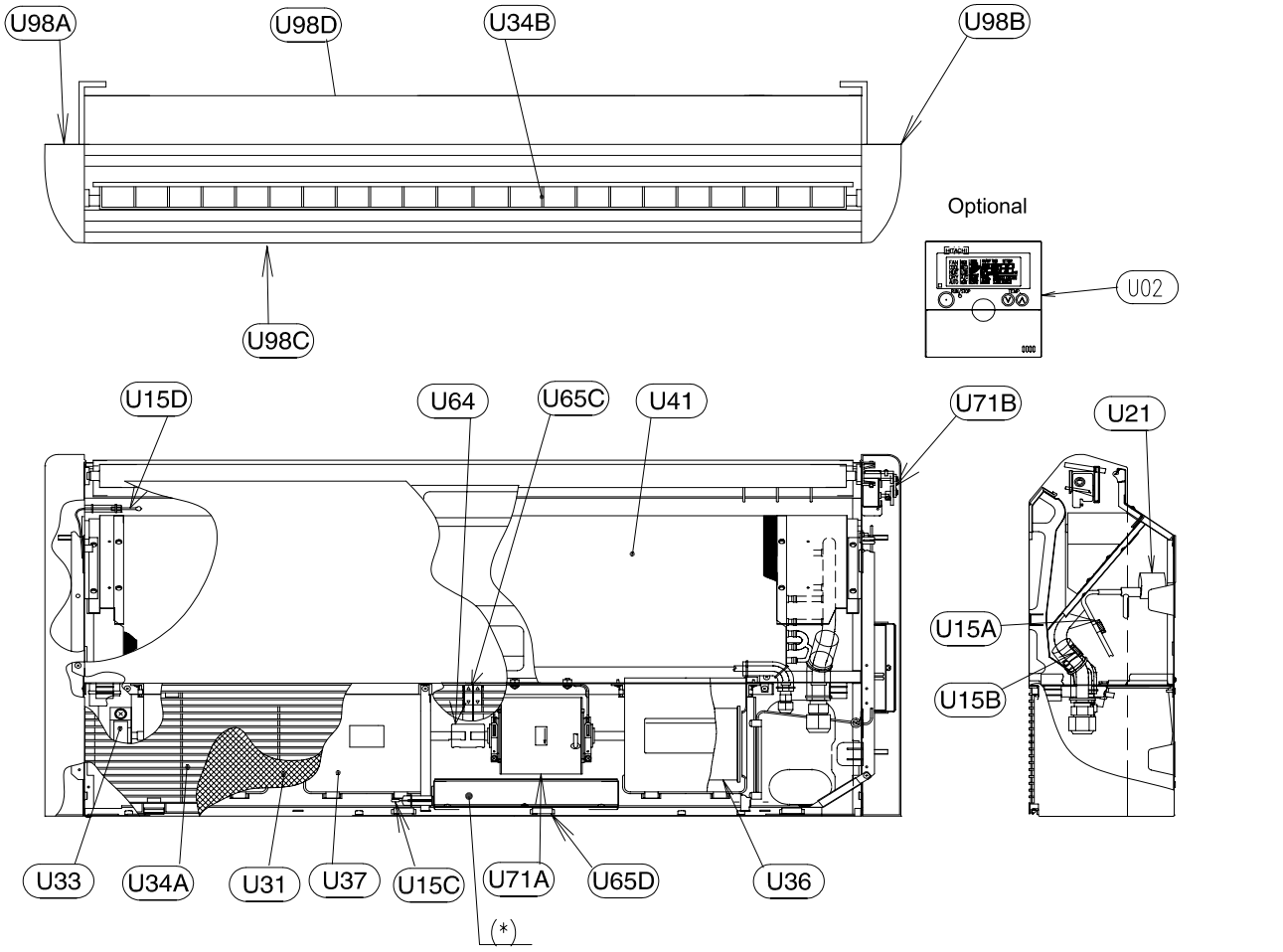
Electrical Parts



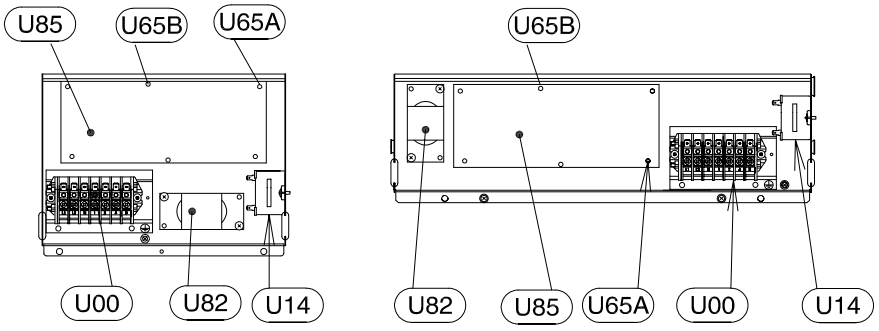
Drawing number: SPN200506

Number	Part name	Remarks
U04	Fuse	5A for the control circuit
U14A	Capacitor	4MF 440VAC
U14B	Capacitor	5MF 440VAC
U15A	Thermistor	THM1 thermistor for air inlet
U15B	Thermistor	THM2 thermistor for air outlet
U15C	Thermistor	THM3 thermistor, protection against liquid freezing
U15D	Thermistor	THM5 thermistor for gas
U21	Expansion valve	—
U31	Air filter	For air panel P-N23DWA
U34	Air grille	For air panel P-N23DWA (with air filter)
U36	Fan	—
U41	Heat exchanger	—
U65	Plastic material	—
U71A	Motor	355W fan
U71B	Motor	55W on other side
U71B	Motor	for the discharge drain mechanism
U71C	Motor	For the P-N23DWA motor rotation assembly
U82	Transformer	—
U85A	Printed circuit board	Main PCB
U85B	Printed circuit board	Noise protection
U85C	Printed circuit board	Modulation band pulse
U87	Float sensor	—

9.6 RPC-(2.0-6.0)FSN2E



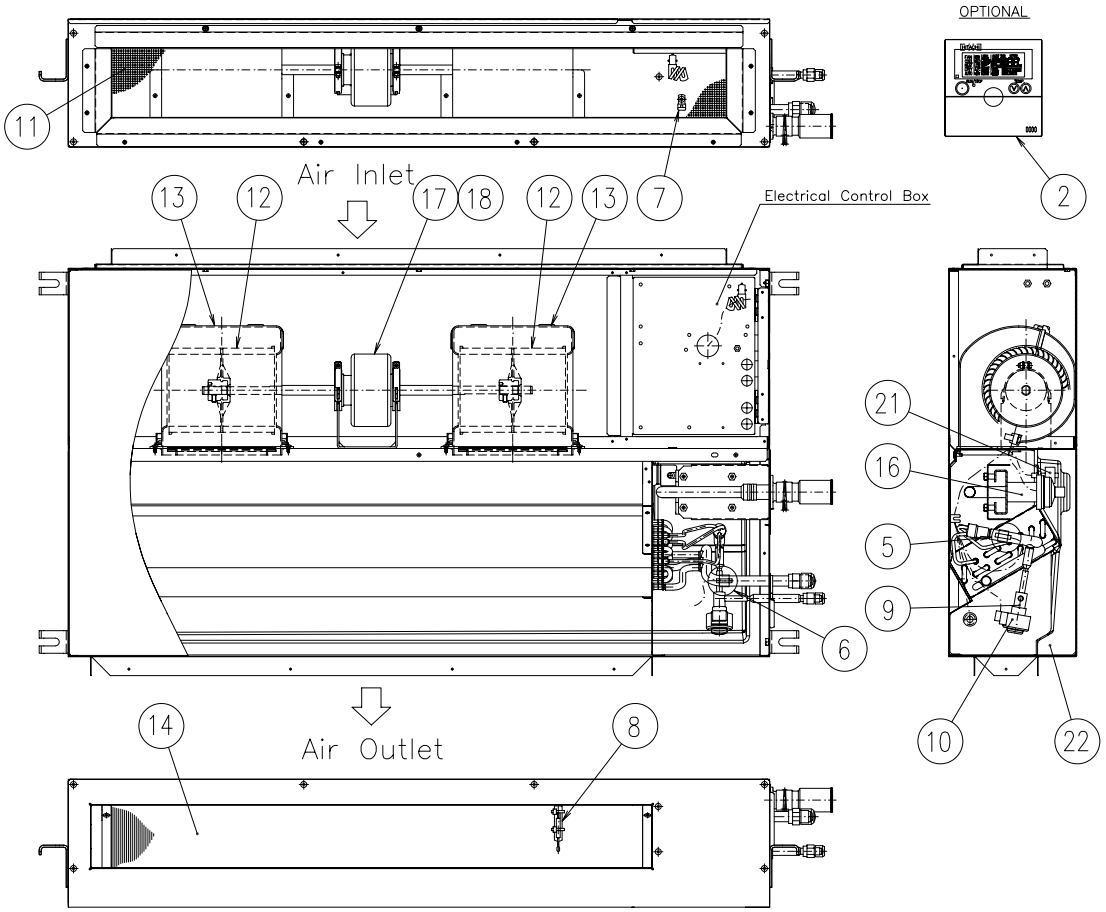
Electrical Parts



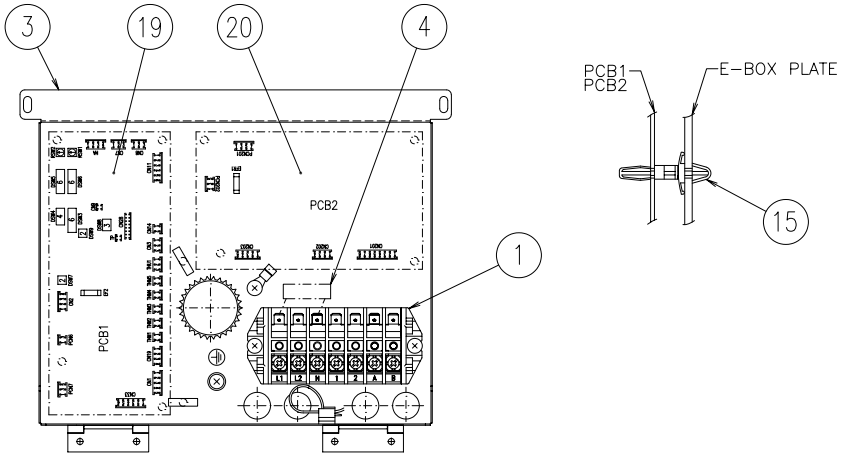
Drawing number: EP-801-1A

Number	Part name	Remarks
U00	Terminal board	
U02	Remote control SW	Assembly of (components + harness)
U14	Capacitor	4uF/5uF
U15A	Thermistor	THM3 thermistor for liquid piping
U15B	Thermistor	THM5 thermistor for gas pipe
U15C	Thermistor	THM1 thermistor for air inlet
U15D	Thermistor	THM2 thermistor for air outlet
U21	Expansion valve	—
U31	Air filter	—
U33	Bearing	—
U34A	Air inlet grille	Inlet air
U34B	Grille assembly	Outlet air
U37	Fan frame	—
U41	Heat exchanger	Assembly
U64	Heat exchanger	Assembly
U64	Boss	—
U65A	Spacer	—
U65B	Push spacer	—
U65C	Grille knob	
U65D	Grille support	
U71A	Fan motor	—
U71B	AS motor	—
U82	Transformer	—
U85	Printed circuit board	-
U98A	Left cover	Left part
U98B	Right cover	Right part
U98C	Lower cover assembly	Lower part
U98D	Upper cover assembly	Upper part

9.7 RPI-(0.8-1.5)FSN4E



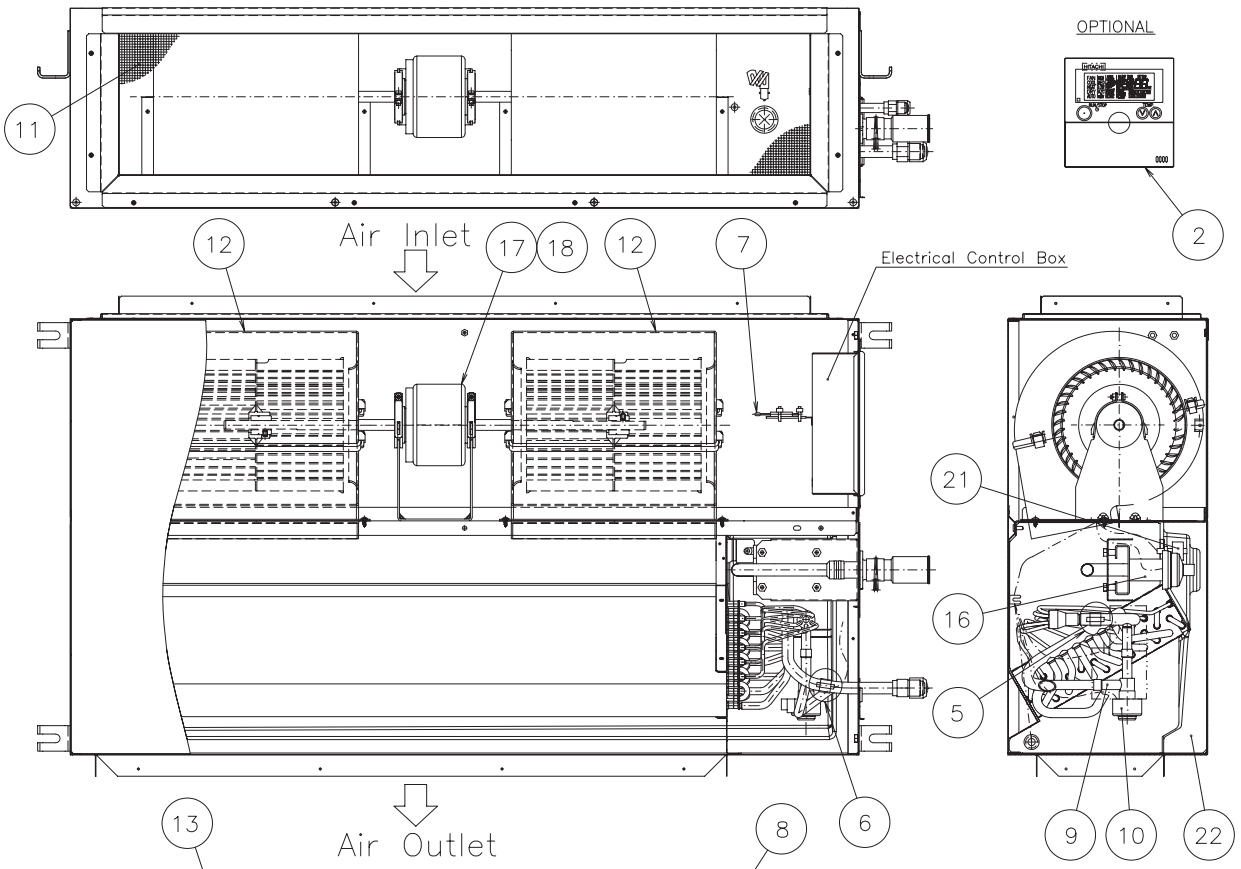
LOCATION OF ELECTRICAL EQUIPMENT IN THE ELECTRICAL BOX



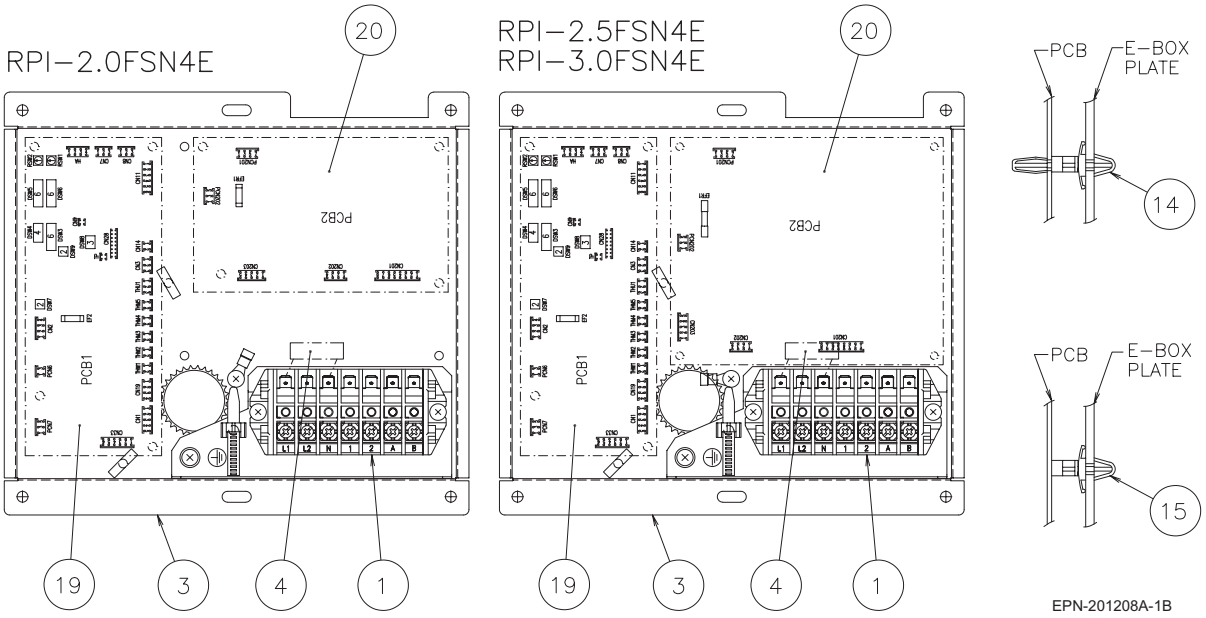
EPN-201206A-1B

Number	Part name	Remarks
1	Terminal Board	-
2	Remote Control SW	PC-ART (Optional)
3	Electrical Box	Assembly (Components + Harness)
4	Capacitor Assy.	-
5	Thermistor	For Liquid Pipe
6	Thermistor	For Gas Pipe
7	Thermistor	For Inlet Air
8	Thermistor	For Outlet Air
9	Expansion Valve	(Without Coil)
10	Expansion Valve Coil	-
11	Filter	-
12	Runner	-
13	Fan Casing	-
14	Heat Exchanger	Assembly
15	Spacer	For PCB fixing
16	Drain Pump	Discharge Mechanism
17	Fan Motor	-
18	Fan Assy.	Assembly (Motor + Stay + Runners + Casings)
19	PCB1	Control PCB
20	PCB2	Power PCB
21	Float Switch	-
22	Drain Pan	Assembly

9.8 RPI-(2.0-3.0)FSN4E



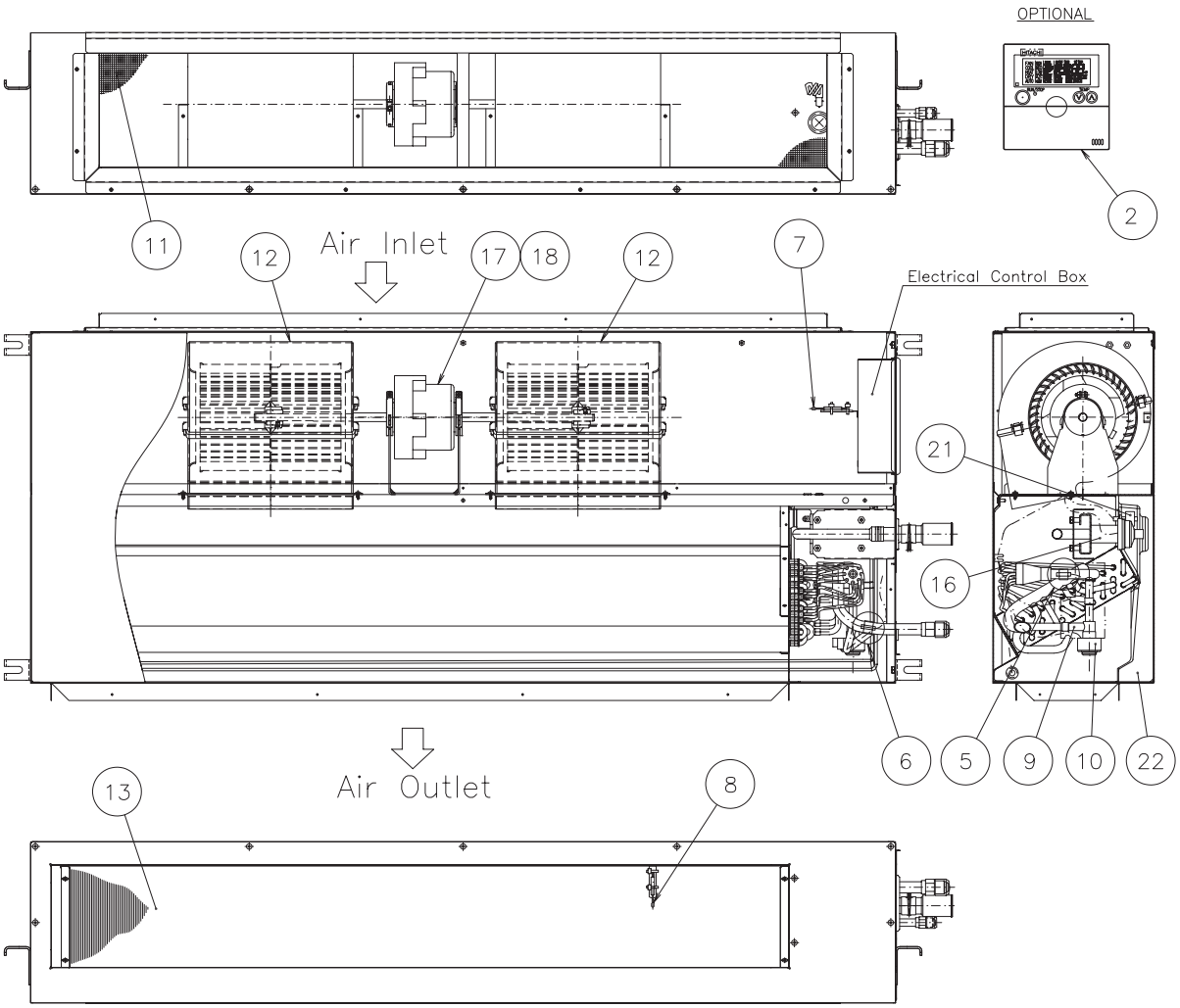
LOCATION OF ELECTRICAL EQUIPMENT IN THE ELECTRICAL BOX



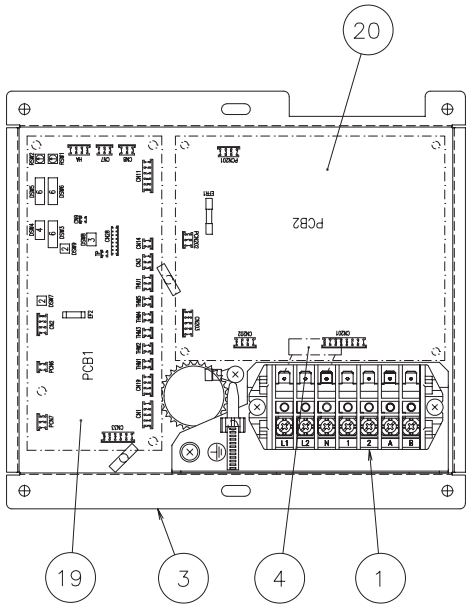
EPN-201208A-1B

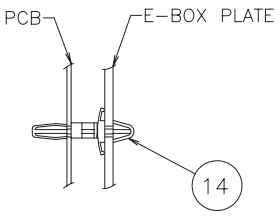
Number	Part name	Remarks
1	Terminal Board	-
2	Remote Control SW	PC-ART (Optional)
3	Electrical Box	Assembly (Components + Harness)
3	Electrical Box	Assembly (Components + Harness)
3	Electrical Box	Assembly (Components + Harness)
3	Electrical Box	Assembly (Components + Harness)
3	Electrical Box	Assembly (Components + Harness)
3	Electrical Box	Assembly (Components + Harness)
4	Capacitor Assy.	-
5	Thermistor	For liquid Pipe
6	Thermistor	For Gas Pipe
7	Thermistor	For Inlet Air
8	Thermistor	For Outlet Air
9	Expansion Valve	-
9	Expansion Valve	-
9	Expansion Valve	-
10	Expansion Valve Coil	-
11	Filter	-
11	Filter	-
12	Fan Casing/Runner	Fan Casing + Runner
13	Heat Exchanger	Assembly
13	Heat Exchanger	Assembly
13	Heat Exchanger	Assembly
13	Heat Exchanger	Assembly
14	Spacer	For PCB Fixing
15	Push Spacer	For PCB Fixing
16	Drain Pump	Discharge Mechanism
17	Fan Motor	-
17	Fan Motor	-
17	Fan Motor	-
18	Fan Assy	Assembly (Motor+Stay+Runners+Casing)
18	Fan Assy	Assembly (Motor+Stay+Runners+Casing)
18	Fan Assy	Assembly (Motor+Stay+Runners+Casing)
19	PCB1	Control PCB
20	PCB2	Power PCB
20	PCB2	Power PCB
20	PCB2	Power PCB
21	Float Switch	-
22	Drain Pan	Assembly
22	Drain Pan	Assembly

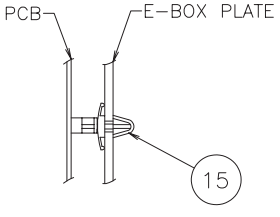
9.9 RPI-(4.0-6.0)FSN4E



LOCATION OF ELECTRICAL EQUIPMENT IN THE ELECTRICAL BOX



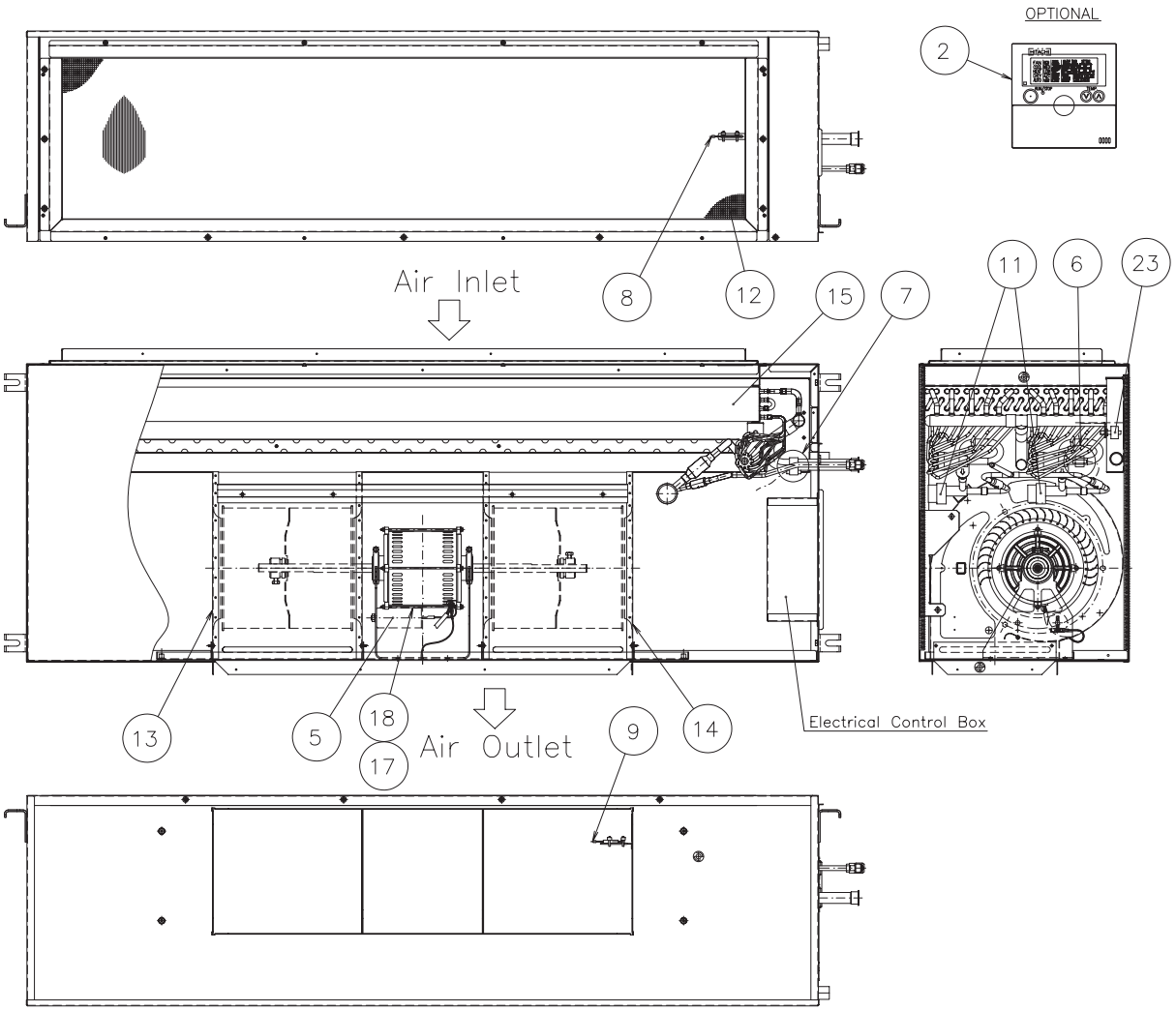




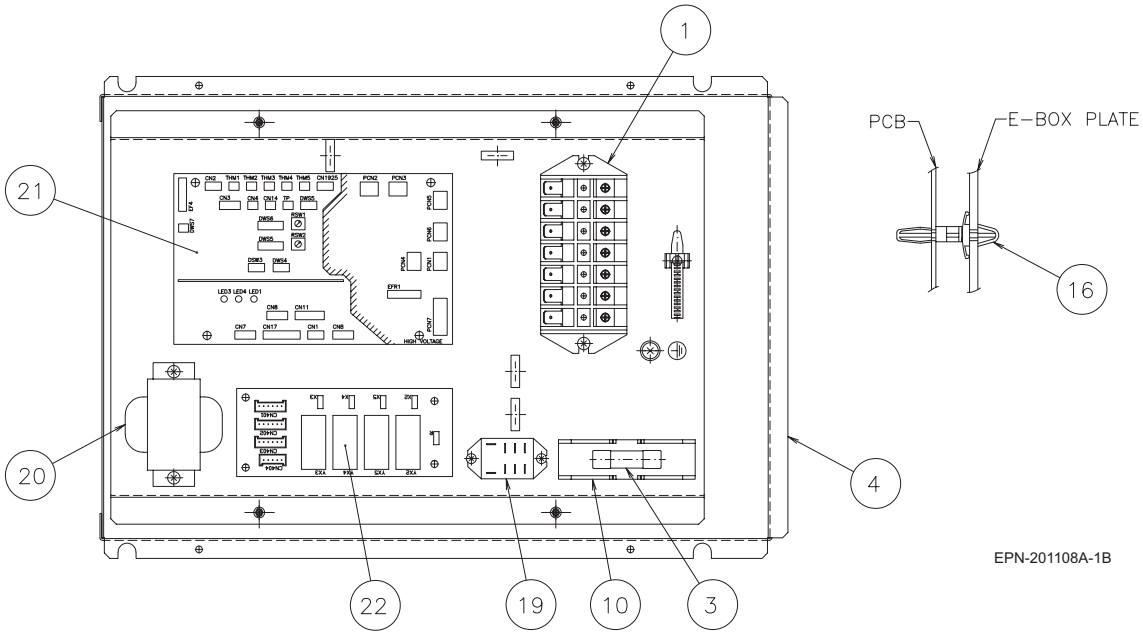
EPN-201208A-2B

Number	Part name	Remarks
1	Terminal Board	-
2	Remote Control SW	PC-ART (Optional)
3	Electrical Box	Assembly (Components + Harness)
3	Electrical Box	Assembly (Components + Harness)
3	Electrical Box	Assembly (Components + Harness)
3	Electrical Box	Assembly (Components + Harness)
3	Electrical Box	Assembly (Components + Harness)
3	Electrical Box	Assembly (Components + Harness)
4	Capacitor Assy.	-
5	Thermistor	For liquid Pipe
6	Thermistor	For Gas Pipe
7	Thermistor	For Inlet Air
8	Thermistor	For Outlet Air
9	Expansion Valve	-
9	Expansion Valve	-
9	Expansion Valve	-
10	Expansion Valve Coil	-
11	Filter	-
11	Filter	-
12	Fan Casing/Runner	Fan Casing + Runner
13	Heat Exchanger	Assembly
13	Heat Exchanger	Assembly
13	Heat Exchanger	Assembly
13	Heat Exchanger	Assembly
14	Spacer	For PCB Fixing
15	Push Spacer	For PCB Fixing
16	Drain Pump	Discharge Mechanism
17	Fan Motor	-
17	Fan Motor	-
17	Fan Motor	-
18	Fan Assy	Assembly (Motor+Stay+Runners+Casing)
18	Fan Assy	Assembly (Motor+Stay+Runners+Casing)
18	Fan Assy	Assembly (Motor+Stay+Runners+Casing)
19	PCB1	Control PCB
20	PCB2	Power PCB
20	PCB2	Power PCB
20	PCB2	Power PCB
21	Float Switch	-
22	Drain Pan	Assembly
22	Drain Pan	Assembly

9.10 RPI-(8.0/10.0)FSN3E

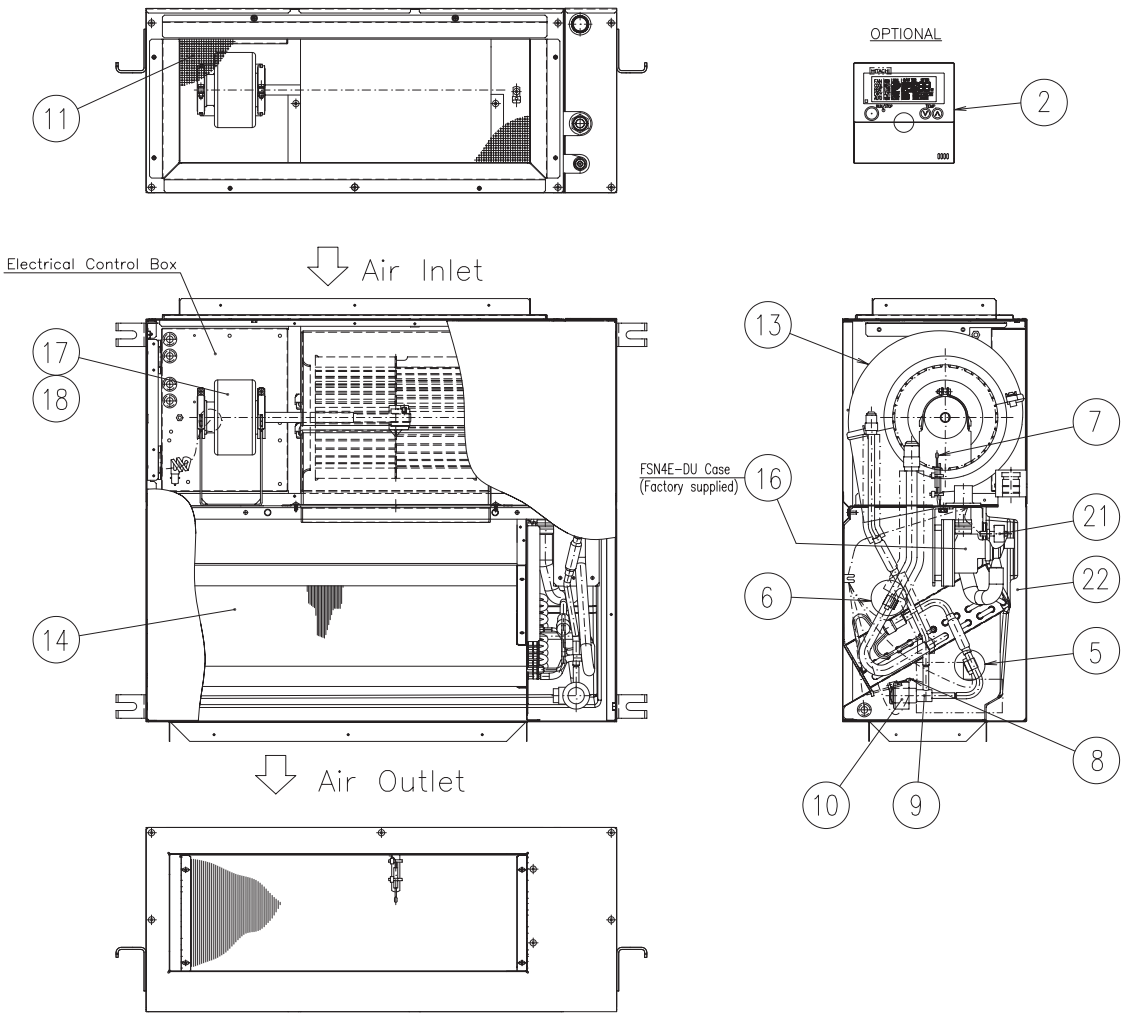


LOCATION OF ELECTRICAL EQUIPMENT IN THE ELECTRICAL BOX

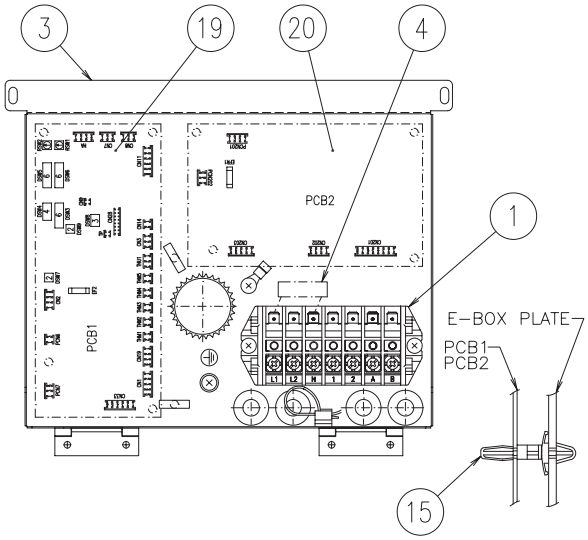


Number	Part name	Remarks
1	Terminal Board	-
2	Remote Control SW	PC-ART (Optional)
3	Fuse	10A
4	Electrical Box	Assembly (Components + Harness)
4	Electrical Box	Assembly (Components + Harness)
5	Capacitor	20μF
5	Capacitor	25μF
6	Thermistor	For liquid Pipe
7	Thermistor	For Gas Pipe
8	Thermistor	For Inlet Air
9	Thermistor	For Outlet Air
10	Fuse Holder	-
11	Expansion Valve	-
11	Expansion Valve	-
12	Filter	-
13	Fan Casing/Runner R	Fan Casing + Runner (Right)
14	Fan Casing/Runner L	Fan Casing + Runner (Left)
15	Heat Exchanger	Assembly
15	Heat Exchanger	Assembly
16	Spacer	For PCB Fixing
17	Fan Assy	(Stay + Base + Motor + Cassings + Runners)
18	Fan Motor	-
19	Power Relay	-
20	Transformer	-
21	Printed Circuit Board	(PI065 ASSY)
22	Relay PCB	-
23	Float Switch	-

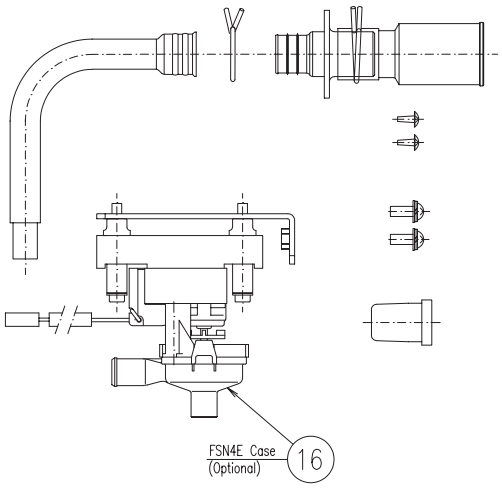
9.11 RPIM-(0.8-1.5)FSN4E(-DU)



LOCATION OF ELECTRICAL EQUIPMENT
IN THE ELECTRICAL BOX



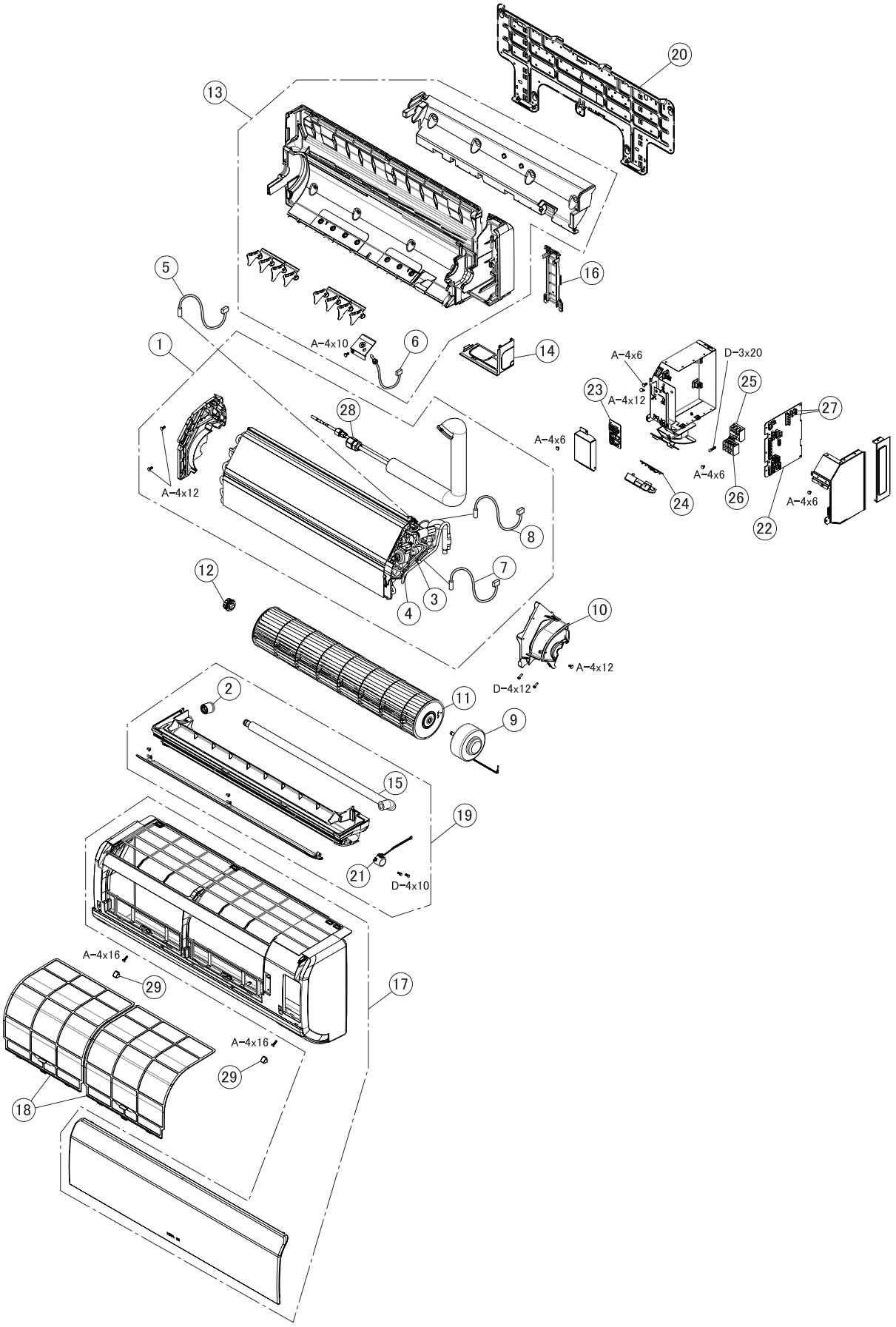
DRAIN PUMP KIT DU-M1E
(OPTIONAL ACCESSORY FOR FSN4E MODELS)



EPN-201206A-2B

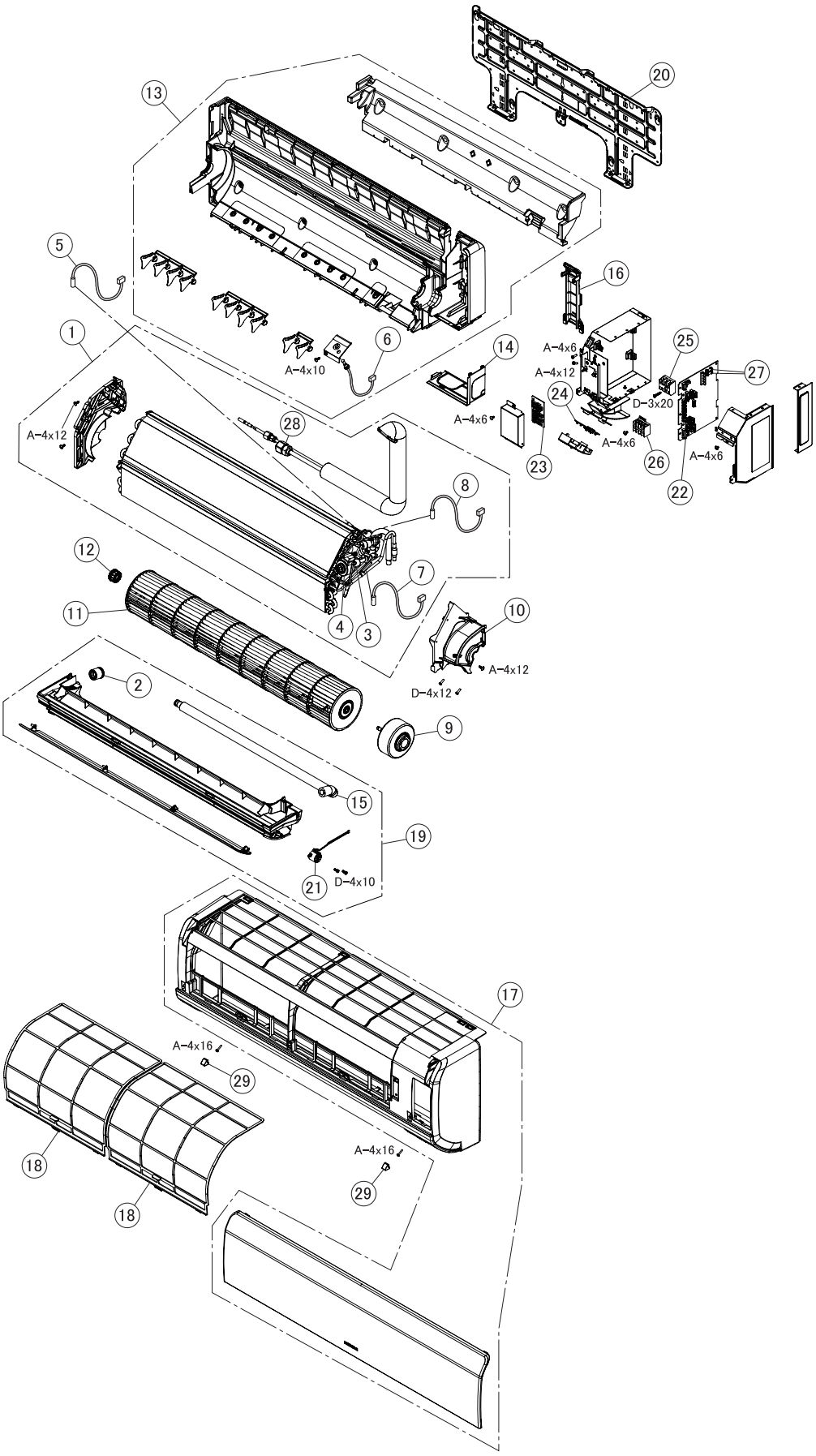
Number	Part name	Remarks
1	Terminal Board	-
2	Remote Control SW	PC-ART (Optional)
3	Electrical Box	Assembly (Components + Harness)
3	Electrical Box	Assembly (Components + Harness)
3	Electrical Box	Assembly (Components + Harness)
3	Electrical Box	Assembly (Components + Harness)
3	Electrical Box	Assembly (Components + Harness)
3	Electrical Box	Assembly (Components + Harness)
4	Capacitor Assy.	-
5	Thermistor	For Liquid Pipe
5	Thermistor	For Liquid Pipe
6	Thermistor	For Gas Pipe
6	Thermistor	For Gas Pipe
7	Thermistor	For Inlet Air
7	Thermistor	For Inlet Air
8	Thermistor	For Outlet Air
8	Thermistor	For Outlet Air
9	Expansion Valve	(Without Coil)
10	Expansion Valve Coil	-
11	Filter	-
11	Filter	-
12	Runner	-
13	Fan Casing	-
13	Runner-Fan Casing Assy.	Fan Casing + Runner
14	Heat Exchanger	Assembly
14	Heat Exchanger	Assembly
14	Heat Exchanger	Assembly
14	Heat Exchanger	Assembly
15	Spacer	For PCB fixing
16	Drain Pump	Discharge Mechanism
17	Fan Motor	-
17	Fan Motor	-
18	Fan Assy.	Assembly (Motor + Stay + Runners + Casings)
18	Fan Assy.	Assembly (Motor + Stay + Runner + Casing)
19	PCB1	Control PCB
19	PCB1	Control PCB
20	PCB2	Power PCB
21	Float Switch	-
21	Float Switch	-
22	Drain Pan	Assembly
22	Drain Pan	Assembly

9.12 RPK-(0.8/1.0)FSN(H)3M



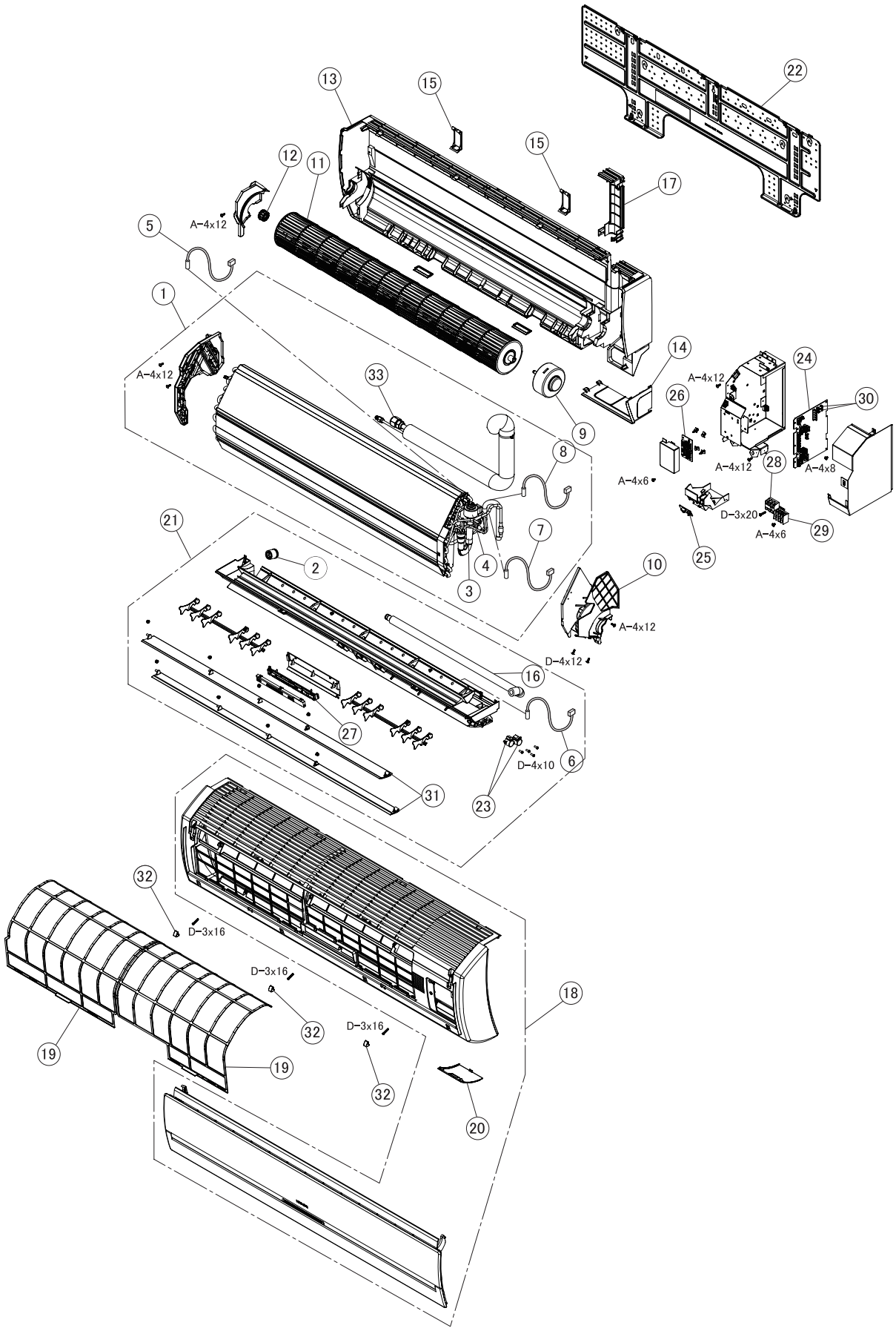
Number	Part name	Remarks
1	Heat exchanger	-
2	Drain cap	-
3	Expansion valve	Only for RPK-(0.8/1.0)FSN3M
4	EXPV motor	Only for RPK-(0.8/1.0)FSN3M
5	Thermistor	For air inlet (THM1)
6	Thermistor	For air outlet (THM2)
7	Thermistor	For freeze protection (THM3)
8	Thermistor	For gas line (THM5)
9	Fan motor	DC, 38W
10	Motor clamp	-
11	Fan	-
12	Bearing	-
13	Bottom base	-
14	Corner cover	-
15	Drain hose	-
16	Pipe cover	-
17	Cabinet panel assy	-
18	Filter	-
19	Drain pan assy	-
20	Plate	-
21	AS Motor	for Auto Swing Louver
22	PCB	PI-121-S for Control
23	PCB	for Switch
24	PCB	for Receiver with Indicator
25	Terminal board	for Power Source Circuit
26	Terminal board	for Control Circuit
27	Fuse	Fuse on PI-121-S, 5A
28	Flare nut	f12.7
29	Screw cap	-

9.13 RPK-1.5FSN(H)3M



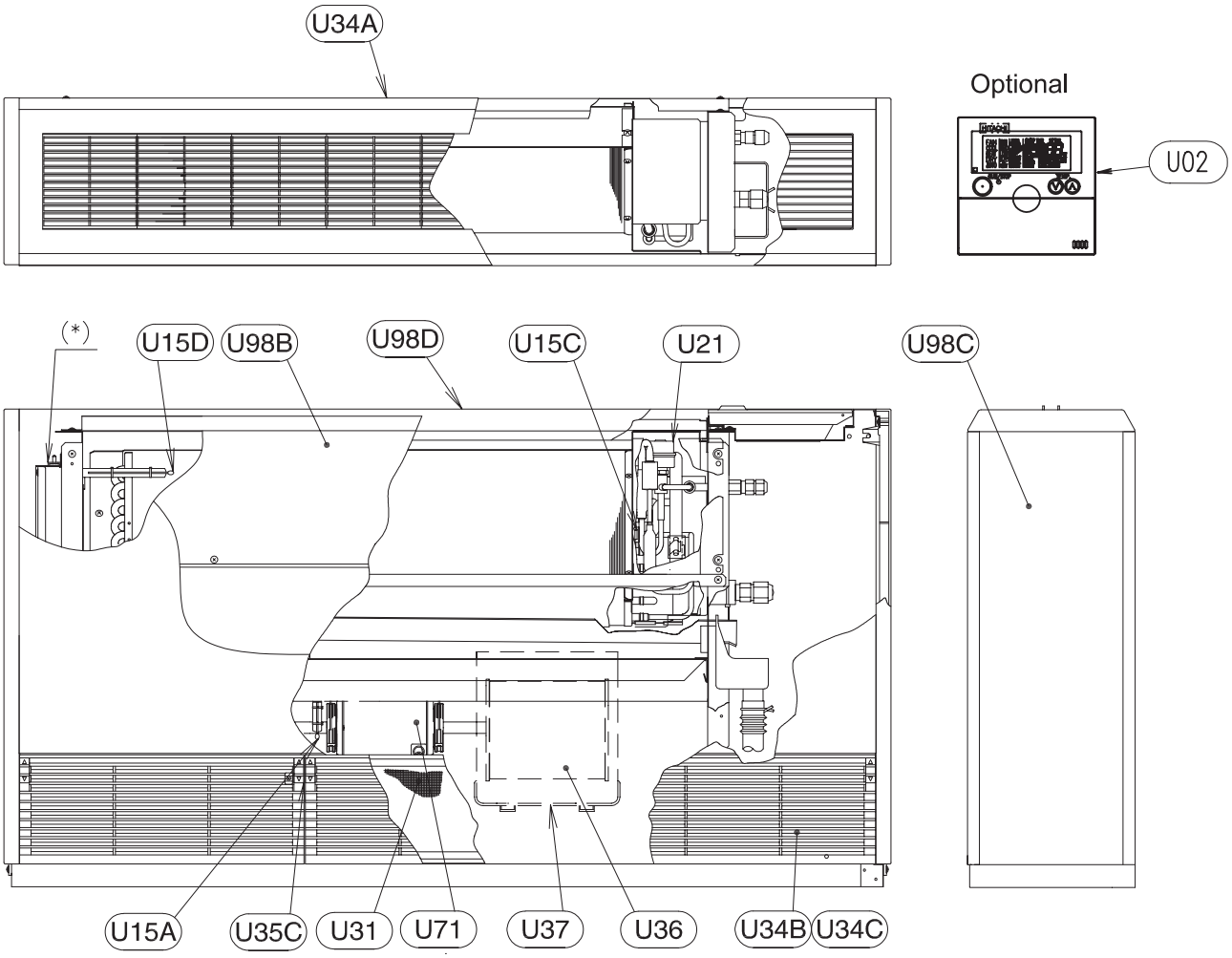
Number	Part name	Remarks
1	Heat exchanger	-
2	Drain cap	-
3	Expansion valve	Only for RPK-1.5FSN3M
4	EXPV motor	Only for RPK-1.5FSN3M
5	Thermistor	For air inlet (THM1)
6	Thermistor	For air outlet (THM2)
7	Thermistor	For freeze protection (THM3)
8	Thermistor	For gas line (THM5)
9	Fan motor	DC, 38W
10	Motor clamp	-
11	Fan	-
12	Bearing	-
13	Bottom base	-
14	Corner cover	-
15	Drain hose	-
16	Pipe cover	-
17	Cabinet panel assy	-
18	Filter	-
19	Drain pan assy	-
20	Plate	-
21	AS Motor	for Auto Swing Louver
22	PCB	PI-121-S for Control
23	PCB	for Switch
24	PCB	for Receiver with Indicator
25	Terminal board	for Power Source Circuit
26	Terminal board	for Control Circuit
27	Fuse	Fuse on PI-121-S, 5A
28	Flare nut	f12.7
29	Screw cap	-

9.14 RPK-(2.0-4.0)FSN3M

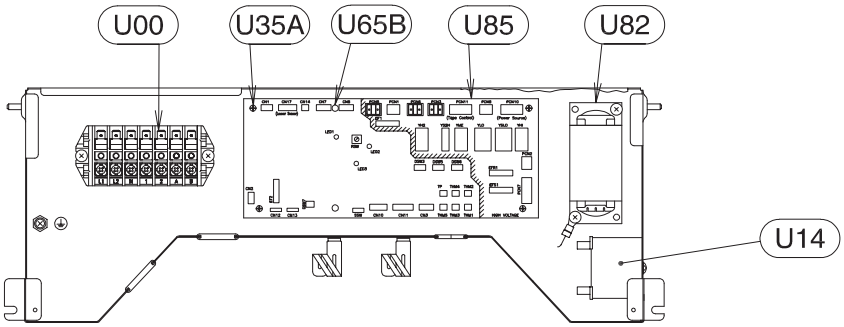


Number	Part name	Remarks
1	Heat Exchanger	-
2	Drain Cap	-
3	Expansion Valve	-
4	EXPV Motor	For expansion valve
5	Thermistor	For air inlet (THM1)
6	Thermistor	For air outlet (THM2)
7	Thermistor	For freeze protection (THM3)
8	Thermistor	For gas line (THM5)
9	Fan Motor	DC, 38W
10	Motor Clamp	-
11	Fan	-
12	Bearing	-
13	Cabinet Assy	-
14	Corner Cover	-
15	Pipe Fixing Plate	-
16	Drain Hose	-
17	Pipe Cover	-
18	Cabinet Panel Assy	-
19	Filter	-
20	Receiver Cover	-
21	Drain Pan Assy	-
22	Plate	-
23	AS Motor	for Auto Swing Louver
24	PCB-S	PI-121-S for Control
25	PCB-S	for Receiver
26	PCB-S	for Switch
27	PCB-S	for Indicator
28	Terminal Board	for Power Source Circuit
29	Terminal Board	for Control Circuit
30	Fuse	Fuse on PI-121-S, 5A
31	Horizontal Blade	-
32	Screw Cap	-
33	Flare Nut	f15.88

9.15 RPF-(1.0-2.5)FSN2E



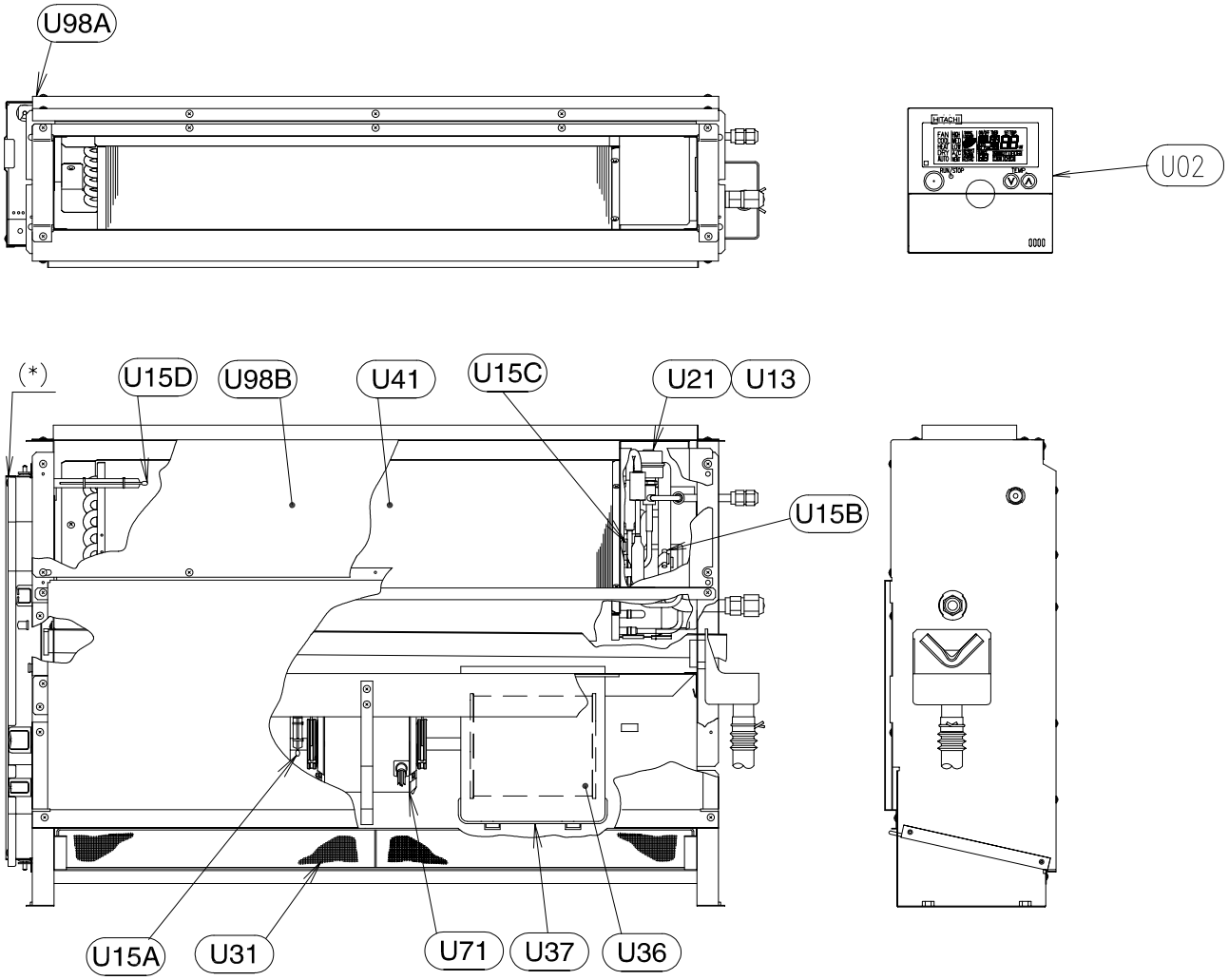
(*) Electrical Parts



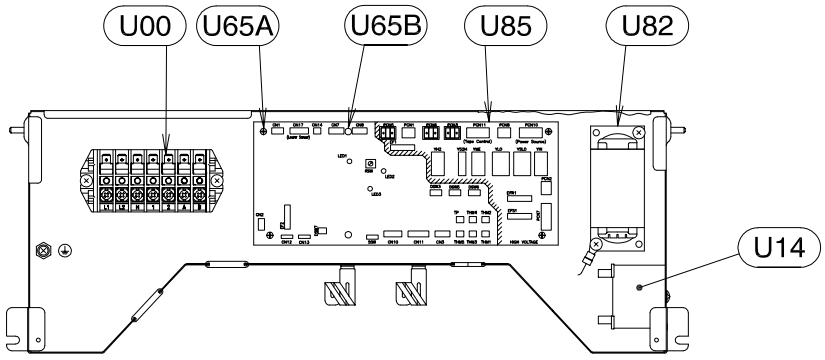
Drawing number: EPN-808A-1A

Number	Part name	Remarks
U00	Terminal board	—
U02	Remote control switch	PC-P2HTE/PC-ART
U12	Exp. valve cord	—
U13	Exp. valve cord	—
U14	Capacitor	2μF / 4μF
U15A	Thermistor	THM1 Air Inlet
U15B	Thermistor	THM5 Gas
U15C	Thermistor	THM3 Liquid (freeze protection)
U15D	Thermistor	THM2 Air Outlet
U21	Expansion valve	—
U31	Air filter	—
U34A	D grille	Air outlet
U34B	Air inlet grille	Air inlet
U34C	Air inlet grille	Air inlet
U36	Runner	—
U37	Fan casing	—
U41	Heat exchanger	Assembly
U65A	Spacer	For fixing PCB
U65B	Push spacer	For fixing PCB
U65C	Grille knob	—
U71	Fan motor	—
U82	Transformer	—
U85	Printed circuit board	—
U98A	Back cover	Assembly
U98B	Front cover	Assembly
U98C	Side cover	Assembly
U98D	Upper cover	—

9.16 RPFI-(1.0-2.5)FSN2E



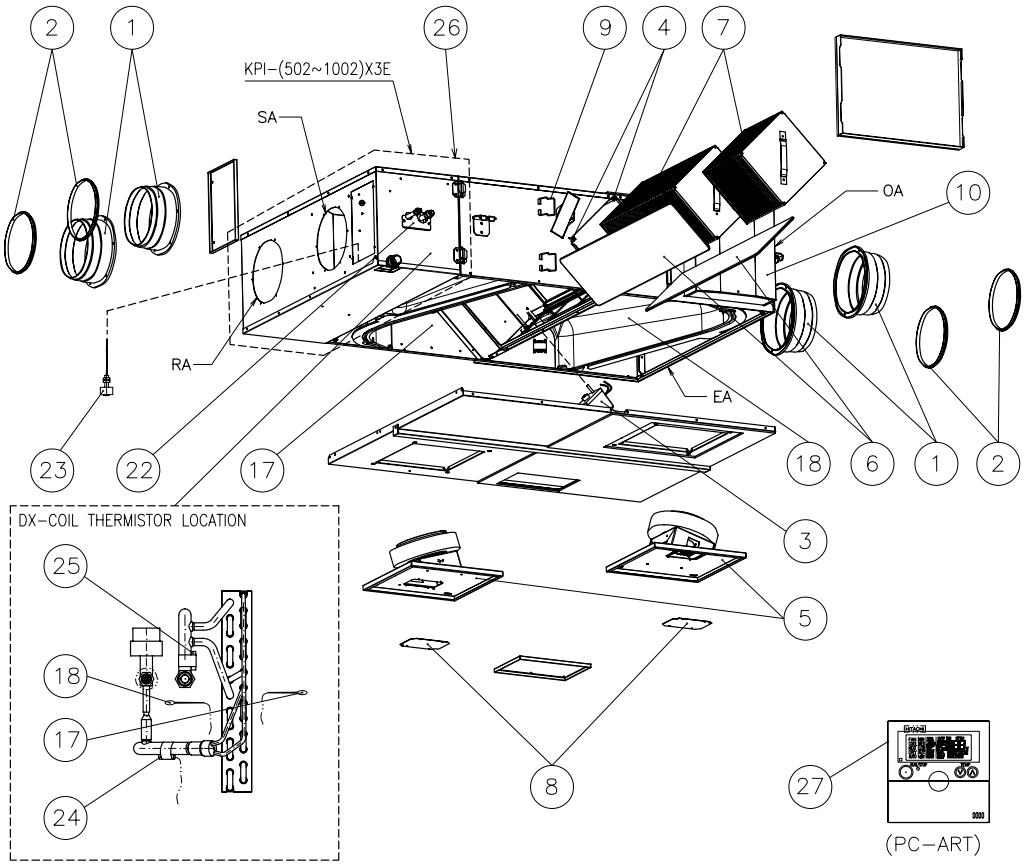
Electrical Parts



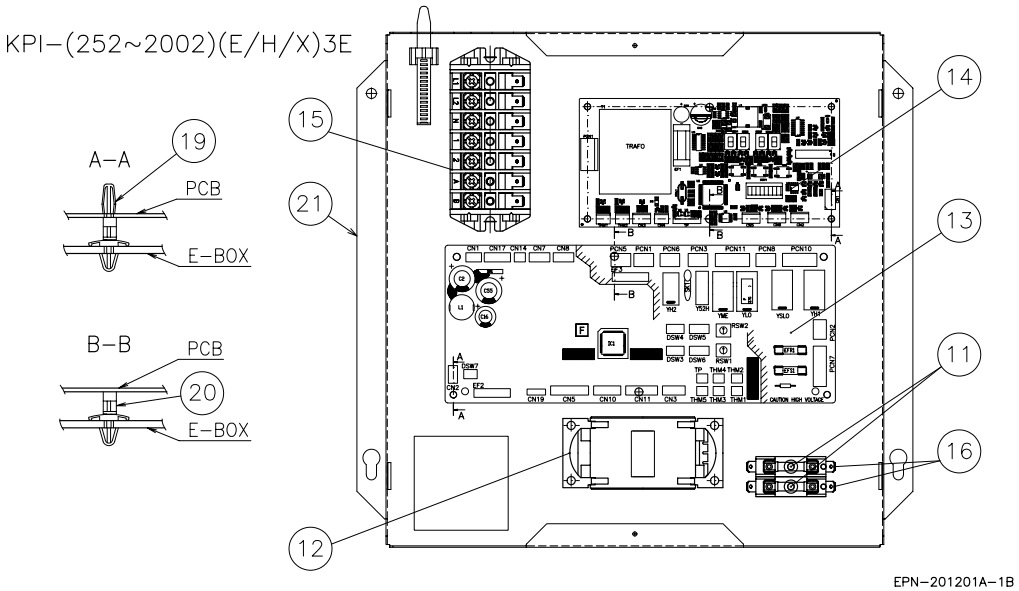
Drawing number: EPN808A-2B

Number	Part name	Remarks
U00	Printed circuit board terminals	—
U02	SW remote control	PC-P2HTE/PC-ART (optional)
U12	Cord expansion valve	—
U13	Cord expansion valve	—
U14	Capacitor	2uF/4uF
U15A	Thermistor	THM1 thermistor for air inlet
U15B	Thermistor	THM5 thermistor for gas pipe
U15C	Thermistor	THM3 thermistor for liquid piping
U15D	Thermistor	THM2 thermistor for air outlet
U21	Expansion valve	—
U31	Air filter	—
U36	Runner	—
U37	Fan frame	—
U41	Heat exchanger	Assembly
U65A	Spacer	Attached to the PCB
U65B	Push spacer	Attached to the PCB
U71	Fan motor	—
U82	Transformer	—
U85	Printed circuit board	—
U98A	Rear cover	Assembly
U98B	Front cover	Assembly

9.17 KPI-(252-2002)(E/H)3E and KPI-(502-1002)X3E



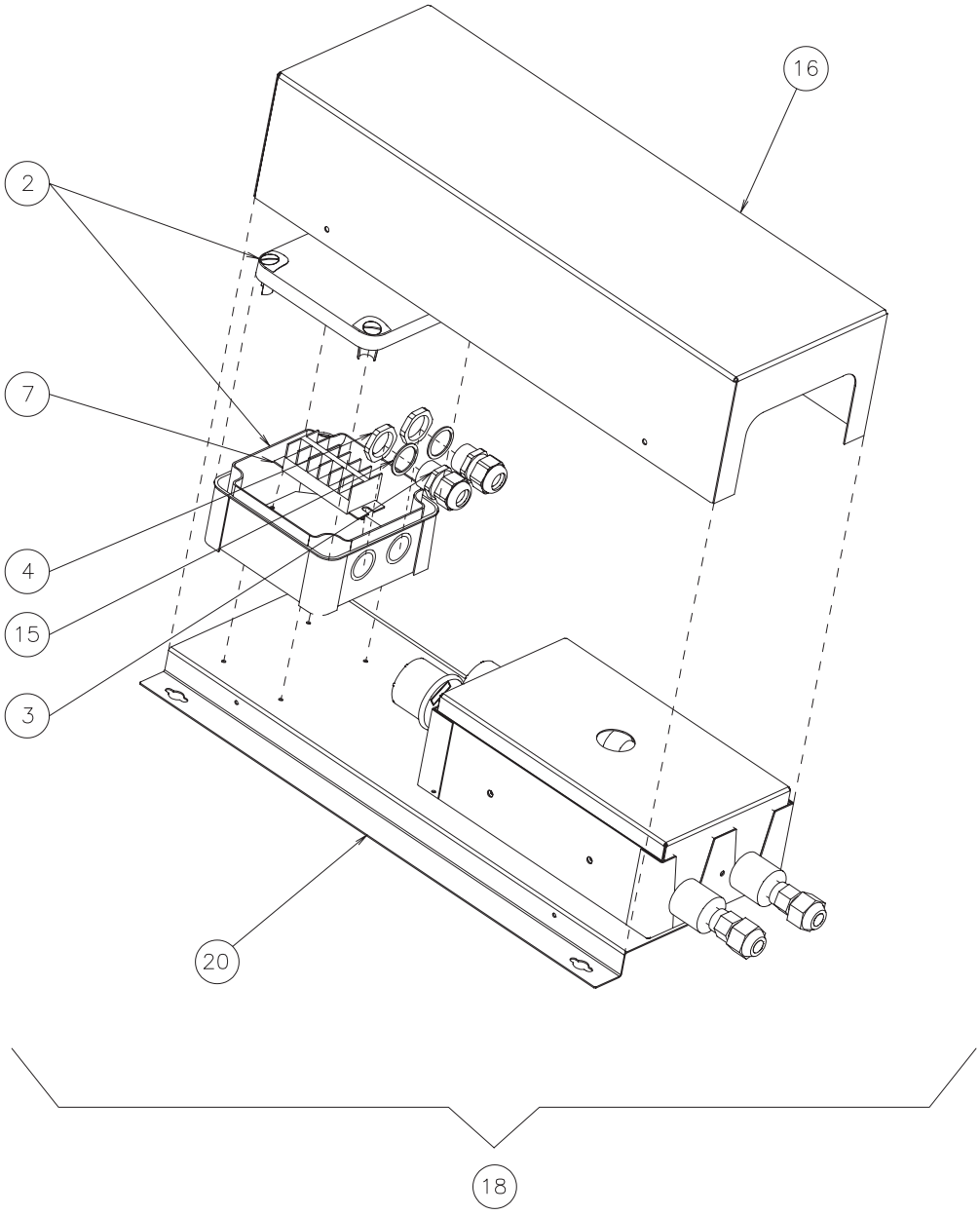
LOCATION OF ELECTRICAL EQUIPMENT IN THE ELECTRICAL BOX



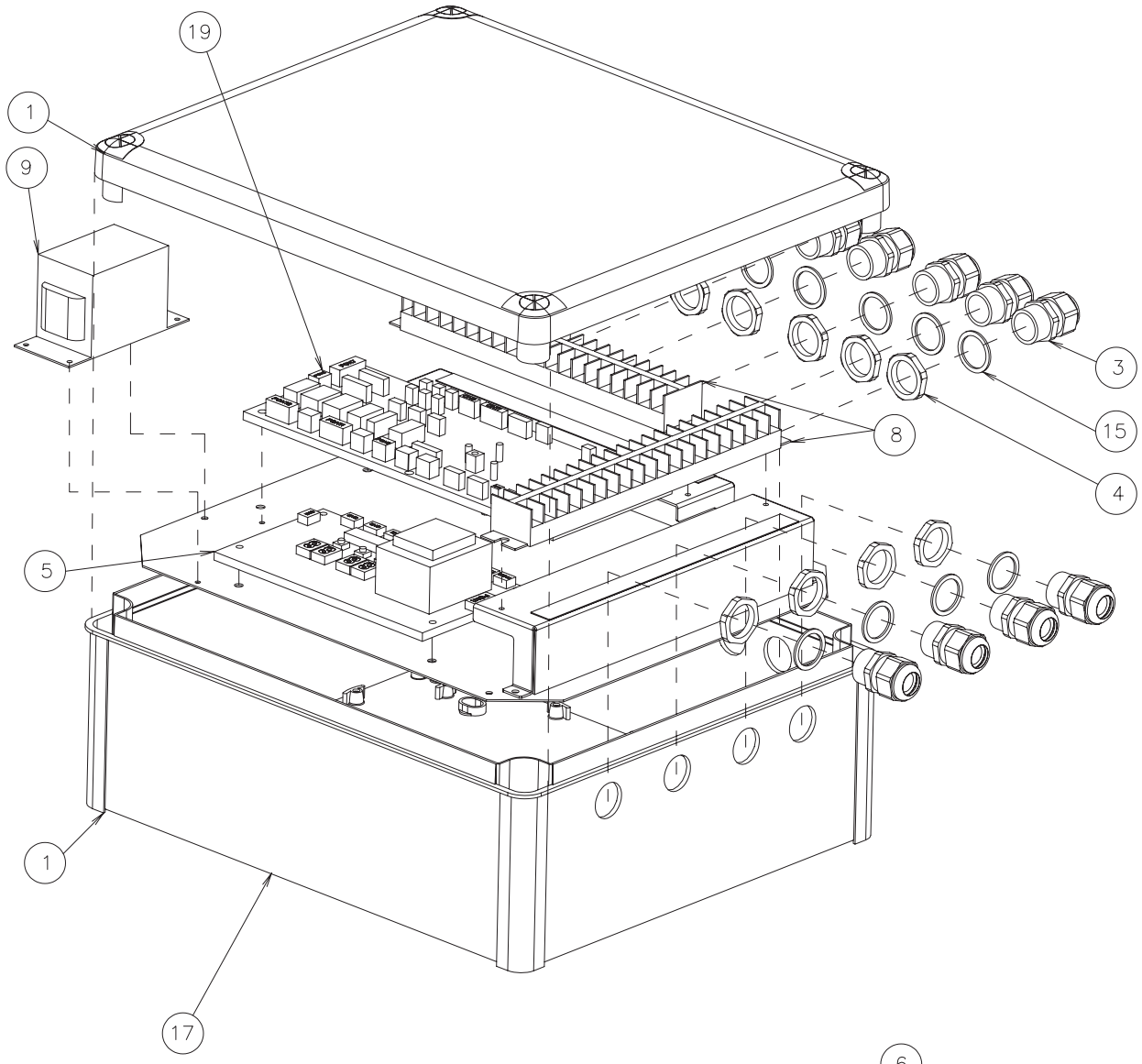
EPN-201201A-1B

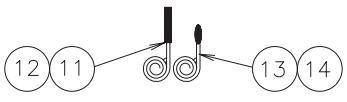
Number	Part name	Remarks
1	Duct Connector	Plastic material
2	Duct Connection Sealing Strip	For Duct Connector
3	Damper Motor	AC Motor for Damper
4	Exchanger Guide Gasket	-
5	Fan Assy	Fan Cover
6	Air Filter	Inlet & Outlet Air
7	Heat Exchanger	Celluloid Heat Exchanger (Aluminium HE for KPI-XXX-H3E)
8	Fan Service Cover	-
9	Heat Exchanger Cover Clamp	-
10	E-Box Cover	-
11	Fuse	2/4 A (6x32) - Fan Protection
12	Transformer	Main Transformer
13	Printed Circuit Board (PI073)	-
14	Printed Circuit Board	-
15	Terminal Board	-
16	Fuse Holder	-
17	Thermistor	Blue Socket
18	Thermistor	Red Socket
19	Spacer	Main PCB Holder
20	Push Spacer	-
21	Electrical Box	-
22	Dx-coil service cover	-
23	Float switch	-
24	Thermistor	Blue Socket (Freeze)
25	Thermistor	Yellow Socket (Gas)
26	Dx-Coil Module	-
27	Remote Control	-

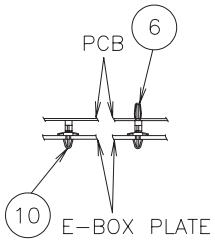
9.18 DX-Interface



EPN–201202B–1B







EPN–201202B–2B

Number	Part name	Remarks
1	E-BOX EXP. VALVE KIT	
2	E-BOX EXP. VALVE KIT	
3	PACKING GLAND	
4	PACKING GLAND NUT	
5	PRINTED CIRCUIT BOARD	AUX PCB
6	SPACER	For PCB Fixing
7	TERMINAL BOARD	
8	TERMINAL BOARD	
9	TRANSFORMER	
10	PUSH SPACER	For PCB Fixing
11	THERMISTOR	THM3: For liquid Pipe; Black socket
12	THERMISTOR	THM5: For Gas Pipe; Yellow socket
13	THERMISTOR	THM1: For Inlet Air; Blue socket
14	THERMISTOR	THM2: For Outlet Air; Red socket
15	PACKING GLAND WASHER	
16	COVER	
17	E-BOX FINAL ASSY	Assembly (Components + Harness)
18	EXP. VALVE ASSY	Assembly
19	PRINTED CIRCUIT BOARD	
20	EXP VALVE KIT ASSY	Assy (Valve stay + EXV Kit)

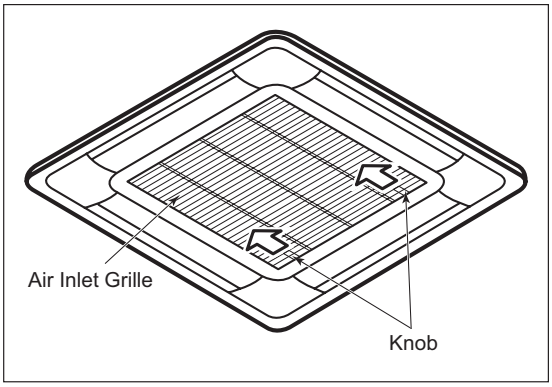
10. Servicing

Index

10.1 RCI - 4-way cassette (1.0-6.0)FSN3

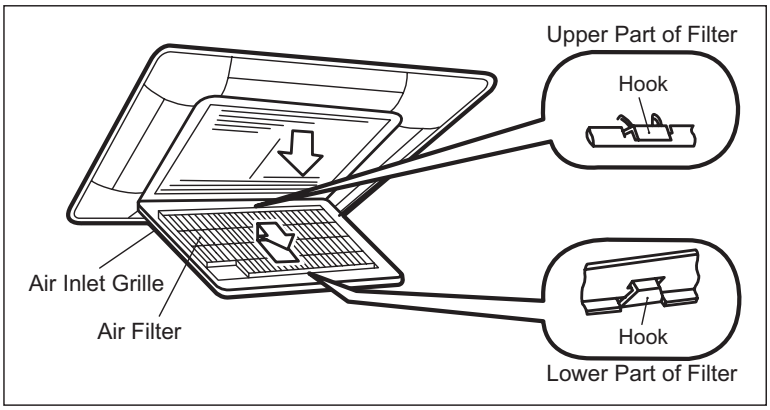
10.1.1 Removing Air Filter and Air Inlet Grille

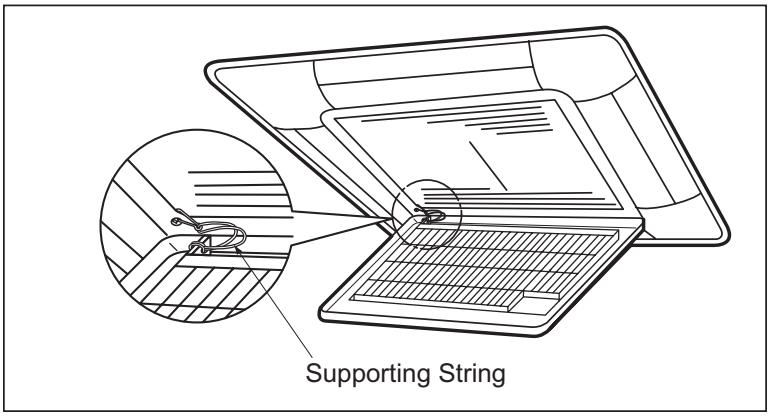
1 The air filter is attached inside the air inlet grille. While pushing both ends of knobs at the air inlet grille toward the arrow direction, open the air inlet grille.
2 Hold the lower side of the air inlet grille keeping it inclined. Remove the hooks of air filter from the air inlet grille and remove the air filter.
3 Remove the supporting string from the air panel. After lifting the air inlet grille keeping it inclined, draw the air inlet grille forward to remove.
4 When attaching the air inlet grille, the supporting string shall be attached to the air panel.



CAUTION

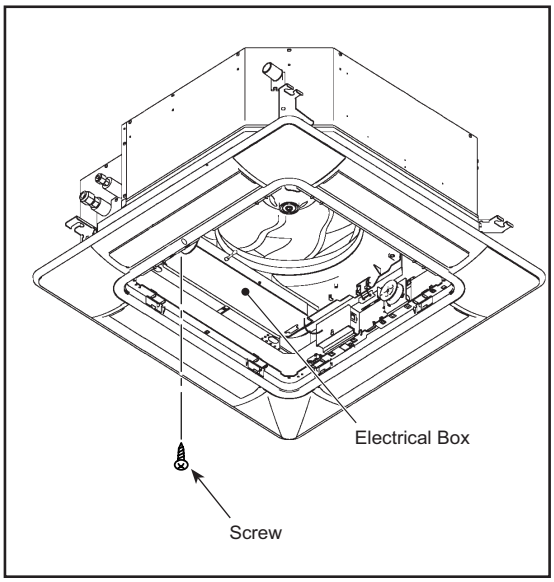
TURN OFF all power source switches.





10.1.2 Removing Electrical Box Cover

1 The electrical box appears when opening the air inlet grille. Remove the fixing screw for electrical box cover and open the electrical box.
2 The electrical box cover can hook onto the electrical box during the maintenance.



CAUTION

Pay attention not to fall the electrical box cover.

10.1.3 Removing Optional Air Panel

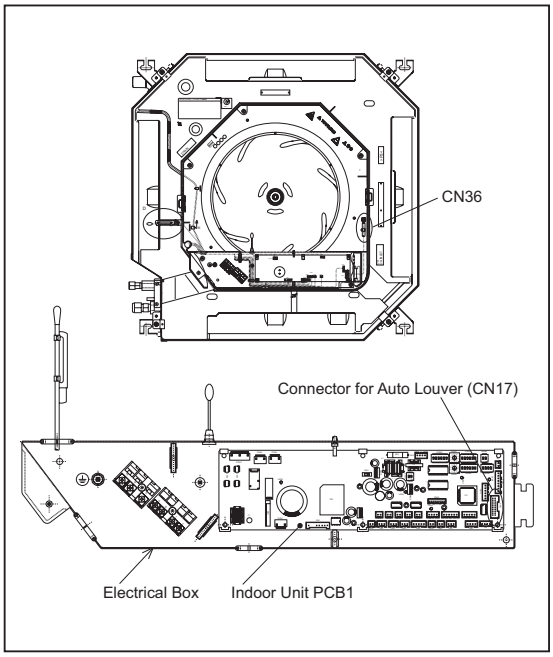
1 Open the air inlet grille. Remove the connector (CN36) at the air panel from the connector for auto louver (CN17) on the indoor unit PCB1.

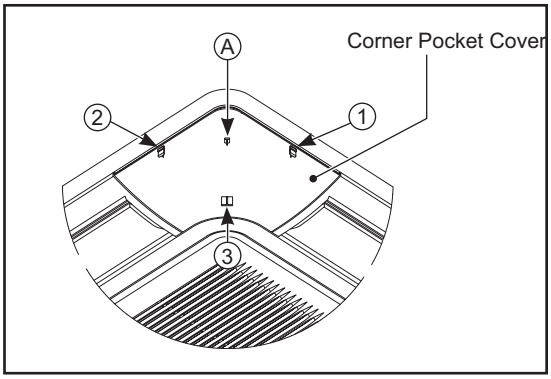
2 Remove the air inlet grille from the air panel.

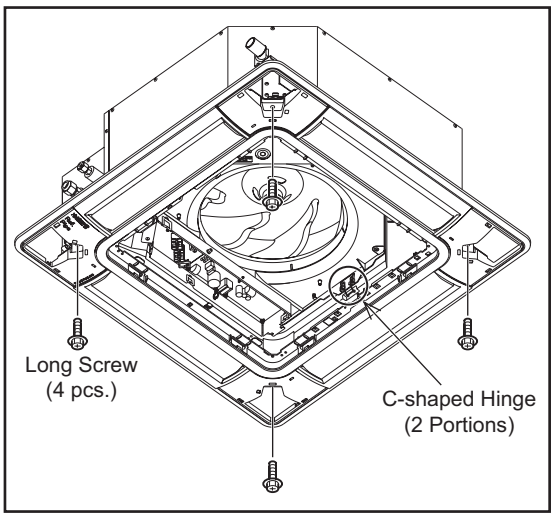
3 Remove four (4) corner pocket covers from the air panel. They can be removed pulling "Ⓐ" part toward the arrow direction in the figure below.

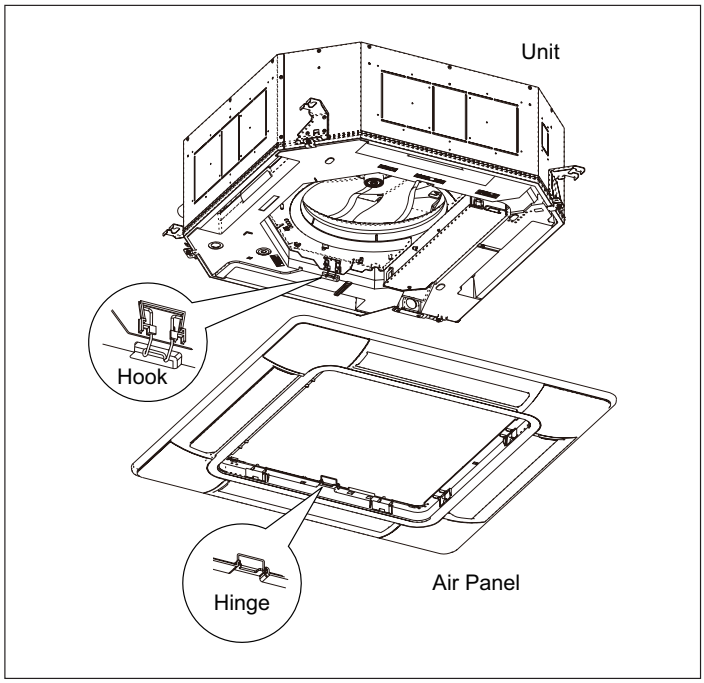
* To attach the corner pocket covers again, insert the fixing hooks (① and ②) to the air panel and insert the fixing hook (③) to the air panel.

4 Remove four (4) long screws from the air panel. Remove them with attention to temporally hook hinges of air panel (2 portions) onto hooks of unit (2 portions). Then, remove the air panel after unhooking two (2) hinges from the two (2) hooks.









10.1.4 Removing Turbo Fan and Fan Motor

1 Remove the air inlet grille and the electrical box cover according to the item 2.3.1 “Removing Air Filter and Air Inlet Grille“ and the item 2.3.2 “Removing Electrical Box Cover“.

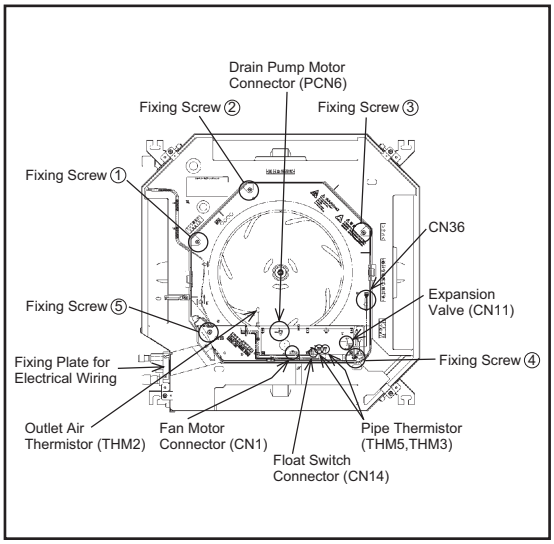
2 Moving Electrical Box

a. Remove the outlet air thermistor (THM2), the drain pump motor connector (PCN6), the float switch connector (CN14), the pipe thermistors (THM5 and THM3), the expansion valve (CN11) and the fan motor connector (CN1) from indoor unit PCB1.

b. Remove the fixing screws ④ and ⑤ for electrical box and hang the electrical box from the unit.

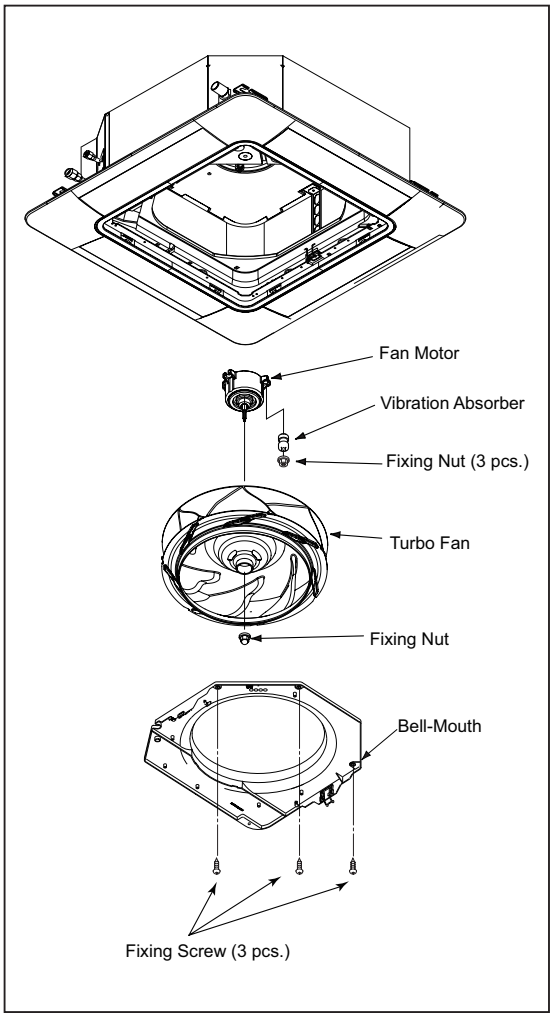
3 Removing Bell-Mouth
Remove three (3) fixing screws ①, ② and ③ for bell-mouth fixed to the drain pan, and remove the bell-mouth.

4 Removing Turbo Fan and Fan Motor
Remove the turbo fan after the fixing nut for the turbo fan is removed. Remove the fan motor after three (3) fixing nuts for the fan motor are removed. (When reassembling, the tightening torque for nuts shall be approximately 8N-m.)



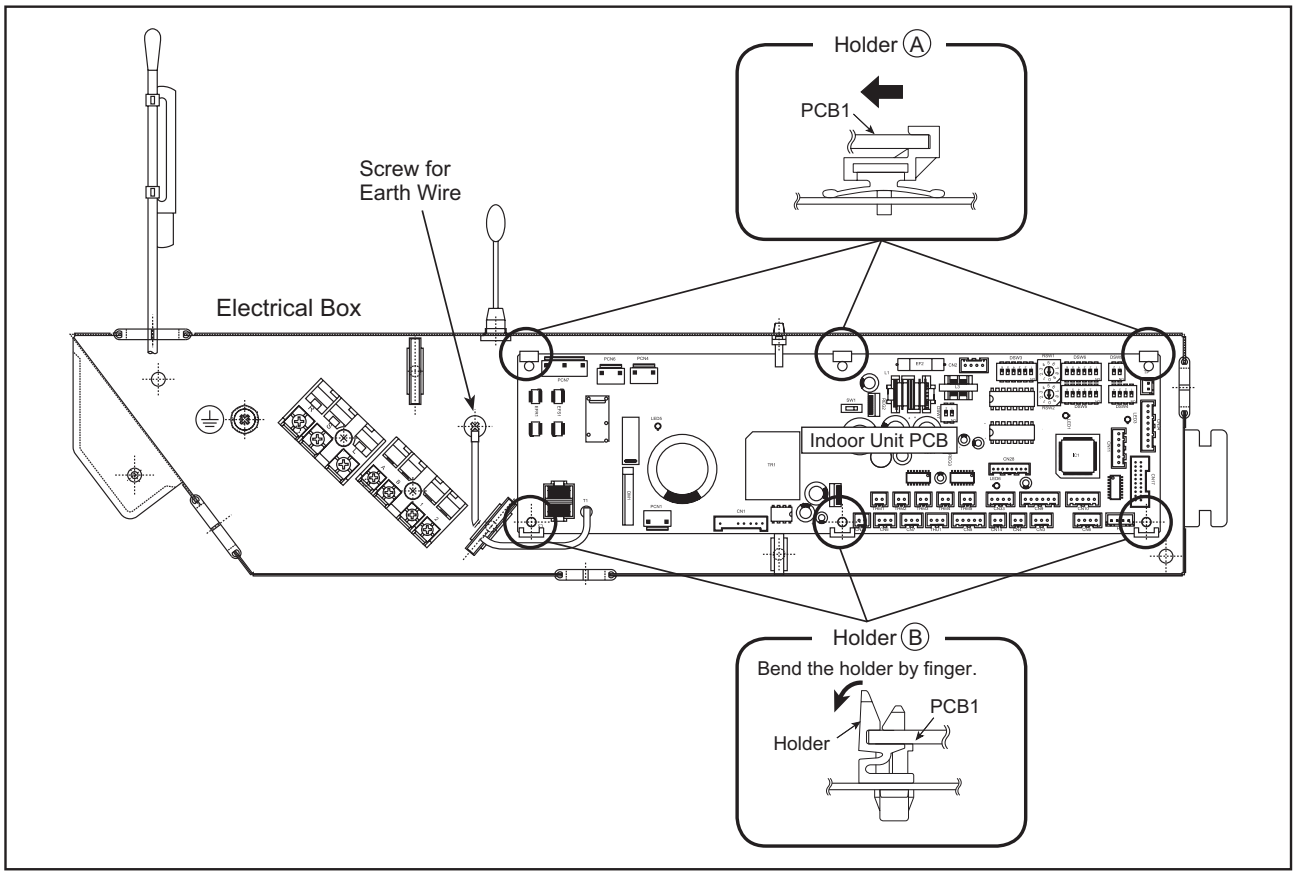
NOTE

When reassembling, temporally fix the fixing screws (① to ⑤), and align the center of turbo fan and bell-mouth to match. Tighten securely after keeping the clearance between the turbo fan and the bell-mouth evenly. In addition, securely fix lead wires for fan motor, 2 pipe thermistors and expansion valve by the cord clamp attaching at the partition plate.



10.1.5 Removing Printed Circuit Board (PCB1)

1 Remove the air inlet grille according to the item “Removing Air Filter and Air Inlet Grille”.
2 Remove the electrical box according to the item “Removing Electrical Box Cover“.
3 Disconnect all wiring connectors from PCB1.
4 Remove the screw for earth wire.
5 The PCB1 is fixed by six (6) holders. Bend the holders (B) by finger and raise the PCB1. Remove the PCB1 from the holders (A) by drawing it towards arrow direction in the figure below.

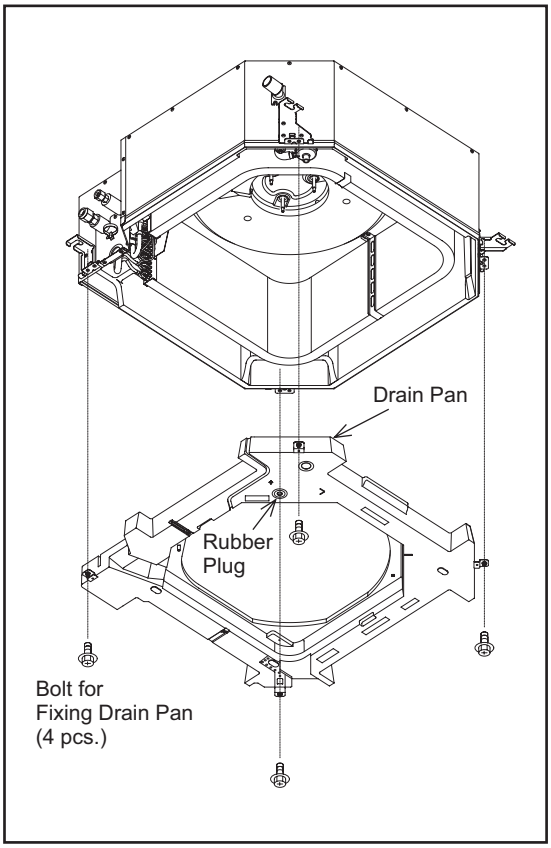


NOTE

- ***Do not touch electrical parts on PCB1.***
- ***Pay attention not to apply an excessive force to PCB1. It may cause failure of PCB1.***
- ***When reassembling, attach connectors to the correct position. If not, the PCB1 may be damaged. In addition, securely attach the screw for earth wire.***

10.1.6 Removing Drain Pan

1 Remove the air panel according to the item “Removing Optional Air Panel”.
2 Remove the electrical box cover according to the item “Removing Electrical Box Cover“. Disconnect connectors of air outlet thermistor, 2 pipe thermistors (gas and liquid), the expansion valve, the drain pump, the float switch and the fan motor.
3 Remove the electrical box and the bell-mouth according to the item “Removing Turbo Fan and Fan Motor”.
4 Draining Drain Water
Pull out the rubber plug from the drain pan, and drain the water remaining in the drain pan. Although the silicon sealant is applied around the rubber plug, the rubber plug can be removed cutting the silicon sealant by a cutter. (Pay attention not to damage the rubber plug by a cutter.) In addition, check the clogging at the drain hole.
5 Removing Drain Pan
Remove four (4) bolts fixing the drain pan. Remove the drain pan.

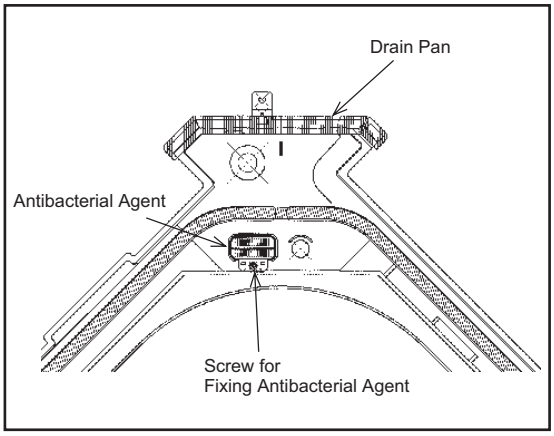


NOTE

When attaching the rubber plug again, push in it into the drain hole by using Phillips Screwdriver, etc. after the rubber plug is wet by water. Seal the rubber plug after the silicone sealant is applied around the flange part of rubber plug.

10.1.7 Removing Antibacterial Agent

1 Remove the air panel according to the item “Removing Optional Air Panel”.
2 Remove the electrical box cover according to the item “Removing Electrical Box Cover“. Disconnect connectors of air outlet thermistor, 2 pipe thermistors (gas and liquid), the expansion valve, the drain pump, the float switch and the fan motor.
3 Remove the drain pan according to the item “Removing Drain Pan”.
4 Remove the antibacterial agent (cased) fixed inside the drain pan by screw.

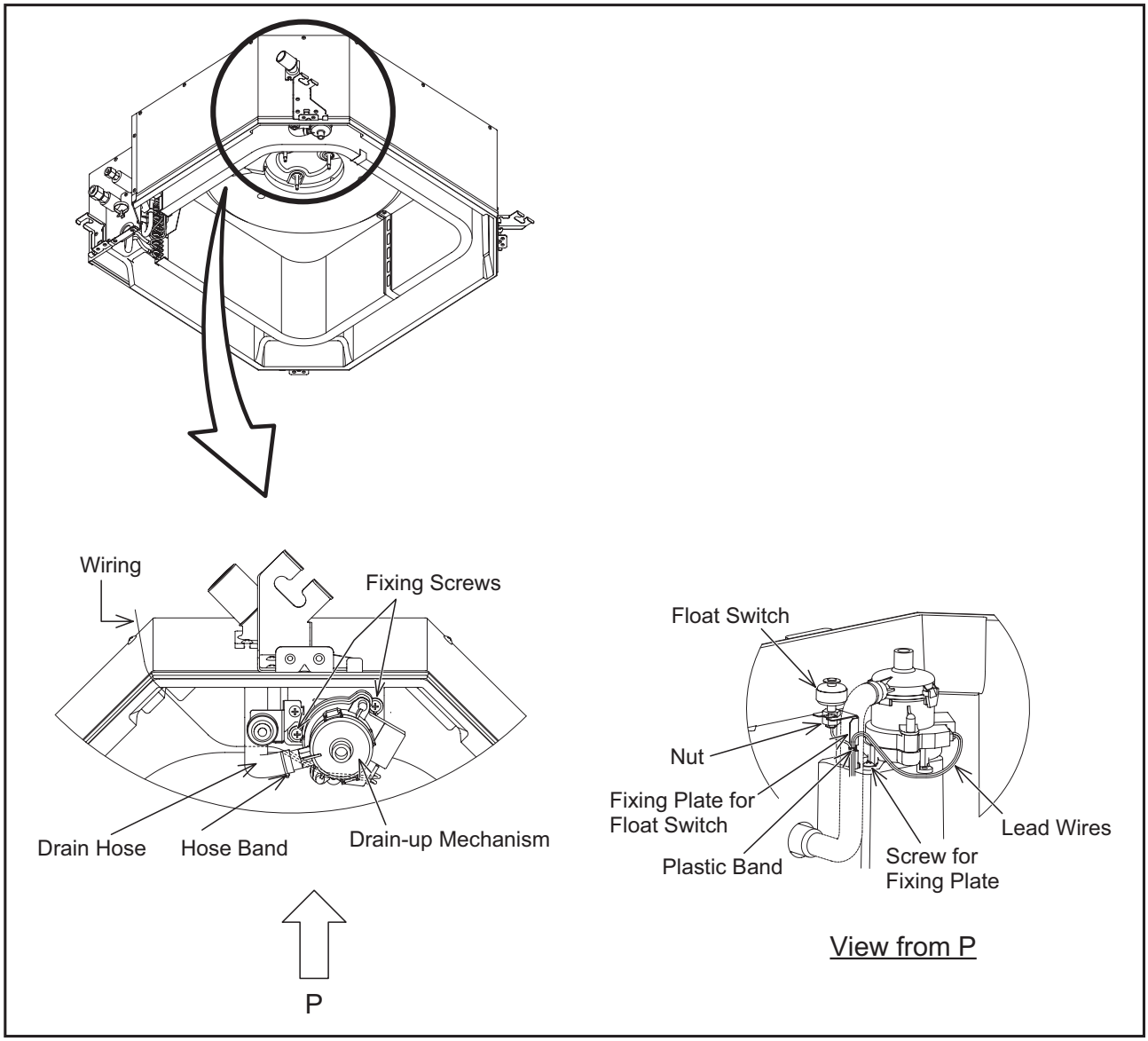


10.1.8 Removing Drain-Up Mechanism

1 Remove the drain pan according to the item “Removing Drain Pan”.
2 Remove the insulation which attaches the wires for float switch and drain-up mechanism together.
3 Cut the plastic band fixing the wires at the fixing plate for float switch.
4 Cut the hose band for drain hose by nipper, and remove the drain hose from the drain-up mechanism.
5 Remove two (2) fixing screws for drain-up mechanism. When removing, hold the drain-up mechanism by hand in order not to fall.
6 Remove the drain-up mechanism.

NOTE

When reassembling, wrap up the wires for float switch and drain-up mechanism together by the insulation Fix securely them to the original position. When attaching the drain pan again, pay attention not to pull the wires strongly. Otherwise, the insulation attaching at the cabinet may be peeled.



10.1.9 Removing Float Switch

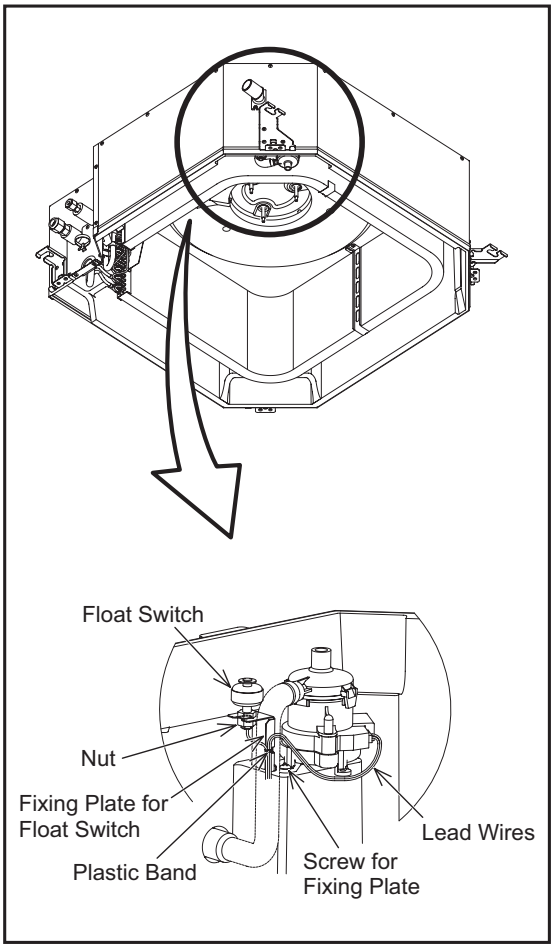
1 (1) Remove the drain pan according to the item “Removing Drain Pan”.
2 (2) Remove the insulation which attaches the wires for float switch and drain-up mechanism together.
3 (3) Cut the plastic band fixing the wires at the fixing plate for float switch.
4 (4) Removing Float Switch
The float switch is attached next to the drain-up mechanism. Remove the float switch by loosening the fixing screw for the fixing base.

NOTE

When reassembling, wrap up the wires for float switch and drain-up mechanism together by the insulation. Fix securely them to the original position. When attaching the drain pan again, pay attention not to pull the wires strongly. Otherwise, the insulation attaching at the cabinet may be peeled.

NOTE

Pay attention to handle the float switch. If it is dropped to a floor, the malfunction may occur. When attaching the float switch, tighten the screw by hand. (Do not use a motor-driven screwdriver.)



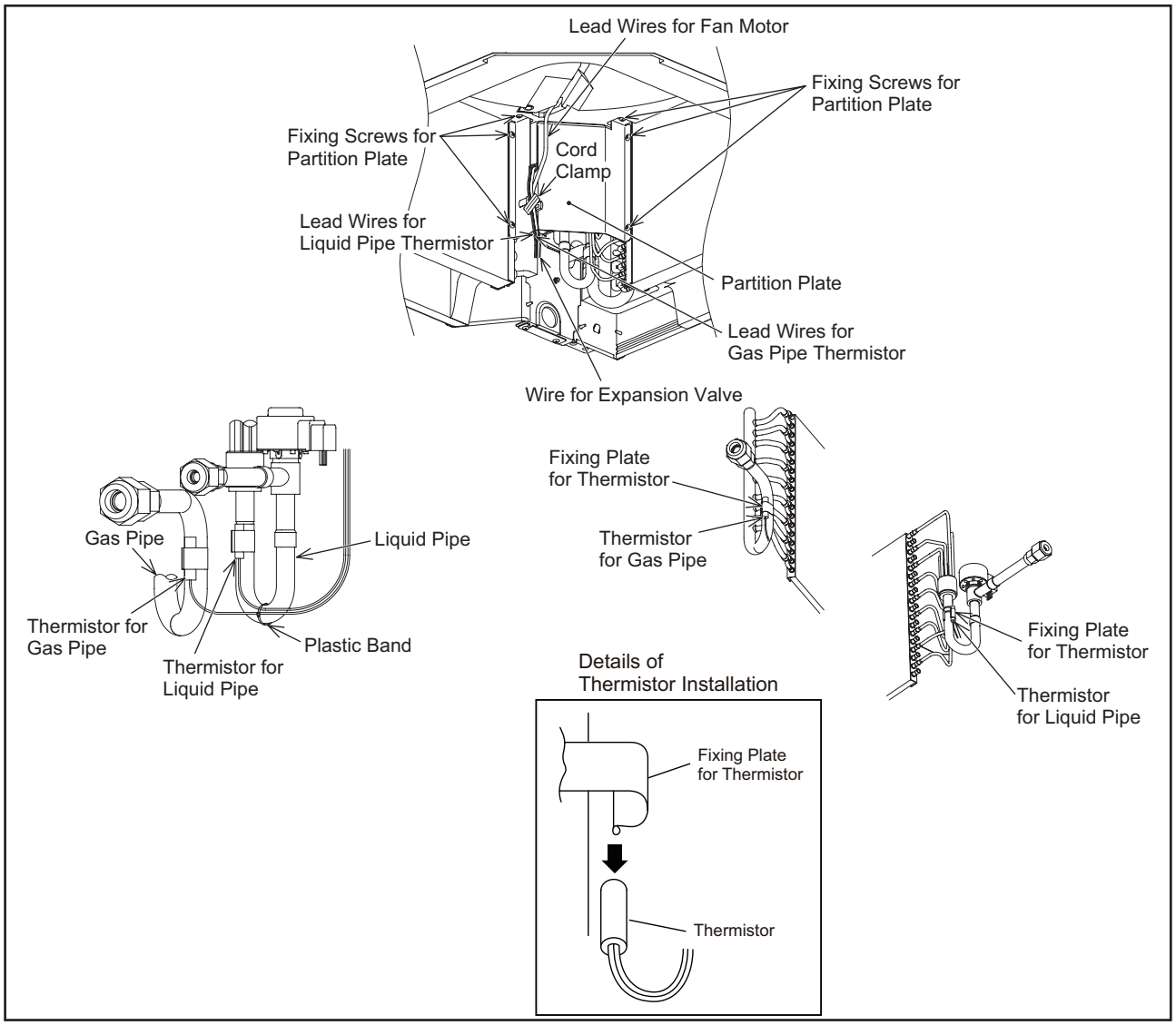
10.1.10 Removing Thermistors for Liquid Pipe and Gas Pipe

1 Remove the air panel according to the item “Removing Optional Air Panel”.
2 Remove the bell-mouth according to the item “Removing Turbo Fan and Fan Motor”.
3 Remove the drain pan according to the item “Removing Drain Pan”.
4 Removing Partition Plate
Remove six (6) fixing screws for partition plate. Remove lead wires (for fan motor, 2 pipe thermistors and expansion valve) from the cord clamp.

* When reassembling, bind lead wires (for liquid pipe and gas pipe thermistors) together by the plastic band (field-supplied).

5 Remove the fixing plate for thermistor from the gas pipe, and remove the gas pipe thermistor.
6 Remove the fixing plate for thermistor from the liquid pipe, and remove the liquid pipe thermistor.

* When reassembling, securely fix lead wires (for fan motor, 2 pipe thermistors and expansion valve) together by the cord clamp attaching at the partition plate and attach each thermistor to the original position.



NOTE

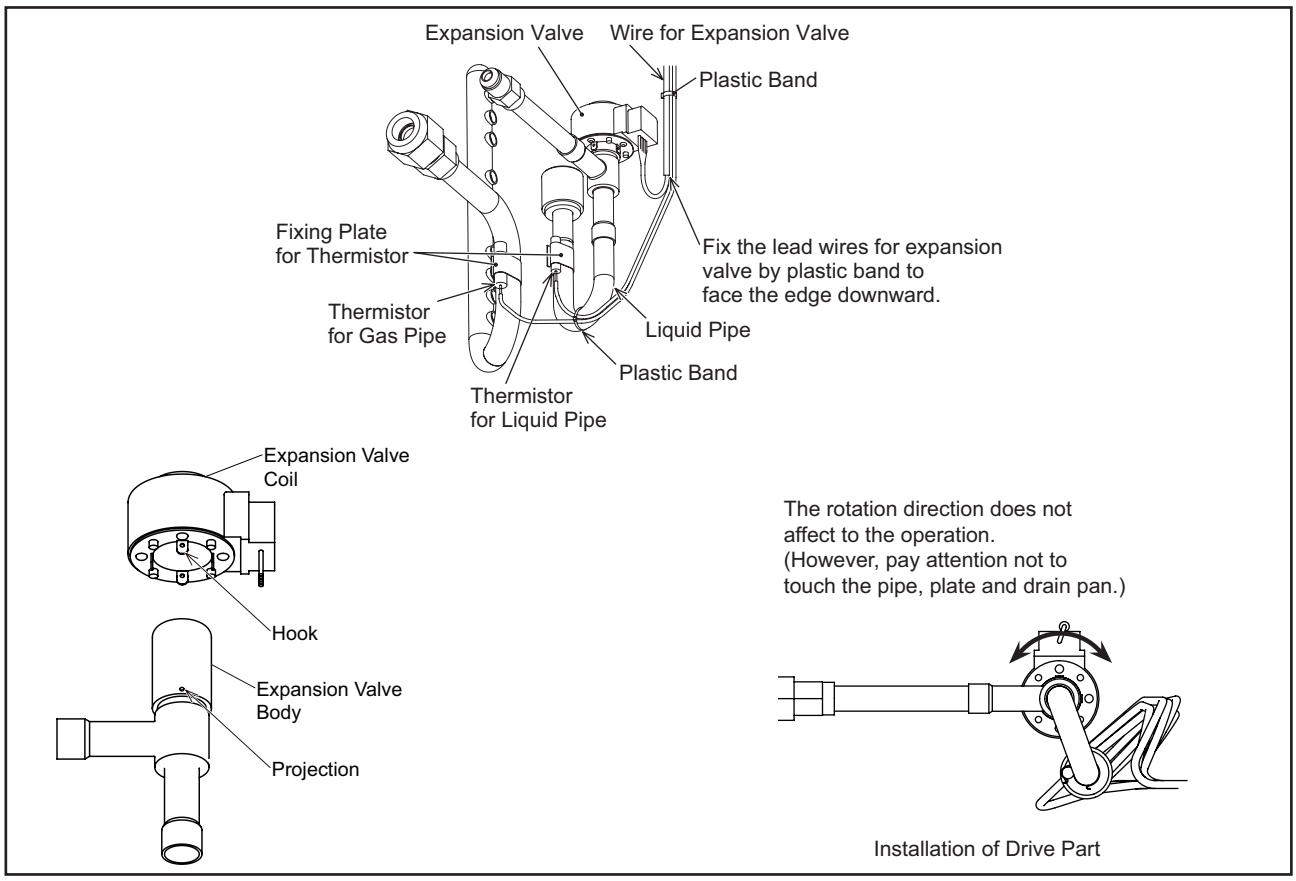
Fix lead wires (for 2 pipe thermistors and expansion valve) together by the plastic band to face the edge of vinyl tube downward as shown in the figure of the item “Removing Electric Expansion Valve Coil”. If the lead wires are not fixed correctly, it may cause water leakage.

10.1.11 Removing Electronic Expansion Valve Coil

CAUTION

TURN OFF all power source switches.

1 Remove the air panel according to the item “Removing Optional Air Panel”.
2 Remove the bell-mouth according to the item “Removing Turbo Fan and Fan Motor”.
3 Remove the drain pan according to the item “Removing Drain Pan”.
4 Remove the partition plate according to the item “Removing Thermistors for Liquid Pipe and Gas Pipe”.



5 Cut the plastic band fixing lead wires (for 2 pipe thermistors and expansion valve).
6 Remove the hooks of the expansion valve coil from the projection of the expansion valve body by a few turn of expansion valve coil. Pull up and remove the expansion valve coil. At this time, pay attention not to twist the pipes.
7 Insert the new expansion valve coil for replacement to the expansion valve body. When inserting, fix the expansion valve coil to catch the projections onto the hooks.

NOTE

The hooks are located each 90o, and the projections are located each 180o.
The hooks shall catch onto the projections completely though the rotation direction does not affect to the operation.
If the hooks do not completely catch onto the projections, it may cause malfunction of expansion valve coil.

8 If the replacement work is completed, fix the wire for expansion valve near the expansion valve coil by plastic band. At this time, fix the lead wires for expansion valve to face the edge downward.
After fixing the lead wires for expansion valve, fix again lead wires (for 2 pipe thermistors and the expansion valve) together by the plastic band.

NOTE

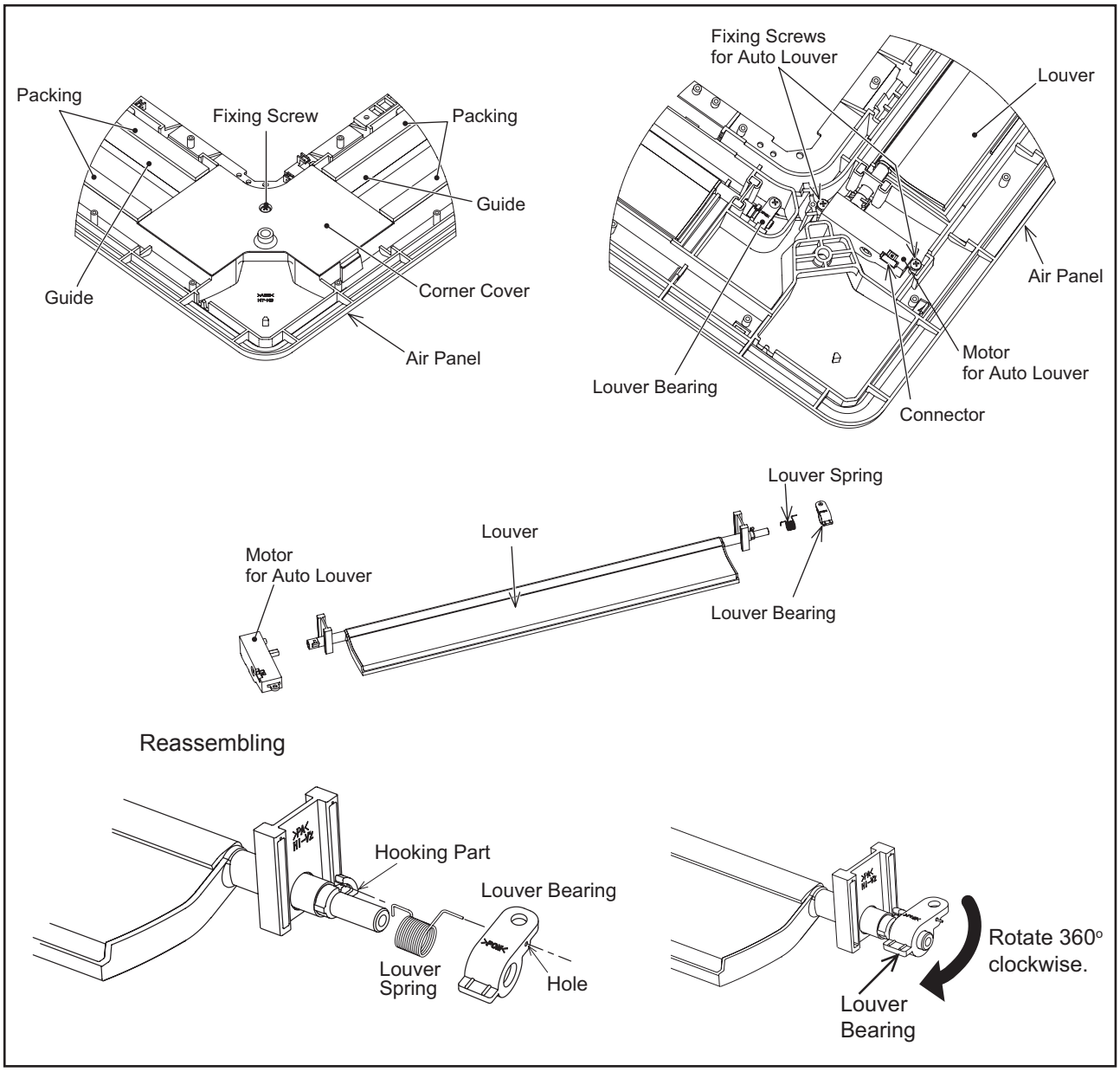
When reassembling, securely fix lead wires (for fan motor, 2 pipe thermistors and expansion valve) together by the cord clamp attaching at the partition plate.

10.1.12 Removing Auto Louver Motors

1 Remove the air panel according to the item “Removing Optional Air Panel”.
2 Remove the fixing screws for each corner cover and remove the corner covers.
3 Remove the packings and guides.
4 Remove two (2) fixing screws for each motor from the air panel.
Remove the screw for louver bearing, and pull it out from the air panel. Then, remove the louvers, louver bearings and motors.
5 Remove the motors from the louvers.
6 Remove each connector connected to the motors.

NOTE

- ***When reassembling, securely catch the C-shaped part of louver spring onto the hooking part of louver. Additionally, insert the L-shaped part of louver spring into the hole of louver bearing.***
- ***Rotate the louver bearing 360o clockwise before fixing the screw for louver bearing.***

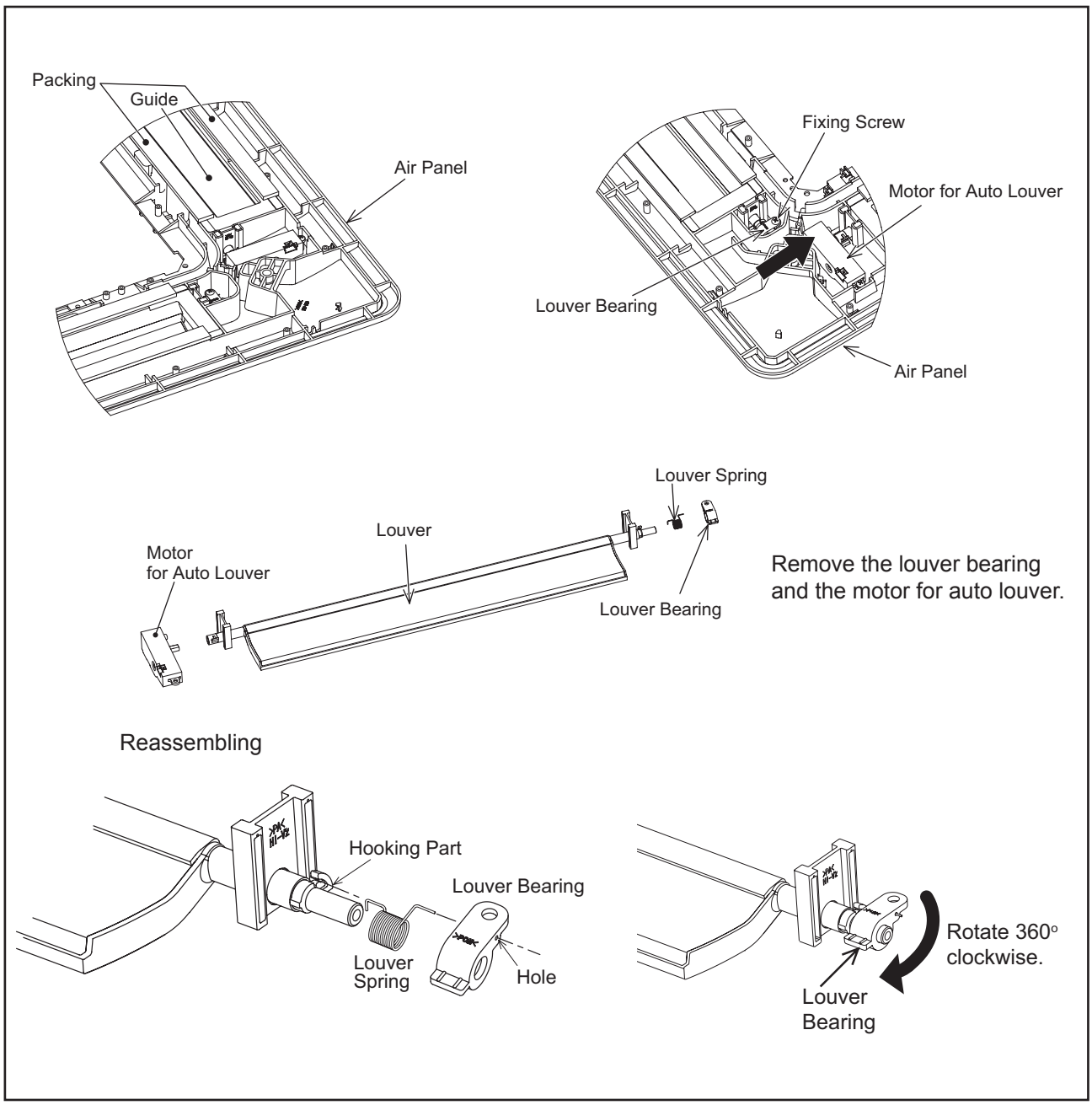


10.1.13 Removing Louver

1 Remove the air panel according to the item “Removing Optional Air Panel”.
2 Remove the corner cover according to the item “Removing Auto Louver Motors”.
3 Remove the packings and guides.
4 Remove two (2) fixing screws for motors from the air panel. Remove the screw for louver bearing, and pull it out from the air panel. Then, remove the louvers, louver bearings and motors.
5 Remove the motors for auto louver according to the item “Removing Auto Louver Motors”.
6 Remove each louver bearing and louver spring.

NOTE

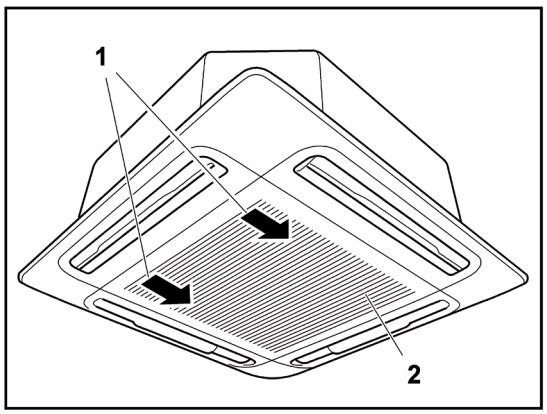
- ***When reassembling, securely catch the C-shaped part of louver spring onto the hooking part of louver. Additionally, insert the L-shaped part of louver spring into the hole of louver bearing.***
- ***Rotate the louver bearing 360o clockwise before fixing the screw for louver bearing.***



10.2 RCI - 4-way cassette (1.0-6.0)FSN3Ei

10.2.1 Removal of the long-lasting air filter

Nº	Part
1	Button
2	Air inlet grille



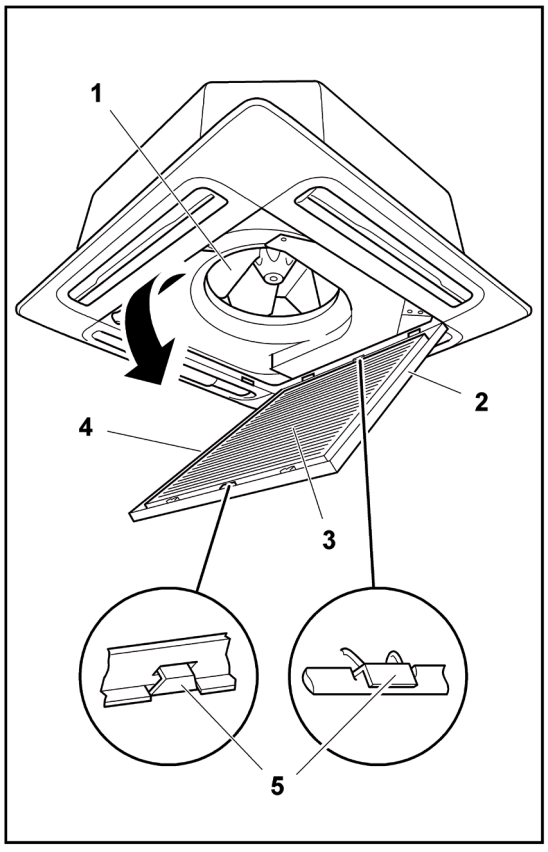
The long-lasting filter is located inside the air inlet grille.

Press the buttons in the direction indicated by the arrows and open the air inlet grille.

Remove the filter from the grille by holding onto the lower part of the grille and the filter and detaching the blocked part.

10.2.2 Removal of the air inlet grille

Nº	Part
1	Fan
2	Air inlet grille
3	Long-lasting filter
4	Chain
5	Hooks



Lift the grille approximately 30° and release the securing chain.

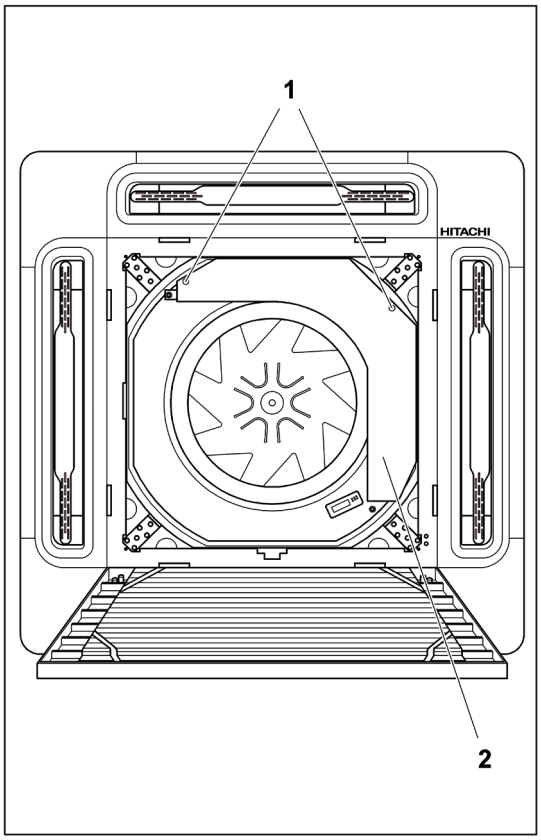
Remove the grille by sliding it upwards and forwards.

NOTE

If the chain is released and the grille angle is at 90°, the grille cannot be removed.

10.2.3 Removal of the electrical box cover

Nº	Part
1	Screws
2	Electrical box cover

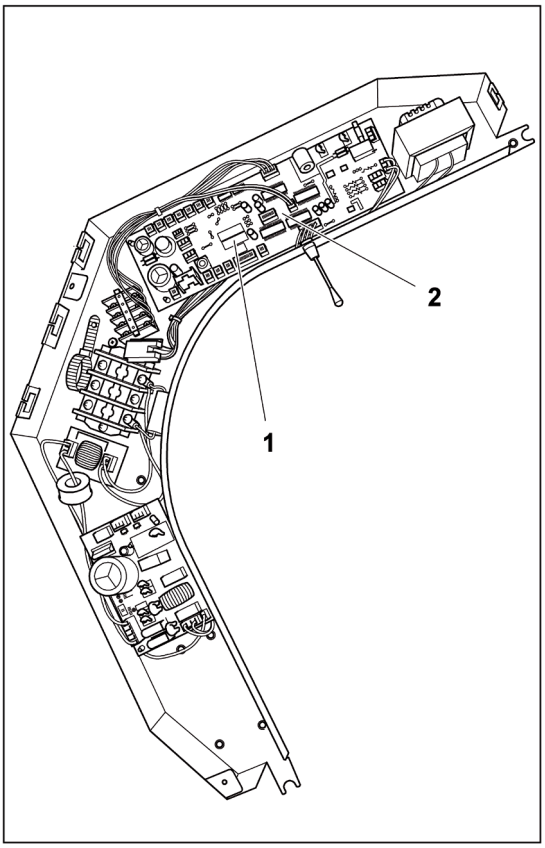


The electrical box can be removed by opening the air inlet grille.

Remove the two set screws from the electrical box cover and remove it.

10.2.4 Removal of the optional air panel

Nº	Part
1	Main PCB
2	Connector CN17 for the louver motor



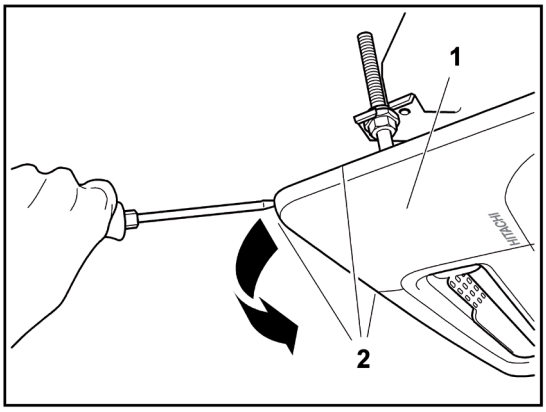
Remove the electrical box cover as is indicated in chapter Removal of the electrical box cover and separate connector CN17 from the louver motor in the main indoor PCB.

Remove the air inlet grille from the optional air panel.

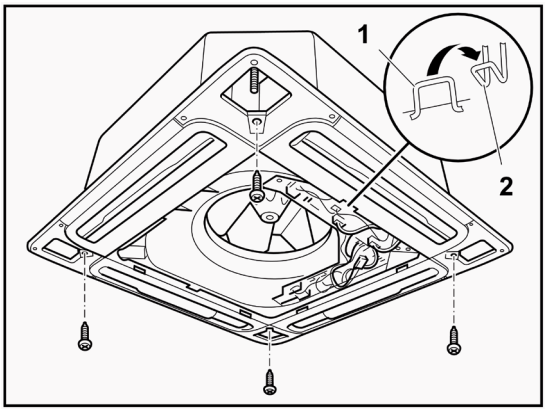
Remove the four panels from the corners as shown in the figure. Insert a screwdriver or a coin into the three grooves in the corner and release the attachment from each corner.

Remove the four screws from the optional air panel and secure to the drain pan hinge as shown in the figure. Then remove the optional air panel from the unit.

Nº	Part
1	Panel corner
2	3 grooves

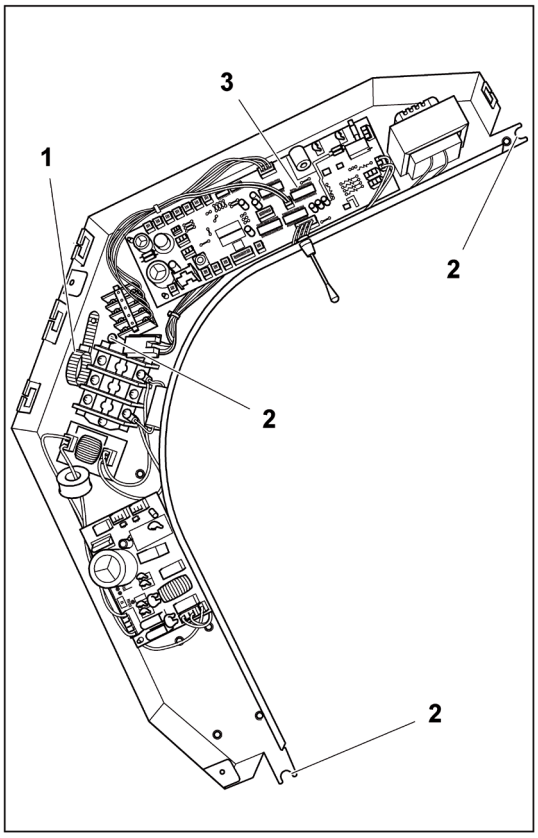


Nº	Part
1	Hinge
2	Hook



10.2.5 Removal of the fan duct and motor

Nº	Part
1	Plastic clamp
2	PCB electrical box set screws
3	PCB



Remove the air inlet grille as is indicated in chapter Removal of the air inlet grille.

Remove the electrical box as follows:

1 Disconnect the thermistors (THM2), the drainage motor connector (PCN6) and the float switch connector (CN14) from the PCB.
2 Loosen the screw from the wire clamp and remove.
3 Remove the three set screws from the electrical box and remove carefully.

10.2.6 Bellmouth removal

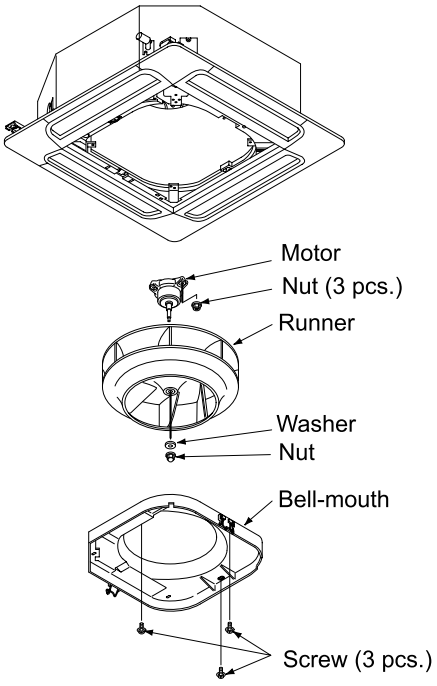
Remove the three screws securing the fan duct to the drain pan and remove it.

Remove the duct by removing the nut and washer securing it.

Disconnect the earth wire from the fan motor (only for 4, 5 and 6 HP).

Remove the fan motor connector.

Remove the three nuts securing the fan motor and remove it.

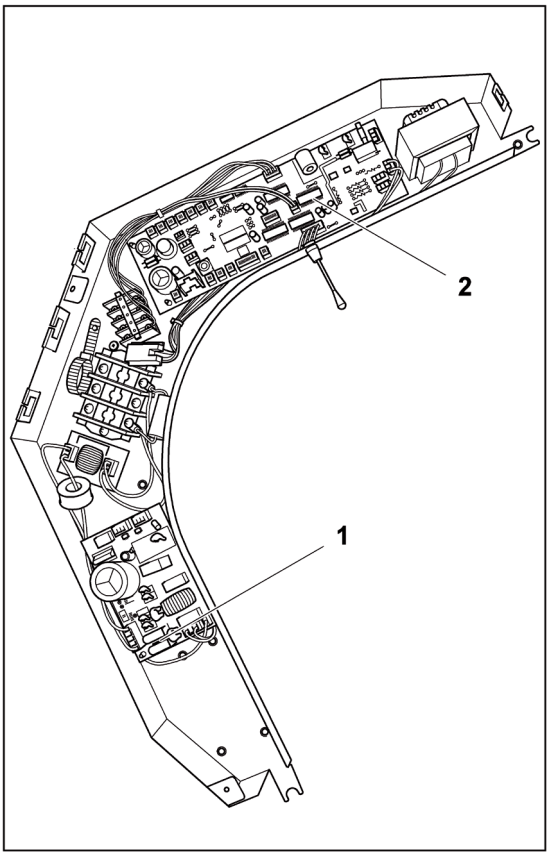


NOTE

Torque value: maximum 8 Nm.

10.2.7 Removal of the printed circuit board (PCB)

Nº	Part
1	Power supply PCB
2	Control PCB



Remove the air inlet grille as indicated in chapter Removal of the air inlet grille.

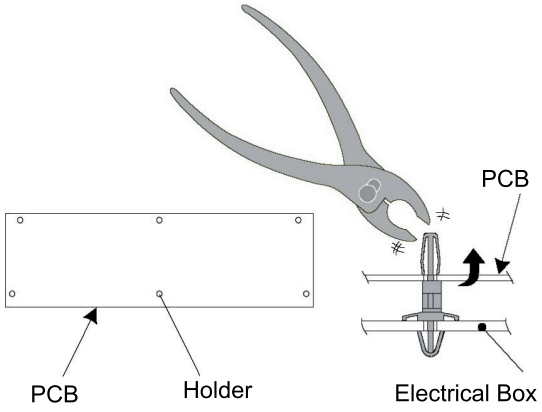
Remove the electrical box cover as indicated in chapter Removal of the electrical box cover.

Separate all of the wiring connectors on the printed circuit boards (PCB).

Remove the PCB by pressing carefully on the support tabs with long-tipped pliers, as shown in the figure.

CAUTION

- ***Do not touch the electrical components of the PCB.***
- ***Do not apply force to the PCB, as this could damage it.***
- ***Pay special attention to the position of the connectors on the PCB. An incorrect position during installation may damage the PCB.***



10.2.8 Removal of the drain pan

Remove the optional air panel as is indicated in chapter Removal of the optional air panel.

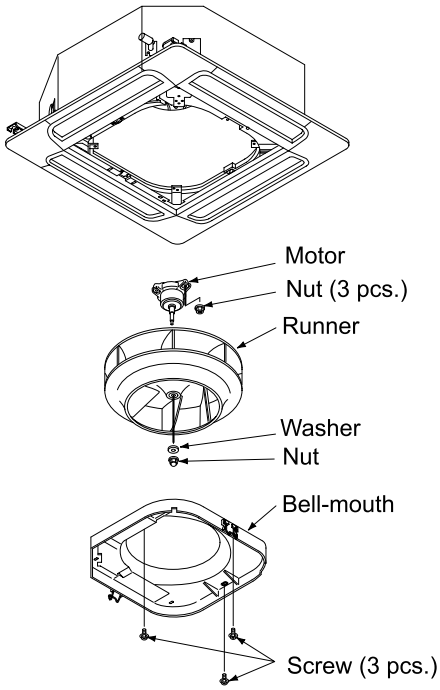
Remove the electrical box cover as indicated in chapter Removal of the electrical box cover.

Separate the connectors from:

1 The air outlet thermistor.
2 The two pipe thermistors.
3 The electronic expansion valve.
4 The drainage pump.
5 The float switch.
6 The fan motor.

Remove the fan duct and motor as indicated in chapter Bellmouth removal.

Check that the drainage hole is not blocked.



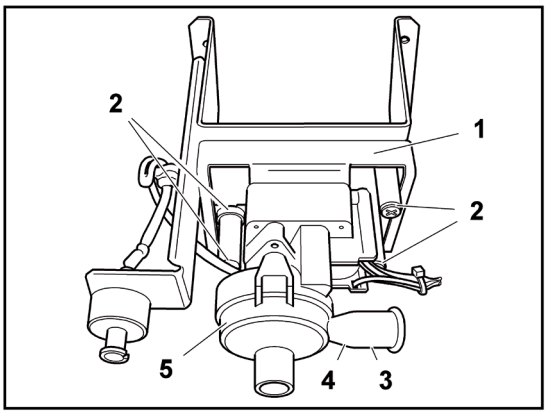
CAUTION

Do not use a knife or similar to remove the rubber plug, as this could damage it.

Remove the drain pan after removing the four set screws.

10.2.9 Removal of the drain mechanism

Nº	Part
1	Securing plate
2	Screws
3	Location of the pipe flange
4	Drain hose
5	Drain mechanism



Remove the drain pan as indicated in chapter Removal of the drain pan.

Remove the flange from the hose and remove the drain hose.

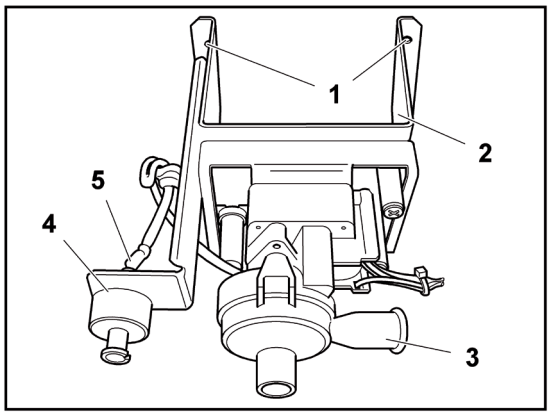
Remove the earthing wiring screw.

Hold the drain mechanism and remove the three screws from the mechanism securing plate.

Remove the mechanism with the securing plate.

10.2.10 Removal of the float switch

Nº	Part
1	Securing plate screw
2	Securing base
3	Drain mechanism
4	Float switch
5	Nut



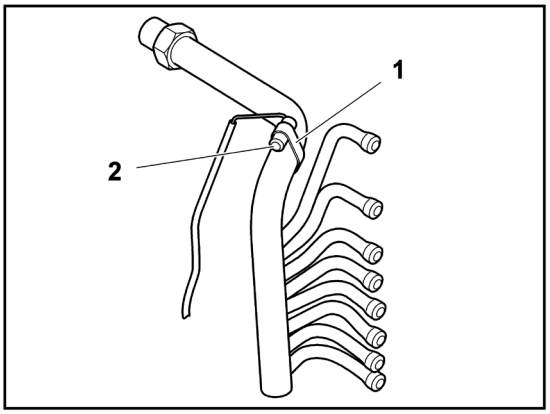
Remove the drain pan as indicated in chapter Removal of the drain pan.

Loosen the resin nut securing the float switch and remove it.

Remove the two screws securing the drain mechanism to remove the mechanism.

10.2.11 Removal of the thermistors from the liquid and gas pipes

Nº	Part
1	Thermistor securing plate
2	Thermistor



Remove the optional air panel in line with the instructions given in chapter Removal of the optional air panel.

Remove the fan duct in line with the instructions given in chapter Bellmouth removal.

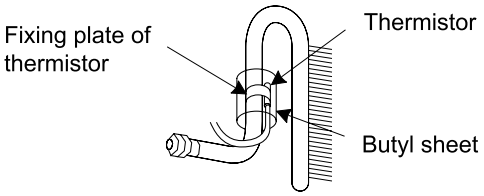
Remove the drain pan as indicated in chapter Removal of the drain pan.

Remove the butyl sheet covering the thermistor. Remove the plate securing the thermistor to the pipe on which it is located and remove.

NOTE

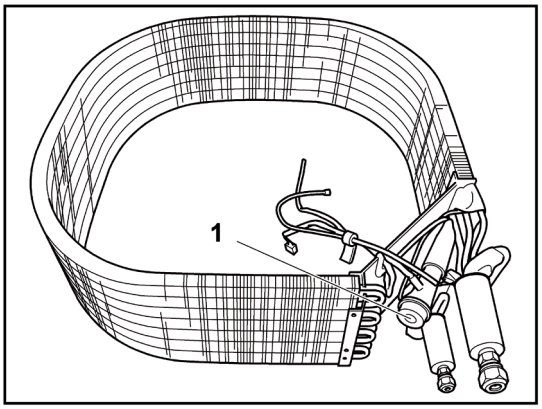
The thermistor protection and securing system is the same on the gas and liquid pipe.

(Thermistor gas pipe)



10.2.12 Removal of the electronic expansion valve coil

Nº	Part
1	Expansion valve



Remove the optional air panel in line with the instructions given in chapter Removal of the optional air panel.

Remove the fan duct in line with the instructions given in chapter Bellmouth removal.

Remove the drain pan as indicated in chapter Removal of the drain pan.

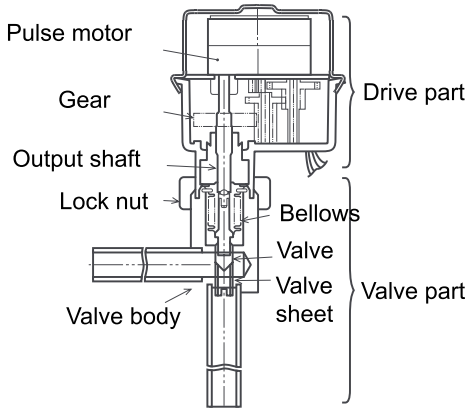
Remove the electronic expansion valve butyl sheet.

Secure the body of the valve using an appropriate wrench and loosen the nut with another wrench, turning it anti-clockwise.

NOTE

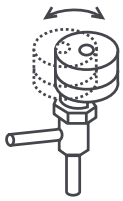
Do not hold onto the motor when loosening the nut with a wrench. The base of the transmission part could become loose and break.

Loosen the nut several turns to release the transmission part from the bolt.



Adjustment of direction is not required.

(However, pay attention not to touch the pipes or the drain pan.)



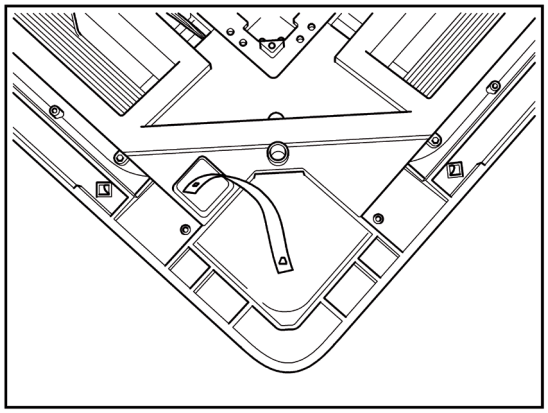
Direction of drive part

Prepare the new transmission part (spare part) with the position of the transmission wheel (transmission bolt) already adjusted.

NOTE

- ***Pay attention to removal while replacing and prevent dust and foreign particles, etc. from entering it (the exposed part during removal is the mechanical part of the valve).***
- ***Do not damage the valve joint with tools.***

Fit the transmission part to the body of the valve, hold onto both and make sure their axes coincide before fitting the nut to the valve body bolt.



Tighten the nut by hand and apply the torque value: 12 Nm - 15 Nm.

NOTE

- ***Do not apply significant force to the motor, such as rotational torque or bending load, while holding it with your hand and tightening the nut.***
- ***The direction of the eccentric part of the motor is fitted in the same way as the expansion valve. Although the motor is facing away from the piping connections on the valve body, modification of this direction does not affect the valve open/close function. Therefore, it is not necessary to adjust the direction of the motor if the motor position moves in the direction of rotation after replacement, as shown in the figure.***
- ***However, check that the motor direction for the electronic expansion valve coil does not touch another pipe or the side plate of the electrical box.***

Once replaced, fit the electronic expansion valve in the reverse manner as indicated for the removal process.

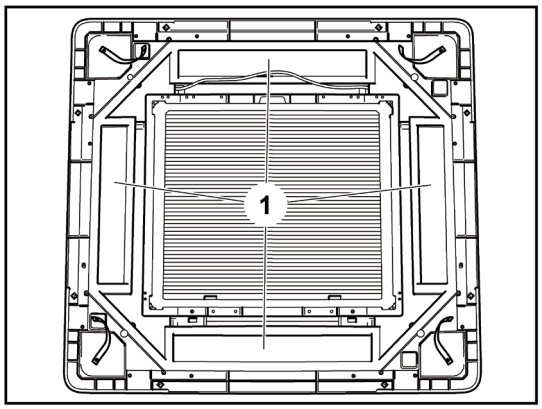
Position the butyl sheet, attaching it correctly to the valve.

NOTE

Check that the cables do not touch the fan duct after installation is complete.

10.2.13 Removal of the automatic louver motor

Nº	Part
1	Automatic swing louvers



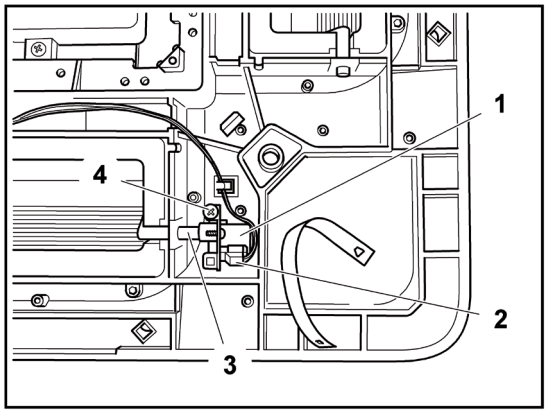
Remove the optional air panel in line with the instructions given in chapter Removal of the optional air panel.

Remove the motor cover after removing the screw securing the automatic louver motor cover.

Remove the automatic louver motor shaft and remove the motor with the securing plate.

Separate all connectors from the motor.

Nº	Part
1	Automatic louver motor
2	Connector
3	Louver shaft
4	Screw



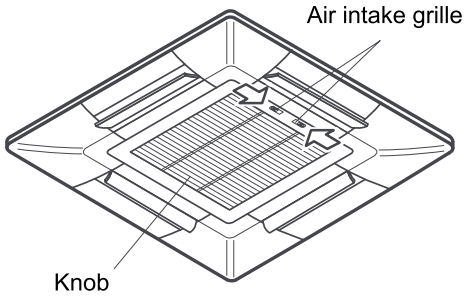
10.3 RCIM - 4-way cassette (0.8-2.0)FSN2 (compact)

10.3.1 Removal of the air filter

The long-lasting filter is located inside the air inlet grille.

Press the buttons in the direction indicated by the arrows and open the air inlet grille.

Remove the filter from the grille by holding onto the lower part of the grille and the filter and detaching the blocked part.



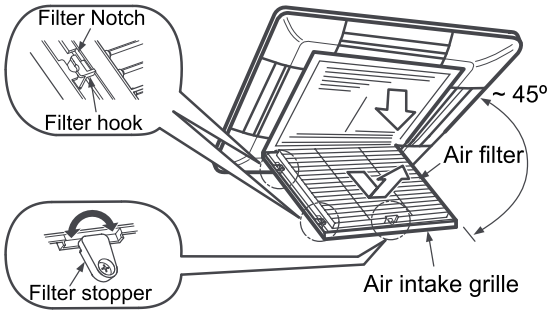
10.3.2 Removal of the air inlet grille

Lift the grille approximately 45° and release the securing chain.

Remove the grille by sliding it upwards and forwards.

NOTE

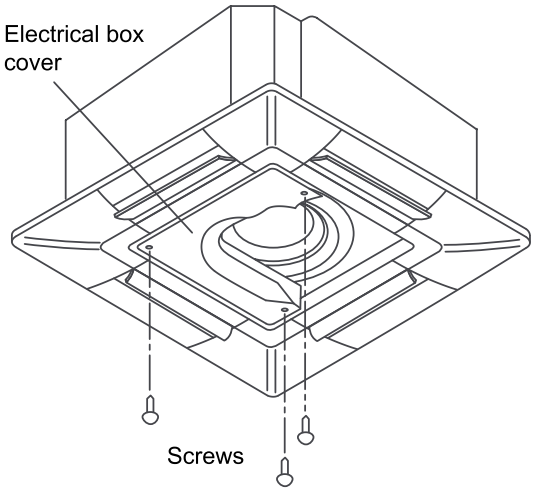
- ***If the chain is released and the grille angle is at 90°, the grille cannot be removed. Furthermore, the plastic supports could break.***
- ***If the louvers are to be moved, for example for cleaning purposes, select automatic swing mode to move the four louvers to the same position.***



10.3.3 Removal of the electrical box cover

The electrical box can be removed by opening the air inlet grille.

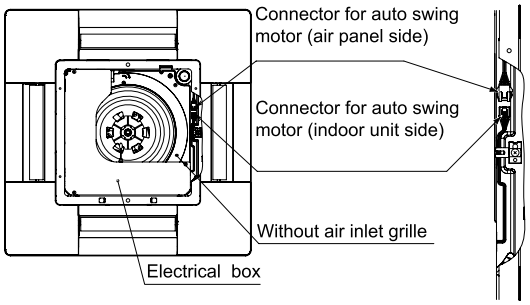
Remove the three set screws from the electrical box cover and remove it.



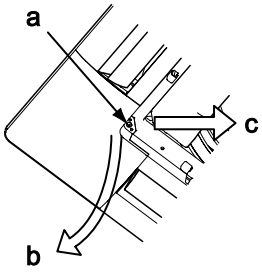
10.3.4 Removal of the optional air panel

Open the air inlet grille and separate the automatic louver connector.

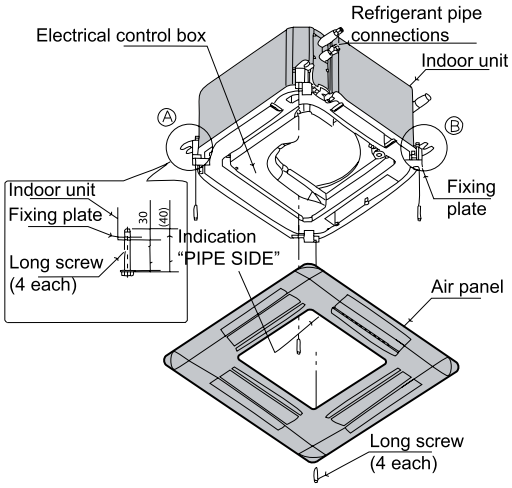
Enlarged view



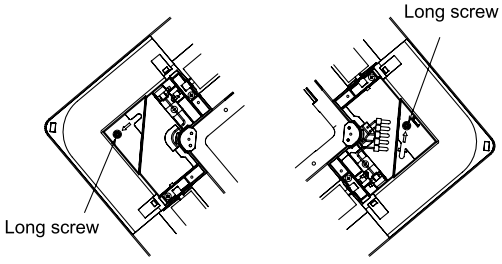
Remove the screw -a- from the side of the optional air panel and detach two hinges in the direction indicated by the arrow -b-. Then remove the four corner covers from the optional air panel by sliding them in the direction indicated by the arrow -c-.



Loosen the two screws securing the air panel to the indoor unit. Then remove the other two screws (remove the screw located next to the PIPE SIDE indication and the one located on the opposite side).

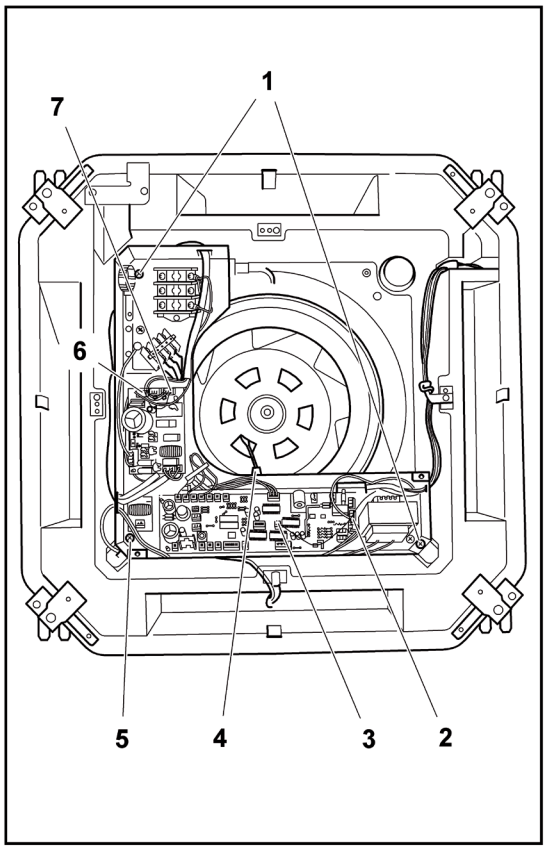


Detach the hinge from the two-position hooks, turning the panel in the direction indicated by the arrow and remove the optional air panel.



10.3.5 Removal of the electrical box

Nº	Part
1	Electrical box set screw
2	Drainage pump connector (PCN6)
3	Automatic louver connector (CN17)
4	Outlet thermistor (THM2)
5	Automatic louver electrical box set screw (THM2)
6	Fan motor connector (CN203)
7	Fan motor connector (CN201)



Remove the air inlet grille as indicated in chapters Removal of the air filter and Removal of the air inlet grille.

Remove the electrical box as follows:

1 Remove the electrical box cover.
2 Disconnect the thermistors (THM2), the drainage motor connector (PCN6), the float switch connector (CN14), the automatic louver connector (CN17) and the fan motor connector (PCN203, CN201) from the PCB.
3 Remove the three set screws from the electrical box and remove carefully.

10.3.6 Removal of the fan duct and the fan

Remove the three screws securing the fan duct to the drain pan and remove it.

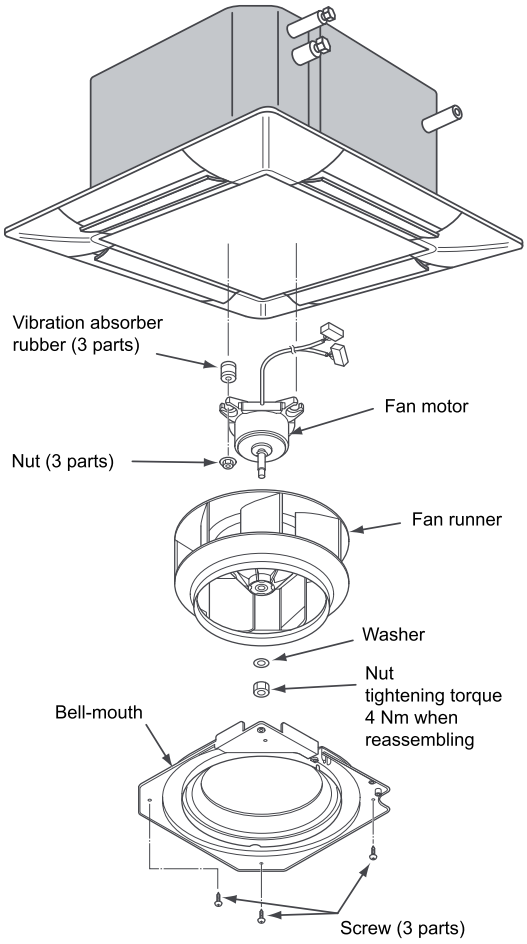
Remove the duct by removing the nut and washer securing it.

Remove the fan motor connector.

Remove the three nuts securing the fan motor and remove it.

NOTE

Torque value: maximum 4Nm.



10.3.7 Removal of the printed circuit board (PCB)

Remove the air inlet grille as indicated in chapter Removal of the air inlet grille.

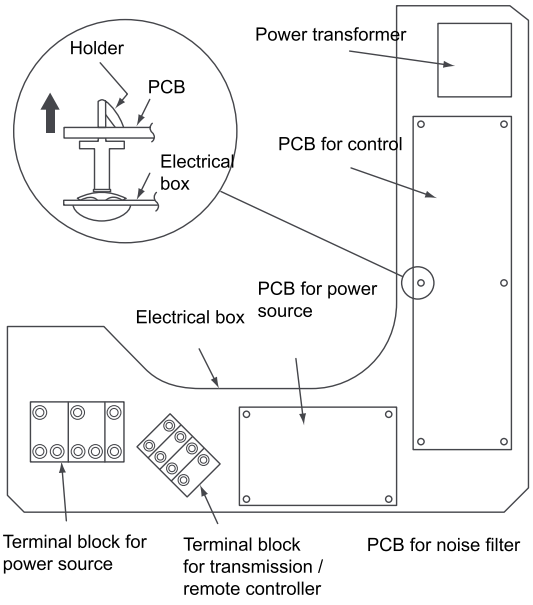
Remove the electrical box cover as indicated in chapter Removal of the electrical box.

Separate all of the wiring connectors on the printed circuit boards (PCB).

Carefully remove the securing supports from the control PCB (six), from the power supply PCB (four) and from the noise filter PCB (four) by pressing carefully on the support tabs with long-tipped pliers, as shown in the figure.

CAUTION

- ***Do not touch the electrical components of the PCB.***
- ***Do not apply force to the PCB, as this could damage it.***
- ***Pay special attention to the position of the connectors on the PCB. An incorrect position during installation may damage the PCB.***



10.3.8 Removal of the drain pan

Remove the air panel in line with the instructions given in chapter Removal of the optional air panel.

Remove the electrical box cover as indicated in chapter Removal of the electrical box.

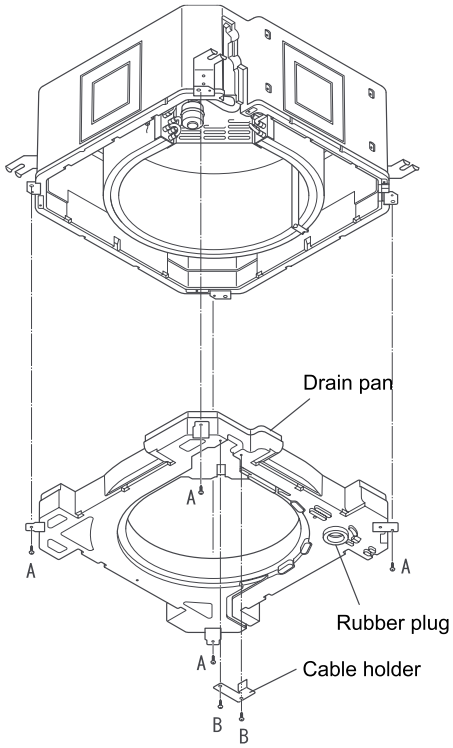
Separate the connectors from:

1 The air outlet thermistor.
2 The two pipe thermistors.
3 The electronic expansion valve.
4 The drainage pump.
5 The float switch.

Remove the fan duct and motor as indicated in chapter Removal of the fan duct and the fan.

Remove the two screws securing the cable support to the drain pan and remove the support.

Empty the pan of water by removing the rubber plug.



A : Drain pan setscrew
B : Screw for cable holde

CAUTION

- ***The plug is sealed with silicone but can be easily removed by pulling on the bottom of it.***
- ***Do not use a knife or similar to remove the rubber plug, as this could damage it.***
- ***Do not remove or damage the lower plug insulation when refitting.***

Check that the drainage hole is not blocked.

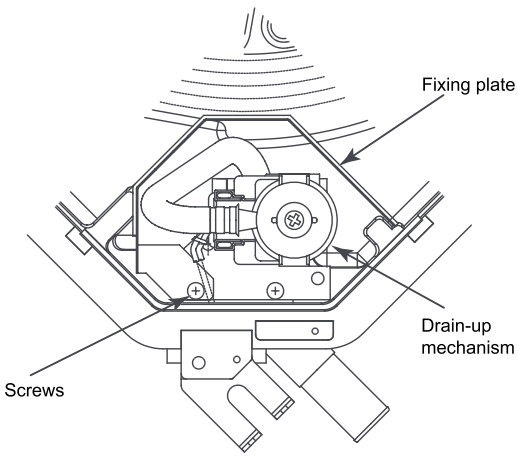
Remove the drain pan after removing the four set screws, pulling it carefully downwards.

CAUTION

- ***Do not use a sharp tool, such as a screwdriver, to fit the rubber plug, as this could damage it.***
- ***After fitting the plug, there must be a space of 2 - 3 mm between it and the drain pan.***

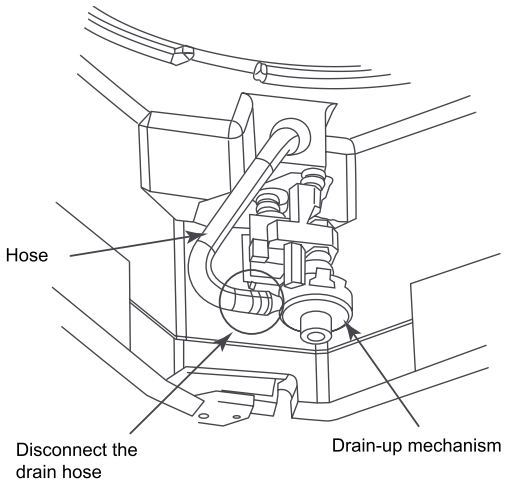
10.3.9 Removal of the drain mechanism

Remove the drain pan as indicated in chapter Removal of the drain pan.



Remove the flange from the hose and remove the drain hose.

Remove the earthing wiring screw.

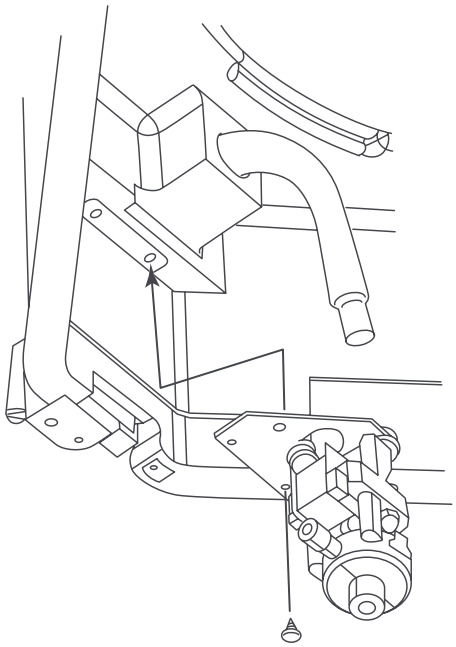


Hold the drain mechanism and remove the screw from the mechanism securing plate.

Remove the mechanism with the securing plate.

NOTE

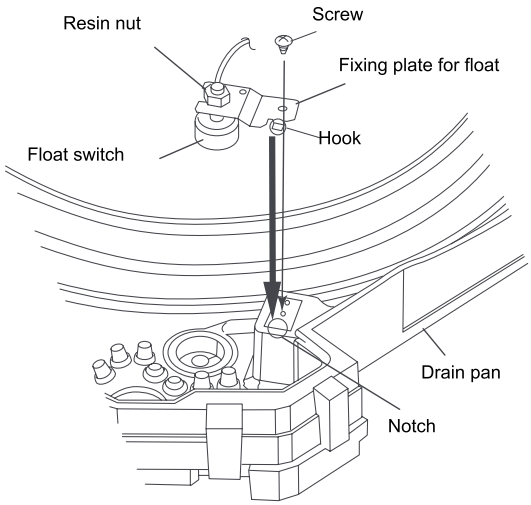
When installing, fit the drain hose as far as possible in the pump.



10.3.10 Removal of the float switch

Remove the drain pan as indicated in chapter Removal of the drain pan.

Remove the screw securing switch securing plate to the drain pan and remove it.



NOTE

The float switch is located at the rear of the drain pan.

Loosen the resin nut securing the float switch and remove it.

Remove the two screws securing the drain mechanism to remove the mechanism.

NOTE

- ***When refitting, make sure the hook is fitted into the groove in the drain pan and screw into place.***
- ***The torque value of the resin nut is 0.3 - 0.4 Nm. If the torque value is higher, the nut will be damaged.***

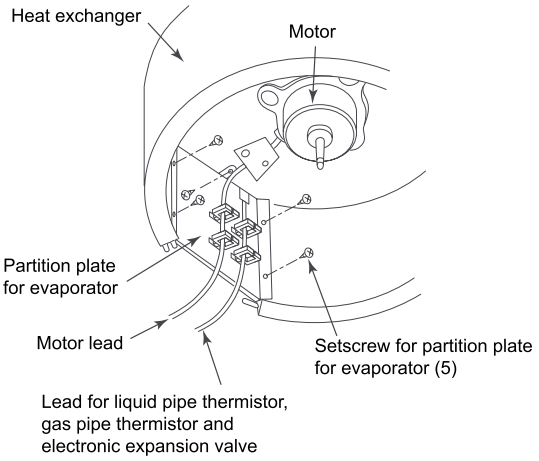
10.3.11 Removal of the thermistors from the liquid and gas pipes

Remove the optional air panel in line with the instructions given in chapter Removal of the optional air panel.

Remove the fan duct in line with the instructions given in chapter Removal of the fan duct and the fan.

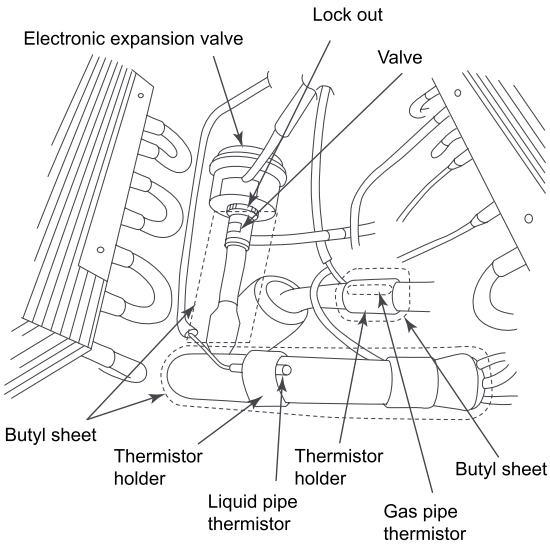
Remove the drain pan as indicated in chapter Removal of the drain pan.

Remove the evaporator partition plate securing the heat exchanger by removing the five screws.



NOTE

- ***The thermistor protection and securing system is the same on the gas and liquid pipe.***
- ***The thermistors are secured with brackets.***



10.3.12 Removal of the electronic expansion valve coil

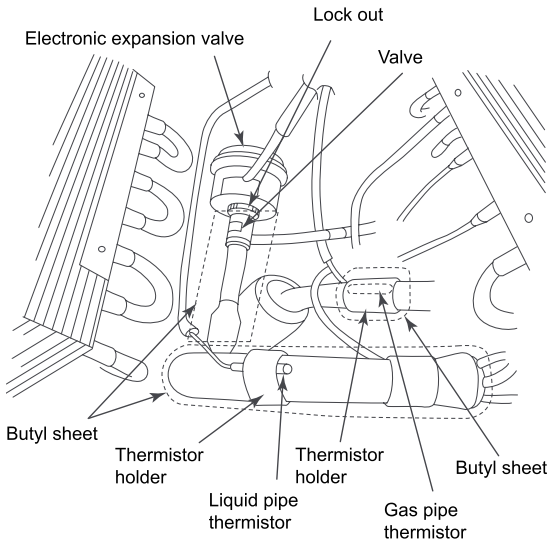
Remove the optional air panel in line with the instructions given in chapter Removal of the optional air panel.

Remove the fan duct and the fan as indicated in chapter Removal of the fan duct and the fan.

Remove the drain pan as indicated in chapter Removal of the drain pan.

Remove the electronic expansion valve butyl sheet.

Secure the body of the valve using an appropriate wrench and loosen the nut with another wrench, turning it anti-clockwise.



NOTE

Do not hold onto the motor when loosening the nut with a wrench. The base of the transmission part could become loose and break.

Loosen the nut several turns to release the transmission part from the bolt.

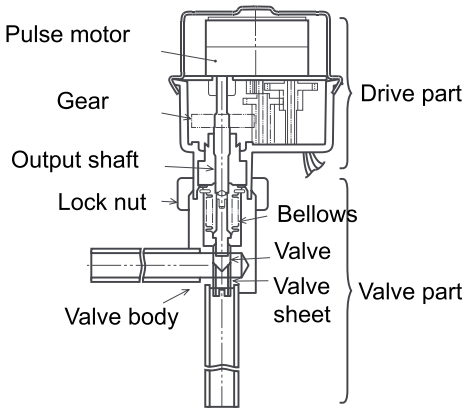
Prepare the new transmission part (spare part) with the position of the transmission wheel (transmission bolt) already adjusted.

NOTE

- ***Pay attention to removal while replacing and prevent dust and foreign particles, etc. from entering it (the exposed part during removal is the mechanical part of the valve).***
- ***Do not damage the valve joint with tools.***

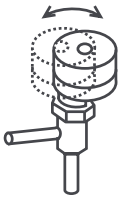
Fit the transmission part to the body of the valve, hold onto both and make sure their axes coincide before fitting the nut to the valve body bolt.

Tighten the nut by hand and apply the torque value: 12 Nm - 15 Nm.



Adjustment of direction is not required.

(However, pay attention not to touch the pipes or the drain pan.)



Direction of drive part

NOTE

- ***Do not apply significant force to the motor, such as rotational torque or bending load, while holding it with your hand and tightening the nut.***
- ***The direction of the eccentric part of the motor is fitted in the same way as the expansion valve. Although the motor is facing away from the piping connections on the valve body, modification of this direction does not affect the valve open/close function. Therefore, it is not necessary to adjust the direction of the motor if the motor position moves in the direction of rotation after replacement, as shown in the figure.***
- ***However, check that the motor direction for the electronic expansion valve coil does not touch another pipe or the side plate of the electrical box.***

Once replaced, fit the electronic expansion valve in the reverse manner as indicated for the removal process.

Position the butyl sheet, attaching it correctly to the valve.

NOTE

Check that the cables do not touch the fan duct after installation is complete.

10.3.13 Removal of the automatic louver motor

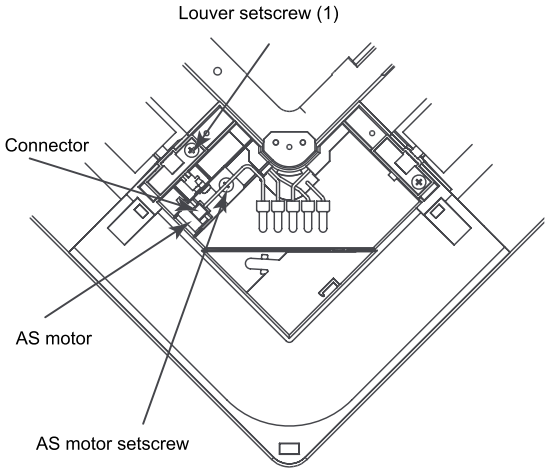
Remove the optional air panel in line with the instructions given in chapter Removal of the air optional air panel.

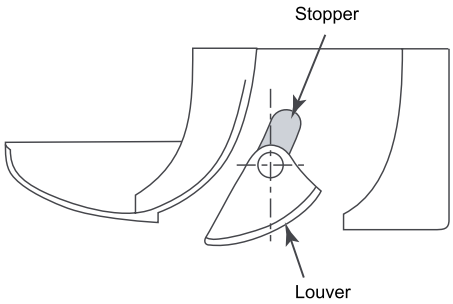
Separate the connector from the AS motor.

Remove the screw securing the louver and one set screw on the AS motor.

Remove the AS motor, pulling carefully with the louver and then sliding it out.

After removing the AS motor, refit the louver adjusting the stop position as indicated in the figure: cut D on the shaft of the AS motor must coincide with cut D on the louver.





10.4 RCD - 2-way cassette

10.4.1 Removal of the long-lasting filter and the air inlet grille

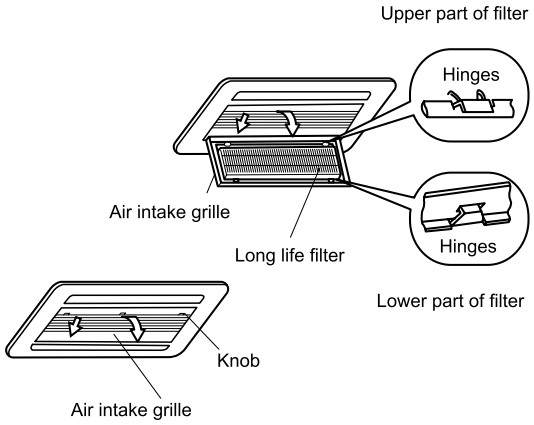
NOTE

The long-lasting filter is located inside the air inlet grille.

Open the air inlet grille by pressing the button, as indicated in the figure.

Remove the filter from the grille by holding onto the lower part of the grille and the filter and detaching the blocked part.

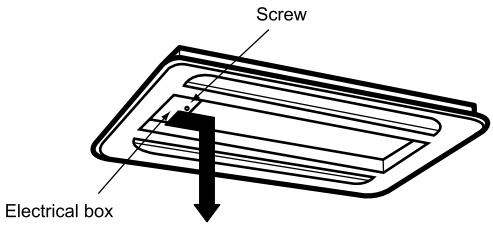
The grille can be removed by lifting and pulling it forwards from the chain to release it.



10.4.2 Removal of the electrical box

Open the air inlet grille.

Loosen the screw securing the electrical box panel and remove it.



10.4.3 Removal of the optional air panel

Open the air inlet grille.

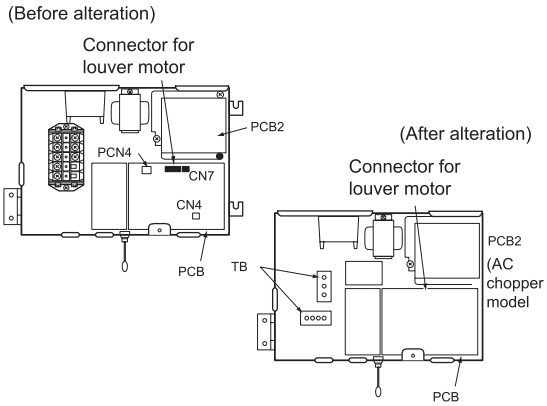
Remove the electrical box panel.

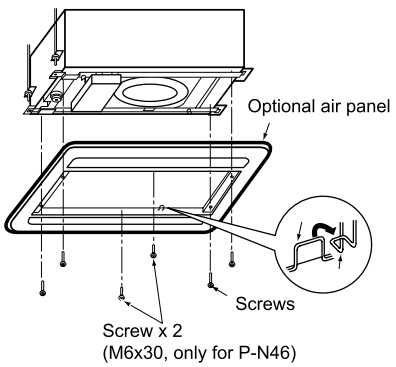
Remove the connector (CN17) of the automatic louver on the indoor unit PCB.

Remove the air inlet grille from the optional air panel.

Remove the four screws securing the optional air panel.

Remove the panel after detaching the hinge from the two positions next to the drain pan.



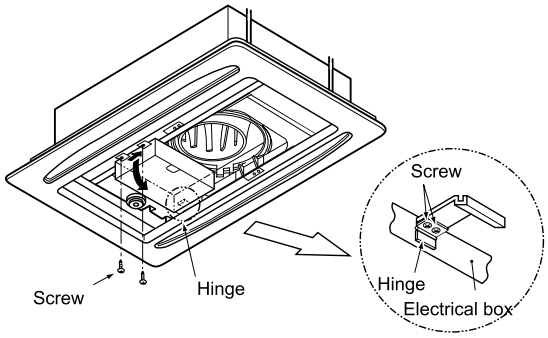


10.4.4 Removal of the fan duct and the fan

Remove the optional air panel in line with the instructions given in chapter Removal of the optional air panel.

Separate the connectors from each cable in the electrical box.

Remove the two set screws from the electrical box and turn around 90° downwards (the electrical box is attached by the hinge).



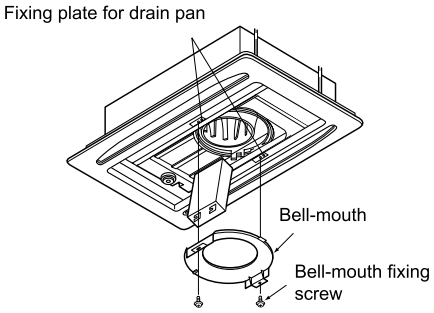
NOTE

Do not remove the set screw from the hinge.

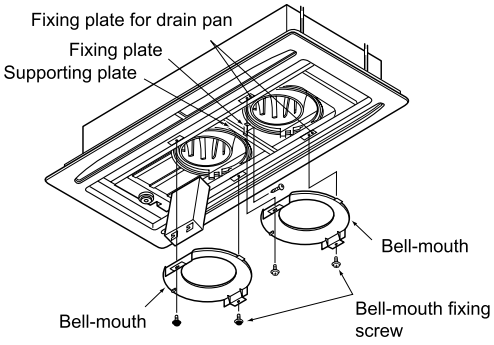
4 and 5 HP models: remove the screw from the securing plate and remove.

Remove the two screws securing the bellmouth to the drain pan securing plates and remove it.

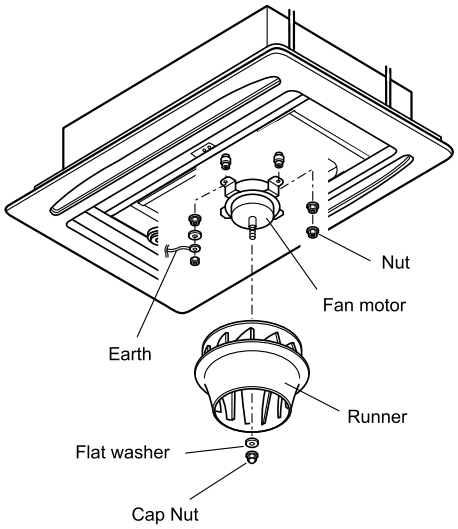
RCD-2.0 to 3.0FSN
(1 bell-mouth)



RCD-4.0 and 5.0FSN
(2 bell-mouth)



Remove the cap nut and the washer securing the fan duct and remove it.



NOTE

- ***Torque value: maximum 8 Nm.***
- ***RCD-(1.5-3.0)FSN2: one duct and one fan motor.***
- ***RCD-(4.0-5.0)FSN2: two ducts and two fan motors.***

Separate the connector from the fan motor earth cable.

Remove the four nuts securing the fan motor and remove it.

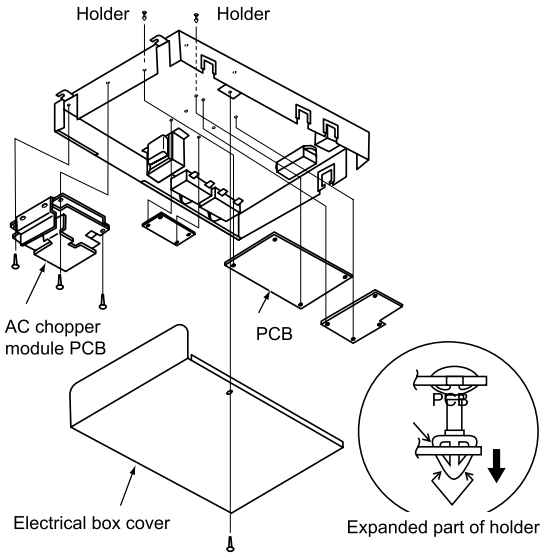
10.4.5 Removal of the printed circuit board (PCB)

Remove the air inlet grille as indicated in chapter Removal of the optional air panel.

Remove the electrical box as indicated in chapter Removal of the electrical box.

Remove the printed circuit board (PCB) by pressing carefully on the support tabs with long-tipped pliers, as shown in the figure.

Remove the three set screws from the AC chopper.



CAUTION

- ***Do not touch the electrical components of the PCB.***
- ***Do not apply force to the PCB, as this could damage it.***
- ***The sealed earthing cable and the transformer are secured by a screw. When installing, be particularly careful not to overtighten the set screw.***

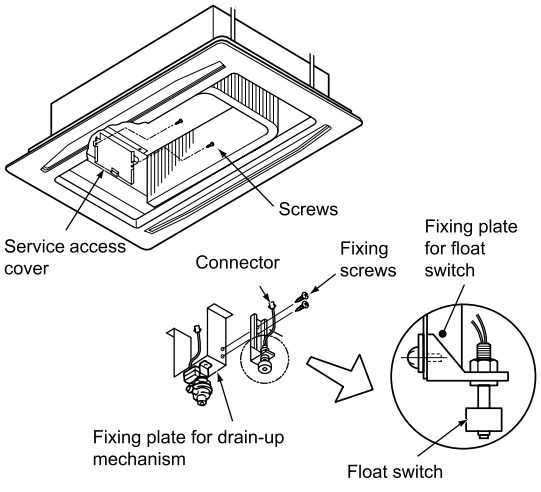
10.4.6 Removal of the float switch

Remove the air inlet grille as indicated in chapter Removal of the long-lasting filter and the air inlet grille.

Remove the bellmouth in line with the instructions given in chapter Removal of the fan duct and the fan.

Remove the two screws securing the panel located next to the service opening, close to the pipes inside the unit and remove it.

Separate the float switch connector and remove the two screws securing the plate attaching the switch to the drain mechanism securing plate.



Loosen the resin nut securing the float switch and remove it.

NOTE

The torque value of the resin nut is 0.3 - 0.4 Nm. If the torque value is higher, the nut will be damaged.

10.4.7 Removal of the drain mechanism

Remove the air inlet grille as indicated in chapter Removal of the long-lasting filter and the air inlet grille.

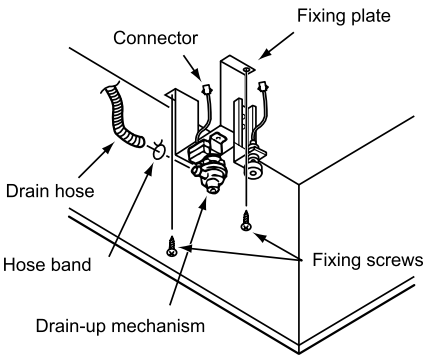
Remove the bellmouth in line with the instructions given in chapter Removal of the fan duct and the fan.

Remove the drain pan as indicated in chapter Removal of the drain pan.

Separate the connectors from the drain pump and the float switch.

Remove the flange from the hose and remove the drain hose.

Remove the two screws from the plate securing the drain mechanism and remove it.



NOTE

When installing, fit the drain hose as far as possible in the pump.

10.4.8 Removal of the drain pan

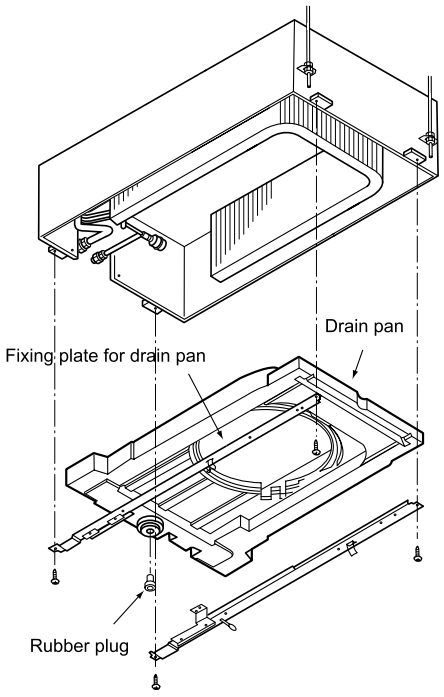
Remove the air inlet grille as indicated in chapter Removal of the long-lasting filter and the air inlet grille.

Disconnect the cable between the indoor and outdoor unit and separate all of the connectors from the electrical box.

Remove the fan duct and the fan as indicated in chapter Removal of the fan duct and the fan.

Empty the pan of water by removing the rubber plug.

RCD-1.5 to 3.0 FSN



CAUTION

- ***The plug is sealed with silicone but can be easily removed by pulling on the bottom of it.***
- ***Do not use a knife or similar to remove the rubber plug, as this could damage it.***
- ***Do not remove or damage the lower plug insulation when refitting.***

Check that the drainage hole is not blocked.

RCD-(1.0-3.0)FSN2: remove the two screws securing the reinforcement plate to the drain pan securing plate.

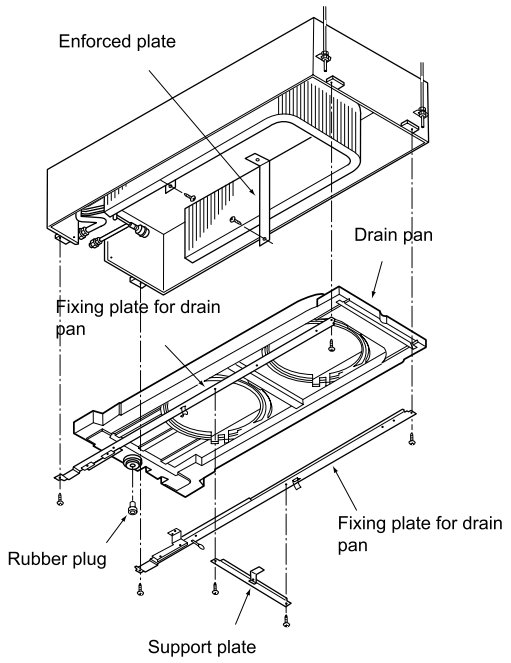
RCD-(4.0/5.0)FSN2: remove the two screws securing the support plate to the drain pan securing plate and remove it.

Remove the two drain pan securing plates and remove it.

CAUTION

Do not use a sharp tool, such as a screwdriver, to fit the rubber plug, as this could damage it.

RCD-4.0 and 5.0 FSN2



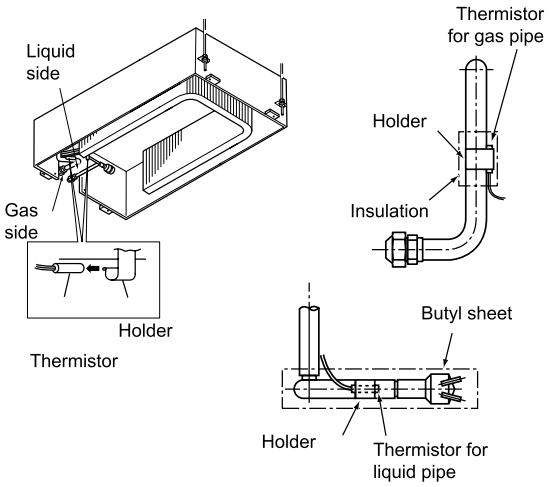
10.4.9 Removal of the thermistors from the liquid and gas pipes

Remove the air inlet grille as indicated in chapter Removal of the long-lasting filter and the air inlet grille.

Remove the fan duct and the fan as indicated in chapter Removal of the fan duct and the fan.

Remove the drain pan as indicated in chapter Removal of the drain pan.

Remove the butyl sheet covering the thermistor. Remove the plate securing the thermistor to the pipe on which it is located and remove.

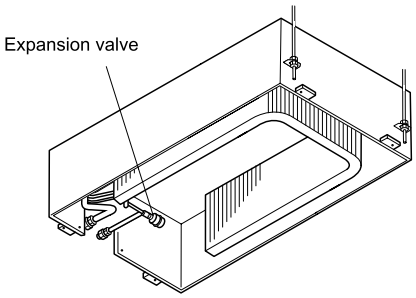


NOTE

- ***The thermistor protection and securing system is the same on the gas and liquid pipe.***
- ***The thermistors are secured with brackets.***

10.4.10 Removal of the electronic expansion valve coil

Secure the body of the valve using an appropriate wrench and loosen the nut with another wrench, turning it anti-clockwise.



NOTE

Do not hold onto the motor when loosening the nut with a wrench. The base of the transmission part could become loose and break.

Remove the optional air panel in line with the instructions given in chapter Removal of the optional air panel.

Remove the fan duct and the fan as indicated in chapter Removal of the fan duct and the fan.

Remove the drain pan as indicated in chapter Removal of the drain pan.

Loosen the nut several turns to release the transmission part from the bolt.

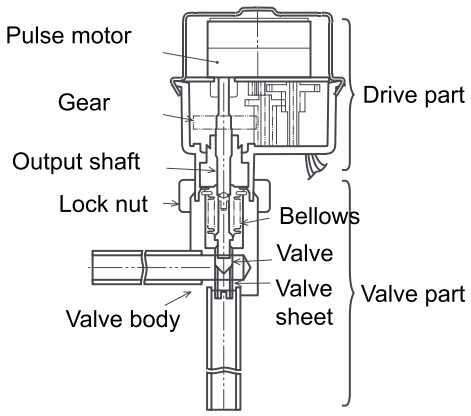
Prepare the new transmission part (spare part) with the position of the transmission wheel (transmission bolt) already adjusted.

NOTE

- ***Pay attention to removal while replacing and prevent dust and foreign particles, etc. from entering it (the exposed part during removal is the mechanical part of the valve).***
- ***Do not damage the valve joint with tools.***

Fit the transmission part to the body of the valve, hold onto both and make sure their axes coincide before fitting the nut to the valve body bolt.

Tighten the nut by hand and apply the torque value: 12 Nm - 15 Nm.

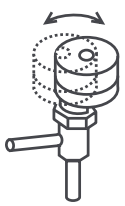


NOTE

- ***Do not apply significant force to the motor, such as rotational torque or bending load, while holding it with your hand and tightening the nut.***
- ***The direction of the eccentric part of the motor is fitted in the same way as the expansion valve. Although the motor is facing away from the piping connections on the valve body, modification of this direction does not affect the valve open/close function. Therefore, it is not necessary to adjust the direction of the motor if the motor position moves in the direction of rotation after replacement, as shown in the figure.***
- ***However, check that the motor direction for the electronic expansion valve coil does not touch another pipe or the side plate of the electrical box.***

Adjustment of direction is not required.

(However, pay attention not to touch the pipes or the drain pan.)



Direction of drive part

Once replaced, fit the electronic expansion valve in the reverse manner as indicated for the removal process.

Position the butyl sheet, attaching it correctly to the valve.

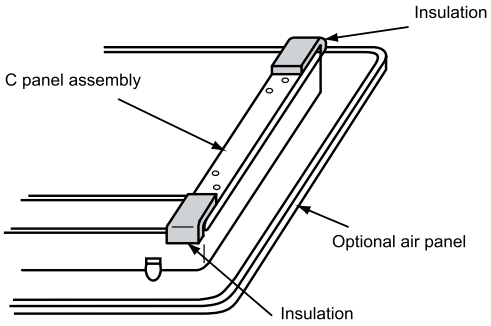
NOTE

Check that the cables do not touch the fan duct after installation is complete.

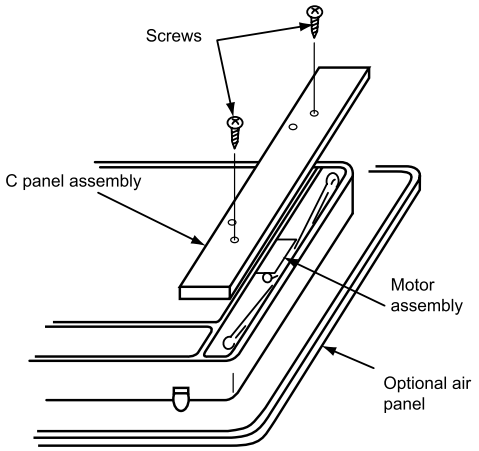
10.4.11 Removal of the automatic louver motor

Remove the optional air panel in line with the instructions given in chapter Removal of the optional air panel.

Remove the insulating material attached by the adhesive on both sides of panel C.



Remove the two screws securing panel C and remove the optional air panel.

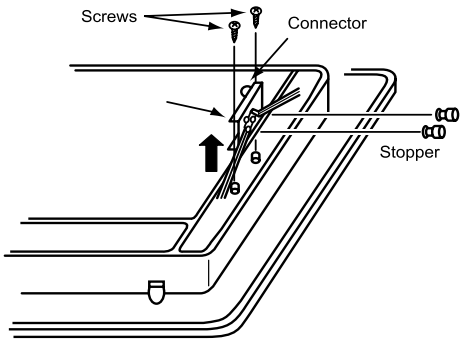


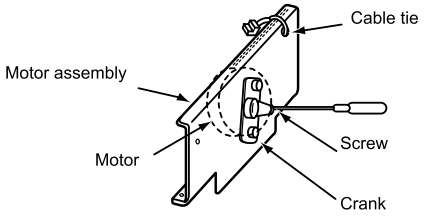
Remove the two screws securing the motor.

Remove the two stops by lifting the motor by hand in the direction of the arrow.

NOTE

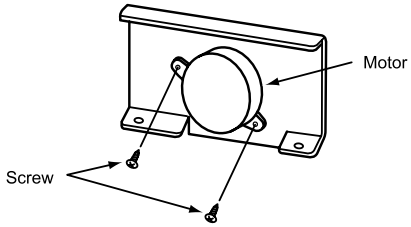
- ***The stops can be removed by pulling them.***
- ***The motor can be separated by removing the connector at the same time.***





Remove the screw securing the handle and cut the plastic tie securing the motor cable.

Remove the two screws securing the motor and remove it.



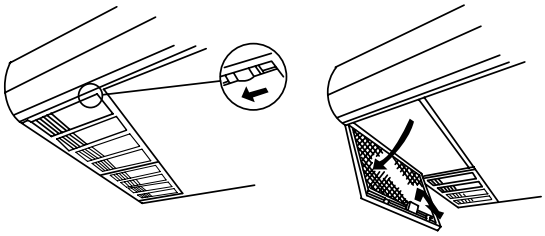
10.5 RPC - Ceiling

10.5.1 Removal of the air filter

Press the buttons on the grille backwards.

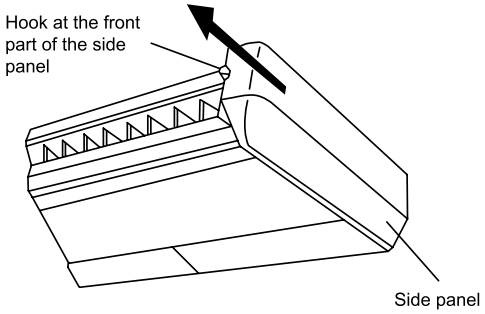
Open the air inlet grille downwards.

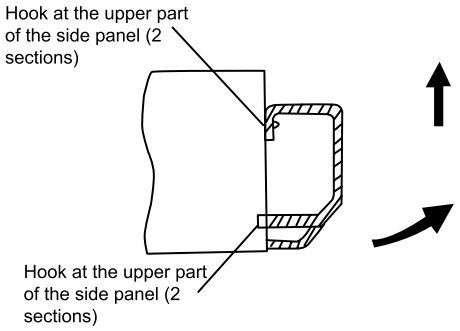
Lift the button and remove the filter.



10.5.2 Removal of the side panel

Pull the side panel forwards.





Release the hook from the lower part of the panel.

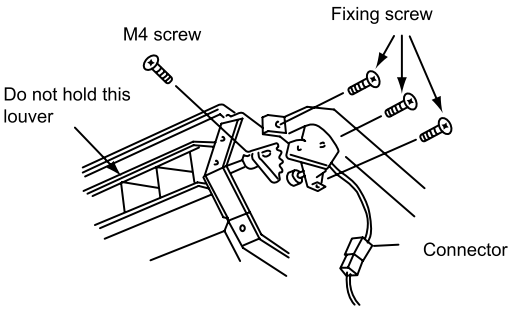
Lift the side panel.

10.5.3 Removal of the air outlet grille

Remove the side panel in line with the instructions given in chapter Removal of the side panel.

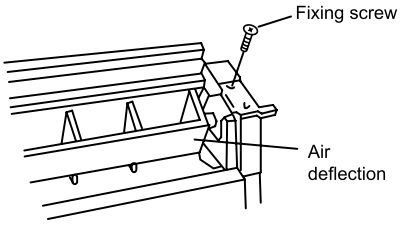
Remove the right shaft crank on the air louver.

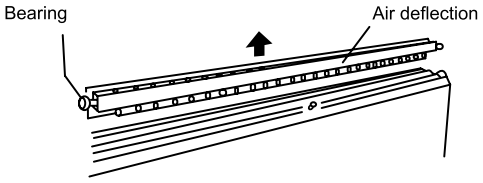
Remove the four set screws from the louver and remove it.



NOTE

The louver includes the linkage brackets.

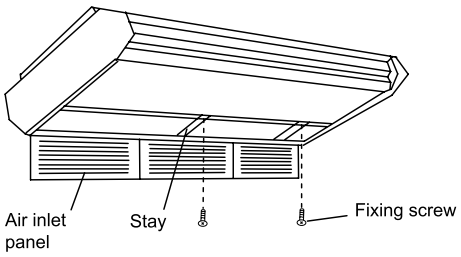




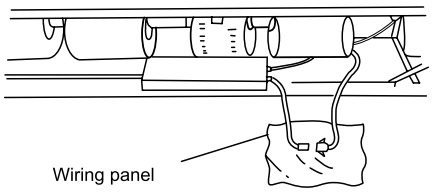
10.5.4 Removal of the fan motor

Open the air inlet grille as indicated in chapter Removal of the air filter.

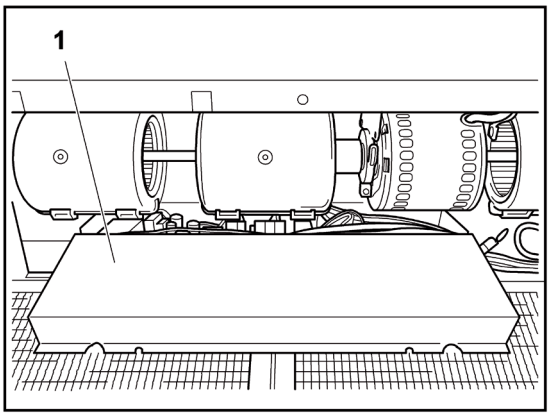
Remove the air inlet clip.



Separate the indoor fan motor connector.



Nº	Part
1	Electrical box

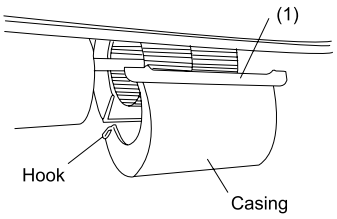


Remove the screws securing the box and attach to the lower frame.

CAUTION

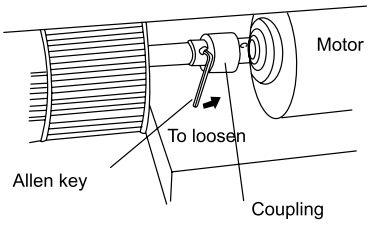
Hold onto the electrical box to prevent it from falling.

Press the four attachment points of the cover (1) inwards and remove it.



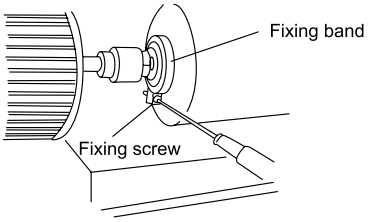
Loosen the coupling screws using a wrench.

Remove the securing flange and remove the fan motor by sliding it backwards.



CAUTION

Hold onto the motor to prevent it from falling.

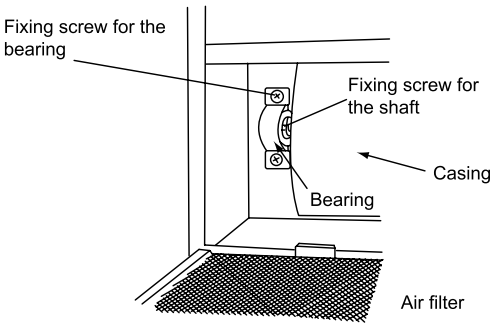


10.5.5 Removal of the fan shaft support

Remove the side panel in line with the instructions given in chapter Removal of the side panel.

Loosen the two bolts securing the support and the shaft using a hexagonal wrench.

Remove the four M8 set screws from the support and remove it.



10.5.6 Removal of the coupling

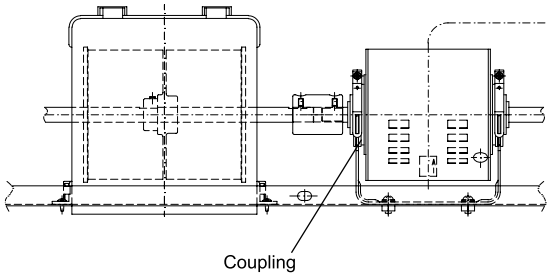
Remove the side panel in line with the instructions given in chapter Removal of the side panel.

Remove the cover in two parts, as indicated in section Removal of the fan motor.

Loosen the coupling screw using a hexagonal wrench.

Remove the M8 bolt securing the support as indicated in section Removal of the fan shaft support.

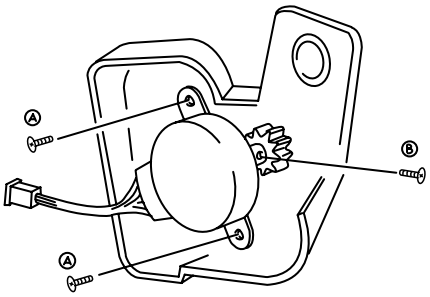
Remove the coupling after removing the shaft and fan unit.



10.5.7 Removal of the automatic louver motor

Remove the side panel in line with the instructions given in chapter Removal of the side panel.

Remove the bolts (M4) from the AS motor assembly and remove the right shaft of the discharge air grille.



CAUTION

Be particularly careful not to damage the AS motor.

Remove the two bolts securing the automatic louver motor and remove the AS motor assembly securing plate.

Remove the bolt securing the automatic louver motor shaft and the AS pinion.

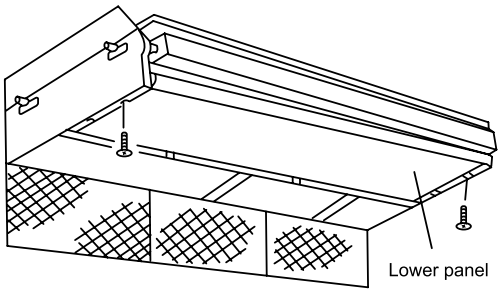
NOTE

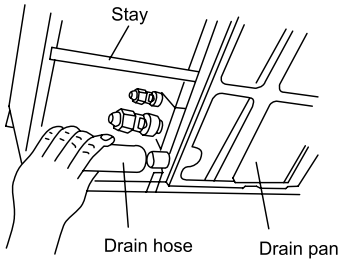
- ***Torque value of the two screws securing the automatic louver motor: 0.8 Nm.***
- ***Torque value of the screw securing the automatic louver motor shaft: 0.4 Nm.***
- ***Apply the torque value using a torque wrench.***

10.5.8 Removal of the thermistors from the liquid and gas pipes

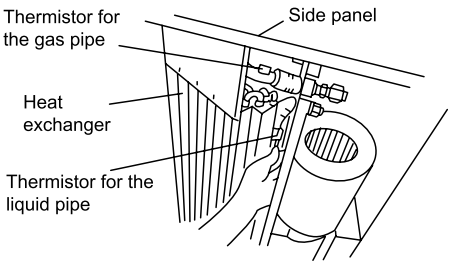
Remove the side panel in line with the instructions given in chapter Removal of the side panel.

Remove the lower panel.



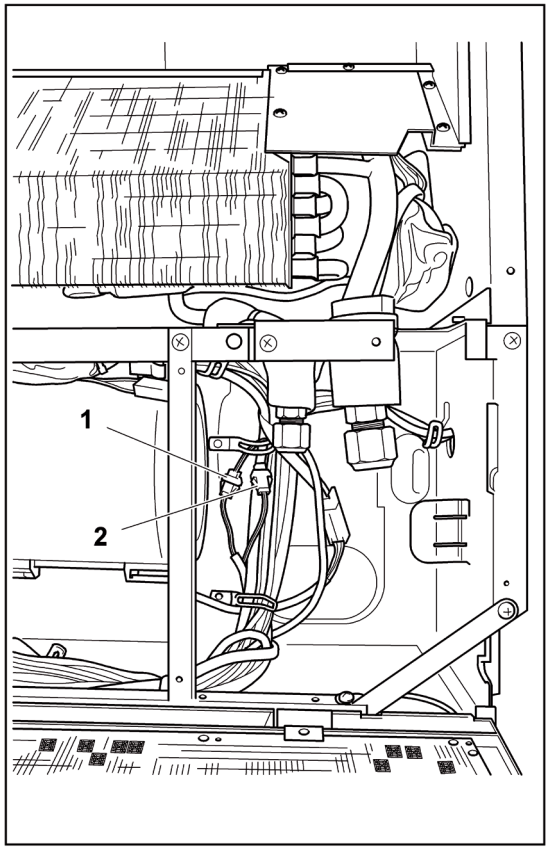


Disconnect the drain hose and remove the drain pan.



Nº	Part
1	Gas thermistor (yellow connector)
2	Liquid thermistor (black connector)

Remove the thermistors from the liquid and gas pipe.



10.5.9 Removal of the printed circuit board (PCB)

Open the air inlet panel as indicated in chapter Removal of the air filter.

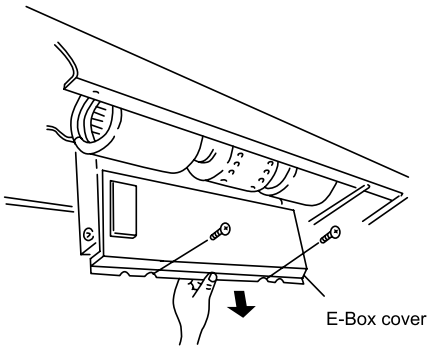
Separate the connector from the fan motor wiring.

Remove the screws securing the box and attach to the lower frame.

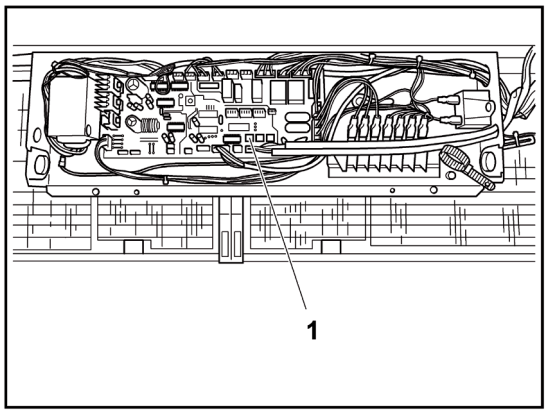
CAUTION

Hold onto the electrical box to prevent it from falling.

Remove the panel.



Nº	Part
1	PCB

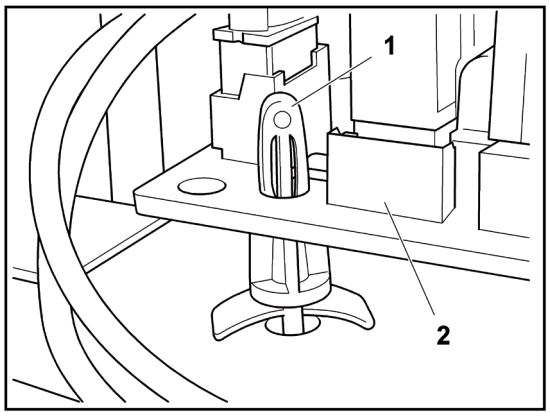


Carefully remove the securing supports from the printed control board (PCB) (four) by pressing carefully on the support tabs with long-tipped pliers.

CAUTION

- ***Do not touch the electrical components of the PCB.***
- ***Do not apply force to the PCB, as this could damage it.***
- ***Pay special attention to the position of the connectors on the PCB. An incorrect position during installation may damage the PCB.***

Nº	Part
1	Extended support part
2	PCB

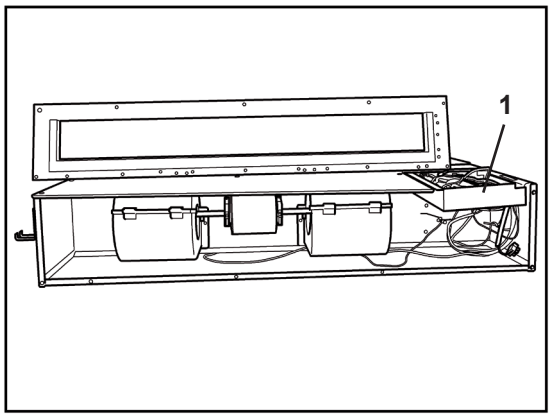


10.6 RPI-(0.8-6.0)FSN4E

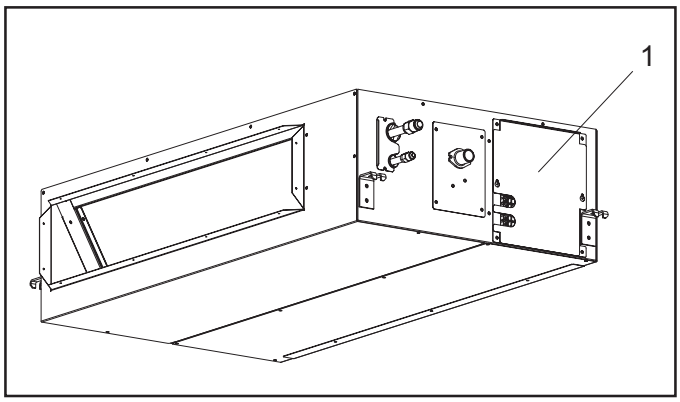
10.6.1 Removal of the electrical box

Nº	Part
1	Location of the electrical box cover

RPI-(0.8-1.5)FSN4E

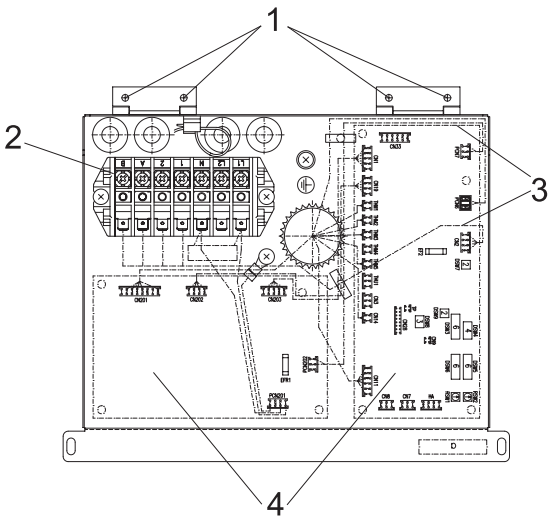


RPI-(2.0-6.0)FSN4E

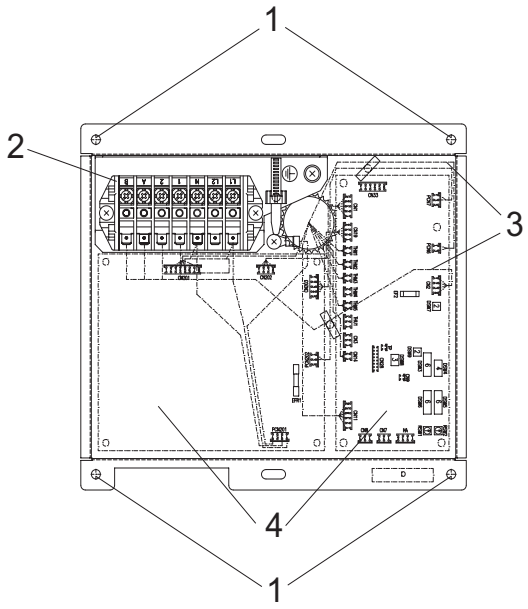


Nº	Part
1	Set screw
2	Terminal board
3	Transformer
4	PCB

RPI-(0.8-1.5)FSN4E



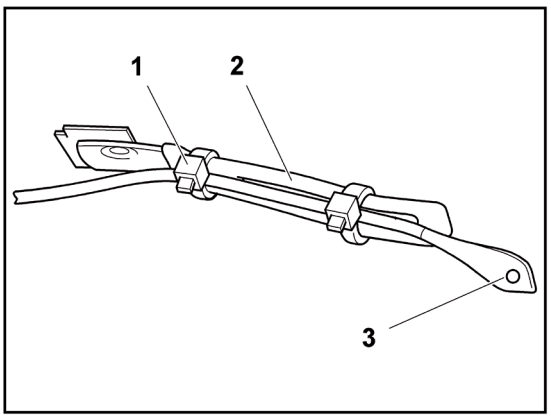
RPI-(2.0-6.01)FSN4E



10.6.2 Removal of the inlet and outlet air thermistors

Inlet air thermistor

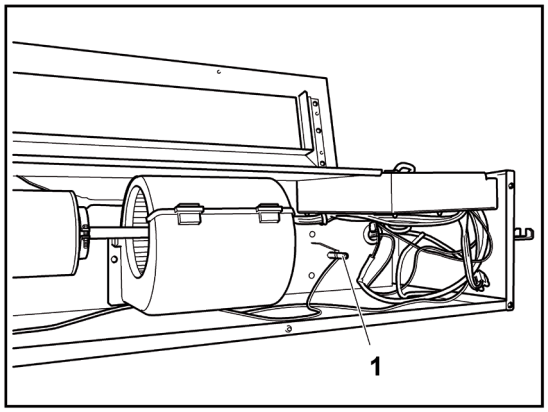
Nº	Part
1	Tie
2	Cable clamp
3	Thermistor



NOTE

Disconnect and remove the thermistor.The thermistor is located on the outlet side of the unit.

Nº	Part
1	Location of the air inlet thermistor



NOTE

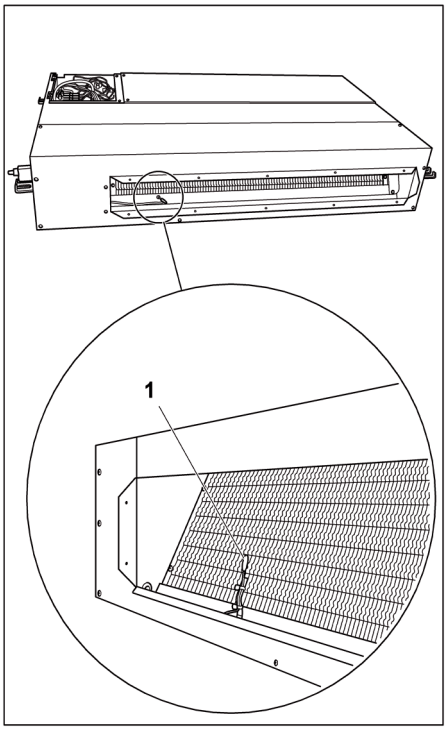
To disconnect and remove the appropriate thermistor, previously see the chapter corresponding to the wiring diagrams in this Manual.

Remove the screws securing the rear cover of the unit.

Disconnect and remove the thermistor.

Outlet air thermistor

Nº	Part
1	Air outlet thermistor

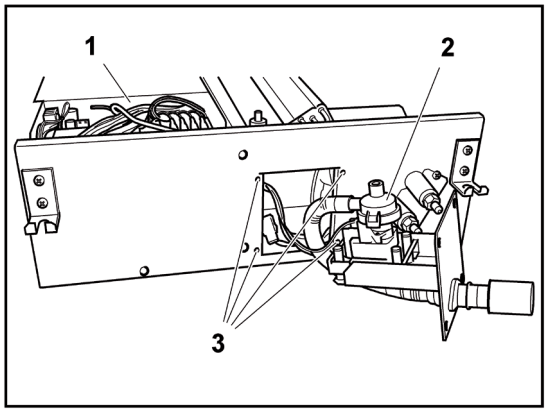


NOTE

To disconnect and remove the appropriate thermistor, previously see the chapter corresponding to the wiring diagrams in this Manual.

10.6.3 Removal of the thermistors from the liquid and gas pipes

Nº	Part
1	Electrical box
2	Drain pump
3	Screws



NOTE

- ***To disconnect and remove the appropriate thermistor, previously see the chapter corresponding to the wiring diagrams in this Manual.***
- ***Cover the thermistors with cork tape or pipe insulation, depending on the location. Both materials are factory-supplied. Replace them if damaged during maintenance work.***

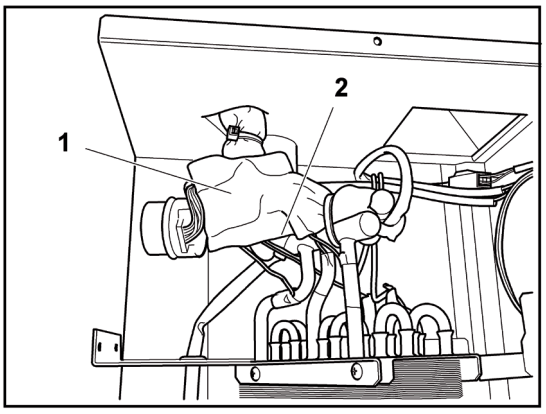
Remove the electrical box cover.

Remove the service cover.

The liquid and gas pipe thermistors are secured to the copper piping by a special clamp.

- Liquid pipe thermistor: covered with cork tape.
- Gas pipe thermistor: covered with pipe insulation.

Nº	Part
1	Location of the thermistor
2	Location of the thermistor

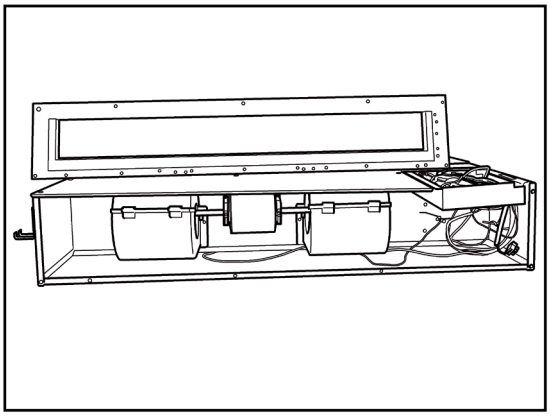


NOTE

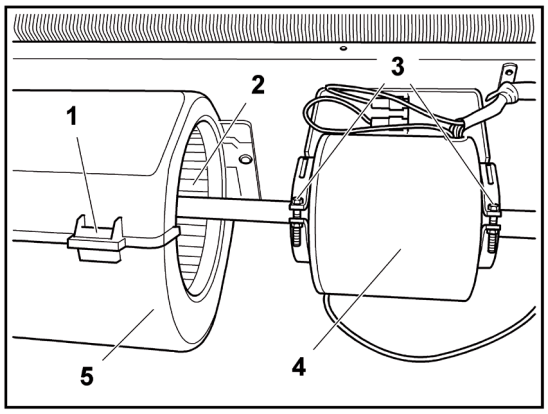
- ***Black connector: liquid thermistor.***
- ***Yellow connector: gas thermistor.***

10.6.4 Removal of the fan parts

Fan parts: fan motor, fan casing and duct.



Nº	Part
1	Locks
2	Duct
3	Fixture supports
4	Fan motor
5	Fan casing



Remove the rear cover as indicated in chapter Removal of the inlet and outlet air thermistor.

Remove the tape located in the centre of the casing.

Press the locks and remove half of the fan casing.

Remove the fixture support screws and carefully remove the motor together with the fans.

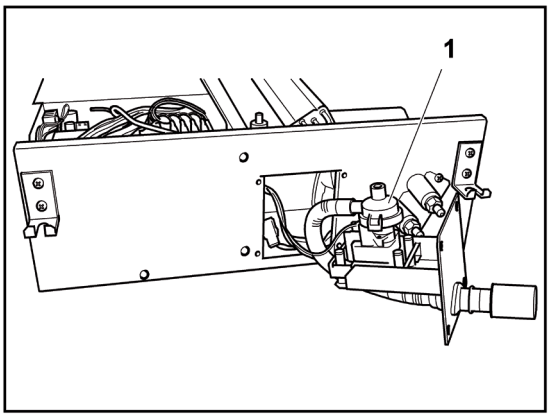
Loosen the screws securing the fans to the motor shaft.

NOTE

If the fan casing is to be fully removed, remove the screws securing the other half to the fan motor fixture.

10.6.5 Removal of the drain mechanism

Nº	Part
1	Drain pump

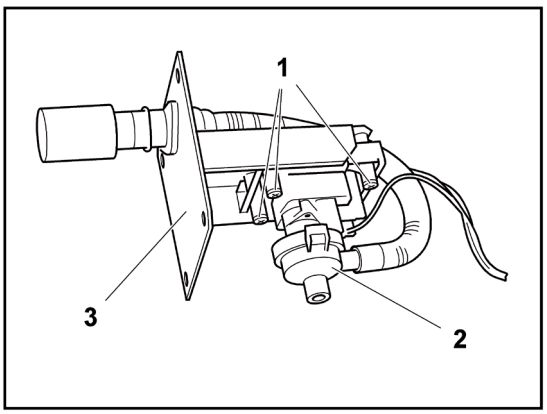


NOTE

To disconnect and remove the drain mechanism, previously see the chapter corresponding to the wiring diagrams in this Manual.

Remove the drain pump support screws and remove it.

Nº	Part
1	Bolts
2	Drain pump
3	Service cover



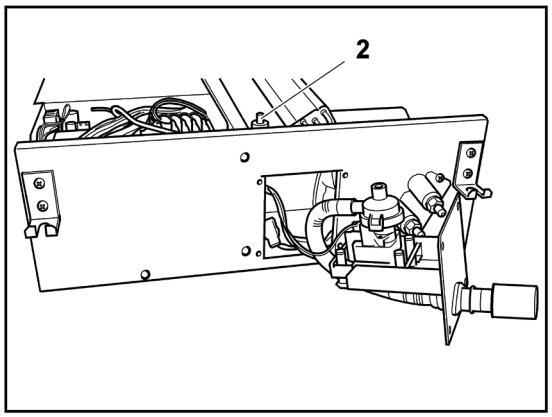
NOTE

Prior to installing the new pump:

1 ***Remove the electrical box from the unit to connect it to the printed circuit board (PCB) in line with the instructions given in chapter Removal of the electrical box.***
2 ***Seal the drain hose gaskets correctly.***

10.6.6 Removal of the float switch

Nº	Part
1	Float switch position



NOTE

To disconnect and remove the float switch, previously see the chapter corresponding to the wiring diagrams in this Manual.

Remove the drain pump support screws and remove it.

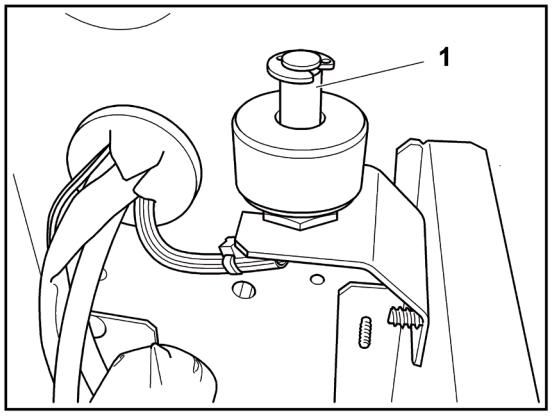
Loosen the screws securing the float switch to the support.

Loosen the resin nut securing the float switch and remove it.

NOTE

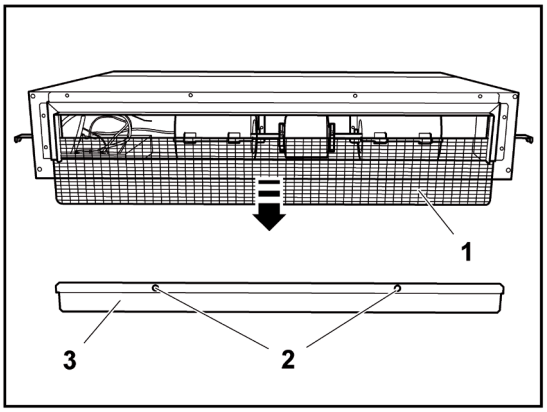
The torque value of the resin nut is 0.3 - 0.4 Nm. If the torque value is higher, the nut will be damaged.

Nº	Part
1	Float switch



10.6.7 Removal of the air filter

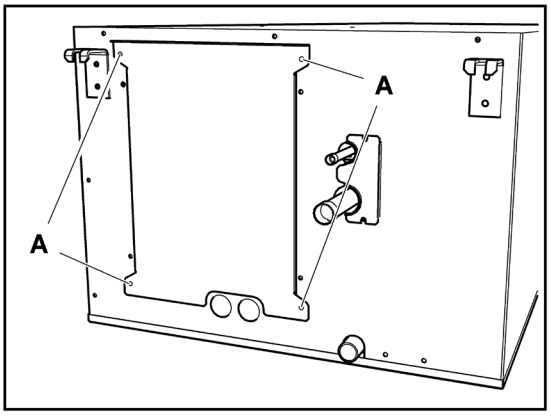
Nº	Part
1	Air filter
2	Screws
3	Air filter fixture bar



10.7 RPI-(8.0-10.0)FSN3E - Ducted indoor unit

10.7.1 Removal of the electrical box cover

Remove the set screws -A- from the electrical box cover to access the electrical components.



10.7.2 Removal of electrical components

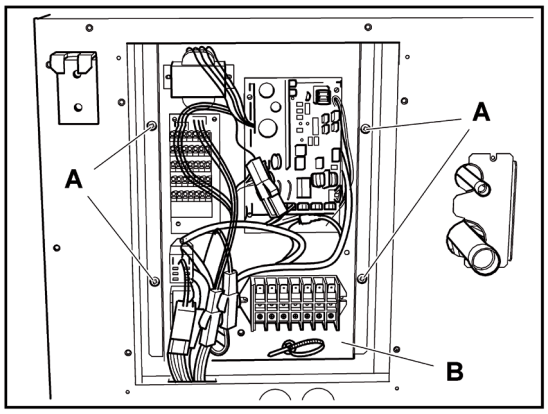
Remove the electrical box cover Removal of the electrical box cover.

Separate the connections of all electrical components.

Remove the set screws -A- and separate the full electrical component support -B-.

CAUTION

Handle the support carefully to avoid damaging the electrical components.



10.7.3 Removal of the inlet and outlet air thermistors

Inlet air thermistor

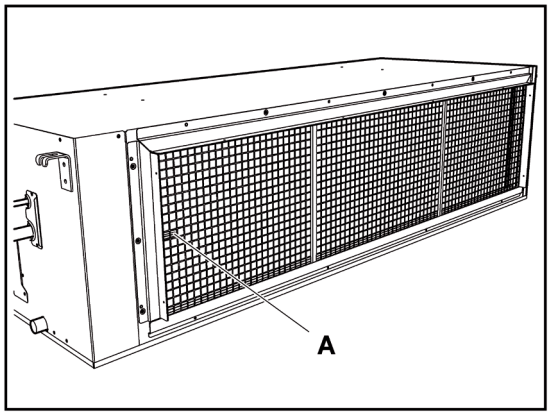
Remove the air filter Removal of the air filter.

NOTE

The inlet air thermistor -A- is located on the left-hand side of the air inlet to the unit.

Remove the electrical box cover Removal of the electrical box cover.

Disconnect and remove the thermistor.



NOTE

To disconnect and remove the appropriate thermistor, previously see the chapter corresponding to the wiring diagrams in this Manual.

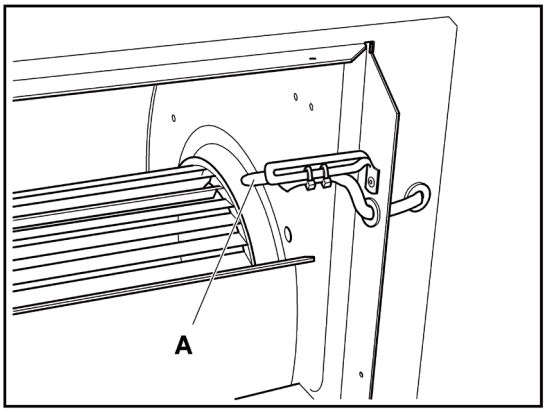
Nº	Part
1	Tie
2	Cable clamp
3	Thermistor

Outlet air thermistor

The outlet air thermistor -B- is located on the right-hand side of the air outlet from the unit.

Remove the electrical box cover Removal of the electrical box cover.

Disconnect and remove the thermistor.



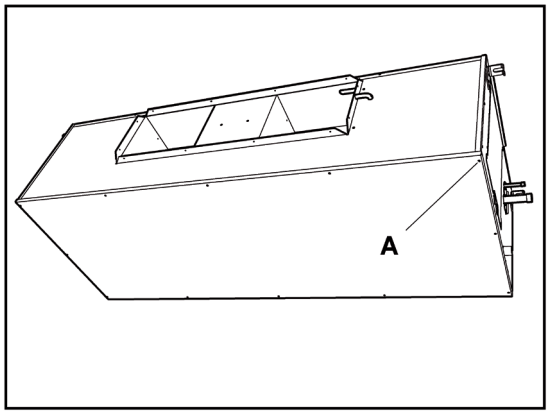
NOTE

To disconnect and remove the appropriate thermistor, previously see the chapter corresponding to the wiring diagrams in this Manual.

Nº	Part
1	Tie
2	Cable clamp
3	Thermistor

10.7.4 Removal of the thermistors from the liquid and gas pipes

Remove all screws -A- from the lower cover of the unit and separate it.



Remove the electrical box cover Removal of the electrical box cover.

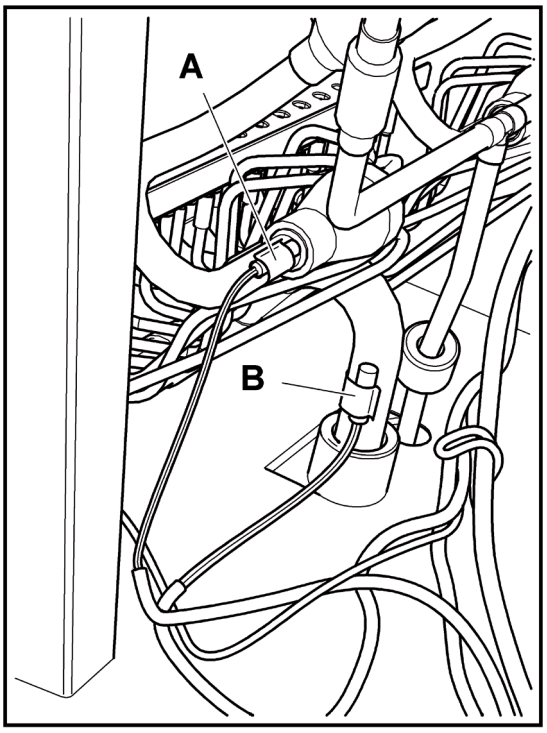
Disconnect the thermistor.

NOTE

- ***To disconnect and remove the appropriate thermistor, previously see the chapter corresponding to the wiring diagrams in this Manual.***
- ***Black connector: liquid thermistor.***
- ***Yellow connector: gas thermistor.***

Remove the gas -A- and liquid -B- thermistor insulation cover.

Remove the special clamp holding the thermistor to the copper piping and remove it.

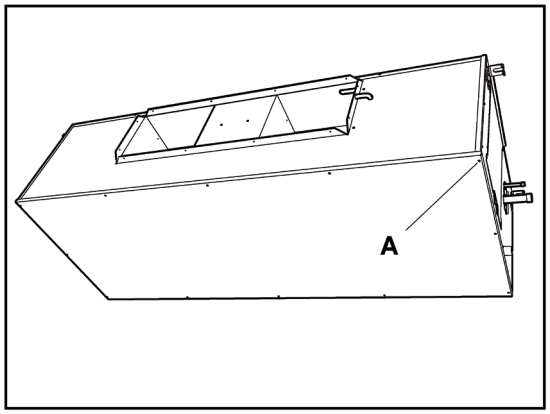


NOTE

When fitting the thermistors, remember that they must be secured correctly by the special clamp and completely covered by the previously removed insulation.

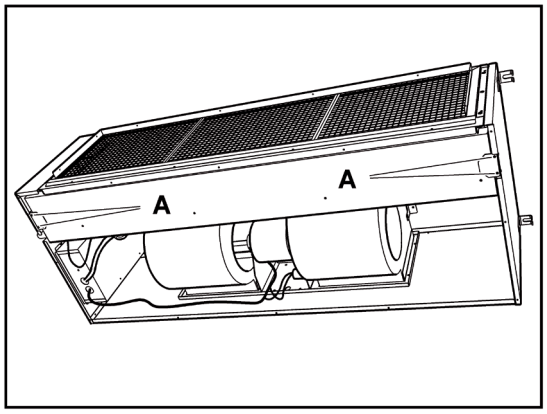
10.7.5 Removal of the drain pan

Remove all screws -A- from the lower cover of the unit and separate it.



Release the unit drainage connection.

Remove the screws -A- securing the drain pan and remove it.

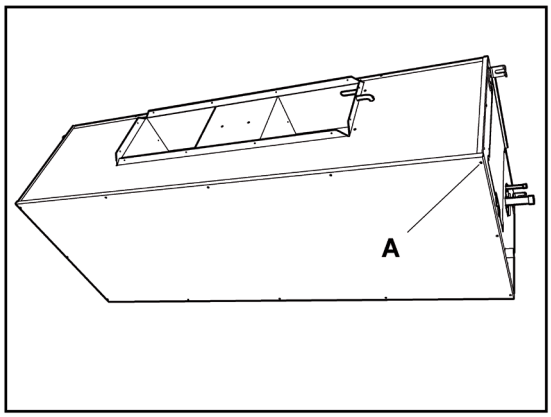


NOTE

When fitting, seal the drain hose gasket correctly.

10.7.6 Fan removal

Remove all screws -A- from the lower cover of the unit and separate it.



Remove the electrical box cover Removal of the electrical box cover.

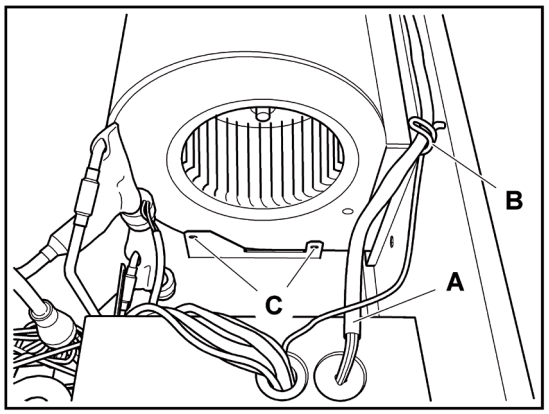
Disconnect the fan motor.

NOTE

To disconnect and remove the fan motor, previously see the chapter corresponding to the wiring diagrams in this Manual.

Remove the drain pan Removal of the drain pan.

Remove the wiring A- from the electrical box and release it from the support -B-.

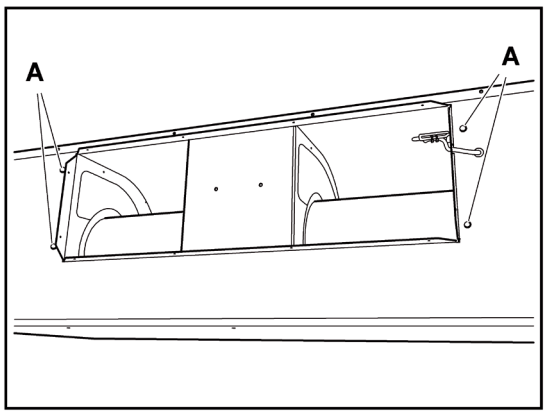


Remove the screws -C- on both sides of the fan.

CAUTION

- ***Make sure the fan can be removed correctly, without the risk of injuring anyone in the surrounding area.***
- ***The fan is heavy. Request the assistance of two operators to hold the fan while it is being removed.***

Remove the screws -A- on both sides of the fan and remove the unit.



When fitting, connect the fan motor connector to the electrical box in line with the previous configuration:

- Connector CN24 LSP (Low Static Pressure); (factory-supplied).
- Connector CN25 HSP (High Static Pressure).

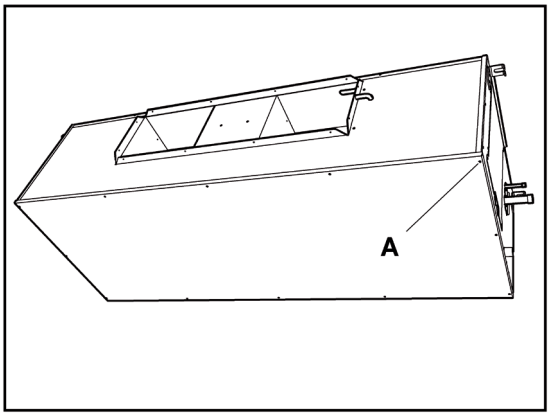
NOTE

Service cover fan assembly parts (runner, fan casing, fan motor) must be performed once the fan assembly has been removed from the unit.

10.7.7 Removal of the float switch

Remove all screws -A- from the lower cover of the unit and separate it.

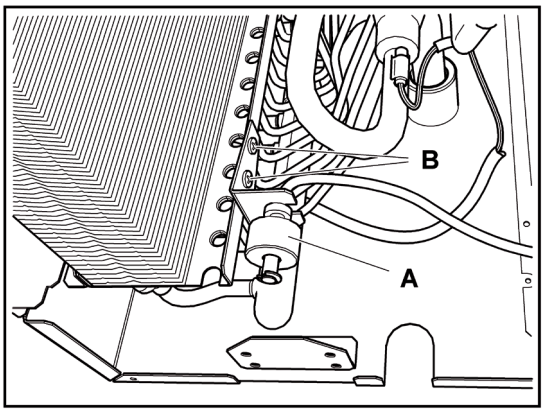
Remove the drain pan Removal of the drain pan.



NOTE

To disconnect and remove the float switch, previously see the chapter corresponding to the wiring diagrams in this Manual.

Loosen the resin nut securing the float switch -A- and remove it. If the switch support is to be removed, remove screws -B-.

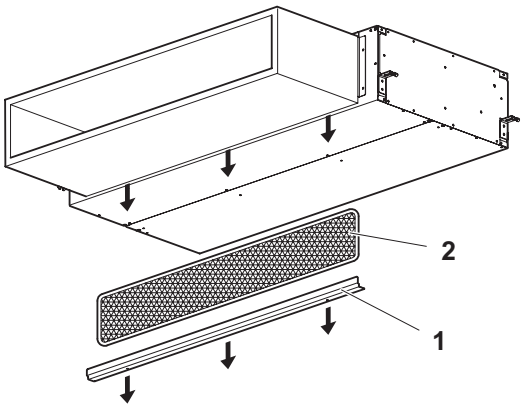


NOTE

The torque value of the resin nut is 0.3 - 0.4 Nm. If the torque value is higher, the nut will be damaged.

10.7.8 Removal of the air filter

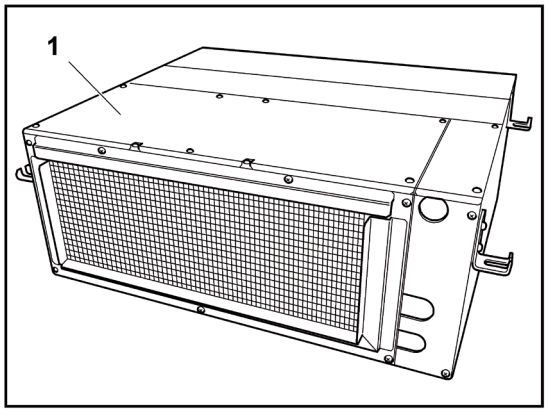
Remove the four set screws from the support fixture -1- of the air filter -2- and separate both parts.



10.8 RPIM - Ducted indoor unit

10.8.1 Removal of the electrical box

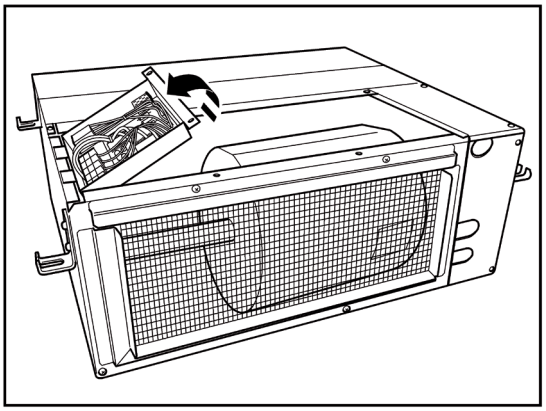
Nº	Part
1	Location of the electrical box cover.



Remove the electrical box cover to access the electrical components.

Nº	Part
1	Set screws
2	Terminal board
3	Transformer
4	PCB

Remove the set screws and remove the electrical box from the unit.



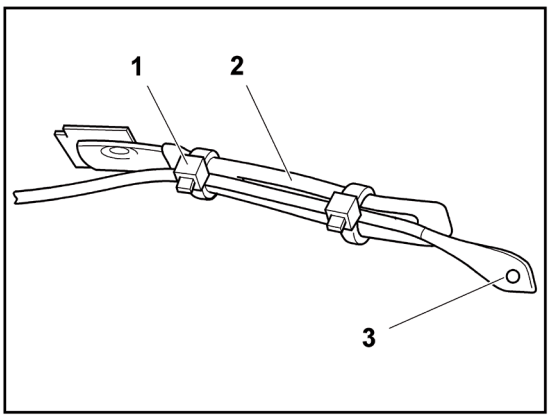
NOTE

The electrical box is fitted with a hinge.

10.8.2 Removal of the inlet and outlet air thermistors

Inlet air thermistor

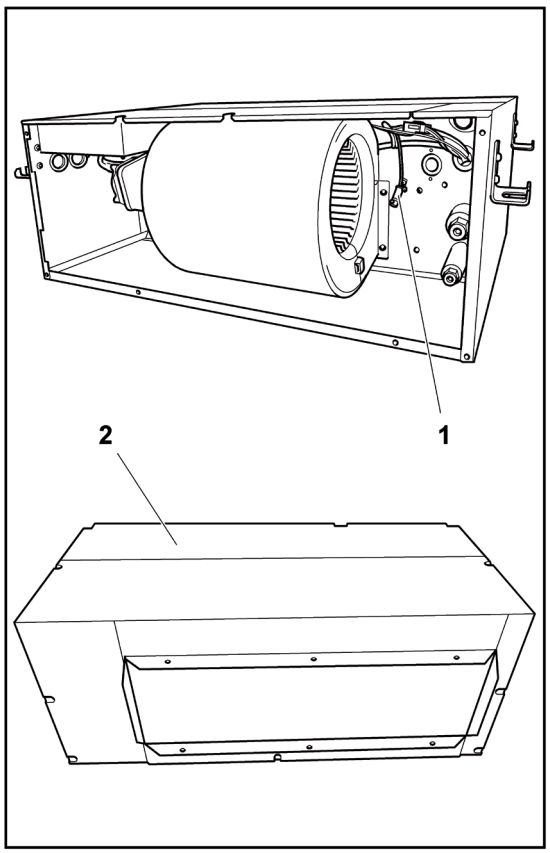
Nº	Part
1	Tie
2	Cable clamp
3	Thermistor



NOTE

To disconnect and remove the appropriate thermistor, previously see the chapter corresponding to the wiring diagrams in this Manual.

Nº	Part
1	Location of the air inlet thermistor
2	Rear cover

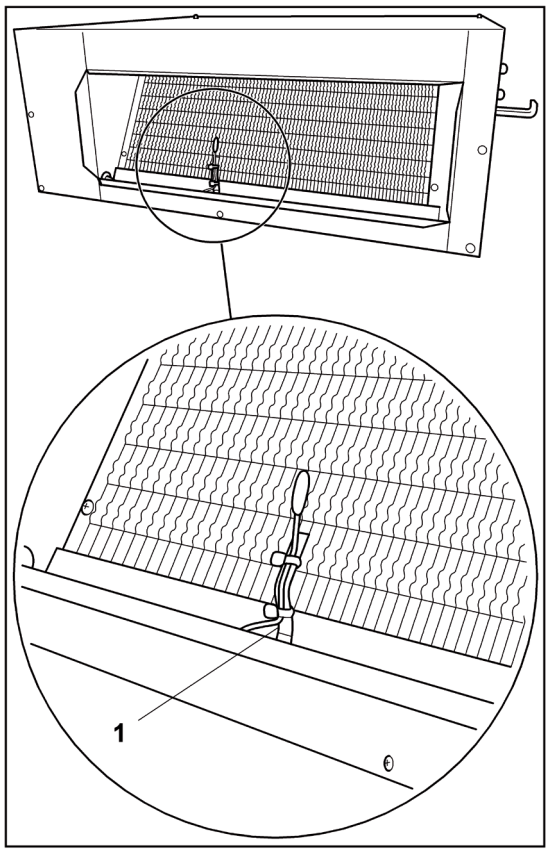


Remove the screws securing the rear cover of the unit.

Disconnect and remove the thermistor.

10.8.3 Outlet air thermistor

Nº	Part
1	Outlet thermistor



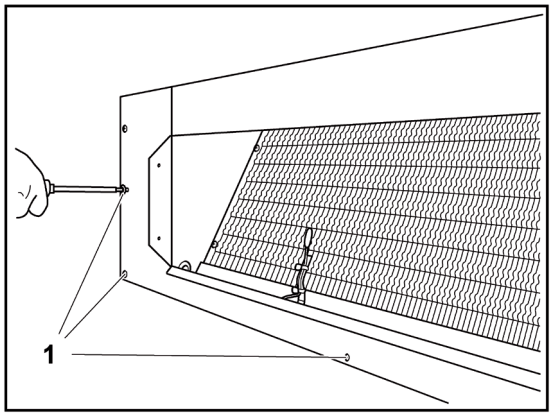
NOTE

- ***The thermistor is located on the outlet side of the unit.***
- ***To disconnect and remove the appropriate thermistor, previously see the chapter corresponding to the wiring diagrams in this Manual.***

Disconnect and remove the thermistor.

Removal of the thermistors from the liquid and gas pipes

Nº	Part
1	Screws



NOTE

- ***To disconnect and remove the appropriate thermistor, previously see the chapter corresponding to the wiring diagrams in this Manual.***
- ***Cover the thermistors with cork tape or pipe insulation, depending on the location. Both materials are factory-supplied. Replace them if damaged during maintenance work.***

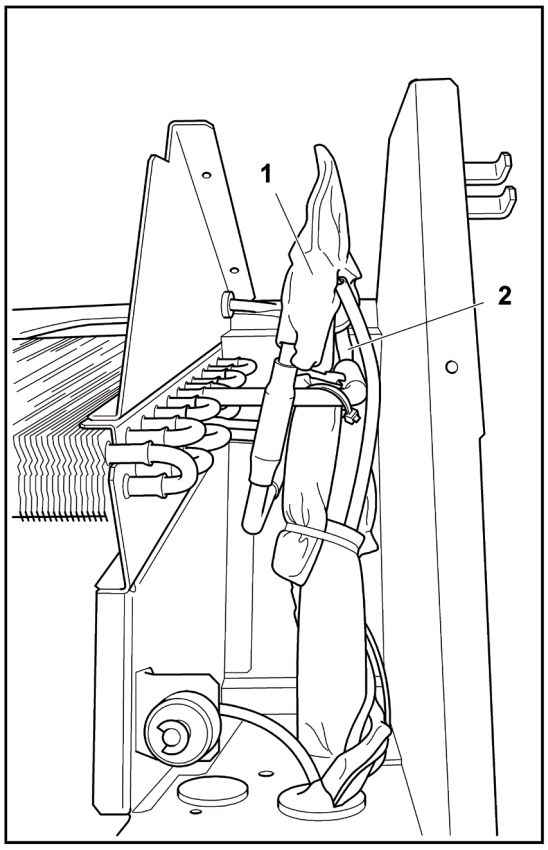
Remove the electrical box cover.

Remove the service cover.

The liquid and gas pipe thermistors are secured to the copper piping by a special clamp.

- Liquid pipe thermistor: covered with cork tape.
- Gas pipe thermistor: covered with pipe insulation.

Nº	Part
1	Location of the thermistor



NOTE

- ***Black connector: liquid thermistor.***
- ***Yellow connector: gas thermistor.***

10.8.4 Removal of the fan parts

Fan parts: fan motor, fan casing and duct.

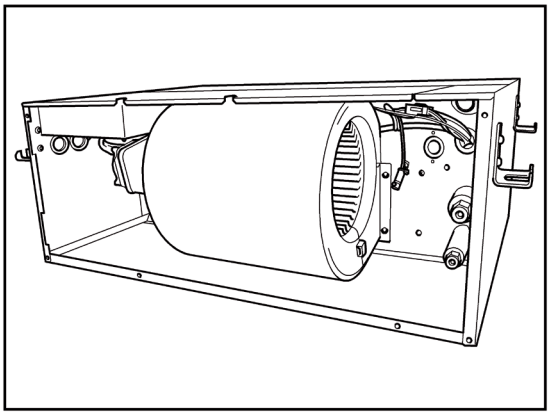
Remove the rear cover as indicated in chapter Removal of the inlet and outlet air thermistors.

Remove the tape located in the centre of the casing.

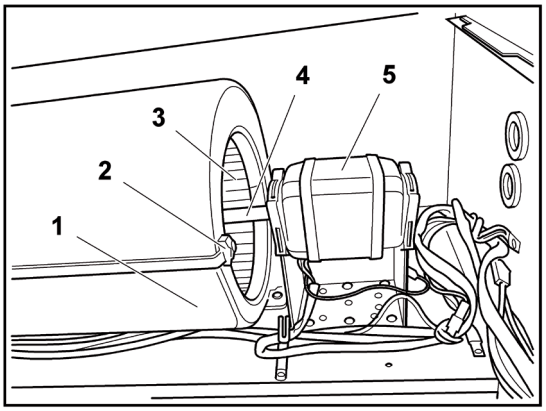
Press the locks and remove half of the fan casing.

Remove the fixture support screws and carefully remove the motor together with the fans.

Loosen the screws securing the fans to the motor shaft.



Nº	Part
1	Fan casing
2	Lock
3	Fan duct
4	Shaft
5	Fan motor

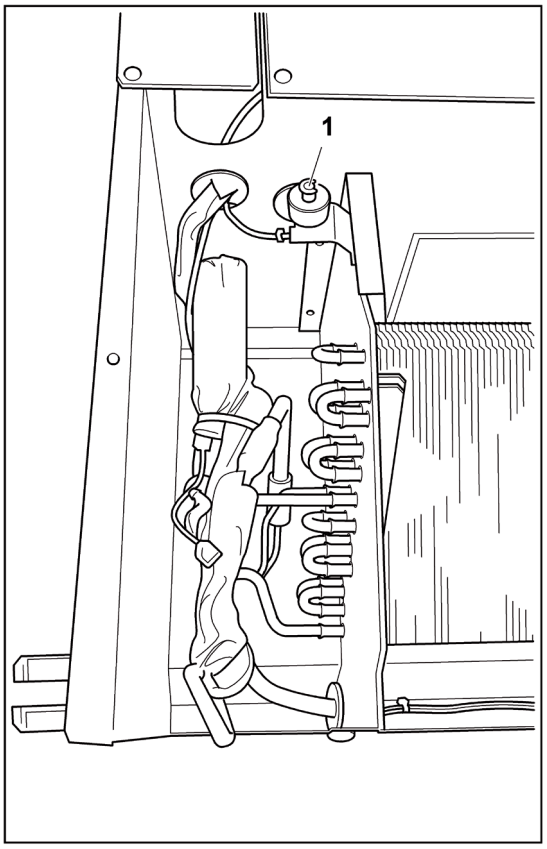


NOTE

If the fan casing is to be fully removed, remove the screws securing the other half to the fan motor fixture.

10.8.5 Removal of the float switch

Nº	Part
1	Float switch position



NOTE

To disconnect and remove the float switch, previously see the chapter corresponding to the wiring diagrams in this Manual.

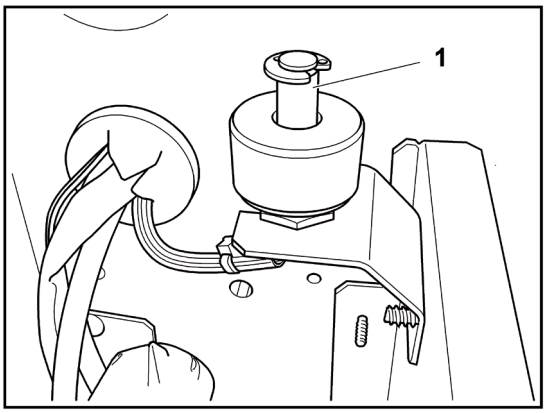
Remove the necessary covers to access the float switch.

Loosen the screws securing the float switch to the support.

NOTE

The torque value of the resin nut is 0.3 - 0.4 Nm. If the torque value is higher, the nut will be damaged.

Nº	Part
1	Float switch

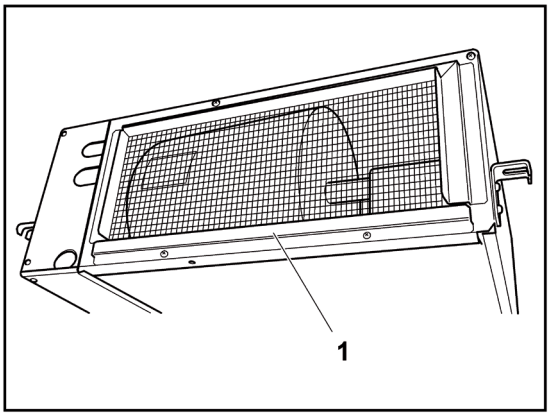


Loosen the resin nut securing the float switch and remove it.

10.8.6 Removal of the air filter

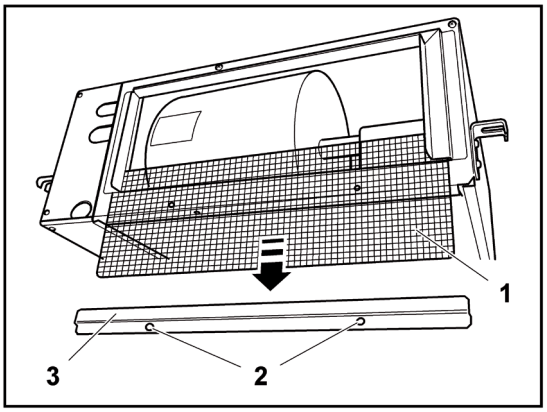
Nº	Part
1	Air filter fixture bar

Remove the air filter fixture support screws and remove the air filter.



Nº	Part
1	Air filter
2	Screws
3	Air filter fixture bar

Pull the air filter downwards.

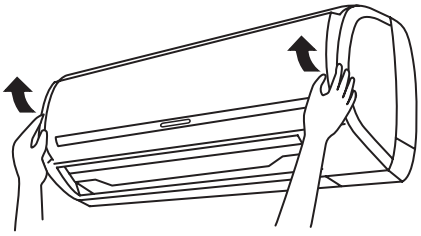


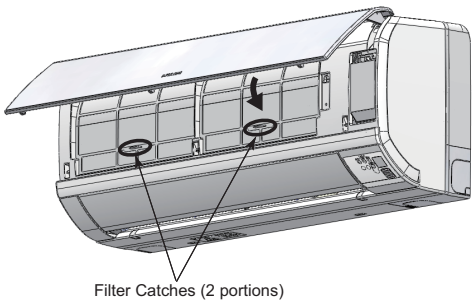
10.9 RPK - FSN(H)3M Wall mounted

10.9.1 Removal of the air filter

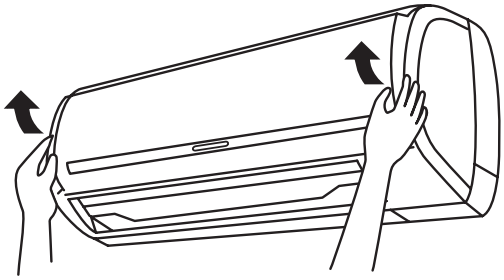
◆ **For RPK-(0.8-1.5)FSN(H)3M**

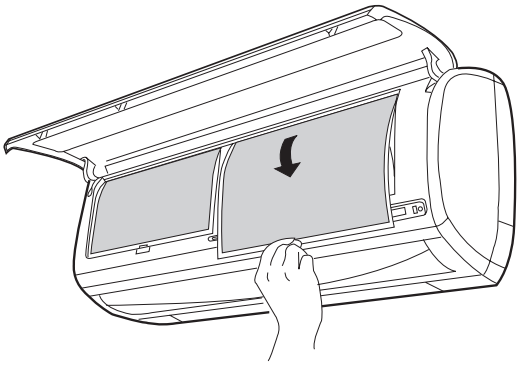
Open the flat panel. Hold the both sides of flat panel and pull it up





◆ **For for RPK-(2.0-4.0)FSN(H)3M**





10.9.2 Removal of the front panel

CAUTION

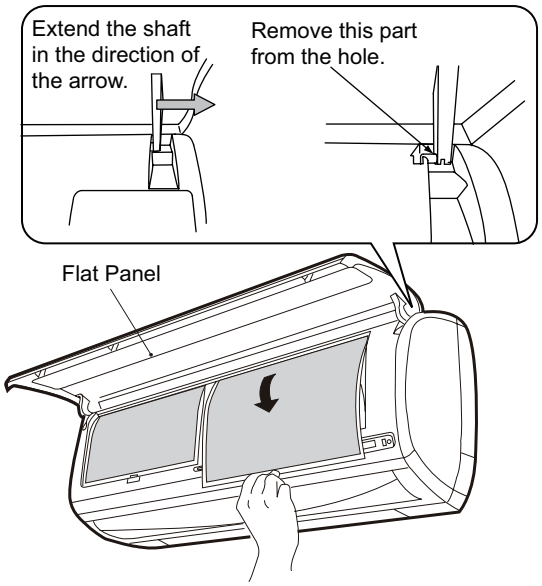
- ***Cover completely the front panel with a sheet of plastic to protect it during installation work.***
- ***The shaft is coated with a lubricant. If it gets in eyes or contacts with skin, flash them out with water immediately. Also consult a doctor if necessary. Wash your hands thoroughly after handling the shaft.***

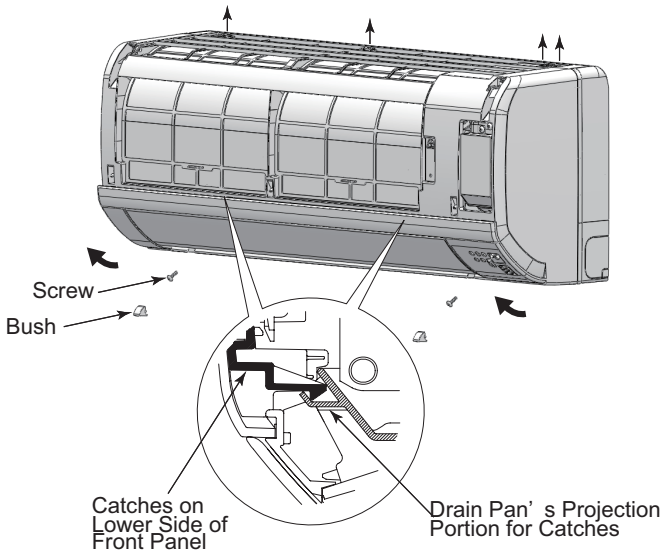
◆ **For RPK-(0.8-1.5)FSN(H)3M**

1. Remove the air filter according to the “Removing Air Filter.” chapter.
2. Open the flat panel fully and slightly extend the right arm shaft outward. After the shaft is removed from the front panel, pull the flat panel frontward with the right arm shaft slightly extended outward and then remove the flat panel.
3. Remove 2 bushes and then 2 screws. Pull the lower side of the front panel forward to release the catches. Then remove the front panel carefully so that it does not touch the horizontal louver attached to the air outlet.
4. Slightly lift the front panel up to release the catches (four portions) on the upper side of the unit. Then pull the front panel forward to remove it

NOTE

When releasing the catches, snap sound is heard. This is the sound made when the catches are released and so there are no safety concerns.





Do not apply an excessive force to the catches.

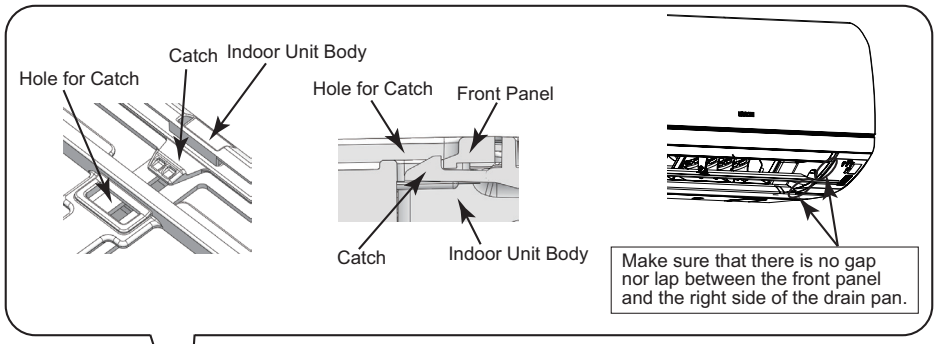
5 When mounting the front panel, firstly attach the air outlet side of the panel to the unit and then put the catches (four portions) on the upper side of the unit into the holes on the panel. Push the lower side of the panel to fasten the catches.

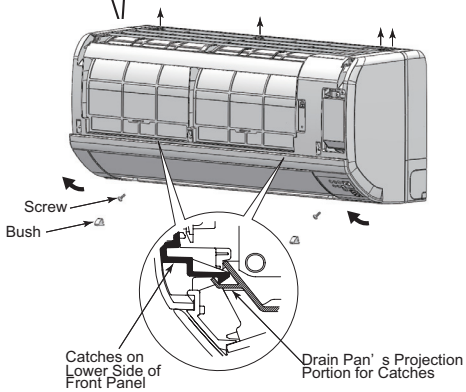
NOTE

Make sure that there is no gap nor lap between the front panel and the right side of the drain pan. If there is a gap there, an air leakage and dew condensation may occur and the dew may drop on the front panel.

6 Tighten 2 screws and attach 2 bushes. And then mount the air filter.

7 Insert the arm shafts on both sides of the flat panel into the holes on the unit body, along the guide of the front panel. After the flat panel is attached properly, close the flat panel.

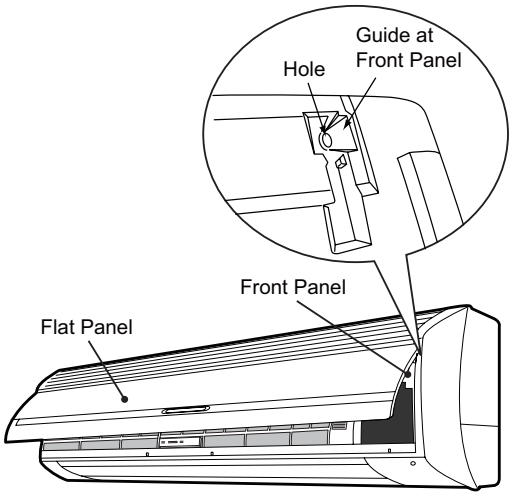




Do not apply an excessive force to the catches.

Attaching flat panel.

Insert completely the left and right arm shafts of flat panel into the holes along the guide at the front panel. Ater the flat panel is attached completely, insert the catches for air filter to fix it.



◆ For RPK-(2.0-4.0)FSN(H)3M

1 Remove the air filter according to the “Removing Air Filter.” chapter.
2 Open the flat panel fully and push the right arm shaft inward. After the shaft is removed from the front panel, pull the flat panel frontward with the right arm shaft slightly pushed inward and then remove the flat panel.
3 Remove 3 bushes and then 3 screws. Pull the lower side of the front panel (2 portions) forward to release the catches. Use a slotted screwdriver when the catches are difficult to release.

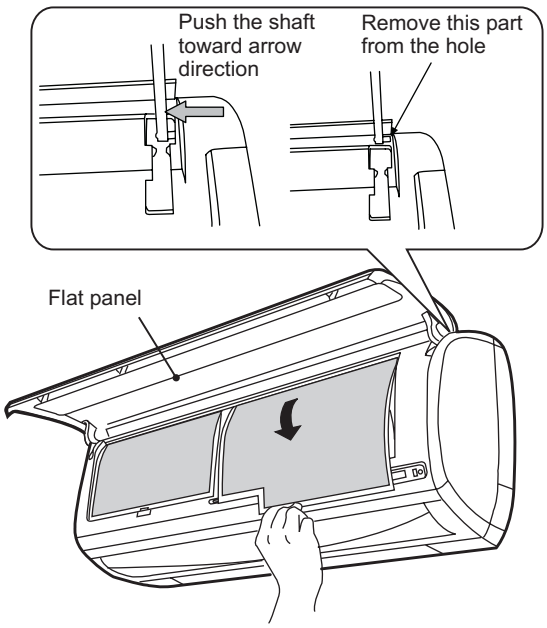
CAUTION

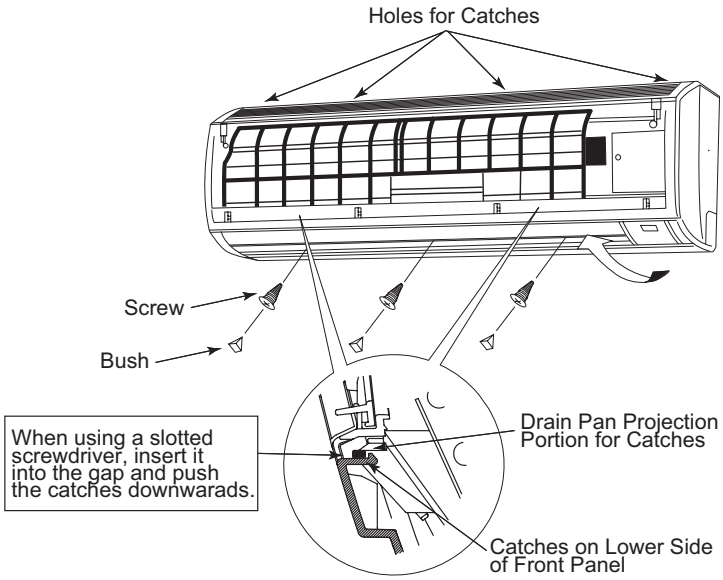
Take special care not to be injured by the heat exchanger fins.

4 Remove the front panel carefully so that it does not touch the horizontal louver attached to the air outlet. Slightly lift the front panel up to release the catches (4 portions) on the upper side of the unit. Then pull the front panel forward to remove it.

NOTE

When releasing the catches, snap sound is heard. This is the sound made when the catches are released and so there are no safety concerns.





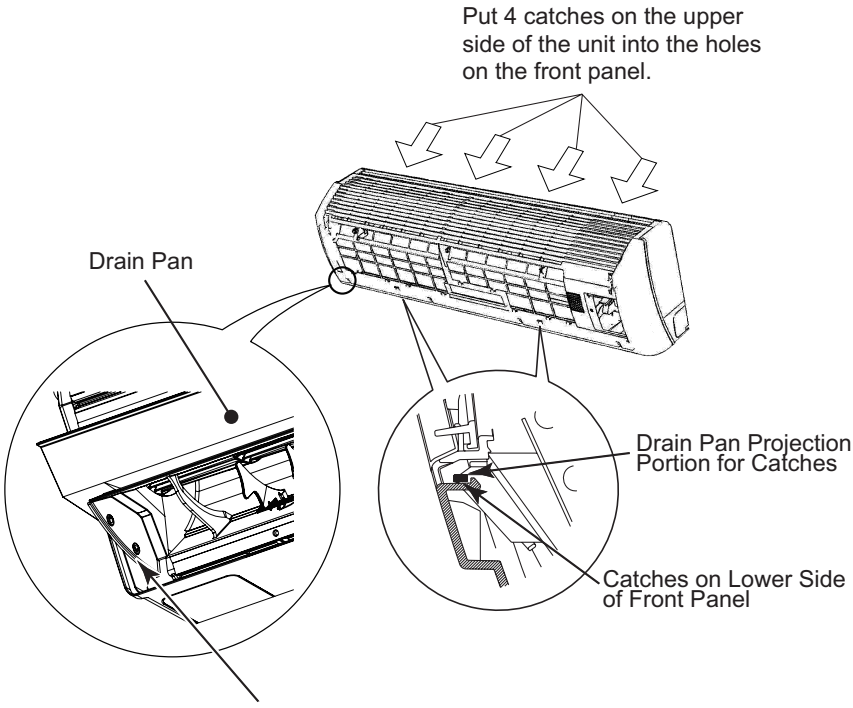
5 When mounting the front panel, be careful that it does not touch the horizontal louver. Paying attention to both sides of the panel, put the catches (four portions) on the upper side of the unit into the holes on the panel. Then push the lower side of the panel (2 portions) to fasten the catches.

NOTE

Make sure that there is no gap nor lap between the front panel and the left side of the drain pan. If there is a gap there, an air leakage and dew condensation may occur and the dew may drop on the front panel.

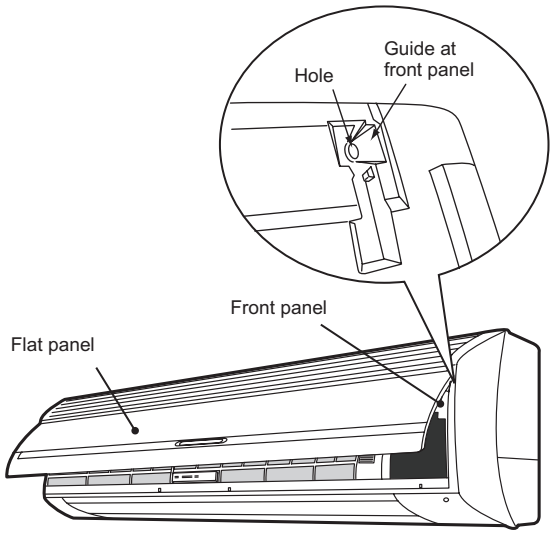
6 Tighten 3 screws and attach 3 bushes. And then mount the air filter.

7 Insert completely the arm shafts of left and right side of the panel into the holes along the guide of the front panel. After the flat panel is attached properly, close the flat panel.



Attaching flat panel

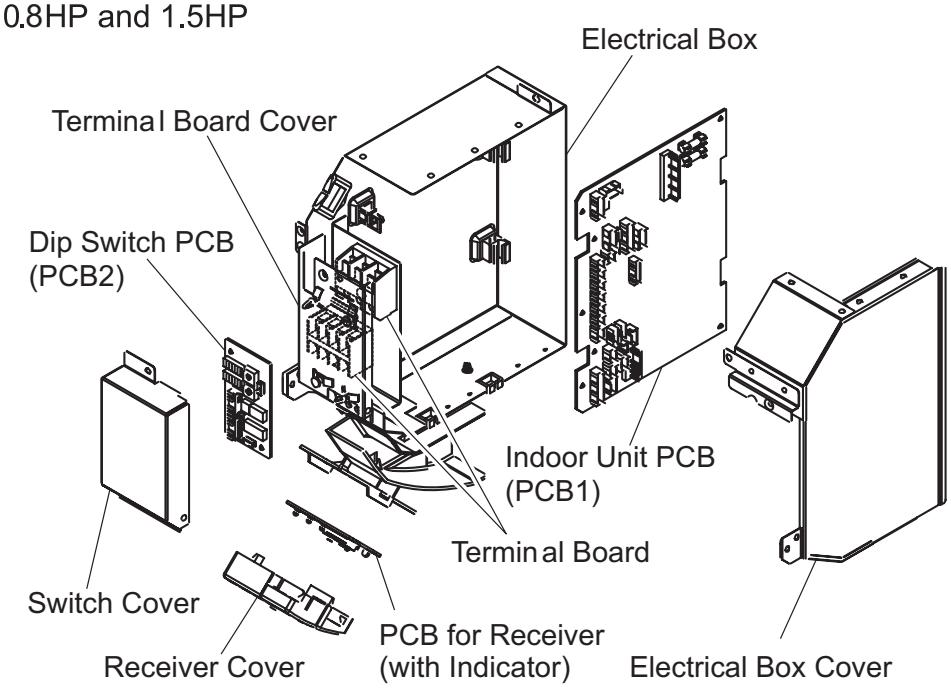
Insert completely the left and right arm shafts of flat panel into the holes along the guide at the front panel. After the flat panel is attached completely, insert the catches for air filter to fix.



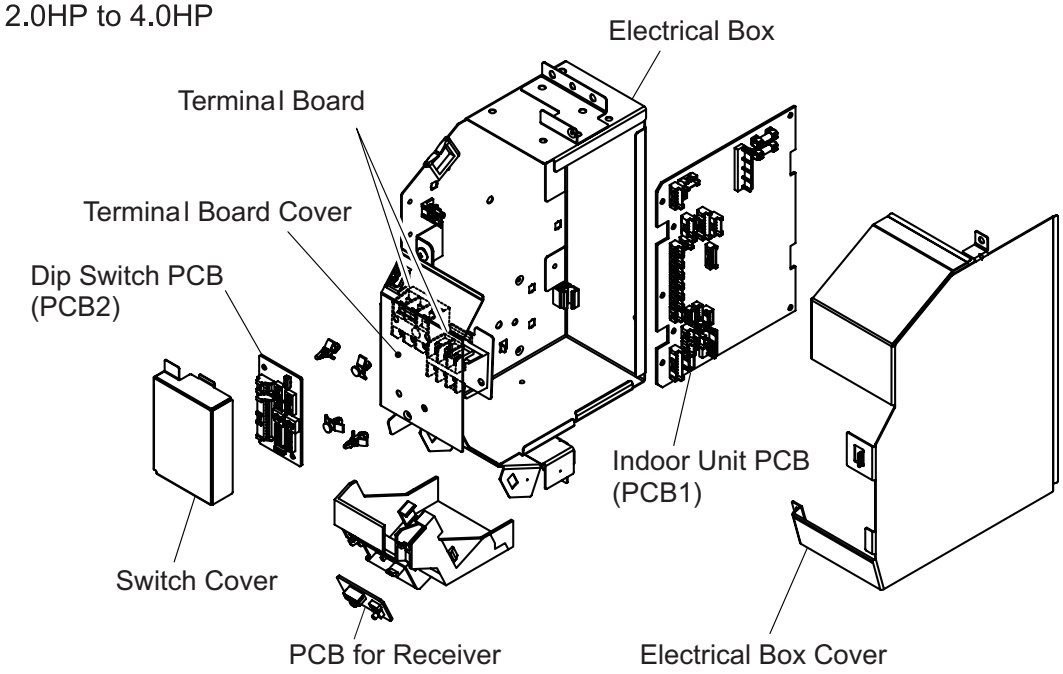
10.9.3 Electrical Box Structure

The electrical box for a wall type indoor unit is composed of the following components.

0.8HP and 1.5HP



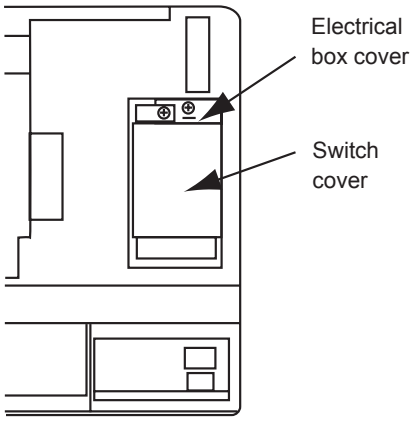
2.0HP to 4.0HP



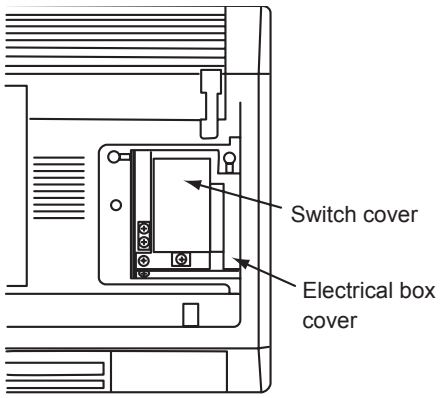
10.9.4 Remove the electrical box cover

Remove the flat panel as indicated in section Removal of the flat panel. The electrical box cover can be opened without removing the front panel.

RPK-(0.8-1.5)FSN(H)3M

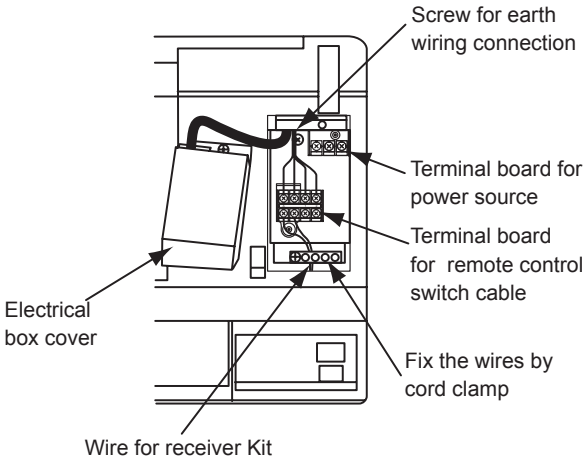


RPK-(2.0-4.0)FSN3M

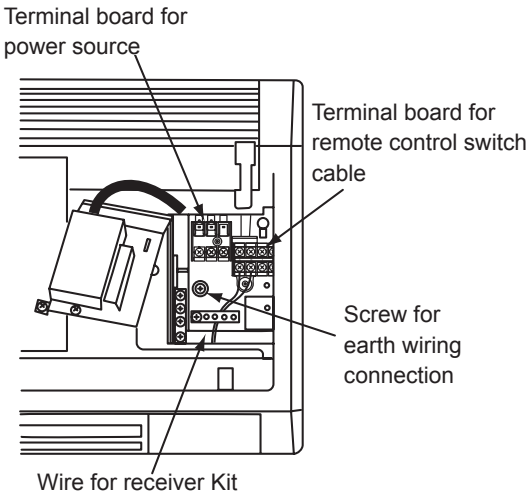


Open the electrical box cover by unscrewing the screw.

RPK-(0.8-1.5)FSN(H)3M



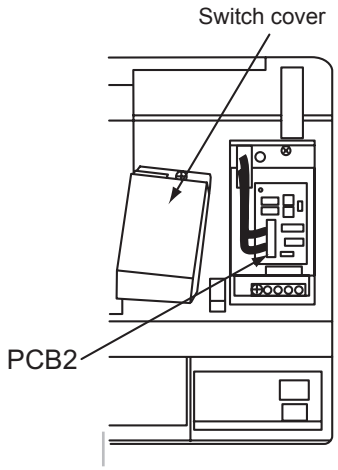
RPK-(2.0-4.0)FSN3M



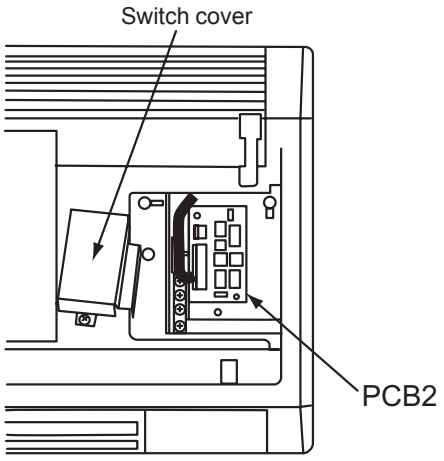
10.9.5 Remove the switch cover

Remove the flat panel as indicated in section Removal of the flat panel. The switch cover can be opened without removing the front panel.

RPK-(0.8-1.5)FSN(H)3M



RPK-(2.0-4.0)FSN3M



10.9.6 Replacing PCB1 for Control

◆ **For RPK-(0.8-1.5)FSN(H)3M**

a. Remove the electrical box according to the “Removing Electrical Box.” chapter.

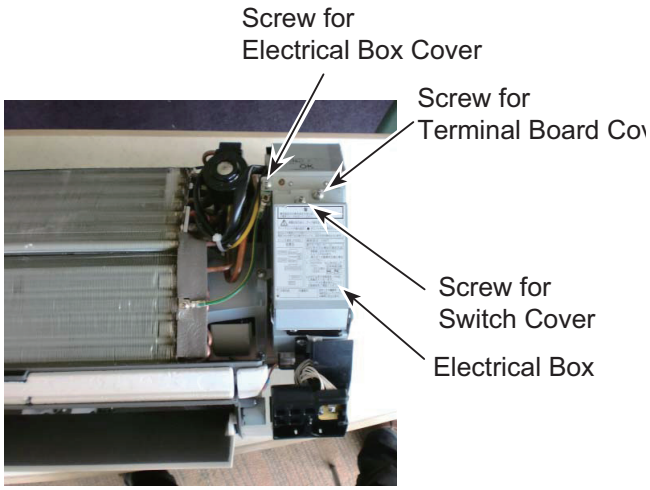
NOTE

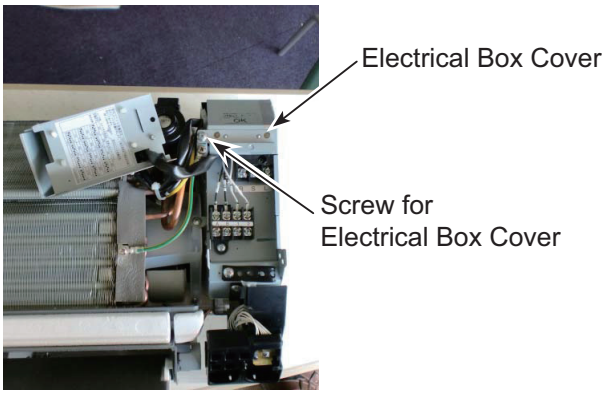
If there is enough service space to the right side of the electrical box, PCB1 can be replaced without removing the electrical box.

b. Remove 1 screw fixing the terminal board cover to remove it.

c. Remove 1 screw fixing the electrical box cover located to the right side of the electrical box. Then remove the electrical box cover.

d. Remove the wirings and connectors (on the PCB1) for the freeze protection thermistor, gas pipe thermistor, inlet air thermistor, outlet air thermistor, transmission, remote control switch, power source, external input/output, auto-louver, PCB for receiver (with indicator), fan motor and expansion valve coil.



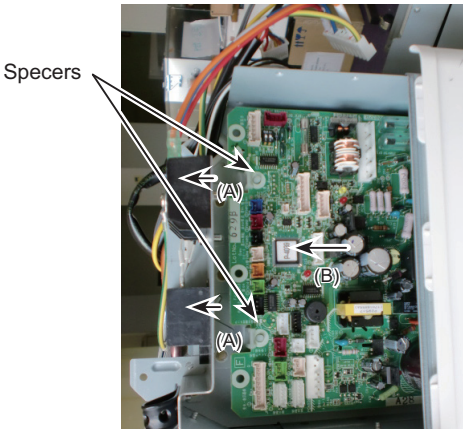


e. Remove 2 spacers in the direction of the arrow (A) and also remove PCB1 in the direction of the arrow (B).

f. After the replacement, attach them in the reverse procedure.

NOTE

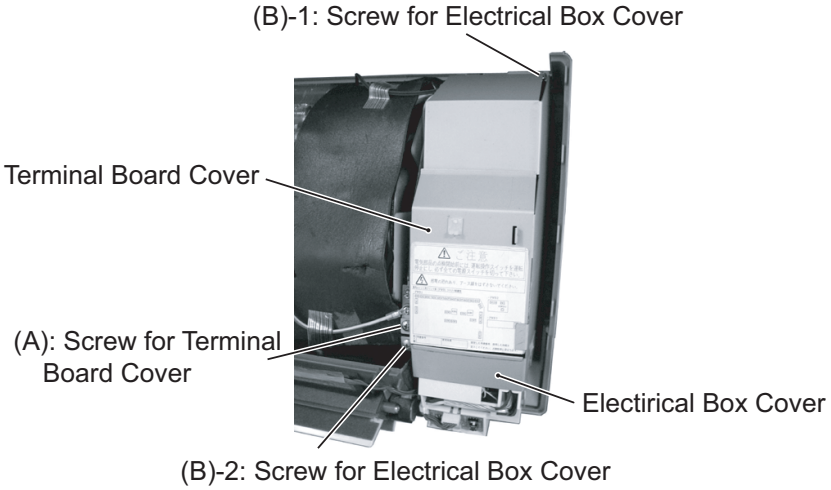
If the unit with the expansion valve kit is used, regard “expansion valve coil” as “expansion valve relay cord.”

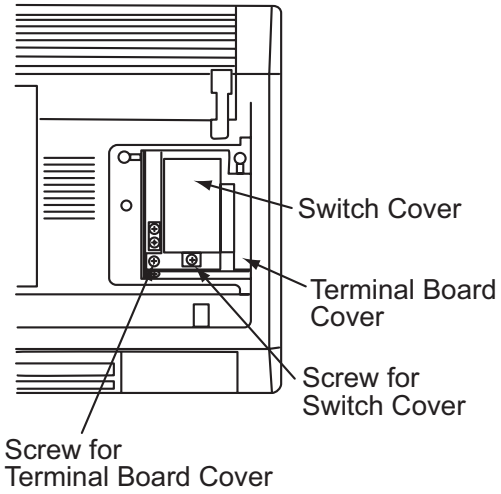


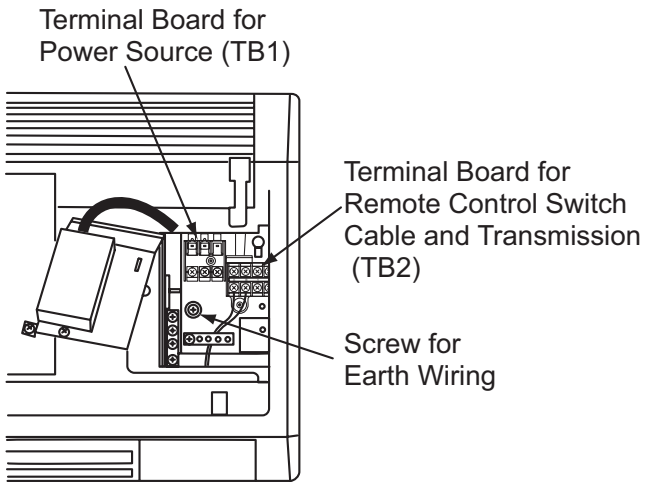
◆ **For RPK-(2.0-4.0)FSN(H)3M**

a. Remove the front panel according to the “Removing Front Panel” chater.

b. Remove 1 screw (A) fixing the terminal board cover to remove it. Then, remove 2 screws (C) fixing the electrical box cover to remove it.

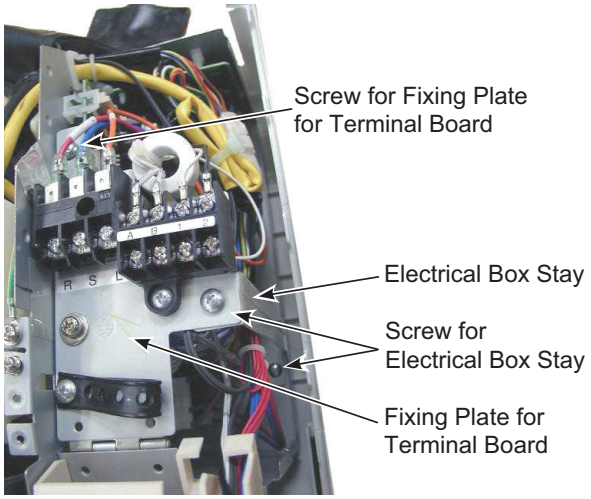


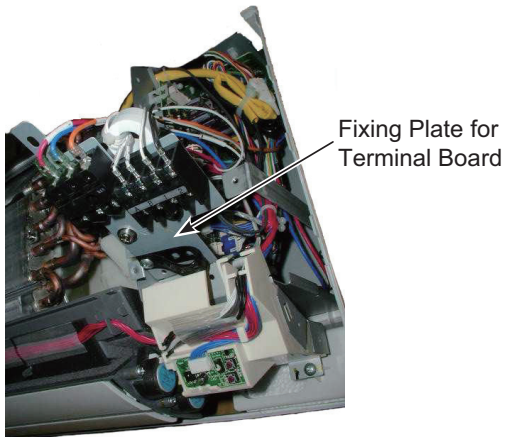




c. Remove 2 screws for the electrical box stay to remove it.

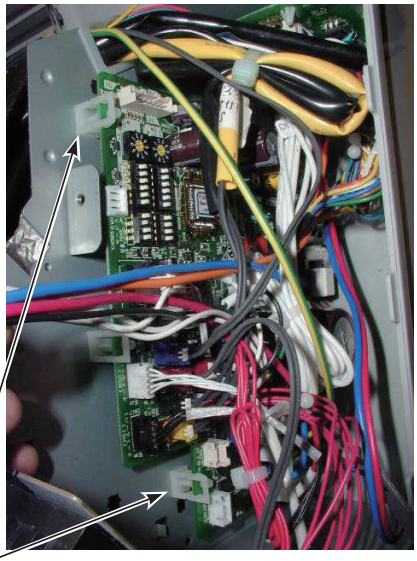
d. Remove 1 screw for the fixing plate for the terminal board and tilt the board frontward.





e. Remove the connectors (on the PCB1) for the freeze protection thermistor, gas pipe thermistor, inlet air thermistor, outlet air thermistor, transmission, remote control switch, power source, external input/output, auto-louver, PCB for indication, fan motor, PCB for receiver and expansion valve coil.

f. Undo the hook of the spacers (2 portions) on the front side. Then remove the PCB1 from the electrical box.



Specers on Front Side
(2 portions)

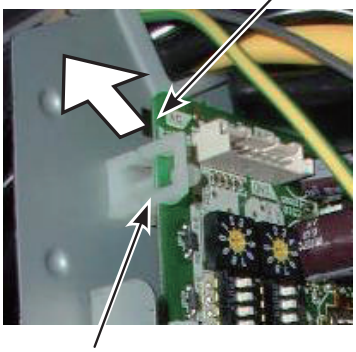
g. Insert the new PCB1 for replacement into the grooves of two (2) spacers on the rear side. Then attach the PCB1 to the hooks on the front side to fix it.

h. Connect the connectors to the PCB1 and attach the fixing plate for the terminal board, the electrical box stay, the electrical box cover and the terminal board cover in the reverse procedure.

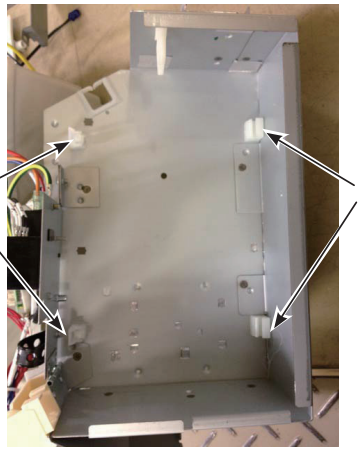
NOTE

- *Make sure that the wirings will not get caught and that all the connectors will be connected correctly.*
- *If the unit with the expansion valve kit is used, regard "expansion valve coil" as "expansion valve relay cord."*

Incline this portion in
the direction of the arrow
to undo the hooks.



Spacers on Front Side



Spacers on
Front Side
(2 Portions)

Spacers on
Rear Side
(2 Portions)

10.9.7 Removing Electrical Box

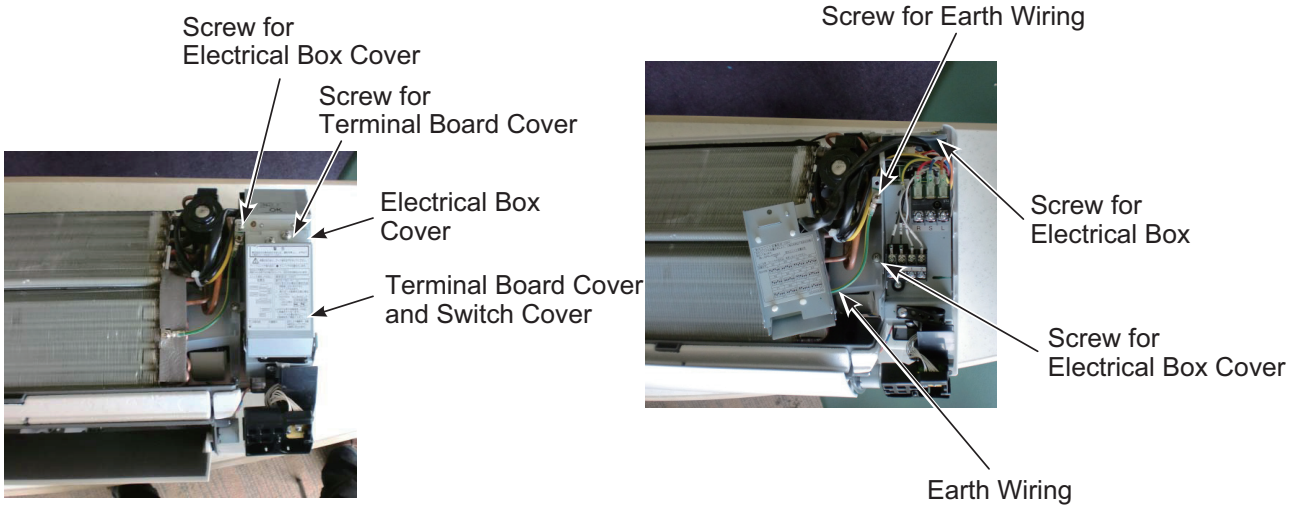
◆ **For RPK-(0.8-1.5)FSN(H)3M**

1 Remove the front panel according to the "Removing Front Panel" chapter
2 Remove 1 screw fixing the terminal board cover to remove it. Also remove 1 screw fixing the electrical box cover to remove it.
3 Then, remove the power source wiring, the transition wiring and the wiring for the remote control switch from the terminal board.
4 Remove the connectors (on the PCB1) for the freeze protection thermistor, gas pipe thermistor, inlet air thermistor, outlet thermistor, auto-louver, fan motor and expansion valve coil, and the earth wire.

5 Remove the wirings for the freeze protection thermistor, gas pipe thermistor, inlet air thermistor and the expansion valve coil from the wiring outlet at the upper part. Also remove the wirings for the outlet air thermistor, auto-louver and fan motor from the wiring outlet at the lower part.
6 Remove 2 screws fixing the electrical box to dismount it from the indoor unit body.

NOTE

If the unit with the expansion valve kit is used, regard "expansion valve coil" as "expansion valve relay cord."

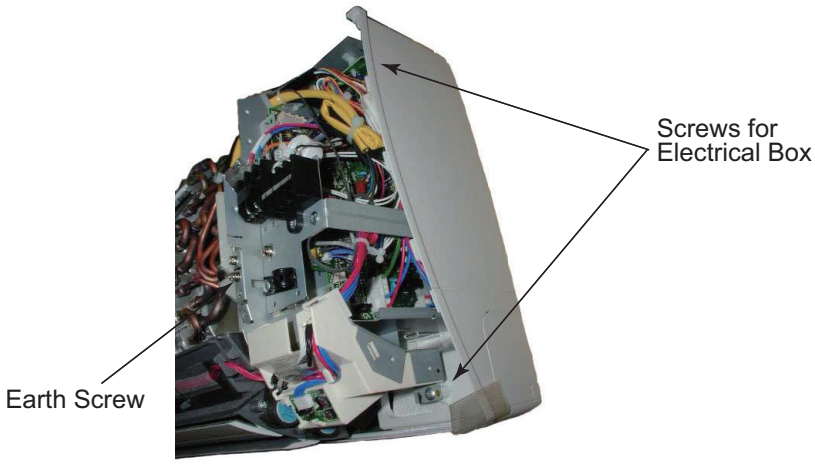


◆ For RPK-(2.0-4.0)FSN(H)3M

1 Remove the front panel according to the "Removing Front Panel" chapter
2 Remove the terminal board cover and the electrical box cover according to "Removing Printed Circuit Board" chapter
3 Then, remove the power source wiring, the transition wiring and the wiring for the remote control switch from the terminal board.
4 Remove the connectors (on the PCB1) for the freeze protection thermistor, gas pipe thermistor, inlet air thermistor, outlet air thermistor, auto-louver, PCB for indication, PCB for receiver, fan motor and expansion valve coil.
5 Remove the wirings for the freeze protection thermistor, gas pipe thermistor, inlet air thermistor, fan motor and expansion valve coil from the wiring outlet at the upper part. Also remove the wirings for the outlet air thermistor, auto-louver, PCB for indication and PCB for receiver from the wiring outlet at the lower part.
6 Remove 2 screws fixing the electrical box to dismount it from the indoor unit body.
7 Remove the earth screw to disconnect earth wire between the heat exchanger and the electrical box.
8 Before remounting the electrical box, make sure to connect the connectors mentioned above. Then mount the electrical box in the reverse procedure.

NOTE

If the unit with the expansion valve kit is used, regard "expansion valve coil" as "expansion valve relay cord."



10.9.8 Removing AS Motor

◆ For RPK-(0.8-1.5)FSN(H)3M

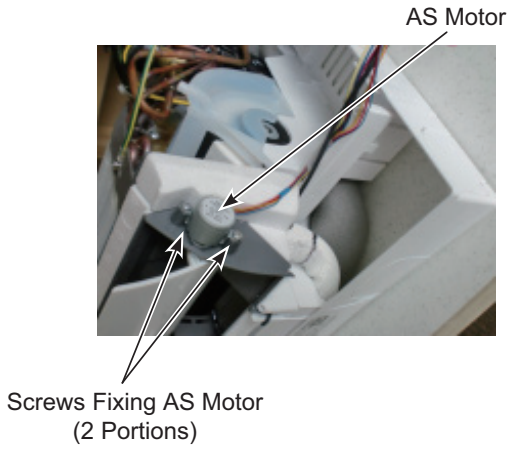
1 Remove the front panel according to the “Removing Front Panel” chapter.
2 Remove the electrical box according to the “Removing Electrical Box” chapter.
3 Remove 2 screws fixing the AS motor to remove it. Then pull the AS motor outward and remove it from the shaft of the horizontal louver.
4 When mounting the AS motor, insert the shaft of the AS motor into the D-cut portion of the horizontal louver. Then mount the AS motor in the reverse procedure.

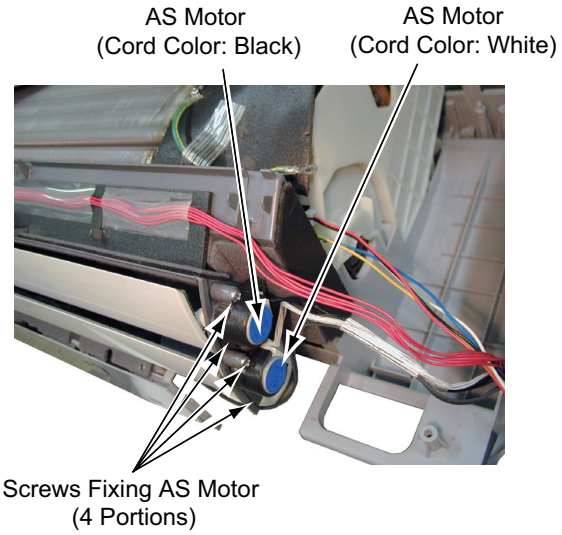
◆ For RPK-(2.0-4.0)FSN(H)3M

1 Remove the front panel according to the “Removing Front Panel” chapter.
2 Remove the electrical box fron the cabinet according to the “Removing Electrical Box” chapter.
3 Remove 4 screws fixing 2 AS motors to remove them. Then pull the AS motors outward and remove them from the shaft of the horizontal louver.
4 When mounting the AS motors, insert the shafts of the AS motors into the D-cut portions of the horizontal louver. Then mount the AS motors in the reverse procedure.

NOTE:

The AS motor connected to the black cord is for the upper horizontal louver and the AS motor connected to the white cord is for the lower horizontal louver. Take care not to mount a wrong AS motor when mounting them.





10.9.9 Removing Drain Pan

Take care when removing the drain pan, as water may have collected in the drain pan.

◆ **For RPK-(0.8-1.5)FSN(H)3M**

Do not remove the horizontal louver. Otherwise, some component may be damaged.

1 Remove the front panel according to the “Removing Front Panel” chapter.
2 Remove the electrical box according to the “Removing Electrical Box” chapter.
3 Release the catches fixing the drain pan.
   i. 1.0HP (3 portions) : (A)×1, (B)×1 and (C)×1
   ii. 1.5HP (4 portions) : (A)×2, (B)×1 and (C)×1

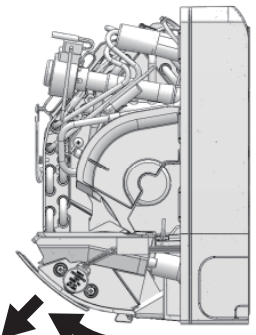
   Then draw the drain pan in the direction of the arrow in the figure below to remove it.

NOTE:

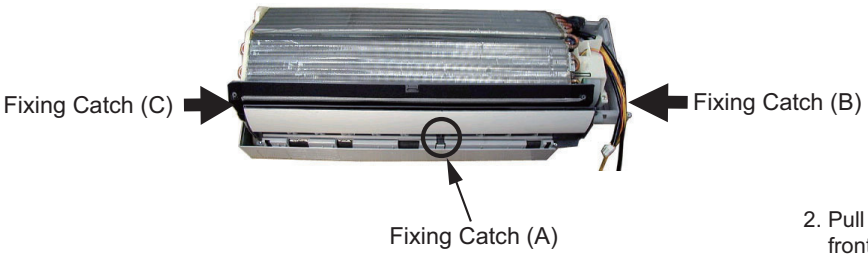
Before removing the drain pan, check that the drain hose is not fixed. If the drain hose is firmly fixed, the drain pan cannot be removed.

4 When mounting the drain pan, mount it in the reverse procedure. Make sure that the catches fixing the drain pan, mentioned in the procedure (3), are fastened.

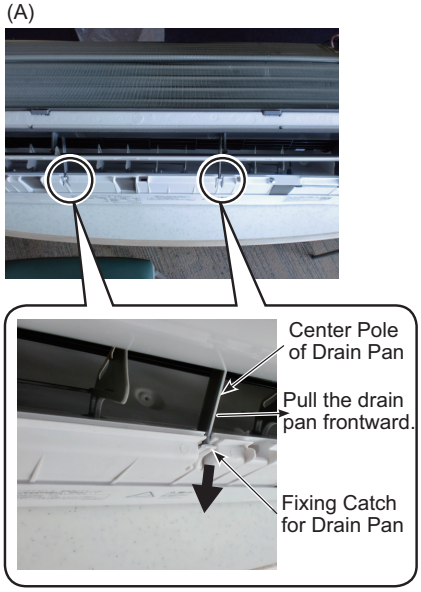
Direction for Removing Drain Pan



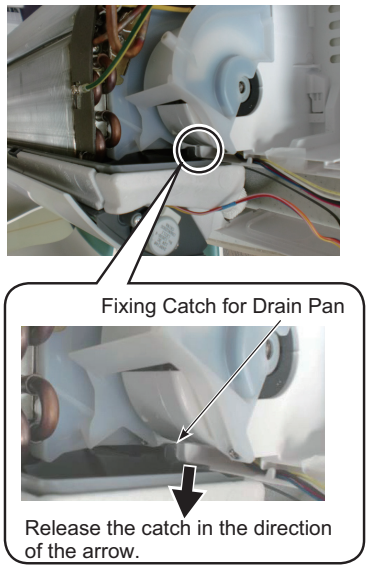
Positions of Fixing Catches for Drain Pan
(Example: 1.5HP)



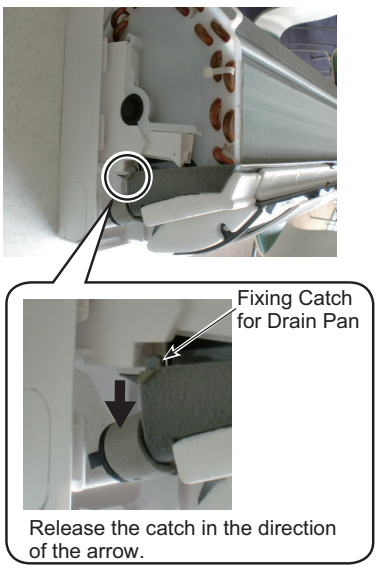
(A)



(B)



(C)



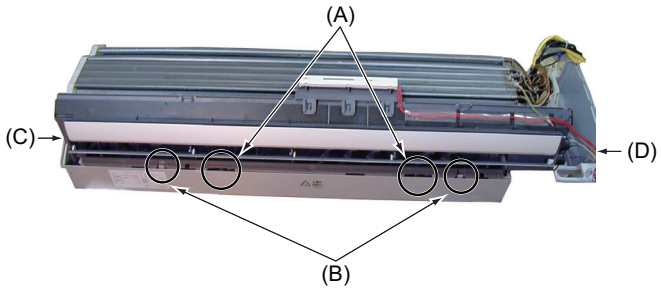
◆ For RPK-(2.0-4.0)FSN(H)3M

1 Remove the front panel according to the “Removing Front Panel” chapter.
2 Remove the electrical box according to the “Removing Electrical Box” chapter.
3 Remove the louver cover (A) (2 portions) attached to the lower part of the cabinet with a slotted screwdriver.
4 Remove 2 hooks (B) for the drain pan.

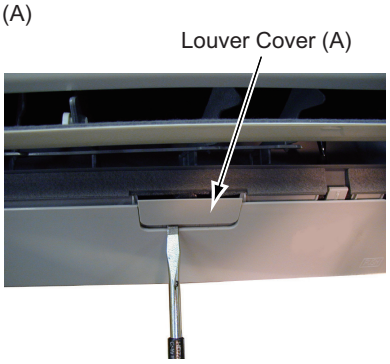
NOTE:

Before removing the drain pan, check that the drain hose is not fixed. If the drain hose is firmly fixed, the drain pan cannot be removed.

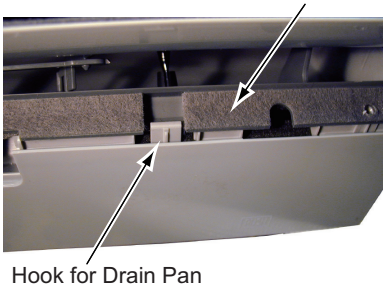
5 Remove 3 catches at (C) and (D) in the following procedure. Apply a force in the direction of the arrow (1) and release 1 catch (C) fixing the drain pan to the cabinet. Then apply a force in the direction of the arrow (2) and release 2 catches (D). Remove the drain pan.
6 When mounting the drain pan, mount it in the reverse procedure.



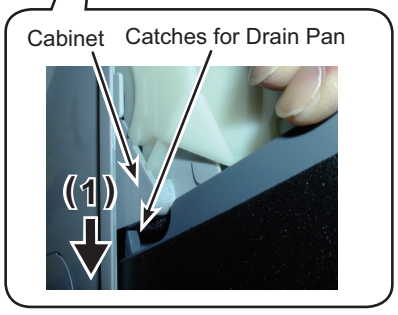
(A)



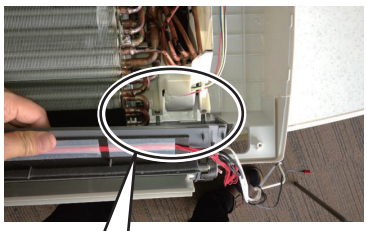
(B)

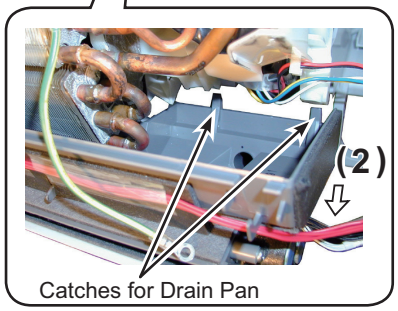


(C)



(D)





Note:
The catches are hidden from view by the fan motor. The figure above shows an example with the fan motor removed.

10.9.10 Removing Heat Exchanger

DANGER

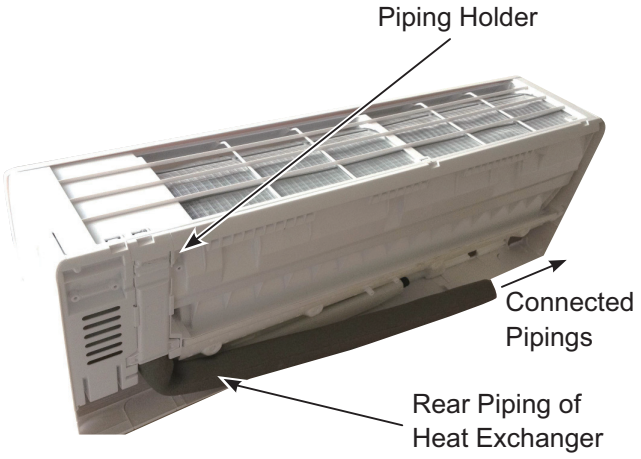
TURN OFF all power source switches.

CAUTION

- *Recover the refrigerant from the unit before the work. After all the refrigerant is recovered, turn OFF all power source switches.*
- *Make sure that the unit will not be damaged. If having difficulty in performing the work alone, the work shall be taken by two people.*
- *Take special care not to be injured by the heat exchanger fins.*

◆ **For RPK-(0.8-1.5)FSN(H)3M**

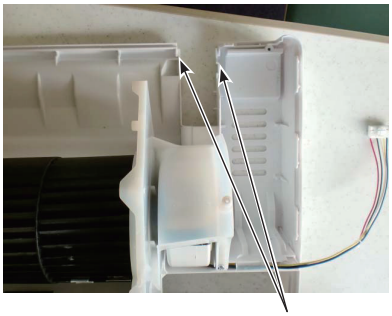
1 Remove the power source wiring, the transition wiring and the wiring for the remote control switch.
2 Push the portion indicated by "PUSH" on the underside of the unit to release the catches at the lower part of the unit.
3 Remove the flare nuts attached to the rear piping of the heat exchanger to disconnect the pipings. Then lift the indoor unit up and draw it frontward to remove it.
4 Remove the front panel according to the "Removing Front Panel" chapter.
5 Remove the electrical box according to the "Removing Electrical Box" chapter.
6 Remove the drain pan according to the "Removing Drain Pan" chapter.

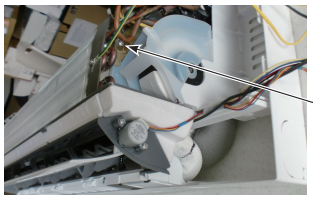


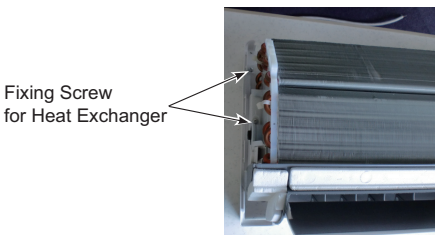
Rear Side of Indoor Unit

7 Release 2 catches on the inside of the piping holder at the rear side of the indoor unit and remove the piping holder.
8 Remove 1 screw fixing the right side of the heat exchanger. Then remove 2 screws fixing the left side of the heat exchanger.

Front Side of Indoor Unit (The figures above show the examples with the piping for heat exchanger removed.)







9 Tilt up the piping holder at the rear side approximately 10 degrees in the direction of the arrow (A) as shown in the figure below.
10 Pull out the heat exchanger with the rear pipings obliquely upward in the direction of the arrow (B) to remove it from the slotted portion.

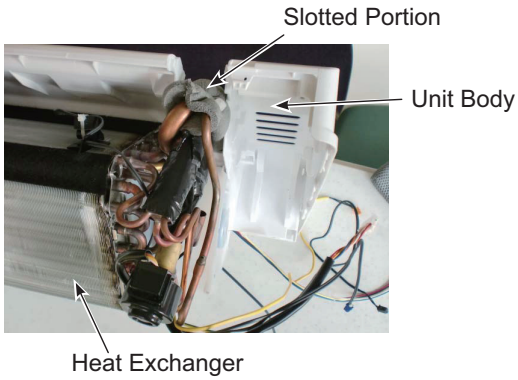
NOTE

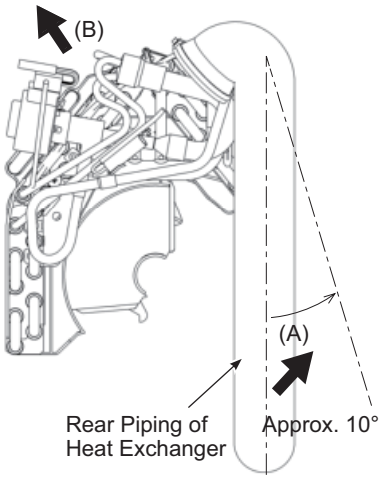
Make sure that the heat exchanger and the unit body will not be damaged when removing the heat exchanger.

11 When mounting the heat exchanger, mount it in the reverse procedure.

NOTE

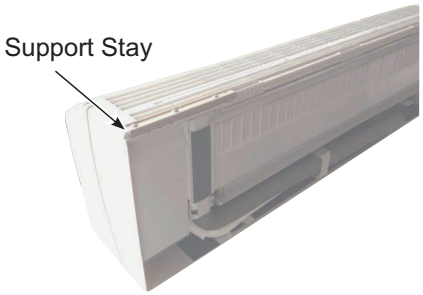
Before mounting the heat exchanger, check to ensure that there is no clearance between the heat exchanger and the motor clamp in order to prevent dew drops.



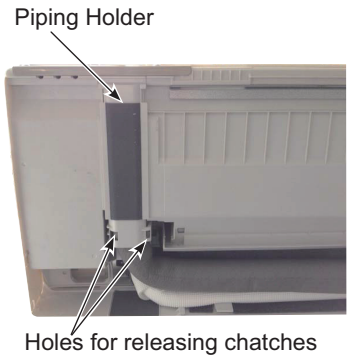


◆ For RPK-(2.0-4.0)FSN(H)3M

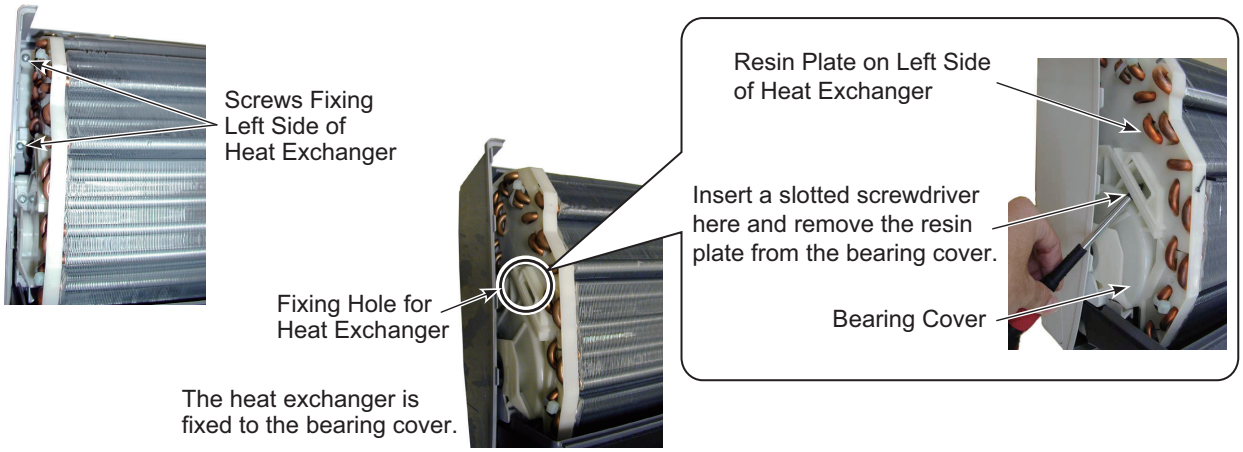
1 Remove the power source wiring, the transition wiring and the wiring for the remote control switch.
2 Push the portion indicated by “PUSH” on the underside of the unit to release the catches at the lower part of the unit.
3 Remove the flare nuts attached to the rear pipings of the heat exchanger to disconnect the piping. Then lift the indoor unit up and draw it frontward to remove it.
4 Remove the front panel according to the “Removing Front Panel” chapter.
5 Remove the electrical box according to the “Removing Electrical Box” chapter.
6 Remove the drain pan according to the “Removing Drain Pan” chapter.
7 Remove 3 screws fixing the support stay attached to the rear side of the indoor unit and remove it.



8 Insert a slotted screwdriver into the holes (2 portions) to release the catches for the piping holder as shown in the figure below.
9 Release 2 catches for fixing the piping on the inside of the piping holder attached to the rear side of the indoor unit. Then remove the piping holder.



10 Remove 2 screws fixing the left side of the heat exchanger and undo 1 hook for the heat exchanger. Then remove butyl sheet covering piping between the heat exchanger and the electrical box.
11 Remove 1 screw fixing the right side of the heat exchanger.
12 Release the catches for the heat exchanger fixed to the bearing cover with a slotted screwdriver.



13 Tilt up the piping holder at the rear side approximately 10 degrees in the direction of the arrow (A) as shown in the figure below.
14 Pull out the heat exchanger with the rear pipings obliquely upward in the direction of the arrow (B) to remove it from the slotted portion.

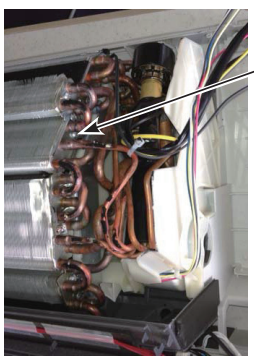
NOTE

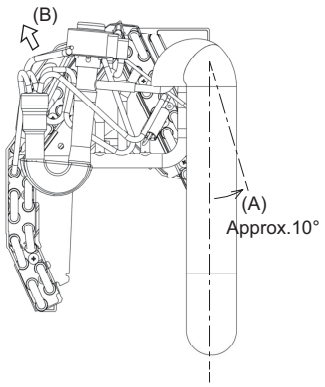
Make sure that the heat exchanger and the unit body will not be damaged when removing the heat exchanger.

15 When mounting the heat exchanger, mount it in the reverse procedure.

NOTE

Before mounting the heat exchanger, check to ensure that there is no clearance between the heat exchanger and the motor clamp in order to prevent dew drops.

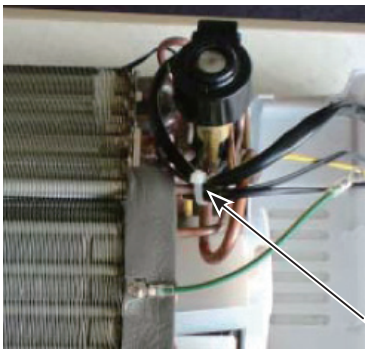




10.9.11 Removing Thermistors for Freeze Protection, Gas Pipe, Outlet Air and Inlet Air

◆ **For RPK-(0.8-1.5)FSN(H)3M**

1 Remove the front panel according to the “Removing Front Panel” chapter.
2 Remove the electrical box according to the “Removing Electrical Box” chapter.
3 Remove the plastic band (A) clamping each thermistor.



4 Removing Freeze Protection Thermistor

a. The freeze protection thermistor is fixed by thermistor pipe with a thermo clip. Remove the thermistor from the thermo clip.

b. When attaching the freeze protection thermistor, attach it in the reverse procedure. Insert the thermistor into the thermistor pipe and fix it with the thermo clip.

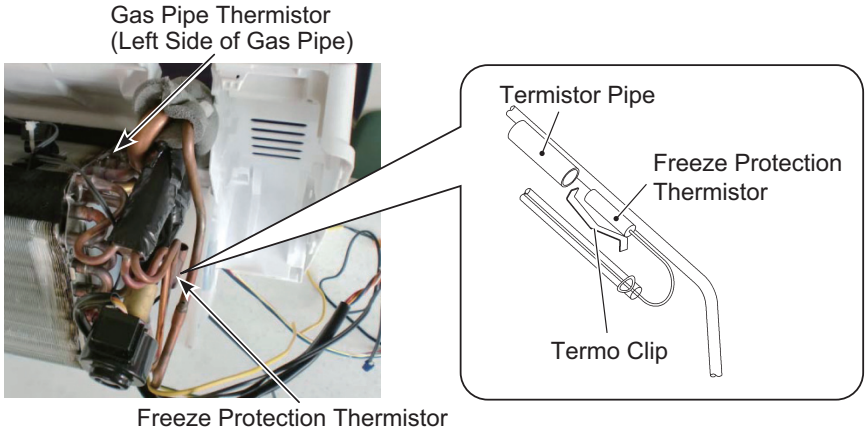
c. After attaching the thermistor, clamp the wirings for the expansion valve, freeze protection thermistor, gas pipe thermistor and inlet air thermistor with one (1) plastic band.

5 Removing Gas Pipe Thermistor

a. The gas pipe thermistor is fixed by the thermistor holder. Remove the thermistor holder from the thermistor. Then, the gas pipe thermistor can be removed.

b. When attaching the gas pipe thermistor, attach it in the reverse procedure. Get the thermistor firmly attached to the inside of the piping with the thermistor holder.

c. After attaching the thermistor, clamp the wirings for the expansion valve, freeze protection thermistor, gas pipe thermistor and inlet air thermistor with one (1) plastic band.

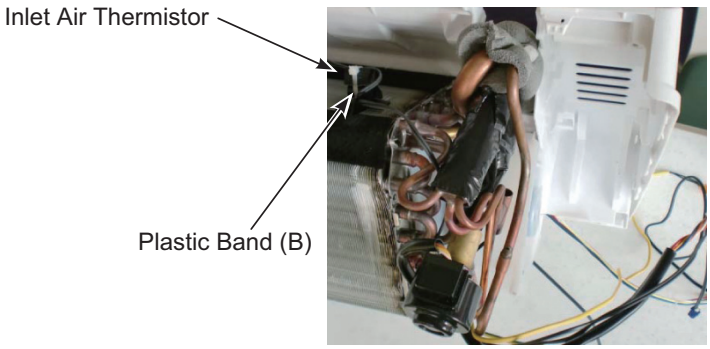


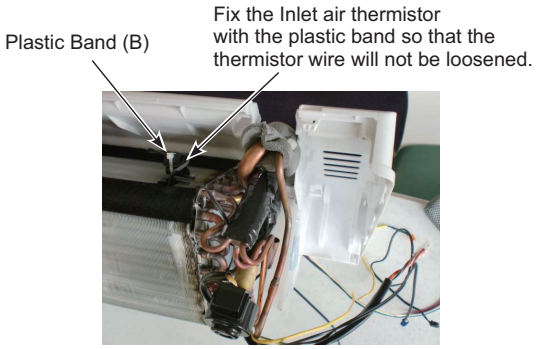
6 Removing Inlet Air Thermistor

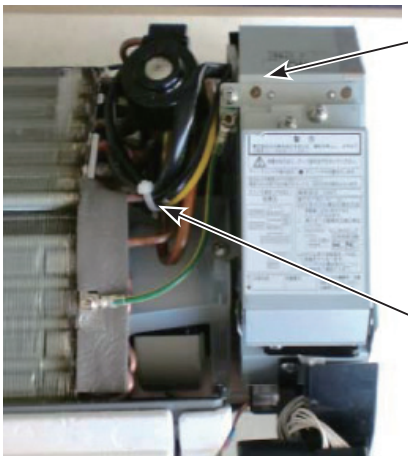
a. The inlet air thermistor is clamped with 1 plastic band (B) to the resin component for fixing the thermistor inserted into the heat exchanger fins. Remove the plastic band to remove the thermistor.

b. When attaching the inlet air thermistor, attach it to the resin component with the plastic band in the reverse procedure. Take care during the work so that the wiring for the thermistor will not come into contact with metal edges of fins or side plates of the heat exchanger.

c. After attaching the thermistor, clamp the wiring for the expansion valve, freeze protection thermistor, gas pipe thermistor and inlet air thermistor with 1 plastic band.







Place the wirings for the thermistors (for inlet air, gas pipe and freeze protection), and the expansion valve coil into the electriacal box from the wiring outlet at the upper side. (The wiring for the expansion valve coil is not included when using the unit without expansion valve)

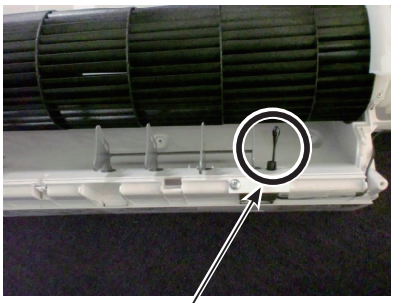
Clamp the wirings for the thermistors (for inlet air, gas pipe and freeze protection), and the expansion valve coil with the plastic band. (The wiring for the expansion valve coil is not included when using the unit without expansion valve)

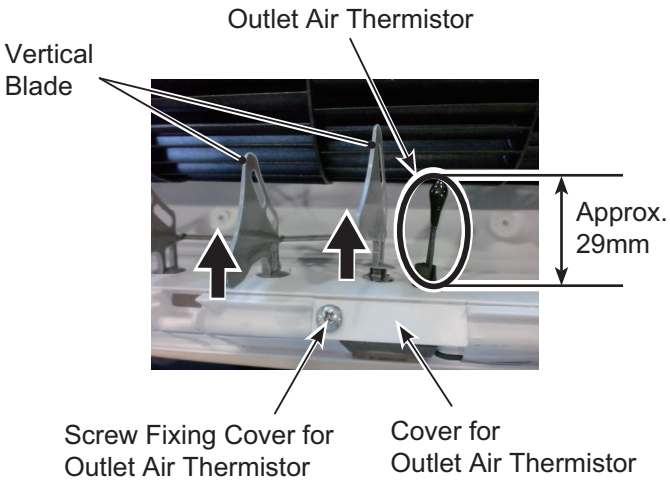
7 Removing Outlet Air Thermistor

a. Remove the front panel according to the “Removing Front Panel” chapter.

b. Lift the front side of the vertical blade up in the direction of the arrow to remove it.

c. Remove 1 screw fixing the outlet air thermistor cover to remove the cover.





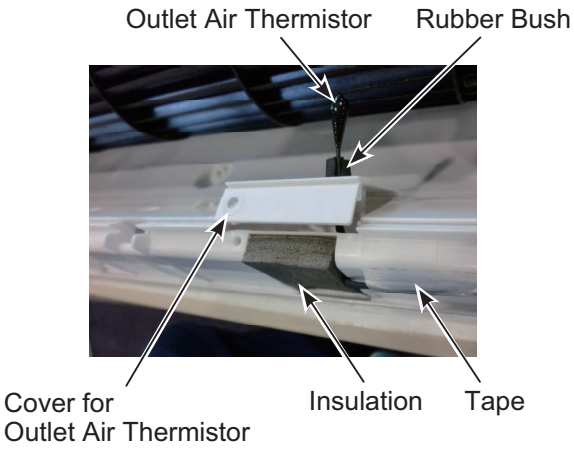
d. After removing the insulation, pull out the rubber bush to remove the outlet air thermistor.

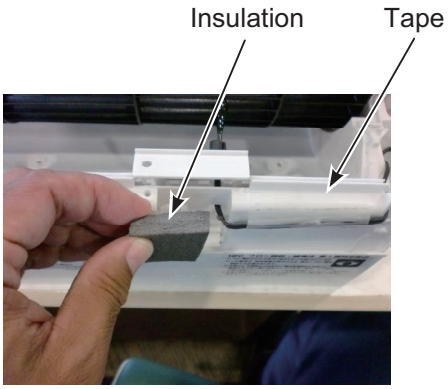
e. Remove the tape fixing the thermistor to remove the thermistor.

f. When attaching the outlet air thermistor, attach it in the reverse procedure.

NOTE

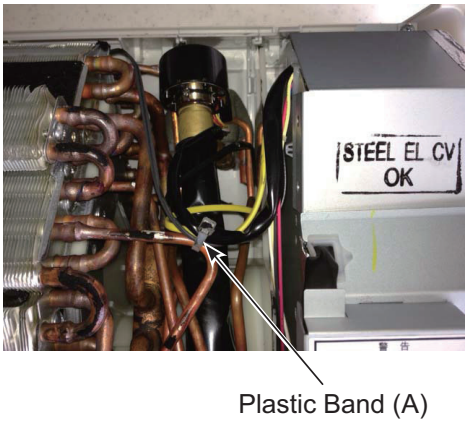
- *Take care during the work so that the wiring for the thermistor will not get caught in the cover.*
- *Make sure that it is 29mm from the upper surface of the thermistor cover to the top of the thermistor.*





◆ **For RPK-(2.0-4.0)FSN(H)3M**

1 Remove the front panel according to the “Removing Front Panel” chapter.
2 Remove the electrical box according to the “Removing Electrical Box” chapter.
3 Remove the heat exchanger according to the “Removing Heat Exchanger” chapter.
4 Remove the plastic band (A) clamping each thermistor.



5 Removing Freeze Protection Thermistor

a. The freeze protection thermistor is fixed to the inside of the thermistor pipe brazed to the gas pipe by the thermo clip. Remove the thermistor from the thermo clip.

b. When attaching the freeze protection thermistor, attach it in the reverse procedure. Insert the thermistor into the thermistor pipe and fix it with the thermo clip.

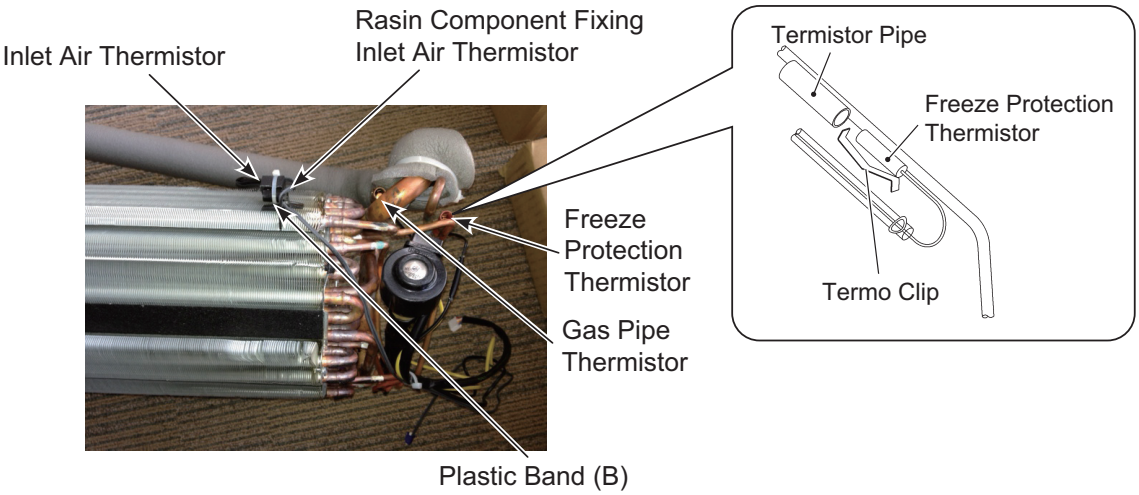
c. After attaching the thermistor, clamp the wiring for the expansion valve, freeze protection thermistor, gas pipe thermistor and inlet air thermistor with 1 plastic band.

6 Removing Gas Pipe Thermistor

a. The gas pipe thermistor is fixed to the inside of the thermistor pipe brazed to the gas pipe by the thermistor holder. Remove the thermistor holder from the thermistor. Then, the gas pipe thermistor can be removed.

b. When attaching the gas pipe thermistor, attach it in the reverse procedure. Get the thermistor firmly attached to the inside of the piping with the thermistor holder.

c. After attaching the thermistor, clamp the wiring for the expansion valve, freeze protection thermistor, gas pipe thermistor and inlet air thermistor with 1 plastic band.



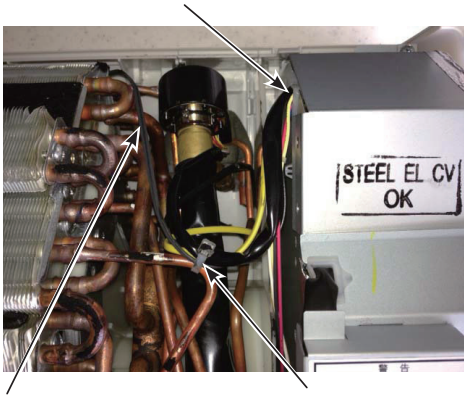
7 Removing Inlet Air Thermistor

a. The inlet air thermistor is clamped with one (1) plastic band (B) to the resin component for fixing the thermistor inserted into the sub heat exchanger fins. Remove the plastic band to remove the thermistor.

b. When attaching the inlet air thermistor, attach it to the resin component with the plastic band in the reverse procedure. Take care during the work so that the wiring for the thermistor will not come into contact with metal edges of fins or side plates of the heat exchanger.

c. After attaching the thermistor, clamp the wiring for the expansion valve, freeze protection thermistor, gas pipe thermistor and suction air thermistor with one (1) plastic band.

Place the wiring for the thermistors (for inlet air, gas pipe and freeze protection),
and the expansion valve coil into the electriacal box from the wiring outlet at the upper side.
(The wiring for the expansion valve coil is not included when using the unit without expansion valve)



Fix the inlet air thermistor with the plastic band
so that the thermistor wire will not be loosened.

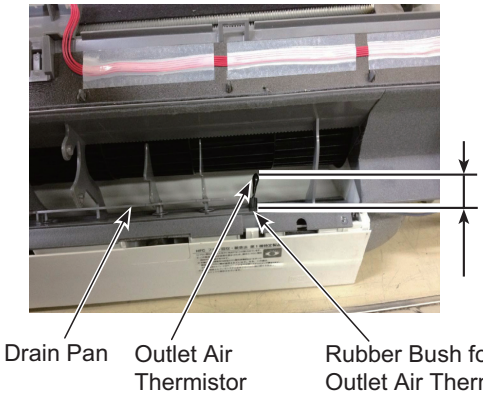
Clamp the wirings for the thermistors
(for inlet air, gas pipe and freeze protection),
and the expansion valve coil with the plastic band.
(The wiring for the expansion valve coil is not included
when using the unit without expansion valve)

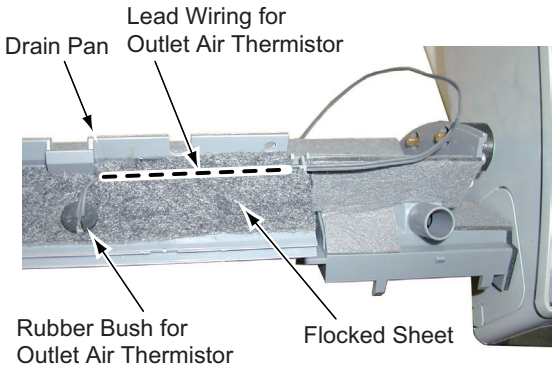
8 Removing Outlet Air Thermistor

a. Remove the drain pan according to the item 2.1.7 “Removing Drain Pan.”

b. Remove the rubber bush and the flocked sheet fixing the outlet air thermistor from the back side of the drain pan. Then pull out the rubber bush from the drain pan.

c. When attaching the outlet air thermistor, attach the rubber bush and fix the thermistor with the flocked sheet in the reverse procedure.





Make sure that it is approx. 29mm from the drain pan to the top of the thermistor.

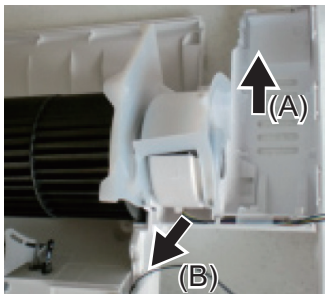
10.9.12 Removing Fan and Fan Motor

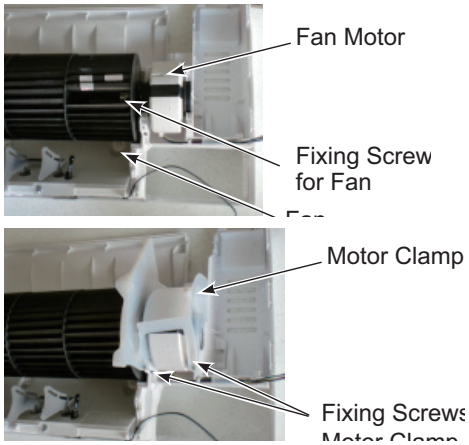
DANGER

TURN OFF all power source switches.

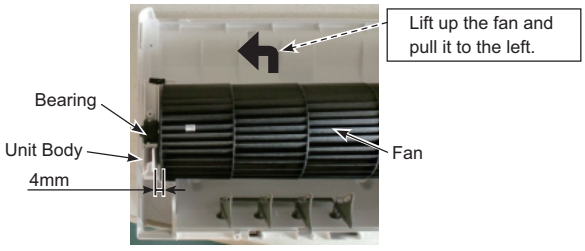
◆ **For RPK-(0.8-1.5)FSN(H)3M**

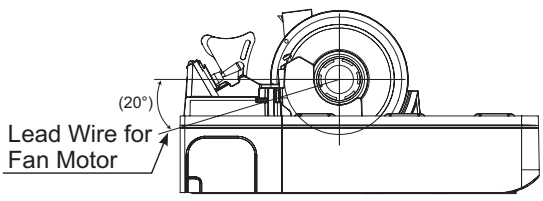
1 Remove the heat exchanger according to the “Removing Heat Exchanger” chapter.
2 Remove 2 screws fixing the motor clamp to remove it. As lifting up the motor clamp in the direction of the arrow (A), pull it out in the direction of the arrow (B).
3 Then Loosen 1 screw fixing the fan and the motor shaft.





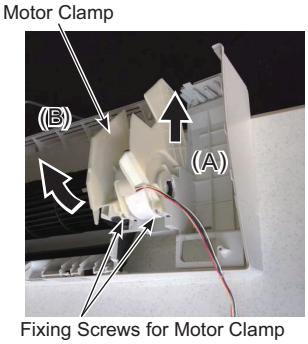
4 Hold the fan with hands and lift the bearing side up slightly. Then pull out the fan in the direction of the arrow to remove the fan and the motor as shown in the figure below.
5 When mounting the fan motor and fan, mount them in the reverse procedure. The fan shall be mounted 4mm away from the unit body.
6 The lead wire for the fan motor shall be pulled out as shown in the figure below.

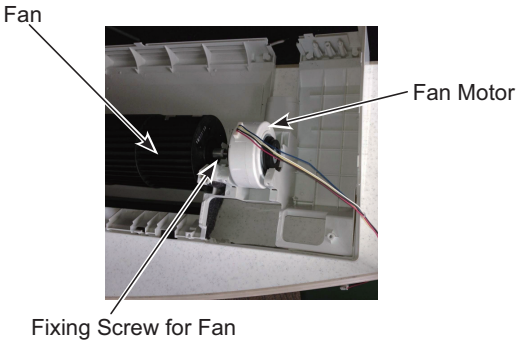




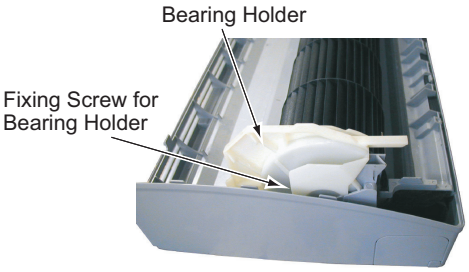
◆ For RPK-(2.0-4.0)FSN(H)3M

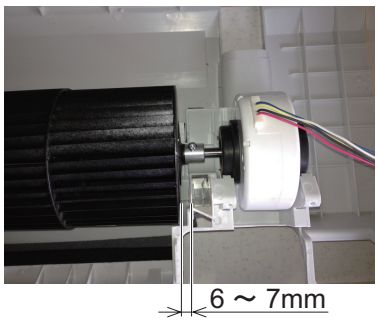
1 Remove the heat exchanger according to the “Removing Heat Exchanger” chapter.
2 Remove 2 screws fixing the motor clamp. As lifting up the motor clamp in the direction of the arrow (A), pull it out in the direction of the arrow (B).
3 Then Loosen 1 screw fixing the fan and the motor shaft.

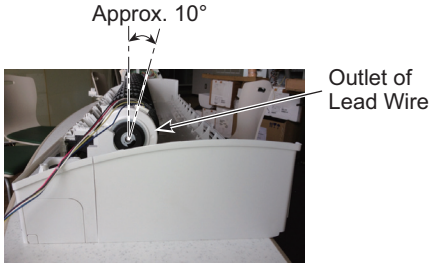




4 Remove 1 screw fixing the bearing holder and remove the bearing holder.
5 Hold the fan with hands and lift the bearing side up slightly. Then pull out the fan to the left to remove the fan and the motor.
6 When mounting the fan motor and fan, mount them in the reverse procedure. The fan shall be mounted 6~7mm away from the unit body.
7 The outlet of the lead wire for the fan motor shall be at the cabinet side and the lead wire shall be pulled out as shown in the figure below.



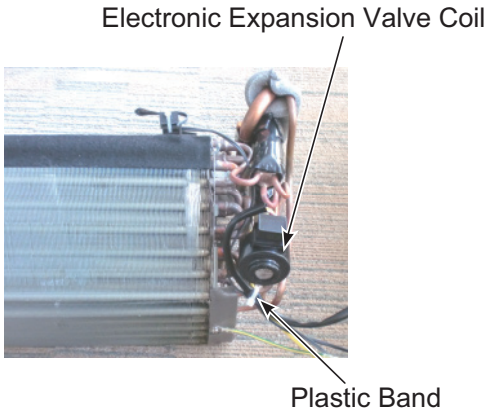




10.9.13 Removing Electronic Expansion Valve Coi

◆ For RPK-(0.8-1.5)FSN(H)3M

1 Remove the plastic band clamping wiring for the electronic expansion valve.



2 Rotate the expansion valve coil in the direction of the arrow (A) shown in the figure below. After releasing the detents for the expansion valve coil from the projection portions of the expansion valve body, pull up the coil frontward to remove it.

NOTE

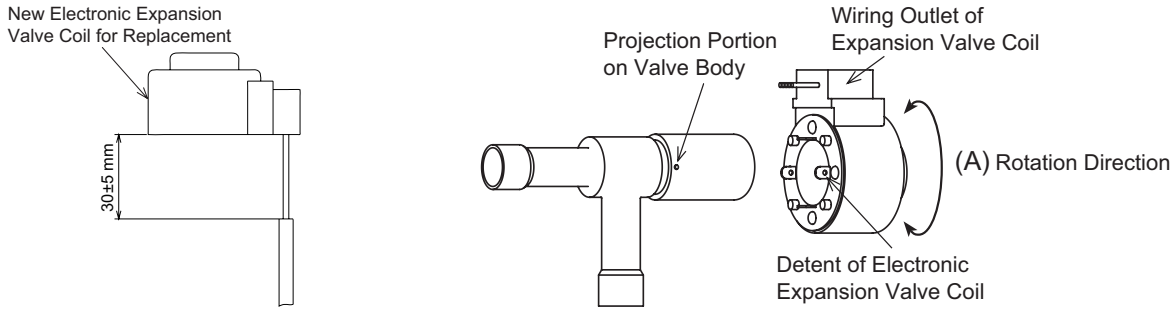
Take care not to twist the piping.

3 Insert the new expansion valve coil for replacement into the expansion valve body. Fit the projection portions into the detents with the wiring outlet facing up.

NOTE

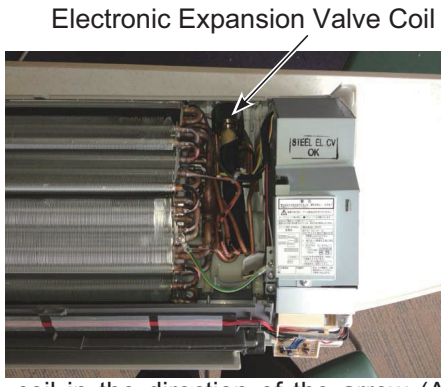
- *The detents are located 90º apart in a circle and the projections are located 180º apart in a circle.*
- *Fit the projection portions into the detents. If inserting the coil incorrectly, it may cause malfunction of the expansion valve coil.*

4 After the work, clamp the wirings for the expansion valve, the freeze protection thermistor, gas pipe thermistor and inlet air thermistor with one (1) plastic band.



◆ **For RPK-(2.0-4.0)FSN(H)3M**

(1) The rear pipe for the heat exchanger, the electronic expansion valve, and the piping at the inlet/outlet of the electronic expansion valve are protected with butyl sheets. Remove butyl sheets covering the piping, the expansion valve coil and the expansion valve body .



(2) Rotate the expansion valve coil in the direction of the arrow (A) shown in the figure below. After releasing the detents for the expansion valve coil from the projection portions of the expansion valve body, pull up the coil to remove it.

NOTE:

Take care not to twist the piping.

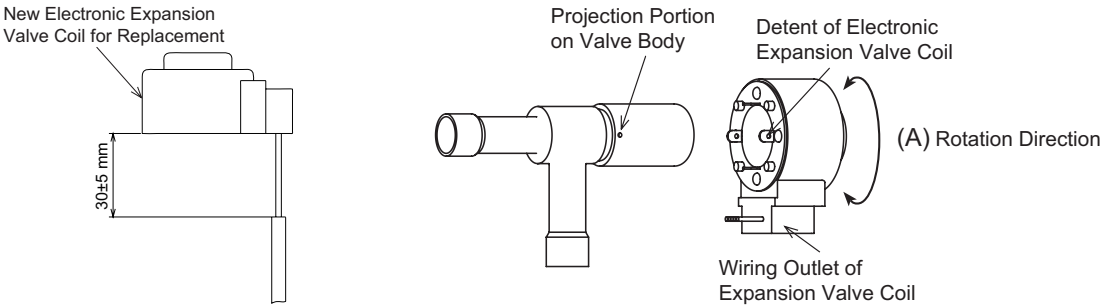
(3) Insert the new expansion valve coil for replacement into the expansion valve body. Fit the projection portions into the detents with the wiring outlet facing down.

NOTE:

The detents are located 90º apart in a circle and the projections are located 180º apart in a circle.

Fit the projection portions into the detents. If inserting the coil incorrectly, it may cause malfunction of the expansion valve coil.

(4) After the work, protect the expansion valve coil with butyl sheets and mount the heat exchanger in the reverse procedure.



10.9.14 Removing Horizontal Louver

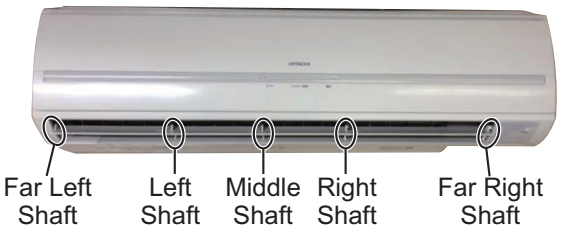
◆ **For RPK-(0.8-1.5)FSN(H)3M**

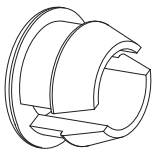
Do not remove the horizontal louver when removing the drain pan. Removing the horizontal louver will result in component failures.

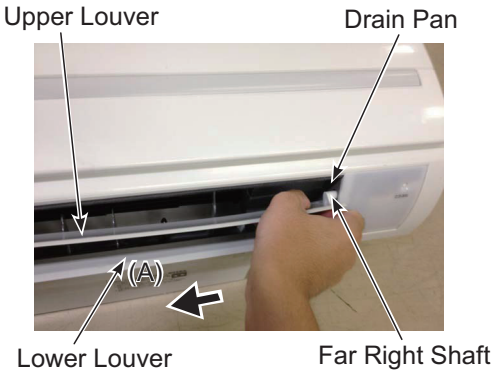
◆ **For RPK-(2.0-4.0)FSN(H)3M**

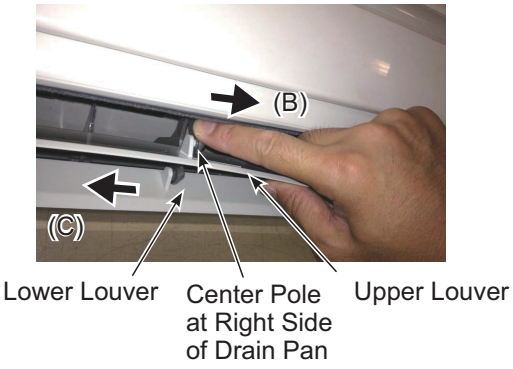
Do not lose the bearings for each shaft at the right, middle, left and far left.

1 Open the upper and lower horizontal louver slightly.
2 Slightly bend the upper horizontal louver and pull it in the direction of the arrow (A) to remove the shaft at the far right from the drain pan.
3 As slightly bending the center pole at the right side of the drain pan in the direction of the arrow (B), pull the upper horizontal louver in the direction of the arrow (C) to remove the shaft at the right from the drain pan.

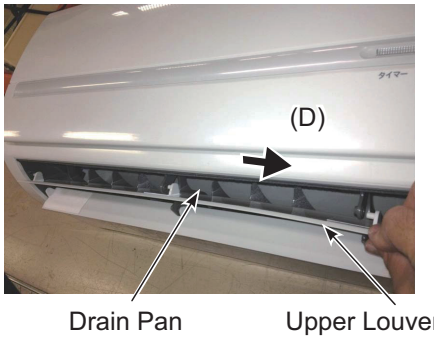








4 Pull out the upper horizontal louver in the direction of the arrow (D) to remove it.



5 Remove the lower horizontal louver in the same procedure as the upper horizontal louver.
6 When mounting the horizontal louvers, mount the louvers in the reverse procedure.

NOTE

When mounting the horizontal louvers, insert the D-cut portions at the far right shafts of the louvers into the AS Motor shafts.

10.10 RPF(I)- (1.0-2.5)

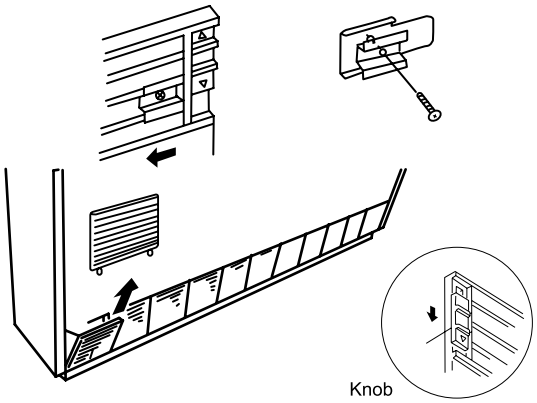
10.10.1 Removal of the air inlet grille

RPF-(1.0-2.5)FSN2E

Loosen the screws on the securing plate of the right part of the grille then remove the plates.

Press the button on both sides of the grille in the direction indicated by the arrow. The grille can be opened at a 30° angle.

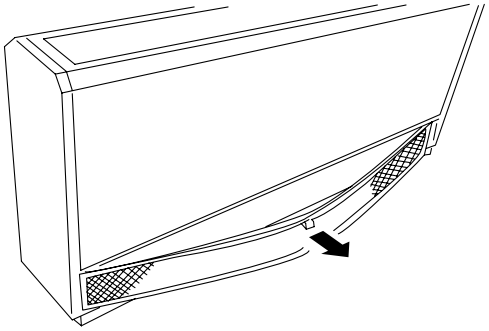
Remove the air inlet grille from the hinges.



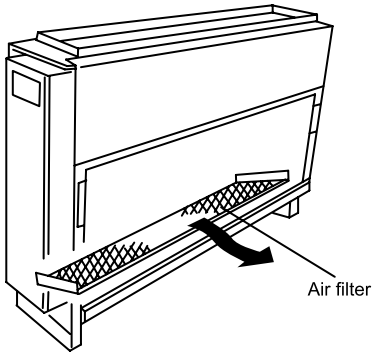
10.10.2 Removal of the air filter

RPF-(1.0-2.5)FSN2E

The air filter is located inside the air inlet grille. Remove the air inlet grilles as indicated in section Removal of the air inlet grille.



Remove the filter by pulling the filter button.



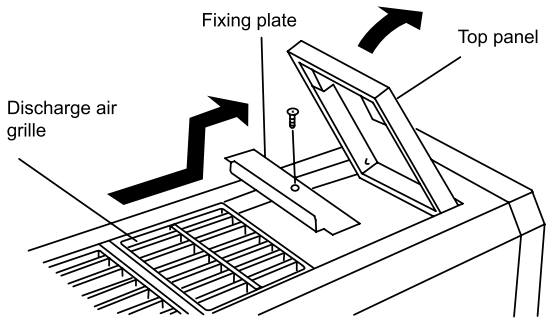
10.10.3 Removal of the air outlet grille

RPF-(1.0-2.5)FSN2E

Remove the screw holding the securing plate.

Open the upper panel so that it is vertical.

Slide and remove the air outlet grille.



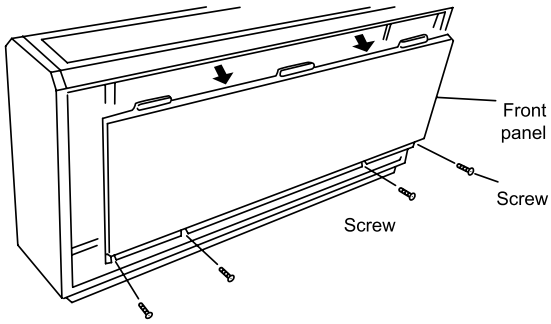
10.10.4 Removal of the front panel

Remove the central panel air filter in line with the instructions given in chapter Removal of the air filter.

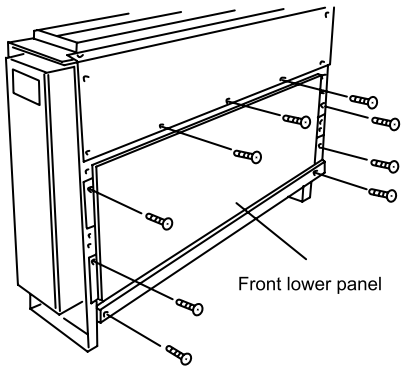
Remove the screws from the lower part of the front panel.

NOTE

- ***RPF-(1.0-2.5)FSN2E: 4 screws.***
- ***RPFI -1.0FSN2E: 9 screws.***
- ***RPFI -1.5FSN2E: 10 screws.***



Remove the 11 set screws and remove the front panel.



10.10.5 Removal of the fan motor

Remove the air inlet grille as indicated in chapter Removal of the air inlet grille.

Remove the air filter as indicated in section Removal of the air filter.

Remove the four set screws from the fan motor assembly plate and remove it.

Disconnect the wiring from the fan motor connector. Remove the wiring board and the connector.

Remove the cover by pressing the four attachment points inwards.

Loosen the bolts using a wrench.

Remove the securing plate.

Remove the fan motor by sliding it backwards.

NOTE

Be careful when releasing the fan motor, as it could fall.

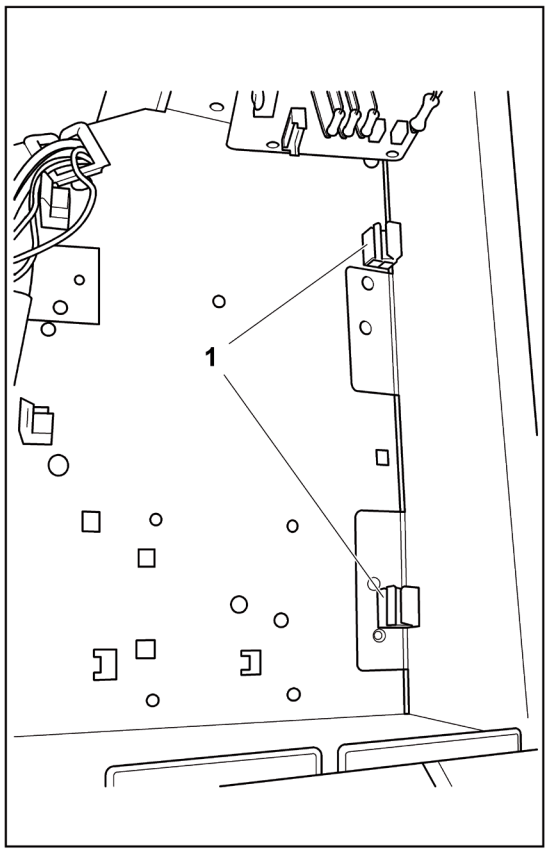
10.10.6 Removal of the printed circuit board (PCB)

Remove the air inlet grille as indicated in section Removal of the air inlet grille.

Remove the air filter as indicated in section Removal of the air filter.

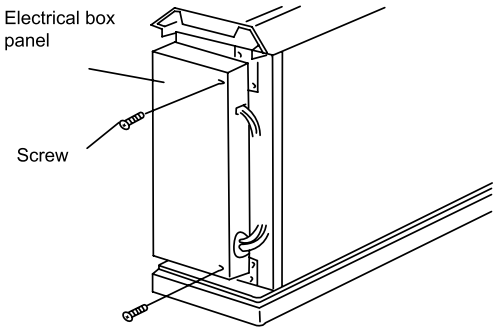
Remove the front panel as indicated in section Removal of the front panel.

Remove the side panel, removing the 3 set screws and pulling the panel downwards.

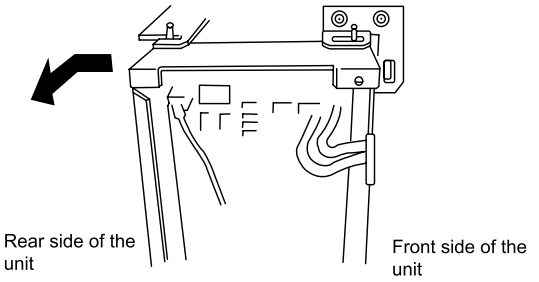


Remove the panel from the electrical box after removing the four set screws.

Remove the 2 set screws from the electrical box and release the attachment from the top of the box. Turn the electrical box at a 90° angle.



Press the four attachment points of the PCB using long-tipped pliers and placing a finger next to the hole in the PCB before removing the PCB.



CAUTION

- ***Do not touch the electrical components of the PCB.***
- ***Do not apply force to the PCB, as this could damage it.***
- ***Pay special attention to the position of the connectors on the PCB. An incorrect position during installation may damage the PCB.***

10.10.7 Removal of the thermistors from the liquid and gas piping

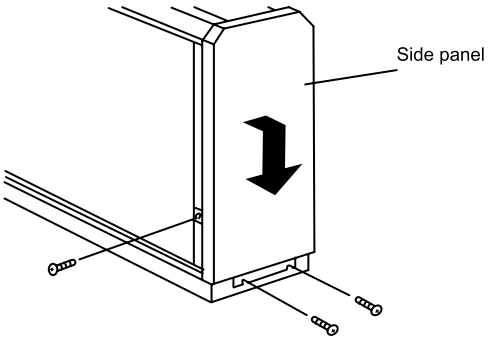
Remove the air inlet grille as indicated in section Removal of the air inlet grille.

Remove the air filter as indicated in section Removal of the air filter.

Remove the front panel as indicated in section Removal of the front panel.

Remove the side panel, removing the 3 set screws and pulling the panel downwards.

Disconnect the wiring from the thermistor and remove the thermistor.



10.11 KPI

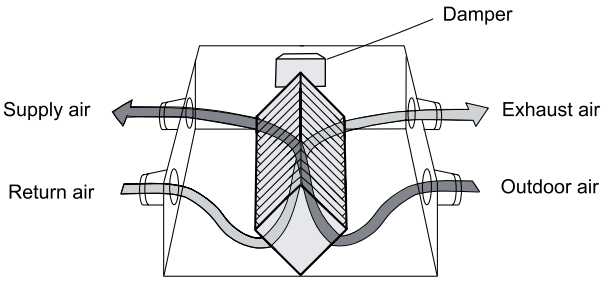
10.11.1 System description

An example of the system is shown below. Make sure the system has been checked by a HITACHI distributor.

Exchange mode

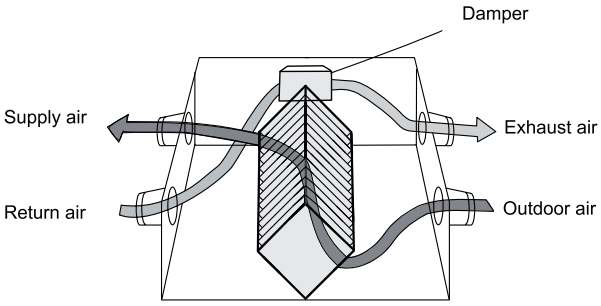
The air returning from the indoor part passes through the total heat exchanger unit and is expelled outdoors.

The outdoor air is supplied through the total heat exchanger.



Ventilation bypass mode

The air from indoors is expelled without heat exchange.



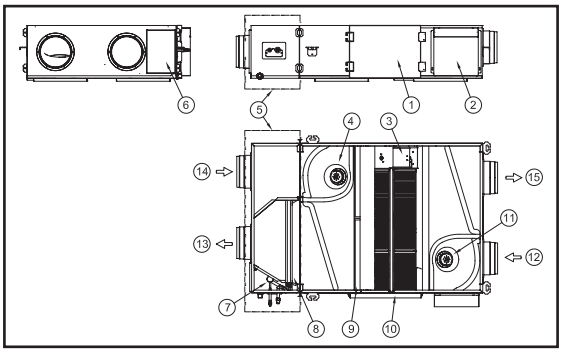
Automatic selection mode

(Factory-set). The operating mode is selected automatically according to the temperature conditions (outdoor, indoor and set).

10.11.2 Structure and part names

KPI-(252-2002)(E/H)3E and KPI-(502-1002)X3E

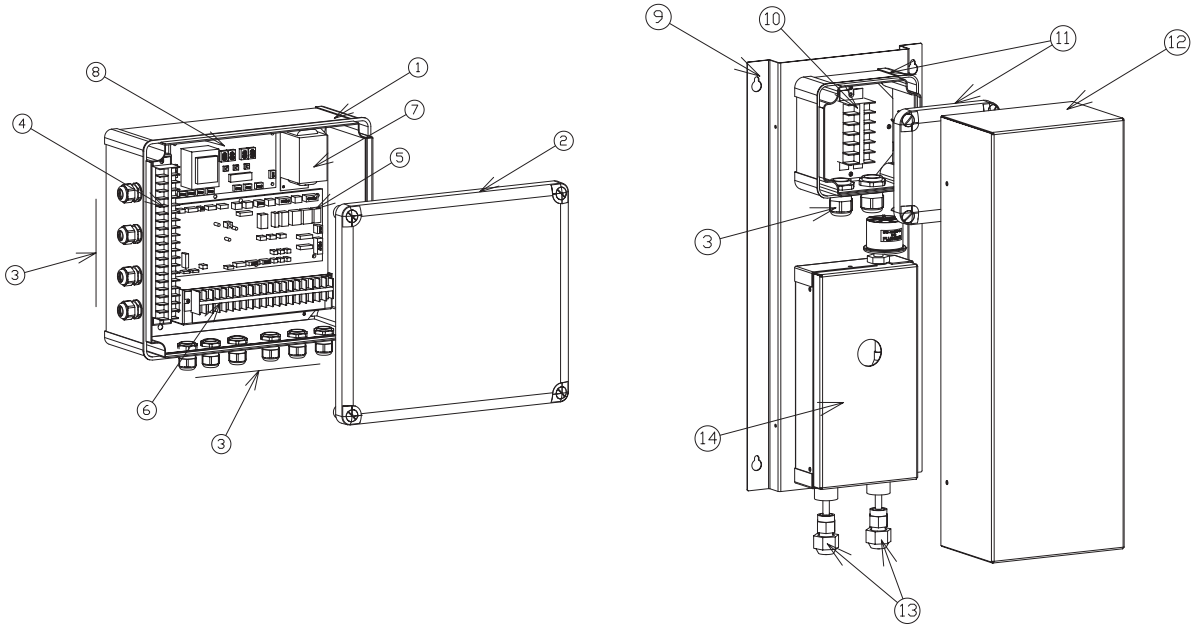
Nº	Part
1	HEX/Filters Service Cover
2	Electrical Box
3	Damper
4	Return air fan motor
5	Active module (only KPI-(502-1002)X3E)
6	Evaporator service cover (only KPI-(502-1002)X3E)
7	Expansion Valve (only KPI-(502-1002)X3E)
8	Evaporator (only KPI-(502-1002)X3E)
9	High efficiency filter (optional)
10	Heat exchanger
11	Supply air fan motor
12	OA - Outdoor Air
13	SA - Supply Air
14	RA - Return Air
15	EA - Exhaust Fan



10.12 DX-Interface

10.12.1 Structure and part names

DX-Interface EXV-(2.0-10.0)E1



Nº	Name	Nº	Name
1	Control box	8	PCB2
2	Control box cover	9	Expansion valve box
3	Cable gland	10	Terminal board 3
4	Terminal board 1	11	Terminal board box and cover
5	PCB1	12	Expansion valve box cover
6	Terminal board 2	13	Refrigerant connections
7	Transformer	14	Expansion valve device

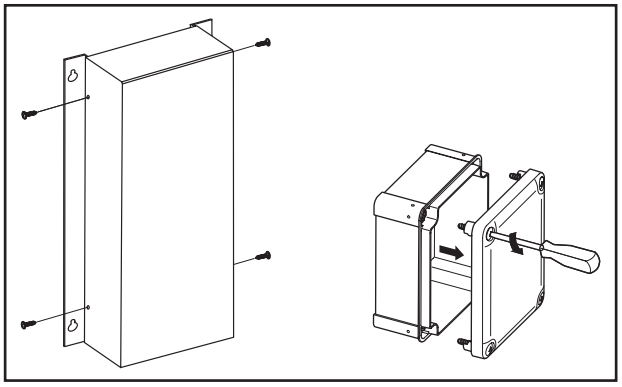
10.12.2 Removal of the electrical components

◆ **Control box**

Remove the control box cover unscrewing the 4 screws.

◆ **Expansion valve box**

Remove the expansion valve box cover unscrewing the 4 screws. Remove the terminal box like the control box cover.



CAUTION

Handle the support carefully to avoid damaging the electrical components.

CAUTION

- ***Do not touch the electrical components of the PCB.***
- ***Do not apply force to the PCB, as this could damage it.***
- ***Pay special attention to the position of the connectors on the PCB. An incorrect position during installation may damage the PCB.***

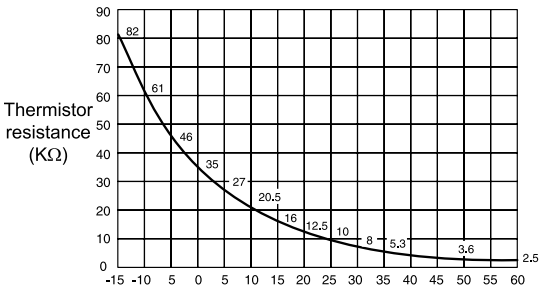
11. Electrical checks of the main parts

Index

11.1 Thermistor

Check that the thermistors are connected to the PCB inlet and, if not, connect them.

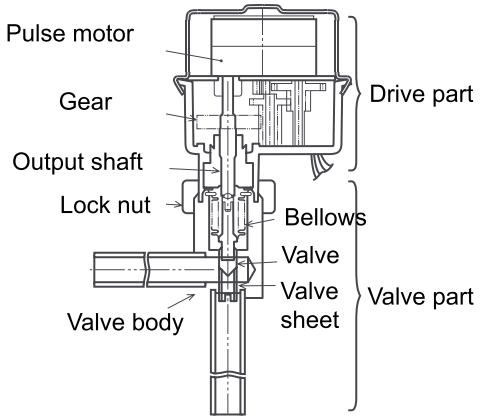
Use a multimeter to check that the thermistor resistances are between 240 Ω and 840 kΩ. Otherwise, replace any defective thermistors.



Thermistor characteristics

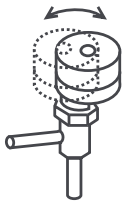
11.2 Electronic expansion valve

1. Check that the voltage of the valve ranges between 12Vdc±1.2V.
2. Use a multimeter to check the coil resistance (per phase). This ranges between 150 Ω±10% at an ambient temperature of 20°.
3. Check the number of pulses per second. This ranges between 100Ω ± 250 pulses per second (the width between pulses is greater than 3 mm) on activating phase 2.
4. Check that the valve flow is reversible.
5. When the valve is fully open and in heating process, check that the temperature of the liquid in the piping increases. If not, this indicates a fault.
6. When the valve is slightly open or fully open, check that the temperature of the freeze protection thermistor is higher than the suction temperature. If not, this indicates a fault.



Adjustment of direction is not required.

(However, pay attention not to touch the pipes or the drain pan.)



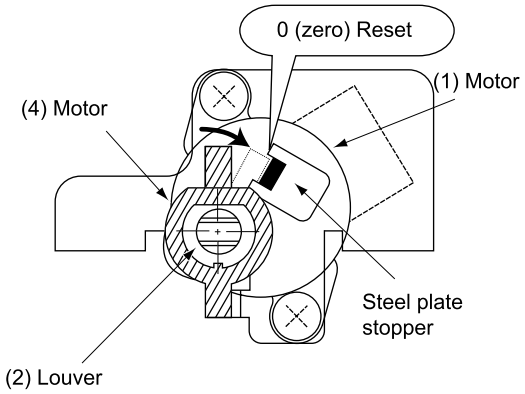
Direction of drive part

11.3 Automatic louver mechanism

11.3.1 RCI(M) indoor units

Stop the automatic louver:

1. Press AUTO LOUVER on the remote control while the automatic louver is operating.
2. The AS-type stop (2) touches the end of the steel plate and the louver returns to position 0.
3. The motor (1) power supply switches off when the louver is at the set position.
4. The louver stops at the set position.



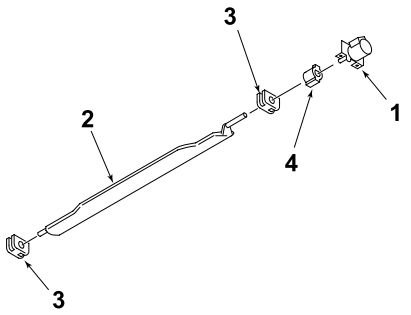
Remove the optional air panel.

Remove the automatic louver cover and motor.

Check for dust, dirt, damp and cracks on the parts.

Check the joints and meshing between the parts:

Number	Part name
1	Motor
2	Louver
3	Bushing
4	Stop



Check that the motor connectors are correctly connected to the power supply.

Check that the motor has a power supply of 12 V.

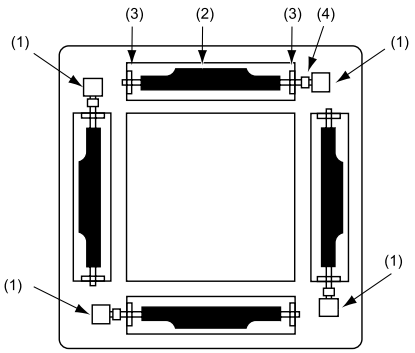
Start the panels.

Press LOUVER to start the louver movement.

Check the meshing of the louver parts and that the louver movement is correct.

Fit the automatic louver cover and motor.

Fit the optional air panel.



11.3.2 RCD indoor units

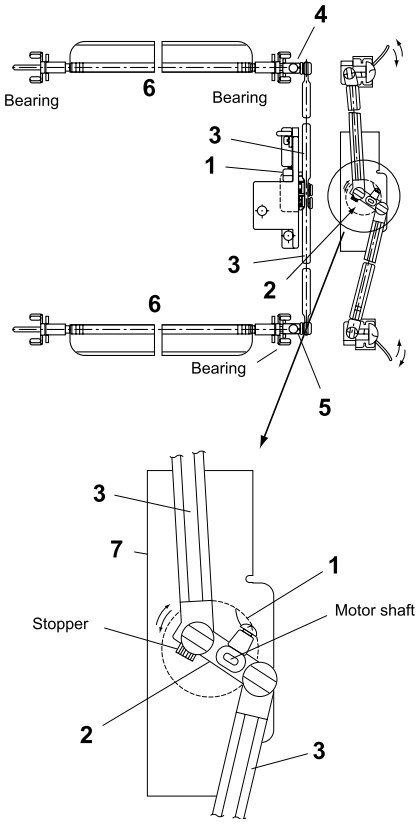
Stop the automatic louver:

1 Press AUTO LOUVER on the remote control while the automatic louver is operating.
2 The crank (2) touches the end of the motor securing plate (7) and the louver returns to position 0.
3 The motor (1) power supply switches off when the louver is at the set position.
4 The louver (6) stops at the set position.

Remove the optional air panel.

Remove the automatic louver cover and motor.

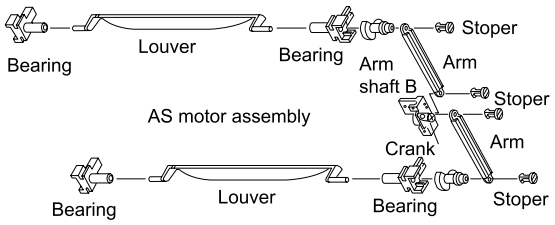
Check for dust, dirt, damp and cracks on the parts.



Number	Part name
1	Motor
2	Crank
3	Arm
4	Shaft A
5	Shaft B
6	Louver
7	Motor securing plate

Check the meshing and the joints between the parts:

1 Motor shaft and crank, separated by the motor securing plate.
2 Crank and arms.
3 Arms and shafts.
4 Shafts and louver shaft.
5 Bushings and louver.



Check that the motor connectors are correctly connected to the power supply.

Check that the motor has a power supply of

Start the panels.

Press to start the louver movement.

Check the meshing of the louver parts and that the louver movement is correct.

Fit the automatic louver cover and motor.

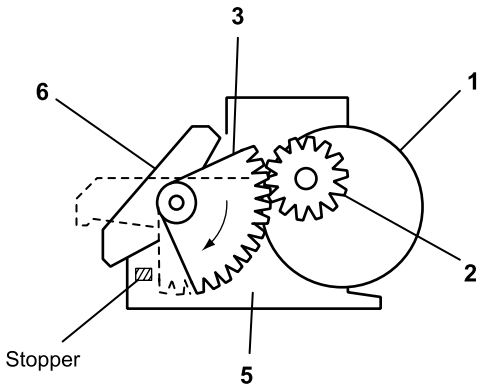
Fit the optional air panel.

11.3.3 RPC indoor units

Stop the automatic louver:

1 Press AUTO LOUVER on the remote control while the automatic louver is operating.
2 The gear (3) touches the end of the cover (6) and the louver returns to position 0.
3 The motor (1) power supply switches off when the louver is at the set position.
4 The louver (6) stops at the set position.

Number	Part name
1	Motor
2	Pinion
3	Gear
4	Bushing
5	Cover
6	Louver



Remove the optional air panel.

Remove the automatic louver cover and motor.

Check for dust, dirt, damp and cracks on the parts.

Check the meshing and the joints between the parts:

1 Motor shaft and pinion.
2 Pinion and gear.
3 Gear and louver shaft.
4 Bushings and louver.

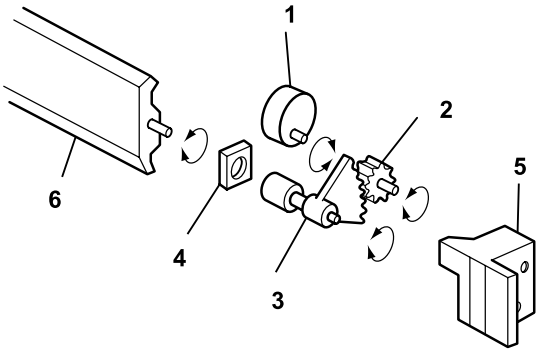
Check that the motor connectors are correctly connected to the power supply.

Check that the motor has a power supply of

Start the panels.

Press to start the louver movement.

Check the meshing of the louver parts and that the louver movement is correct.



Fit the automatic louver cover and motor.

Fit the optional air panel.

HITACHI
Inspire the Next

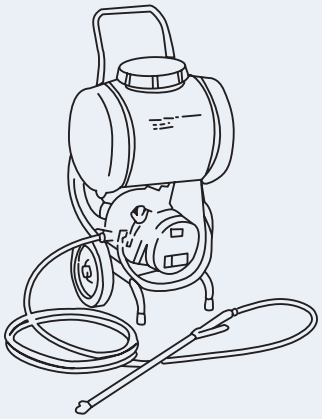
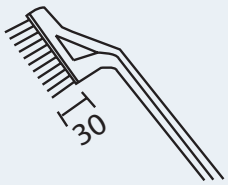
12. Maintenance notes

Index

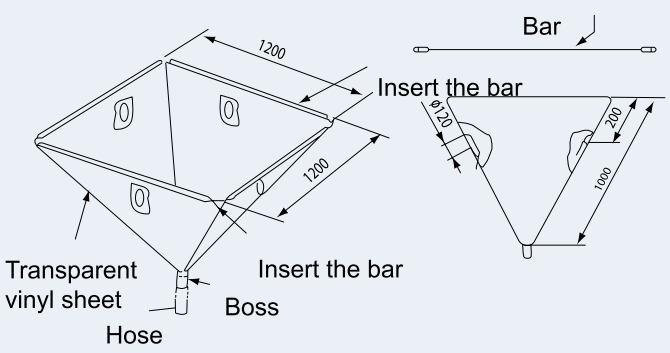
12.1 Regular equipment maintenance

12.1.1 Necessary tools, equipment and consumable for regular maintenance

◆ **Tools**

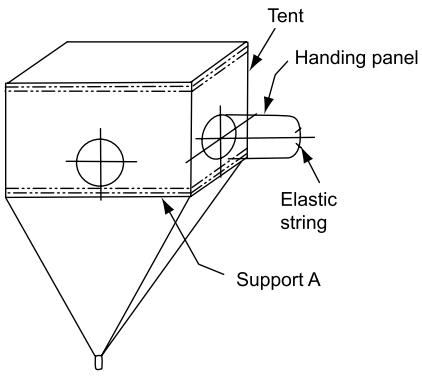
Tool	Remarks
Water pump for cleaning 	Use of a water pump with a tank is recommended
Cleaning water tank	Approx. 18 litres
Nozzle	
Brush 	Non-metal, with a brush length of 25 to 35 mm
Bucket	Capacity 2 to 5 litres
Philips screwdriver	1
Tweezers	1
Adjustable wrench	1
Megohmmeter	Measured voltage of up to 500 V
Gun	Applying cleaning water
Rope	4 ropes measuring 1 m
Vinyl sheeting	Thickness of 0.5 mm
Gloves	
Water pan pipe	Select a pipe in line with the installation requirements
Cleaning product	Use a neutral cleaning product

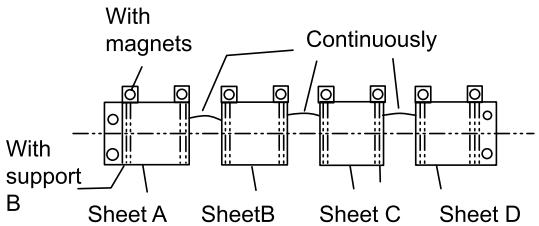
Equipment

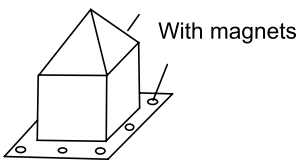
Equipment	Remarks
Cleaning water manifold  Inner side of Ø120 hole should be covered with felt sheet in order to insert the spray nozzle	Depending on the type of unit to be cleaned, use a duct-type, built-in 2-way type, wall type or ceiling type manifold. The lower part of the Ø120 hole must be covered with a piece of felt to insert the nozzle of the gun
Cleaning water manifold kit	Built-in 4-way

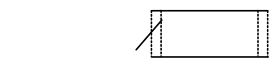
Cleaning water manifold kit

Parts	Material	Remarks	Quantity
Container with access panel	Vinyl chloride sheeting	1 mm thick, with a 0.3 mm access panel	1
Bracket A	Stainless steel		8
Sheeting A	Vinyl chloride sheeting	1 mm in thickness, with support B and magnet	1
Sheeting B	Vinyl chloride sheeting	1 mm in thickness, with support B and magnet	1
Sheeting C	Vinyl chloride sheeting	1 mm in thickness, with support B and magnet	1
Sheeting D	Vinyl chloride sheeting	1 mm in thickness, with support B and magnet	1
Motor panel	Vinyl chloride sheeting	1 mm in thickness with magnet	1
Motor flange	Vinyl chloride sheeting	1 mm in thickness, adhesive tape	1
Connection panel	Vinyl chloride sheeting		1
Gloves	Rubber		1
Sling		1 m	4









Consumables

Consumable	Remarks
Cleaning product	Neutral soap
Adhesive tape	To secure the vinyl sheeting so that the room is protected from the cleaning water
Piece of felt	Diameter of 120 mm

12.1.2 Indoor cleaning

◆ Cleaning the built-in 4-way indoor unit RCI(M)

Preliminary procedure.

Place a vinyl sheet on the floor to protect the furniture and other items from the cleaning water before starting this job.

Remove the optional air panel as indicated in section Removal of the optional air panel.

Remove the electrical box after opening the corresponding panel and then disconnect the connectors located between the indoor and outdoor units and other connectors, as indicated in sections Removal of the electrical box cover and Removal of the electrical box.

Remove the bellmouth and fan as indicated in section Removal of the fan duct and the fan.

Remove the drain pan as indicated in sections Removal of the drain pan and Removal of the drain pan. Also carry out the following tasks:

1 Remove the drain pan after emptying it of water.
2 Empty the drain pan of water by removing the rubber plug. Make sure the water flows easily through the hole by inserting a pencil into it.
3 Once the drain pan has been removed, check that there is no water in the drainage at the bottom of the pan.
4 Clean and dry the pan before removing it. Handle the pan carefully.

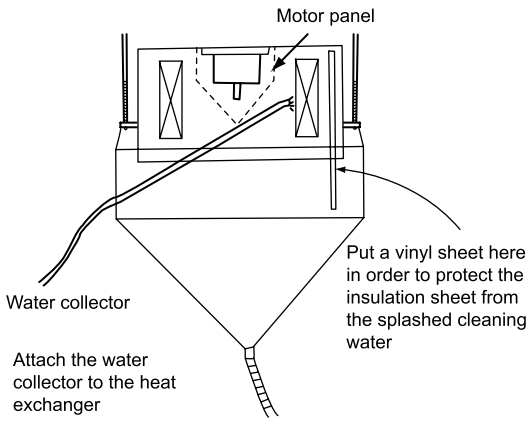
Remove the float switch as indicated in sections Removal of the float switch and Removal of the float switch.

Cleaning the indoor unit

NOTE

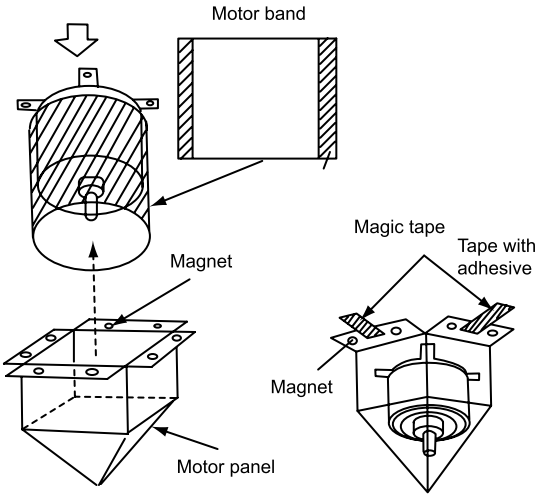
Wear gloves to avoid injuries caused by the heat exchanger fins.

Place a vinyl sheet around the heat exchanger to prevent the cleaning water from splashing the insulation surface and drain pump.



Secure the vinyl sheet to the side plate of the exchanger using adhesive tape and seal the gap between the vinyl sheets in the same manner.

Secure the motor panel using adhesive tape.



Clean the dust from the inner surface of the heat exchanger by brushing it downwards. Collect all of the dust in a bucket or a cardboard box.

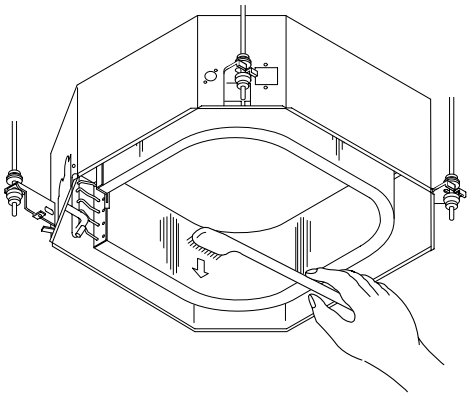
Hang the cleaning water manifold from the indoor unit.

Tie the rope to the suspension bolts of the indoor unit and drop downwards.

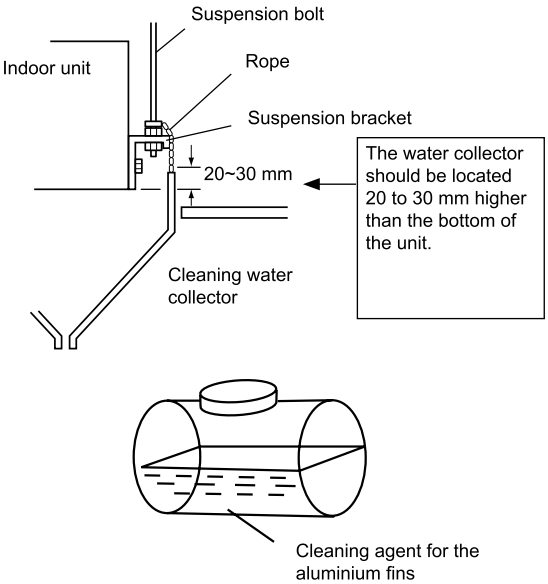
Insert the support bars into the holes in the water manifold.

Tie the rope to the support bar of the water manifold and hang the manifold.

Connect a pipe to the boss and place the end inside the pipe.

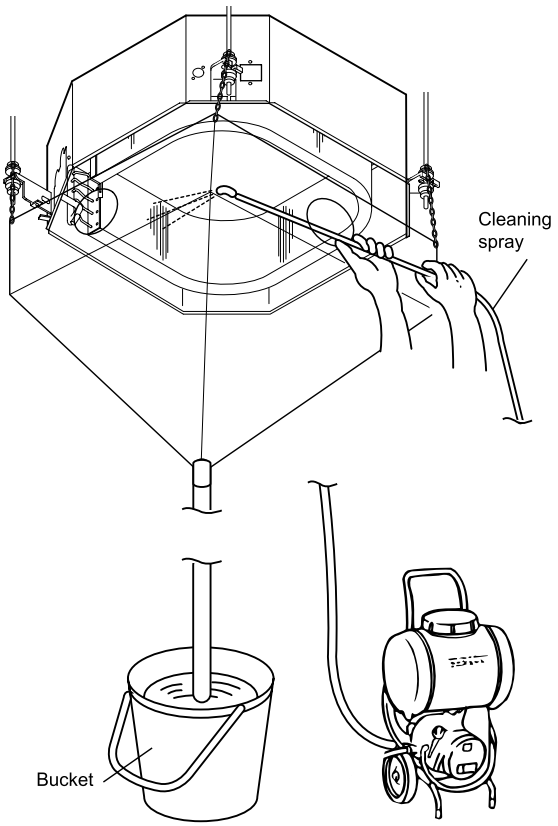


Pour approximately 15 litres of cleaning product for the aluminium fins into a supply tank.



NOTE

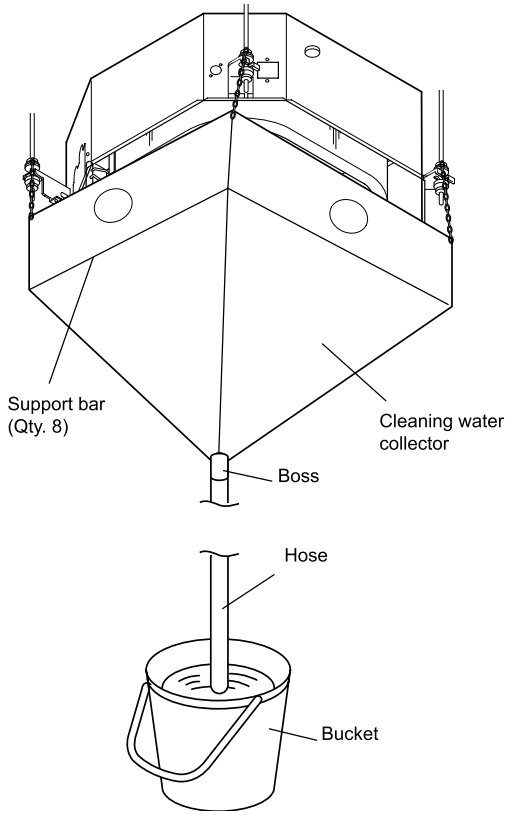
1 ***Set the pressure of the water pump so as not to damage the funs.***
2 ***Any cleaning water left behind will rust the fins. Set the pump pressure to between 2.5 and 5 kg/cm^3 to protect the fins.***



Insert the nozzle of the pressurised water gun into the hole in the cleaning water manifold. Start the water pump and clean the heat exchanger of any dust.

After cleaning, spray and remove all remains of water.

1 After cleaning, fit the drain pan by lowering the rope.
2 Dry the remains of any water on the indoor unit.
3 Check the insulation of the drain pump using a megohmmeter. Check that the insulation is above 1 MΩ when 500V are applied.
4 Connect the wiring.
5 Perform the neutralisation treatment after cleaning.



◆ Cleaning the built-in 2-way indoor unit (RCD)

Preliminary procedure.

Place a vinyl sheet on the floor to protect the furniture and other items from the cleaning water before starting this job.

Remove the drain pan as indicated in section Removal of the drain pan. Also carry out the following tasks:

1 Remove the drain pan after emptying it of water.
2 Empty the drain pan of water by removing the rubber plug. Make sure the water flows easily through the hole by inserting a pencil into it.
3 Once the drain pan has been removed, check that there is no water in the drainage at the bottom of the pan.
4 Clean and dry the pan before removing it. Handle the pan carefully.

Remove the electrical box after opening the corresponding panel and then disconnect the connectors located between the indoor and outdoor units and other connectors, as indicated in section Removal of the electrical box.

Remove the float switch as indicated in section Removal of the float switch.

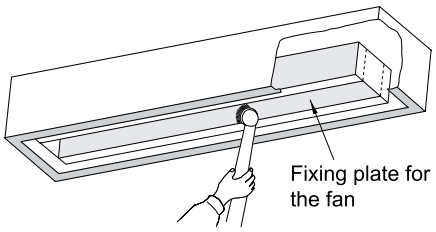
Remove the drainage mechanism as indicated in section Removal of the drain mechanism.

Cleaning the indoor unit

Clean the dust from the inner surface of the heat exchanger by brushing it downwards. Collect all of the dust in a bucket or a cardboard box.

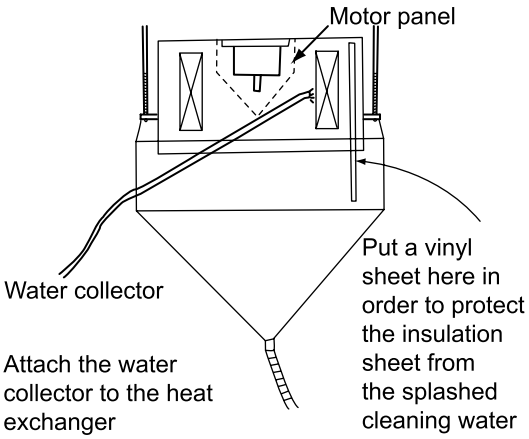
NOTE

Wear gloves to avoid injuries caused by the heat exchanger fins.



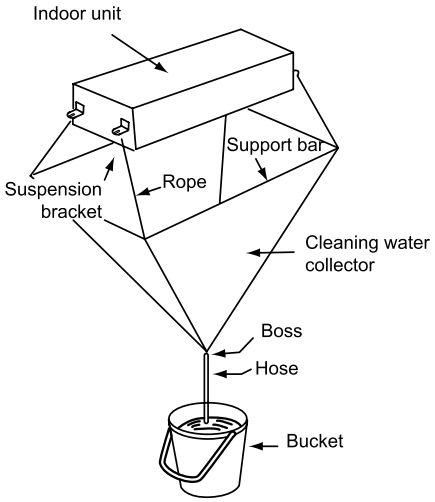
Place a vinyl sheet around the heat exchanger to prevent the cleaning water from splashing the insulation surface and drain pump. Secure the vinyl sheet to the side plate of the exchanger using adhesive tape and seal the gap between the vinyl sheets in the same manner.

Secure the motor panel using adhesive tape.



Hang the cleaning water manifold from the indoor unit.

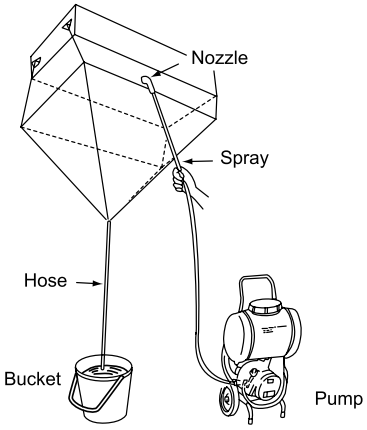
1 Tie the rope to the suspension bolts of the indoor unit and drop downwards.
2 Insert the support bars into the holes in the water manifold.
3 Tie the rope to the support bar of the water manifold and hang the manifold.
4 Connect a pipe to the boss and place the end inside the pipe.



Pour approximately 15 litres of cleaning product for the aluminium fins into a supply tank.

Insert the nozzle of the pressurised water gun into the hole in the cleaning water manifold. Start the water pump and clean the heat exchanger of any dust.

After cleaning, spray and remove all remains of water.



NOTE

1 ***Set the pressure of the water pump so as not to damage the funs.***
2 ***Any cleaning water left behind will rust the fins. Set the pump pressure to between 2.5 and 5 kg/cm^3 to protect the fins.***

After cleaning, fit the drain pan by lowering the rope.

Dry the remains of any water on the indoor unit.

Check the insulation of the drain pump using a megohmmeter. Check that the insulation is above 1 MΩ when 500V are applied.

Connect the wiring.

Perform the neutralisation treatment after cleaning.

◆ Cleaning of the wall-type indoor unit (RPK)

Preliminary procedure.

Place a vinyl sheet on the floor to protect the furniture and other items from the cleaning water before starting this job.

Remove each part as indicated in the “Wall type” section.

Remove the front panel as indicated in section Removal of the front panel.

Remove the electrical box after opening the corresponding panel and then disconnect the connectors located between the indoor and outdoor units and other connectors, as indicated in section Remove the electrical box panel.

Remove the drain pan. Also carry out the following tasks:

1 Remove the drain pan after emptying it of water.
2 Empty the drain pan of water by removing the rubber plug. Make sure the water flows easily through the hole by inserting a pencil into it.

3 Once the drain pan has been removed, check that there is no water in the drainage at the bottom of the pan.
4 Clean and dry the pan before removing it. Handle the pan carefully.

Remove the heat exchanger as indicated in sections Removal of the heat exchanger and Removal of the fan motor.

Cleaning the indoor unit

NOTE

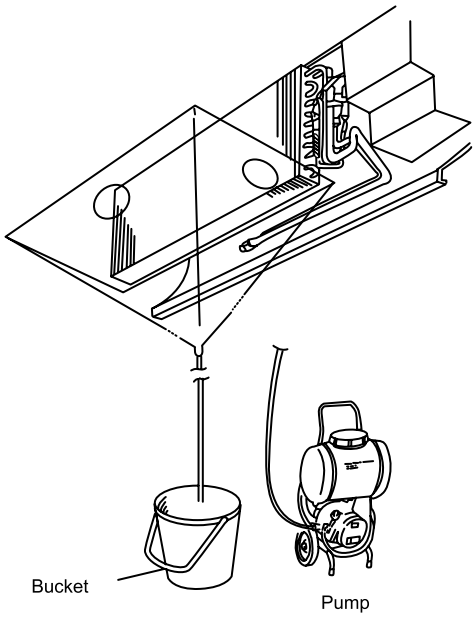
Wear gloves to avoid injuries caused by the heat exchanger fins.

Clean the inner surface of dust. Collect all of the dust in a bucket or a cardboard box.
Place a vinyl sheet around the electrical components to protect them from splashed cleaning water.

Secure the motor panel using adhesive tape.

Hang the cleaning water manifold from the indoor unit.

1 Tie the rope to the suspension bolts of the indoor unit and drop downwards.
2 Insert the support bars into the holes in the water manifold.
3 Tie the rope to the support bar of the water manifold and hang the manifold.
4 Connect a pipe to the boss and place the end inside the pipe.



Pour approximately 15 litres of cleaning product for the aluminium fins into a supply tank.

Insert the nozzle of the pressurised water gun into the hole in the cleaning water manifold. Start the water pump and clean the heat exchanger of any dust.

After cleaning, spray and remove all remains of water.

NOTE

1 ***Set the pressure of the water pump so as not to damage the funs.***
2 ***Any cleaning water left behind will rust the fins. Set the pump pressure to between 2.5 and 5 kg/cm^3 to protect the fins.***

Dry the remains of any water on the indoor unit.

Check the insulation of the drain pump using a megohmmeter. Check that the insulation is above 1 MΩ when 500V are applied.

Connect the wiring.

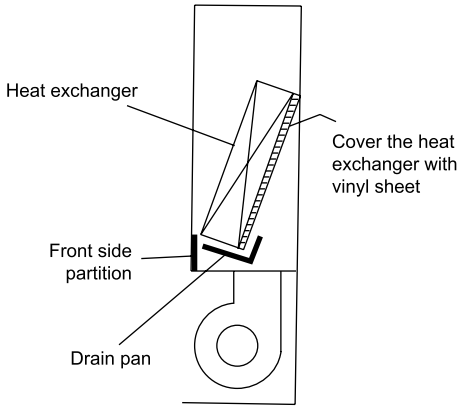
Perform the neutralisation treatment after cleaning.

After cleaning, fit the drain pan by lowering the rope.

Perform the neutralisation treatment after cleaning.

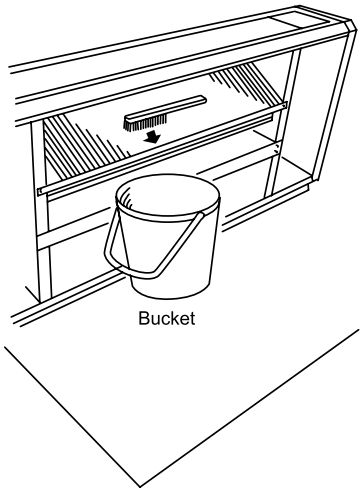
◆ Cleaning the floor console and floor concealed console indoor unit RPF(I)

Remove the front panel in line with the instructions given in chapter Removal of the front panel.



Remove any dust from the heat exchanger.

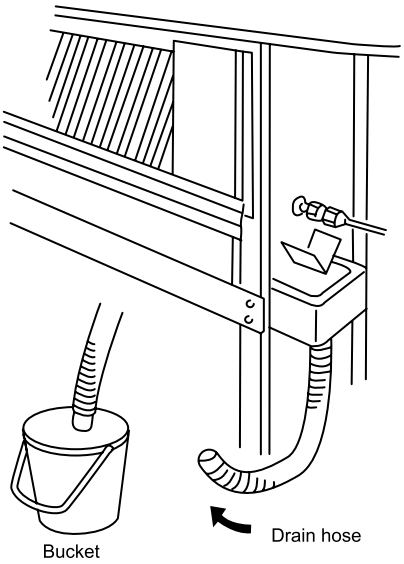
Remove the dust from the heat exchanger by brushing it in a downwards direction. Collect all of the dust in a bucket or a cardboard box.



Disconnect the drain pipe from the piping.

Cover the rear of the heat exchanger with a sheet of vinyl after removing the front partition and the drain pan. After covering the rear, refit the front partition and the drain pan.

Lift the drain pipe and place the end in a bucket.



◆ Cleaning of the ceiling-type indoor unit (RPC)

Preliminary procedure.

Place a vinyl sheet on the floor to protect the furniture from the cleaning water before starting this job.

Remove the side panels in line with the instructions given in chapter Removal of the side panel.

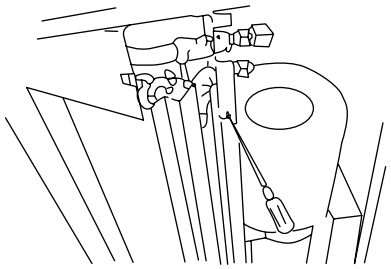
Remove the louver in line with the instructions given in chapter Removal of the air outlet grille.

Open the air inlet grille as indicated in chapter Removal of the air filter.

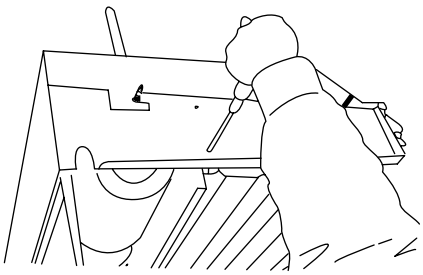
Remove the lower panel and drain pan in line with the instructions given in chapter Removal of the thermistors from the liquid and gas pipes.

Remove the partition plate after removing the set screws.

Remove the fan securing cover after removing the two screws located on the left and right of the partition.



Fit the drain pan and the lower panel in the opposite order of the instructions.



Cleaning the indoor unit

NOTE

Wear gloves to avoid injuries caused by the heat exchanger fins.

Place a vinyl sheet around the electrical components except the drain pan to protect them from splashed cleaning water.

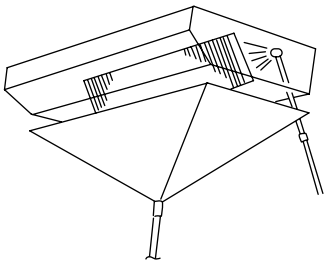
Secure the motor panel using adhesive tape.

Clean the dust from the inner surface of the heat exchanger by brushing it downwards. Collect all of the dust in a bucket or a cardboard box.

Hang the cleaning water manifold from the indoor unit.

Insert the nozzle of the pressurised water gun into the hole in the cleaning water manifold. Start the water pump and clean the heat exchanger of any dust.

After cleaning, spray and remove all remains of water.



NOTE

1 ***Set the pressure of the water pump so as not to damage the funs.***
2 ***Any cleaning water left behind will rust the fins. Set the pump pressure to between 2.5 and 5 kg/cm^3 to protect the fins.***

After cleaning, fit the drain pan by lowering the rope.

Dry the remains of any water on the indoor unit.

Check the insulation of the drain pump using a megohmmeter. Check that the insulation is above 1 MΩ when 500V are applied.

Perform the neutralisation treatment after cleaning.

◆ RPI(M) - Ducted indoor unit type

DANGER

Wear gloves to avoid injuries when handling components.

Work prior to cleaning

Turn off the power supply switches before starting maintenance work and fit the appropriate safety locks and warnings.

Wait 5 minutes after turning off the power supply switches.

Place a vinyl sheet on the floor to protect the furniture and other items from the cleaning water.

Remove the following components:

1 Side panel.
2 Discharge air grille.
3 Air filter.
4 Liquid and gas piping thermistors.
5 Fan motor.

Remove the set screws from the partition plate 2 and remove the plate.

Remove the set screws from the fan cover, located on the left and right of the partition. Then remove the fan cover.

Fit the drain pan and the lower panel.

Cover the components (except the drain pan) with a vinyl sheet to avoid splashing with cleaning water.

Use a brush to clean any dust from the interior surface of the heat exchanger and the fins. To do so, brush downwards and collect all of the dust in a bucket or cardboard box.

Spray cleaning water over the fins from the rear of the heat exchanger.

Follow the steps below to wash with clean water:

1 Set the water pump pressure to between 2.5 and 5 kg/cm^2 to protect the fins.
2 Start the water pump and wash the fins with clean water.

Work and checks after cleaning

1 Measure the drainage pump insulation using a megohmmeter, check that the insulation is over a 1 MΩ on applying 500 V.
2 Pour water into the drain pan to check that the water flows easily.
3 Remove the vinyl sheets.
4 Fit the fan cover and fit and tighten the cover securing screws.
5 Fit the partition plate and fit and tighten the plate securing screws.
6 Fit the following components:
   a. Fan motor.
   b. Liquid and gas piping thermistors.
   c. Air filter.
   d. Discharge air grille.
   e. Side panel.

NOTE

The cleaning product is neutral. However, after it has been used the cleaning water may no longer be neutral.

7 Collect the cleaning water and apply the neutralisation treatment once you have disposed of it.

12.1.3 Cleaning of KPI units

Filter maintenance

Preliminary procedures

Turn off all power supply switches before starting maintenance work.

Wait 5 minutes after stopping the unit before starting the cleaning procedure.

Do not start the system without the air filter to avoid blockages in the total heat exchanger.

DANGER

Wear gloves to avoid injuries when handling the filter.

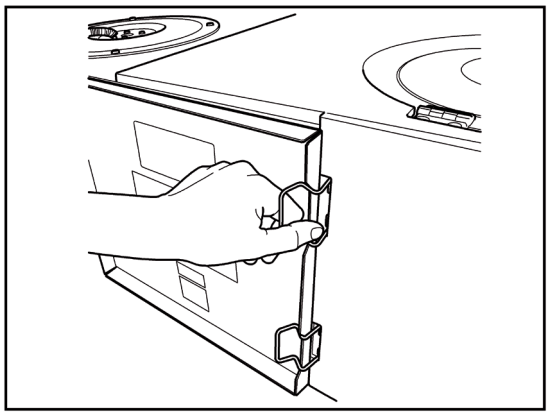
NOTE

- ***Clean the heat exchanger unit once or more every two years.***
- ***Clean the air filter more than once a year.***

KPI-(252-2002)(E/H)3E and KPI-(502-1002)X3E

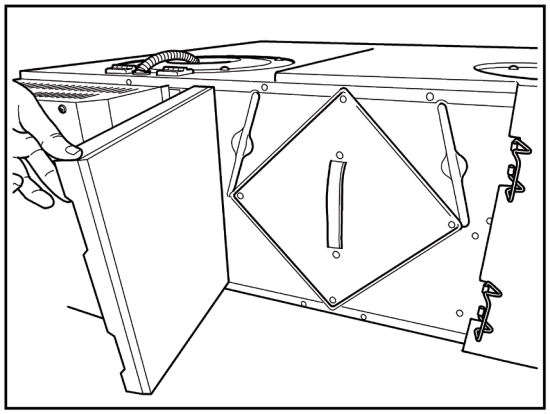
Pull the hinges back.

Open and remove the service cover.



Remove the air filters located at the bottom left and bottom right, close to the heat exchanger unit.

KPI-(252-2002)(E/H)3E example



Use a vacuum cleaner to suck up any dust.

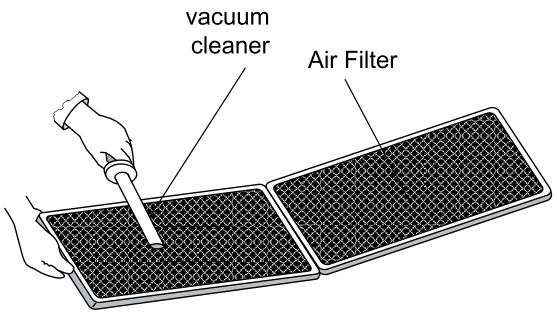
Dissolve a little neutral soap in cold or warm water to clean the dirt.

Place the filters in the soapy water to clean them.

Allow the filters to dry.

Fit the filter.

Close the service cover.



Cleaning energy recovery ventilation unit elements

NOTE

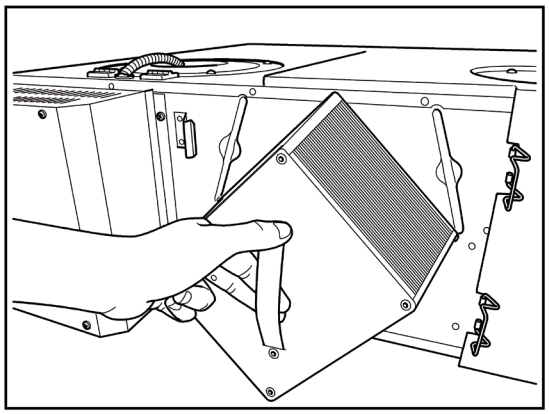
Clean the element once or more every two years to prevent the air flow and efficiency from dropping.

CAUTION

- ***Do not wash the element with water under any circumstances.***
- ***Do not use the hard nozzle on the vacuum cleaner, as this could damage the exposed parts of the heat exchanger.***

KPI-(252-2002)(E/H)3E and KPI-(502-1002)X3E

Hold onto the handle. Remove the two total heat exchanger elements from the main unit.



KPI-(252-2002)E3E and KPI-(502-1002)X3E

Use a vacuum cleaner to suck up any dust and dirt from the exposed surfaces of the total exchanger elements.

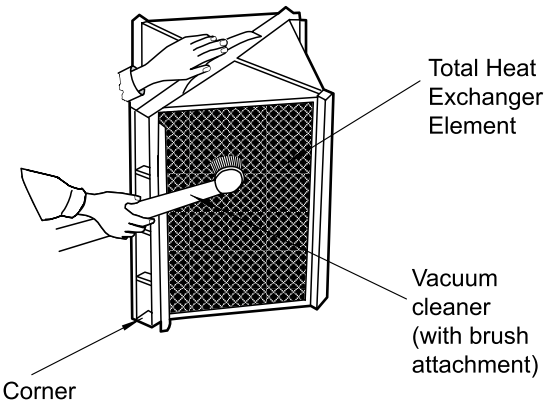
Fit a nozzle with a brush to a vacuum cleaner to carry out this task.

Clean the elements by brushing the exposed surfaces gently.

Fit the element.

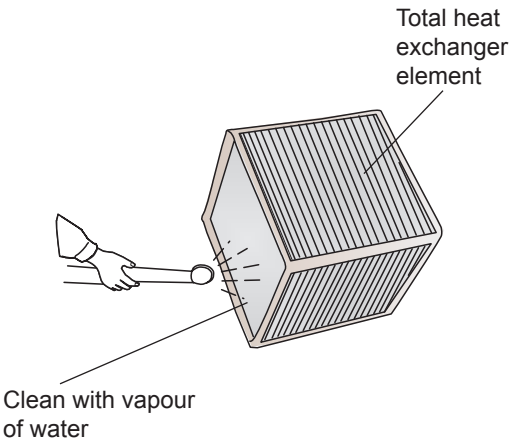
Fit the air filter.

Close the service cover.



KPI-(502-1002)H3E

Aluminium heat exchanger can be cleaned using vapour. Clean the exchager using stream.



12.1.4 Collection of refrigerant to replace the indoor unit

◆ Collection of refrigerant after replacing the indoor unit

1 Connect the gauge manifold to the gas and liquid stop valve.
2 Switch the power supply ON.
3 Enable pin 1 of DSW1 on the outdoor unit PCB for cooling operation. Close the liquid stop valve and collect the refrigerant.
4 Carry out the following procedures immediately when the side pressure drops and the gas stop valve indicates –0.01 MPa.

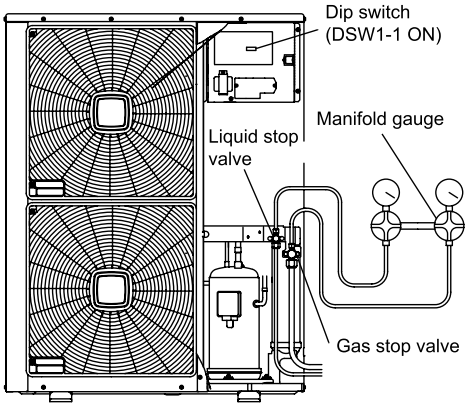
NOTE

Prevent the pressure from dropping below –0.01 MPa. If the pressure is less, the compressor may be faulty.

a. Close the gas stop valve.

b. Disable pin 1 of DSW1.

5 Switch off the power supply.



HITACHI
Inspire the Next

Hitachi Air Conditioning Products Europe, S.A.
Ronda Shimizu, 1 - Polig. Ind. Can Torrella
08233 Vacarisses (Barcelona) Spain

Hitachi certifies that our products have met EU consumer safety, health and environmental requirements.

Hitachi Air Conditioning Products Europe, S.A. is certified with:
ISO 9001 of AENOR, Spain for its Quality Management accordance with the standard
ISO 14001 of AENOR Spain for its Environmental Management systems accordance with the standard

Hitachi air conditioning products are manufactured according to:
ISO 9001 of JQA, Japan for its Quality Management accordance with the standard
ISO 14001 of JACO, Japan for its Environmental Management accordance with the standard

Hitachi air conditioning products are manufactured according to:
ISO 9001 of Malaysia, for its Quality Management accordance with the standard
ISO 14001 of Malaysia, for its Environmental Management systems accordance with the standard

HITACHI participates in the Eurovent Certification Programme; the certified data of certified models are listed in the Eurovent Certification Online Directory (www.eurovent-certification.com).

SMGB0077 rev.0 - 01/2013

Printed in Spain