HITACHI

# INDOOR UNITS SYSTEM FREE SERIES & COMPLEMENTARY SYSTEMS





## Service Manual

RCI - FSN4
RCIM - FSN4(E)
RCD - FSN3
RPC - FSN3(E)
RPI - FSN(3/4)(P)E(-f)
RPIM - FSN4E(-DU)
RPK - FSN(H)3M
RPF - FSN2E
RPFI - FSN2E
KPI - (E/X)4E
DX - Interface - EXV-E2
Econofresh - EF-456NE

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# 1. General information



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# 1.1 General information

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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 authorization 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.

| SYSTEM FREE<br>Line up of Indoor Units | Complementary systems |
|---|---|
| RCI-FSN4<br>RCIM-FSN4(E)<br>RCD-FSN3<br>RPC-FSN3<br>RPC-FSN3E<br>RPI-FSN(3/4)(P)E(-f)<br>RPIM-FSN4E(-DU)<br>RPK-FSN(H)3M<br>RPF-FSN2E<br>RPFI-FSN2E | KPI-(E/X)4E<br>DX-Interface EXV-E2<br>Econofresh EF-456NE |

**NOTE**

*For RCI-FSN4, RCIM-FSN4(E), RCD-FSN3 , RPC-FSN3 and RPK-FSN3M, combinations with IVX Premium and IVX Standard series 1, as well as SET FREE FSXN1E and FSXNH(E) series, are recommended in order to obtain the maximum performance.*

## 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 classification and line-up

## 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): 0.6, 0.8, 1.0, 1.5, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, 10.0, 16.0, 20.0 | | | | | | | |
| | | | FS = SYSTEM FREE | | | | | | | |
| | | | | N = R410A refrigerant | | | | | | |
| | | | | | H = Hotel (RPK-(0.6-1.5) only) | | | | | |
| | | | | | | 2/3/4 = series | | | | |
| | | | | | | | P= Pair | | | |
| | | | | | | | | E = Made in Europe<br>M = Made in Malaysia<br>– = Made in Japan or China | | |
| | | | | | | | | | (-DU) = Drain Up (RPIM only)<br>(-f) = Non-flammable insulation (RPI-(8.0-20.0)FSN3E-f only | |
| XXX | – | X.X | FS | N | (H) | X | (P) | (X) | (-xx) | |

## 1.3.2 Classification of KPI models

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| KPI- Ventilation system | | | | | | | |
| | Position-separating hyphen (fixed) | | | | | | |
| | | Capacity ($m^3/h$): 250, 500, 800, 1000, 1500, 2000 | | | | | |
| | | | 2 = 1 ~ 230V 50Hz | | | | |
| | | | | E = Energy recovery<br>X = Active (Energy recovery + DX section) | | | |
| | | | | | 4 = series | | |
| | | | | | | E = Made in Europe | |
| KPI | – | (Y)YY | 2 | Y | 4 | 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 | | |
| | | | | 2 = series | |
| EXV | – | X.X | E | 2 | |

## 1.3.4 Classification of Econofresh models

| | | | | | |
|---|---|---|---|---|---|
| Econofresh unit type | | | | | |
| | Position-separating hyphen (fixed) | | | | |
| | | Capacity (HP): 4.0, 5.0, 6.0 | | | |
| | | | N: R410A refrigerant | | |
| | | | | E = Made in Europe | |
| EF | - | 456 | N | E | |

### 1.3.5 Product line-up: indoor units

**NOTE**

- *The indoor unit models and codes are the last updated at time of publication; other previous models and coming developments could be available for combination with the outdoor unit series.*
- *Check the exact classification for each unit (model, type, power and series) in "1.3.1 Classification of indoor unit models".*



#### ◆ RCI and RCIM indoor units

| RCI | | RCIM | |
|---|---|---|---|
| ❄ ☀ | | | |
|  | |  | |
| 4-way cassette | | 4-way cassette (compact) | |
| Unit | Code | Unit | Code |
| | | RCIM-0.6FSN4(E) (*) | 60278215 (7E411137) |
| | | RCIM-0.8FSN4(E) | 60278216 (7E411100) |
| RCI-1.0FSN4 | 70405001 | RCIM-1.0FSN4(E) | 60278217 (7E411101) |
| RCI-1.5FSN4 | 70405002 | RCIM-1.5FSN4(E) | 60278218 (7E411102) |
| RCI-2.0FSN4 | 70405003 | RCIM-2.0FSN4(E) (**) | 60278219 (7E411103) |
| RCI-2.5FSN4 | 70405004 | RCIM-2.5FSN4(E) (**) | 60278220 (7E411104) |
| RCI-3.0FSN4 | 70405005 | | |
| RCI-4.0FSN4 | 70405007 | | |
| RCI-5.0FSN4 | 70405008 | | |
| RCI-6.0FSN4 | 70405009 | | |
| Panel | | Panel | |
| P-N23NA2<br>(without Motion Sensor) | 70532000 | P-AP56NAM<br>(without Motion Sensor) | 60297297 |

**NOTE**

- *The RCI and RCIM models must be used in combination with the indicated panels.*
- *(*): 0.6 HP Indoor Units can only be used in combination with SET FREE FSXN1E, FSXNH(E) and FSN3E series.*
- *(**): 1 indoor unit combinations with IVX Premium / Standard series not allowed.*

## ◆ RCD and RPC indoor units

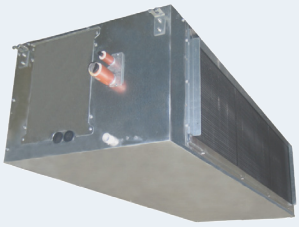
| RCD | | | | RPC | | | |
|---|---|---|---|---|---|---|---|
| ❄ ☀ | | | | | | | |
|  | | | |  | |  | |
| 2-way cassette | | | | Ceiling type | | | |
| Unit | Code | Unit | Code | Unit | Code | Unit | Code |
| RCD-0.8FSN3 (*) | 60278242 | | | | | | |
| RCD-1.0FSN3 (*) | 60278243 | | | | | | |
| RCD-1.5FSN3 (*) | 60278244 | | | | | RPC-1.5FSN3 | 60278164 |
| RCD-2.0FSN3 (*) | 60278245 | | | | | RPC-2.0FSN3 | 60278165 |
| RCD-2.5FSN3 (*) | 60278246 | | | | | RPC-2.5FSN3 | 60278166 |
| RCD-3.0FSN3 (*) | 60278247 | | | RPC-3.0FSN3E | 7E443005 | RPC-3.0FSN3 | 60278167 |
| | | RCD-4.0FSN3 (*) | 60278248 | RPC-4.0FSN3E | 7E443007 | RPC-4.0FSN3 | 60278168 |
| | | RCD-5.0FSN3 (*) | 60278249 | RPC-5.0FSN3E | 7E443008 | RPC-5.0FSN3 | 60278169 |
| | | RCD-6.0FSN3 (*) | 60278250 | RPC-6.0FSN3E | 7E443009 | RPC-6.0FSN3 | 60278170 |
| Panel | | Panel | | | | | |
| P-AP90DNA | 60297300 | P-AP160DNA | 60297301 | | | | |

**NOTE**

- *The RCD models must be used in combination with the indicated panels.*
- *(*): 1 indoor unit combinations with IVX Premium / Standard series not allowed.*

## ◆ RPI and RPIM indoor units

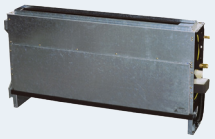
| RPI | | | | RPIM | |
|---|---|---|---|---|---|
| ❄ ☀ | | | | | |
|  | |  | |  | |
| Indoor ducted unit | | | | Indoor ducted unit (compact) | |
| Unit | Code | Unit | Code | Unit | Code |
| RPI-0.6FSN4E (*) | 7E424037 | | | RPIM-0.6FSN4E (*) | 7E430037 |
| | | | | RPIM-0.6FSN4E-DU (*) | 7E431037 |
| 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 | | | | | | | |
|---|---|---|---|---|---|---|---|
| ❄ ☀ | | | | | | | |
|  | | | |  | | | |
| Indoor ducted unit | | | | | | | |
| Unit | Code | Unit | Code | Unit | Code | Unit | Code |
| RPI-8.0FSN3E | 7E424010 (**) | RPI-8.0FSN3E-f | 7E424410 (**) | | | | |
| RPI-10.0FSN3E | 7E424011 (**) | RPI-10.0FSN3E-f | 7E424411 (**) | | | | |
| | | | | RPI-16.0FSN3PE | 7E425038 (***) | RPI-16.0FSN3PE-f | 7E425438 (***) |
| | | | | RPI-20.0FSN3PE | 7E425039 (***) | RPI-20.0FSN3PE-f | 7E425439 (***) |

**NOTE**

- *(*): 0.6 HP Indoor Units can only be used in combination with SET FREE FSXN1E and FSXNH(E) series.*
- *(**): In combination with UTOPIA IVX Premium/Standard series: 1 indoor unit system only.*
- *(***): RPI-FSN3PE(-f) can only be used in combination with SET FREE FSXN1E , FSXNH(E) and FSN3 series.*

## ◆ RPK, RPF and RPFI indoor units

| RPK | | RPF | | RPFI | |
|---|---|---|---|---|---|
| | | ❄ ☀ | | | |
|  | |  | |  | |
| Wall type | | Floor type | | Floor concealed type | |
| Unit | Code | Unit | Code | Unit | Code |
| RPK-0.6FSN3M (*) | 60278145 | | | | |
| RPK-0.6FSNH3M (*) | 60278153 | | | | |
| RPK-0.8FSN3M | 60278146 | | | | |
| RPK-0.8FSNH3M | 60278154 | | | | |
| RPK-1.0FSN3M | 60278147 | | | | |
| RPK-1.0FSNH3M | 60278155 | RPF-1.0FSN2E | 7E450001 | RPFI-1.0FSN2E | 7E460001 |
| RPK-1.5FSN3M | 60278148 | | | | |
| RPK-1.5FSNH3M | 60278156 | RPF-1.5FSN2E | 7E450002 | RPFI-1.5FSN2E | 7E460002 |
| RPK-2.0FSN3M | 60278149 | RPF-2.0FSN2E (**) | 7E450003 | RPFI-2.0FSN2E (**) | 7E460003 |
| RPK-2.5FSN3M | 60278150 | RPF-2.5FSN2E (**) | 7E450004 | RPFI-2.5FSN2E (**) | 7E460004 |
| RPK-3.0FSN3M | 60278151 | | | | |
| RPK-4.0FSN3M | 60278152 | | | | |
| **Expansion valve kit** [1] | | | | | |
| EV-1.5N1[1] | 60921791 | | | | |

**NOTE**

- *(*) 0.6 HP Indoor Units can only be used in combination with SET FREE FSXN1E and FSXNH(E) series.*
- *(**) 1 indoor unit combinations with IVX Premium / Standard series not allowed.*
- *[1] For RPK-(0.6-1.5)FSNH3M models only.*

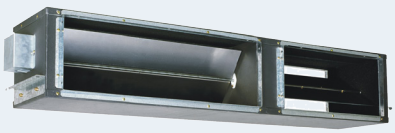
### 1.3.6 Product line-up: KPI energy recovery unit

| KPI | | | |
|---|---|---|---|
|  | | | |
| Energy recovery | | Active (Energy Recovery+DX section) | |
| Unit | Code | Unit | Code |
| KPI-252E4E | 70603000 | | |
| KPI-502E4E | 70603001 | KPI-502X4E | 70603201 |
| KPI-802E4E | 70603002 | KPI-802X4E | 70603202 |
| KPI-1002E4E | 70603003 | KPI-1002X4E | 70603203 |
| KPI-1502E4E | 70603004 | | |
| KPI-2002E4E | 70603005 | | |

### 1.3.7 Product line-up: DX-Interface

| DX-Interface | | |
|---|---|---|
|  Control box<br>  Expansion valve box | Unit | Code |
| | EXV-2.0E2 | 7E611000 |
| | EXV-2.5E2 | 7E611001 |
| | EXV-3.0E2 | 7E611002 |
| | EXV-4.0E2 | 7E611003 |
| | EXV-5.0E2 | 7E611004 |
| | EXV-6.0E2 | 7E611005 |
| | EXV-8.0E2 | 7E611006 |
| | EXV-10.0E2 | 7E611007 |

### 1.3.8 Product line-up: Econofresh

| Econofresh | |
|---|---|
|  | |
| Unit | Code |
| EF-456NE | 7E560000 |

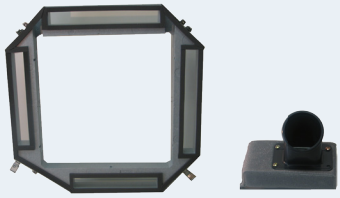
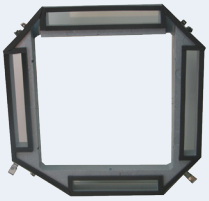
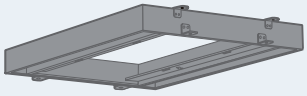
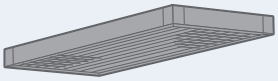
**NOTE**

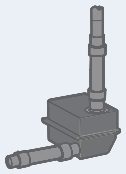
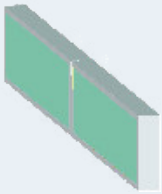
*The EF-456NE unit can only be installed in combination with the following units (Sales from April 2014):*

- *RPI-4.0FSN4E (7E424020)*
- *RPI-5.0FSN4E (7E424021)*
- *RPI-6.0FSN4E (7E424022)*

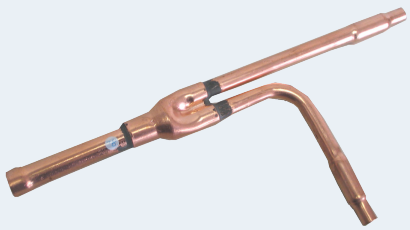
### 1.3.9 Accessory code list

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 | Unit Reference | Description | Code | Figure |
|---|---|---|---|---|
| PD-75A | RCI-FSN4 | Duct adapter for fresh outdoor air intake kit | 60291763 |  |
| PD-75C | RCIM-FSN4(E) | | 60292014 | |
| PD-150D | RCD-FSN3 | | 60292064 | |
| OACI-160K2 | RCI-FSN4 | Fresh outdoor air intake kit | 60291761 |  |
| TKCI-160K | RCI-FSN4 | T-shaped duct connection kit for fresh outdoor air intake ki | 60291762 |  |
| PDF-71C1 | RCI-(1.0-2.5)FSN4 | Duct connecting flange for indoor air outlet | 60299436 |  |
| PDF-160C1 | RCI-(3.0-6.0)FSN4 | | 60299437 | |
| PI-160LS1 | RCI-FSN4 | 3-way outlet parts set | 60291756 |  |
| F-160LK | RCI-FSN4 | Antibacterial long life air filter (installation on the panel) | 60291760 |  |
| B-160H2 | RCI-FSN4 | Filter Box (Adapter for deodorising filter) | 60291759 |  |
| F-71L-D1 | RCI-(1.0-2.5)FSN4 | Deodorant air filter (installation on the Filter Box B-160H2) | 60291757 |  |
| F-160L-D1 | RCI-(3.0-6.0)FSN4 | | 60291758 | |
| B-90HD | RCD-(0.8-3.0)FSN3 | Filter Box (Adapter for antibacterial long life air filter) | 60292061 |  |
| B-160HD | RCD-(4.0-6.0)FSN3 | | 60292062 | |
| F-90MD-K1 | RCD-(0.8-3.0)FSN3 | Antibacterial long life air filter high performance filter (installation on the filter box F-90MD-K1→B-90HD F-160MD-K1→B-160HD) | 60292058 |  |
| F-160MD-K1 | RCD-(4.0-6.0)FSN3 | | 60292059 | |
| F-56LPC1 | RPC-(1.5-2.0)FSN3 | Long life filter (Installation on the indoor unit) | 60299279 |  |
| F-90LPC1 | RPC-(2.5-3.0)FSN3 | | 60299280 | |
| F-160LPC1 | RPC-(4.0-6.0)FSN3 | | 60299281 | |

| Name | Unit Reference | Description | Code | Figure |
|---|---|---|---|---|
| DUPC-63K1 | RPC-FSN3 | Drain-up Mechanism | 60291935 |  |
| DUPC-71K1 | | | 60291936 | |
| DUPC-160K1 | | | 60291937 | |
| PS-MSK2 | RCI-FSN4 | Motion sensor kit | 70590903 | |
| SOR-NEP | RPC-FSN3 | | 60291825 |  |
| SOR-NEC | RCIM-FSN4(E) | | 60292011 | |
| SOR-NED | RCD-FSN3 | | 60292055 | |
| SLT-30-200-L600 | KPI | Noise damper | 70550200 |  |
| SLT-30-250-L600 | | | 70550201 | |
| SLT-30-300-L600 | | | 70550202 | |
| SLT-30-355-L600 | | | 70550203 | |
| HEF-252 | KPI | High efficiency filter | 70552201 |  |
| HEF-502 | | | 70552202 | |
| HEF-802 | | | 70552203 | |
| HEF-1002 | | | 70552204 | |
| HEF-1502 | | | 70552205 | |
| HEF-2002 | | | 70552206 | |

## 1.3.10 Multi-Kits

| Name | Unit Reference | Description | Code | Figure |
|---|---|---|---|---|
| E-102SN4 | SET FREE | Line Branch | 70524201 |  |
| E-162SN4 | | | 70524202 | |
| E-242SN3 | | | 70524104 | |
| E-302SN3 | | | 70524105 | |
| E-52XN3 | | | 70525100 | |
| E-102XN3 | | | 70525101 | |
| E-162XN3 | | | 70525102 | |
| E-202XN3 | | | 70525103 | |
| E-242XN3 | | | 70525104 | |
| E-322XN3 | | | 70525106 | |
| MH-84AN1 | SET FREE | Header Branch | 70522009 |  |
| MH-108AN | | | 70522008 | |
| MH-108XN | | | 70523108 | |

### 1.3.11 Individual remote controls

| Name | Description | Code | Figure |
|---|---|---|---|
| PC-ARFPE | Remote control with timer | 70510002 |  |
| PC-ARH | Simplified remote control | 60291486 |  |
| PC-AWR | Wireless remote control | 60291056 |  |

### 1.3.12 Receiver kit for combination with wireless remote control switch

| Receiver kit name | Indoor Unit application | Compatible Wireless remote control | Code | Figure |
|---|---|---|---|---|
| PC-ALH3 | RCI-FSN4 | PC-AWR | 60291767 | on the panel  |
| PC-ALHC1 | RCIM-FSN4(E) | PC-AWR | 60292003 | |
| PC-ALHD1 | RCD-FSN3 | PC-AWR | 60292053 | |
| PC-ALHP1 | RPC-FSN3 | PC-AWR | 60291823 | |
| PC-ALHZ | RPI-FSN(3/4)(P)E,<br>RPIM-FSN4E(-DU),<br>RPF(I)-FSN2E | PC-AWR | 60291473 | on the wall  |
| PC-ALHZF | RCI-FSN4,<br>RCIM-FSN4(E),<br>RCD-FSN3,<br>RPK-FSN(H)3M<br>RPC-FSN3 | PC-AWR | 60291789 | |

### 1.3.13 Centralised remote controls

| Name | Description | Code | Figure |
|---|---|---|---|
| PSC-A64GT | Touch screen central station | 60291730 |  |
| PSC-A32MN | Touch screen central station mini | 60291966 |  |
| PSC-A64S | Centralised remote control | 60291479 |  |
| PSC-A16RS | Centralised ON/OFF control | 60291484 |  |

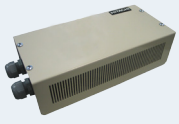
### 1.3.14 Building air conditioning controls

| Name | Description | Code | Figure |
|---|---|---|---|
| CSNET WEB (PSC-A160WEB1) | Centralised control system which runs CSNET WEB software to control the indoor units | 7E512000 |  |
| CSNET Manager LT | Centralised control with a touch interface of 12 inches which runs CSNET MANAGER software to control the indoor units. | 7E512201 |  |
| CSNET Manager XT | Centralised control with a touch interface of 17 inches which runs CSNET MANAGER software to control the indoor units. | 7E512202 |  |
| HC-A64NET | H-LINK gateway used by CSNET MANAGER Screens to communicate with indoor units (Max. 64 indoor units) | 7E512200 |  |

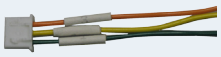
### 1.3.15 Gateways for building management systems (BMS)

| Name | Description | Code | Figure |
|---|---|---|---|
| HC-A8MB | Integration with installation with intelligent control (Building Management System) Gateway Interface to MODBUS systems (Max. 8 indoor units). | 7E513204 |  |
| HC-A64MB | Integration with installation with intelligent control (Building Management System) Gateway Interface to MODBUS systems (Max. 64 indoor units). | 7E513205 | |
| HC-A16KNX | Integration with installations with intelligent control (BMS). Gateway Interface to KNX systems. | 7E513300 |  |
| KNX001 | Integration with installations with intelligent control (BMS) through CSNET WEB. Gateway Interface to KNX systems. | 7E5121000 |  |
| HARC-BX E (A) | Integration with installation with intelligent control (Building Management System) Gateway Interface to LONWORKS systems. (H-LINK I communication) (Max. 64 units with 8 parameters) | 60290874 |  |
| HARC-BX E (B) | Integration with installation with intelligent control (Building Management System) Gateway Interface to LONWORKS systems. (H-LINK I communication) (Max. 32 units with 16 parameters) | 60290875 |  |

### 1.3.16 Control support devices

| Name | Description | Code | Figure |
|---|---|---|---|
| PSC-A1T | Programmable timer | 60291482 |  |
| PSC-6RAD | H-LINK RAC Adapter | 60063017 |  |
| PC-A1IO | Integration of external equipment into H-LINK | 7E519000 |  |
| PSC-5HR | H-LINK Relay | 60291105 |  |
| THM-R2AE | Remote temperature sensor (THM4) | 7E299907 |  |

### 1.3.17 Control accessories

| Name | Description | Code | Figure |
|---|---|---|---|
| Wall support | Wall mounted support (for both CSNET MANAGER LT/XT) | 7E512300 |  |
| Stand support | Stand mounted support (for both CSNET MANAGER LT/XT) | 7E512301 |  |
| PCC-1A | Optional function connector | 70590901 |  |
| PRC-10E1 | 2P-Extension cord (10 metres) | 7E790211 |  |
| PRC-15E1 | 2P-Extension cord (15 metres) | 7E790212 | |
| PRC-20E1 | 2P-Extension cord (20 metres) | 7E790213 | |
| PRC-30E1 | 2P-Extension cord (30 metres) | 7E790214 | |
| Net Configuration Kit | Net configuration kit for HC-A(8/64)MB and HC-A64NET | 7E512306 |  |

### 1.3.18 Other devices compatible with HITACHI Air Conditioning systems

In addition to all the aforementioned HITACHI controls, there are some non-HITACHI devices for combination with HITACHI Air Conditioning systems. These are the following:

- HITACHI-AIRZONE gateway (HTI11001): Applicable to HITACHI RPI(M) units providing compatibility with the AIRZONE systems, zone-based climate-control systems.
- Power meter: Siemens power meter for CSNET WEB and CSNET Manager.
- MODBUS-BACNET gateway: Solution offered by Intesis Software company which transfers MODBUS data into BACNET data.
- MODBUS-FIDELIO gateway: Solution offered by Intesis Software company which transfers MODBUS data into FIDELIO data.

# 2. Unit installation

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# 2.1 RCI - 4-way cassette

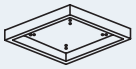
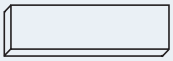
## 2.1.1 Accessories supplied with the unit

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-FSN4 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 | |
| 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 (5Tx270x270) |  | 1 | For covering drain connection |

Applicable panel

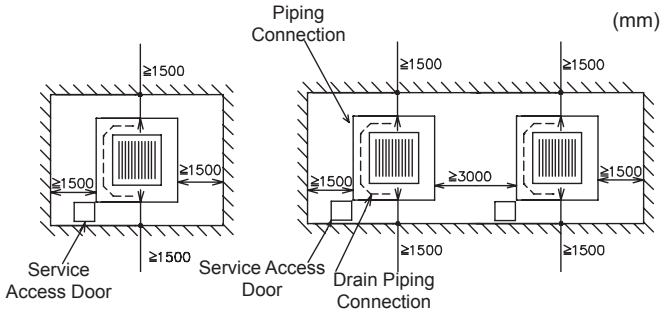
| Indoor unit | Applicable panel |
|---|---|
| RCI-(1.0-6.0)FSN4 | P-N23NA2 (without motion sensor) |

## 2.1.2 Unit installation

### ◆ Initial checks

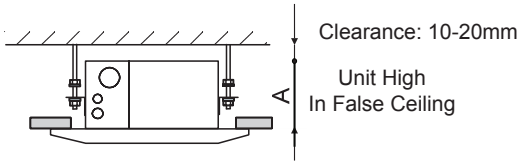
Install the indoor unit with a proper clearance around it paying careful attention of installation direction for the piping, wiring and maintenance working space, as shown below.

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.

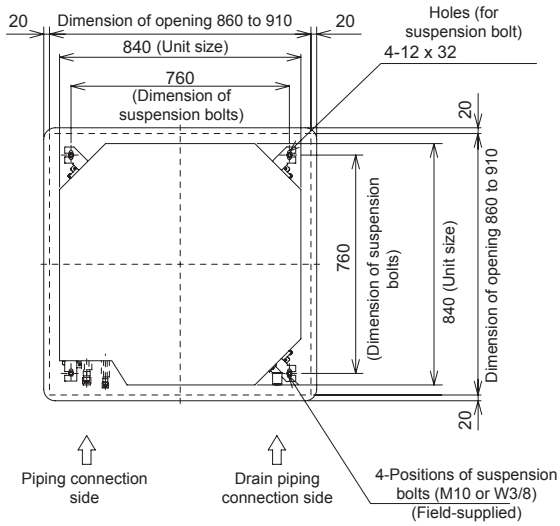
Check the ceiling surface is flat for the air panel installation work.




| Unit HP | A(mm) |
|---|---|
| RCI-1.0 to 2.5HP | 238 |
| RCI-3.0 to 6.0HP | 238 |

### ◆ Opening of false ceiling

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

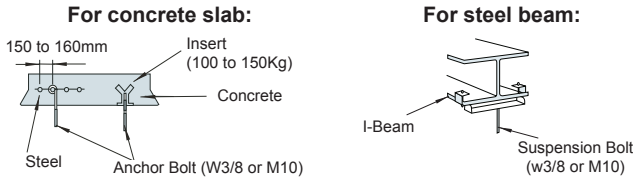



Check to ensure that the ceiling is horizontally level, otherwise water can not flow.

Strengthen the opening parts of the false ceiling.

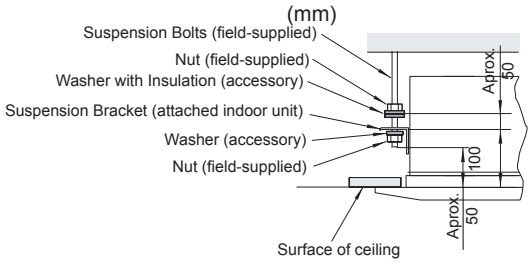
### ◆ Mounting of suspension bolts

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




### ◆ Mounting of indoor unit

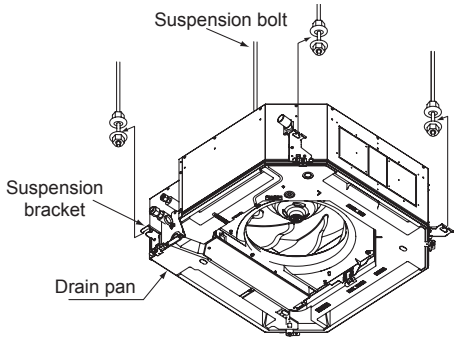
Mount the nuts and the washers to the suspension bolts. Put the washer so that the surface with insulation can faces downwards as shown below:




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.

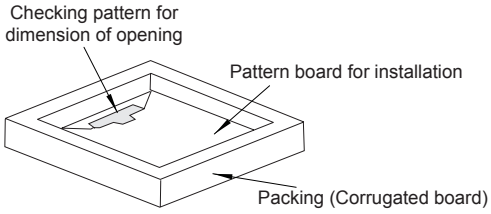



**NOTE**

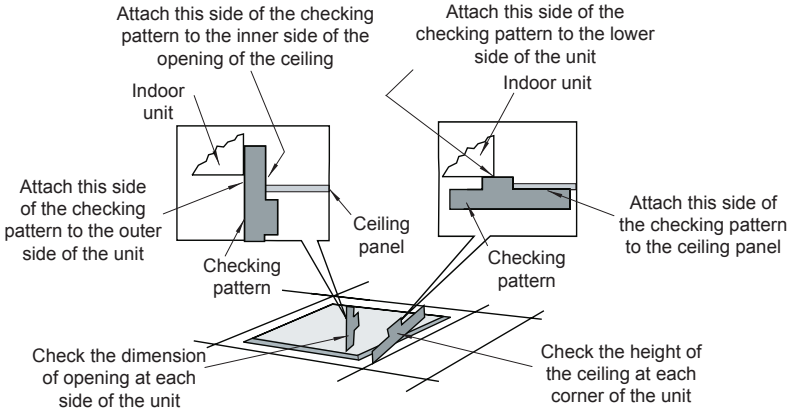
- *If a false ceiling has already been installed, complete all piping and wiring work inside the ceiling before hooking-up the indoor unit.*
- *Secure the indoor unit using the nuts, flat washers and spring washers. (These nuts and washers are supplied, 4 pieces each).*

### ◆ Adjusting the space between indoor units and false ceiling opening

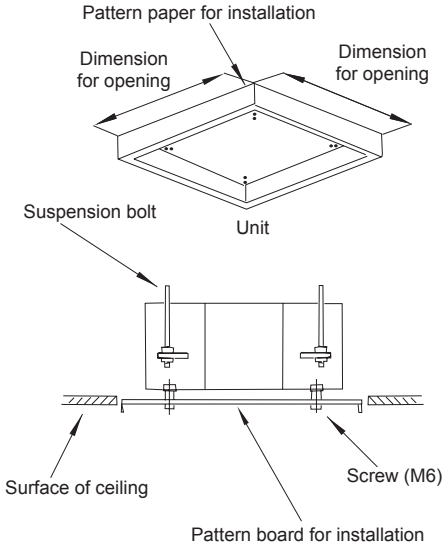
Adjust the indoor unit to the correct position while checking with the pattern for installation.



### ◆ For ceiling already completed with panels




### ◆ Ceiling not completed with panels yet

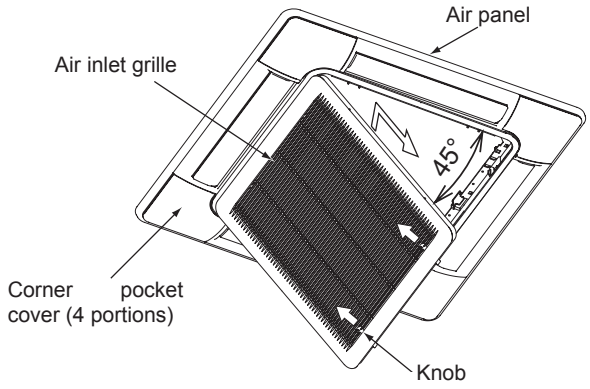


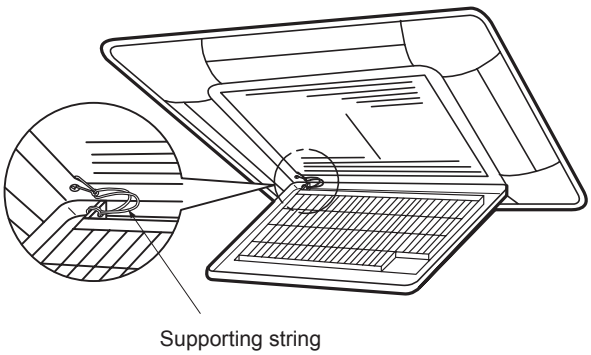

Tighten the nuts of the suspension brackets after the adjustment is completed. Apply LOCK-TIGHT paint to the bolts and nuts in order to prevent them from loosening. If not done, abnormal noises or sounds may occur and the indoor unit may come loose.

## 2.1.3 Air panel installation: P-N23NA2

### ◆ 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.

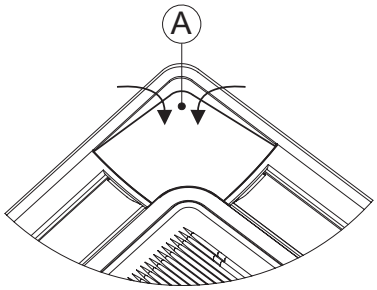
3 Draw the grille towards the open space after lifting.

**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

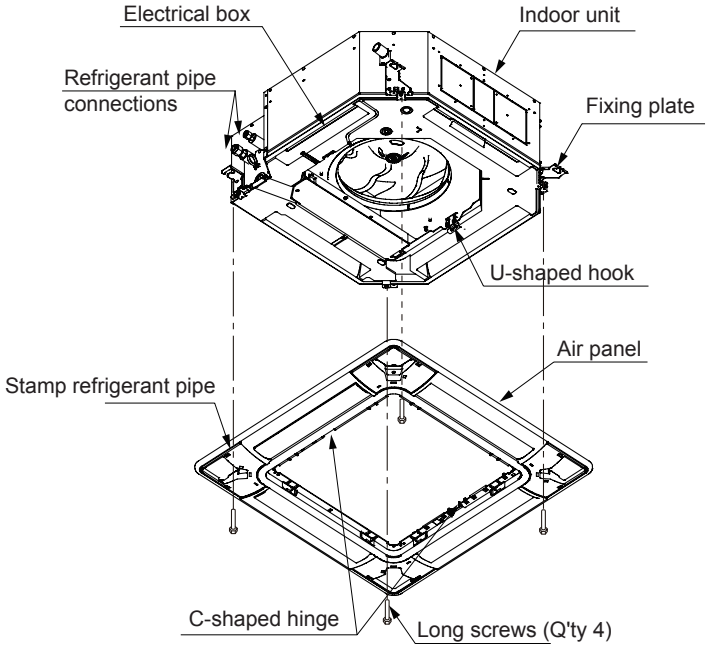
1 Remove the cover of the corner pocket (4 portions). Remove pulling A part toward the arrow direction.




2 Pull down the U-shaped hook (at 2 positions) located at the indoor unit side.

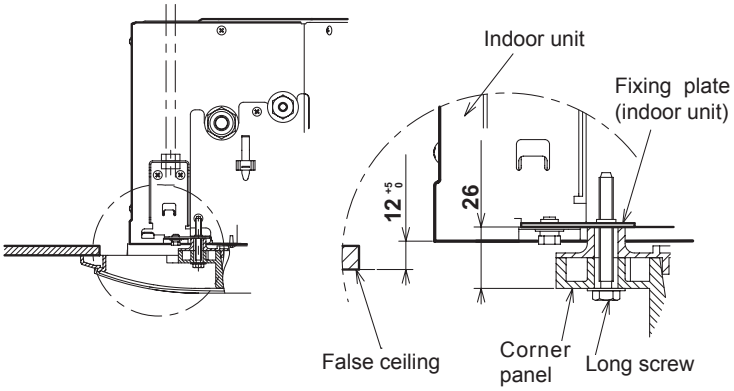
3 Mount the air panel temporarily. Fit the corner position of the refrigerant pipe connection at the indoor unit and the position stamped as “Ref. Pipe ”. Then, catch the C-shaped hinges (2 portions) onto the U-shaped hooks (2 portions).

4 Fix the air panel to the fixing plate by factory supplied long screws (M6 cross screws).



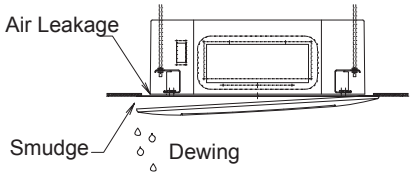

5 Tighten the long screws until touching the stopper to the fixing plate. Check to ensure that the distance between the fixing plate under-surface and the corner panel under-surface is 26mm.

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.

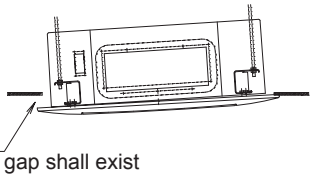


## ⚠ CAUTION

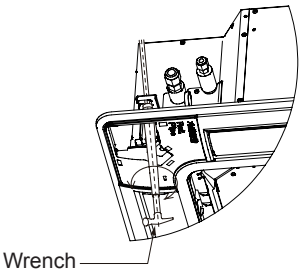
- *If tighten long screws insufficient, may cause something wrong as below.*



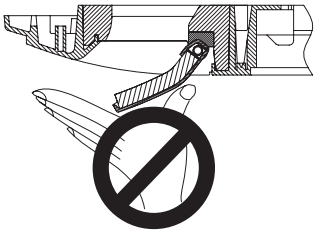

- *If any gap has even though tighten long screws sufficient, readjust the height of indoor unit.*




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



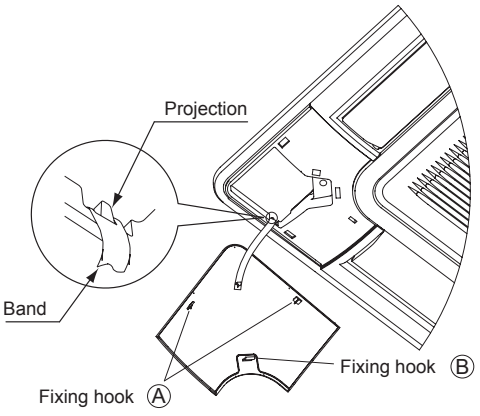

- *Too considerable adjustment of height cause dewing from drain-pan.*
- *Do not turn the air louver by hand. If moved, the louver mechanism would be damaged.*



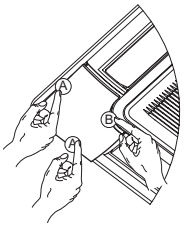
### ◆ Attachment of Corner Pocket Cover

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

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



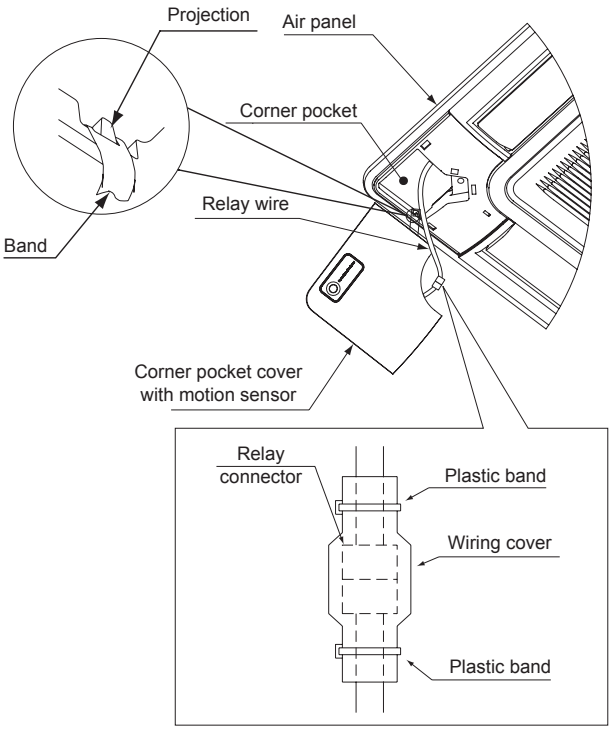

2 Insert and push the fixing hooks (2 portions) at Ⓐ to the air panel and insert and push the fixing hook (1 portion) at Ⓑ to the air panel.



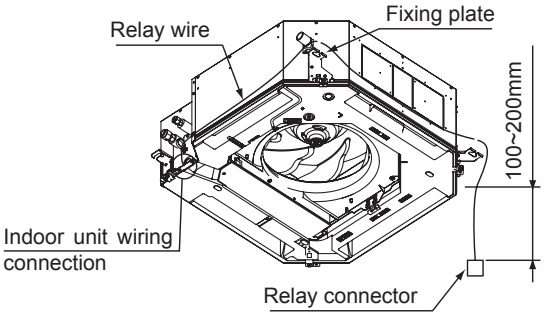
### ◆ Attachment of corner pocket cover with motion sensor PS-MSK2 on the air panel model P-N23NA2

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

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




2 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.




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

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

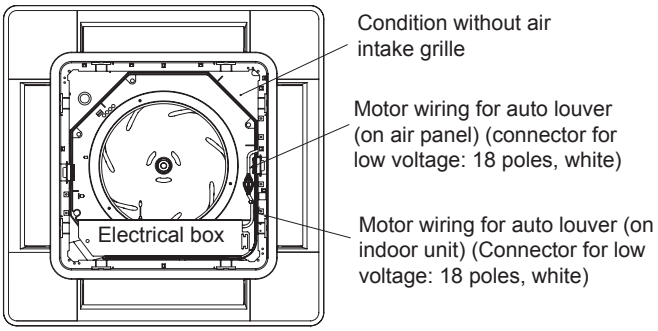
b. While pushing the wiring into the corner pocket, insert the fixing hooks (2 portions) at Ⓐ to the square hole at the air panel, and push the corner pocket cover. Then, insert and push the fixing hook (1 portion) at Ⓑ to the square hole at the air panel.

**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.

## 2.1.4 Accessories supplied with the air panel P-N23NA2

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 |

## 2.2 RCIM - 4-way cassette (compact)

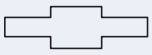
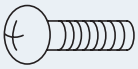
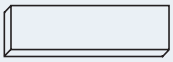
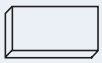
### 2.2.1 Accessories supplied with the unit

Check to ensure that the following accessories are supplied with the unit.

**NOTE**

- *Contact your HITACHI distributor if any of the accessories have not been supplied with the unit.*
- *The hose clamp, screws, washers and plastic cord clamps are placed together with the pipe insulation.*
- *The air panel, remote control switch and branch pipes are not included as they are optional accessories.*

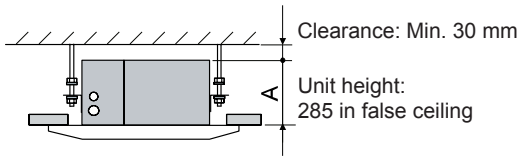


| Accessory | Appearance | Quantity | Purpose |
|---|---|---|---|
| Checking scale<br>(cut and take it out from the carton board) |  | 1 | For adjusting space of false ceiling opening and position of the unit |
| Cross recessed head screws (M5) |  | 4 | For fitting paper pattern |
| Washer with insulation material (M10) |  | 4 | For unit installation |
| Washer (M10) |  | 4 | |
| Drain hose |  | 1 | For drain hose connection |
| Hose clamp |  | 1 | |
| Insulation<br>(5Tx50x200) |  | 1 | For covering wiring connection |
| Insulation<br>(5Tx100x500) |  | 1 | For covering drain connection |
| Insulation<br>(5Tx25x500) |  | 1 | For covering drain connection |

## 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.

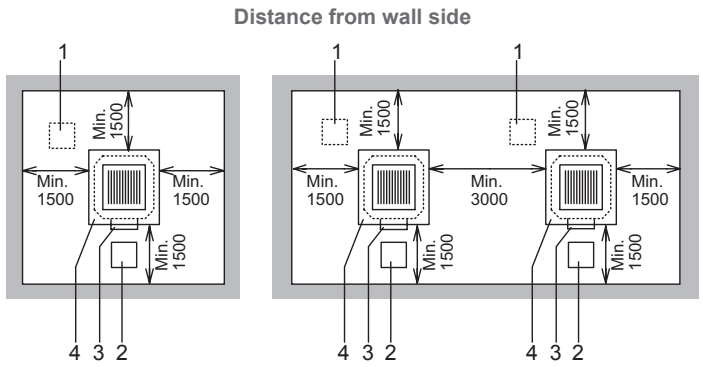


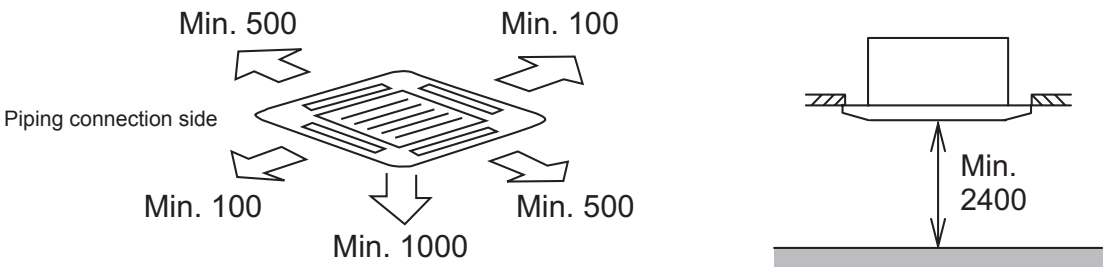

Before starting installation, plan the direction of the pipes and wiring required. Also bear in mind that there must be enough space around the unit for installation and maintenance.

When equipping the duct adapter (optional), set up a service access door at the duct adapter side in order to install the duct adapter. Refer to the installation manual of the duct adapter for details.

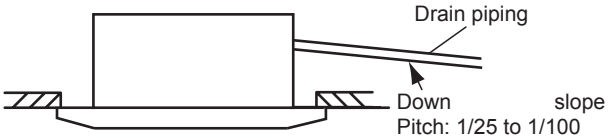
Install a service hatch near the pipe connection area and electrical junction box for installation and maintenance work.

1 Access door for duct adapter (optional)
2 Service access door.
3 Electrical Box
4 Piping connection.



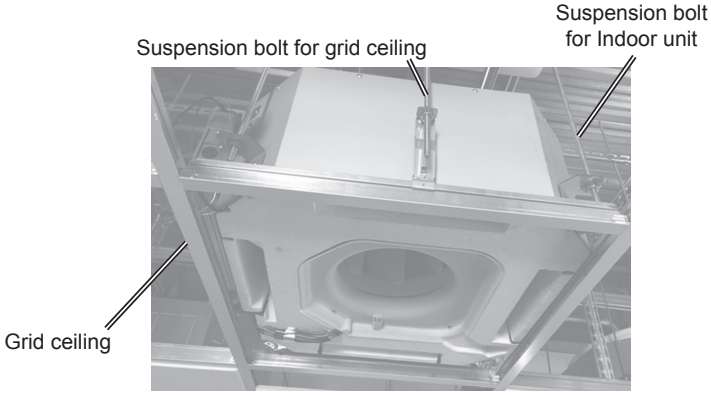

Check that the drain hose can be installed maintaining the necessary downward slope (1/25 to 1/100).




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

**NOTE**

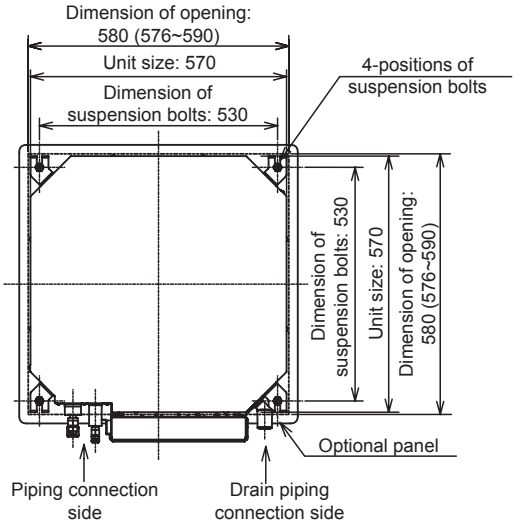
*In the case installing the indoor unit to a grid ceiling, do not touch the unit body, the electrical wiring and refrigerant piping to a suspension bolt of a grid. Check the location of suspension bolts of a grid ceiling and indoor unit mounting position before installing of the indoor unit.*



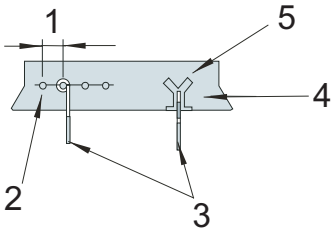
## ◆ Installation

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:

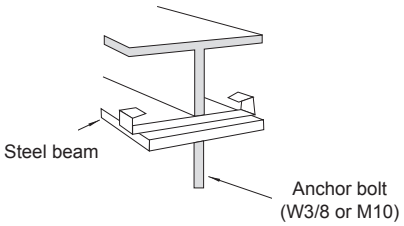



Concrete beams

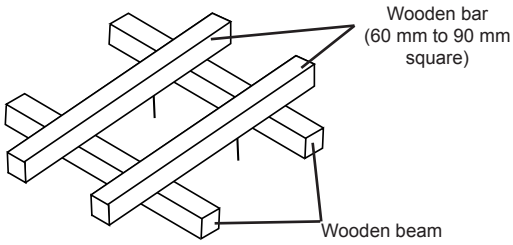



1 150 to 160 mm
2 Steel
3 Anchor bolt (W3/8 or M10)
4 Concrete
5 Insert (100 to 150 kg)

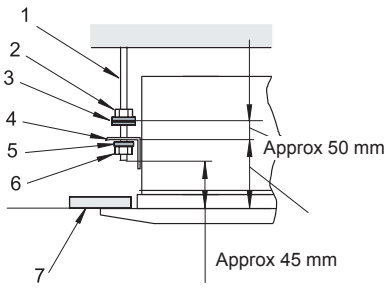
Steel beams




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.

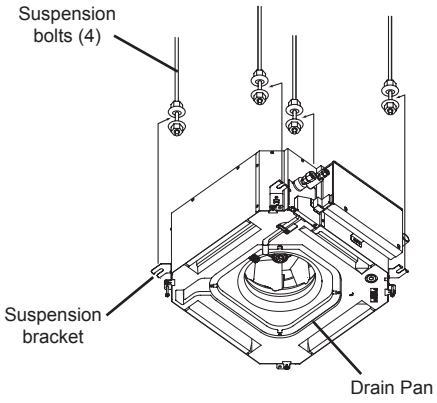
### ⚠ CAUTION

- *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.

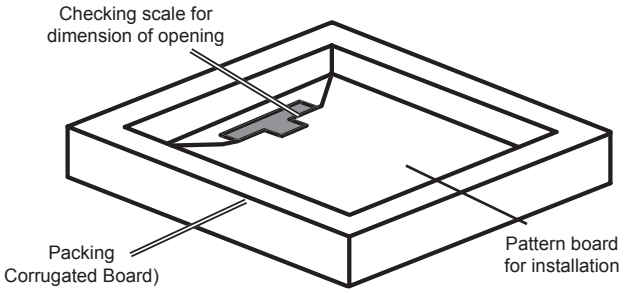
Check that the condensate discharge system in the indoor unit works correctly. To do so, check the level of the drain pan using a spirit level.



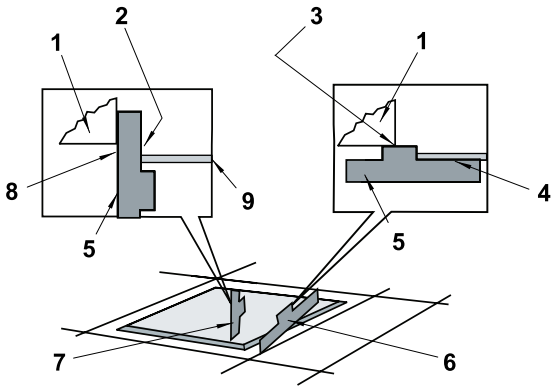

### ◆ Adjusting the space between the indoor unit and the opening in the false ceiling

Pattern Board for Installation and Scale for Dimension of Opening

1 For installation work, the pattern board is required. The pattern board for installation and the checking scale are printed on the back side of the packing.
2 Cut off the checking scale for dimension of opening from the packing.




1 Indoor unit
2 Attach this side of the checking scale to the inner side of the opening of the ceiling
3 Attach this side of the checking scale to the lower side of the unit
4 Attach this side of the checking scale to the ceiling panel
5 Checking scale.
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 scale 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-AP56NAM

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**

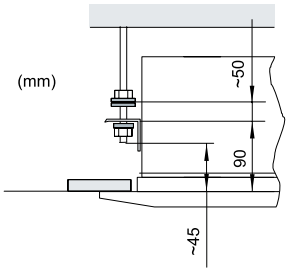
*Take care while the air panel is unpacked and protect it by placing it on insulating or soft material so as not to scratch the sealant insulation.*

**NOTE**

- *Do not move the louver by hand as it may cause a damage to the louver mechanism.*
- *Do not apply an excessive force to the air outlet part to prevent any breakage.*

#### ◆ Location of the suspension brackets

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

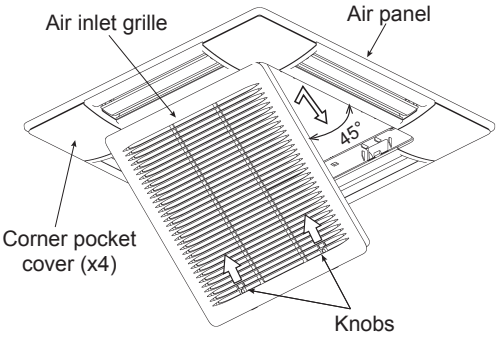



#### ◆ Remove the air inlet grille from the air panel

Remove the Air inlet grille from the air panel:

1 While pushing both ends of knobs at the air inlet grille (as shown in the illustration), open the air inlet griller until an angle of aproximately 45º in relation to the air panel surface.

2 Lift the grille while keeping it tilted.




**NOTE**

*Although the Air inlet griller can be opened until an angle up to 90º from the Air panel surface, it can not be removed.*

**CAUTION**

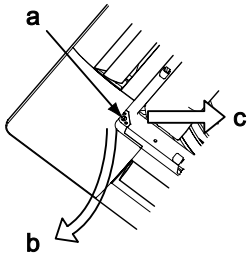
*Do not allow the grille to swing freely or the securing mechanism will break.*

#### ◆ Air panel installation

1 Remove the screw located next to mark -a-.

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

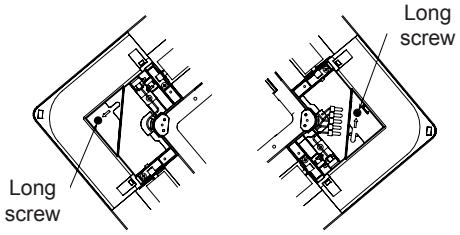
3 Remove the corner cover by pulling it in direction -c-.



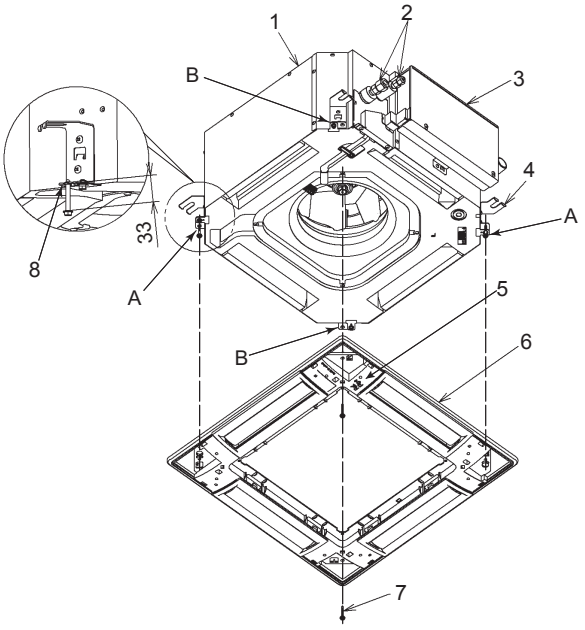

Thread the long screw to secure the air panel temporarily.

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.

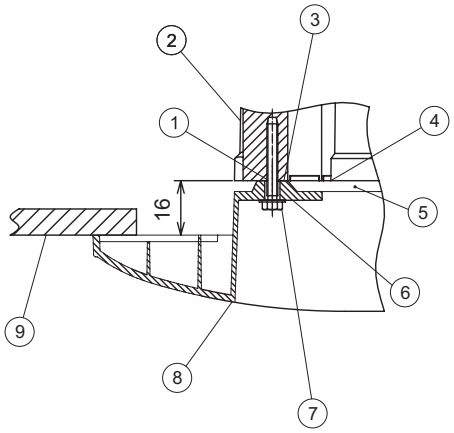


| Nº | Part |
|---|---|
| 1 | Indoor unit |
| 2 | Refrigerant pipe connections |
| 3 | Electrical box |
| 4 | Fixing plate (Indoor unit) |
| 5 | Indication “PIPE SIDE” |
| 6 | Air panel |
| 7 | Long screw (4) |
| 8 | Mounting sheet |




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.

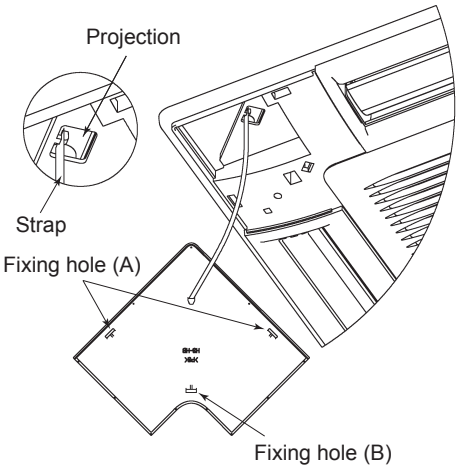
1 Tighten the fixing screw completely
2 Indoor unit
3 Fixing sheet for air panel (indoor unit side)
4 Bottom side of indoor unit
5 Sealing gasket
6 Fixing sheet for air panel (panel side)
7 Fixing screw for air panel
8 Air panel
9 Fase ceiling



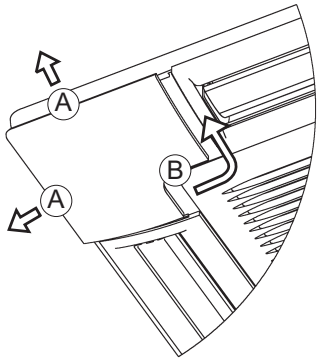

Check that there are no gaps in the touching surface between the indoor unit and the air panel. Gaps may cause air leaks or condensation.

Attach the corner pocket covers (4 portions) 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 in the next figure.



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



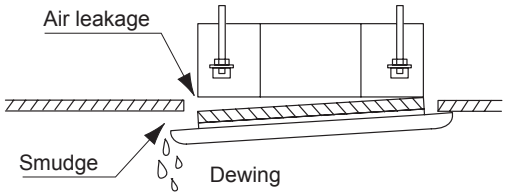

**NOTE**

- *Catch securely the strap 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.*



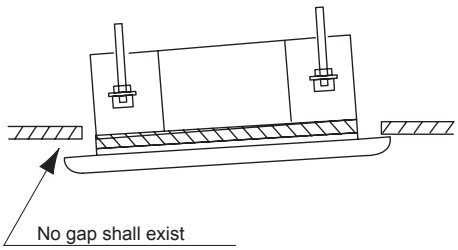
### ◆ Considerations following air panel installation

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



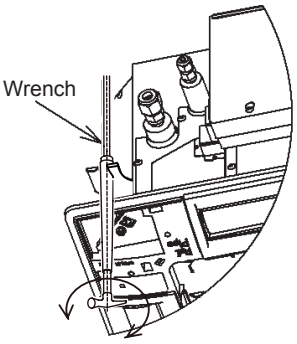

Readjust the height of the indoor unit if gaps are seen around it.

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



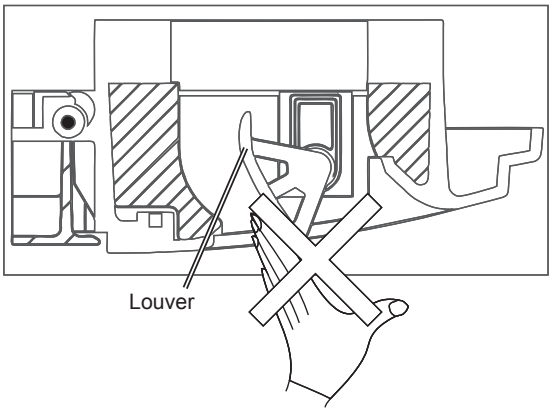

Once the air panel is installed, the final height of the indoor unit can be adjusted using a wrench through the corner cover.

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

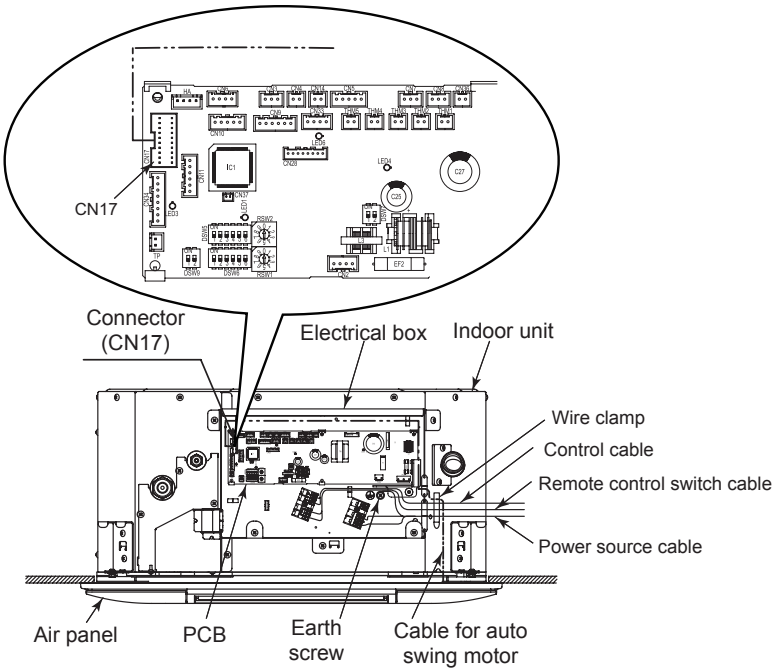
### ⚠ CAUTION

- *Perform securely the electrical wiring work. If the electrical work is not completed, heat generation at the connection, a fire or an electric shock may occur.*
- *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.*

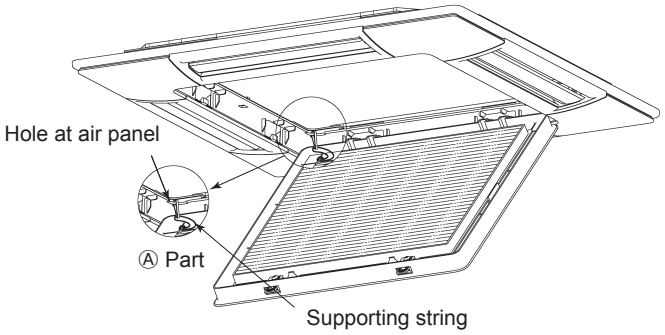
1 The following connectors are used in the air panel. Remove the tape fixing the wiring connectors on the air panel and pull out them as shown in the figure below. Connect them with the wiring connectors to CN17 in the electrical box as the following figure.

### NOTE

*Before the electrical wiring work, turn OFF the power source. If the connectors are connected without turning OFF the power source, the auto swing louver can not activate.*




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. Hook the swivel of the supporting string at Ⓐ to the hole at the air panel. The air inlet grille can be attached from any 4 directions by rotating it. When multiple indoor units are installed or requested from a user, the air intake grille direction can be selected freely.



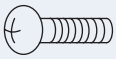
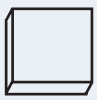
## 2.3 RCD - 2-way cassette

### 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 adjust the space of false ceiling opening and position of the unit. |
| Cross recessed head screws (M6) |  | 6 | For fitting paper pattern. |
| Washer with insulation material (M10) |  | 4 | For Unit Installation. |
| Flat washer (M10) |  | 4 | |
| Drain hose |  | 1 | For the Drain hose connection. |
| Hose clamp |  | 1 | |
| Pipe Insulation |  | 1 | For the Refrigerant pipe connection. |
| Pipe Insulation |  | 1 | |
| Cord clamp |  | 2 | To fix the Remote control switch and refrigerant pipe insulation |
| Cord clamp |  | 6 | |
| Insulation (5Tx50x200) |  | 1 | For covering wiring connection |
| Insulation (5Tx270x270) |  | 1 | For covering drain connection |

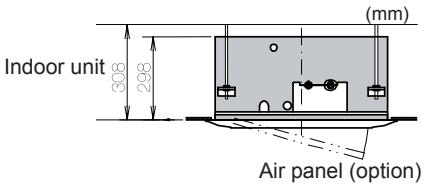
Applicable air panel

| Indoor unit | Applicable air panel |
|---|---|
| RCD-(0.8-3.0) | P-AP90DNA |
| RCD-(4.0-6.0) | P-AP160DNA |

## 2.3.2 Unit installation

### ◆ Initial checks

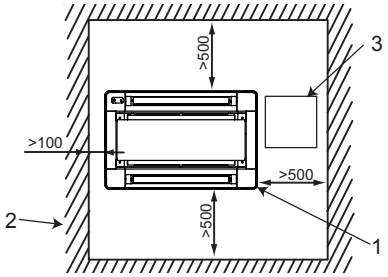
Check that there is enough space between the false ceiling and the ceiling of the room to house the unit. Its height must be less than the measured distance. Consult the corresponding chapter of the Technical Catalogue for information on the unit measurements.




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.

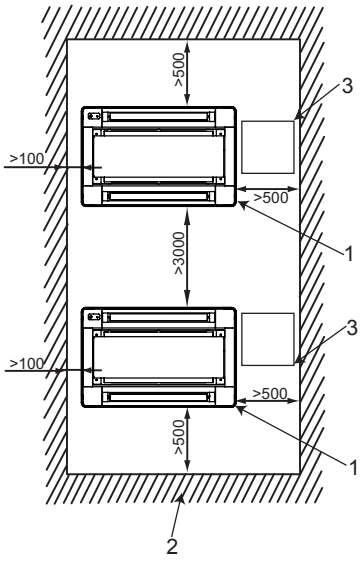
Install a service hatch near the pipe connection area and electrical junction box for installation and maintenance work.

Single unit installation

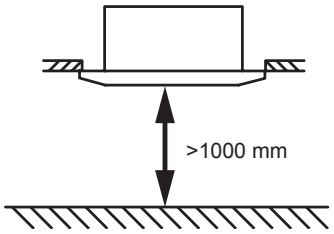



| Nº | Item |
|---|---|
| 1 | Piping connections |
| 2 | Wall |
| 3 | Service access panel |

Multiple unit installation




Minimum Height




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.

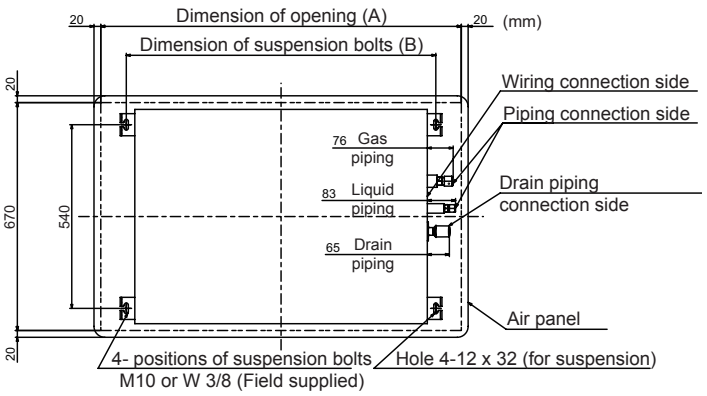
### ◆ Installation

Determine the final location and installation direction of the indoor unit paying attention to the space for the piping, wiring and maintenance.

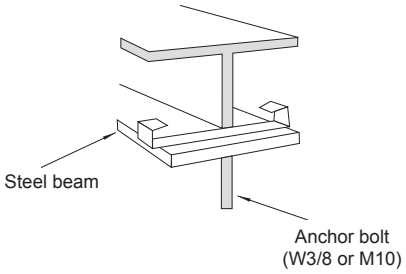
Cut the area of the unit in the false ceiling and reinforce the opening made.

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

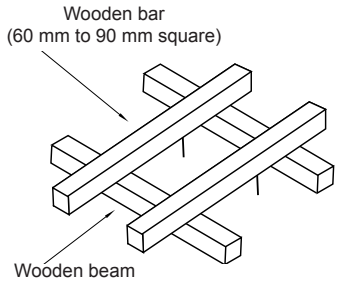
| Model | A (Opening) | B (Suspension) |
|---|---|---|
| RCD-0.8 | 1060 | 910 |
| RCD-1.0 | | |
| RCD-1.5 | | |
| RCD-2.0 | | |
| RCD-2.5 | | |
| RCD-3.0 | | |
| RCD-4.0 | 1620 | 1470 |
| RCD-5.0 | | |
| RCD-6.0 | | |



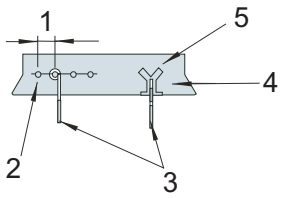
Steel beams




Wooden beams



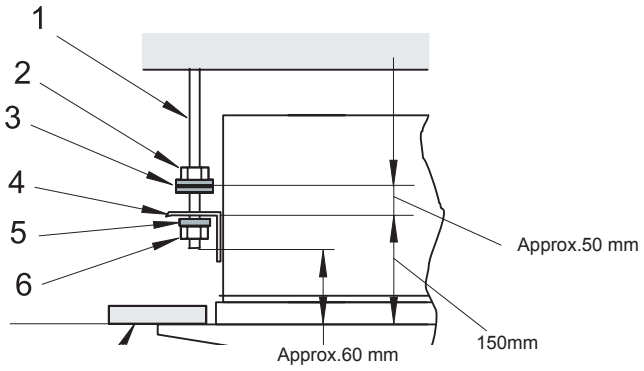

Concrete beams




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



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.

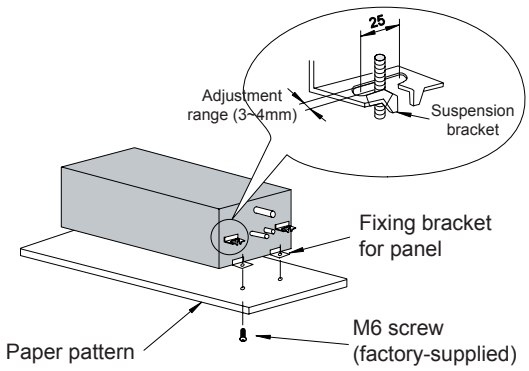
Where a false ceiling is already installed, install and prepare the pipes and cables on the indoor unit before lifting it.

## ⚠ CAUTION

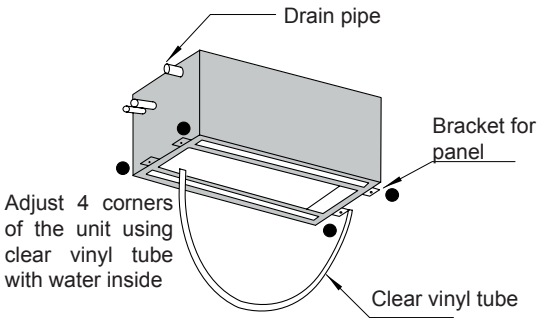
- *Before lifting the unit, prepare any necessary means (ladders, scaffolding, elevator platform, etc.) and check that the current safety regulations in the place where the installation is taking place are met.*
- *Check that the lifting work can be carried out without the risk of injuries to you or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



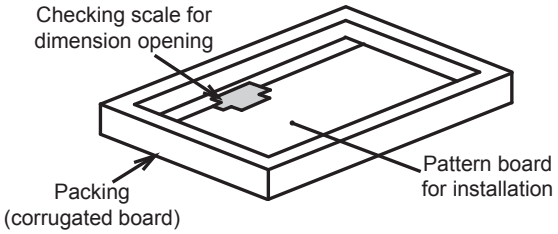
Check that the condensate discharge system in the indoor unit works correctly. To do so, check the level of the drain pan using a spirit level or a clear flexible pipe full of water. The side of the unit on which the drain hose is located must be around 5 mm lower than the other sides.




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

a. For installation work, the pattern board is required. The pattern board for installation and the checking scale are printed on the back side of the packing.

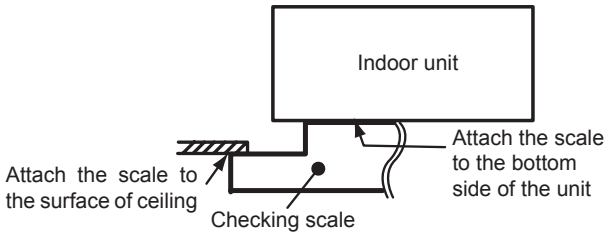
b. Cut off the checking scale for dimension of opening from the packing.

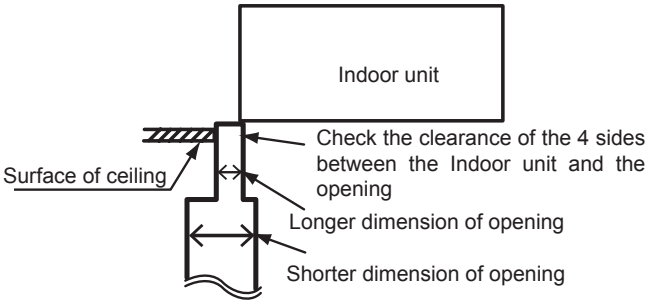



Adjust the indoor unit to the correct position using the pattern and checking pattern for the installation.

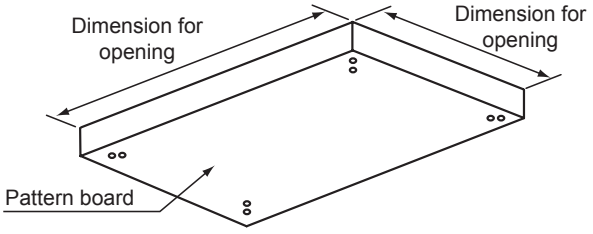
### For panelled ceilings

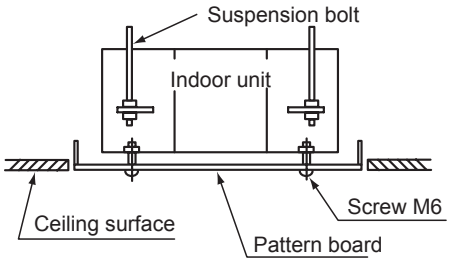
When installing the indoor unit to a false ceiling with an opening, check the dimension of the opening and adjust the clearance between the Indoor unit and the opening following the indications given in the next illustrations




### For ceilings without panels




a. When the false ceiling is not yet completed, attach the pattern board to the indoor unit with the M6 screws, as shown in the figure. And specify the location of the opening. Adjust the position of the indoor unit as the procedure “For panelled ceilings” after ceiling is completed.

b. Tighten two nuts of each suspension bolt after the adjustment is completed. Apply thread-locking product to the suspension bolts and nuts in order to prevent them from loosening, otherwise, abnormal noise may be caused by mechanical vibrations and the indoor unit may become loose.

c. Adjust the indoor unit to the correct position, using the checking scale.

### 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) |



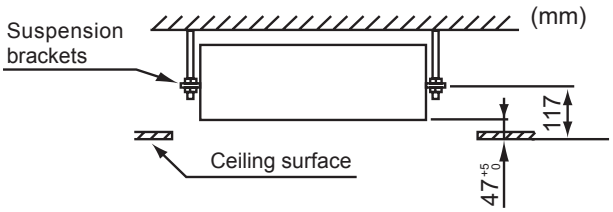
### 2.3.4 Air panel installation

**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.*

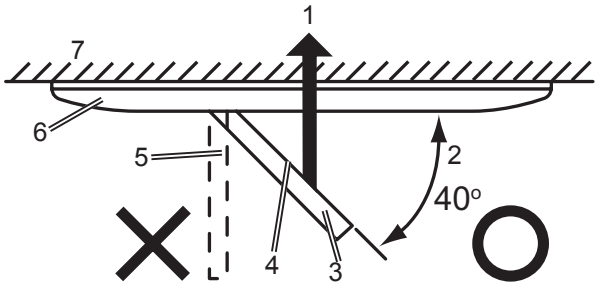
#### ◆ Location of the suspension brackets

Make sure the suspension brackets on the indoor unit are approximately 117 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 | 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.*

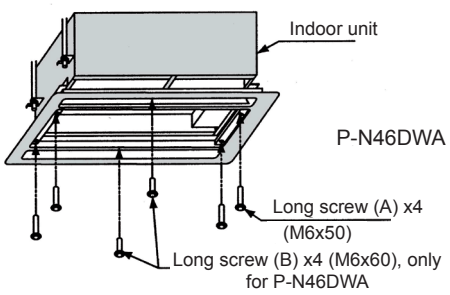
#### ◆ Air panel installation

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.*

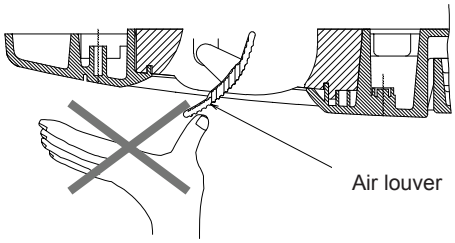



Check that there are no gaps in the touching surface between the indoor unit and the air panel. Gaps may cause air leaks or condensation.

### ◆ Considerations following air panel installation

## ⚠ CAUTION

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

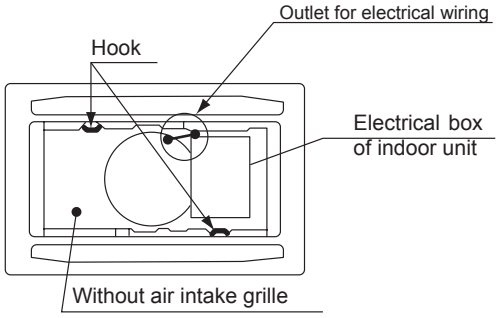



### ◆ Electrical connection of the air panel

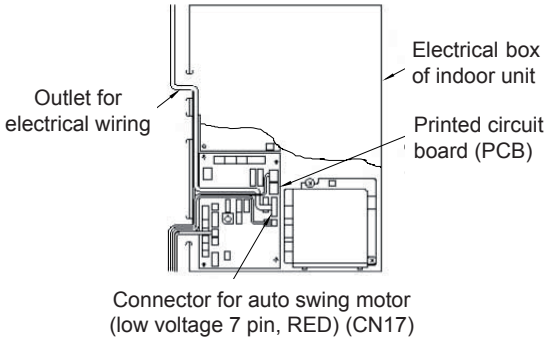
## ⚠ CAUTION

*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).



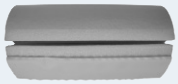
## 2.4 RPC - Ceiling

### 2.4.1 Accessories supplied with the unit RPC-FSN3

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. |
| Washer |  | 8 | For suspension bracket |
| Pipe Insulation (Large) |  | 1 | For refrigerant piping connection |
| Pipe Insulation (Small) |  | 1 | |
| Cord Clamp (Large) |  | 6 | For Fixing Insulation |
| Cord Clamp (Small) |  | 1 | For Fixing Plug |
| Drain hose |  | 1 | For the drain hose connection. |
| Wire clamp |  | 2 | |
| Insulation material (5T x 200 x 200mm) |  | 2 | For the drain hose connection. |

## 2.4.2 Unit installation

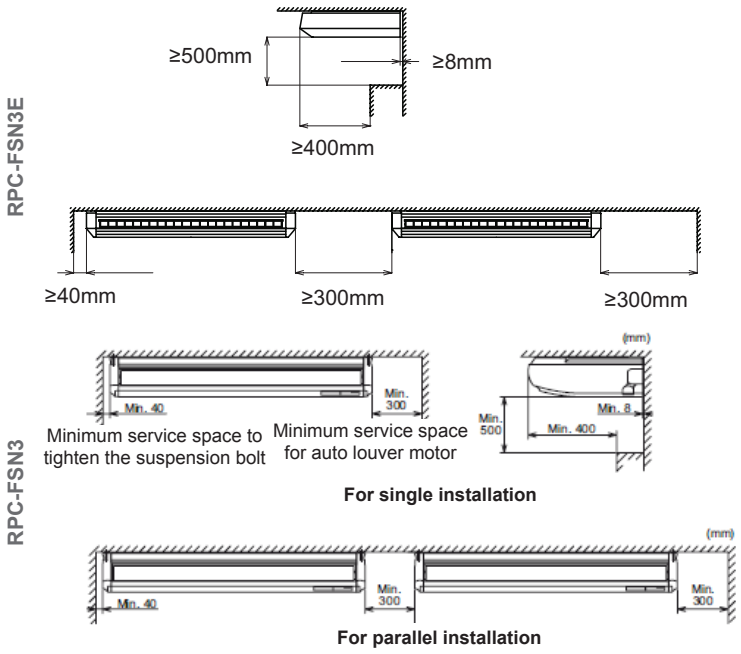
### ◆ Initial checks

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.



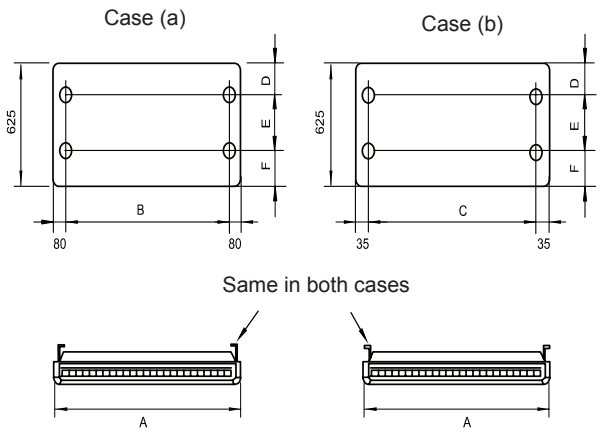

## 2.4.3 Suspension bracket installation RPC-FSN3E

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:

Unit: mm

| Model | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| RPC-2.0 | 1314 | 1140 | 1230 | 150 | 220 | 255 |
| RPC-2.5 | | | | | | |
| RPC-3.0 | 1314 | 1140 | 1230 | 110 | 280 | 235 |
| RPC-4.0 | | | | | | |
| RPC-5.0 | 1574 | 1400 | 1490 | 110 | 280 | 235 |
| RPC-6.0 | | | | | | |



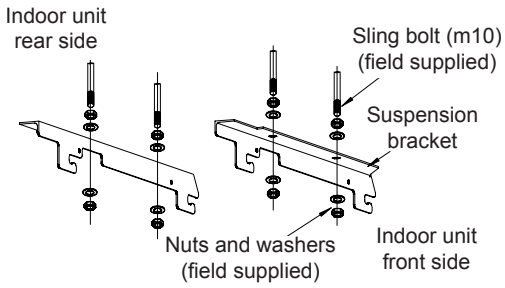
Select the suspension bracket system in line with installation requirements.

**NOTE**

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

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

2 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.

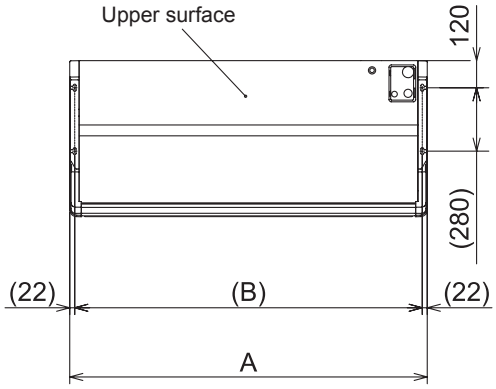



### 2.4.4 Suspension for FSN3 units

1 Determine the final location and installation direction of indoor unit with care to the space for piping and wiring.

2 After the position of indoor unit is determined, make holes in the ceiling to install the suspension bolts.

The position of suspension bolts is shown below.

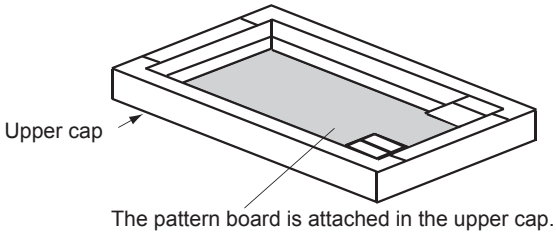



(): Dimension for suspension bolt

| HP | A | B |
|---|---|---|
| (1.5-2) | 960 | 916 |
| (2.5-3) | 1270 | 1226 |
| (4-6) | 1580 | 1536 |

3 Ceiling Work: It is different depending on the building structure. Consult with an architect or an interior finish worker for more information. Do not install electric light units and the indoor unit to the same furring for ceiling. If installed, electric lights may flicker or vibrate by the indoor unit operation. When installing the indoor unit and electric lights, a furring for ceiling must be separated for each.

4 Pattern Board for Installation. The pattern board for the installation is printed on the packing. When making holes in wall and ceiling, the pattern board which hole positions for suspension, refrigerant pipe and drain pipe are printed shall be used.




5 Hanging indoor unit:

- Hanging indoor unit with suspension bracket

6 Make holes in the ceiling for suspension bolts.

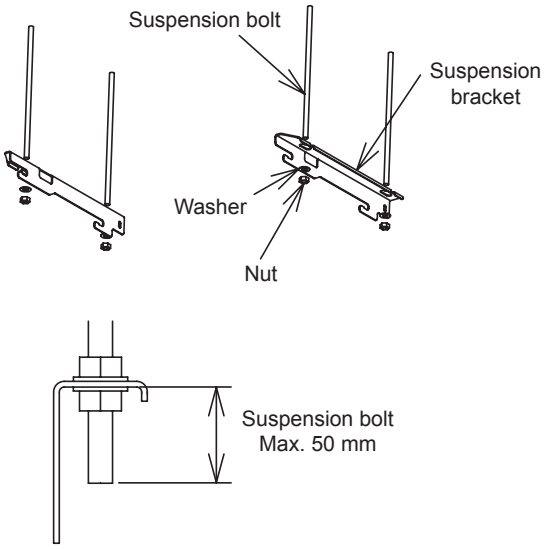
a. Remove the side cover.

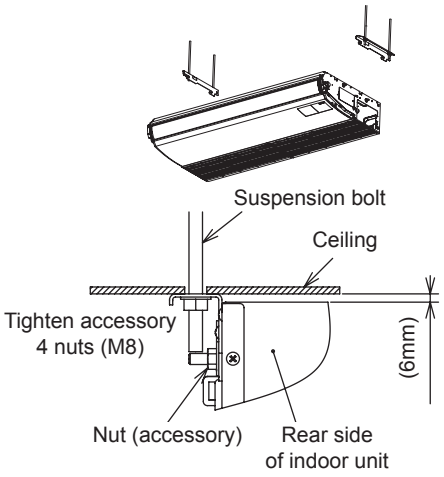
b. Remove the suspension brackets attached to the indoor unit.

c. Fix the suspension brackets to the suspension bolts (4 portions).

d. Mount the indoor unit to the suspension brackets.

e. Tighten the 4 nuts and the fixing screw for suspension bracket.



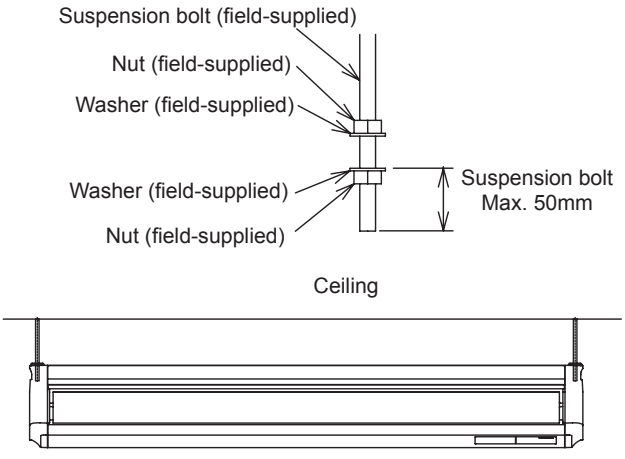

- Hanging indoor unit without suspension bracket

If there is not enough service space between the ceiling and the indoor unit, hang the indoor unit by method *Hanging indoor unit with suspension bracket*.

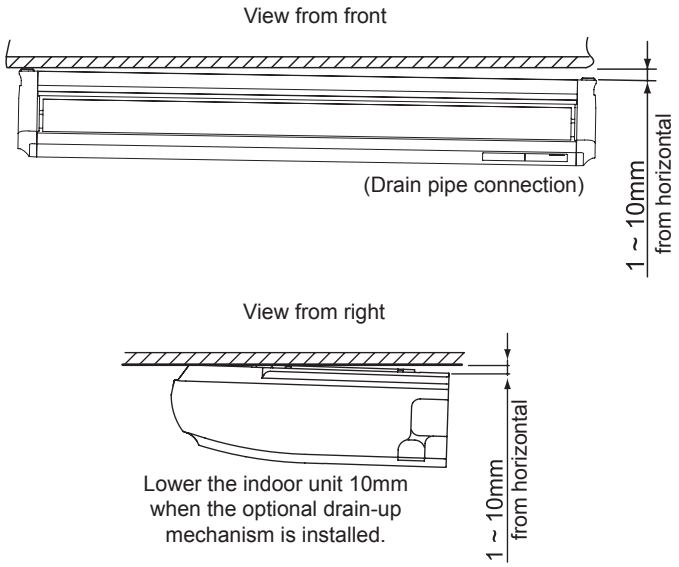
7 Determine the position to install the suspension bolt.

a. Fix the washer and nut to the suspension bolt.

b. Mount the indoor unit to the suspension bolts.



8 When the indoor unit is mounted, create down-slope toward drain pipe connection to be well drainage. The figure shows the right drain pipe connection. (Before shipment) For the left drain pipe connection, create down-slope toward left.




**NOTE**

*The ceiling surface may not be horizontal. When the indoor unit is mounted, check the levelness by a level to be the drain pipe connection down-slope. If the indoor unit is mounted with incorrect suspending position, it may deform and the abnormal vibration may occur.*

9 Attach the side cover and the supporting string.

10 Remove the protection film attached to the louver surface.

11 Remove the protection tape attached to the air inlet filter.

### 2.4.5 Indoor unit installation

**CAUTION**

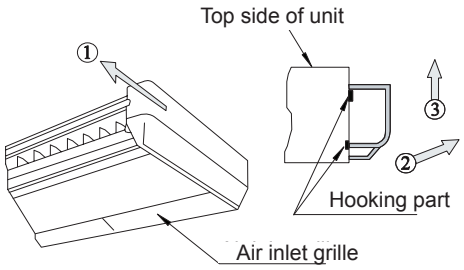
*To avoid damage to the resin side covers, remove them before lifting or moving the indoor unit.*

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.

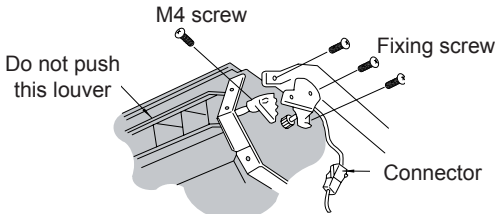
Check that the nuts and washers are correctly secured with the suspension bracket retainers and fit the brackets onto their nuts and washers on the other side.

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




**CAUTION**

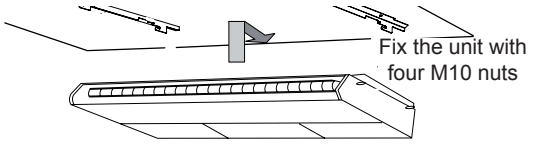
*Do not move the air louver by hand. The drive mechanism may be damaged.*



### ◆ 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.

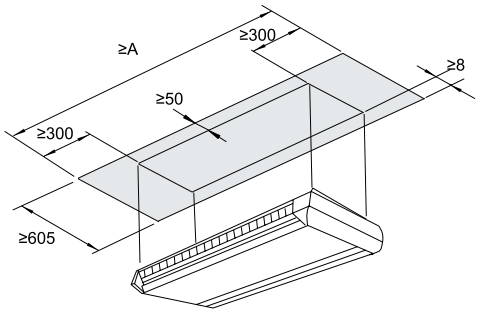
### ◆ Partially built-in unit installation

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.*

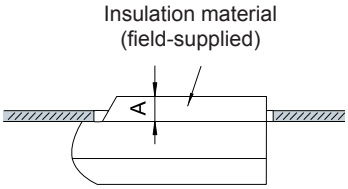



| Model | A |
|---|---|
| RPC-2.0FSN3E | 1560 |
| RPC-(2.5-4.0)FSN3E | 1780 |
| RPC-(5.0-6.0)FSN3E | 2040 |

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

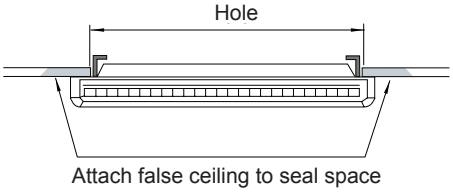
Fit the nuts, flat washers and spring washers supplied to secure the indoor unit.

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)FSN3E | 13 |
| RPC-(4.0-6.0)FSN3E | 75 |

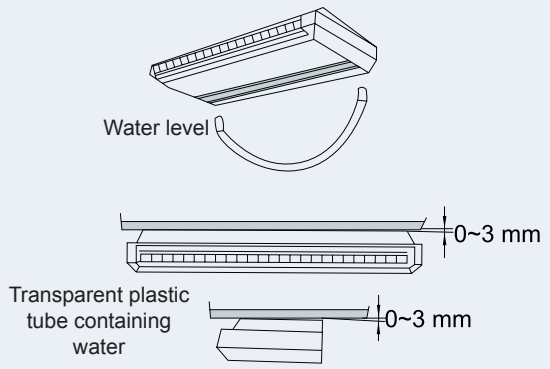
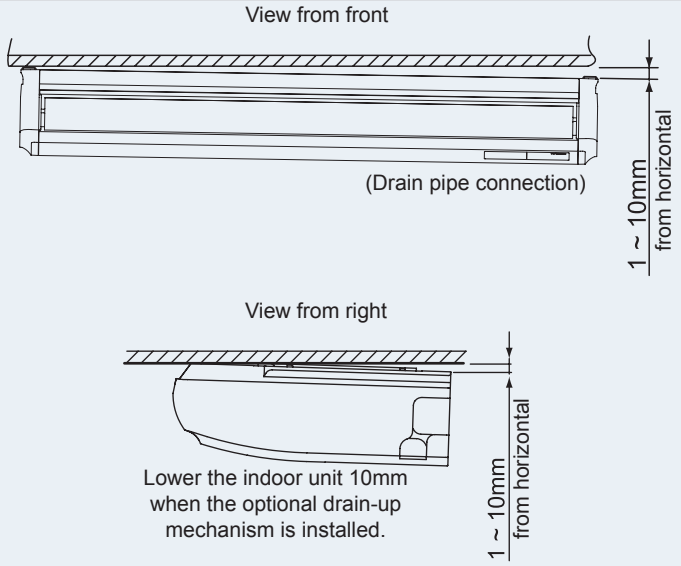
Fit the false ceiling panels along the unit.



### ◆ 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.

| RPC-FSN3E | RPC-FSN3 |
|---|---|
|  |  |

# 2.5 RPI(M) - Ducted indoor unit (0.6-6.0)FSN4E(-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.*

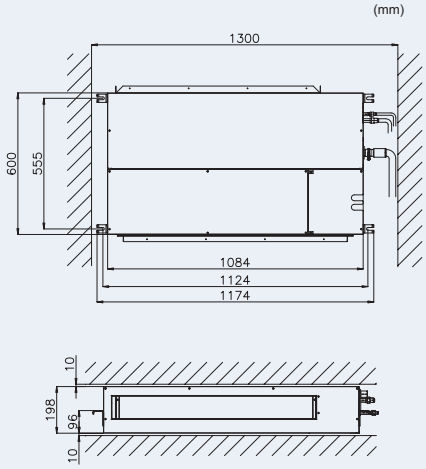
| Accessory | Appearance | Quantity | Purpose |
|---|---|---|---|
| Wire clamp |  | 1 | For the drain hose connection. (only for RPI-(0.8-1.5)FSN4E) |
| Drain hose |  | 1 | For drain connection (only for RPIM) |

## 2.5.2 Unit installation

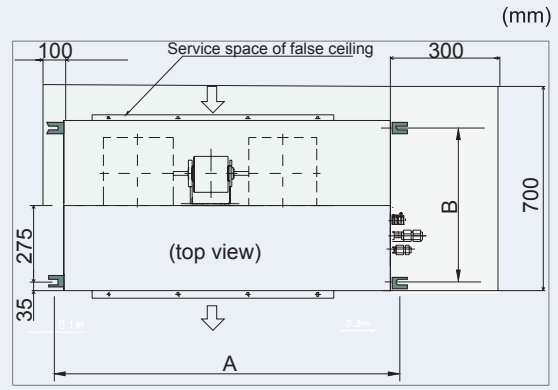
### ◆ Initial checks

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

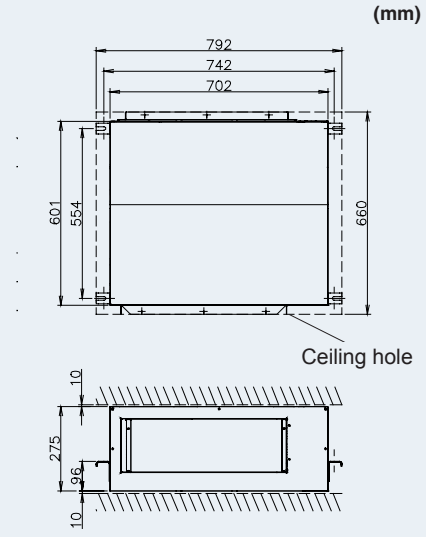
**RPI - Ducted indoor unit (0.6-1.5)FSN4E**




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




**RPIM - Ducted indoor unit (0.6-1.5)FSN4E(-DU)**



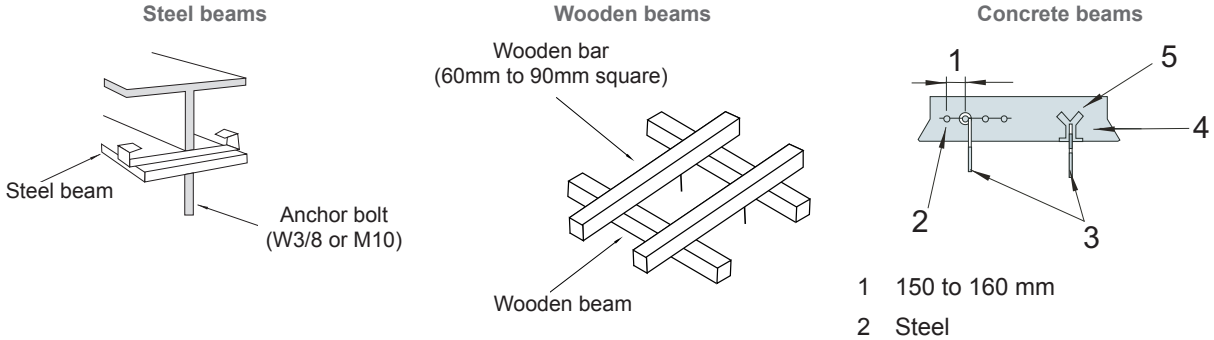
Before starting installation, plan the direction of the pipes and wiring required. Also bear in mind that there must be enough space around the unit for installation and maintenance.

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.

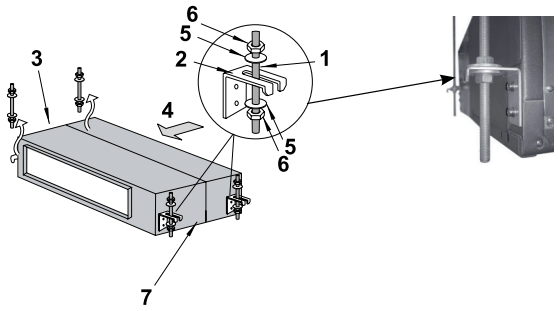
### ◆ Installation

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




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

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.

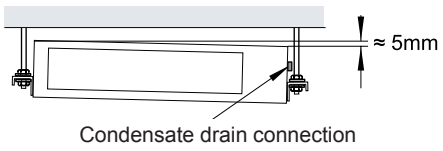
Check that the nuts and washers are correctly secured with the suspension bracket retainers and fit the brackets onto their nuts and washers on the other side.

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.*

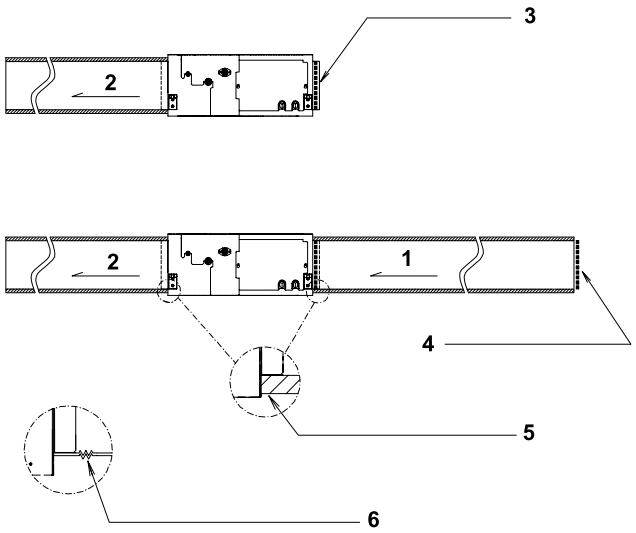
### 2.5.3 Air duct connection

**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)

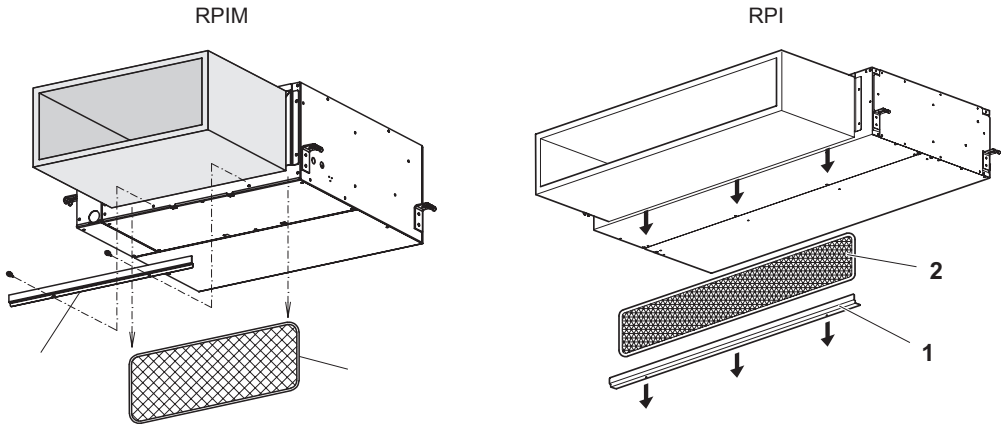



Bear in mind the following instructions depending on the installation type:

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.

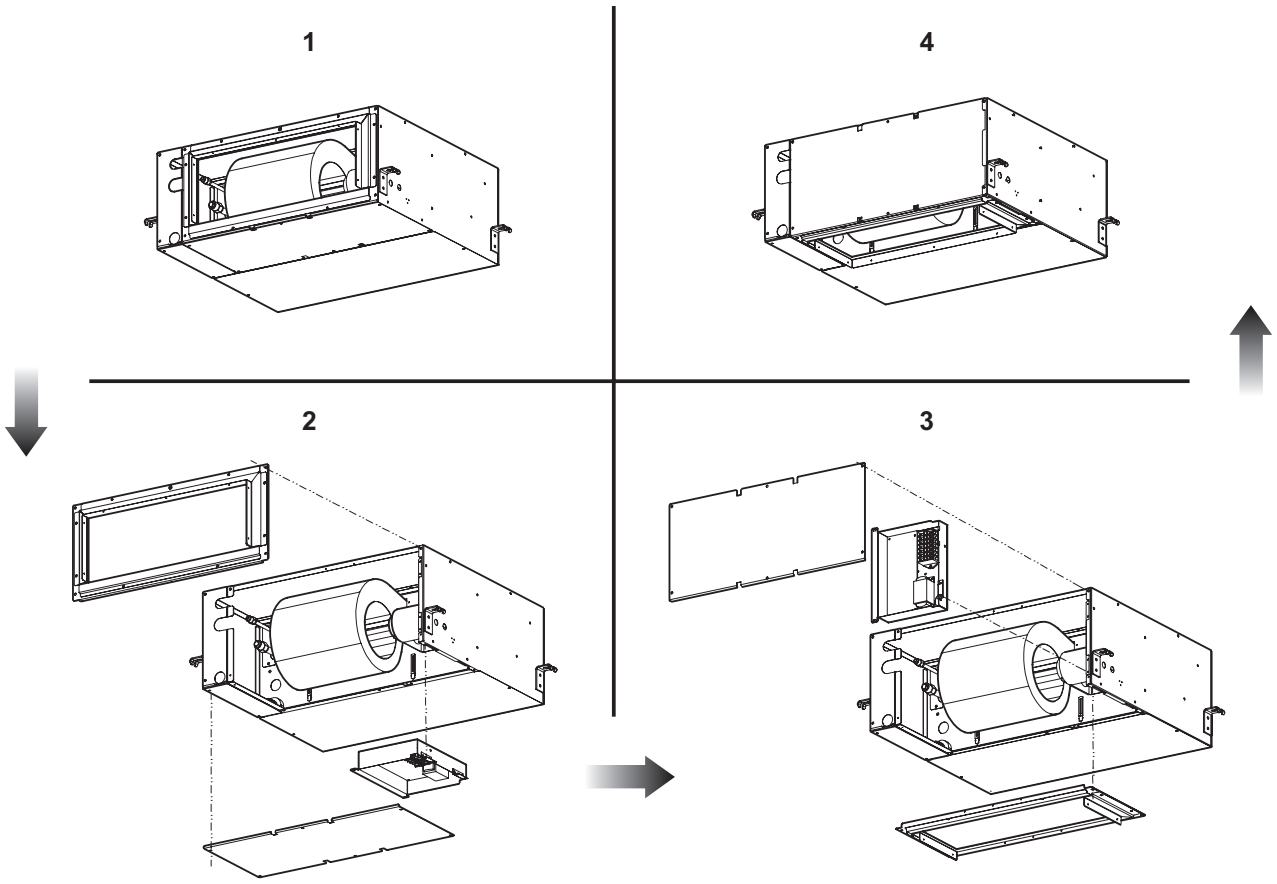
### 2.5.4 Maintenance of the suction air filter

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.




Change in the air suction direction RPIM-(0.6-1.5)FSN4E (-DU)

Change in position of the air inlet on RPIM-(0.6-1.5)FSN4E(-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).

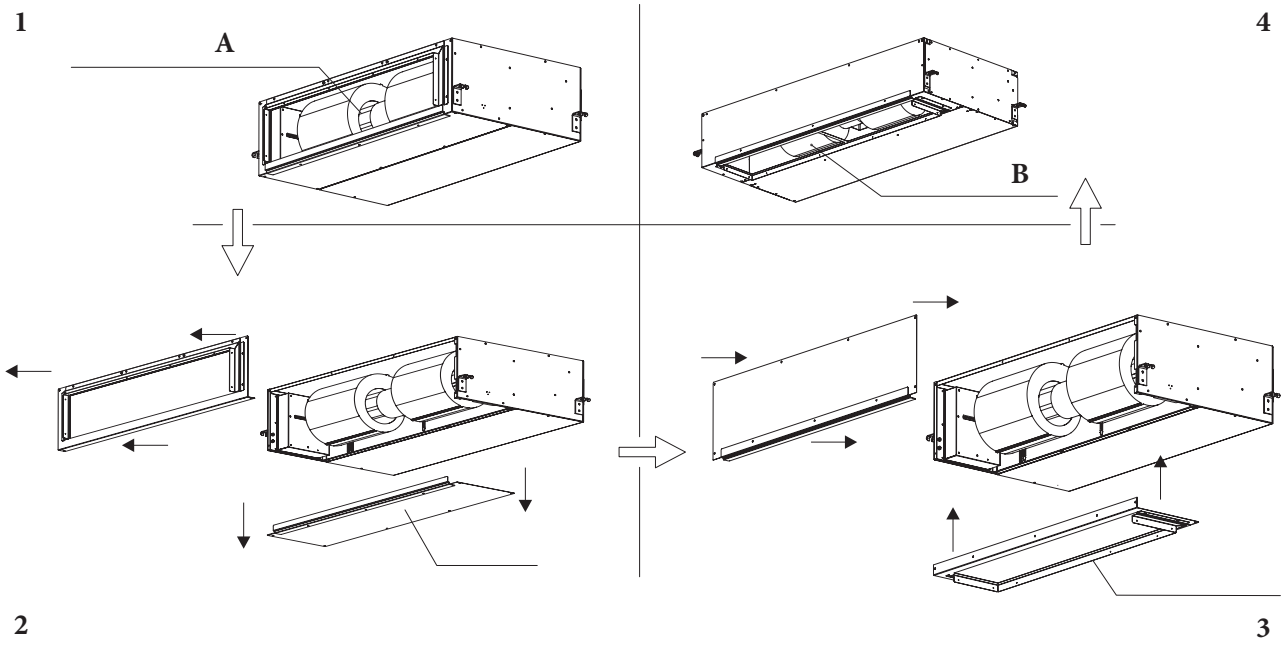
2 Remove the front and rear covers and the electrical box from the unit.

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(-f)

## 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) | | | |

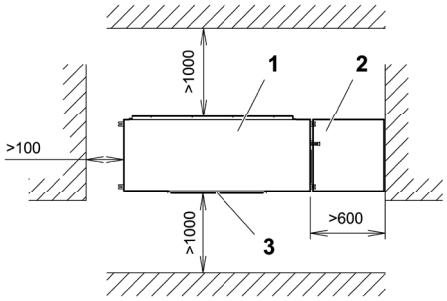


## 2.6.2 Unit installation

### ◆ Initial checks

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

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

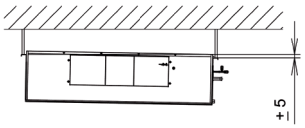



Check that there is enough space around the unit. Consult the corresponding chapter of the Technical Catalogue for information on the unit measurements.

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.

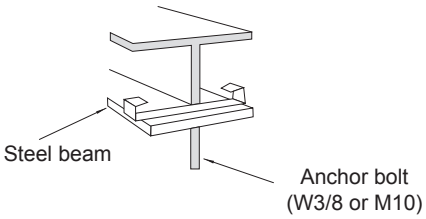
Check that the drain hose can be installed maintaining the necessary down-slope.



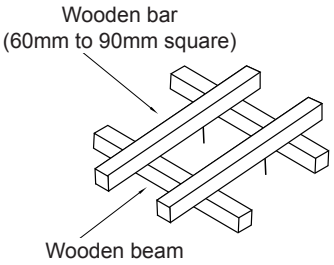
## ◆ Installation

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

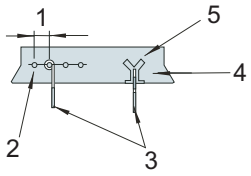
**Steel beams**




**Wooden beams**




**Concrete beams**

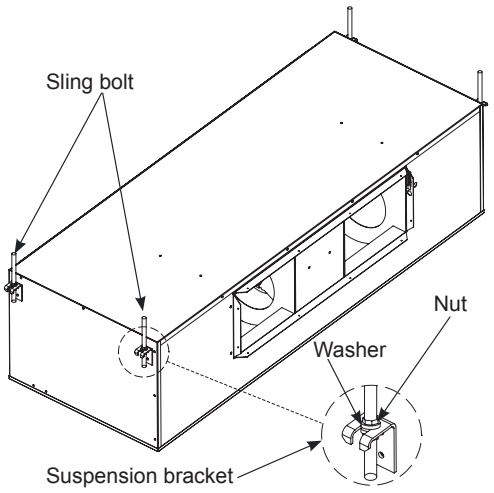



1 150 to 160 mm
2 Steel
3 Anchor bolt (W3/8 or M10)
4 Concrete
5 Insert (100 to 150 kg)

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**

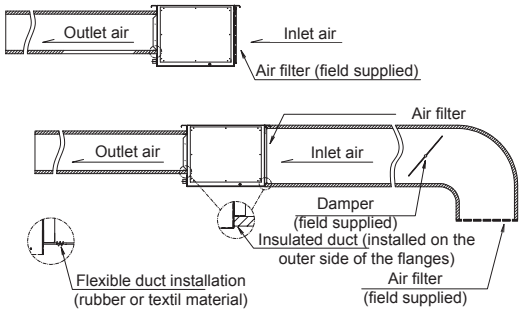
- *Use field-supplied flexible ducts to avoid abnormal acoustic vibrations.*
- *RPI units are supplied with a standard air filter on the suction side. This filter is supplied for cases where no suction duct is applied (or when the duct is very short).*

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.

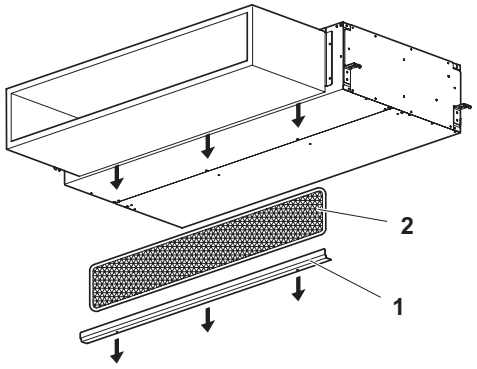
2 Where the suction duct is used, fit the air filter at the suction duct inlet point, removing the standard air filter from the unit. This air filter must be field-supplied or a factory-adapted one must be used.






### 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.



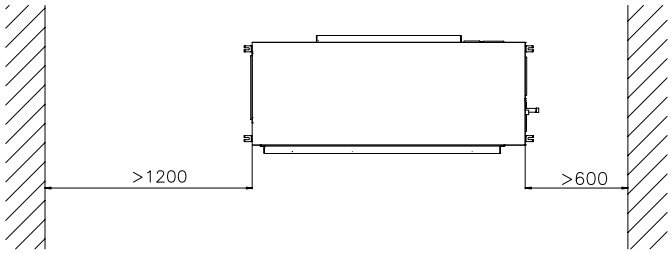
# 2.7 RPI - Ducted indoor unit (16/20)FSN3PE(-f)

## 2.7.1 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.

(mm)



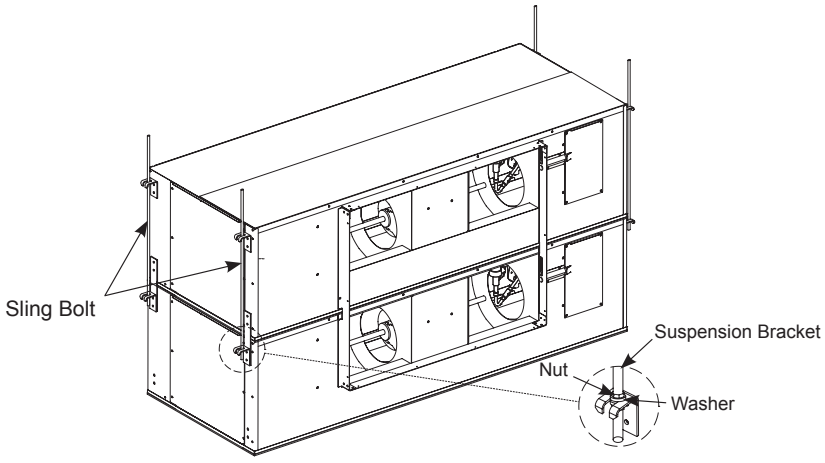

### ◆ Unit's hanging

Install the sling bolts, 4xM10 or greater are recommended, and suspend the indoor unit using the following steps:

1 Hook the suspension bracket of the lower unit to the nut and washer of each sling bolt, as shown, starting from one side.

2 After checking that the nut and washer has been correctly fixed by the retainers of the suspension bracket, hook the top side of the suspension bracket (of the lower unit) by using another nut and washer as shown below.

3 Hook the upper unit brackets for balancing the total weight of the whole unit by tightening the nuts and washers of its hooks.



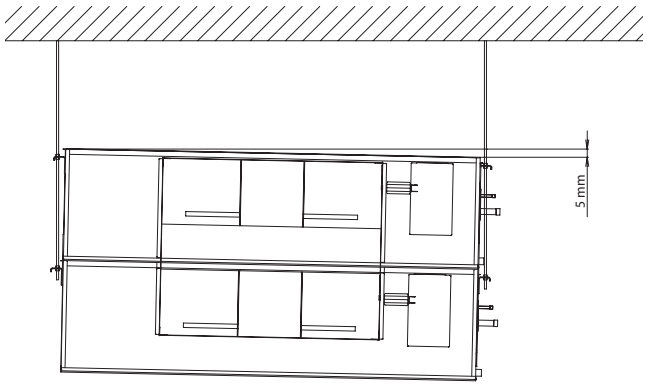

**⚠ CAUTION**

*It is mandatory to hang the unit by the 8 hooks for distributing the unit total weight on its suspending brackets correctly.*

## ◆ Drain Pan Level

Front View

- Check to ensure that the foundation is flat, taking into account the maximum foundation gradient.
- The unit should be installed so that the Drain Pan side of the unit is slightly (approximately 5 mm) lower than the opposite side, in order to avoid the incorrect position of the drain discharge.
- Tighten the nuts of the suspension bolts with the suspension brackets after adjustment is completed.
- Special plastic paint must be applied to the bolts and nuts in order to prevent them from loosening.
- 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.




**NOTE**

*Keep the unit as well as relevant equipment covered with the vinyl cover during installation work.*

## ◆ Air duct connection

Fix the Flexible Air Duct to External Faces of unit flanges (the unit is equipped with factory supply flanges for this purpose).

It is recommended to use a Flexible field supply Duct portion in order to avoid any abnormal sound vibration.

RPI-units are supplied with standard Air Filter at the suction side. This filter is provided for the cases in which no Suction Duct is applied (or it is very short).

It is recommended the following indications depending on the installation.

- Keep the standard Air Filter in case of no Suction Duct is applied (fig.1).
- In case of applying Suction Duct, it is recommended to apply Air Filter at the inlet point of Suction Duct, removing the standard Air Filter of the unit (fig. 2).

**Fig.1**

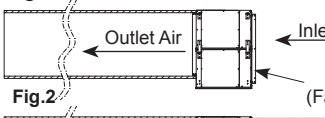
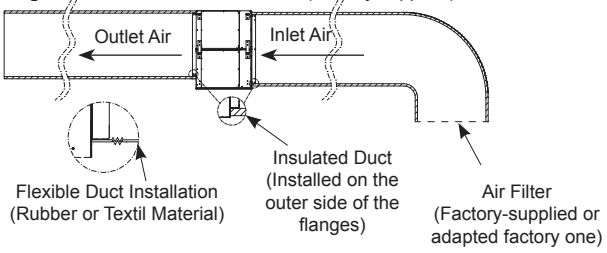



**Fig.2**

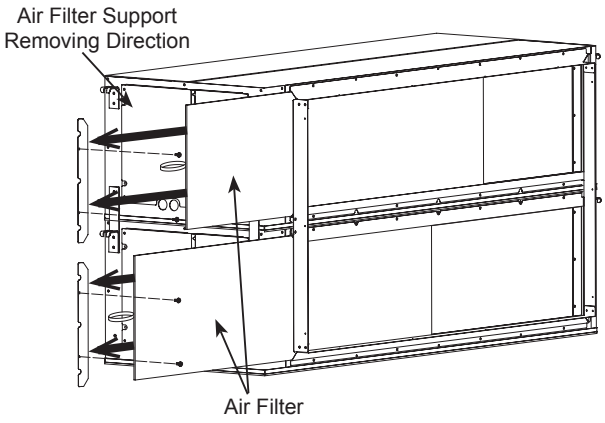



## ◆ Maintenance of the suction air filter

Filter maintenance could be performed from right or left side of the unit.

Remove filter support (x2 screws / each support) and pull out the filter from the handle.

In those installations where the servicing space is narrow, the filter could be bent (in three pieces) when pulling it out.



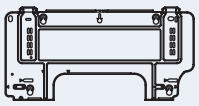
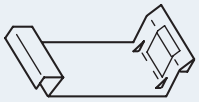
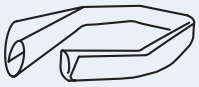
# 2.8 RPK - FSN(H)3M Wall mounted

## 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.*

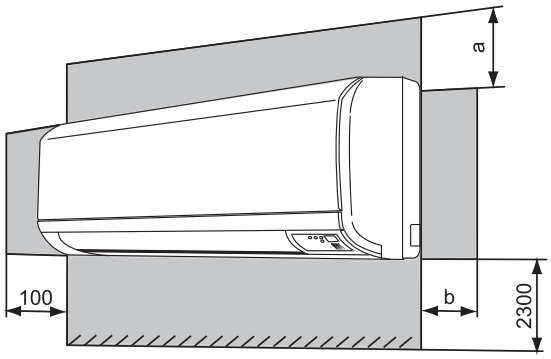
| Accessory | | Q'ty | | | Purpose |
|---|---|---|---|---|---|
| | | 0.8-1.0 | 1.5 | 2.0-4.0 | |
| Suspension bracket |  | 1 | 1 | 1 | For mounting indoor unit |
| Screw (Ø4 x 25L) |  | 6 | | 8 | For fixing suspension bracket |
| Screw (Ø4 x 40L) |  | 2 | | 4 | |
| Fixing plate |  | - | | 1 | For fixing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

## 2.8.2 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-(0.6-1.5)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.*

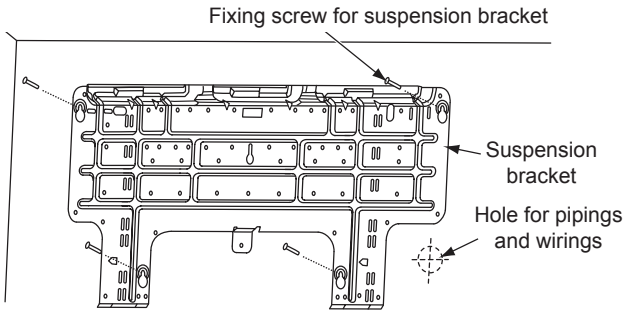
Check that the drain hose can be installed maintaining the necessary down-slope.

## ◆ Installation

### ⚠ CAUTION

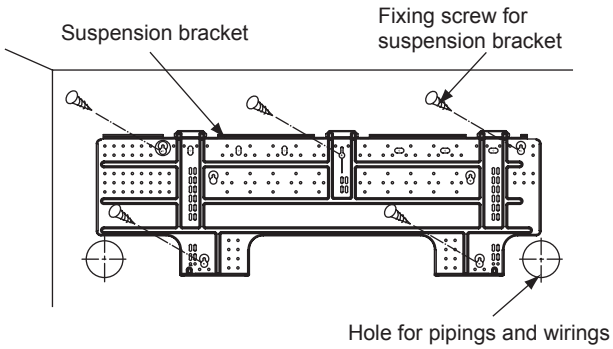
- *Where the mounting bracket must be installed on a wooden or concrete wall, make sure it is resistant enough to withstand a weight of 200 kg.*
- *Do not fit the mounting bracket to a pillar.*
- *The place where the indoor unit is to be installed must be a flat surface with enough space to fully house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

**RPK-(0.6-1.5)FSN(H)3M**




Fix the suspension bracket with more than 4 fixing screws.

**RPK-(2.0-4.0)FSN3M**



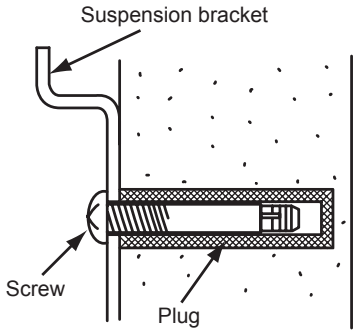

Fix the suspension bracket with more than 5 fixing screws.

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.

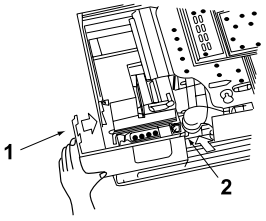



| | Q'ty | |
|---|---|---|
| Plug size | RPK-(0.6-1.5)FSN(H)3M | RPK-(2.0-4.0)FSN3M |
| M4-M5 | 4 | 5 |

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.*

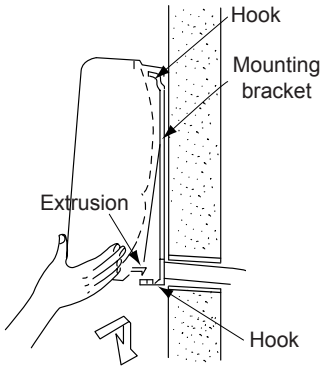


Lift the unit carefully.

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

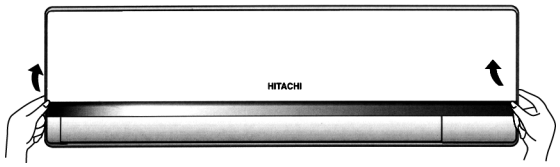
**⚠ CAUTION**

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



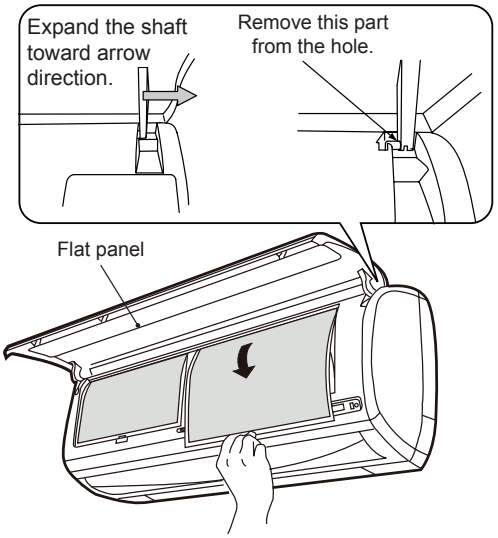

### ◆ Removal of the front panel for RPK-(0.6-1.5)FSN(H)3M

Hold both sides of flat panel and open it fully.



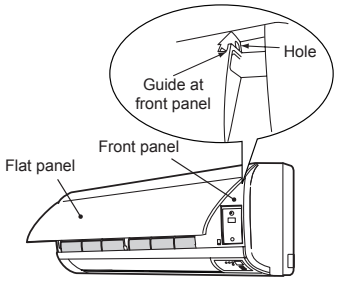

Lift up the air filter, detach the catches from the indoor unit and remove the air filter downward.

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.



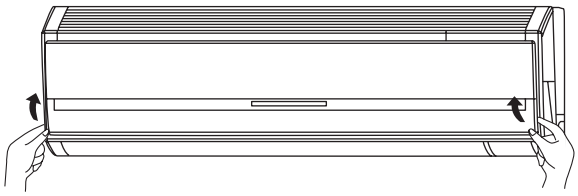

### ◆ Attaching flat panel for RPK-(0.6-1.5)FSN(H)3M

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

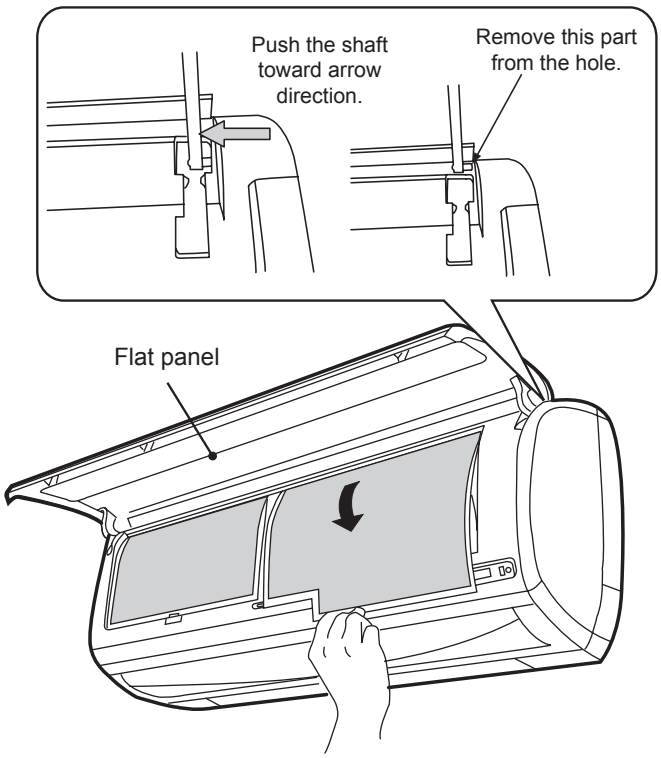
Hold both sides of flat panel and open it fully.



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.



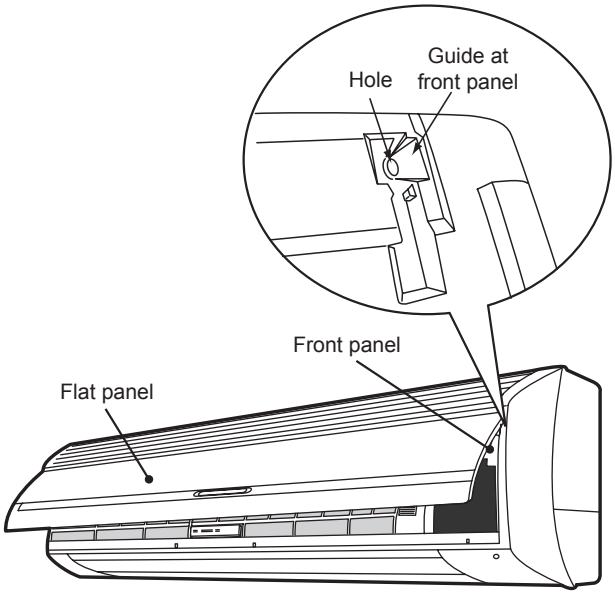



### ◆ Attaching flat panel for RPK-(2.0-4.0)FSN3M

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.

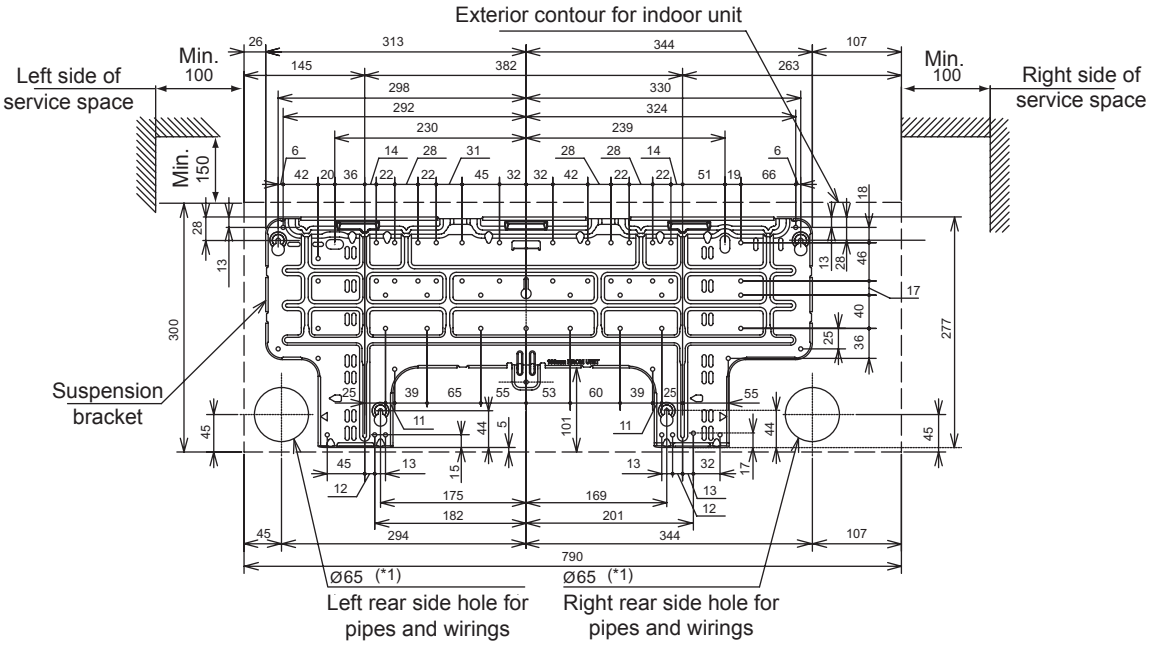
**⚠ CAUTION**

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



## 2.8.3 Mounting bracket dimensions

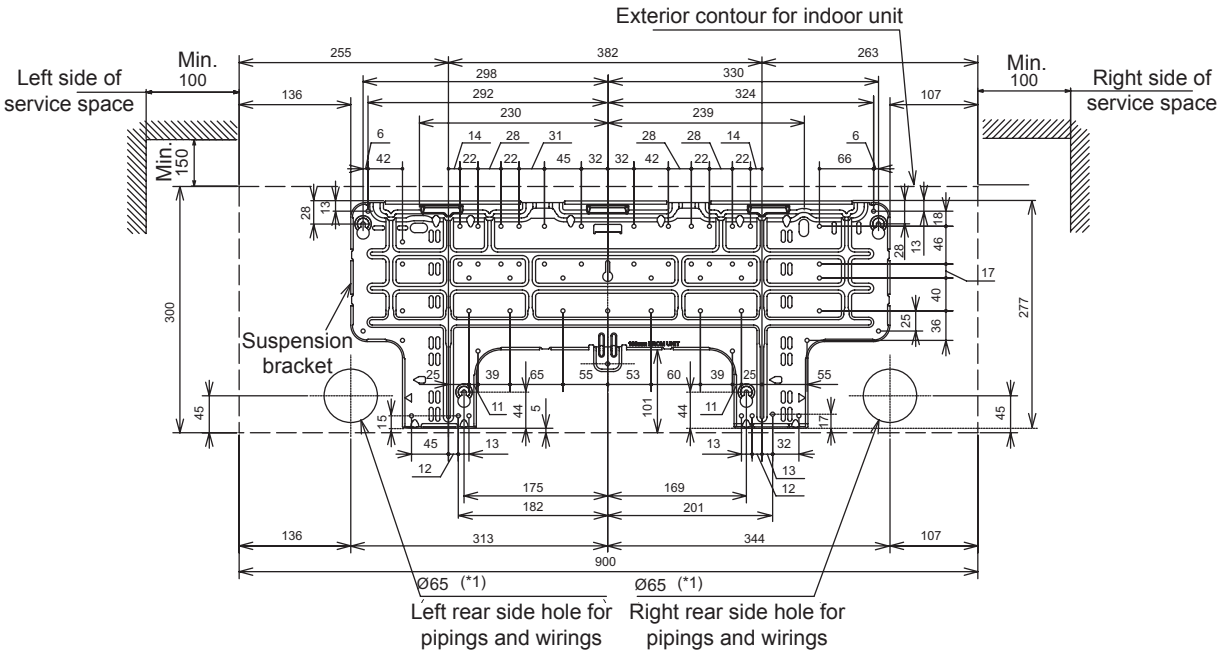
### ◆ RPK-(0.6-1.5)FSN(H)3M unit suspension bracket



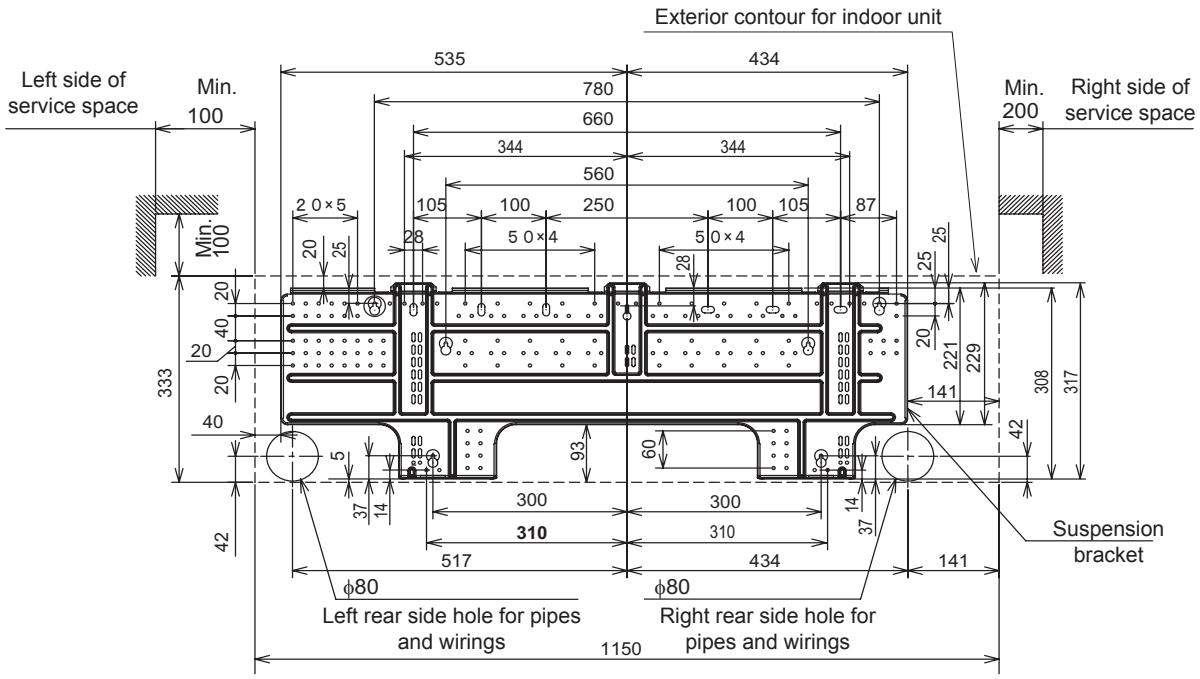

For RPK-(0.6-1.0)FSNH3M units it is recommended to connect the piping at the right rear side of the body to avoid the sound from the refrigerant running through.

### ◆ 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



# 2.9 RPF - Floor type, RPFI - Floor concealed type

## 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.*

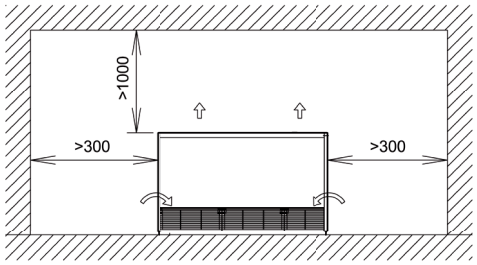
| Accessory | Appearance | Quantity | Purpose |
|---|---|---|---|
| Installation adjustment screw |  | 4 | To adjust the flat level of the unit. |
| Philips head screw |  | 2 | For PC-ARFPE |

## 2.9.2 Unit installation

### ◆ Initial checks

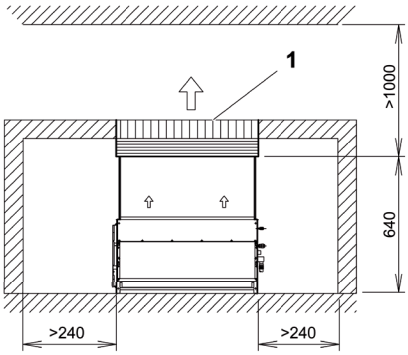
Check that there is enough space around the unit. Consult the corresponding chapter of the Technical Catalogue for information on the unit measurements.

**RPF - Floor type (1.0-2.5)FSN2E**

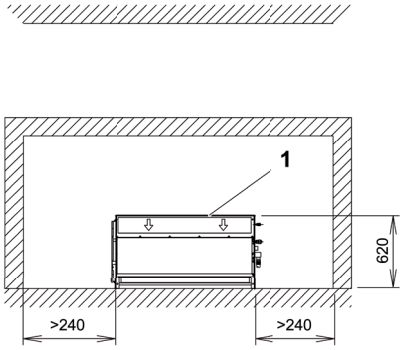



**RPFI - Floor concealed type (1.0-2.5)FSN2E**

1. Vertical air outlet.




1. Horizontal air outlet.



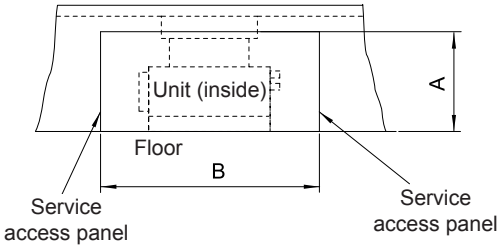

Before starting installation, plan the direction of the pipes and wiring required. Also bear in mind that there must be enough space around the unit for installation and maintenance.

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.

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.

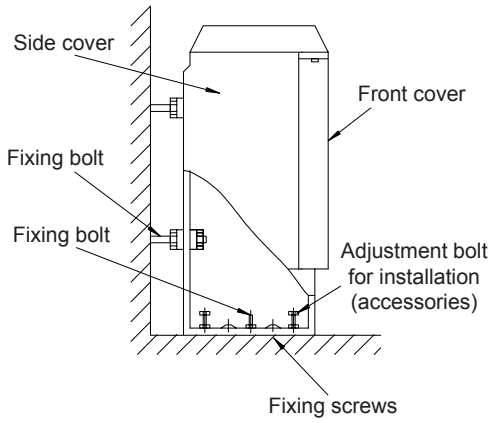
Check that the condensate discharge system in the unit works correctly. To do so, check the level of the drain pan using a spirit level. The side of the unit on which the drain hose is located must be around 3 mm lower than the opposite side.

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.

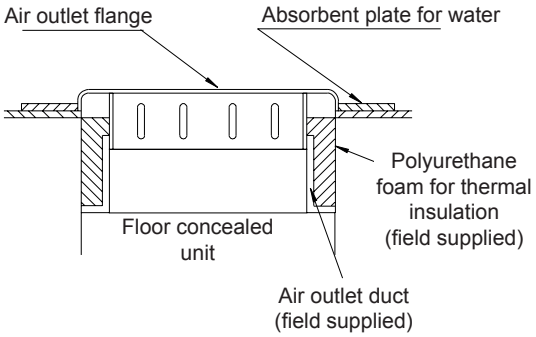



RPFI unit: install the optional air outlet grille as indicated in the figure.

**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.*

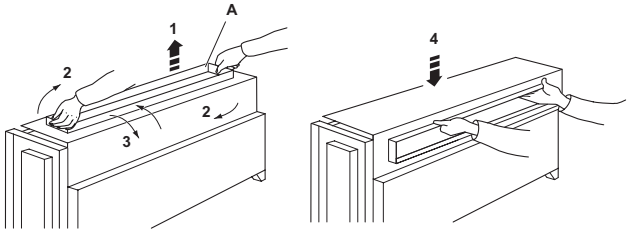
RPFI units: Install an additional access cover attached with screws so as not to touch the fan duct directly.




### 2.9.3 Change in the air outlet direction (RPFI units)

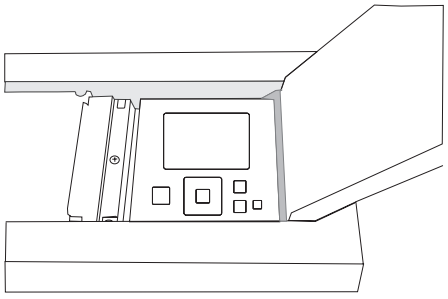
The air outlet direction of the unit can be modified to adapt it to installation requirements, as shown in the illustration.

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-.




### 2.9.4 RPF: Optional PC-ARFPE remote control location

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



# 2.10 KPI energy and KPI active unit

## 2.10.1 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.*

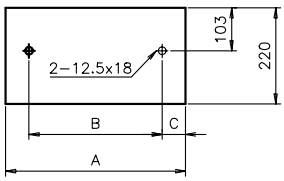
| Accesory | Appearance | Quantity |
|---|---|---|
| Duct adapter |  | 4 |
| Screw |  | 24 |
| Washer |  | 8 |
| Nut |  | 12 |
| Vibration Abs.Rubber |  | 4 |
| Rubber duct joint |  | 4 |



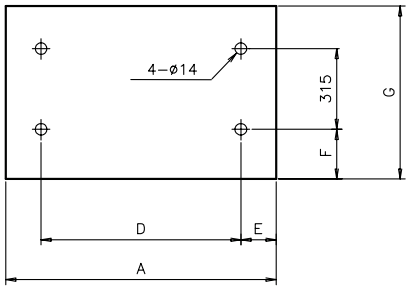
## 2.10.2 Unit installation

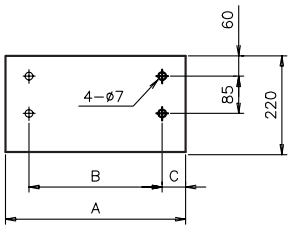
### ◆ Initial checks

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



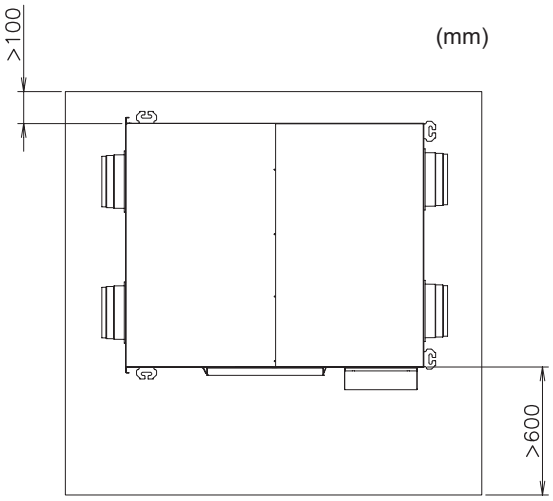

Fixing onto wall (View from front side)



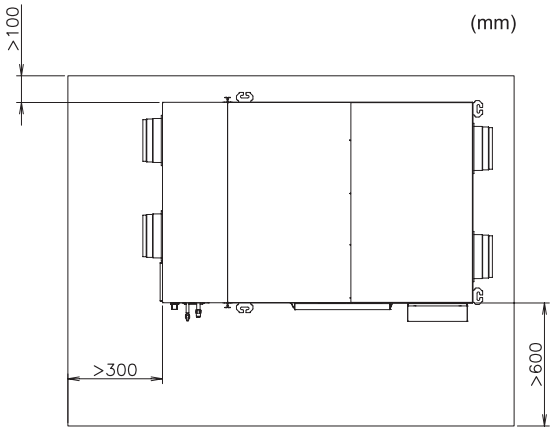




Fixing onto floor using wood screws (4-M5) (View from top side)

**KPI-(252-2002)E4E energy recovery unit**




**KPI-(502-1002)X4E 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.

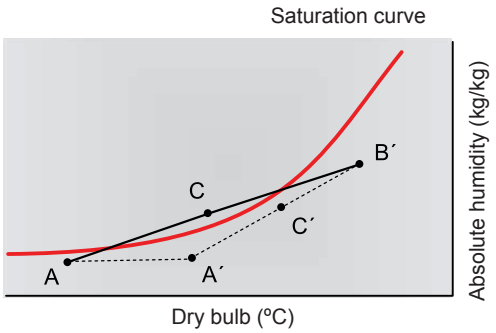
Choose a position in which the unit does not take in outdoor air mixed with combustion or exhaust fumes.

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 0ºC, -5ºC and -10ºC and an indoor air temperature of 30ºC. 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 |

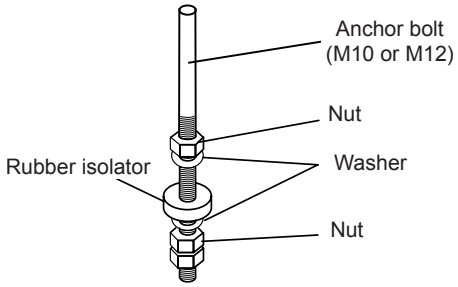
Prepare the sling bolts.

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.



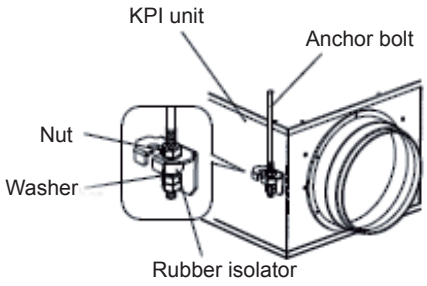



**⚠ CAUTION**

*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.



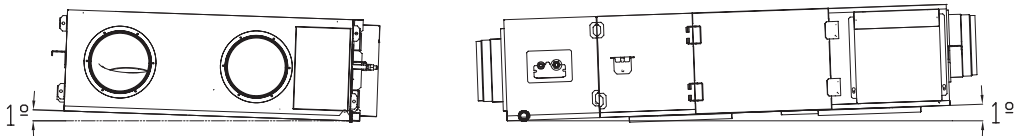

**⚠ CAUTION**

- *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-(502-1002)X4E

The unit should be installed so that one side of the unit is slightly 1º for KPI-(502-1002)X4E 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.*

### 2.10.3 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**

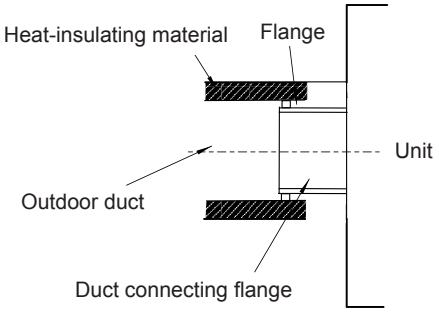
*When connecting the ducts, do not touch the damper plate located behind the main unit.*

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.



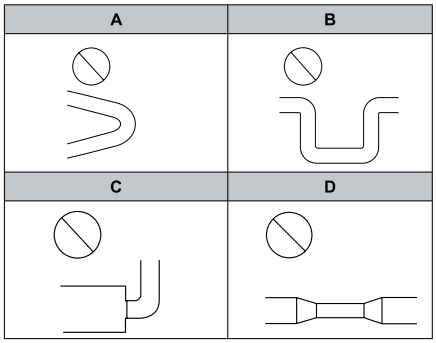

Do not install ducts along complex layouts or sharp bends. The volume of air may be reduced, leading to abnormal circulation noises. Particularly avoid the following situations:

A: extremely tight bends.

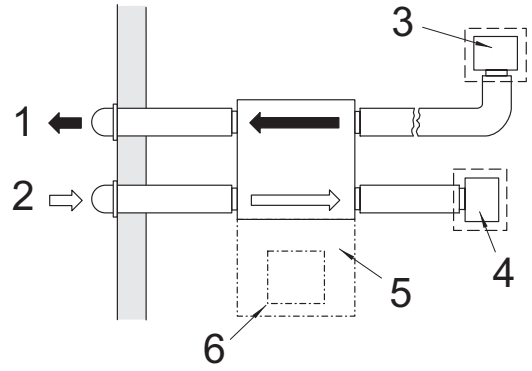
B: multiple bends.

C: bends next to the outlet.

D: extreme reduction of the diameter of the connected ducts.



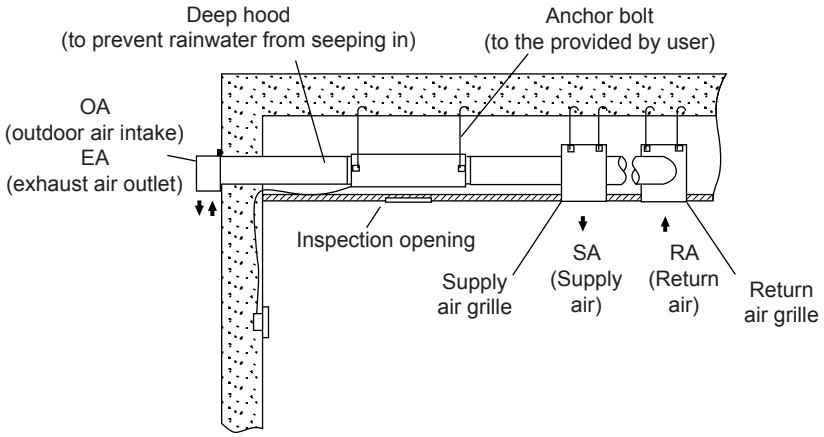
Example of installation:




| 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:



# 2.11 Econofresh Kit

## 2.11.1 Accessories supplied with the unit

Check to ensure that the following accessories are packed with the unit.

**NOTE**

*If any of these accessories are not packed with the unit, contact your contractor.*

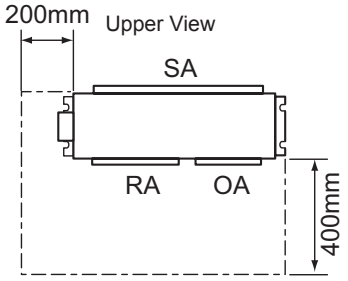
| Accessory | | Qty |
|---|---|---|
| Cord AS |  | 1 |
| Outdoor Thermistor (8m) |  | 1 |
| Screw (for RPI and Econofresh flanges connection) |  | 12 |

## 2.11.2 Unit installation

### ◆ Initial checks

Before Econofresh kit installation refer to indoor unit's Installation and Operation Manual.

Install the indoor unit with a proper clearance around it for operation and maintenance working space, as shown below.




SA: Suction air
RA: Return air
OA: Outlet air

**DANGER**

***Do not install the indoor unit in a flammable environment to avoid fire or an explosion.***

**CAUTION**

- *Check to ensure that the ceiling is strong enough.*
- *Do not install the unit outdoors .*
- *If installed outdoors, an electric hazard or electric leakage will occur.*

### 2.11.3 Mounting the unit

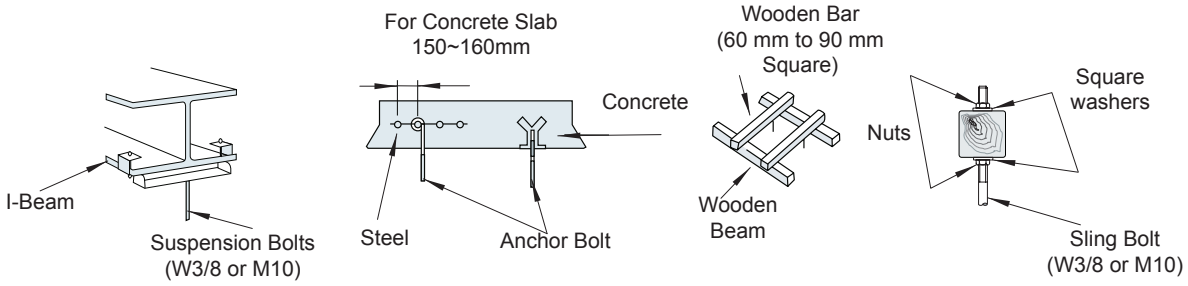
#### ◆ Step 1

Select a final location and installation direction of the unit paying careful attention to the space for wiring and maintenance.

#### ◆ Step 2

Mount suspension bolts, as shown on the figure beside.

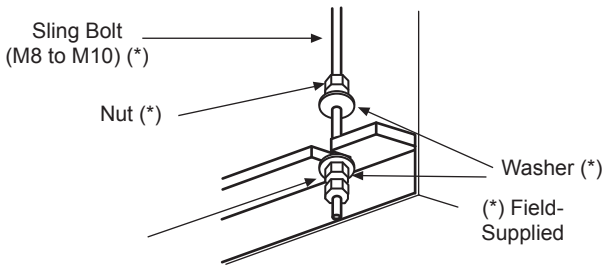
Installation dimensions are shown on Dimensional Drawing.




#### ◆ Step 3

Hanging the unit.

- Hang the suspension bracket on the anchor bolts and adjust in such a way that the unit is installed horizontally
- Tighten up securely using double nuts in order to prevent looseness.




**⚠ CAUTION**

*When suspending the main unit from the ceiling, do not handle it in such a way that a force will be applied to the control box.*

### 2.11.4 Example of installation

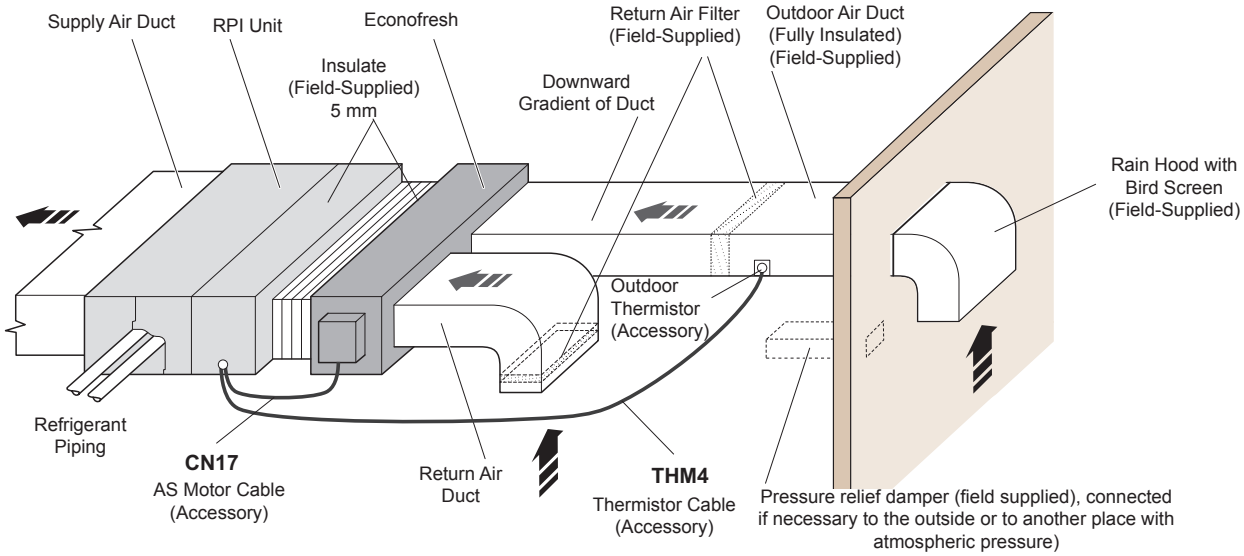
1 Ducting Connection

Pre-drilled duct flanges are provided at the supply, return and outdoor air intake connections. It is recommended that a flexible duct connection be installed to minimize sound and vibration transmission.

2 Insulation

All ducts should be insulated

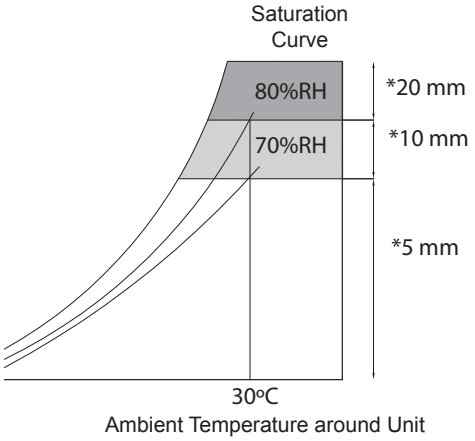
- Especially the outdoor air duct, through which the cold outdoor air flows in, must be sufficiently insulated.
- The lowest temperature of the entering outdoor air flowing through the outdoor air duct is the lowest temperature for heating operation at the installation site.




In the case that the unit is used under the following condition, perform additional insulation (*) or prepare a drain pan underneath the unit.

**NOTE**

*Ducting arrangement must comply with local regulations.*




**NOTE**

*For further information regarding this product, refer to the installation and operation manual.*

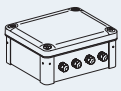
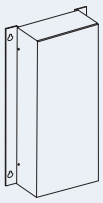
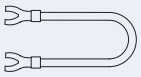
# 2.12 DX-Interface

## 2.12.1 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 | Qty | Purpose |
|---|---|---|---|
| Control box |  | 1 | System control box |
| Expansion valve box |  | 1 | Expansion valve for refrigerant cycle control |
| Thermistor |  | 4 | Temperature sensing:<br>inlet air (blue)<br>outlet air (red)<br>gas line (yellow)<br>liquid line (black) |
| Thermistor extension (5 m) |  | 4 | To extend thermistor length:<br>Inlet air (blue)<br>outlet air (red)<br>gas line (yellow)<br>liquid line (black) |
| Installation Manual and Declaration of conformity |  | 1 | Instructions and important notice |
| Control box fixing accessory |  | 4 | Control box cover lock |
| Harness jumper |  | 1 | Motor alarm connection jumper |

## 2.12.2 Unit installation

- The installation of a specific remote controller is necessary during the installation commissioning. 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 DX-interface 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 vapour or mist flows. Dew condensation water may occur on the expansion valve box while cooling operation. In this case, use the insulation.

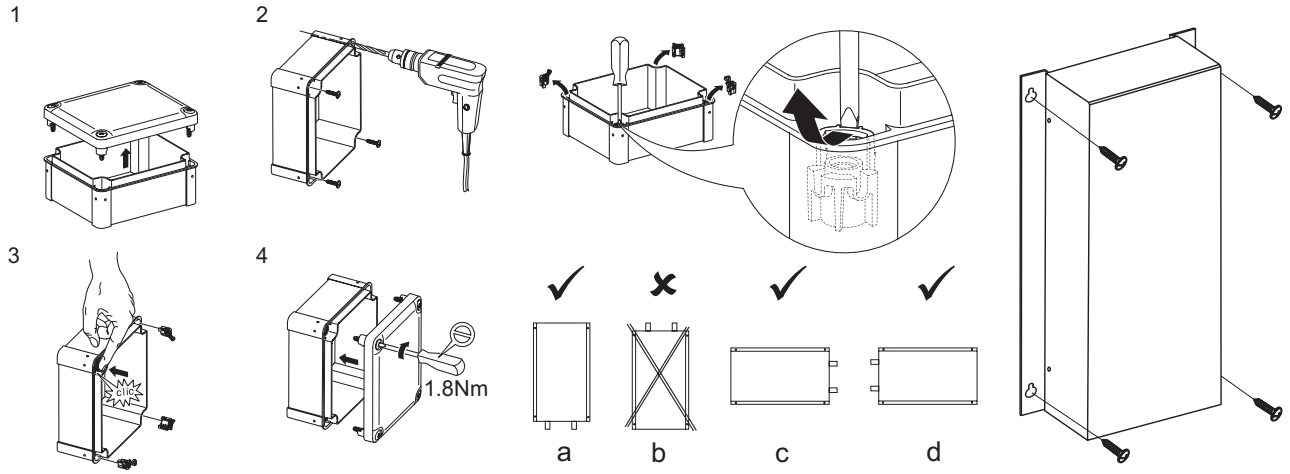
7 Do not install the DX-Interface in a organic solvent (thinner or benzine) environment. Synthetic resin parts may dissolve.

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.

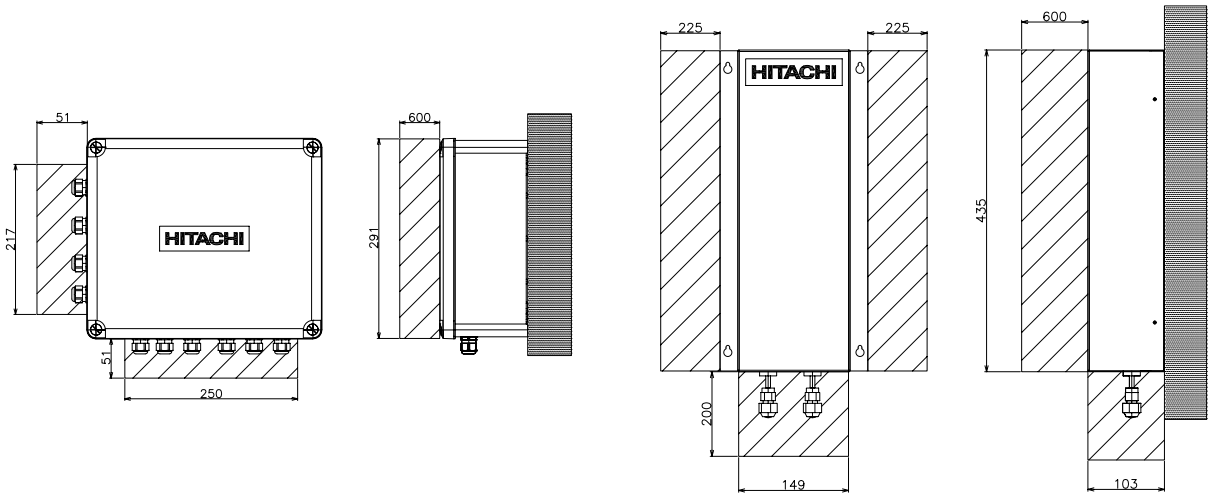
10 Use ceiling material with sound-proof such as plaster board.

### 2.12.3 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).

## 2.12.4 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 colour | PCB socket number | Thermistor length (mm) |
|---|---|---|---|
| Liquid pipe thermistor | Black | THM 3 | 650 |
| Gas pipe thermistor | Yellow | THM 5 | 600 |



**⚠ CAUTION**

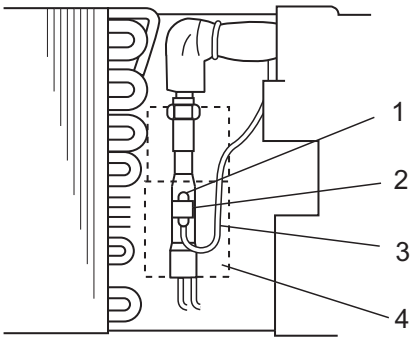
*In case that the thermistors supplied with the Dx-Interface are not long enough, please make sure that the length extension is properly done avoiding the sensing distortion and that the joint is properly insulated to avoid any electrical failure.*

**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) |

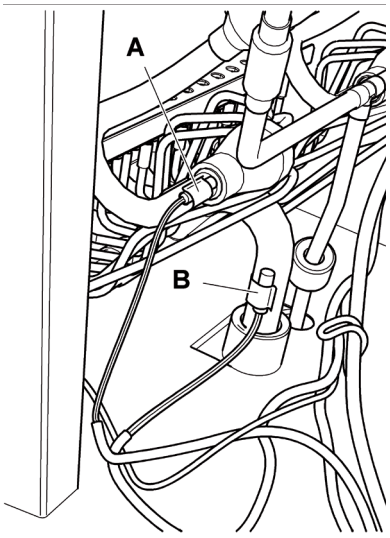



**⚠ CAUTION**

*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 colour | 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**

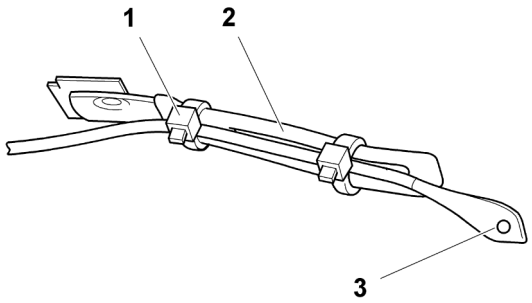
*When fitting the air thermistor, remember that they must be secure correctly, in an adequate place to avoid external influences, like ambient conditions, and where the air temperature is significant.*

### ◆ Cable clamp example

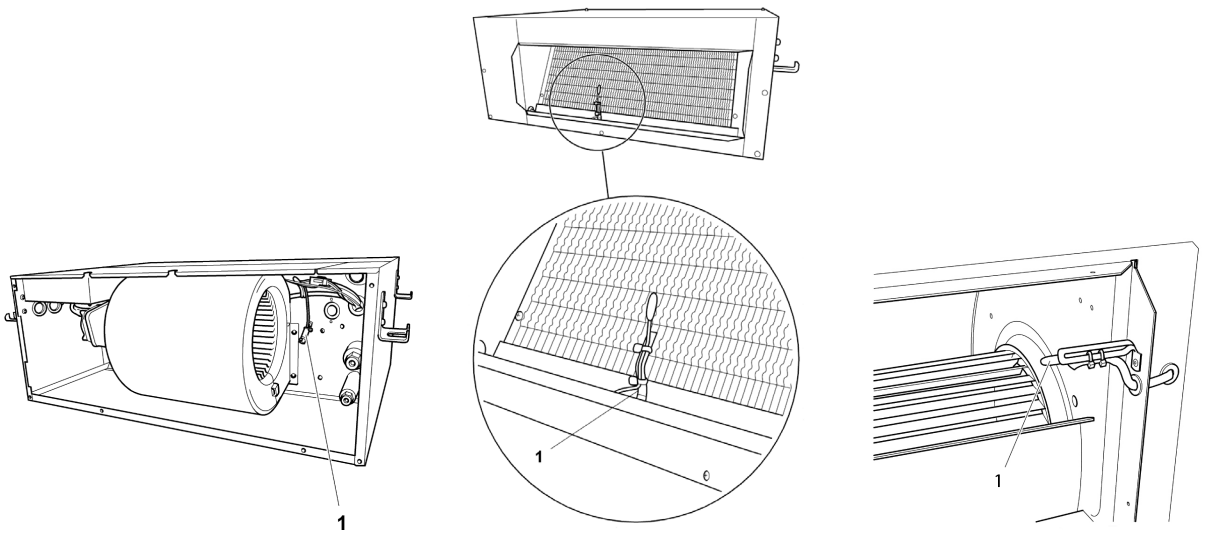
**⚠ CAUTION**

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

| | |
|---|---|
| 1 | Tie (field supplied) |
| 2 | Cable clamp (field supplied) |
| 3 | Thermistor (supplied) |




### ◆ Typical installation




1 Thermistor.

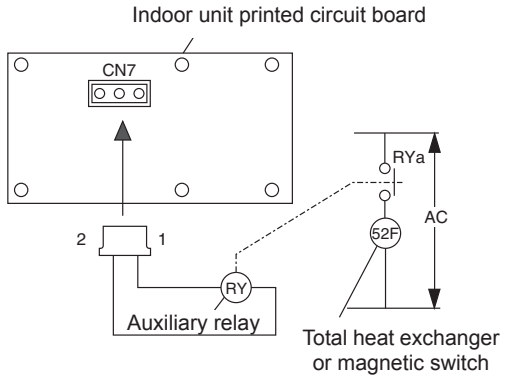
# 2.13 Optional accessories

## 2.13.1 Outdoor air inlet

### ◆ Outdoor air inlet duct connection position

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.
Use a cable with a three-terminal connector (PCC-1A) for the CN7 connector on the indoor PCB.






**Remarks for OACI-160K2, OACI-232 and OACI-232E**

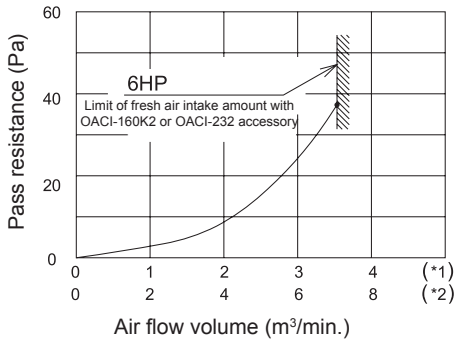
The standard maximum air volume of fresh air intake when using the outdoor air inlet duct references OACI-160K2 or OACI-232 or OACI-232E combined with a total heat exchanger or the duct fan, is within 20% of the rated air volume of the indoor unit (at “HIGH” mode). If the amount of incoming outdoor air 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.

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 references OACI-160K2, OACI-232 or OACI-232E resistance data, is indicated in the following figure. Use as a guide for fan selection.



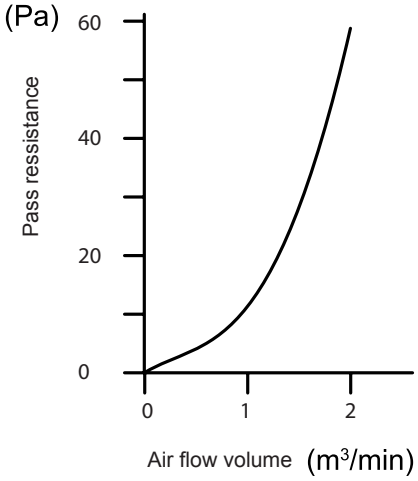

**NOTE**

- *This chart shows the value when the kit OACI-160K2,OACI-232 or OACI-232E is used by itself. In the case that the kit is installed with the T-tube connecting kit, refer the value to its chart .*
- *(*1) When connecting OACI-160K2, OACI-232 or OACI-232E with1 duct adapter.*
- *(*2) When connecting OACI-160K2, OACI-232 or OACI-232E with 2 duct adapter.*

### Remarks for PD-75A

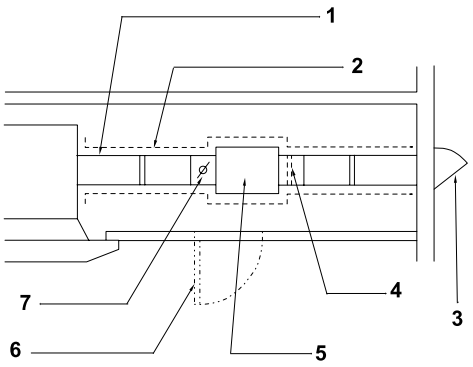
| Indoor unit HP | Maximum capacity of fresh air intake ($m^3$/min) |
|---|---|
| (1.0-2.5) HP | 1.0 |
| (3.0-6.0) HP | 2.0 |

The outdoor air inlet duct reference PD-75A resistance data, is indicated in the following figure. Use as a guide for fan selection.




### ◆ Example of the duct fan installation

| Nº | Part |
|---|---|
| 1 | Duct (made of non-combustible materials only) |
| 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 |




The air through the duct does not pass through the air filter of the indoor units. Fit an air filter (Field supplied) 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**

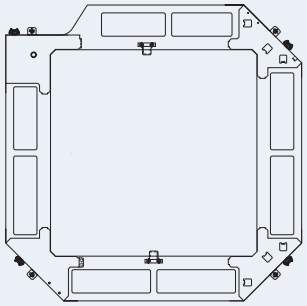
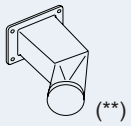
*The parts shown in the above figure will be field-supplied.*

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.

### 2.13.1.1 For RCI-FSN4 indoor units: OACI-160K2 and PD-75A

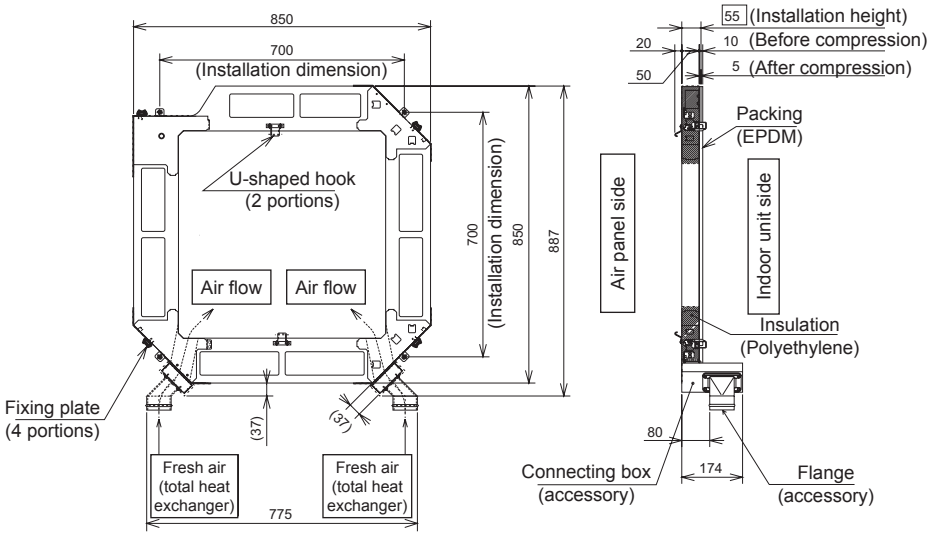
The inlet of outdoor air is possible through the PD-75A or the OACI-160K2 duct connection in the position shown in the figure. (Sold separately).

| OACI-160K2 | PD-75A |
|---|---|
|  (*) |  (**) |

*(*) 1 or 2 duct adapter can be installed*

*(**) Only 1 duct adapter can be installed*

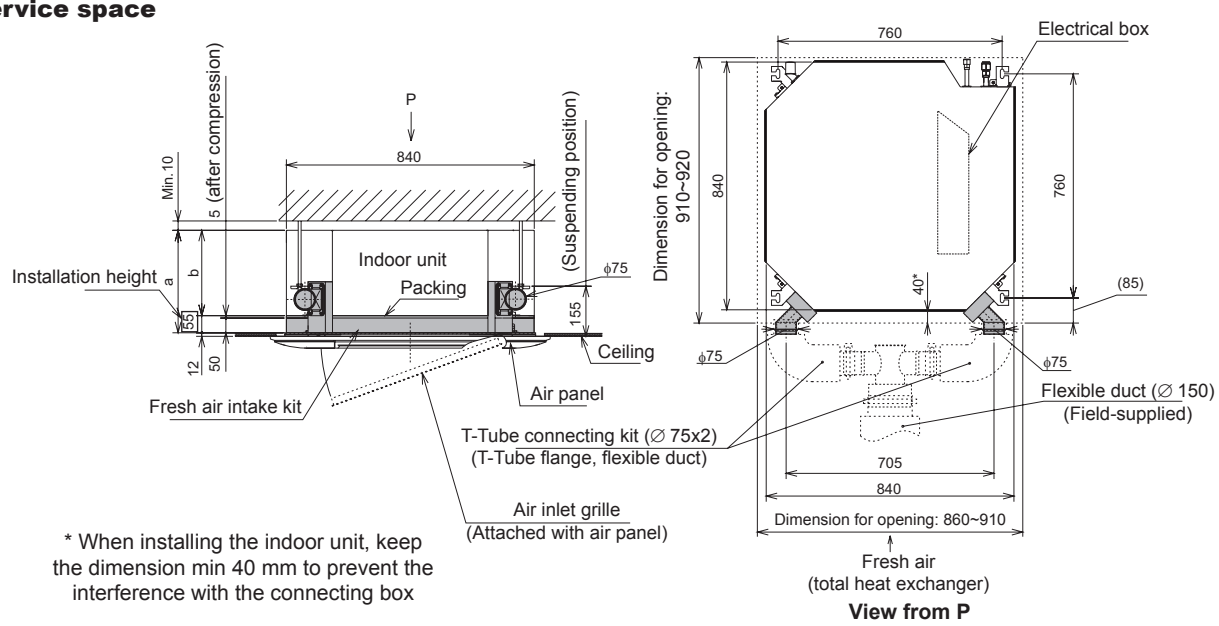
◆ **Duct connection OACI-160K2**




**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.*

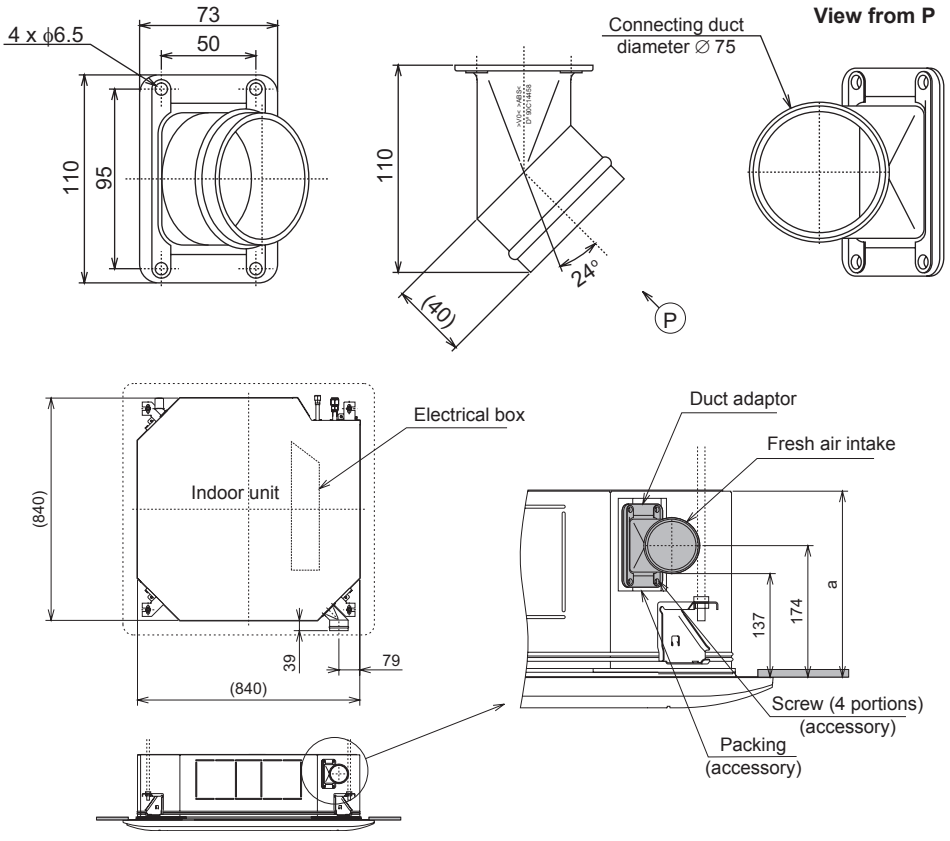
## Service space




* When installing the indoor unit, keep the dimension min 40 mm to prevent the interference with the connecting box

| HP | a | b |
|---|---|---|
| (1.0-3.0) | 328 | 241 |
| (4.0-6.0) | 378 | 291 |

### ◆ Duct adapter PD-75A

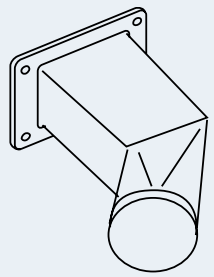


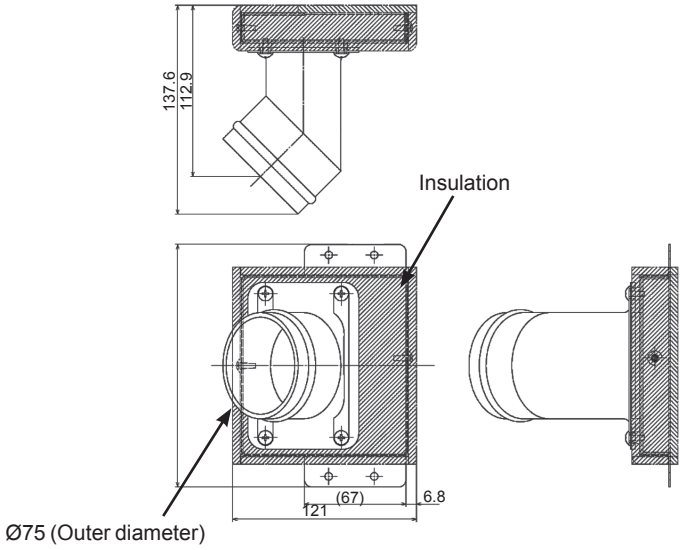

| HP | a |
|---|---|
| (1.0-2.5) | 248 |
| (3.0-6.0) | 298 |

## 2.13.2 Duct adapters

### 2.13.2.1 For RCIM-FSN4(E) indoor units: PD-75C

The inlet of outdoor air is possible through the PD-75C duct adapter for RCIM-FSN4(E) indoor units

| PD-75C (RCIM-FSN4(E)) |
|---|
|  (**) |

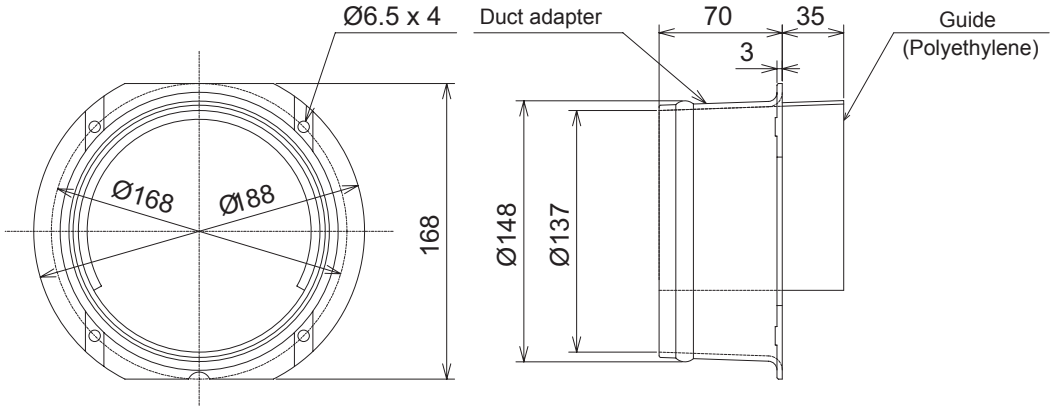



(**) Only 1 duct adapter can be installed

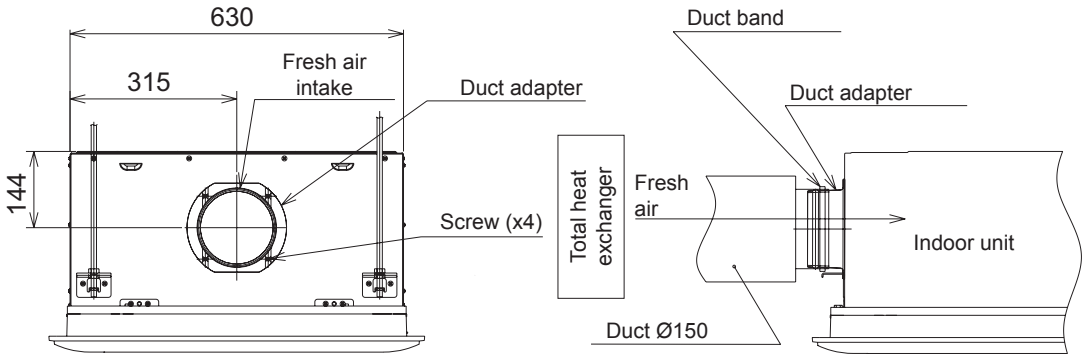
| HP | a |
|---|---|
| (1.0-2.5) | 248 |
| (3.0-6.0) | 298 |

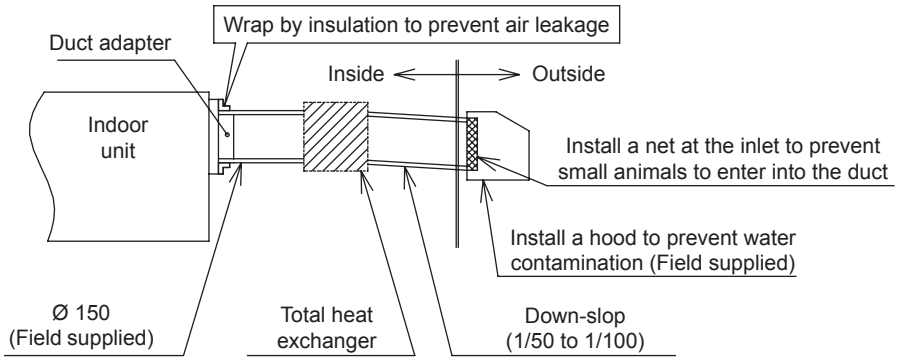
### 2.13.2.2 For RCD-FSN3 indoor units: PD-150D

The PD-150D duct adapter for RCD-FSN3 is used as a connection flange to attach the fresh air intake outlet (for connecting the flexible duct (Ø150).)




An example of installation of the duct adapter PD-150D is shown below. Refer to “Installation & Maintenance Manual” of duct adapter for more detailed information of the installation of fresh air intake duct.






***Specifications***

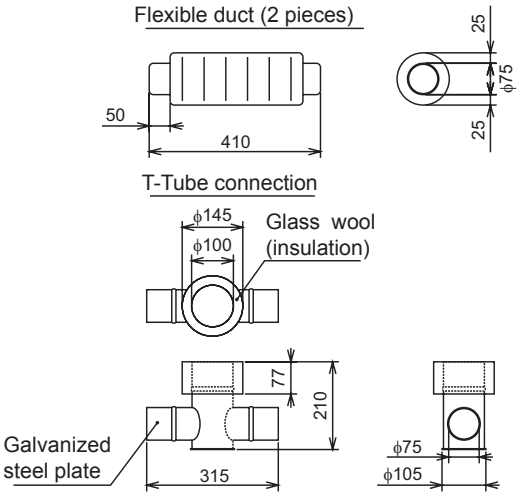
| Item | | RCD-(0.8-6.0)FSN3 |
|---|---|---|
| Maximun Capacity of Fresh Air Intake | $m^3$/min | within 10% of indoor unit airflow volum at “High2” fan speed |
| Usage | | Fresh air intake outlet |
| Connecting Duct Diameter | mm | Ø 150 |
| Material | | ABS resin (Flame resistance: UL94V-0) |
| Accessories | | Packing, Fixing screws (x4), Installation manual |

## 2.13.3 T-duct connection position

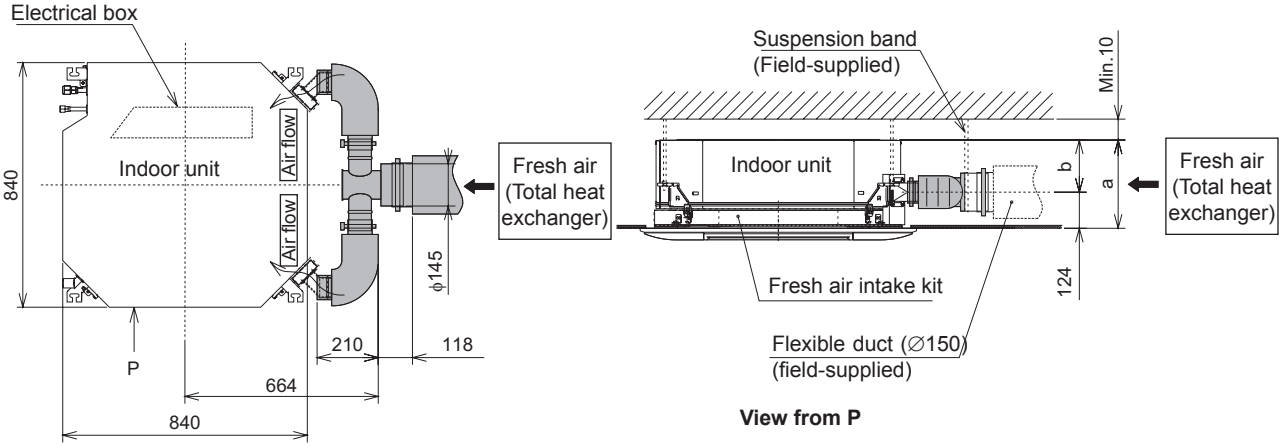
### 2.13.3.1 For RCI-FSN4 indoor units: TKCI-160k

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

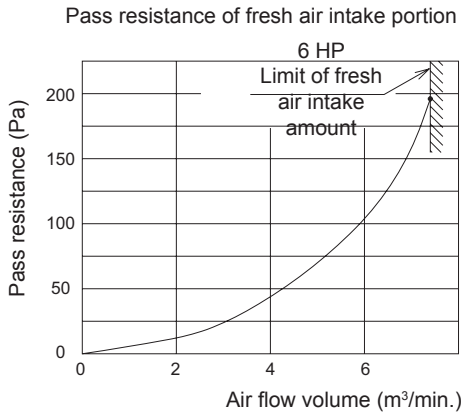
The T-duct connection can only be installed when using the outdoor air inlet kit (optional) or the filter box (optional).




| | 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.




**NOTE**

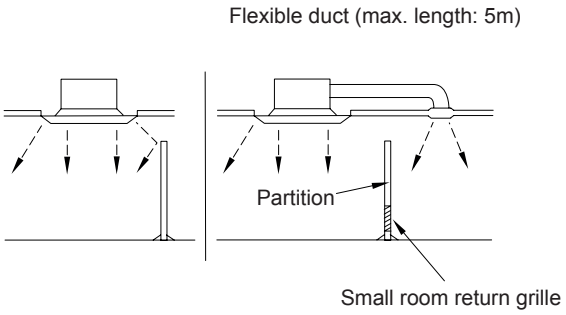
*This chart shows the relationship between the air flow volume and the pass resistance when the T-tube connecting kit is used with the fresh air intake kit.*



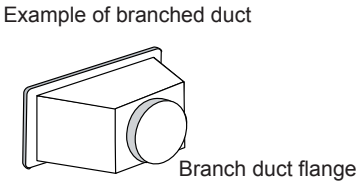
### 2.13.3.2 Branch pipe (PDF-71C, PDF-160CI)

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.

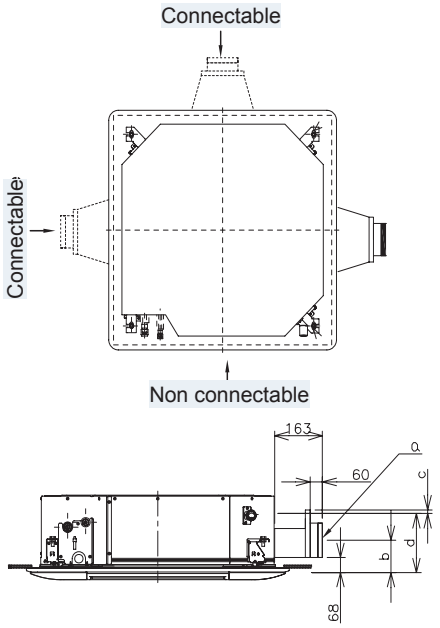



#### Branch pipe installation

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

There are six knock-out 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 (according to the indoor unit model)




Duct connection dimensions

| Model | Units | a | b | c | d |
|---|---|---|---|---|---|
| PDF-71C1 | RCI-(1.0-2.5)FSN4 | 150 | 180 | 36 | 246 |
| PDF-160C1 | RCI-(3.0-6.0)FSN4 | 200 | 205 | 33 | 296 |

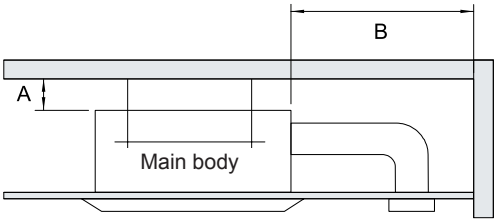
Fit enough insulation to the connection between the pipe and the main body of the indoor unit and to the connection between the duct and the pipe.

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-160LS1 | RCI-(1.0-6.0)FSN4 | 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.



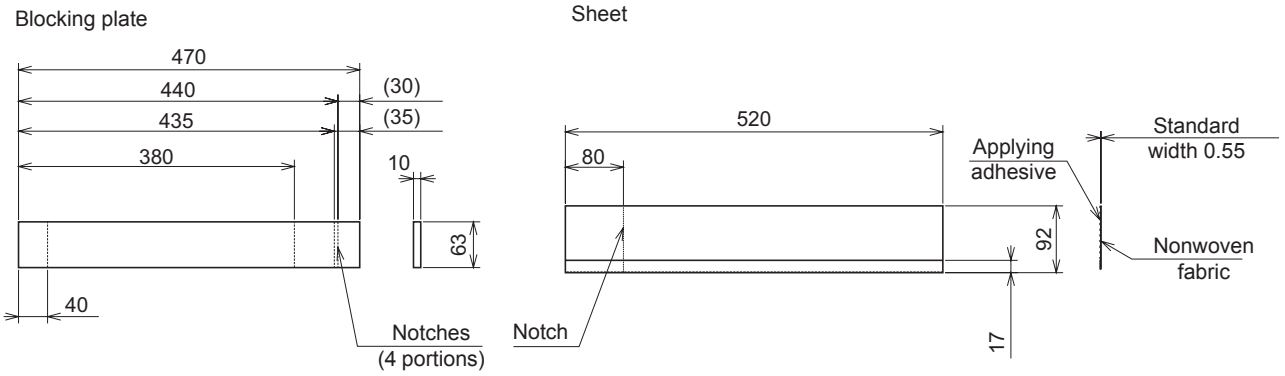

| Measurement | Wall and pillar material | |
|---|---|---|
| | Combustible materials | Non-combustible materials |
| A | ≥ 100 mm | ≥ 50 mm |
| B | ≥ 100 mm | ≥ 60 mm |

## 2.13.4 Outlet air flow interlock

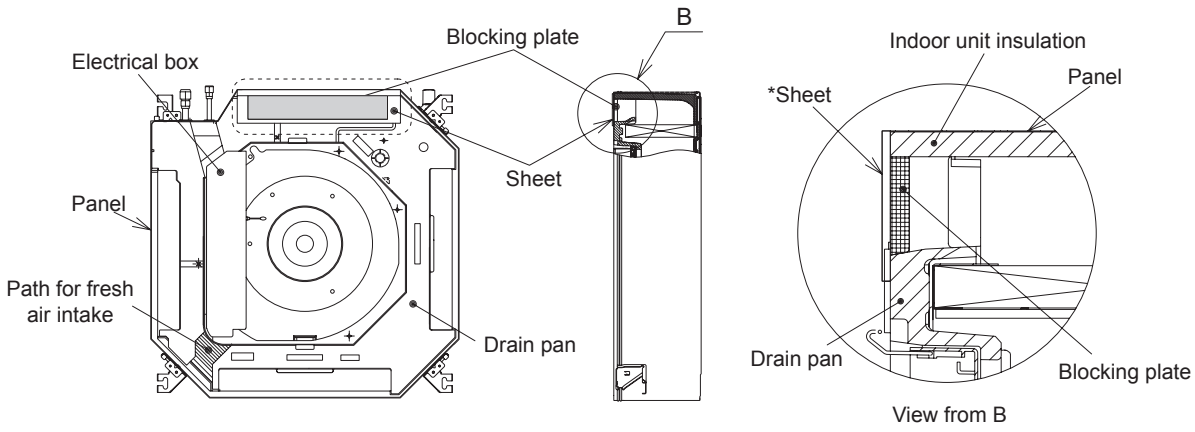
### 2.13.4.1 For RCI-FSN4 indoor units: PI-160SL1

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:

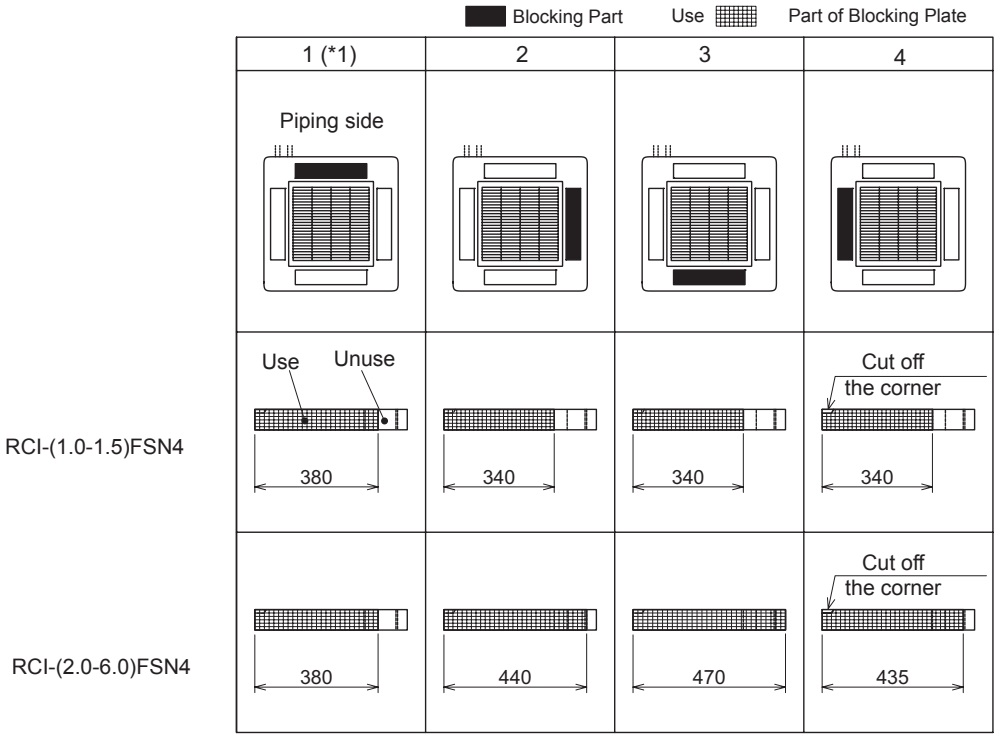



Install the interlock plates as indicated in the figure.



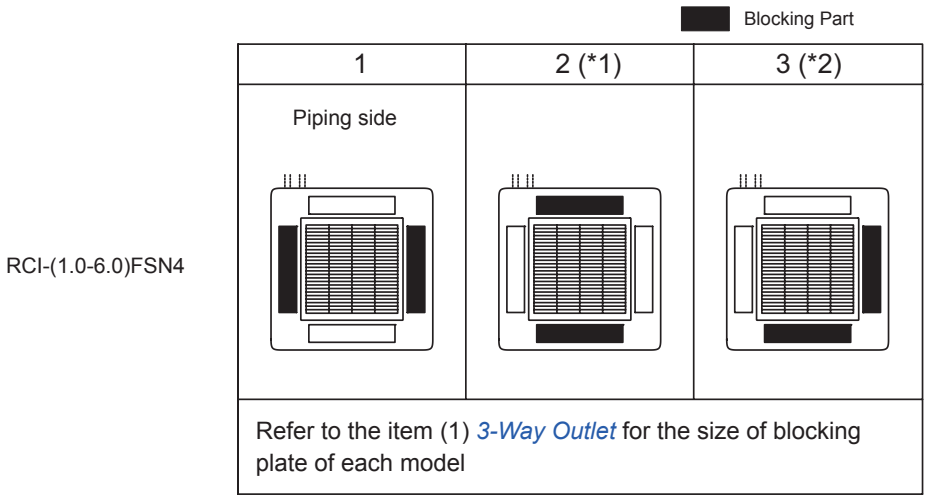

* Do not attach the sheet to the indoor unit insulation and the panel. If adhered, the drain pan can not remove.

Example of 3-Way Outlet




Example of 2-Way Outlet

The air outlet directions can not be selected other than the figure below. (If other air outlet directions are selected, dew condensation may occur.)

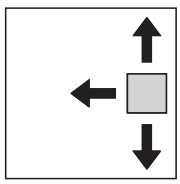



*1 Change the position of the outlet temperature thermistor. If not, the room temperature adjustment may not be available.

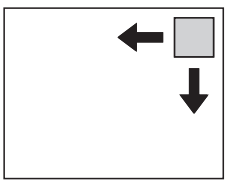
*2 In the case of Example 3, the air flow volume will decrease compared with other cases. Set the high speed setting.

Example for 3-Way and 2 Way Outlet

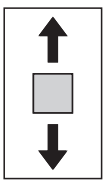
Near the wall: 3-way outlet



In a corner: 2-way outlet



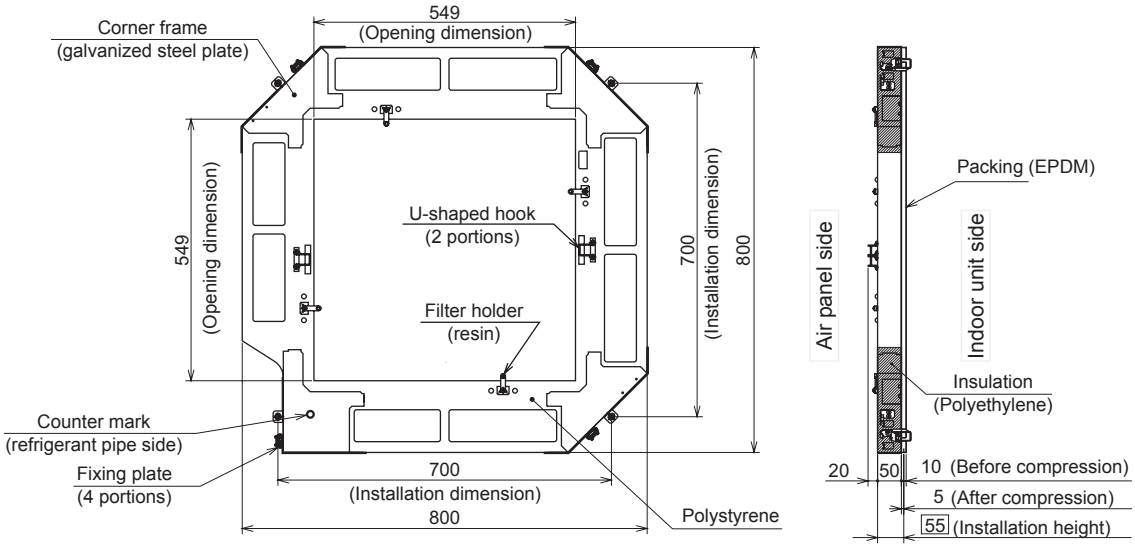
In rectangular room: 2-way outlet



## 2.13.5 Filter box

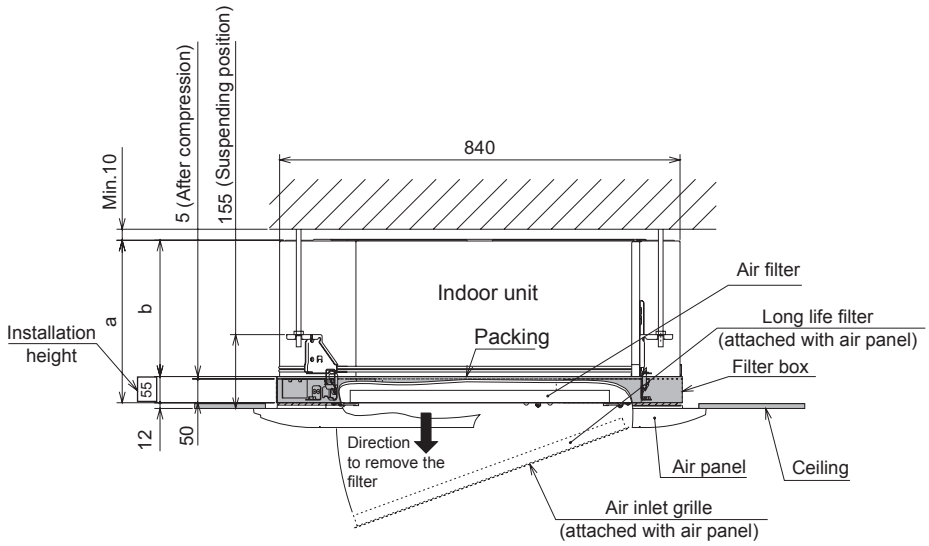
### 2.13.5.1 For RCI-FSN4 indoor units: B-160H2

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.

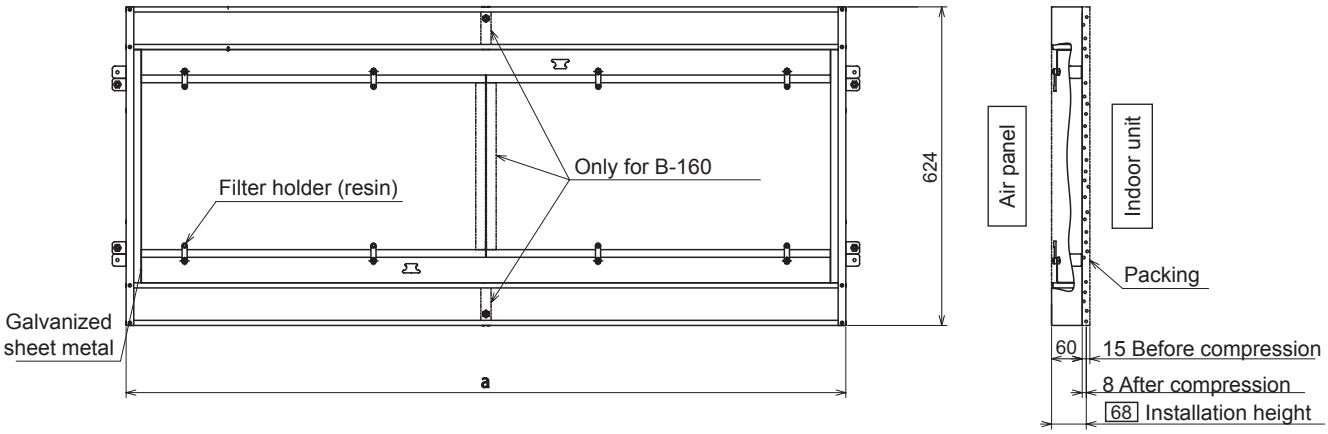
Bear in mind that the size before compression is 10 mm, but the size is reduced after compression to 5mm.




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

### 2.13.5.2 For RCD-FSN3E indoor units: BD-90H and BD-160HD

When the filter box is installed, the total height of the unit increases by approximately 68 mm. Therefore, pay attention to the installation space.

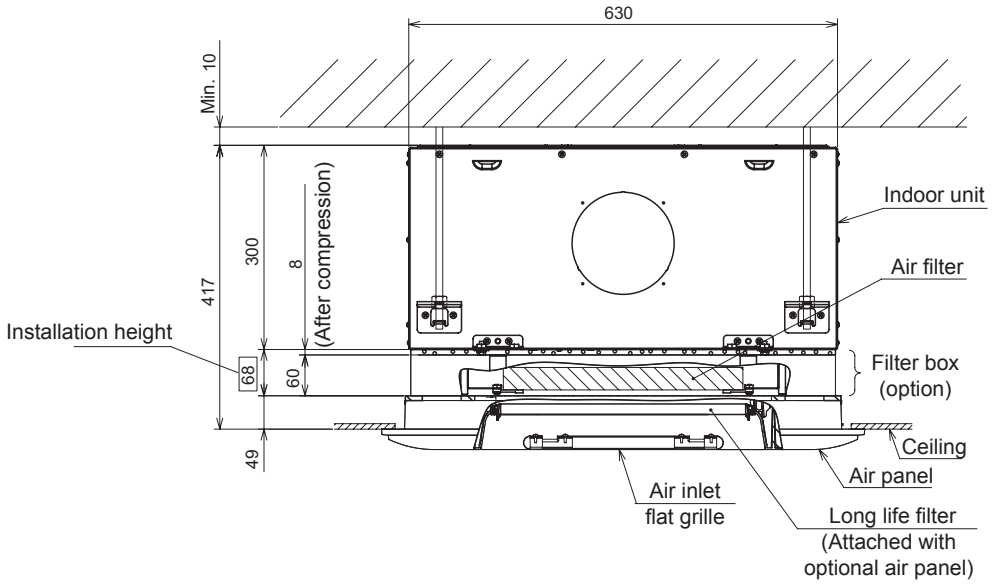



**NOTE**

*The filters are sold separately.*

| | Dimensions (mm) |
|---|---|
| **Model** | **a** |
| BD-90HD | 850 |
| BD-160HD | 1410 |

***Service space***



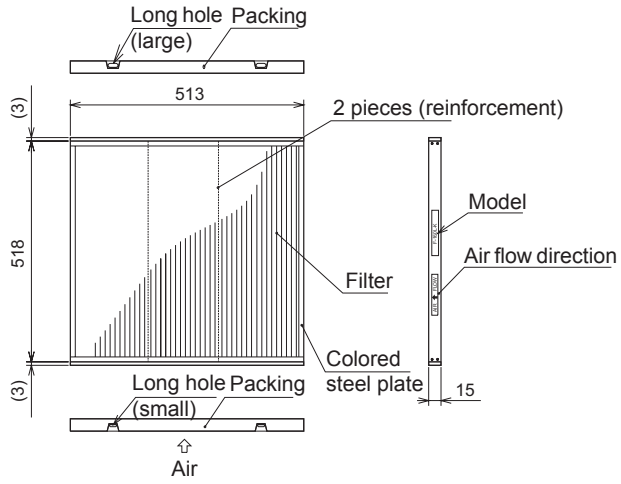

***Specifications***

| | | B-90HD | B-160HD |
|---|---|---|---|
| **Item** | | **RCD-(0.8-3.0)FSN3** | **RCD-(4.0-6.0)FSN3** |
| Quantity | | 1 | |
| Installation height | mm | 68 | |
| Material | | Polyethylenes. Galvanized steel plate | |
| Accessories | | Screw, Hook packing and Installation manual | |
| Weight | kg | 5.0 | 7.5 |
| Applicable air filter (Option) | Antibacterial long life filter (Gravimetric method: 65%) | F-90MD-K1 | F-160MD-K1 |

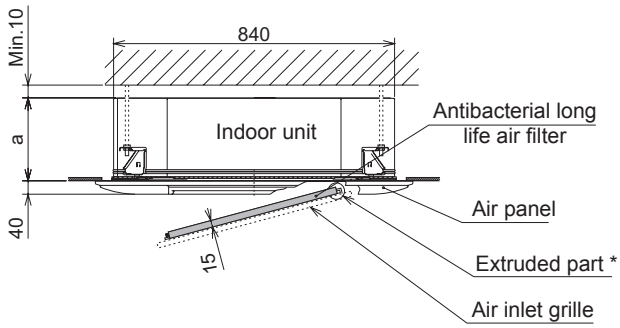
## 2.13.6 Anti-bacteria filter

### 2.13.6.1 For RCI-FSN4: 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.




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

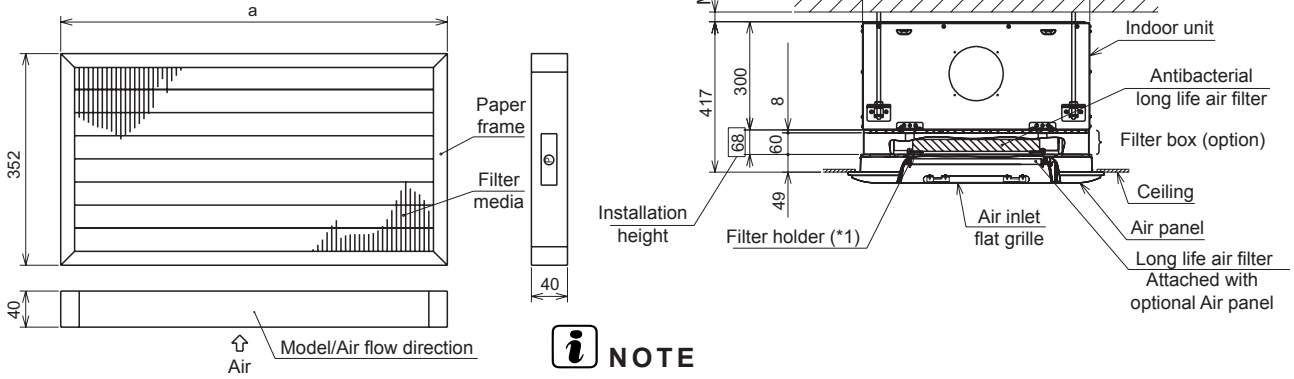
| Model | a (mm) |
|---|---|
| RCI-(1.0-2.5)FSN4 | 238 |
| RCI-(3.0-6.0)FSN4 | 288 |

***Specifications***

| Part | | RCI-(1.0-6.0)FSN4 |
|---|---|---|
| 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 mould |
| Filter material | Antibacterial fibre | Modified acrylic fibre 1 (containing inorganic anti-bacterial substance)<br>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.

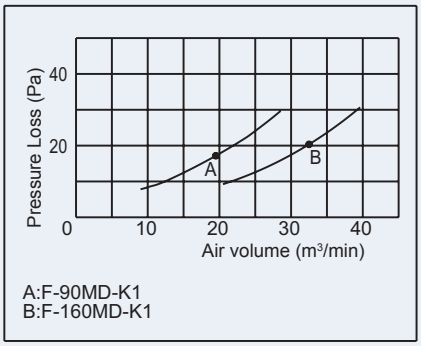
### 2.13.6.2 For RCD-FSN3E indoor units: F-90MD-K1 and F-160MD-K1 (Antibacterial long life air filter)




**NOTE**

**1) Insert the antibacterial long life air filter into the filter box, the fix it with the filter holder*

| | | | | Air flow chart |
|---|---|---|---|---|
| Applicable Indoor unit | | RCD-(0.8-3.0)FSN3 | RCD-(4.0-6.0)FSN3 | |
| Dust collection efficiency | % | 65 (Gravimetric method (*1)) | | |
| Air flow | $m^3$/min. | 19.5 | 32.5 | |
| Initial pressure Loss | Pa (mmAq) | 17.0 | 20.5 | |
| End pressure Loss | Pa (mmAq) | 55.9 | 62.8 | |
| Colour (Filter/frame) | | White / Brown | | |
| Life period | | 8 years (with 2500 hours maintenance) | | |
| Cleaning | | Not available | | |
| Accessory | | Installation manual | | |
| Weight | kg | 0.9 | 0.8 x 2 | |
| Performance | | Avoids the multiplication of bacteria and mould | | |
| Filter material | Antibacterial fibre | Synthetic fibre Non-woven fabric | | |

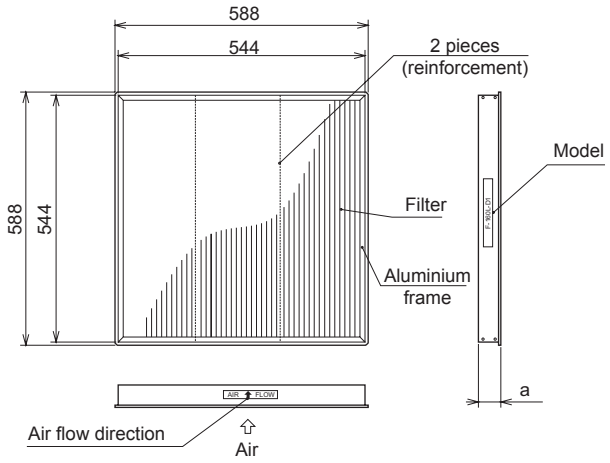



## 2.13.7 Deodorising filter

### 2.13.7.1 For RCI-FSN4 indoor units: F-71L-D1 and F-160L-D1

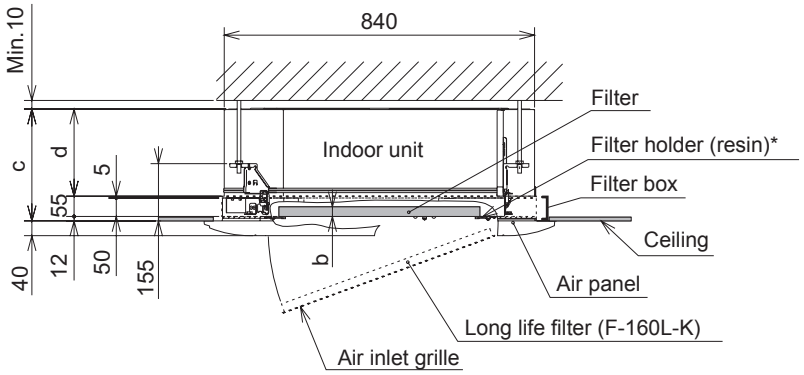
The dimensions of the deodorising filter are indicated in the following figure.

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)<br>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.

# 3. Piping work and refrigerant charge

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# 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 (multi-kit): select the same pipe connection size as for the outdoor unit.

2 Between the branch pipe (multi-kit) 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.*

### ◆ Multi-kit or distributor selection

**NOTE**

- *Pipe connection sizes on outdoor units, indoor units and the multi-kit 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 | Coil (soft) |
| Ø9.52 | 3/8 | 0.80 | Coil (soft) |
| Ø12.70 | 1/2 | 0.80 | Coil (soft) |
| Ø15.88 | 5/8 | 1.00 | Straight lengths (hard) / Coil (soft) |
| Ø19.05 | 3/4 | 1.00 | Coil (soft) |
| Ø22.22 | 7/8 | 1.00 | Coil (soft) |
| Ø25.40 | 1 | 1.00 | Straight lengths (hard half) |
| Ø28.57 | 1-1/8 | 1.00 | Straight lengths (hard half) |

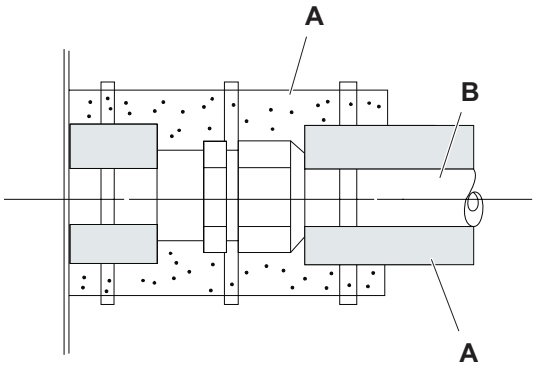


Always use clean copper pipes with no signs of knocks or cracks. Make sure there is no dust or dampness on the inside. Before you install the pipes, clean the inside with oxygen-free nitrogen gas to eliminate any remains of dust or other substances.

**⚠ 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.

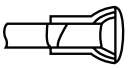


### 3.2.2 Pipe connection

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.



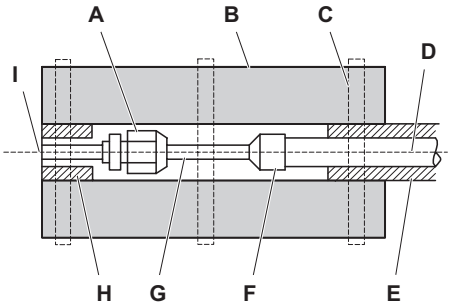
End of refrigerant pipe unprotected.

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 *"3.2.1 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 *"3.1 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**<br>Ensure the atmosphere remains totally dry | Water infiltration due to insufficient protection on the ends of the pipes.<br>Condensation on the inside of the pipes.<br>Insufficient vacuum. | Ice on the inside of the pipe, on the expansion valve (water obstruction)<br>+<br>Absorption of oil humidity and oxidation<br>↓<br>Filter clogging, insulation and compressor fault | Pipe protection:<br>1. Seal the ends of the pipes.<br>2. Protect and insulate the ends of the pipes.<br>↓<br>Wash<br>↓<br>Vacuum dry (*) |
| **2. Cleaning**<br>Absence of dust on the inside of the piping | Dust or other elements entering the ends of the pipes.<br>Film of rust formed during brazing without nitrogen injection.<br>Insufficient nitrogen wash after brazing. | Expansion valve, capillary tube and filter clogging.<br>Oil oxidation.<br>Compressor fault<br>↓<br>Compressor fault, insufficient cooling or heating | Pipe protection:<br>1. Fit caps to the ends of the pipes.<br>2. Protect and insulate the ends of the pipes.<br>↓<br>Wash |
| **3. Absence of leaks**<br>There must be no leaks | Brazing fault.<br>Flaring fault and insufficient torque.<br>Insufficient torque on compressor connectors. | Lack of refrigerant<br>Drop in performance<br>Compressor fault<br>Oil oxidation.<br>↓<br>Compressor overheating | Carry out basic brazing work carefully<br>↓<br>Carry out basic flaring work carefully<br>↓<br>Carry out basic connection work carefully<br>↓<br>Airtight test<br>↓<br>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.

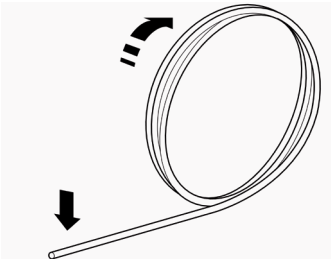
### 3.4.2 Preparing and cutting copper refrigeration pipes

#### 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.*

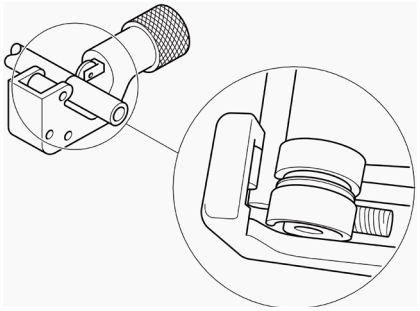
#### Cutting

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.

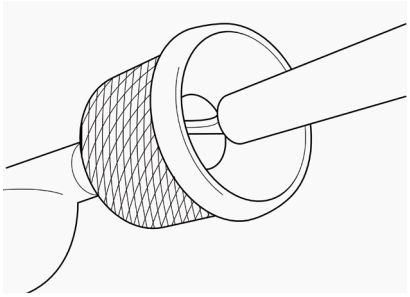
Cut the pipe using a pipe cutter.

**CAUTION**

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



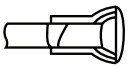
Remove any internal burrs arising from the pipe cutter using a pipe reamer.



**⚠ 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.*



### 3.4.3 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°.*

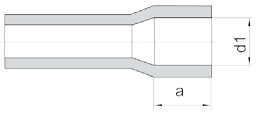
### 3.4.4 Brazing copper refrigeration pipes

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 |

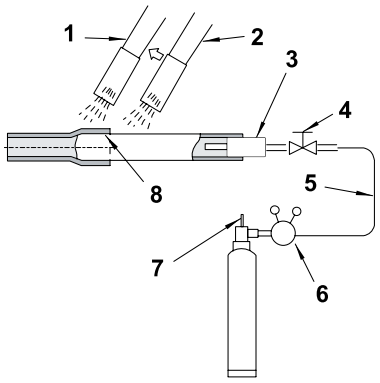
The necessary brazing must be done by brazing, using a copper and silver alloy.

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.



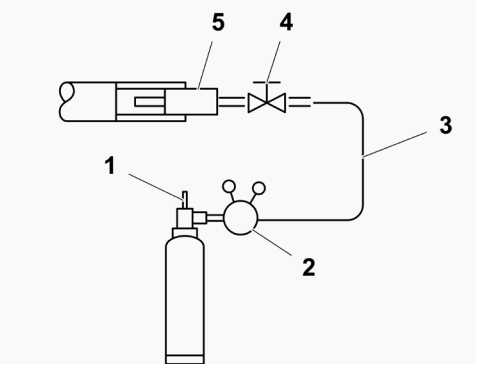

**⚠ CAUTION**

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

### 3.4.5 Flared connection mounting

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

1 Reducer valve
2 Pressure gauge
3 High pressure pipe.
4 Valve with no packing.
5 Rubber cap




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.*

### 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.

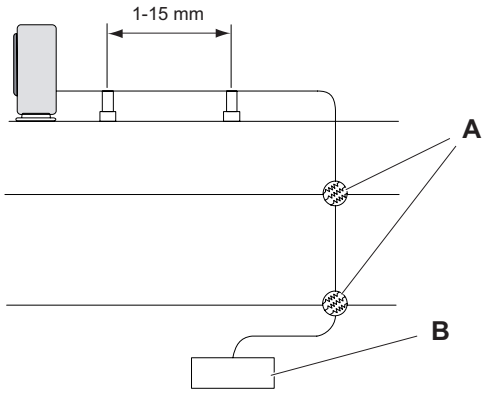
## 3.4.6 Refrigerant pipe suspension

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.

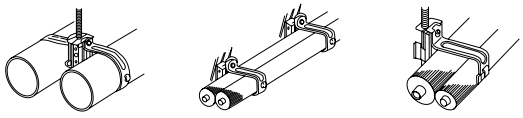
Prevent the refrigerant pipes from touching weak parts of the building, such as walls (non-structural), partition walls, ceilings, etc. Otherwise, operating noise may be caused by pipe vibrations (pay special attention in the case of short pipes).

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.

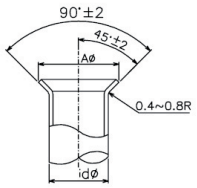


## 3.5 Refrigerant and drain hose installation

### ◆ General notes

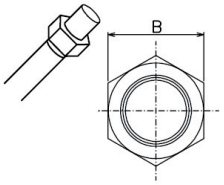
**Dimensions of the flare and thickness of the copper pipe**

| 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**

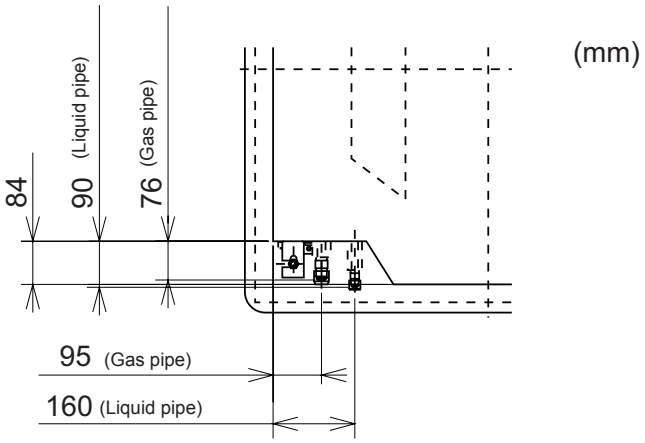
| Nominal diameter | | Measurement B mm |
|---|---|---|
| mm | inches | |
| Ø6.35 | 1/4 | 17 |
| Ø9.52 | 3/8 | 22 |
| Ø12.70 | 1/2 | 26 |
| Ø15.88 | 5/8 | 29 |



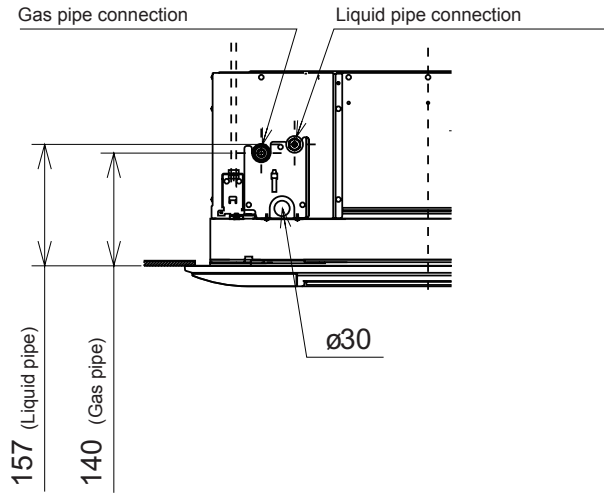

### 3.5.1 RCI-(1.0-6.0)FSN4 - 4-way cassette

### ◆ 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)

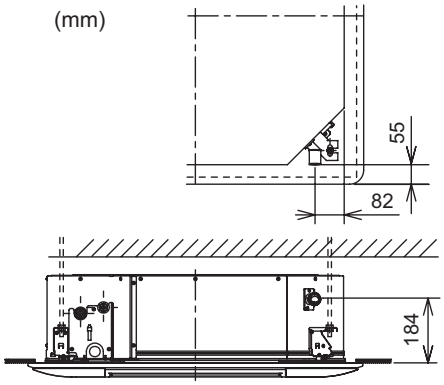



mm (in)

| | Liquid piping | Gas piping |
|---|---|---|
| RCI-(1.0/2.0)FSN4 | Ø 6.35 (1/4) | Ø 12.70 (1/2) |
| RCI-(2.5-6.0)FSN4 | Ø 9.52 (3/8) | Ø 15.88 (5/8) |

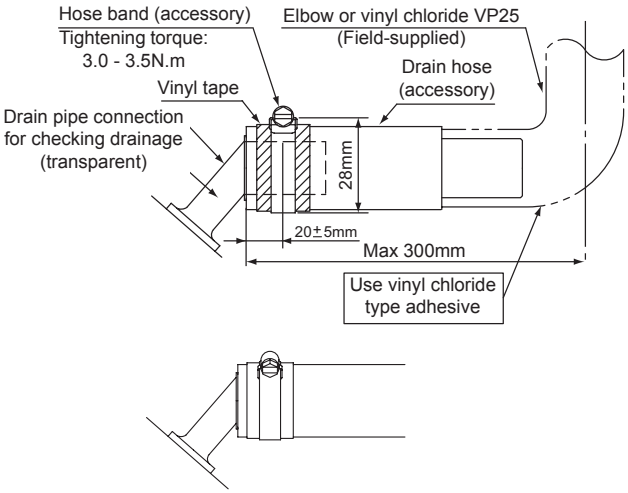
### ◆ Drain pipe installation

The position of the drain pipe connection is shown below.

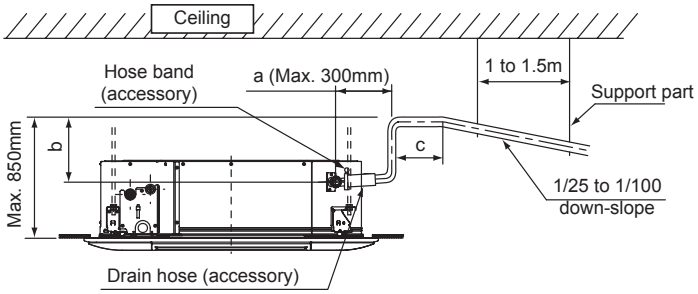



Prepare a polyvinyl chloride pipe with a 32mm outer diameter.

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.

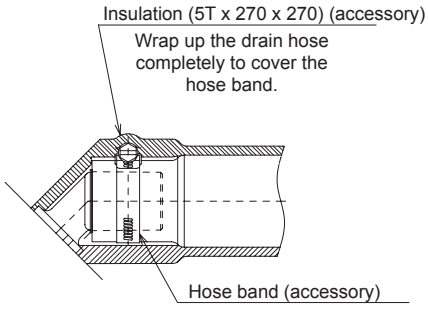



Do not apply excessive force to the Drain Pipe connection. It could cause a damage.

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

Insulate the drain pipe after connecting the drain hose.

(mm)



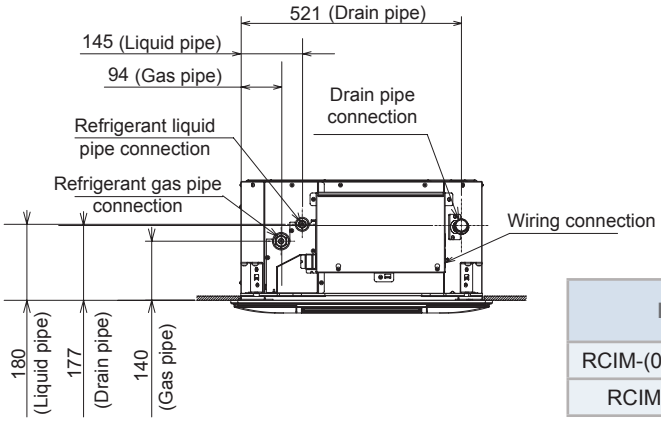

**NOTE**

*If there is excessive clearance between the drain pipe connection and the drain hose, add a sealing material between both parts in order to fit and not deform the drain hose.*

## 3.5.2 RCIM-(0.6-2.5)FSN4(E) - 4-way cassette (compact)

### ◆ 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).



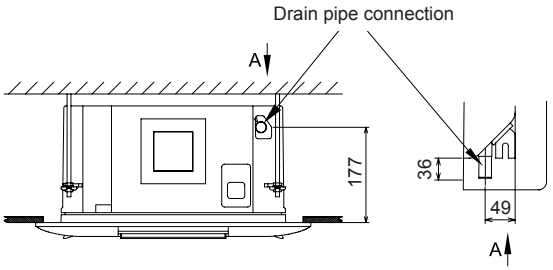

| Models | (1) Gas pipe mm (inches) | (2) Liquid pipe mm (inches) |
|---|---|---|
| RCIM-(0.6-2.0)FSN4(E) | Ø12.70 (1/2”) | Ø6.35 (1/4”) |
| RCIM-2.5FSN4(E) | Ø15.88 (5/8”) | Ø9.52 (3/8”) |

### ◆ Drain pipe installation

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

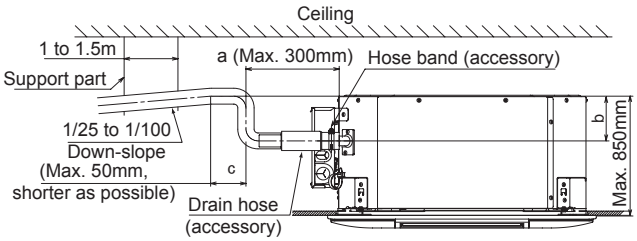
Prepare a polyvinyl chloride (PVC) pipe with an outer diameter of 32 mm.

Secure the pipe with the clamp and adhesive supplied.




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

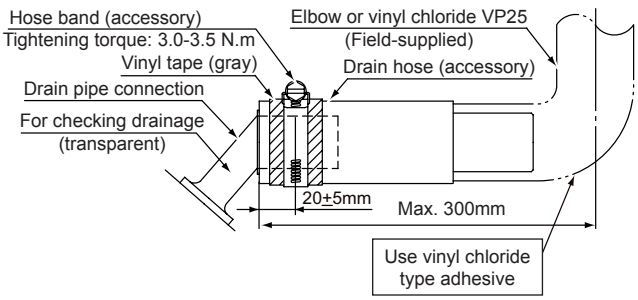
Consider the following sizes: a + b + c ≤ 1100 mm.



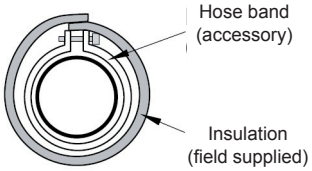

For a correct assembly of the drain hose accessory, follow the instruction shown in the picture below.

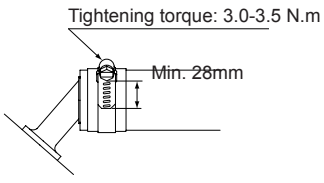
**⚠ CAUTION**

- *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.



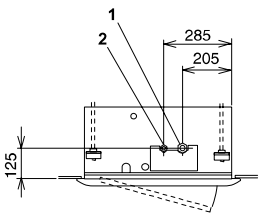

**NOTE**

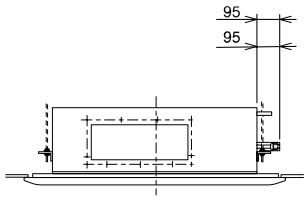
*If there is excessive clearance between the drain pipe connection and the drain hose, add a sealing material between both parts in order to fit and not deform the drain hose.*

### 3.5.3 RCD-(0.8-6.0)FSN3 - 2-way cassette

#### ◆ 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-(0.8/2.0)FSN3 | Ø12.70 (1/2) | Ø6.35 (1/4) |
| RCD-(2.5–6.0)FSN3 | Ø15.88 (5/8) | Ø9.52 (3/8) |

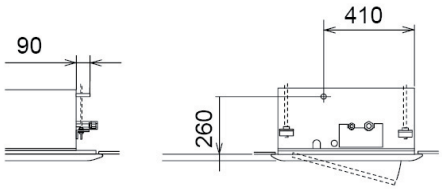


#### ◆ Drain pipe installation

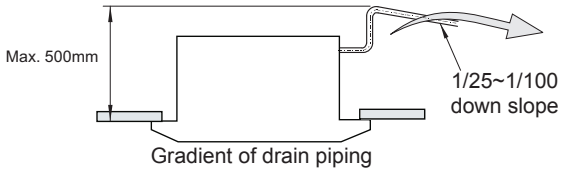
The correct position for the drain hose connection is shown below.

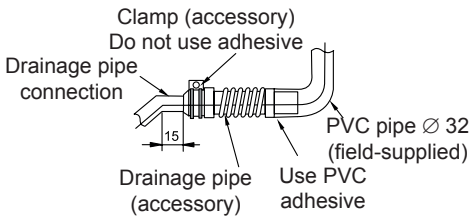
Prepare a polyvinyl chloride (PVC) pipe with an outer diameter of 32 mm.

Secure the pipe with the clamp and adhesive supplied.




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

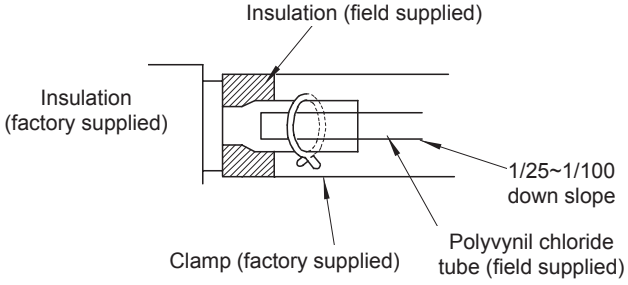



**⚠ CAUTION**

- *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.




**NOTE**

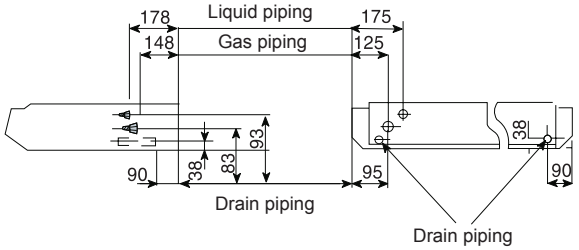
*If there is excessive clearance between the drain pipe connection and the drain hose, add a sealing material between both parts in order to fit and not deform the drain hose.*

## 3.5.4 RPC-(3.0-6.0)FSN3E - Ceiling type

### ◆ 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 *"2. Unit installation"*.

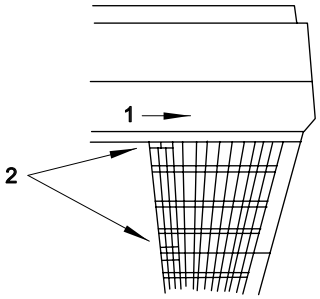



| Models | (1) Gas pipe mm (inches) | (2) Liquid pipe mm (inches) |
|---|---|---|
| RPC-(3.0–6.0)FSN3E | Ø15.88 (5/8) | Ø9.52 (3/8) |

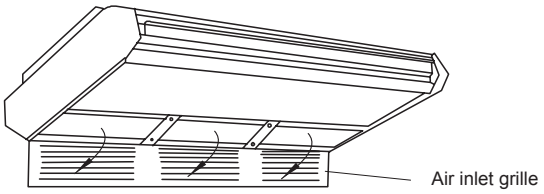
The piping must be installed from the bottom of the unit.

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

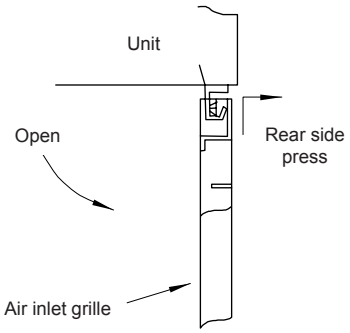
1. Slide
2. Knob




2 Open the air inlet grille



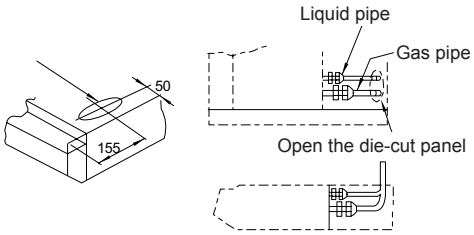

3 Push and slide the air inlet grille backwards and open it.



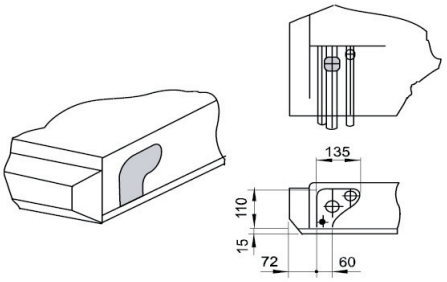
4 Remove the die-cut panel from the required part of the unit to install the refrigerant pipes.

a. Upper side.

Open the Knock-out hole

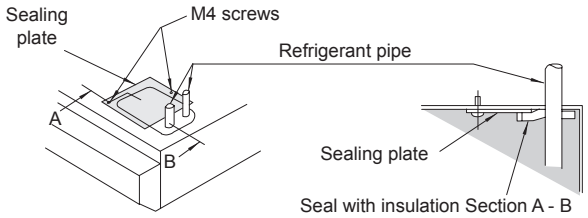



**b.** Rear side.

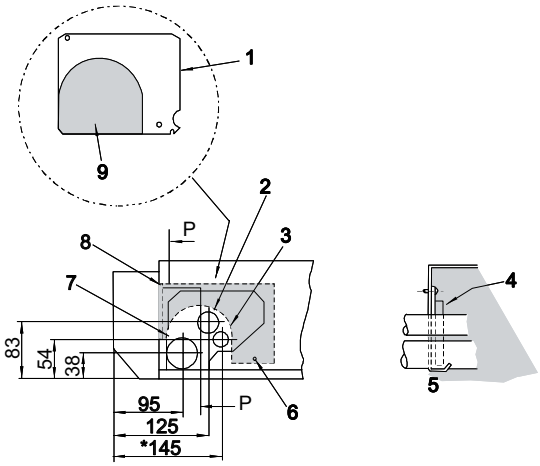



5 Install the pipes through it and seal them using the insulation supplied, as indicated below.

a. Upper side.




**b.** Rear side.



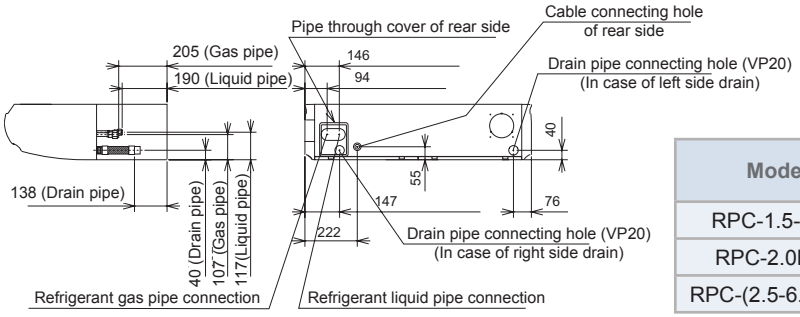

| | |
|---|---|
| 1 | Sealing plate supplied (0.8x118x142 mm) |
| 2 | Gas refrigerant pipe |
| 3 | Liquid refrigerant pipe |
| 4 | Seal with insulation |
| 5 | Section P.P. |
| 6 | M4 screw |
| 7 | Sealing plate |
| 8 | M4 screw |
| 9 | Knock-out hole |

## 3.5.5 RPC-(1.5-6.0)FSN3E - Ceiling type

### ◆ 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 *"2. Unit installation"*.

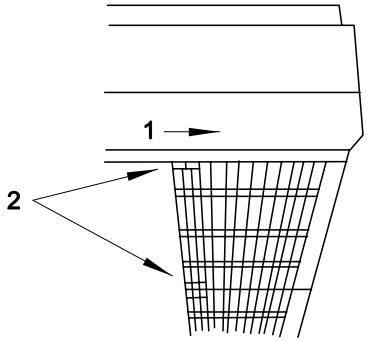



| Models | (1) Gas pipe mm (inches) | (2) Liquid pipe mm (inches) |
|---|---|---|
| RPC-1.5-FSN3 | Ø12.7 (1/2) | Ø6.35 (1/4) |
| RPC-2.0FSN3 | Ø15.88 (5/8) | Ø6.35 (1/4) |
| RPC-(2.5-6.0)FSN3 | Ø15.88 (5/8) | Ø9.52 (3/8) |

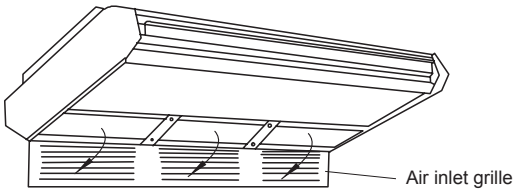
The piping must be installed from the bottom of the unit.

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

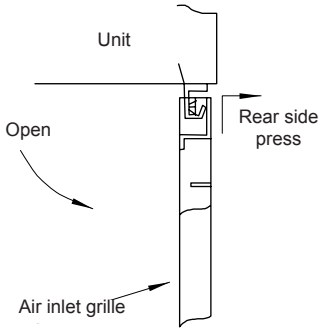
1. Slide
2. Knob




2 Open the air inlet grille



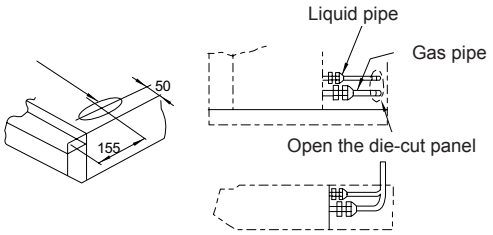

3 Push and slide the air inlet grille backwards and open it.



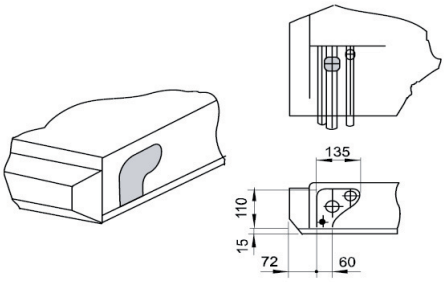
4 Remove the die-cut panel from the required part of the unit to install the refrigerant pipes.

a. Upper side.

Open the Knock-out hole

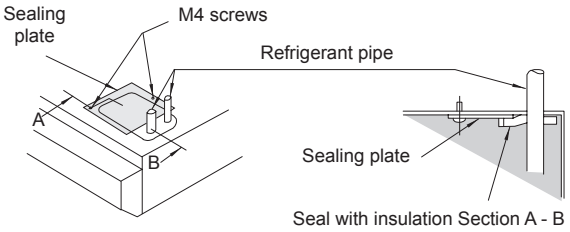



**b.** Rear side.

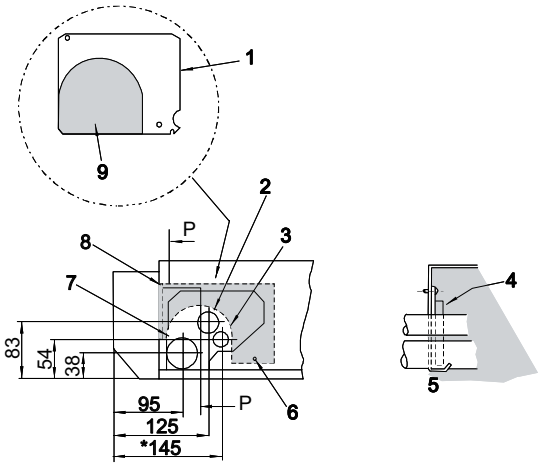



5 Install the pipes through it and seal them using the insulation supplied, as indicated below.

a. Upper side.




**b.** Rear side.




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

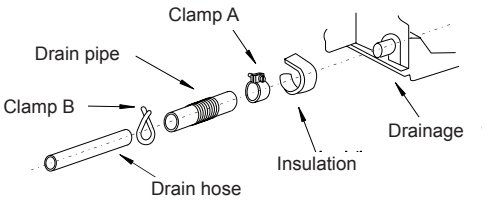
## ◆ Drain pipe installation

**NOTE**

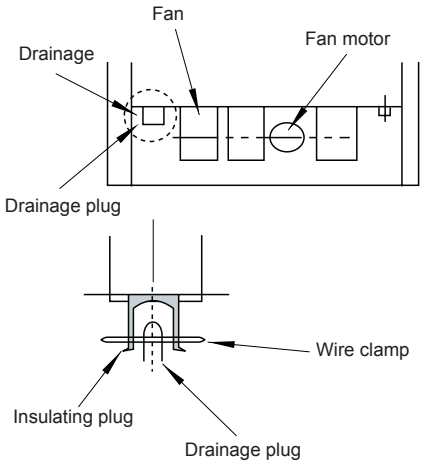
*The normal direction for connecting the drain hose is on the right side (when the unit is seen from the outlet grille side). The connection can be made from the left side if there are construction elements of the building around it.*

### Connection on the right-hand side

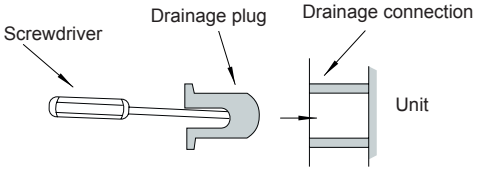
1 Insert the drain pipe in the clamp “A”.
2 Push the drain hose towards the boss until it reaches the end of the pan.
3 Tighten the screw on the wire clamp to secure the pipe around the drain connection without causing water leaks.
4 Insulate the drain hose around the wire clamp to avoid condensation.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




### Connection on the left-hand side

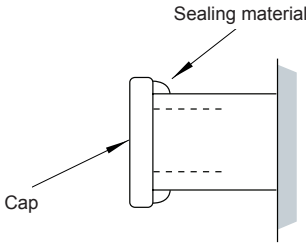



1 Remove the plug from the drain hose by cutting the securing clip.
2 Remove the insulating material.
3 Remove the drain plug and insert the pipe into the wire clamp.
4 Insert the drain plug into the right-hand boss using a screwdriver.




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

5 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 26mm.

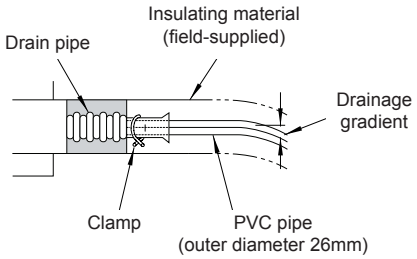
The drain hose must have a gradient of 1% (1/100) to 4% (1/25).

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.





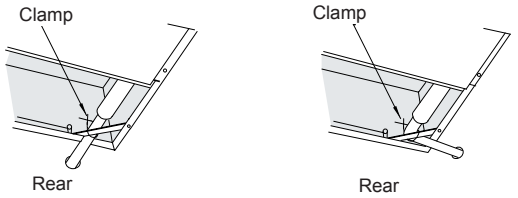

**⚠ CAUTION**

- *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.*

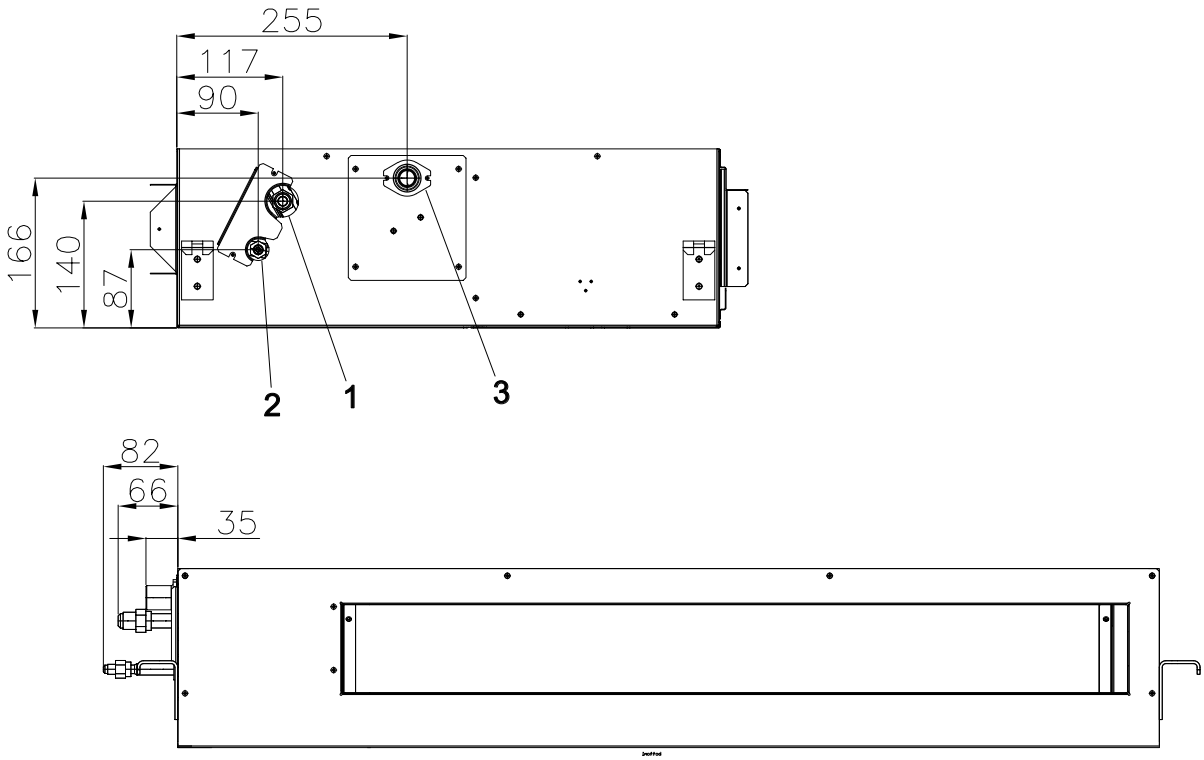



Check the correct working order of the drainage system.

### 3.5.6 RPI-(0.6-1.5)FSN4E - Ducted indoor unit

#### ◆ 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 |

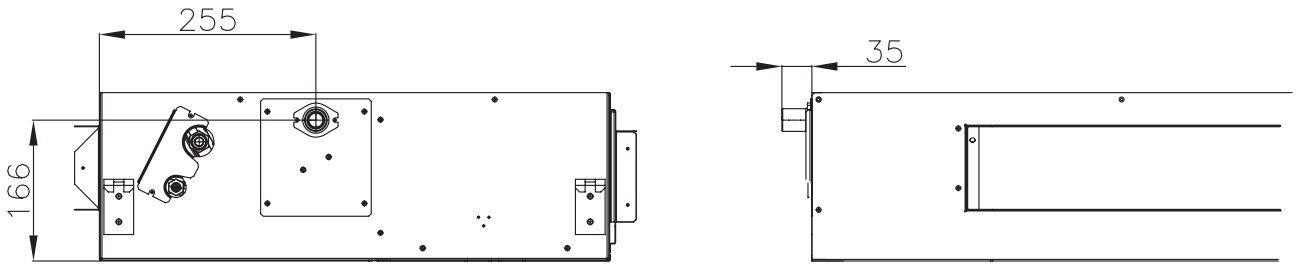
| Models | Gas pipe mm (inches) | Liquid pipe mm (inches) |
|---|---|---|
| RPI | Ø12.7 (1/2) | Ø6.35 (1/4) |

**NOTE**

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

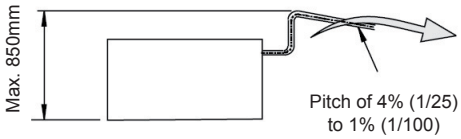
### ◆ Drain pipe installation

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

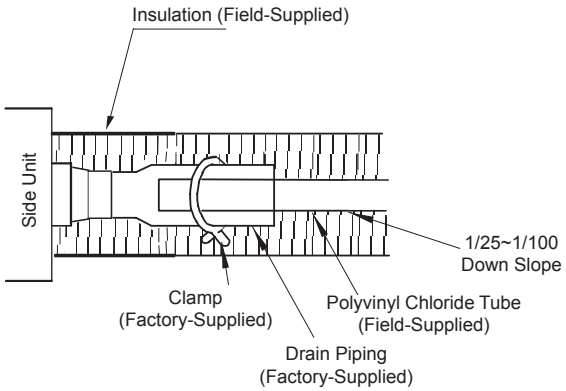



Prepare a polyvinyl chloride (PVC) pipe with an outer diameter of 32 mm.

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.

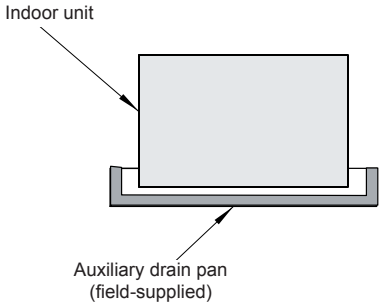



Insulate the drain pipe after connecting the drain hose.




**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.*




**NOTE**

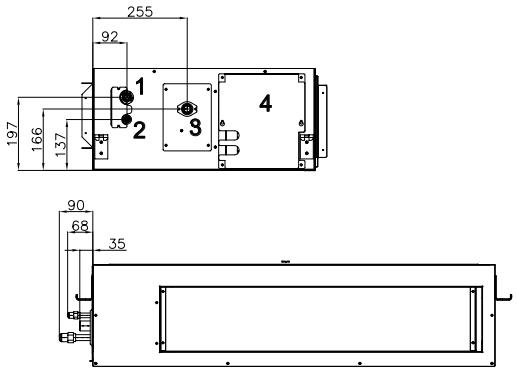
*If there is excessive clearance between the drain pipe connection and the drain hose, add a sealing material between both parts in order to fit and not deform the drain hose.*

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

### ◆ 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



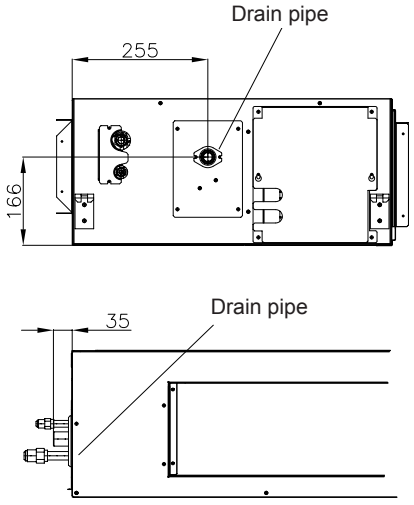

| Models | Gas pipe mm (inches) | Liquid pipe mm (inches) |
|---|---|---|
| RPI-2.0FSN4E | Ø15.88 (5/8) | Ø6.35 (1/4) |
| RPI-(2.5/3.0)FSN4E | | Ø9.52 (3/8) |
| RPI-(4.0-6.0)FSN4E | | |

**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.

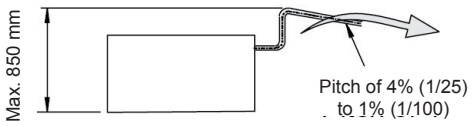



**NOTE**

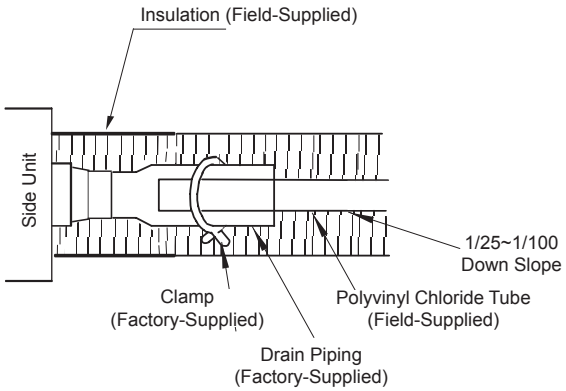
*If there is excessive clearance between the drain pipe connection and the drain hose, add a sealing material between both parts in order to fit and not deform the drain hose.*

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

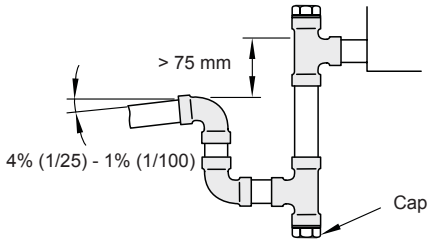
Fasten the tubing to the drain hose with an adhesive and the factory supplied clamp. The drain piping must be performed with a down-slope pitch of 1/25 to 1/100.




Then insulate the drain hose appropriately.

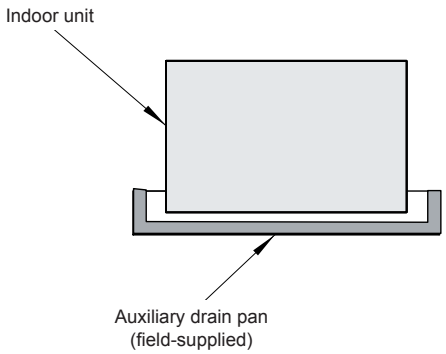



Connect a trap to the drain hose at the angle indicated, as indicated in the figure (for RPI-(8.0/10.0)FSN3E).




**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.*



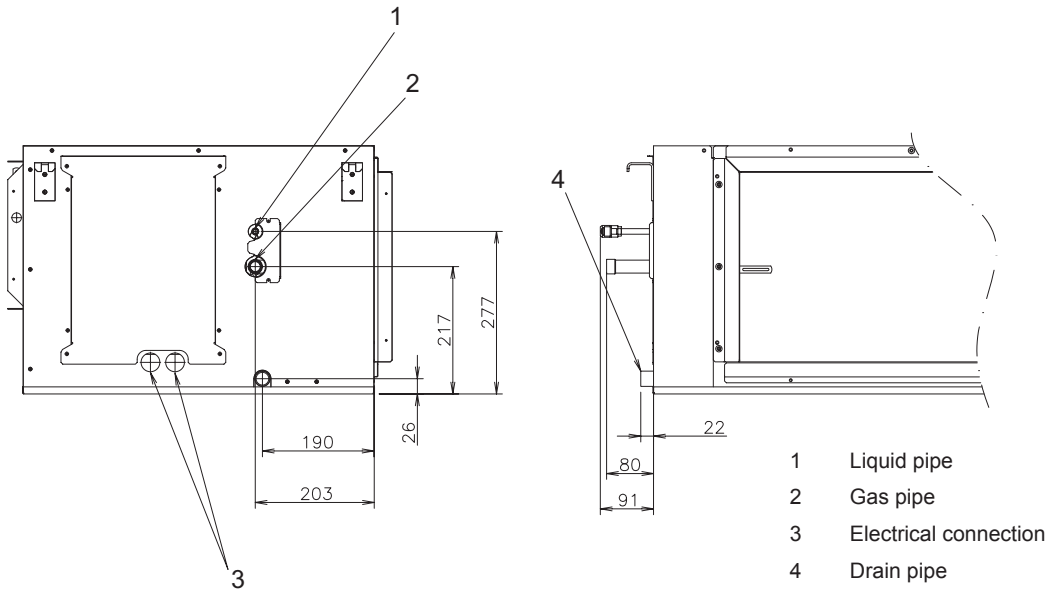

**NOTE**

*If there is excessive clearance between the drain pipe connection and the drain hose, add a sealing material between both parts in order to fit and not deform the drain hose.*

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

### ◆ 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(-f) | Ø19.05 (3/4) | Ø9.52 (3/8) |
| RPI-10.0FSN3E(-f) | 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.*

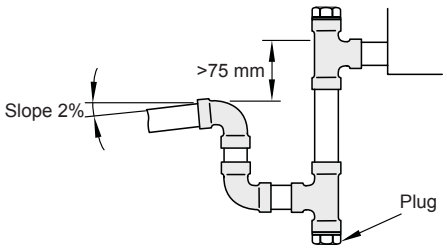
### ◆ Drain pipe installation

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

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

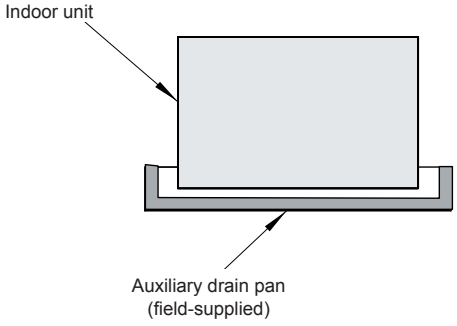
The drain piping should be performed with a down-slope pitch of 1/25 to 1/100.

Connect a syphon, as shown at the figure below.




**NOTE**

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




**CAUTION**

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

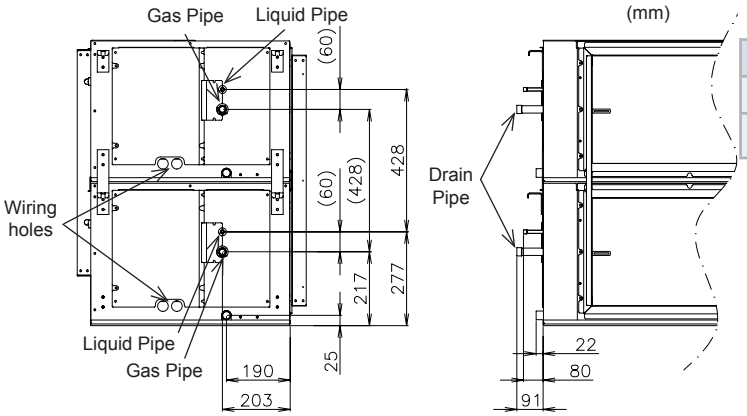
**NOTE**

*If there is excessive clearance between the drain pipe connection and the drain hose, add a sealing material between both parts in order to fit and not deform the drain hose.*

## 3.5.9 RPI-(16.0/20.0)FSN3PE(-f) - Ducted indoor unit

### ◆ Refrigerant pipe connection

The location of Liquid, Gas and the Drain Pipe connection is shown below.

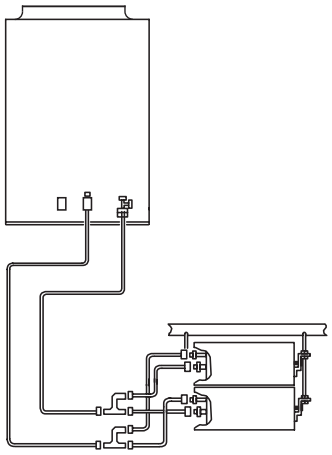



mm (in)

| Model | RPI-16.0FSN3PE(-f) | RPI-20.0FSN3PE(-f) |
|---|---|---|
| Gas Piping | Ø19.05 (3/4”) | Ø22.2 (7/8”) |
| Liquid Piping | Ø9.52 (3/8”) | Ø9.52 (3/8”) |

### ◆ Required multi kits

The following multikits (sold separately) are necessary to interconnect piping between outdoor and indoor unit:



(Picture for illustrative purpose only)

| Indoor Unit | Multikit reference |
|---|---|
| RPI-16.0FSN3PE(-f) | E162SN3 |
| RPI-20.0FSN3PE(-f) | E242SN3 |

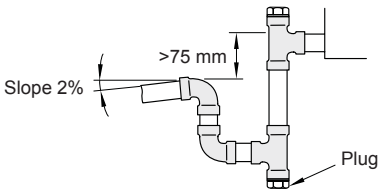
### ◆ Drain pipe installation

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 performed with a down-slope pitch of 1/25 to 1/100.

Connect a syphon, as shown at the figure below.

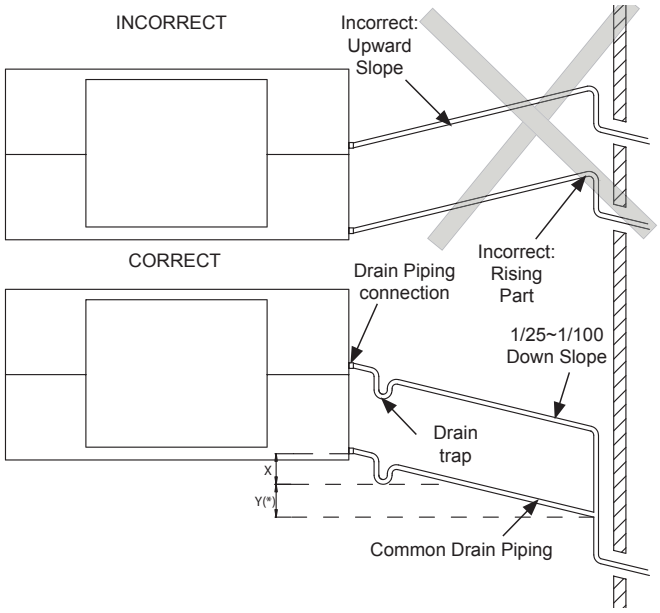



**NOTE**

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

**NOTE**

*If there is excessive clearance between the drain pipe connection and the drain hose, add a sealing material between both parts in order to fit and not deform the drain hose.*




## ⚠ CAUTION

- *It is very important the syphon installation in order to guarantee the proper condensate draining.*
- *Do not create an upper-slope or rise for the drain piping, since drain water will flow back to the unit and leakage to the room will occur when the unit operation is stopped.*
- *Do not connect the drain pipe with sanitary or sewage piping or any other drainage piping.*
- *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 pipe size of the common drain pipe must be large enough according to the unit size and number of unit.*
- *Drain piping will require insulating if the drain is installed in a location where condensation forming on the outside of drain pipe may drop and cause damage. The insulation for the drain pipe must be selected to insure vapour sealing and prevent condensation forming.*
- *Drain trap should be installed next to indoor unit. This trap must be designed to good practice and be checked with water (charged) and tested for correct flow. Do not tie or clamp the drain pipe and refrigerant pipe together.*

## NOTE

- (*)Y distance m*ust be higher than X.*
- *Install drainage in a*ccordance with national and local codes.

After performing drain piping work and electrical wiring, check to ensure that water flows smoothly as in the following procedure:

### Checking Unit without drain-up mechanism

- Pour approximately 1.8 litres of water into the drain pan (in each unit).
- Check to ensure that the water flows smoothly or whether no water leakage occurs. When water cannot be found at the end of the drain piping, pour another approximately 1.8 litres of water into the drain pan of each unit.

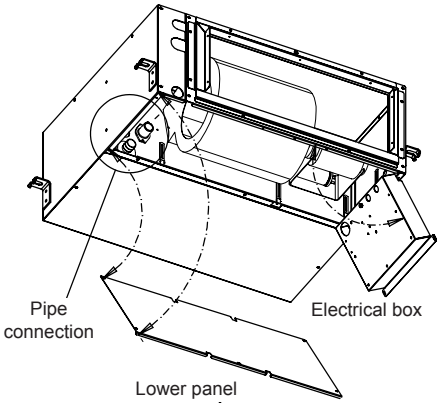
## NOTE

- *Pay attention to the thickness of the insulation when the left side piping is performed. If it is too thick, piping can not be installed in the unit.*
- *If there is excessive clearance between the drain pipe connection and the drain hose, add a sealing material between both parts in order to fit and not deform the drain hose.*

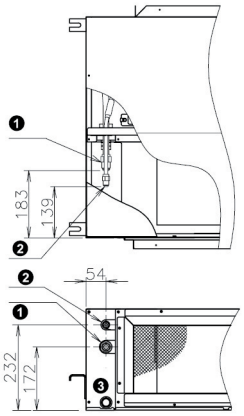
### 3.5.10 RPIM-(0.6-1.5)FSN4E(-DU) - Ducted indoor unit

#### ◆ 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(0.6–1.5)FSN4E | Ø12.70 (1/2) | Ø6.35 (1/4) |

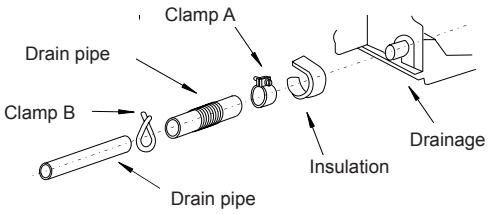
**NOTE**

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

#### ◆ Drain pipe installation

Drain hose installation:

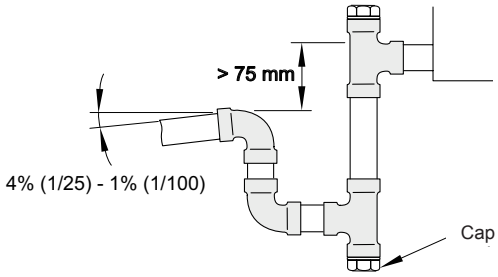
1 Insert the drain hose in the clamp “A”.
2 Push the drain hose towards the boss until it reaches the end of the pan.
3 Tighten the screw on the wire clamp to secure the pipe around the drain connection without causing water leaks.
4 Insulate the drain hose around the wire clamp to avoid condensation.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




**NOTE**

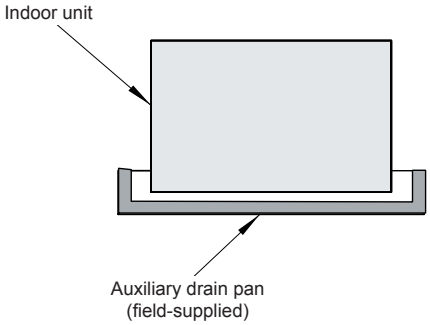
*If there is excessive clearance between the drain pipe connection and the drain hose, add a sealing material between both parts in order to fit and not deform the drain hose.*

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

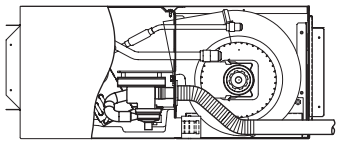



**NOTE**

*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.*



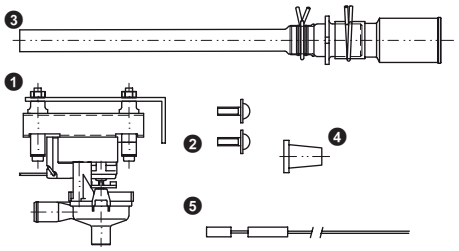

### Drainage installation for (-DU) units



### Optional drainage kit (for units without drain pump)

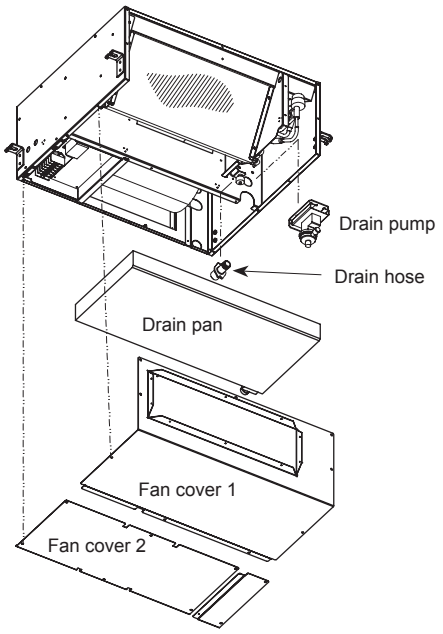
For special cases those installation design finally requires draining up (and was not desgined from the beginning of the installation project), it is available the optional drain kit.

Optional drain up mechanism kit

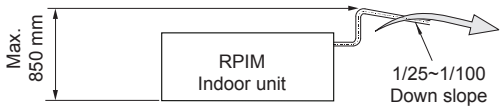



❶ Drain pump
❷ Screw (2 units)
❸ Drain hose
❹ Rubber plug
❺ Drain pump wire

Kit installation:




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



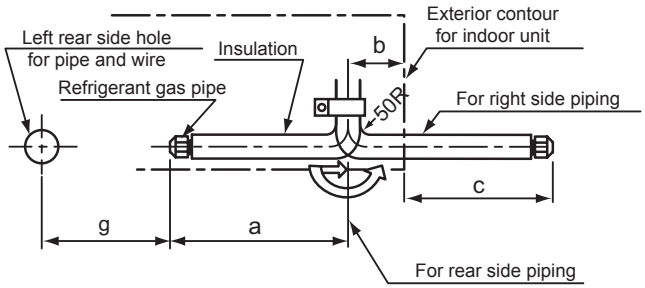

## 3.5.11 RPK-(0.6-4.0)FSN(H)3M - Wall type

### ◆ Refrigerant pipe installation

#### Gas pipe connection

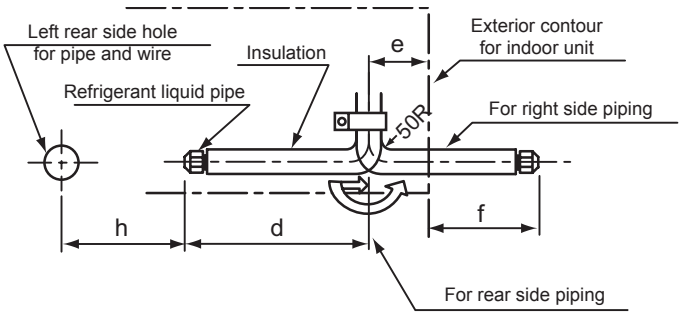
The position of the gas pipe connection is possible in all directions (above, left or right).

| Model | Measurements (mm) | | | |
|---|---|---|---|---|
| | a | b | c | g |
| RPK-(0.6-1.0)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 |



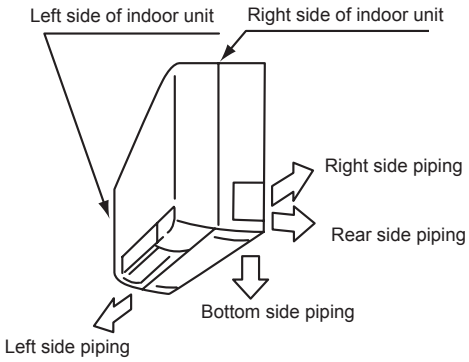

#### Liquid pipe connection

| Model | Measurements (mm) | | | |
|---|---|---|---|---|
| | d | e | f | h |
| RPK-(0.6-1.0)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 |



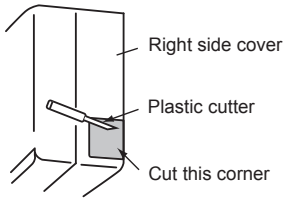
### Direction of piping connection

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.

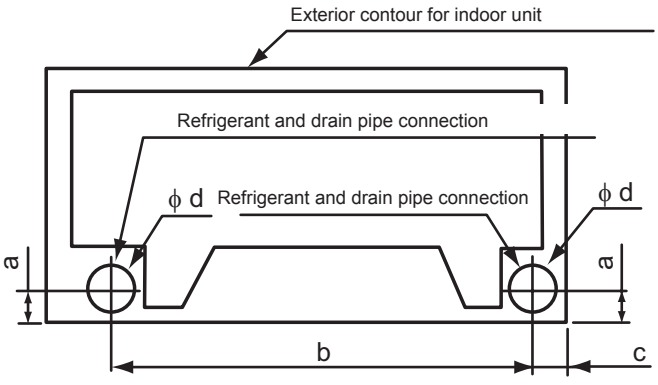
  **b.** For the pipe installation embedded in the wall, the positions of piping are as follows.

**NOTE**

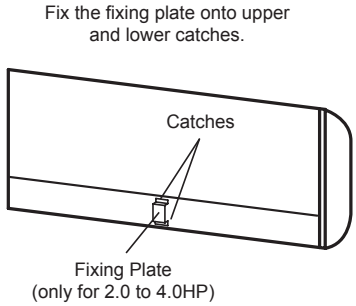
*For RPK-(0.6-1.5)FSN(H)3M, it is recommended to connect the piping at the right rear side of the body to avoid the sound from the refrigerant running through.*

Unit: mm

| Model | Liquid piping | | | |
|---|---|---|---|---|
| | a | b | c | Ød |
| RPK-(0.6-1.0)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.




| Models | Gas pipe mm (inches) | Liquid pipe mm (inches) |
|---|---|---|
| RPK-(0.6-1.5)FSN(H)3M | Ø12.70 (1/2) | Ø9.52 (3/8) (FSNH3M)<br>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) |

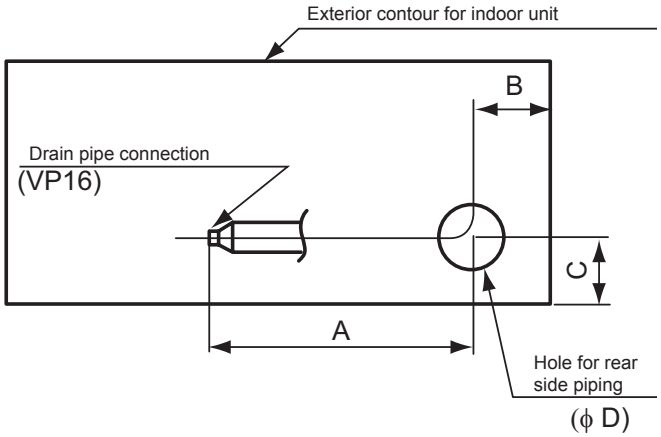
## Drain pipe installation

**NOTE**

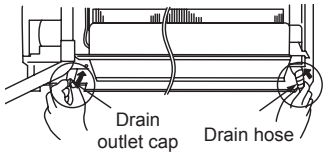
*The normal direction for connecting the drain hose is on the right side (when the unit is seen from the outlet grille side). The connection can be made from the left side or from the rear if there are construction elements of the building around it.*

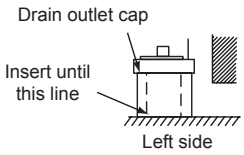
Unit: mm

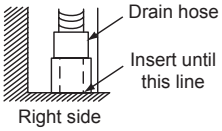
| Model | A | B | C | ØD |
|---|---|---|---|---|
| RPK-(0.6-1.5)FSN(H)3M | 568 | 107 | 45 | 65 |
| RPK-(2.0-4.0)FSN3M | 550 | 141 | 42 | 80 |




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.)

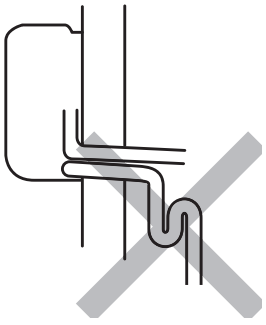



Provide a vinyl chloride pipe, VP16.

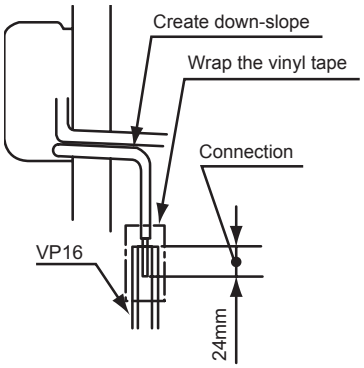
When the drain hose is used, do not create rising part or twist.



Wrap surely the vinyl tape around the drain piping connection.

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

1 Do not connect the drain pipe with sanitary or sewage piping or any other drainage piping.
2 After the drain piping work is completed, check that water flows smoothly by pouring water into the drain pan by a cup.
3 Wrap the field-supplied insulation around the drain pipe running through the indoor.
4 When installing the pipe, do not tie the drain pipe and refrigerant pipe together.



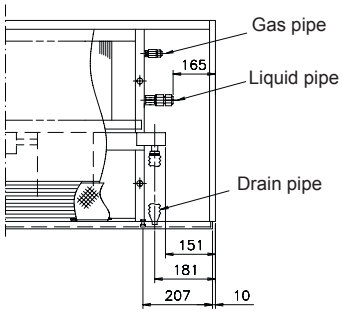

**⚠ CAUTION**

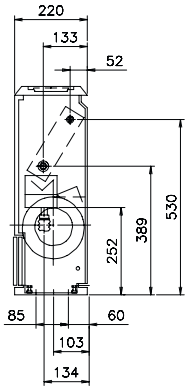
- *Pay attention not to splash water to the electrical parts such as the fan motor or thermistors.*
- *When the common drain piping is connected with other indoor units, the connected position of each indoor unit must be higher than the common piping. The size of common drain pipe must be large enough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

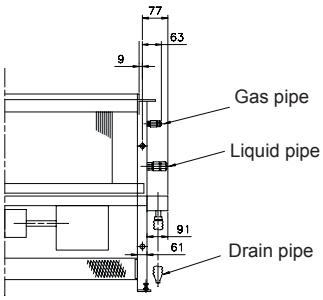
## 3.5.12 RPF(I)-(1.0-2.5)FSN2E - Floor type

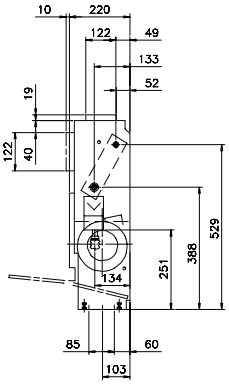
### ◆ Refrigerant pipe installation

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)-(1.0-1.5)FSN2E | 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) | |

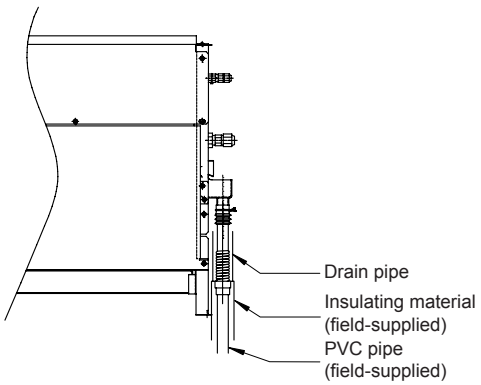
### ◆ Drain pipe installation

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 and control settings

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# 4.1 Unit electrical wiring and connection

**⚠ CAUTION**

*Check to ensure that the field supplied electrical components (mains power switches, circuit breakers, wires, connectors and wire terminals) have been properly selected according to the electrical data indicated on this chapter and they comply with national and local codes. If it is necessary, contact with your local authority in regards to standards, rules, regulations, etc.*

## 4.1.1 Wiring size

Use wires which are not lighter than the polychloroprene sheathed flexible cord (code designation 60245 IEC 57).

### ◆ Indoor units

| Model | Power supply | Maximum current (A) | Power supply cable size EN60 335-1 | Transmitting cable size EN60 335-1 |
|---|---|---|---|---|
| Indoor units (0.6-6.0) HP | 1~ 230V 50Hz or 1~ 220-240V 50Hz (depending on model) | 5.0 | 2 x 0.75 $mm^2$+GND | 2x 0.75 $mm^2$ |
| RPI-(8.0/10.0)FSN3E(-f) | | 10.0 | 2 x 1.5 $mm^2$+GND | |
| RPI-16.0FSN3PE(-f) | | 16.2 | 2 x 4.0 $mm^2$+GND | |
| RPI-20.0FSN3PE(-f) | | 17.7 | | |

### ◆ KPI units

| Model | Power supply | Maximum current (A) | Power supply cable size EN60 335-1 |
|---|---|---|---|
| KPI-252E4E | 1~ 230V 50Hz | 4.0 | 2 x 1.0 $mm^2$+GND |
| KPI-502(E/X)4E | | 4.0 | 2 x 1.0 $mm^2$+GND |
| KPI-802(E/X)4E | | 4.0 | 2 x 1.0 $mm^2$+GND |
| KPI-1002(E/X)4E | | 8.0 | 2 x 1.5 $mm^2$+GND |
| KPI-1502E4E | | 8.0 | 2 x 2.5 $mm^2$+GND |
| KPI-2002E4E | | 8.0 | 2 x 2.5 $mm^2$+GND |

### ◆ DX-Interface

| Model | Power supply | Maximum current (A) | Power supply cable size EN60 335-1 |
|---|---|---|---|
| EXV-(2.0-10.0)E2 | 1~ 230V 50Hz | 5.0 | 2 x 0.75 $mm^2$+GND |

### 4.1.2 Minimum requirements of the protection devices

**CAUTION**

- *Ensure specifically that there is an Earth Leakage Breaker (ELB) installed for the units.*
- *If the installation is already equipped with an Earth Leakage Breaker (ELB), ensure that its rated current is large enough to hold the current of the units.*

**NOTE**

- *Electric fuses can be used instead of magnetic Circuit Breakers (CB). In that case, select fuses with similar rated values as the CB.*
- *The Earth Leakage Breaker (ELB) mentioned on this manual is also commonly known as Residual Current Device (RCD) or Residual Current Circuit Breaker (RCCB).*
- *The Circuit Breakers (CB) are also known as Thermal-Magnetic Circuit Breakers or just Magnetic Circuit Breakers (MCB).*

#### ◆ Indoor units

| Model | Power supply | Maximum current (A) | CB (A) | ELB (nº poles/A/mA) |
|---|---|---|---|---|
| Indoor units (0.6-6.0) HP | 1~ 230V 50Hz or 1~ 220-240V 50Hz (depending on model) | 5.0 | 6 | 2/40/30 |
| RPI-(8.0/10.0)FSN3E(-f) | | 10.0 | 10 | |
| RPI-16.0FSN3PE(-f) | | 16.2 | 20 | |
| RPI-20.0FSN3PE(-f) | | 17.7 | 20 | |

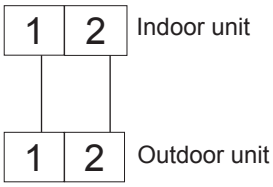
CB: Circuit breaker; ELB: Earth leakage breaker

#### ◆ KPI units

| Model | Power source | Maximum current (A) | CB (A) | ELB (nº poles/A/mA) |
|---|---|---|---|---|
| KPI-252E4E | 1~ 230V50Hz | 4.0 | 6 | 2/40/30 |
| KPI-502(E/X)4E | | 4.0 | 6 | |
| KPI-802(E/X)4E | | 4.0 | 6 | |
| KPI-1002(E/X)4E | | 8.0 | 10 | |
| KPI-1502E4E | | 8.0 | 16 | |
| KPI-2002E4E | | 8.0 | 16 | |

### 4.1.3 Transmission wiring between outdoor and indoor unit

- The transmission is wired to terminals 1-2.
- The H-LINK II wiring system requires only two transmission cables that connect the indoor unit and the outdoor unit.




- Use twist pair wires (0.75 mm²) for operation wiring between outdoor unit and indoor unit. The wiring must consist of 2-core wires (Do not use wire with more than 3 cores).
- Use shielded wires for intermediate wiring to protect the units from noise interference, with a length of less than 300m and a 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.

**⚠ CAUTION**

*Ensure that the transmission wiring is not wrongly connected to any live part that could be damaged the PCB.*

### 4.1.4 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.

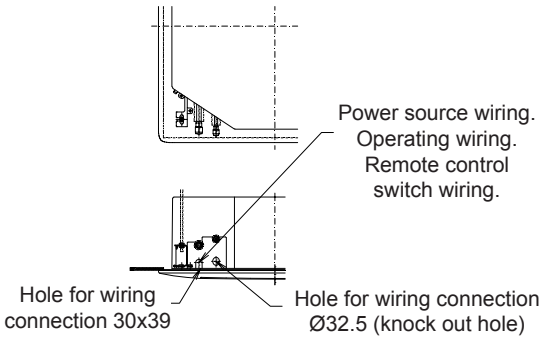
Make the connection between the indoor unit and the air panel.

**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 knock-out 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.

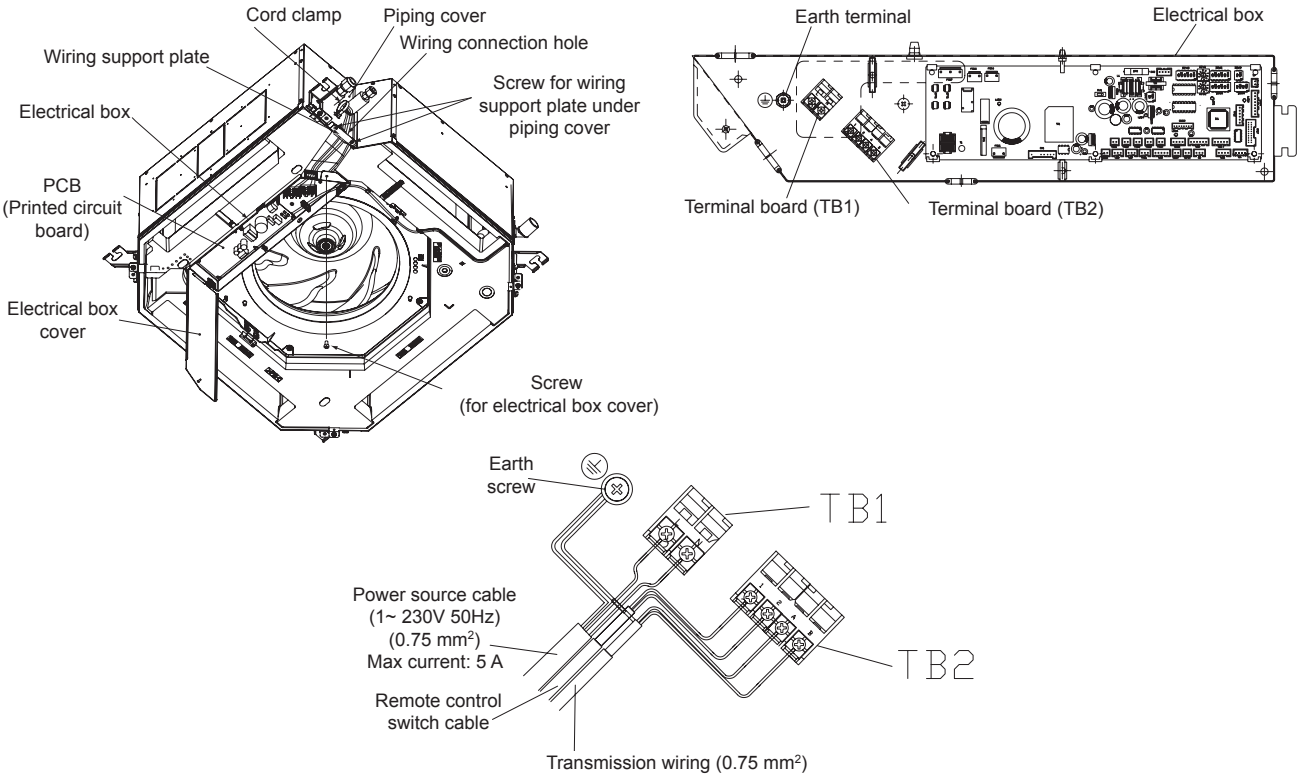
Follow the steps below to connect the communication cables between the outdoor and indoor unit to the terminal strip (TB1):

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-FSN4**




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.*

## 4.1.5 Electrical connection of RCIM units

**Before proceeding to any 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**

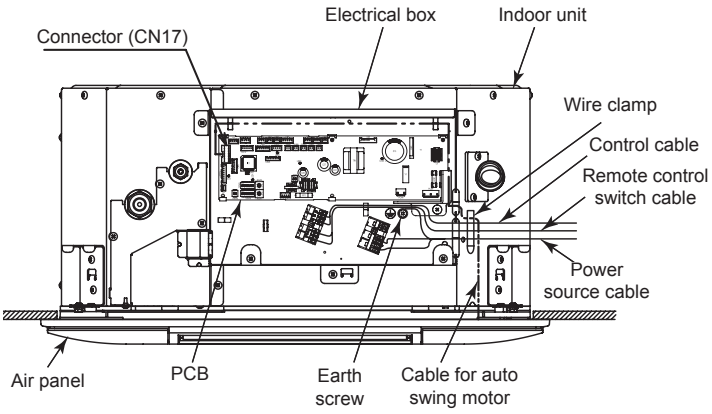
- *Risk of fire: cables must never touch the refrigerant pipes, printed circuit boards (PCB), sharp edges or electrical components inside the unit to avoid damaging them.*
- *Loose connection terminals may lead to cable and terminal overheating. The unit may operate incorrectly, leading to a risk of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

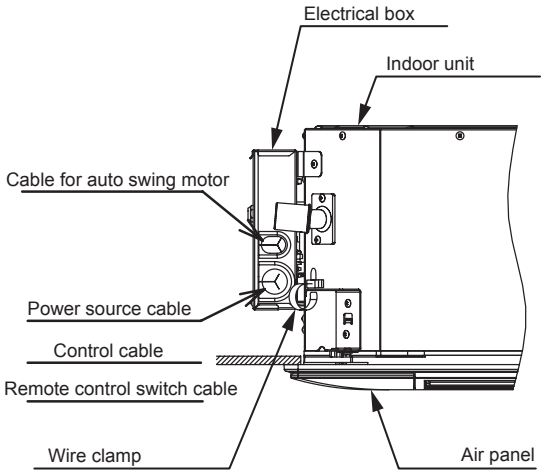
### Electrical connection

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

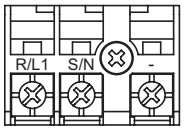
**NOTE**

- *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.*



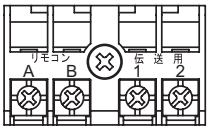




**Terminal Board 1**




Terminal board for Power source cable

**Terminal Board 2**




Terminal board for Control source cable

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

1 Pass the cable through the knock-out 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):

**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 (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.

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.

#### 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 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**

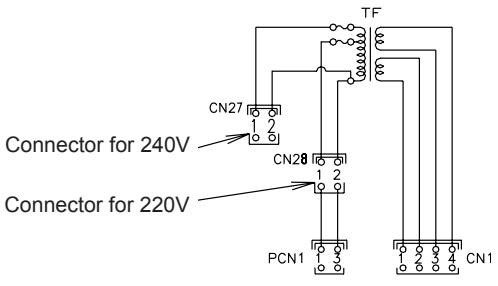
- *Risk of fire: cables must never touch the refrigerant pipes, printed circuit boards (PCB), sharp edges or electrical components inside the unit to avoid damaging them.*
- *Loose connection terminals may lead to cable and terminal overheating. The unit may operate incorrectly, leading to a risk of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



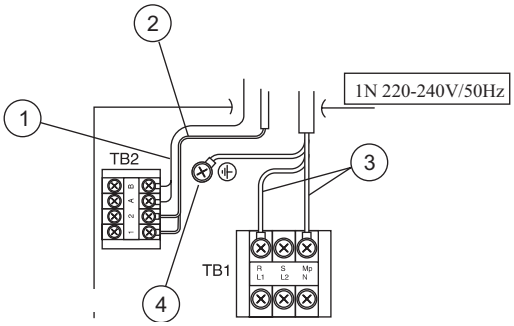

Follow the steps below to connect the power cables to the terminal strip (TB1):

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.

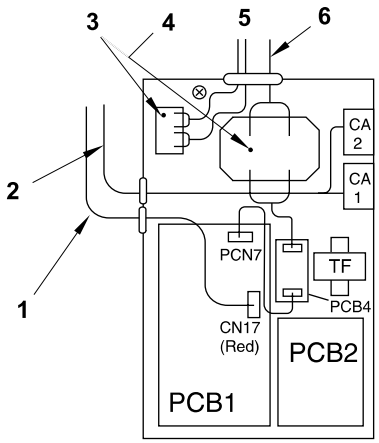
Follow the steps below to connect the communication cables between the outdoor and indoor unit to the terminal strip (TB2):

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 |

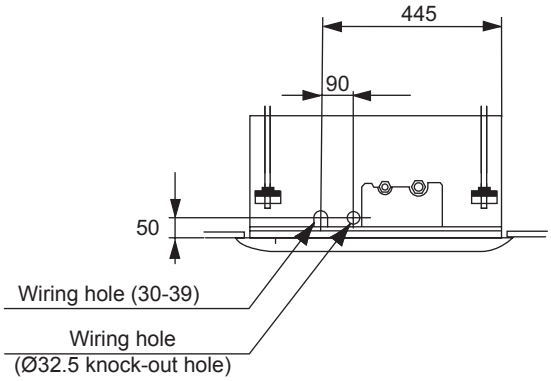



| Nº | Part |
|---|---|
| 1 | Connector for the swing louver motor |
| 2 | Fan motor connector |
| 3 | Terminal strip (TB2) |
| 4 | Terminal strip (TB1) |
| 5 | Wiring |
| 6 | Power wiring |

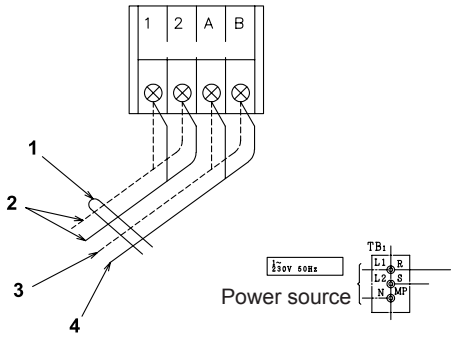



Follow the steps below to connect the earth wire to the earth connection in the electrical box:

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.*

## 4.1.7 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 knock-out 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.

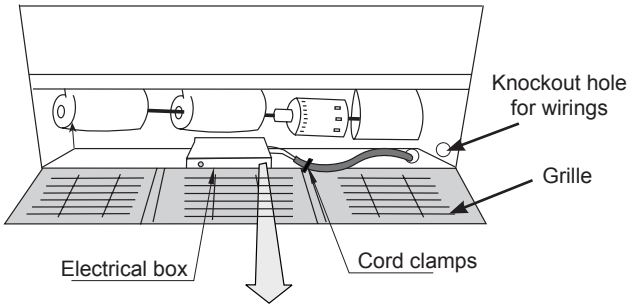
Follow the steps below to connect the communication cables between the outdoor and indoor unit to the terminal strip (TB):

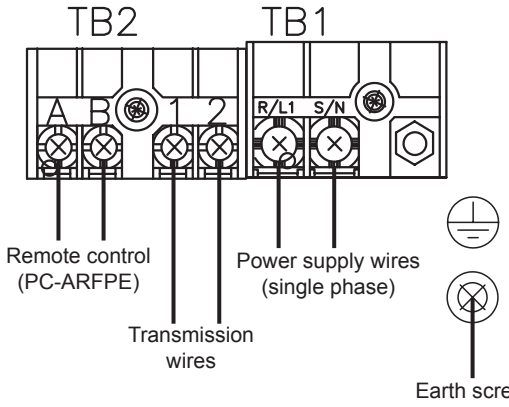
1 Where necessary, loosen the screws on terminals 1 and 2 on the terminal strip (TB).
2 Connect the communication cables to terminals 1 and 2.
3 Tighten the screw on terminals 1 and 2.
4 Check that the cables are correctly secured.

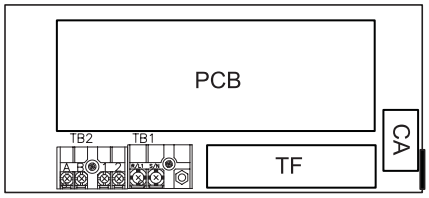
Follow the steps below to connect the earth wire to the earth connection in the electrical box:

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.*

### 4.1.8 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**

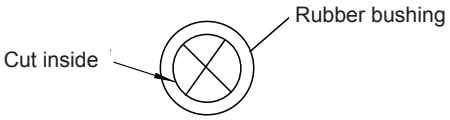
*The service panel for the indoor unit fan motor is at the bottom of the unit and the electrical box service panel is on the right-hand side.*

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 knock-out 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):

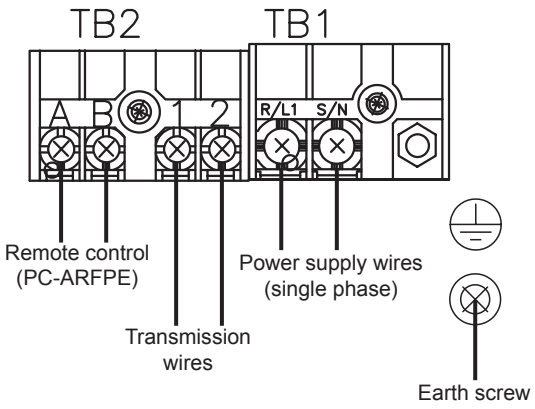
1 Where necessary, loosen the screws on terminals 1 and 2 on the terminal strip (TB).
2 Connect the communication cables to terminals 1 and 2.
3 Tighten the screw on terminals 1 and 2.
4 Check that the cables are correctly secured.

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

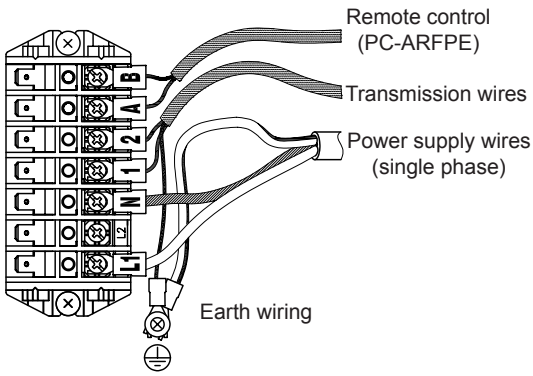
1 Where necessary, loosen the screw on the earthing connection in the electrical box.
2 Connect the shielded part of the power supply earth wire and the signal wiring earth wire to the earth connection.
3 Tighten the screw on the earthing connection in the electrical box.
4 Check that the shielded part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

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

From 0.6 to 6.0 hp



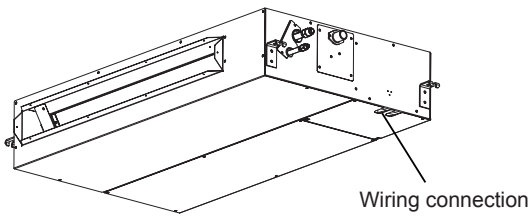

From 8.0 to 20.0 hp

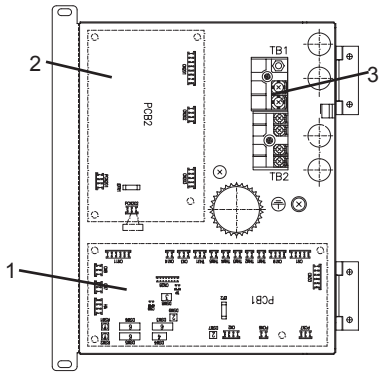


### RPI-(0.6-1.5)FSN4E Terminal board location

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

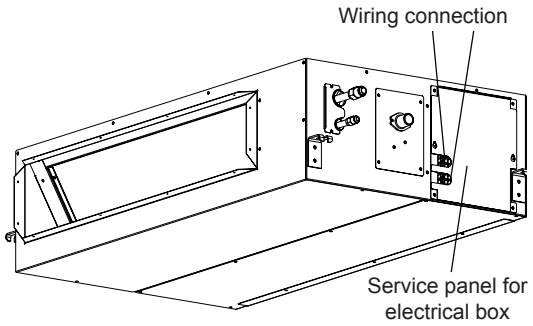
| Nº | Part |
|---|---|
| 1 | Printed circuit board 1 (PCB1) |
| 2 | Printed circuit board 2 (PCB2) |
| 3 | Terminal board (TB) |

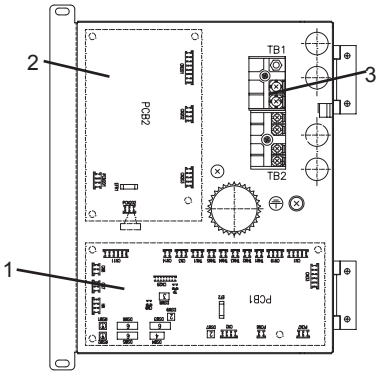



### RPI-(2.0-6.0)FSN4E Terminal board connections

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

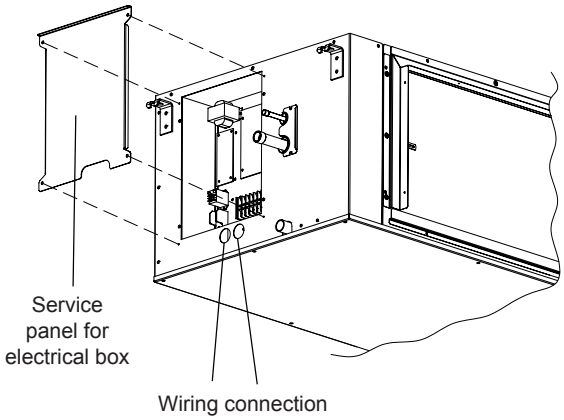


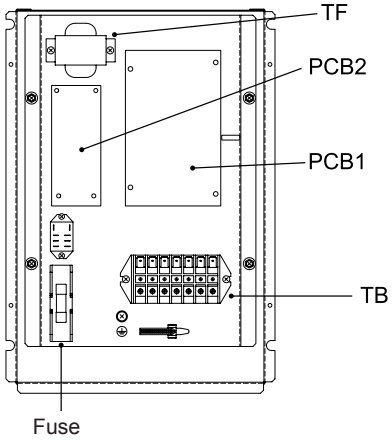

### RPI-(8.0/10.0)FSN3E(-f) Terminal board connections

| Nº | Part |
|---|---|
| PCB1 | Printed circuit board |
| PCB2 | Printed circuit board |
| TF | Transformer |
| TB | Terminal strip |
| FUSE | Fuse |

RPI-8~10

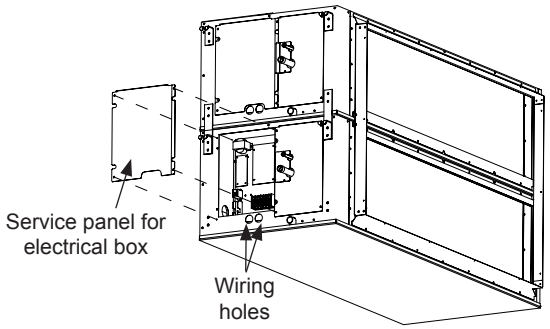


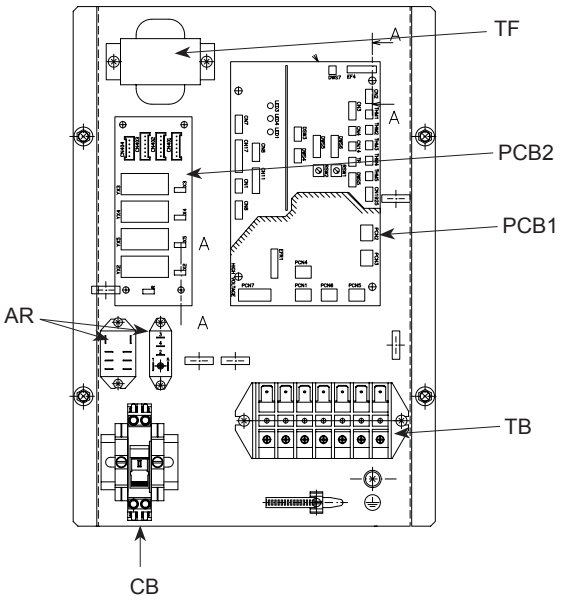

RPI-8~10



### RPI-(16.0/20.0)FSN3PE(-f) Terminal board connections

| Nº | Part |
|---|---|
| PCB1 | Printed circuit board 1 |
| PCB2 | Printed circuit board 2 |
| TF | Transformer |
| TB | Terminal board |
| CB | Circuit breaker |
| AR | Auxiliary relay |

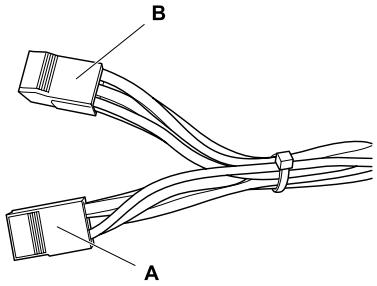



## Test runs

The fan motor in RPI-(8.0/10.0)FSN3E(-f) and RPI-(16.0/20.0)FSN3(-f)PE units can be configured in two different ways:

- A: connector CN24 LSP (Low Static Pressure) (factory supplied setting);
- B: connector CN25 HSP (High Static Pressure). .

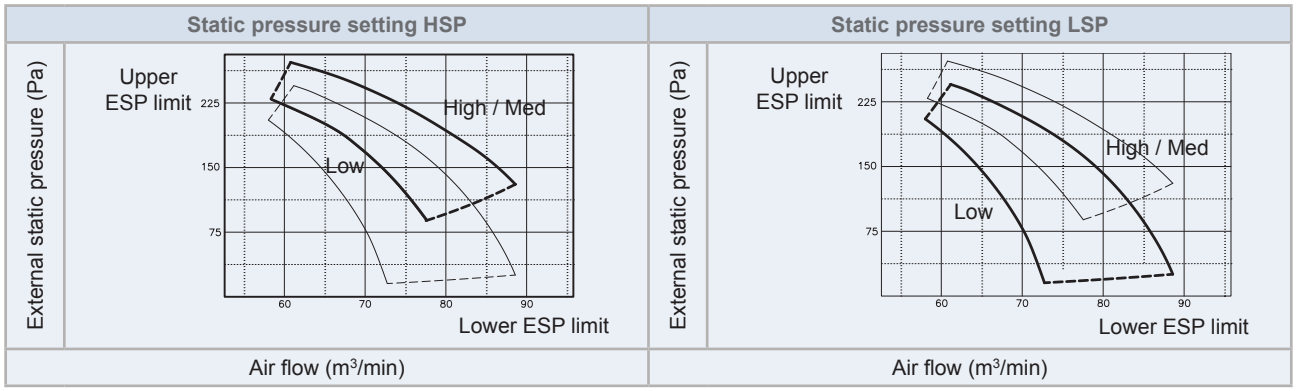



**⚠ CAUTION**

*Perform the connection with the same settings in both units that make up models RPI-(16.0/20.0)FSN3E; otherwise malfunction may occur, causing damage to the units.*

According to the Static Pressure setting (connector CN24 LSP (Low Static Pressure) or CN25 HSP (High Static Pressure)) the fan speed available in the Remote Control Switch are the ones show as example in the following pictures.

- Example for RPI-(8.0/10.0)FSN3E(-f):




**⚠ CAUTION**

- *Make sure SP-02 is selected on the remote control for RPI-(0.8-6.0)FSN4E units in the case of short duct installations. To configure SP-02, refer the optional functions C5->"02", low static pressure option. Make sure the low static pressure option (LSP) is selected for RPI (8.0/10.0)FSN3E(-f) units.*
- *Ensure a minimal resistance is maintained in the duct, as shown in the fan performance graphs. Starting the unit with a duct that is too short causes it to operate outside its accepted operating range.*

## 4.1.9 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**

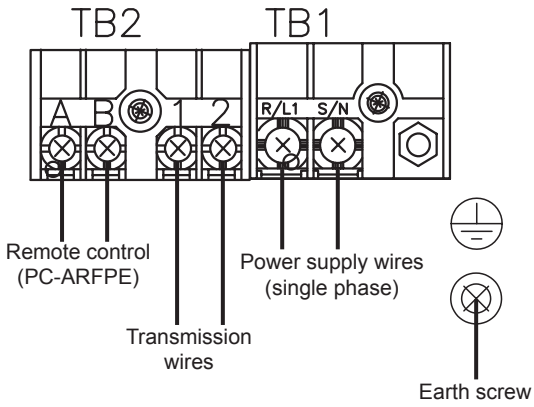
- *The service access panel for the indoor unit fan motor is at the bottom of the unit.*
- Remove the service access panel.
- *Cut the centre of the rubber bushing in the wiring connection hole.*

**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 knock-out 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):

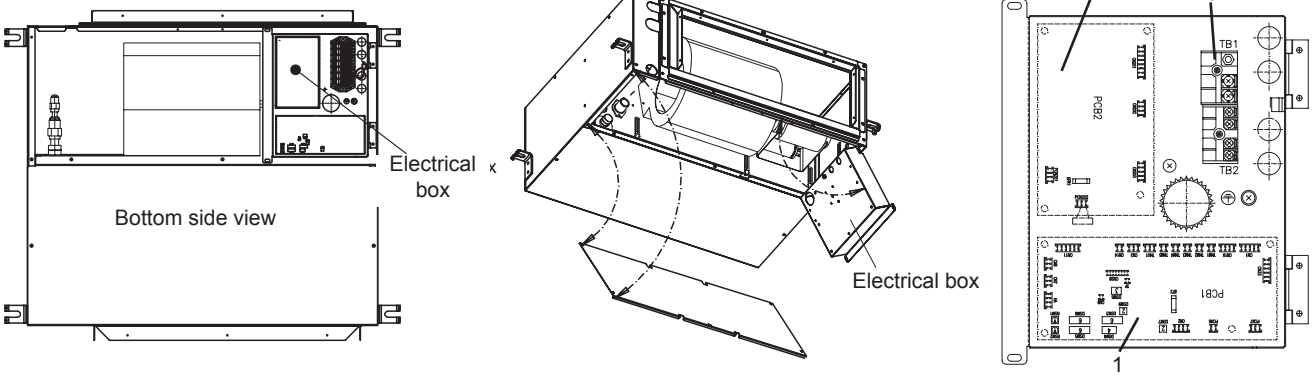
1 Where necessary, loosen the screws on terminals 1 and 2 on the terminal strip (TB).
2 Connect the communication cables to terminals 1 and 2.
3 Tighten the screw on terminals 1 and 2.
4 Check that the cables are correctly secured.

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.*

## 4.1.10 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

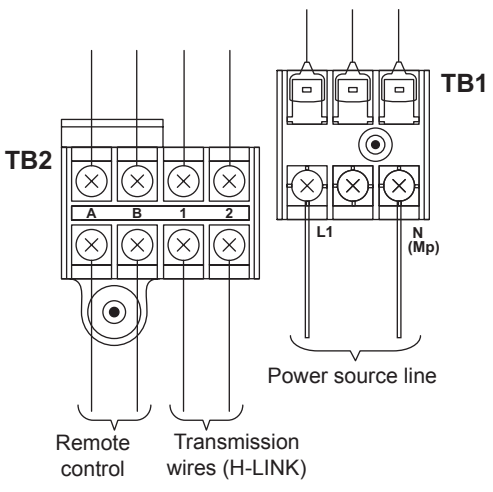
**CAUTION**

- *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 Catalogue". 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-ARFPE.*
- *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.*

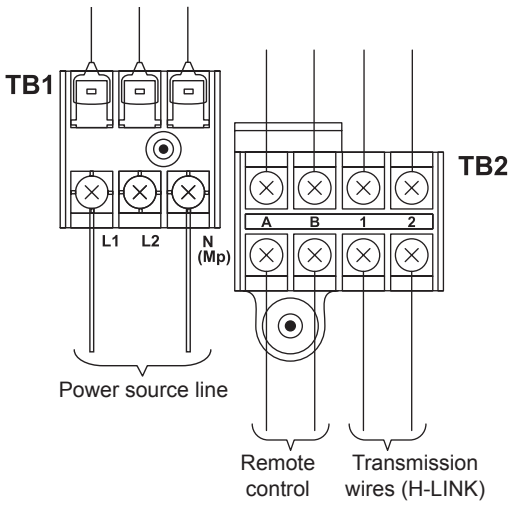
The electrical wiring capacity of the outdoor unit should be referred according to "Installation & Operation Manual" of the outdoor unit. Setting dip switch may be required depending on the combination with the outdoor unit.

1 Connect the power source cables (L1 and N phases (1~ 230V 50Hz)) to the terminal board correctly.

RPK-(0.6-1.5)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

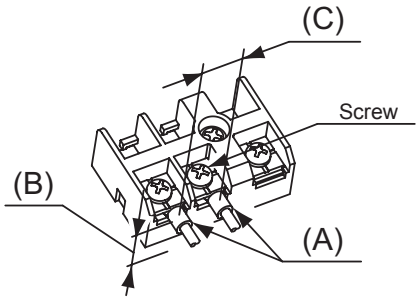
- *When the total wiring length for control cable between the outdoor unit and the indoor unit and between indoor units is less than 100m, the normal wiring (more than 0.75mm$^2$) except the twist pair cable is available. (except for Australia)*
- *The total wiring length for the remote control switch can be extended up to 500m. If the total wiring length less than 30m, the normal wiring (0.3mm$^2$) 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.*

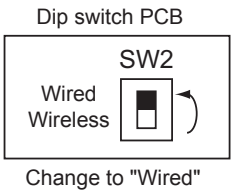



### NOTE

*In case of using optional wired remote control switch (PC-ARFPE) or optional receiver Kit (PC-ALHZF).*

*The following setting is required when the optional wired remote control switch (PC-ARFPE) 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.*

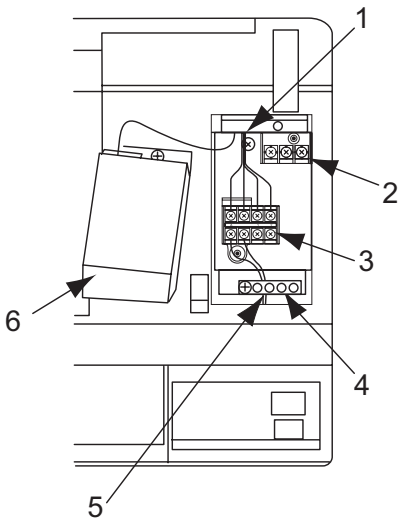



*In case of using optional wireless remote control switch (PC-AWR)*

- *The SW2 switch setting is NOT required when the wireless remote control switch (PC-AWR) 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.)*

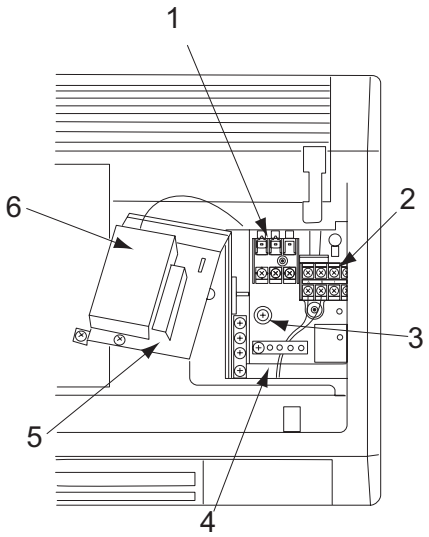
### RPK-(0.6-1.5)FSN(H)3M terminal board connections

| 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.*

### 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**

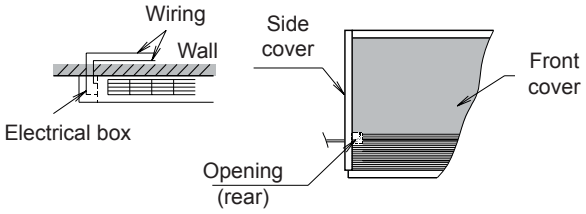
- *Risk of fire: cables must never touch the refrigerant pipes, printed circuit boards (PCB), sharp edges or electrical components inside the unit to avoid damaging them.*
- *Loose connection terminals may lead to cable and terminal overheating. The unit may operate incorrectly, leading to a risk of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

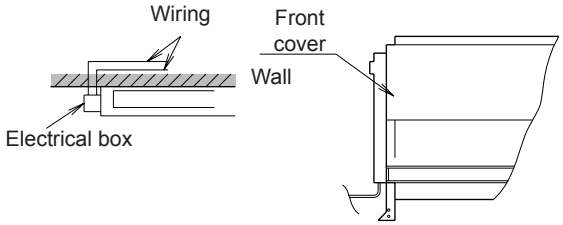
**NOTE**

*For RPF units, the correct wiring is connected from the rear left side.*




**NOTE**

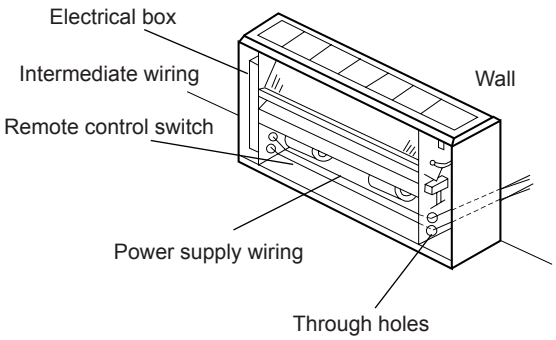
*For RPFI units, the correct wiring is connected from the rear right side.*

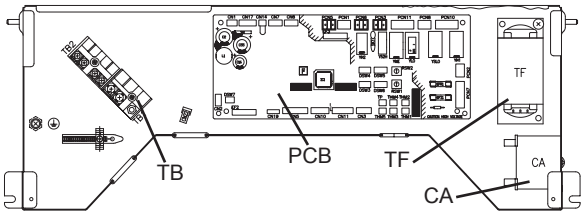



Open the front and side panels.

**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. |

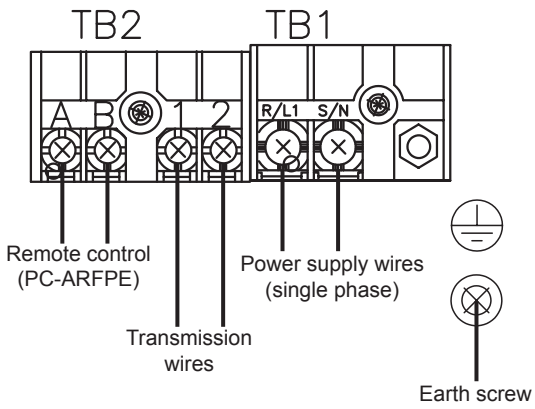


Follow the steps below to connect the cable of the remote control (PC-ARFPE/PC-P2HTE) or the optional extension wire:

1 Pass the cable through the knock-out 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.*

## 4.1.11 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**

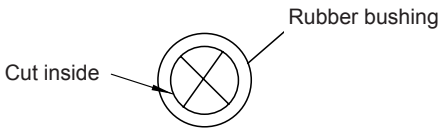
- *Risk of fire: cables must never touch the refrigerant pipes, printed circuit boards (PCB), sharp edges or electrical components inside the unit to avoid damaging them.*
- *Loose connection terminals may lead to cable and terminal overheating. The unit may operate incorrectly, leading to a risk of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

### Electrical connection

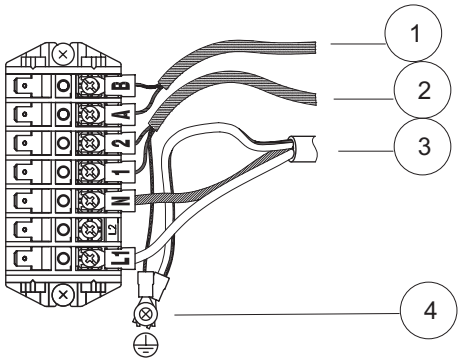
Cut the centre of the rubber bushing in the wiring connection knock-out hole.

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

1 Pass the cable through the knock-out 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

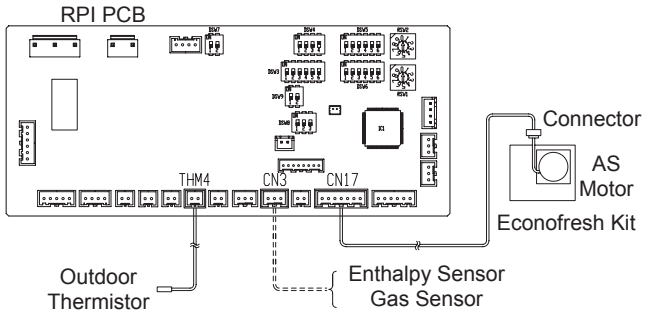
**CAUTION**

- *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.*

## 4.1.12 Econofresh electrical wiring connection

The electrical wiring connection for the unit is shown below. Mount the outdoor thermistor at a position near the outdoor air inlet.

Pay attention to the position of the thermistor where the direct sunshine is not radiated or rain water is not touched.




**DANGER**

- ***Turn OFF the main power switch to the unit and wait for more than 3 minutes before electrical wiring work or a periodical check is performed.***
- ***Check to ensure that the indoor unit's fan has stopped before electrical wiring work or a periodical check is performed.***
- ***Protect the wires, electrical parts, etc. from rats or other small animals. If not protected, rats may gnaw at unprotected parts and at the worst, a fire will occur.***

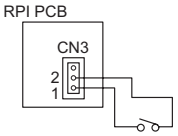
**CAUTION**

*Wrap the accessory packing around the wires, and plug the wiring connection hole with the seal material to protect the products from any condensate water or insects.*

### Optional sensor connection

When installing the field-supplied sensors, select and connect the sensors as follows.

- The type of the sensor should be of ON/OFF switching type.
- The switch rating should be DC12V.
- Connect the wires to #1 and #2 of CN3 on the RPI PCB. (In this case, the enthalpy sensor cannot be applied.)
- Lead the wires through the connecting hole for the control circuit.




Optional Sensor (DC12V, 1 to 2mA)

1 Enthalpy Sensor (Field-Supplied)
- The switching arrangement should be as follows.
  - OFF: for Calling Free Cooling (Compressor OFF)
  - ON: for Calling Mechanical Cooling (Compressor ON)
- Set the enthalpy sensor mode by using remote control switch.

2 CO2 Gas Sensor (Field-Supplied)
- The switch arrangement should be as follows.
  - ON: for Increasing Outdoor Air Introduction
  - OFF: for Decreasing Outdoor Air Introduction
- Set the CO2 Gas sensor mode by using remote control switch.

### 4.1.13 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.*

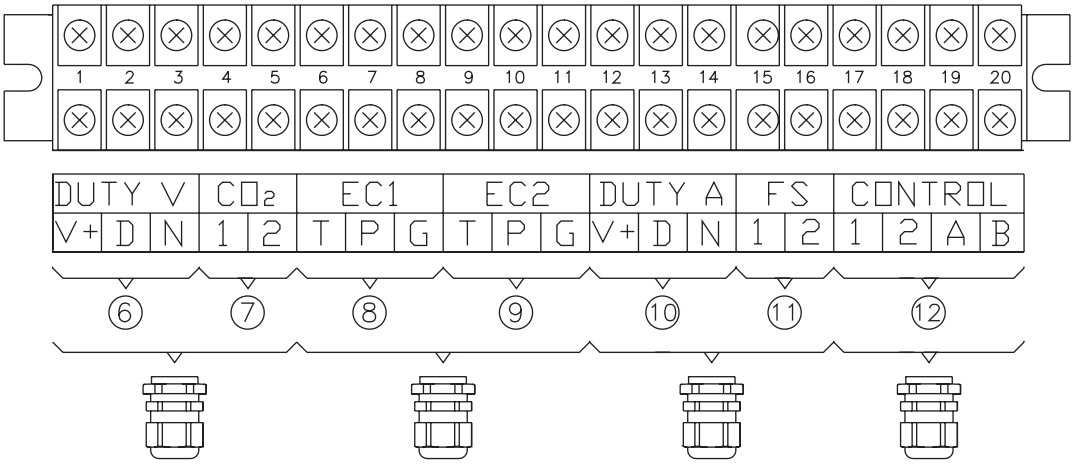
**NOTE**

*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.*

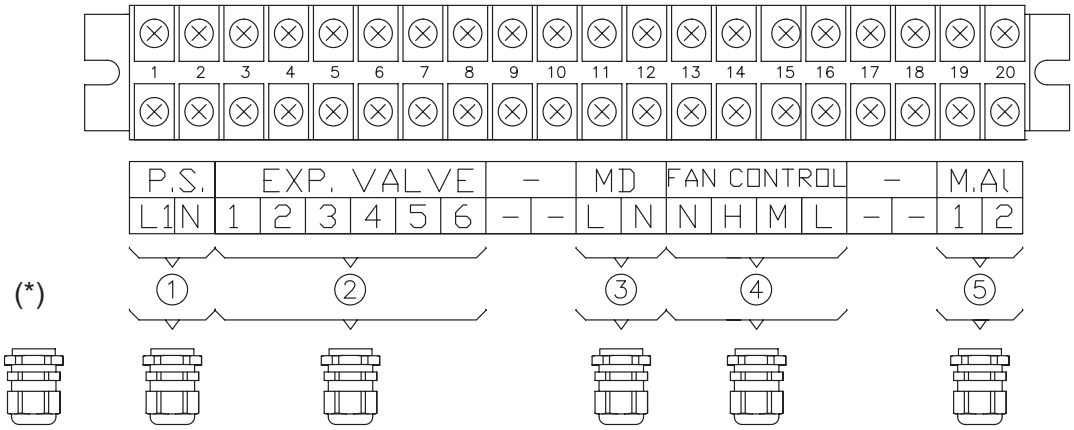
#### ◆ Control box terminal board

**DX-Interface EXV-(2.0-10.0)E2**

**Terminal board 1**




**Terminal board 2**

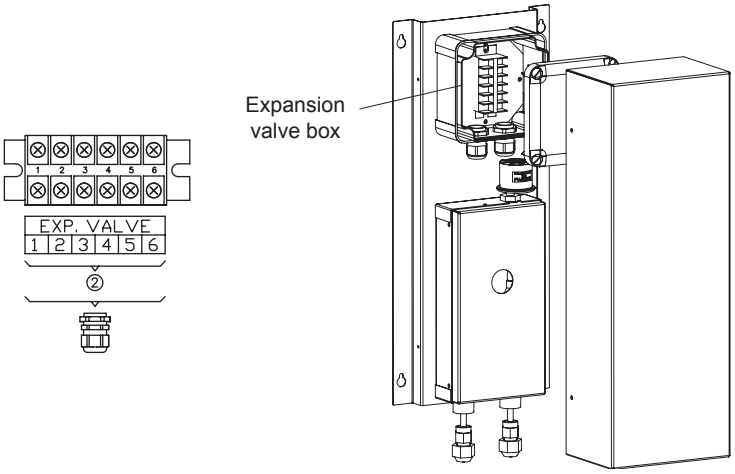



**NOTE**

*(*) Packing gland for thermistor installation.*

### ◆ Expansion valve box terminal board

**DX-Interface EXV-(2.0-10.0)E2**




### ◆ 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: 3 W* |
| | 2 | D | D: Voltage input (0~10V) (0~5V) | |
| | 3 | N | N: GND | |
| ⑦ | 4 | 1 | **$CO_2$ 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: 3 W |
| | 13 | D | D: Current input (4~20mA) | |
| | 14 | N | N: GND | |
| ⑪ | 15 | 1 | **FS: Float 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 communication (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):**<br>The main power supply connection (230 Vac) is wired to terminals L1 and N. | 1~ 230V 50Hz, Max current. 5A<br>Wire section: 3x0,75mm² |
| | 2 | N | | |
| ② | 3 | 1 | **EXP. VALVE: Expansion valve connection (necessary):**<br>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):**<br>A drain water pump (field supplied) can be connected to DX-kit interface. | 1~ 230V 50Hz Max current: 1A (output)<br>Wire section: 2x0,75mm² |
| | 12 | N | | |
| ④ | 13 | N | **FAN CONTROL: Fan tap speed control by HITACHI remote controller (optional):**<br>N-Neutral phase connection (common) | Maximum current allowed: 3,5A<br>Wire section: 4x0,75mm²<br>(*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:**<br>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<br>(*2) |
| | 20 | 2 | | |

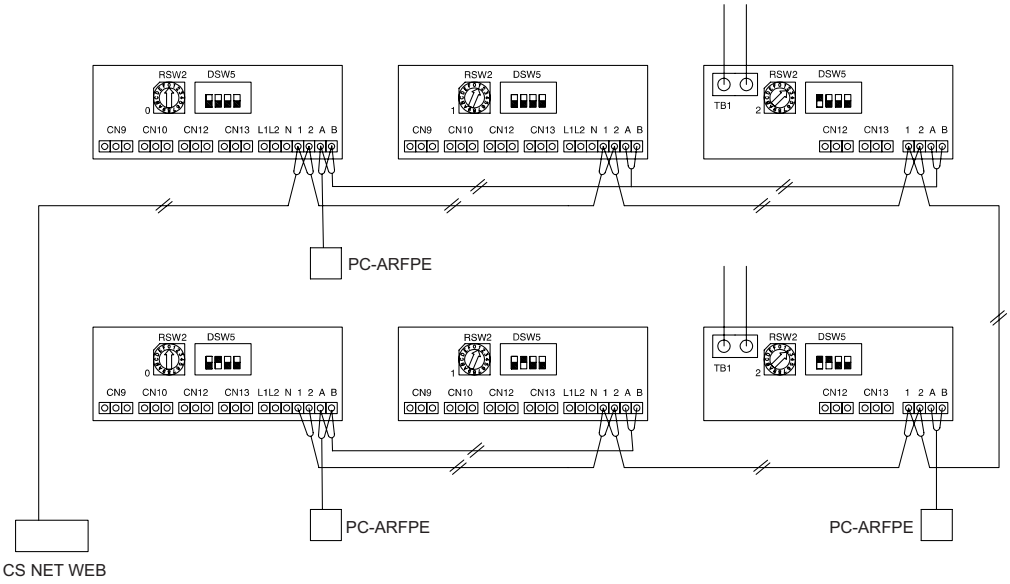
**NOTE**

- *(*1): Locked rotor amperage (LRA) must be lower than 8A.*
- *(*2): Alarm signal with high power (1~ 230V 50Hz): In case of M. AI, connection is not necessary. The harness jumper provided inside the DX-Interface must be used.*

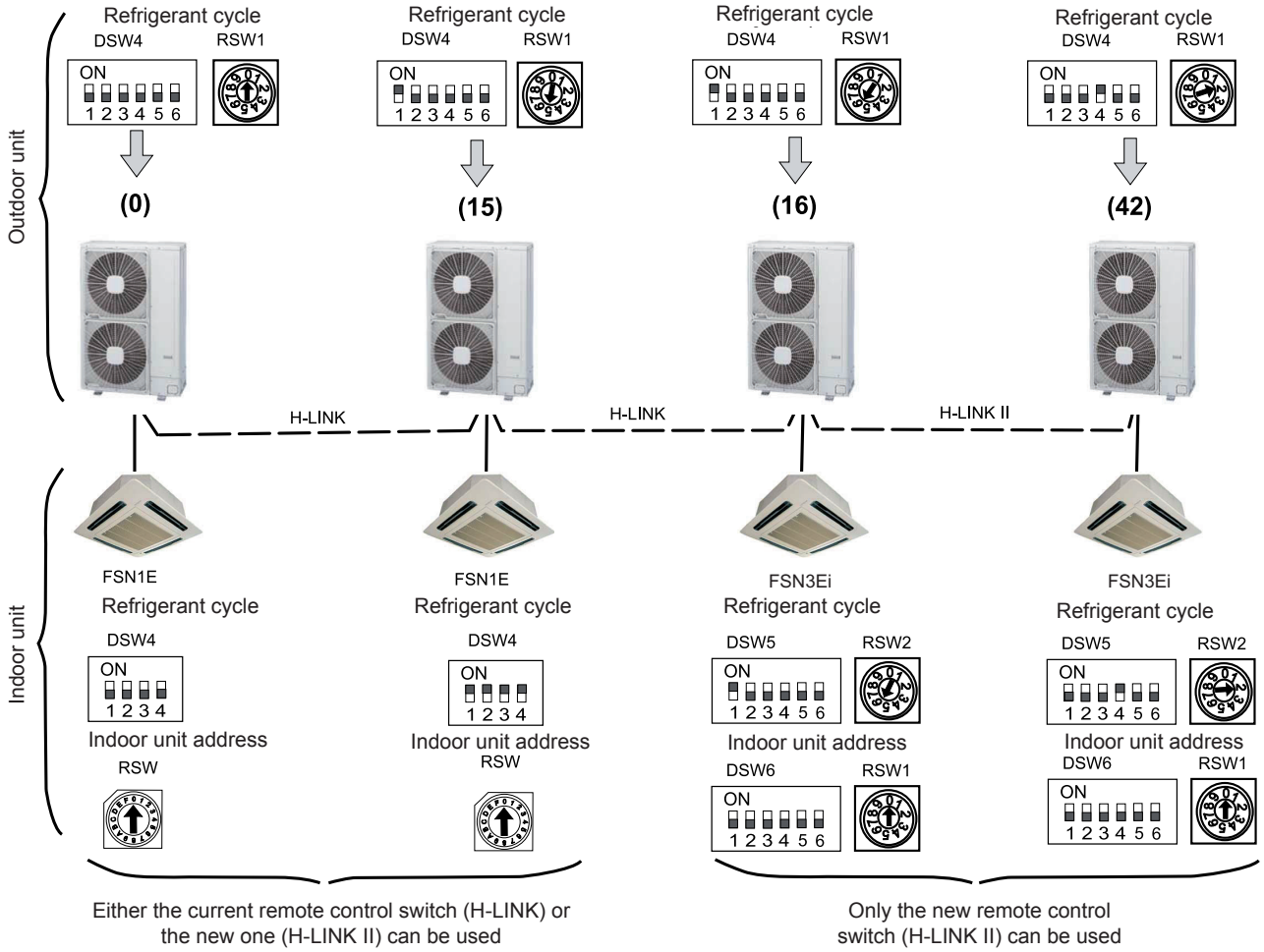
### Expansion valve box

| Mark | Item | Name | Description | Wire and maximum current specification (EN60335-1) |
|---|---|---|---|---|
| ② | 1 | 1 | **Control connection (necessary):**<br>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 | | |

### 4.1.14 Network system connection (CS-NET WEB)




### 4.1.15 Connection between units H-LINK and H-LINK II

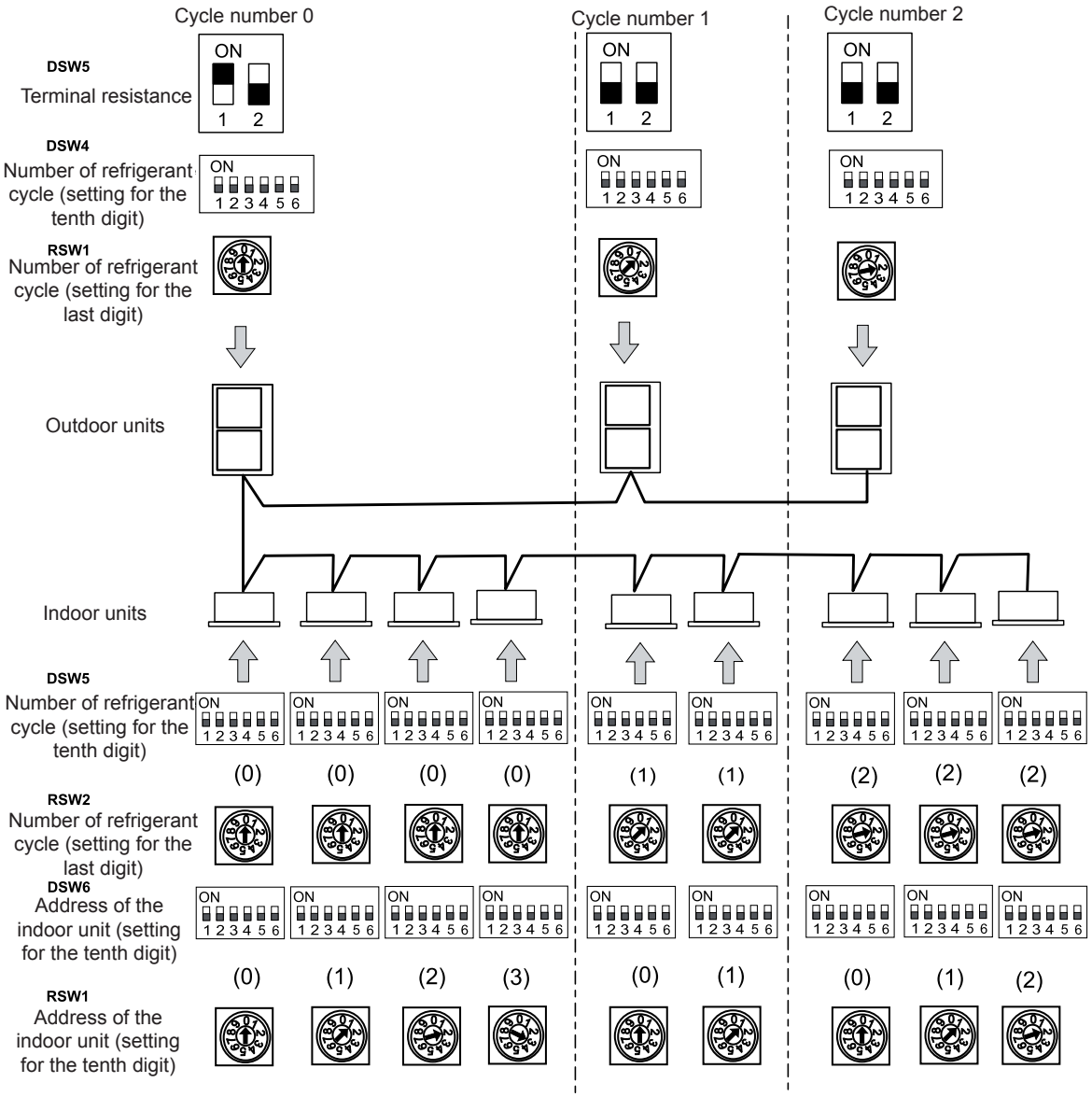



For mixed H-LINK and H-LINK II systems, set the H-LINK units in the first 16 positions of the system, as shown in the following figure. There are 26 systems with FSN(2/3/4)E indoor units.

**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.

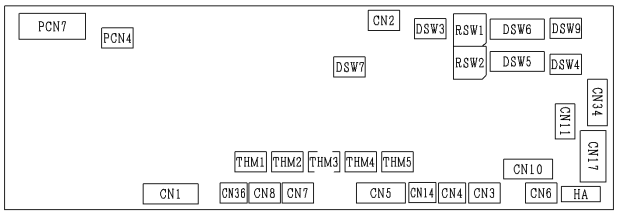
**NOTE**

*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.*

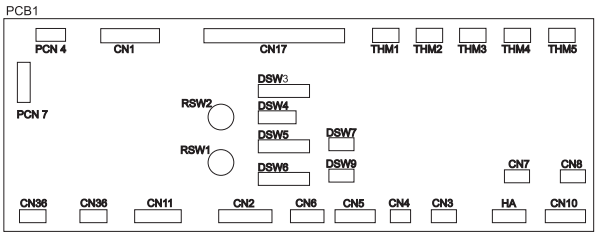
## 4.2.1 Location of DIP switches and RSW switches

### Location of DIP switches and RSW rotary switches

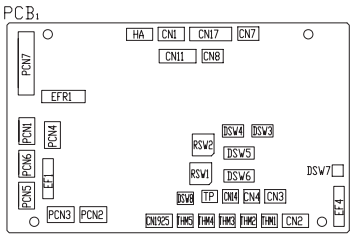
- **RCI-(1.0-6.0)FSN4 units**



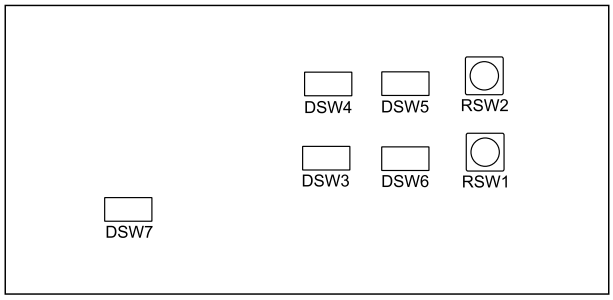

- **RCIM-(0.6-2.0)FSN4(E) units**



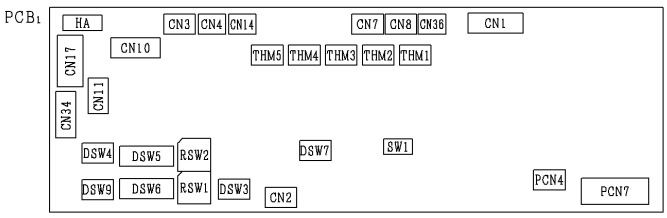

- **RCD-(1.0-3.0)FSN2 units**



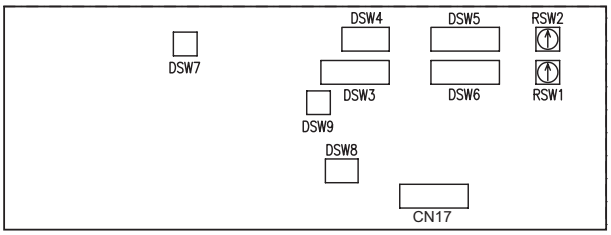

- **RPC-(2.0-6.0)FSN3E units**
- **RPF(I)-(1.0-2.5)FSN2E units**



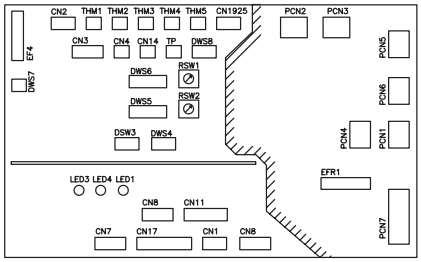

- **RPC-(1.5-6.0)FSN3 units**



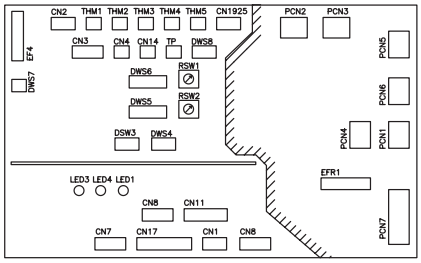

- **RPI(M)-(0.6-6.0)FSN4E(-DU) units**



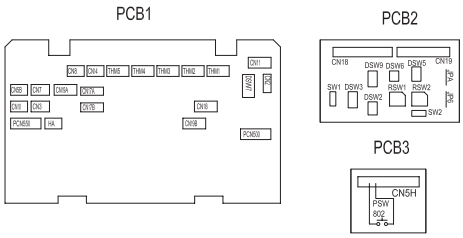
- **RPI-(8.0/10.0)FSN3E(-f) units**



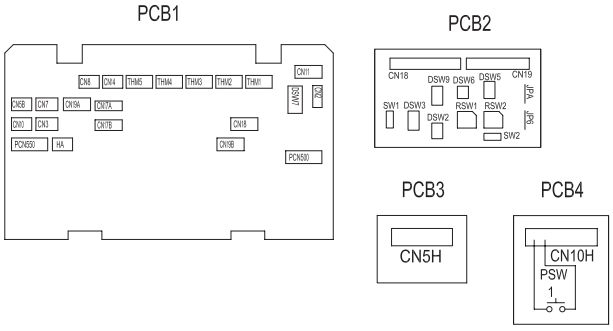

- **RPI-(16.0/20.0)FSN3PE(-f) units (x2)**



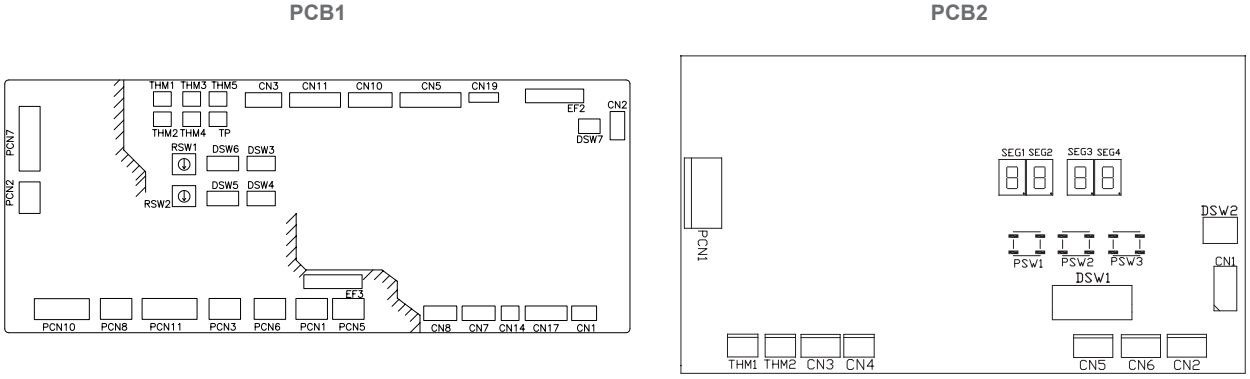

- **RPK-(0.6-1.5)FSN(H)3M units**




- **RPK-(2.0-4.0)FSN3M units**

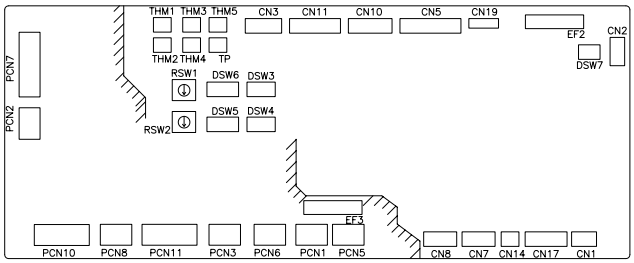



- **KPI-(252-2002)E4E and KPI-(502-1002)X4E units**

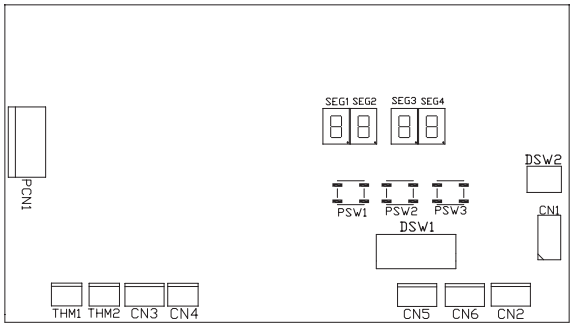


- **DX-Interface**

PCB1




PCB2




### 4.2.2 Functions of the DIP switches and RSW switches (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.*

#### ◆ SW1 (RCI-FSN4, RPC-FSN3 and RPK-FSN(H)3M only)

No settings are required. Factory setting:



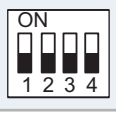
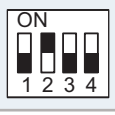
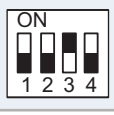

#### ◆ SW2 (RPK-(0.6-4.0)FSN(H)3M only)

| Factory setting | Wired remote control |
|---|---|
| Wired / Wireless  | Wired / Wireless  |

**NOTE**

*In case of using the wired remote control or receiver kit PC-ALHZF set the SW2 to "Wired".*

#### ◆ DSW2: optional function setting (RPK-FSN(H)3M only)

| Factory setting | Special lower capacity setting (0.6HP) (1) | Distinguish of indoor units using wireless remote control (2) |
|---|---|---|
|  |  |  |



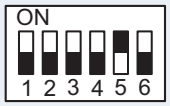
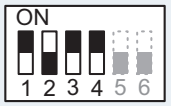
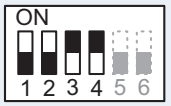
**NOTE**

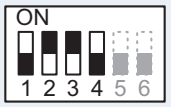
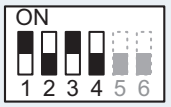
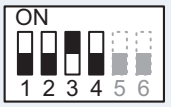
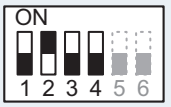
- *(1) Only available for RPK-0.8FSN3M unit. 0.8 HP Indoor Units set to a lower capacity (0.6 HP) can only be used in combination with SET FREE MINI series 2 (RAS-(4-6)FS(V)N(Y)3E) and SET FREE FSXN series.*
- *(2) In order to identify one indoor unit with its own wireless remote control, set DSW2 pin3 ON and set the wireless remote control at "b" mode. For more information, please refer to the corresponding Installation and Operation Manual.*
- *When using a wireless remote controller, no additional receivers are required for individual operation.*
- *For simultaneous operation it is required:*
  *Option 1: PC-ARFPE remote control.*
  *Option 2: In the case of wireless operation with PC-AWR, PC-ALHZF receiver kit is necessary.*
  *In both options change SW2 to wired setting.*

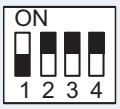
### ◆ DSW3: capacity code setting

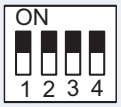
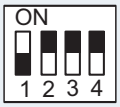
No settings are required. This DIP switch with 4 or 6 switches (depending on Indoor Units) is used to set the capacity code corresponding to the power of the indoor unit.

Indoor Unit capacity 1.5 HP, 2 HP and 2.5 HP can be set to a lower capacity (1.3 HP, 1.8 HP and 2.3 HP) using the DIP switch.

| Power (HP) | | | | | |
|---|---|---|---|---|---|
| 0.6 | 0.8 | 1.0 | 1.3(*) | 1.5 | 1.8(*) |
|  |  |  |  |  |  |

| Power (HP) | | | | |
|---|---|---|---|---|
| 2.0 | 2.3(*) | 2.5 | 3.0 | 4.0 |
|  |  |  |  |  |

| Power (HP) | | | |
|---|---|---|---|
| 5.0 | 6.0 | 8.0 | 10.0 |
|  |  |  |  |

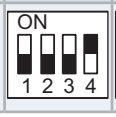
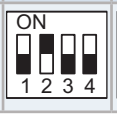
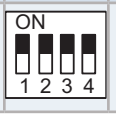
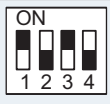
| | Power (HP) | |
|---|---|---|
| | 16.0 | 20.0 |
| PCB1 (Upper Ebox) |  |  |
| PCB2 (Lower Ebox) |  |  |

**NOTE**

- *(*) Capacity available with DSW3 setting.*
- *In those model with switch number 5 and 6, both switches are not used (except 0.6 HP models)*

### ◆ DSW4: unit model code setting

No settings are required. This DIP switch is used to set the model code corresponding to the type of indoor unit.

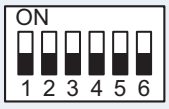
| Unit model | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| RCI-FSN4 | RCIM-FSN4(E) | RCD-FSN3 | RPC-FSN3E | RPC-FSN3 | RPI-FSN4E | RPI-FSN3E(-f) | RPI-FSN3PE(-f) | RPIM-FSN4E | RPF(I)-FSN2E |
|  |  |  |  |  |  |  |  |  |  |

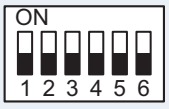
**NOTE**

*DSW4 Not assembled in the RPK-FSN(H)3M models.*

### ◆ DSW5 and RSW2: refrigerant cycle number setting

It is required to change factory default setting, with a value of up to 63. In the same refrigerant cycle, set the same refrigerant cycle number for the outdoor unit and the indoor unit.

| Factory setting | |
|---|---|
| DSW5 | RSW2 |
|   |  |

| Example of system setting with a value of: 5 | |
|---|---|
| DSW5 | RSW2 |
|   |  |

**NOTE**

*RPI-(16.0/20.0)FSN3PE: Set both modules to one cycle number (only).*

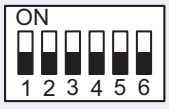
### ◆ DSW6 and RSW1: Unit number setting

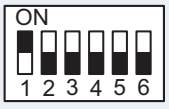
It is required to change factory default setting, with any value from 0 up to 63. The address number must be unique for each unit (in the same refrigerant cycle).

**NOTE**

*If "auto-address" function is available, the setting of DSW6 and RSW1 is not required.*

- All indoor units except RPI-(16.0/20.0)FSN3PE(-f):

| Factory setting | |
|---|---|
| DSW6 | RSW1 |
|   |  |

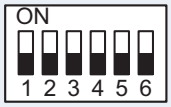
| Example of system setting with a value of: 16 | |
|---|---|
| DSW6 | RSW1 |
|   |  |

**NOTE**

*It is recommended to assign a number from starting"1"*

- RPI-(16.0/20.0)FSN3PE(-f) only:

*No setting is required.*

| DSW6 | RSW1 | |
|---|---|---|
| | PCB1 (Upper e-box) | PCB2 (Lower e-box) |
|   |  |  |

**NOTE**

*When further connecting indoor units, make sure to set a number other than one or two for each indoor unit.*

### ◆ DSW7: fuse recovery

No settings are required.

| | All models |
|---|---|
| Factory setting |   |
| In case of applying high voltage to the terminal 1-2 of TB (Transmitting wires), the fuse on the PCB is cut. In such a case, firstly correct the wiring to TB and then turn ON switch 1 (as showin in the figure). |   |

*DSW7 Not assembled in the RPC-FSN3 models.*

### ◆ DSW8

No settings are required.

| | Only: RCD-FSN2E, RPI(M)(0.8–1.5)FSN4E, RPI(2.0–6.0)FSN4E, RPI-(8.0–10.0)FSN3E(-f), RPI-(16.0–20.0)FSN3PE(-f) |
|---|---|
| Factory setting |  |

### ◆ DSW9

No settings are required.

| | Only for RCI-FSN4, RPC-FSN3, RPI-(2.0-6.0)FSN4E, RPK-FSN(H)3M | Only for RCIM-FSN4(E) RPI(M)-(0.6–1.5)FSN4E |
|---|---|---|
| Factory setting |  |  |
| Special 0.6 HP capacity setting [1] | Not used |  |

**NOTE**

*[1] Only available for RCIM-0.8FSN4(E) and RPI(M)-0.8FSN4E units. 0.8 HP Indoor Units set to a lower capacity (0.6 HP) can only be used in combination with SET FREE MINI series 3 (RAS-(4-6)FS(V)N(Y)3E).*

## 4.2.3 Functions of the DIP switches and RSW switches (KPI units)

### ◆ PCB1 settings

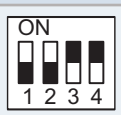
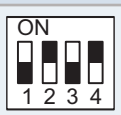
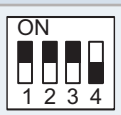
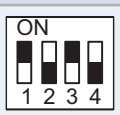
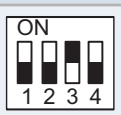
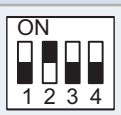
#### DSW1 and DSW2

No settings are required.

| DSW1 | DSW2 |
|---|---|
| All units | All units |
|  |  |

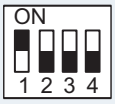
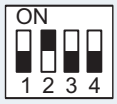
#### DSW3: capacity code setting

No setting is required, due to setting before shipment. This dip switch is used for setting the capacity code.

| DSW3 | | | | | |
|---|---|---|---|---|---|
| KPI-252 | KPI-502 | KPI-802 | KPI-1002 | KPI-1502 | KPI-2002 |
|  |  |  |  |  |  |

### DSW4: unit model code setting

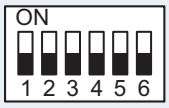
No settings are required. This DIP switch is used to set the model code corresponding to the type of indoor unit. Follow the instructions given in the Service Manual.

| DSW4 | |
|---|---|
| KPI (E4E) | Active KPI (X4E) |
|  |  |

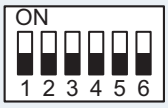


### DSW5 and RSW2: refrigerant cycle number setting

It is required to change factory default setting, with a value of up to 63. In the same refrigerant cycle, set the same refrigerant cycle number for the outdoor unit, indoor unit and KPI unit.

| Factory setting | |
|---|---|
| DSW5 | RSW2 |
|  |  |

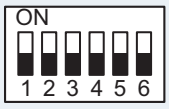


| Example of system setting with a value of: 5 | |
|---|---|
| DSW5 | RSW2 |
|  |  |

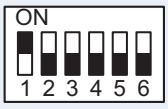


### DSW6 and RSW1: Unit number setting

It is required to change factory default setting, with any value from 0 up to 63. The number allocated to each KPI unit must be set as standard. Follow the instructions given in the Service Manual.

| Factory setting | |
|---|---|
| DSW6 | RSW1 |
|  |  |



| Example of system setting with a value of: 16 | |
|---|---|
| DSW6 | RSW1 |
|  |  |



### DSW7: fuse recovery

No settings are required.

| | All models |
|---|---|
| Factory setting |  |
| In case of applying high voltage to the terminal 1-2 of TB (Transmitting wires), the fuse on the PCB is cut. In such a case, firstly correct the wiring to TB and then turn ON switch 1 (as shown in the figure). |  |

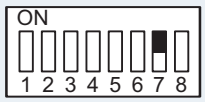


**NOTE**

*DSW7 Not assembled in the RPC-FSN3 models.*

### ◆ PCB2 settings

#### DSW1: Optional functions

| | |
|---|---|
| Factory setting |   |
| Pin 7: Common operation of remote control switch |   |

#### DSW2: End resistance

In case that only KPI units are connected in the same HLINK (no outdoor unit connected in the same HLINK) set pin1 ON (to only one KPI unit). Otherwise, no setting is required for DSW2.

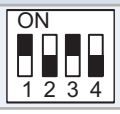
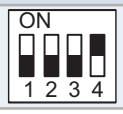
| All units | |
|---|---|
|   | Pin1 ON: H-Link End resistance. |
| | Pin2 ON: Communication between PCB's End resistance. |

## 4.2.4 Functions of the DIP switches and RSW switches (Econofresh kit)

Dip Switch setting shall be performed at RPI PCB's.

**⚠ CAUTION**

*Turn OFF all power sources before setting the dip switches. Without turning OFF, the contents of setting would be invalid*

| | | RPI Dip Switch Factory Setting | RPI+Econofresh Kit installation Dip Switch Setting |
|---|---|---|---|
| RPI-(4/5/6)FSN4E | DSW4 |   |   |

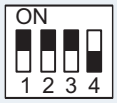
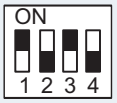
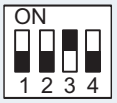
*Mark of "■" indicates the position of dip switches.*

## 4.2.5 Functions of the DIP switches and RSW switches (DX-Interface)

### ◆ PCB1 settings

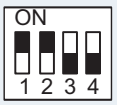
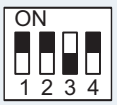
#### DSW3: capacity code setting

No settings are 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 | 5.0 | 6.0 | 8.0 | 10.0 |
|---|---|---|---|---|---|---|---|---|
| Factory setting |   |   |   |   |   |   |   |   |

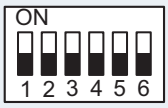
### DSW4: unit model code setting and optional setting

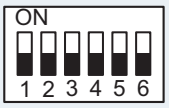
No settings are required.

| | |
|---|---|
| Factory setting |   |
| Enabled EC fan motor alarm by tachometer input |   |

### DSW5 and RSW2: refrigerant cycle number setting

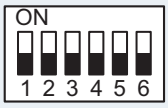
It is required to change factory default setting, with a value of up to 63. In the same refrigerant cycle, set the same refrigerant cycle number for the outdoor unit and DX-Interface.

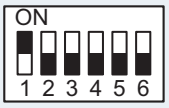
| Factory setting | |
|---|---|
| DSW5 | RSW2 |
|   |  |

| Example of system setting with a value of: 5 | |
|---|---|
| DSW5 | RSW2 |
|   |  |

### DSW6 and RSW1: Unit number setting

It is required to change factory default setting, with any value from 0 up to 63. The number allocated to each KPI unit must be set as standard. Follow the instructions given in the Service Manual.

| Factory setting | |
|---|---|
| DSW6 | RSW1 |
|   |  |

| Example of system setting with a value of: 16 | |
|---|---|
| DSW6 | RSW1 |
|   |  |

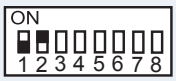
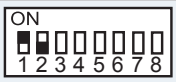
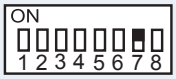
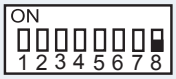
### DSW7: fuse recovery

No settings are required.

| | |
|---|---|
| Factory setting |   |
| In case of applying high voltage to the control terminal 1-2 of TB2 (Transmitting wires)(position 17–18), the fuse on the PCB is cut. In such a case, firstly correct the wiring to TB and then turn ON switch 1 (as showing beside). |   |

## ◆ PCB2 settings

### DSW1: Optional functions

| | | |
|---|---|---|
| Factory setting | |  |
| Pins 1 and 2: Capacity control setting | Discharge air control (Control by outlet temperature) |  |
| | Indoor air control (Control by inlet temperature) |  |
| | External duty control (*1) |  |
| Pins 3 and 4: Duty signal setting (*1) | 4~20 mA (Internal 100Ω load impedance) |  |
| | 0~10 V (Internal 47Ω pull-down resistor) |  |
| | 0~5 V (Internal 47Ω pull-down resistor) |  |
| Pin 5: Duty mode selection (*2) | |  |
| Pin 6: Thermo ON/OFF external input enabled (*3) | |  |
| Pin 7: Group controller (Pin 7 ON: group controller; pin 7 OFF: individual controller) (*4) | |  |
| Pin 8: Not used | |  |

**NOTE**

- *(*1): If external duty control is selected (pins 1-2), check the proper selection for the duty signal (pins 3-4).*
- *(*2): If external duty control is selected (pins 1-2-3-4), then turn pin 5 OFF for absolute reference or ON for incremental reference.*
- *(*3): The thermo ON/OFF control can be driven externally by an input signal connected to the CN3 socket of the PCB1. The pin 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.*
- *(*4) One unit of DX-Interface series 2 is to be set as a group controller, while all the other group members are slave*
- *Please refer to HITACHI Indoor units Service Manual for further information about the setting and connection of the auxiliary inputs.*

### DSW2: End resistance

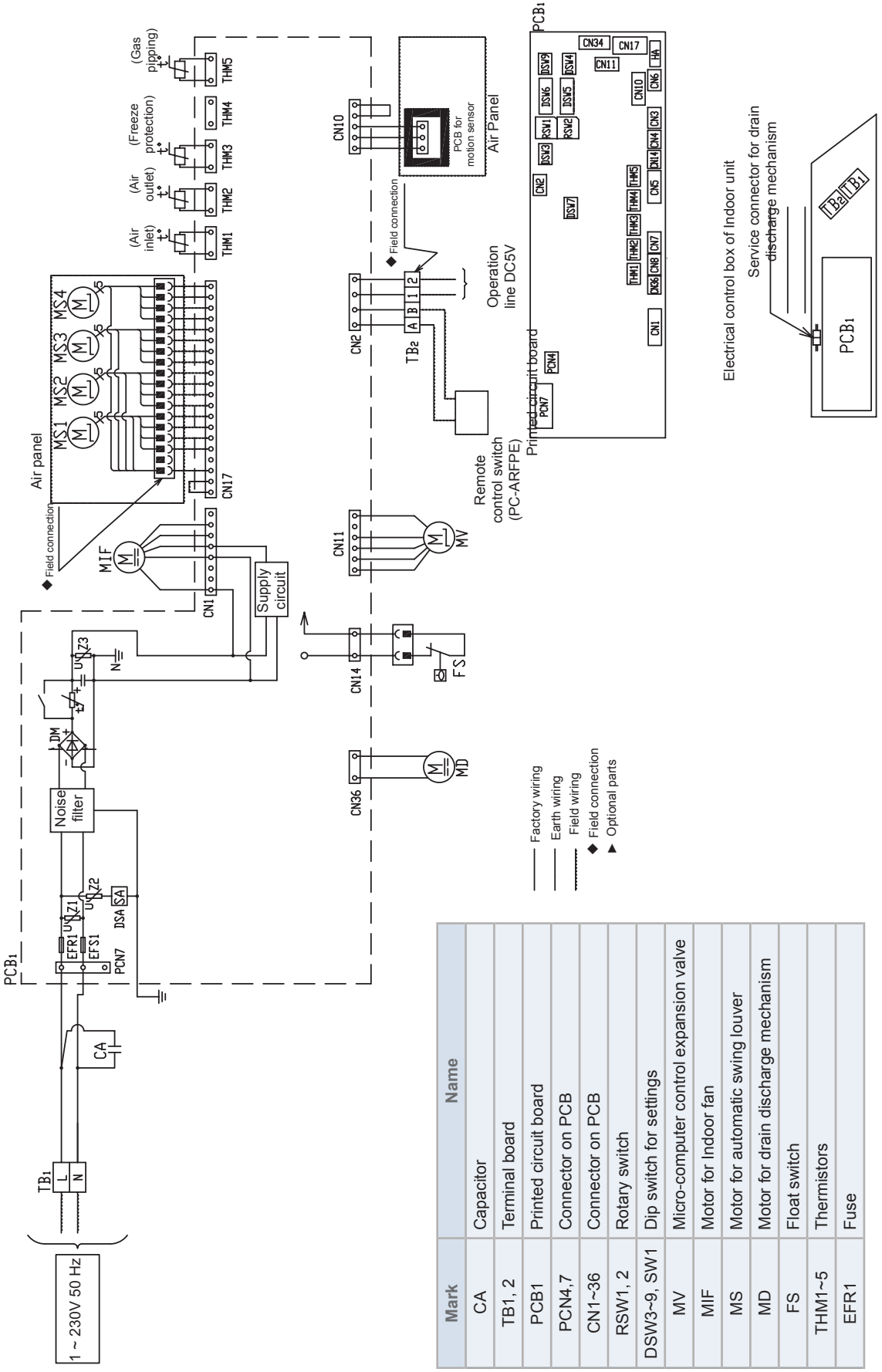
No setting is required.

| All units |
|---|
|  |

# 4.3 Wiring diagrams for indoor units and complementary systems

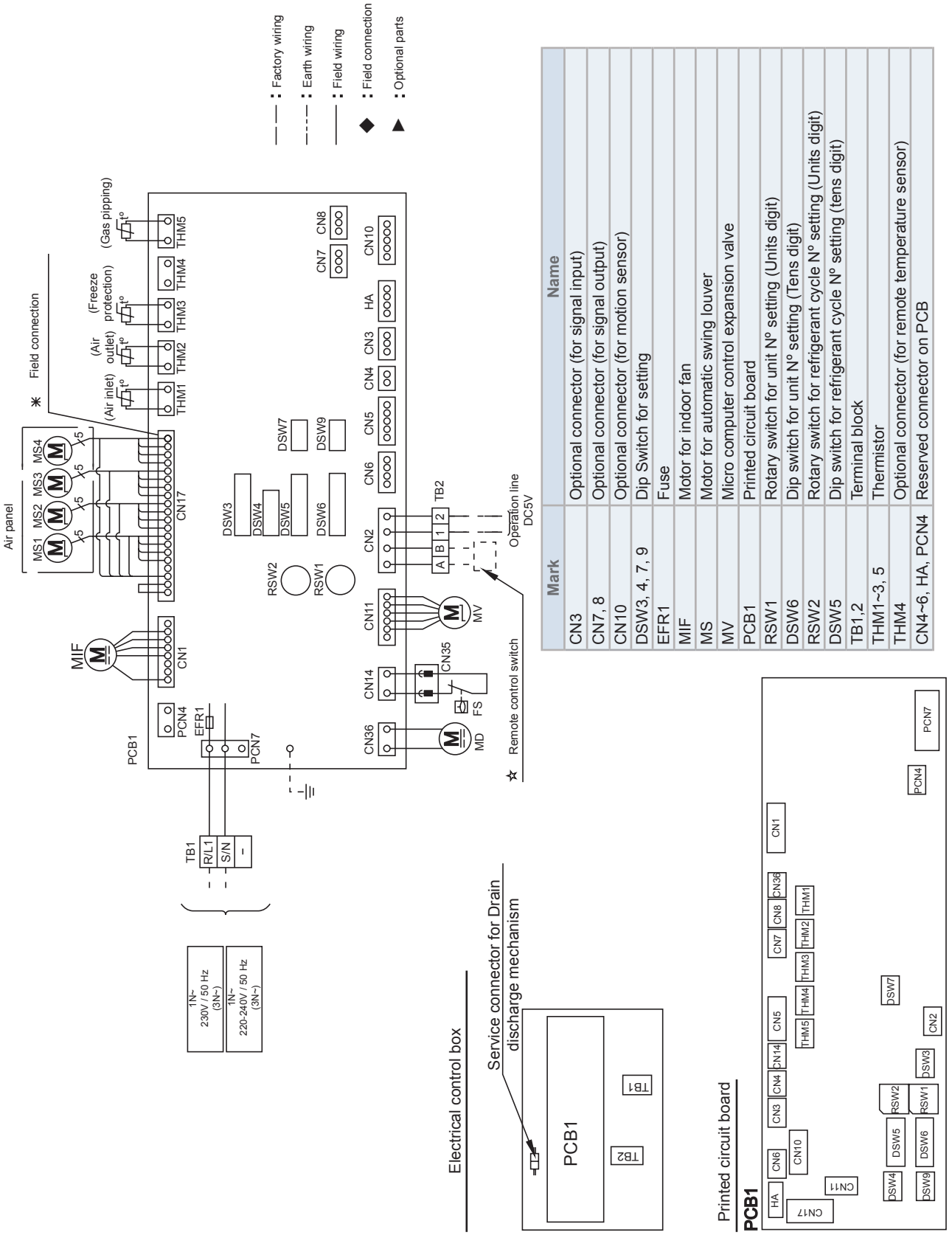
## 4.3.1 Wiring diagrams for indoor units

### ◆ Wiring diagrams for the RCI-(1.0-6.0)FSN4 indoor units



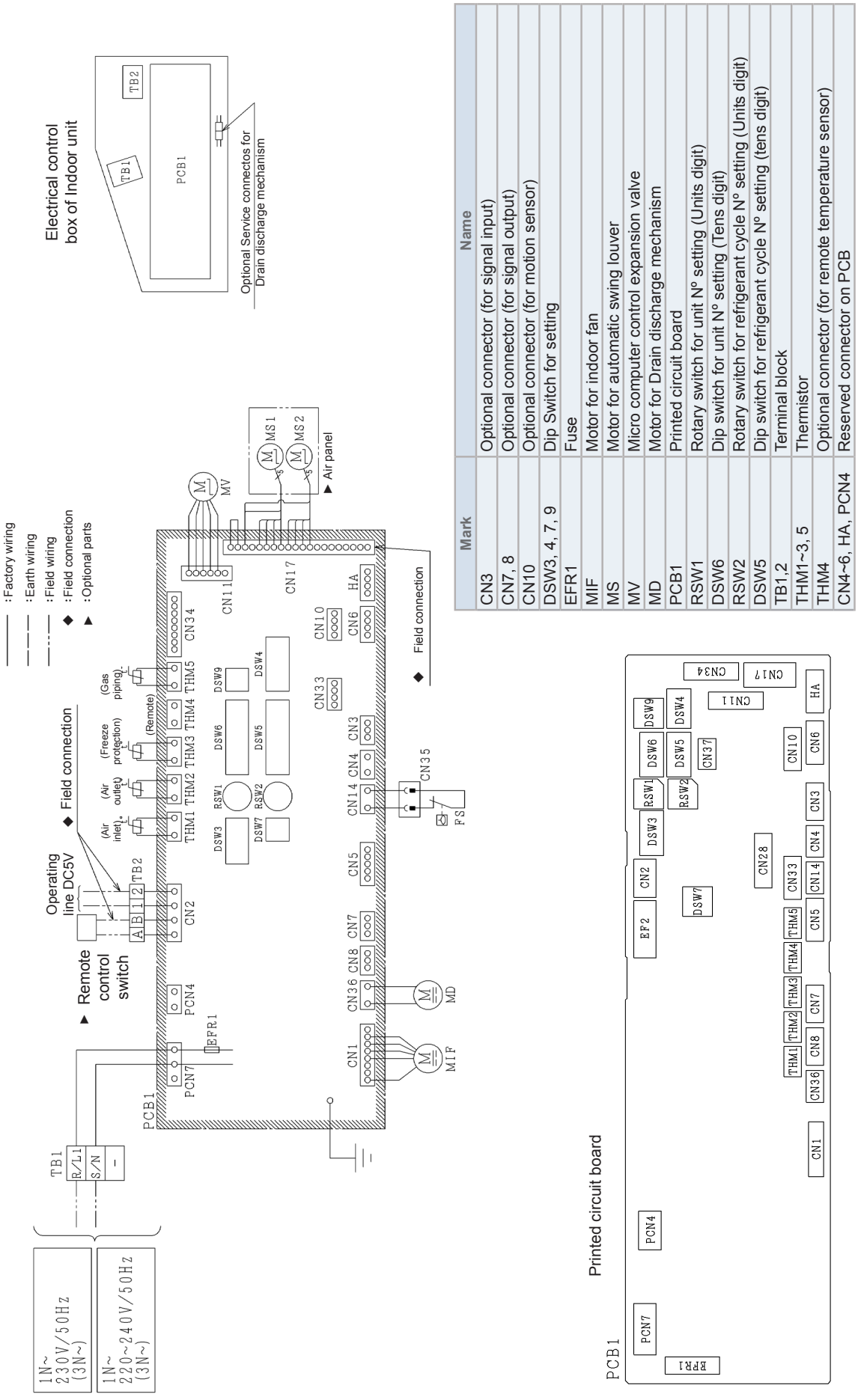

| Mark | Name |
|---|---|
| CA | Capacitor |
| TB1, 2 | Terminal board |
| PCB1 | Printed circuit board |
| PCN4,7 | Connector on PCB |
| CN1~36 | Connector on PCB |
| RSW1, 2 | Rotary switch |
| DSW3~9, SW1 | Dip switch for settings |
| MV | Micro-computer control expansion valve |
| MIF | Motor for Indoor fan |
| MS | Motor for automatic swing louver |
| MD | Motor for drain discharge mechanism |
| FS | Float switch |
| THM1~5 | Thermistors |
| EFR1 | Fuse |

## ◆ Wiring diagrams for the RCIM-(0.6-2.5)FSN4(E) indoor units



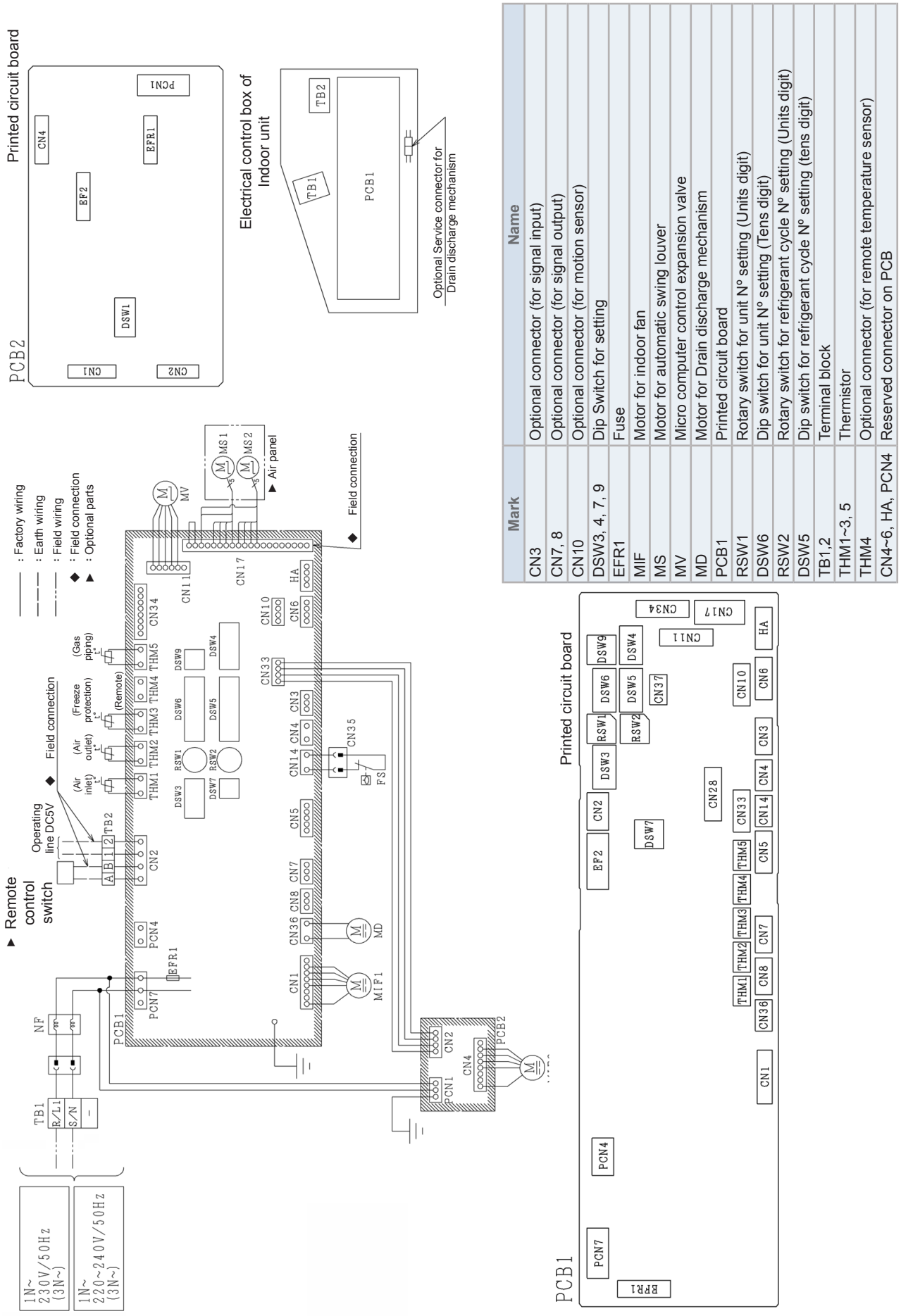

| Mark | Name |
|---|---|
| CN3 | Optional connector (for signal input) |
| CN7, 8 | Optional connector (for signal output) |
| CN10 | Optional connector (for motion sensor) |
| DSW3, 4, 7, 9 | Dip Switch for setting |
| EFR1 | Fuse |
| MIF | Motor for indoor fan |
| MS | Motor for automatic swing louver |
| MV | Micro computer control expansion valve |
| PCB1 | Printed circuit board |
| RSW1 | Rotary switch for unit N° setting (Units digit) |
| DSW6 | Dip switch for unit N° setting (Tens digit) |
| RSW2 | Rotary switch for refrigerant cycle N° setting (Units digit) |
| DSW5 | Dip switch for refrigerant cycle N° setting (tens digit) |
| TB1,2 | Terminal block |
| THM1~3, 5 | Thermistor |
| THM4 | Optional connector (for remote temperature sensor) |
| CN4~6, HA, PCN4 | Reserved connector on PCB |

## ◆ Wiring diagrams for the RCD-(0.8-3.0)FSN3 indoor units(with air panel P-AP90DNA)



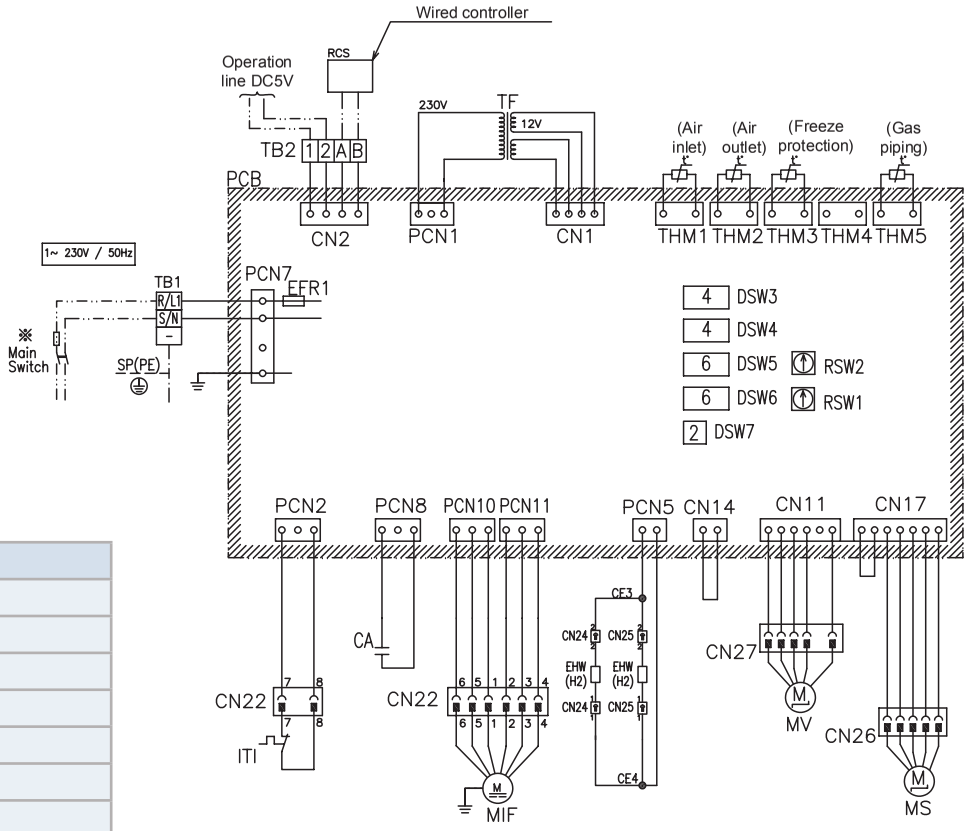

| Mark | Name |
|---|---|
| CN3 | Optional connector (for signal input) |
| CN7, 8 | Optional connector (for signal output) |
| CN10 | Optional connector (for motion sensor) |
| DSW3, 4, 7, 9 | Dip Switch for setting |
| EFR1 | Fuse |
| MIF | Motor for indoor fan |
| MS | Motor for automatic swing louver |
| MV | Micro computer control expansion valve |
| MD | Motor for Drain discharge mechanism |
| PCB1 | Printed circuit board |
| RSW1 | Rotary switch for unit N° setting (Units digit) |
| DSW6 | Dip switch for unit N° setting (Tens digit) |
| RSW2 | Rotary switch for refrigerant cycle N° setting (Units digit) |
| DSW5 | Dip switch for refrigerant cycle N° setting (tens digit) |
| TB1,2 | Terminal block |
| THM1~3, 5 | Thermistor |
| THM4 | Optional connector (for remote temperature sensor) |
| CN4~6, HA, PCN4 | Reserved connector on PCB |

## ◆ Wiring diagrams for the RCD-(4.0-6.0)FSN3 indoor units(with air panel P-AP160DNA)

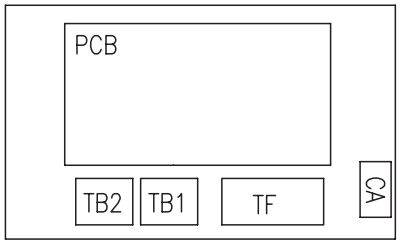



| Mark | Name |
|---|---|
| CN3 | Optional connector (for signal input) |
| CN7, 8 | Optional connector (for signal output) |
| CN10 | Optional connector (for motion sensor) |
| DSW3, 4, 7, 9 | Dip Switch for setting |
| EFR1 | Fuse |
| MIF | Motor for indoor fan |
| MS | Motor for automatic swing louver |
| MV | Micro computer control expansion valve |
| MD | Motor for Drain discharge mechanism |
| PCB1 | Printed circuit board |
| RSW1 | Rotary switch for unit N° setting (Units digit) |
| DSW6 | Dip switch for unit N° setting (Tens digit) |
| RSW2 | Rotary switch for refrigerant cycle N° setting (Units digit) |
| DSW5 | Dip switch for refrigerant cycle N° setting (tens digit) |
| TB1,2 | Terminal block |
| THM1~3, 5 | Thermistor |
| THM4 | Optional connector (for remote temperature sensor) |
| CN4~6, HA, PCN4 | Reserved connector on PCB |

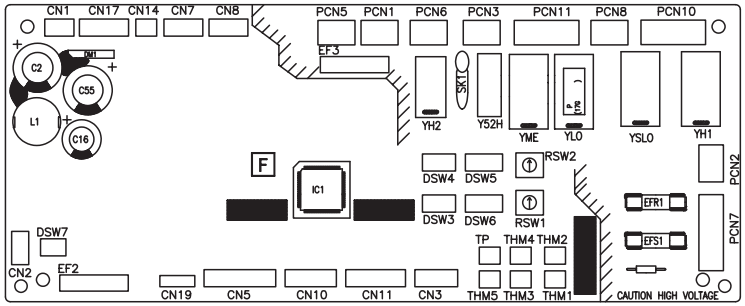
## ◆ Wiring diagrams for the RPC-(3.0-6.0)FSN3E indoor units




Electrical control box




PCB sockets location



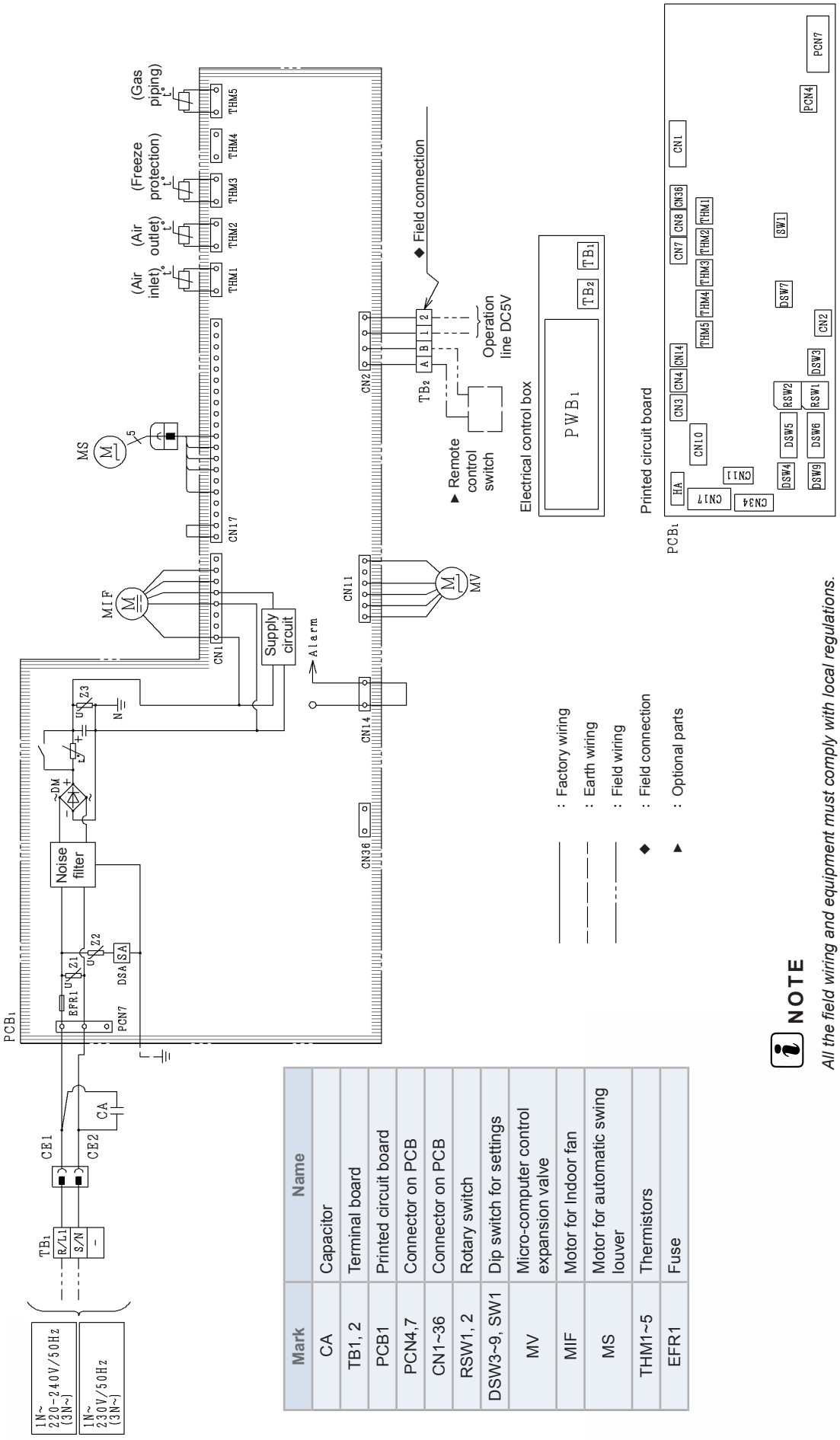

| Mark | Name |
|---|---|
| CA | Capacitor for Indoor fan |
| $CN_{21\sim26}$ | Connector |
| $DSW_3$ | Unit capacity code |
| $DSW_4$ | Model |
| $DSW_5$ | Refrigerant cycle nº |
| $DSW_6$ | Unit code |
| $DSW_7$ | Fuse recover/Remote control selector |
| $EFR_1$ | Fuse |
| $EFS_1$ | Fuse |
| EHW(H2) | Electric heater |
| FS | Float switch |
| ITI | Internal thermostat for Indoor unit fan |
| MD | Motor for drain discharge mechanism |
| MIF | Motor for Indoor fan |
| MS | Motor for automatic swing louver |
| MV | Expansion valce |
| $LED_{1\sim3}$ | Alarm code |
| PCB | Printed circuit board |
| RCS | Remote control switch |
| $RSW_1$ | Indoor unit nº settings |

| Mark | Name |
|---|---|
| $RSW_2$ | Refrigerant cycle nº |
| SA | Surge absorber |
| TB1 | Terminal Block |
| TB2 | Terminal block |
| CE3, 4 | Connector |
| TF | Transformer |
| $THM_1$ | Inlet air thermistor |
| $THM_2$ | Outlet air thermistor |
| $THM_3$ | Liquid pipe thermistor |
| $THM_5$ | Gas pipe thermistor |
| $Y_{H2}$ | Relay for drain motor |
| $Y_{H1}$ | Relay for HI fan motor tap |
| $Y_{ME}$ | Relay for ME fan motor tap |
| $Y_{LO}$ | Relay for LO fan motor tap |
| $Y_{SLO}$ | Relay for SLO fan motor tap |
| $Y_{52H}$ | Relay for electric heater |
| | Field supplied |
| ▬ · ▬ | Field wiring |
| ▬ ▬ ▬ | Earth wiring |
| ▬▬▬ | Factory wiring |



4

## ◆ Wiring diagrams for the RPC-(1.5-6.0)FSN3 indoor units

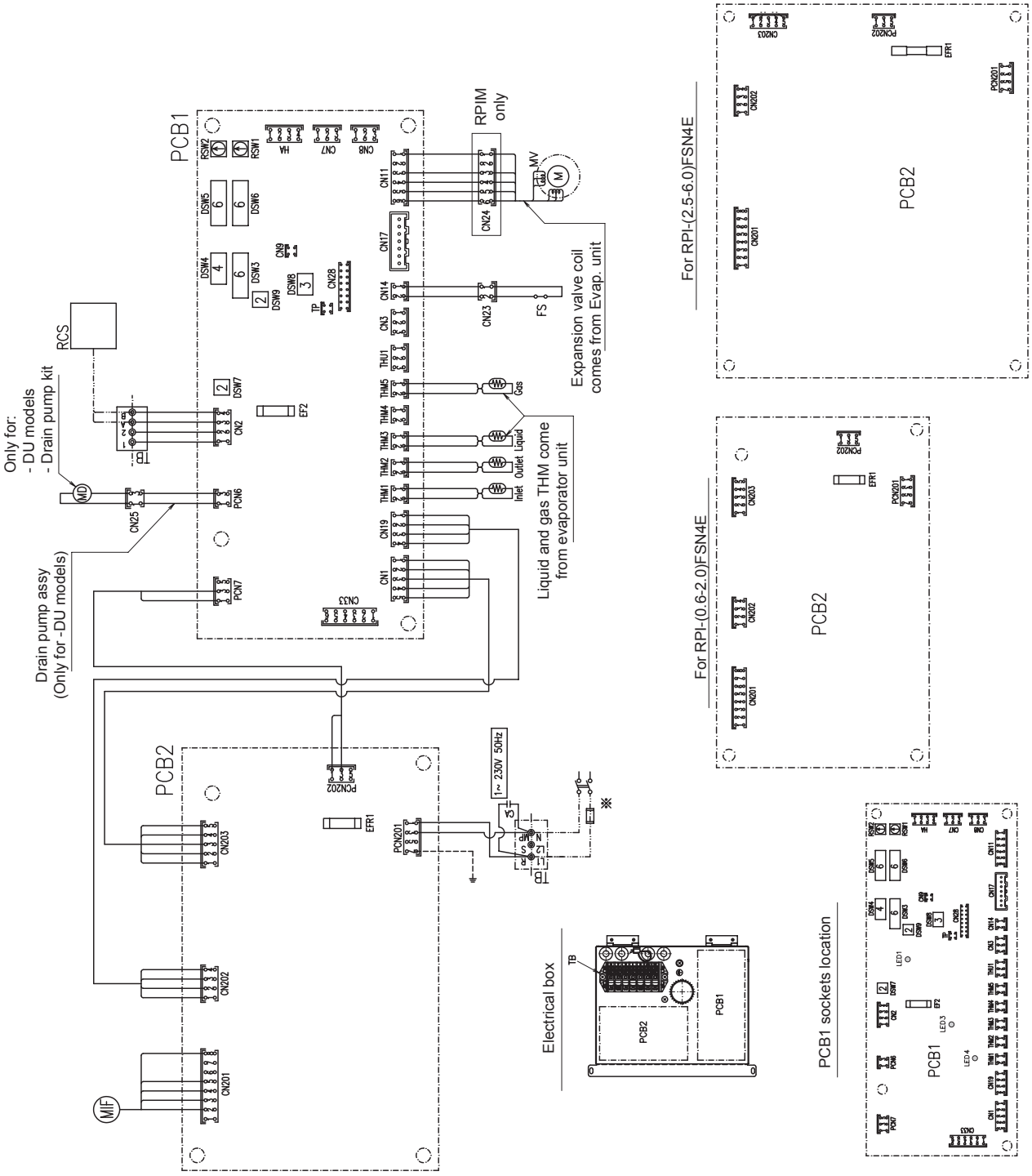



| Mark | Name |
|---|---|
| CA | Capacitor |
| TB1, 2 | Terminal board |
| PCB1 | Printed circuit board |
| PCN4,7 | Connector on PCB |
| CN1~36 | Connector on PCB |
| RSW1, 2 | Rotary switch |
| DSW3~9, SW1 | Dip switch for settings |
| MV | Micro-computer control expansion valve |
| MIF | Motor for Indoor fan |
| MS | Motor for automatic swing louver |
| THM1~5 | Thermistors |
| EFR1 | Fuse |

**NOTE**

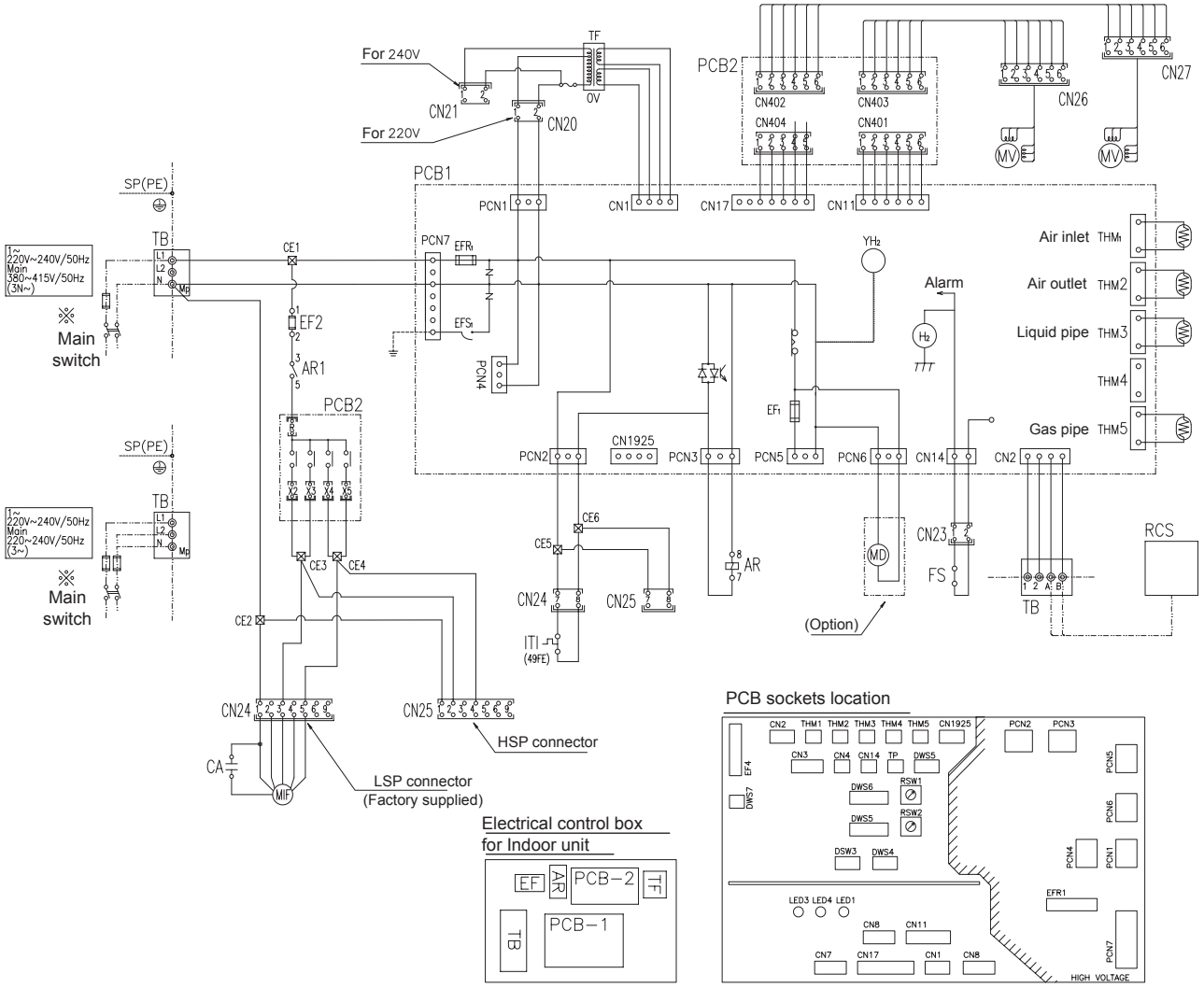
*All the field wiring and equipment must comply with local regulations.*

## ◆ Wiring diagrams for the RPI(M)-(0.6-6.0)FSN4E indoor units




| Mark | Name |
|---|---|
| CA | Capacitor |
| CN23, 25 | Aerial connector |
| DSW3~9 | Dip switch for settings |
| RSW1, 2 | Rotary switch |
| EF2 | Fuse |
| EFR1 | Fuse |
| FS | Float switch |
| MD | Drain pump |
| MIF | Motor for Indoor fan |
| MV | Micro-computer control expansion valve |
| LED1, 3, 4, 6 | Alarm code |
| PCB1, 2 | Printed circuit board |
| RCS | Remote control switch |
| TB | Terminal board |
| THM1~5 | Thermistors |
| ◆ | Field supplied |
| - - - | Field wiring |
| — · — | Earth wiring |
| ——— | Factory wiring |

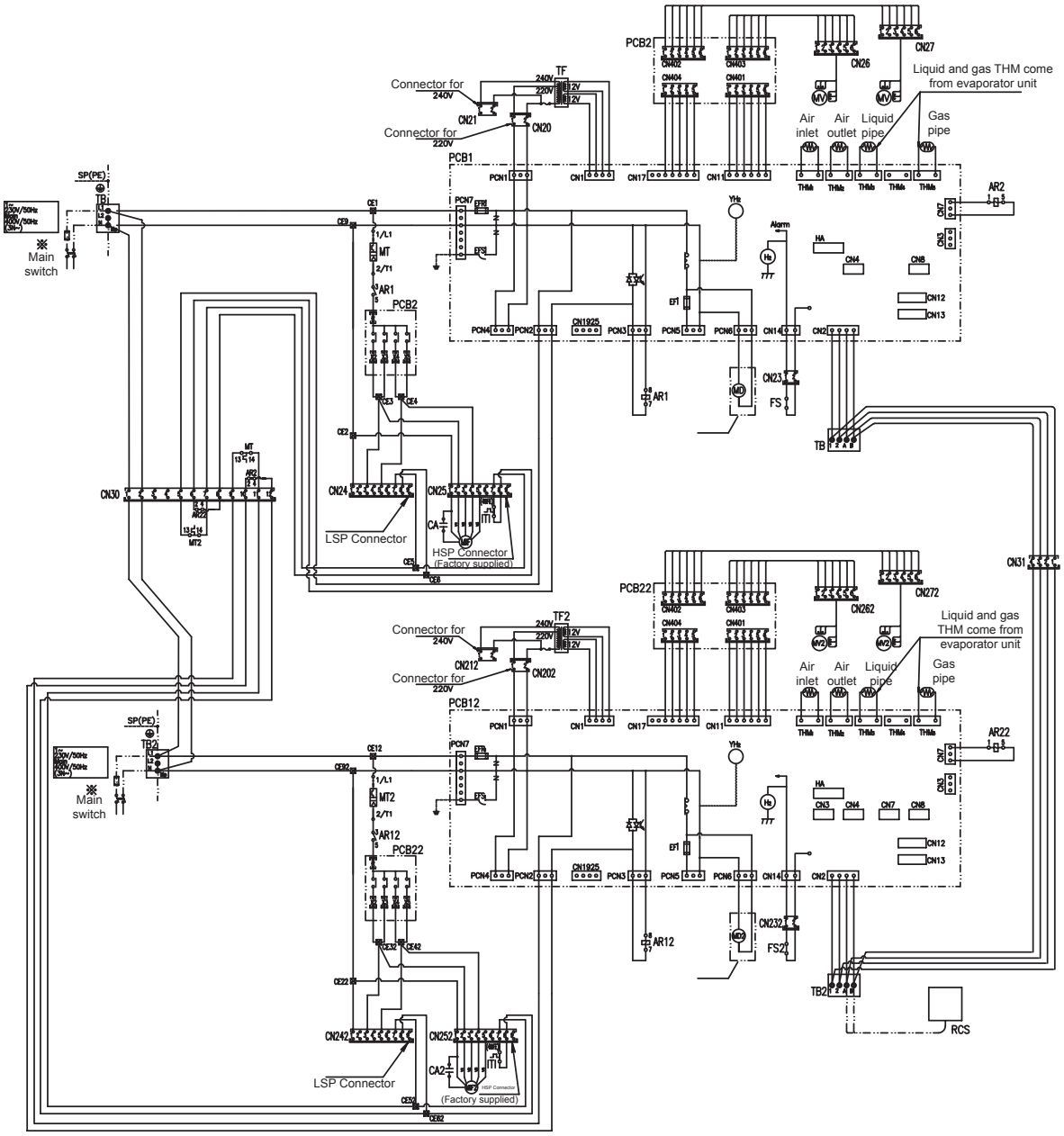
## ◆ Wiring diagrams for the RPI-(8.0/10.0)FSN3E(-f) indoor units




| Mark | Name |
|---|---|
| AR | Auxiliary relay |
| CA | Capacitor for Indoor fan |
| $CN_{20\sim n}$ | Connector |
| $DSW_3$ | Unit capacity code |
| $DSW_4$ | Unit model code |
| $DSW_5$ | Refrigerant cycle nº |
| $DSW_6$ | Indoor unit setting |
| $DSW_7$ | Fuse recover/Remote control selector |
| EF2 | Fuse |
| EFR1 | Fuse |
| FS | Float switch |
| ITI | Internal thermostat for Indoor unit fan |
| MD | Motor for drain discharge mechanism |
| MIF | Motor for Indoor fan |
| MV | Expansion valve |
| $LED_{1\sim3}$ | Alarm code |
| PCB1 | Main printed circuit board |
| PCB2 | Relay printed circuit board |

| Mark | Name |
|---|---|
| RCS | Remote control switch |
| $RSW_1$ | Indoor unit nº settings |
| $RSW_2$ | Refrigerant cycle nº |
| TB | Terminal board |
| TF | Transformer |
| $THM_1$ | Inlet air thermistor |
| $THM_2$ | Outlet air thermistor |
| $THM_3$ | Liquid pipe thermistor |
| $THM_5$ | Gas pipe thermistor |
| X2 | High speed terminal |
| X3 | Medium speed terminal |
| X4 | Low speed terminal |
| X5 | S-Low speed terminal |
| | Field supplied |
| ▬ · ▬ | Field wiring |
| ▬ ▬ ▬ | Earth wiring |
| ▬▬▬ | Factory wiring |

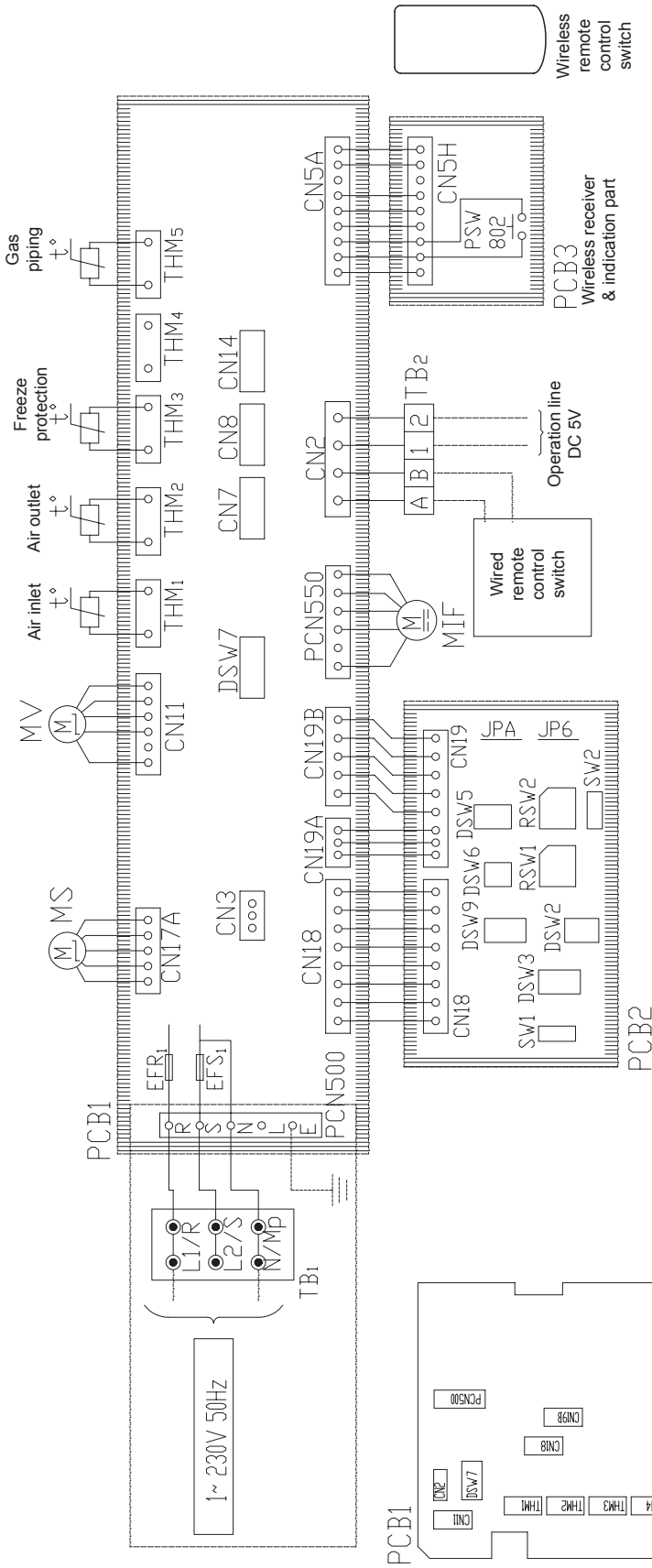
## ◆ Wiring diagrams for the RPI-(16.0/20.0)FSN3PE(-f) indoor units




| Mark | Name |
|---|---|
| AR1,2,12,22 | Auxiliary relay |
| CA2 | Capacitor for Indoor fan |
| $CN_{20\sim n}$ | Connector |
| $DSW_3$ | Unit capacity code |
| $DSW_4$ | Unit model code |
| $DSW_5$ | Refrigerant cycle n° |
| $DSW_6$ | Indoor unit setting |
| $DSW_7$ | Fuse recover/Remote control selector |
| MT | Magnetic and thermal circuit breaker |
| $EFR_1$ | Fuse |
| FS | Float switch |
| ITI | Internal thermostat for Indoor unit fan |
| MD | Motor for drain discharge mechanism |
| MIF | Motor for Indoor fan |
| MV | Expansion valve |
| $LED_{1\sim3}$ | Alarm code |
| PCB1,12 | Main printed circuit board |
| PCB2,22 | Relay printed circuit board |

| Mark | Name |
|---|---|
| RCS | Remote control switch |
| $RSW_1$ | Indoor unit n° settings |
| $RSW_2$ | Refrigerant cycle n° |
| TB | Terminal board |
| TF | Transformer |
| $THM_1$ | Inlet air thermistor |
| $THM_2$ | Outlet air thermistor |
| $THM_3$ | Liquid pipe thermistor |
| $THM_5$ | Gas pipe thermistor |
| X2 | High speed terminal |
| X3 | Medium speed terminal |
| X4 | Low speed terminal |
| X5 | S-Low speed terminal |
| | Field supplied |
| — · — | Field wiring |
| — — — | Earth wiring |
| ——— | Factory wiring |

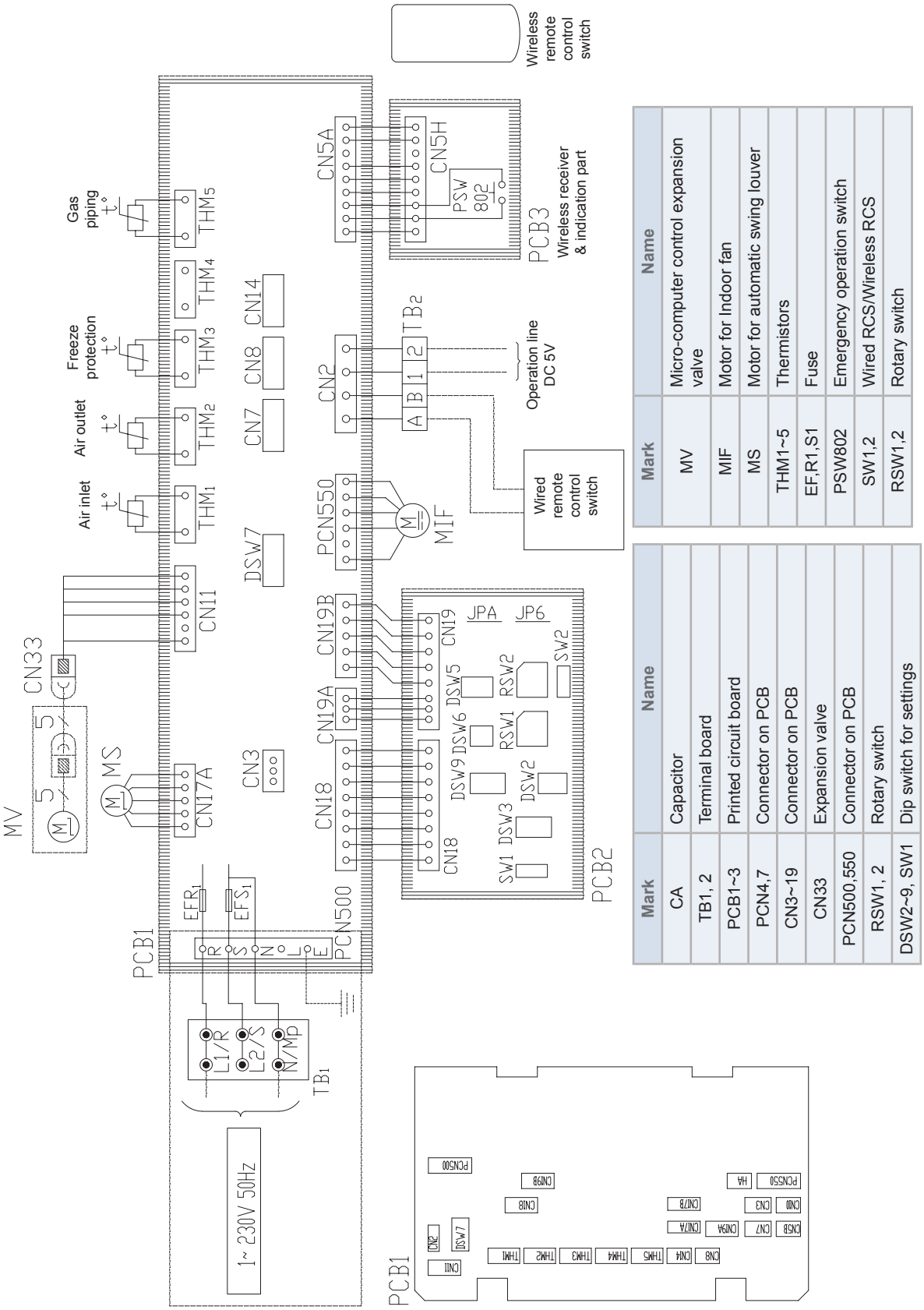
## ◆ Wiring diagrams for the RPK-(0.6-1.5)FSN3M indoor units




| Mark | Name |
|---|---|
| MIF | Motor for Indoor fan |
| MS | Motor for automatic swing louver |
| THM1~5 | Thermistors |
| EF,R1,S1 | Fuse |
| PSW802 | Emergency operation switch |
| SW1,2 | Wired RCS/Wireless RCS |
| RSW1,2 | Rotary switch |

| Mark | Name |
|---|---|
| CA | Capacitor |
| TB1, 2 | Terminal board |
| PCB1~4 | Printed circuit board |
| PCN4,7 | Connector on PCB |
| CN3~19 | Connector on PCB |
| PCN500,550 | Connector on PCB |
| RSW1, 2 | Rotary switch |
| DSW2~9, SW1 | Dip switch for settings |
| MV | Micro-computer control expansion valve |

## ◆ Wiring diagrams for the RPK-(0.6-1.5)FSNH3M indoor units

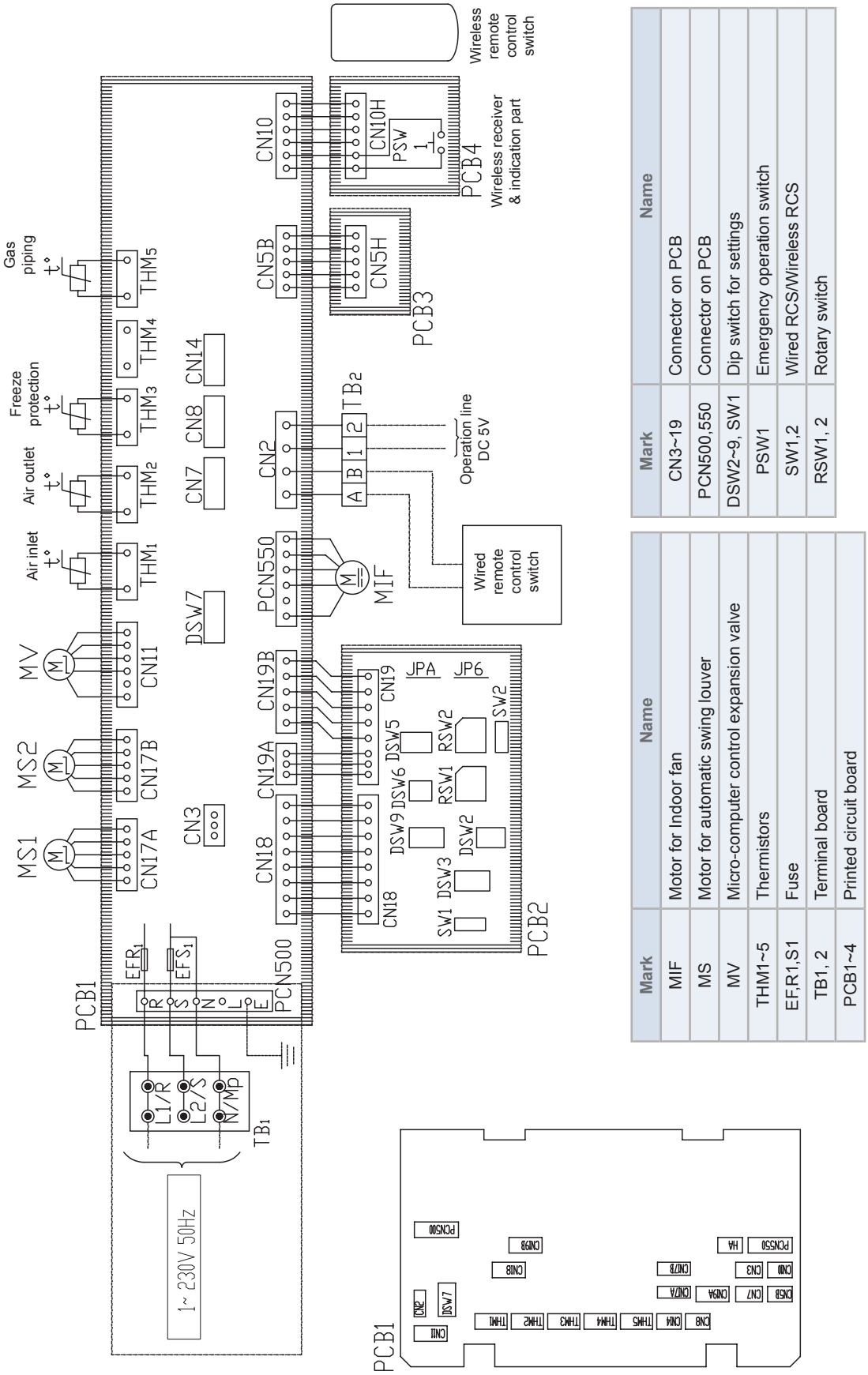



| Mark | Name |
|---|---|
| MV | Micro-computer control expansion valve |
| MIF | Motor for Indoor fan |
| MS | Motor for automatic swing louver |
| THM1~5 | Thermistors |
| EF,R1,S1 | Fuse |
| PSW802 | Emergency operation switch |
| SW1,2 | Wired RCS/Wireless RCS |
| RSW1,2 | Rotary switch |

| Mark | Name |
|---|---|
| CA | Capacitor |
| TB1, 2 | Terminal board |
| PCB1~3 | Printed circuit board |
| PCN4,7 | Connector on PCB |
| CN3~19 | Connector on PCB |
| CN33 | Expansion valve |
| PCN500,550 | Connector on PCB |
| RSW1, 2 | Rotary switch |
| DSW2~9, SW1 | Dip switch for settings |

4

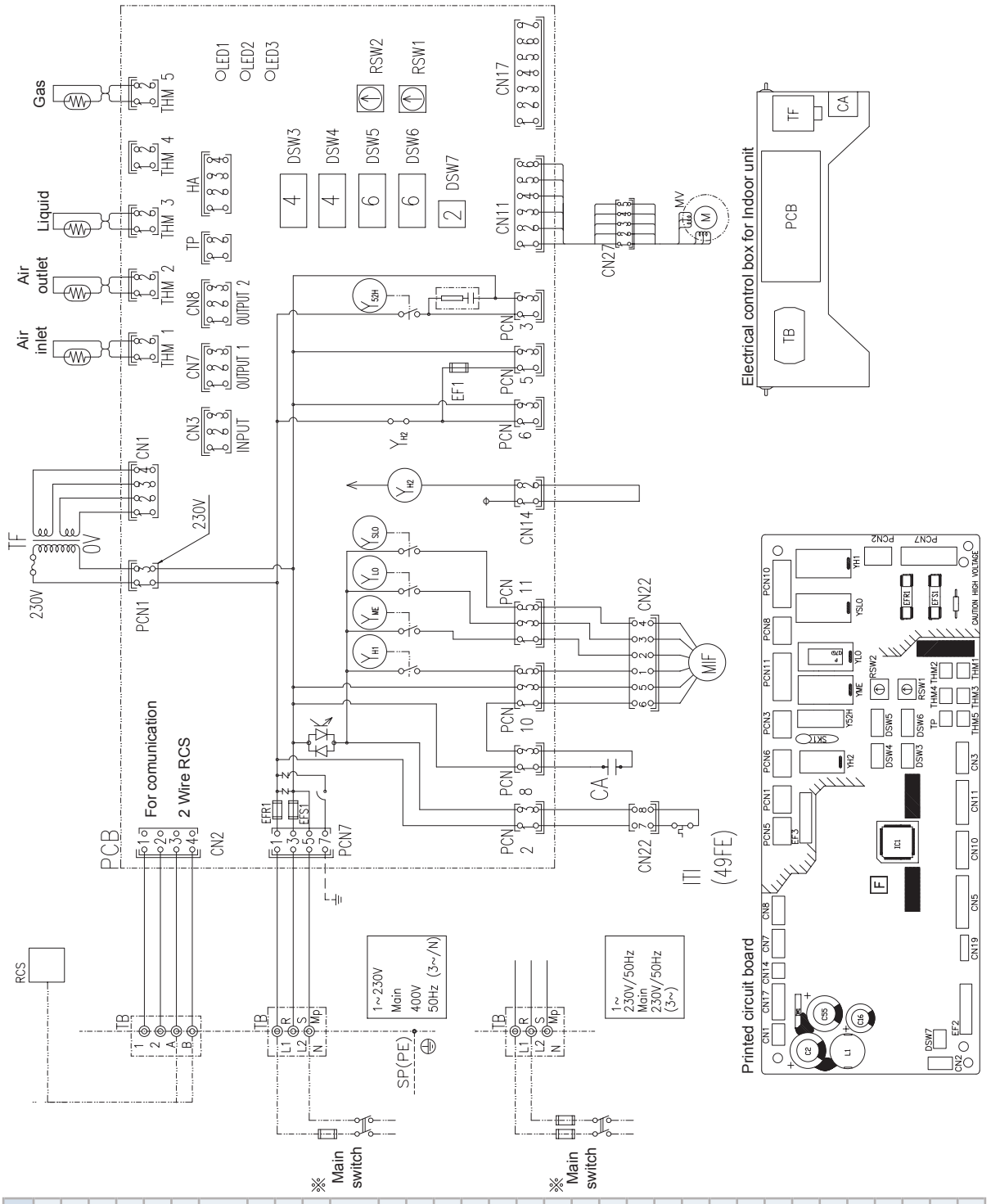
## ◆ Wiring diagram for the RPK-(2.0-4.0)FSN3M indoor unit




| Mark | Name |
|---|---|
| CN3~19 | Connector on PCB |
| PCN500,550 | Connector on PCB |
| DSW2~9, SW1 | Dip switch for settings |
| PSW1 | Emergency operation switch |
| SW1,2 | Wired RCS/Wireless RCS |
| RSW1, 2 | Rotary switch |

| Mark | Name |
|---|---|
| MIF | Motor for Indoor fan |
| MS | Motor for automatic swing louver |
| MV | Micro-computer control expansion valve |
| THM1~5 | Thermistors |
| EF,R1,S1 | Fuse |
| TB1, 2 | Terminal board |
| PCB1~4 | Printed circuit board |

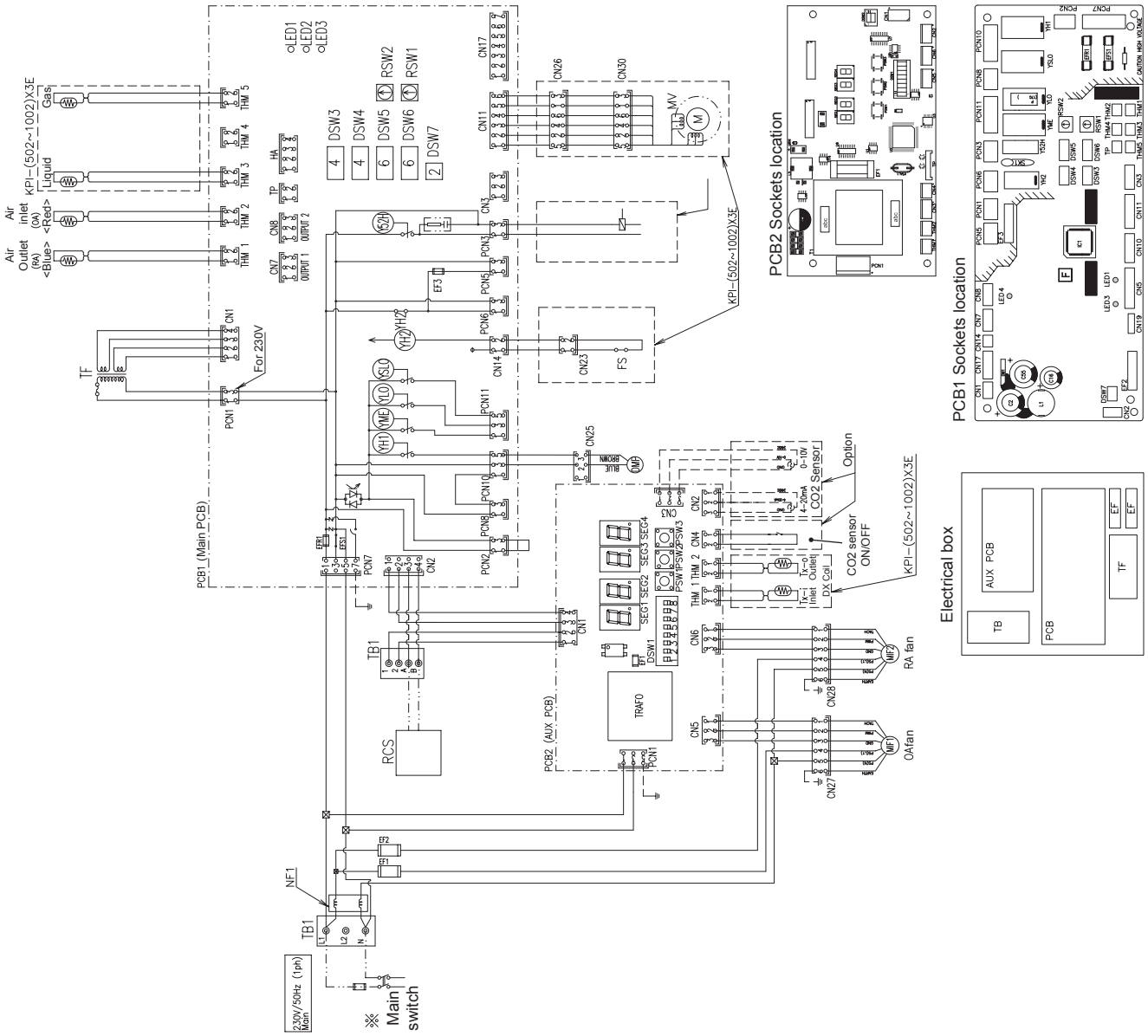
## ◆ Wiring diagrams for the RPF(I)-(1.0-2.5)FSN2E indoor units




| Mark | Name |
|---|---|
| CA | Capacitor for Indoor fan |
| $CN_{21-26}$ | Connector |
| $DSW_3$ | Unit capacity code |
| $DSW_4$ | Model |
| $DSW_5$ | Refrigerant cycle n° |
| $DSW_6$ | Unit code |
| $DSW_7$ | Fuse recover/Remote control selector |
| $EFR_1$ | Fuse |
| $EFS_1$ | Fuse |
| EHW(H2) | Electric heater |
| ITI | Internal thermostat for Indoor unit fan |
| MIF | Motor for Indoor fan |
| MV | Expansion valve |
| $LED_{1-3}$ | Alarm code |
| PCB | Printed circuit board |
| RCS | Remote control switch |
| $RSW_1$ | Indoor unit n° settings |
| $RSW_2$ | Refrigerant cycle n° |
| SSW | Slide switch |
| TB | Terminal Block |
| TF | Transformer |
| $THM_1$ | Inlet air thermistor |
| $THM_2$ | Outlet air thermistor |
| $THM_3$ | Liquid pipe thermistor |
| $THM_5$ | Gas pipe thermistor |
| $YH_1$ | Relay for HI fan motor tap |
| $Y_{ME}$ | Relay for ME fan motor tap |
| $Y_{LO}$ | Relay for LO fan motor tap |
| $Y_{SLO}$ | Relay for SLO fan motor tap |
| | Field supplied |
| | Field wiring |
| | Earth wiring |
| | Factory wiring |

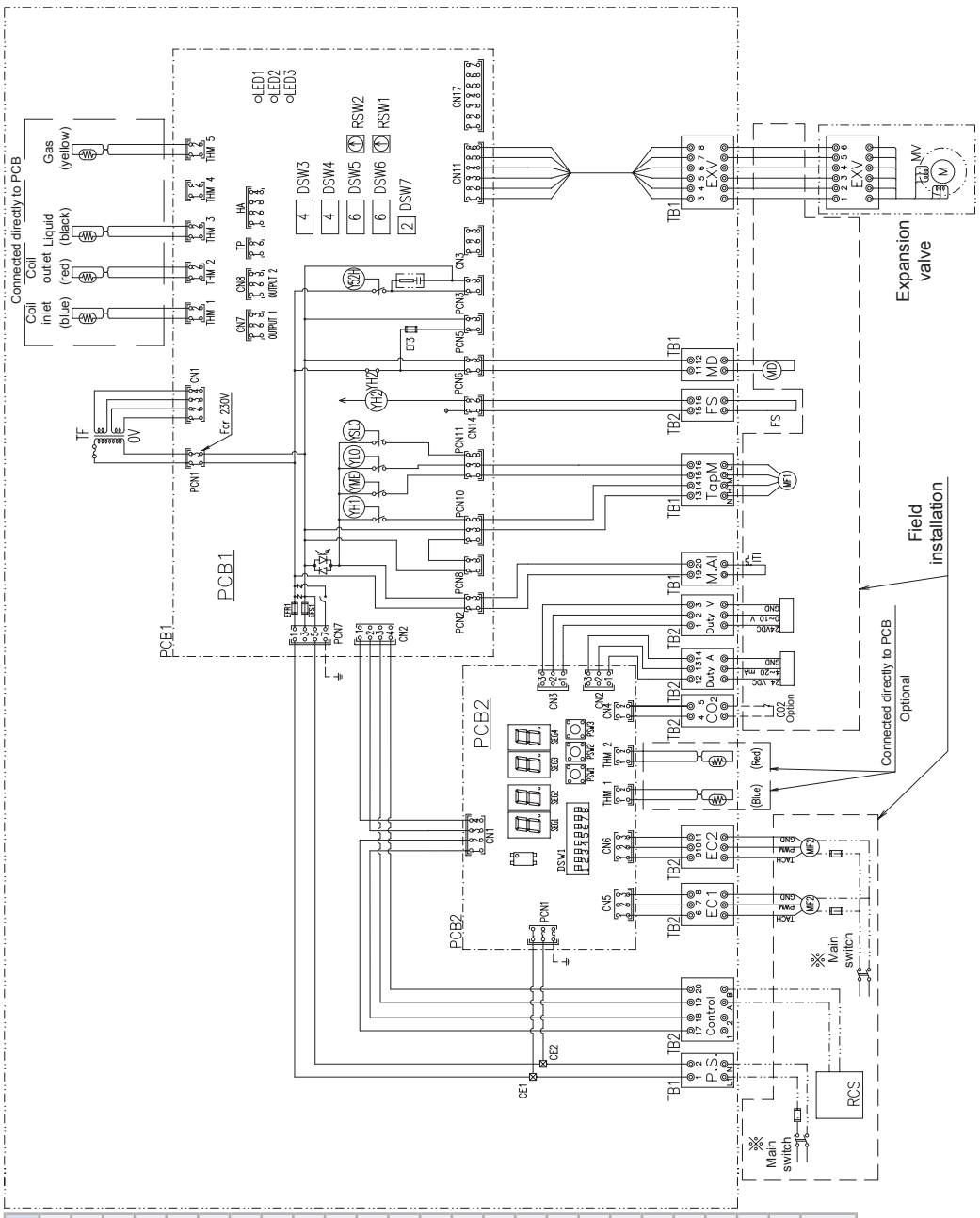
## 4.3.2 Wiring diagrams for complementary systems

### ◆ KPI-(252-2002)E4E energy recovery unit and KPI-(502-1002)X4E active unit




| Mark | Name |
|---|---|
| DSW | Dip switch for settings |
| $RSW_{1,2}$ | Rotary switch for settings |
| $EF_{1,2}$ | Fuse |
| $EFR_1$ | Fuse |
| PCNn | Power connector |
| CNn | Connector |
| SEGx | Display |
| MIF | Motor for Indoor fan |
| $LED_{1\sim3}$ | Alarm code |
| PCB | Printed circuit board |
| RCS | Remote control switch |
| TB | Terminal Board |
| TF | Transformer |
| THM | Thermistor |
| DMP | Damper |
| PSWx | Push button |
| NF1 | Noise filter |
| MV | Expansion valve |
| OA | Outdoor air |
| RA | Return air |
| — · — | Field wiring |
| — — — | Earth wiring |
| ——— | Factory wiring |

## ◆ DX-Interface EXV-(2.0-10.0)E2




| Mark | Name |
|---|---|
| CNn | Connector |
| PCNn | Power connector |
| $DSW_{1\sim n}$ | Dip switch for settings |
| $EFR_1$ | Fuse |
| $LED_{1\sim3}$ | Alarm code |
| $PCB_{1,2}$ | Printed circuit board |
| RCS | Remote control switch |
| $RSW_{1,2}$ | Rotary switch for settings |
| TB | Terminal Board |
| TF | Transformer |
| THM | Thermistor |
| $Y_{H2}$ | Relay for drain motor |
| $Y_{H1}$ | Relay for HI fan motor tap |
| $Y_{ME}$ | Relay for ME fan motor tap |
| $Y_{LO}$ | Relay for LO fan motor tap |
| $Y_{SLO}$ | Relay for SLO fan motor tap |
| Y52H | Relay for Electric heater |
| SEGx | Display |
| $PSW_{1\sim3}$ | Push button |
| MD | Drain pump |
| DMP | Damper |
| MF1 | Top fan motor |
| MF2 | EC Fan motor |
| MV | Expansion valve |
| ITI | Internal thermostat for Indoor fan motor |

# 5. Control system

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**CAUTION**

*Turn off the power supply before setting the DIP switches. If not, the settings will not be valid.*

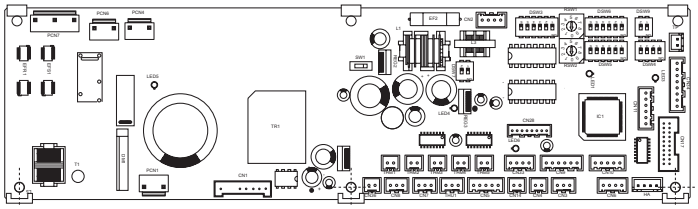
**NOTE**

- *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.*

## 5.1 Printed circuit boards for RCI-FSN4 indoor units

### 5.1.1 Printed circuit boards for RCI-(1.0-6.0)FSN4

The indoor unit PCB operates with five types of DIP switches and two rotary switches. The position is as follows:



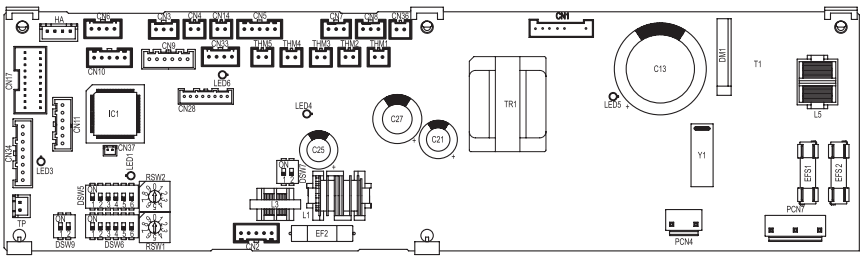
| LED indicator | | |
|---|---|---|
| LED1 | Red | This LED indicates the transmission status between the indoor unit and the remote control. |
| LED3 | Yellow | This LED indicates the transmission status between the indoor unit and the outdoor unit. |
| LED4 | Red | PCB power supply |

| Connector indication | |
|---|---|
| PCN7 | Terminal board 1 |
| THM1 | Air inlet thermistor |
| THM2 | Air outlet thermistor |
| THM3 | Freeze protection thermistor |
| THM5 | Gas piping thermistor |
| CN1 | Motor for indoor fan |
| CN2 | Terminal board 2 |
| CN10 | Air panel PCB |
| CN11 | Micro-computer control expansion valve |
| CN14 | Float switch |
| CN17 | Air panel motor for automatic swing louver |
| CN36 | Motor for drain discharge mechanism |
| EFR1 | PCB1 fuse |
| EFS1 | PCB1 fuse |

| Switch indication | |
|---|---|
| DSW3 | Capacity code |
| DSW4 | Unit model code |
| DSW5, RSW2 | Refrigerant cycle number |
| DWS6, RSW1 | Indoor unit number settings |
| DSW7 | Fuse re-establishing |

## 5.2 Printed circuit boards for RCIM-FSN4(E) indoor units

The indoor unit PCB operates with five types of DIP switches and two rotary switches. The position is as follows:



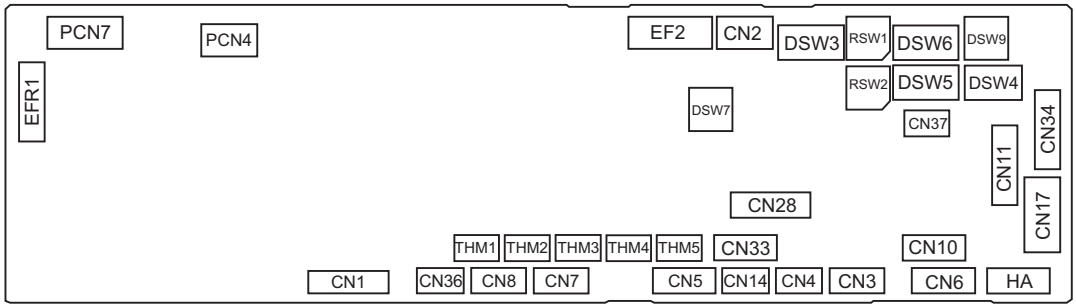
| LED indicator | | |
|---|---|---|
| LED 1 | Red | This LED indicates the transmission status between the indoor unit and the remote control |
| LED 2 | Yellow | This LED indic*ates the transmission status between the indoor unit and the outdoor unit |
| LED 3 | Red | PCB power supply |

| Connector indication | |
|---|---|
| CN3 | Optional connector (For signal input) |
| CN7, 8 | Optional connector (For signal output) |
| CN10 | Optional connector (For motion sensor) |
| DSW3, 4, 7, 9 | Dip switch for setting |
| EFR1,2 | Fuses |
| EF2 | Fuse |
| MIF | Motor for indoor fan |
| MS | Motor for automatic swing louver |
| MV | Micro-computer control expansion valve |
| PCB1 | Printed circuit board |
| RSW1 | Rotary switch for unit number setting (Ones digit) |
| DSW6 | Dip switch for unit number setting (Tens digit) |
| RSW2 | Rotary switch for refrigerant cycle number setting (Ones difit) |
| DSW5 | Dip switch for refrigerant cycle number setting (Tens digit) |
| TB1, 2 | Terminal block |
| THM1~3, 5 | Thermistor |
| THM4 | Optional connector (For remote temperature sensor) |
| CN4~6, HA, PCN4 | Reserved connector on PCB |

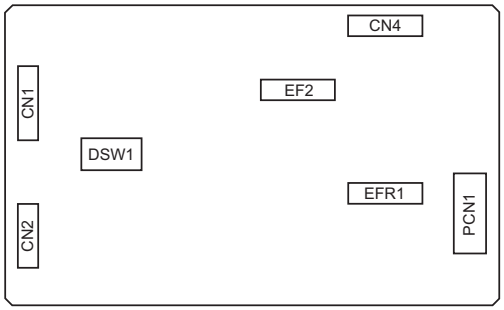
## 5.3 Printed circuit boards for RCD-FSN3 indoor units

The indoor unit PCB operates with five types of DIP switches and two rotary switches. The position is as follows:

PCB1 (RCD-(0.8-6.0)FSN3




PCB1 (RCD-(4.0-6.0)FSN3




| 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 |

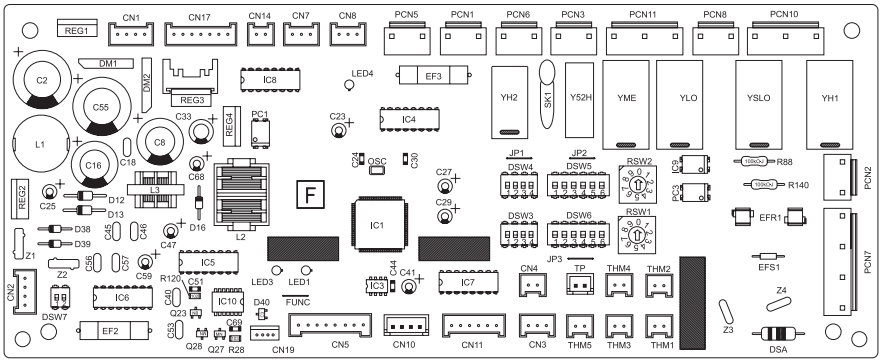
| Connector indication | |
|---|---|
| PCN1 | 220 V transformer |
| PCN7 | Power supply (1-R, 3-S) |
| THM1 | Air inlet thermistor |
| THM2 | Air outlet thermistor |
| THM3 | Freeze protection thermistor |
| THM4 | Remote thermistor |
| THM5 | Gas pipe thermistor |
| CN1 | Connector for Indoor motor fan |
| CN2 | Connector to PCB1 |
| CN3 | Optional input functions |

| Connector indication | |
|---|---|
| CN7 | Optional output functions |
| CN8 | Optional output functions |
| CN10 | Optional connector (for motion sensor) |
| CN33 | Connector to PCB2 |
| CN17 | Swing louver motor 4 |
| CN4~6 | Reserved connectors |
| HA | |
| PCN4 | |
| EFR1 | Fuse |
| EF2 | PCB2 fuse |

| Switch indication | |
|---|---|
| DSW3 | Capacity code |
| DSW4 | Unit model code |
| DSW5, RSW2 | Refrigerant cycle number |
| DSW6, RSW1 | Unit number setting |
| DSW7 | Fuse re-establishing |

## 5.4 Printed circuit board for RPC-FSN3E, RPF(I), units

The indoor unit PCB operates with four types of DIP switches, a slide switch and a rotary switch. The position is as follows:



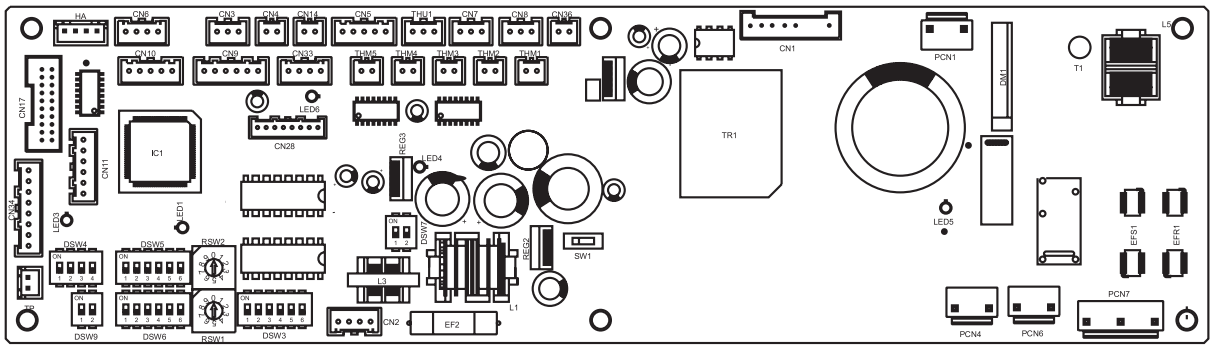

| LED indicator | | |
|---|---|---|
| LED1 | Red | This LED indicates the transmission status between the indoor unit and the remote control. |
| LED3 | Yellow | This LED indicates the transmission status between the indoor unit and the outdoor unit. |
| LED4 | Green | PCB power supply |

| Connector indication | |
|---|---|
| PCN1 | 220 V transformer |
| PCN2 | Indoor fan motor internal thermostat |
| 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 |
| THM1 | Air inlet thermistor |
| THM2 | Air outlet thermistor |
| THM3 | Liquid pipe thermistor |
| THM4 | Remote thermistor (THM-R2 AE) |
| THM5 | Gas pipe thermistor |
| EF3 | Fuse |
| EF2 | Fuse |
| EFS1 | Fuse |
| EFR1 | 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 (number 1, number 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 |

## 5.5 Printed circuit board for RPC-FSN3

The indoor unit PCB operates with four types of DIP switches, a slide switch and a rotary switch. The position is as follows:



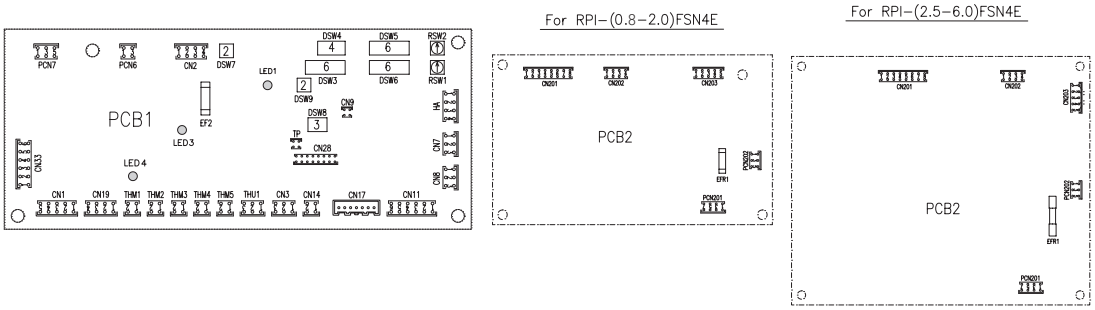

| LED indicator | | |
|---|---|---|
| LED1 | Red | This LED indicates the transmission status between the indoor unit and the remote control. |
| LED3 | Yellow | This LED indicates the transmission status between the indoor unit and the outdoor unit. |
| LED4 | Green | PCB power supply |

| Connector indication | |
|---|---|
| THM1 | Air inlet thermistor |
| THM2 | Air outlet thermistor |
| THM3 | Freeze protection thermistor |
| THM5 | Gas pipe thermistor |
| PCN7 | Terminal board |
| CN1 | Motor for indoor fan |
| CN2 | Terminal board 2 |
| CN3 | Optional input functions |
| CN7 | Optional output functions |
| CN8 | Optional output functions |
| CN10 | Motion Sensor Kit connection |
| CN11 | Expansion valve control |
| CN14 | Float switch |
| CN17 | Swing louver motor |
| CN36 | Power source for drain pump |
| EFS1 | PCB2 fuse |
| EFR1 | PCB2 fuse |
| EF1 | PCB1 fuse |
| EF4 | PCB1 fuse |

| Switch indication | |
|---|---|
| SW1 | Comunicaton type |
| DSW3 | Capacity code |
| DSW4 | Unit model code |
| DSW5, RSW2 | Refrigerant cycle number |
| DWS6, RSW1 | Indoor unit number settings |
| DSW7 | Fuse re-establishing |

## 5.6 Printed circuit board for RPI(M)-(0.6-6.0)FSN4E

The indoor unit PCB operates with four types of DIP switches, a slide switch and a rotary switch. The position is as follows:




| 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 |

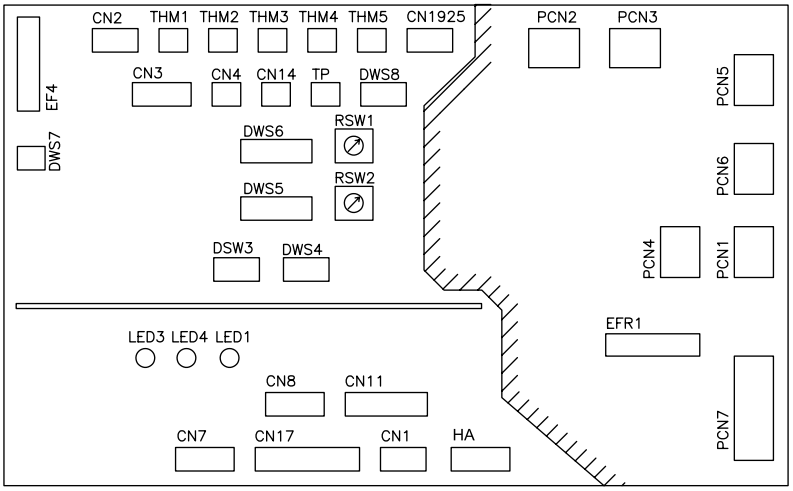
| PCB2 LED indicator | | |
|---|---|---|
| LED1 | Yellow | PCB power supply |

| Connector indication | |
|---|---|
| PCN6 | Drain pump |
| PCN7 | Printed circuit board 2 |
| PCN201 | Terminal board |
| PCN202 | Printed circuit board 1 |
| THM1 | Air inlet thermistor |
| THM2 | Air outlet thermistor |
| THM3 | Liquid pipe thermistor |
| THM5 | Gas pipe thermistor |
| CN1 | Printed circuit board 2 |
| CN2 | Terminal board |
| CN3 | Not used |
| CN11 | Expansion valve |
| CN14 | Float switch |
| CN17 | Econofresh kit connection |
| CN19 | Printed circuit board 2 |
| CN201 | Motor for indoor fan |
| CN202 | Printed circuit board 1 |
| CN203 | Printed circuit board 1 |
| EFR1 | PCB2 fuse |
| EF2 | PCB1 fuse |

| 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 |

## 5.7 Printed circuit board for RPI-(8.0-20.0)FSN3(P)E(-f) units

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 |

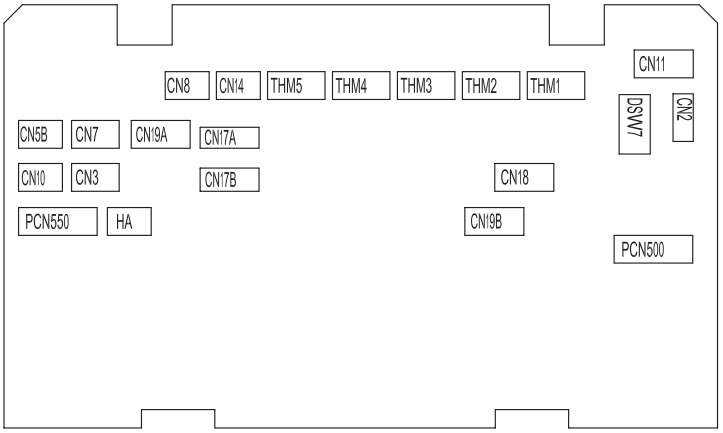
| Connector indication | |
|---|---|
| PCN1 | 220 V transformer |
| PCN2 | Indoor fan motor internal thermostat |
| PCN3 | Fan stoppage alarm signal |
| PCN6 | Drain pump motor (RPI) |
| PCN7 | Power supply (1-R, 2-S, 3-N, 4-E) |
| THM1 | Air inlet thermistor |
| THM2 | Air outlet thermistor |
| THM3 | Liquid pipe thermistor |
| THM4 | Remote thermistor (THM-R2 AE) |
| THM5 | Gas pipe thermistor |
| 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 (number 1, number 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 |

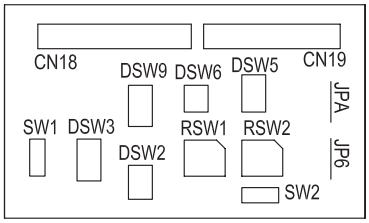
## 5.8 Printed circuit board for RPK-FSN(H)3M units

### 5.8.1 For RPK-(0.6-1.5)FSN(H)3M

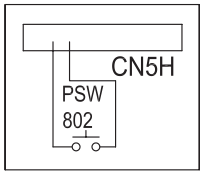
PCB1




PCB2




PCB3

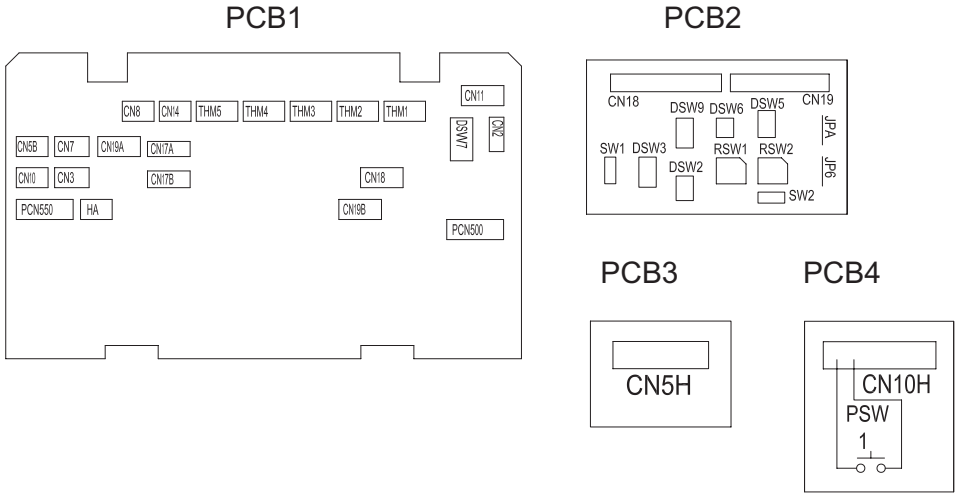



| LED indicator | | |
|---|---|---|
| LED1 | Red | This LED indicates the transmission status between the indoor unit and the remote control. |
| LED3 | Yellow | This LED indicates the transmission status between the indoor unit and the outdoor unit. |
| LED4 | Green | PCB power supply |

| Connector indication | |
|---|---|
| PCN500 | Terminal board 1 |
| PCN550 | Motor for indoor fan |
| THM1 | Air inlet thermistor |
| THM2 | Air outlet thermistor |
| THM3 | Freeze protection thermistor |
| THM5 | Gas piping thermistor |
| CN2 | Terminal board 2 |
| CN3 | Not used |
| CN5A | Printed circuit board 3 |
| CN11 | Micro-computer control expansion valve |
| CN17A | Motor for automatic swing louver |
| CN18 | Printed circuit board 2 |
| CN19A | Printed circuit board 2 |
| CN19B | Printed circuit board 2 |

| Switch indication | |
|---|---|
| DSW3 | Capacity code |
| DSW4 | Unit model code |
| DSW5, RSW2 | Refrigerant cycle number |
| DWS6, RSW1 | Indoor unit number settings |
| DSW7 | Fuse re-establishing |

### 5.8.2 For RPK-(2.0-4.0)FSN3M




| 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 |

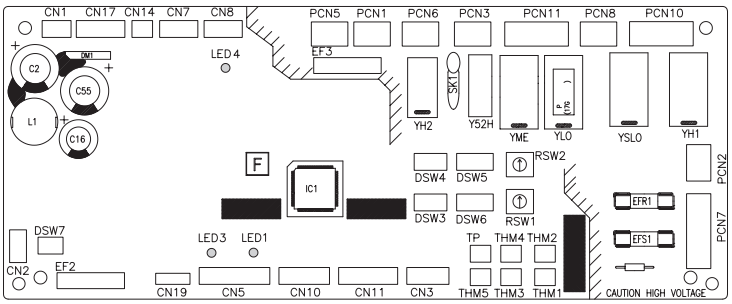
| Connector indication | |
|---|---|
| PCN500 | TB1 |
| PCN550 | Motor for indoor fan |
| THM1 | Air inlet thermistor |
| THM2 | Air outlet thermistor |
| THM3 | Freeze protection thermistor |
| THM5 | Gas piping thermistor |
| CN2 | TB2 |
| CN5B | PCB3 |
| CN10 | PCB4 |
| CN11 | Micro-computer control expansion valve |
| CN17A | Motor for automatic swing louver |
| CN17B | Motor for automatic swing louver |
| CN18 | PCB2 |
| CN19A | PCB2 |
| CN19B | PCB2 |

| Switch indication | |
|---|---|
| DSW3 | Capacity code |
| DSW4 | Unit model code |
| DSW5, RSW2 | Refrigerant cycle number |
| DWS6, RSW1 | Indoor unit number settings |
| DSW7 | Fuse re-establishing |

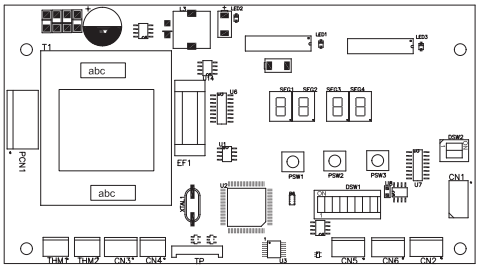
# 5.9 Printed circuit board for complementary systems

## 5.9.1 Printed circuit board for KPI

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 |

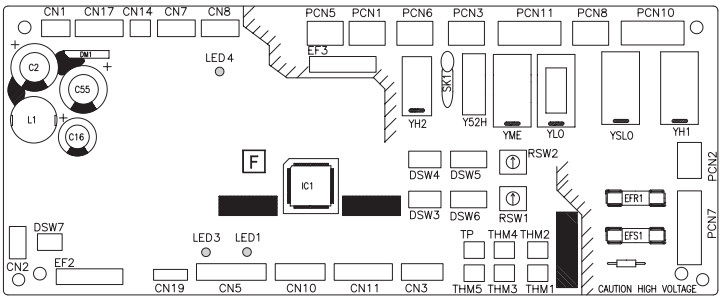
| PCB1 Connector indication | |
|---|---|
| PCN1 | 230V transformer |
| PCN3 | Operation signal for electric heater installation |
| PCN7 | TB1 and PCB2 |
| PCN10 | Damper |
| THM1 | Air outlet thermistor |
| THM2 | Air inlet thermistor |
| THM3 | Liquid pipe thermistor |
| THM5 | Gas pipe thermistor |
| CN1 | Transformer |
| CN2 | TB1 and PCB2 |
| CN11 | Expansion valve |
| CN14 | Float switch |
| EFR1 | PCB1 fuse |
| EFS1 | PCB1 fuse |
| EF3 | PCB1 fuse |

| 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 |

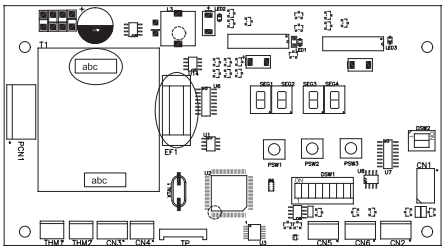
| Switch indication | |
|---|---|
| DSW3 | Capacity code |
| DSW4 | Unit model code |
| DSW5, RSW2 | Refrigerant cycle number |
| DWS6, RSW1 | Indoor unit number settings |
| DSW7 | Fuse re-establishing |

## 5.9.2 Printed circuit board for DX-Interface

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 | TB1 |
| PCN6 | TB1 |
| PCN7 | TB1 and PCB2 |
| PCN10 | TB1 |
| PCN11 | TB1 |
| THM1 | Coil inlet thermistor |
| THM2 | Coil outlet thermistor |
| THM3 | Liquid pipe thermistor |
| THM5 | Gas pipe thermistor |
| CN1 | Transformer |
| CN2 | TB2 and PCB2 |
| CN11 | TB1 |
| CN14 | TB2 |
| EFR1 | PCB1 fuse |
| EFS1 | PCB1 fuse |

| 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 |
| 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 |

## 5.10 Safety protection and control

**Setting control and safety devices for indoor units**

| Model | | | RCI-FSN4 | RCIM-FSN4(E) |
|---|---|---|---|---|
| For the evaporator fan motor: internal thermostat | Switch off | ºC | 80 ±4 (*) | 100±4 (*) |
| | Switch on | ºC | | |
| For the control circuit: fuse capacity | - | A | 5 | 5 |
| Freeze Protection | Cut-Out | ºC | | 0 |
| | Cut-in | ºC | | 14 |
| Thermostat differential | | ºC | | 2 |

| Model | | | RCD | RPC-FSN3E | RPC-FSN3 | RPI(M) | RPI-(8.0/10.0)FSN3E(-f) RPI-(16.0/20.0)FSN3PE(-f) | RPK | RPF(I) |
|---|---|---|---|---|---|---|---|---|---|
| For the evaporator fan motor: internal thermostat | Switch off | ºC | 130±5 | 100 (*) | $100_{-10}^{+15}$ | 110±10 (**) | 140±10 | 100 (*) | 130±5 |
| | Switch on | ºC | 83±15 | 90±15 | $95_{-10}^{+15}$ | 90±10(**) | 90±15 | | 93±15 |
| For the control circuit: fuse capacity | - | A | 5 | 5 | 5 | 5 | 5 | 5 | 5 |

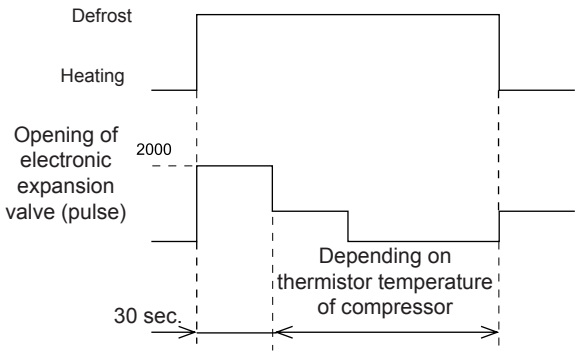
**NOTE**

*(*) Chip Ceramic PTC (Autoreset, non-adjustable)*

## 5.11 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 ºC
      - 4 HP=> SH = -4 ºC
   b. Heat exchanger SH = Tg - TL

Where,
- 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

Where,
- 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.

# 6. Optional functions

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# 6.1 Indoor units input and output signals

## 6.1.1 Available ports

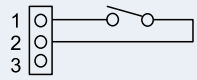
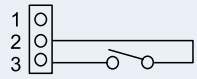
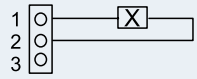
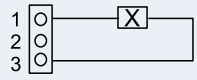
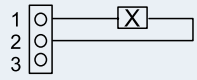
The system has eight optional input signals and six output signals. Both types of signal are programmed into the indoor unit PCB: connector CN3 for input signals and connectors CN7 and CN8 for output signals.

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.*

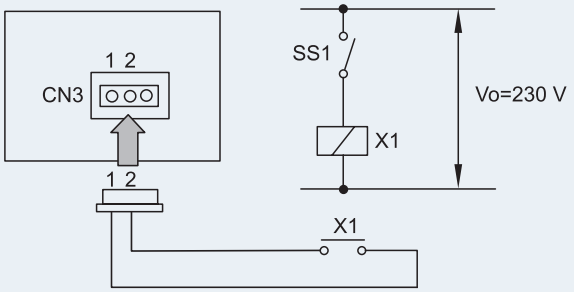
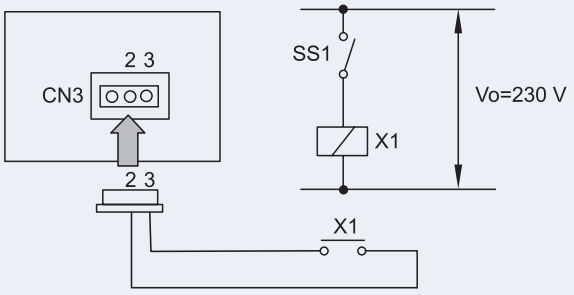
The system has the following input and output ports:

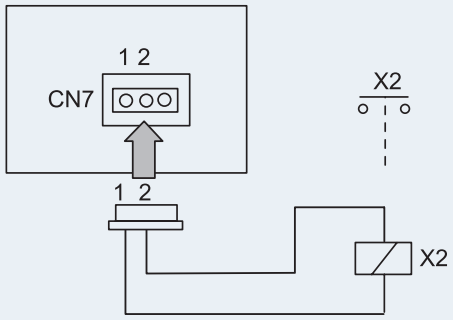
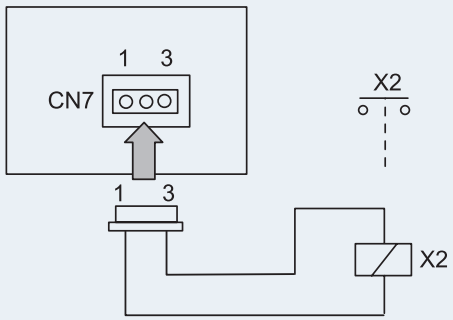
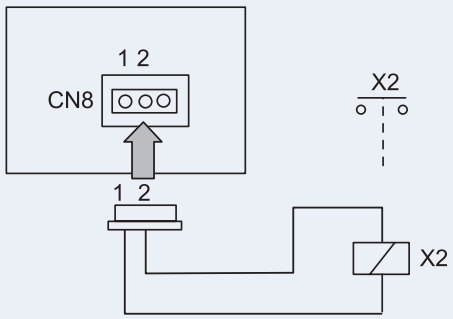
| Indication | | Port setting on the indoor unit PCB | Remarks | Outlet |
|---|---|---|---|---|
| Input | i1 | CN3 1-2 |  | Contact |
| | i2 | CN3 2-3 |  | Contact |
| Output | o1 | CN7 1-2 |  | 12 Vdc |
| | o2 | CN7 1-3 |  | 12 Vdc |
| | o3 | CN8 1-2 |  | 12 Vdc |

**NOTE**

*o2 Configuration not available for RPI-(16.0/20.0)FSN3PE(-f) units.*

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<br>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<br>(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.
- It is recommended to install safety devices such as an electric leakage breaker, etc, (because this is unattended function).

### Returning from optional function setting mode

Press "↩" (return) to return to the normal mode (Operation Mode Indication).

### Indoor unit inputs/outputs factory settings

Connectors CN3, CN7 and CN8 are factory-set with the following optional functions.

| | Connector number | Connector terminal | Function | Factory settings |
|---|---|---|---|---|
| Input | CN3 | 1–2 | 03 | Function 1. Remote unit On/Off |
| | | 2–3 | 06 | Cancellation of commands from the remote control after a forced stoppage |
| Output | CN7 | 1–2 | 01 | Operation signal |
| | | 1–3 | 02 | Alarm signal |
| | CN8 (Not for RPK) | 1–2 | 06 | Thermostat enabled signal during heating |

(*) If the Econofresh kit is connected, CN3 terminals 1 and 2 are locked for the enthalpy sensor or the CO2 sensor.

## 6.1.2 Optional signal configuration

The following tables describe the optional signals available on indoor units.

### Optional input signals

**NOTE**

*If an input signal is set, the on-screen display on the remote control automatically changes to the following.*

| Indication | Input signal | Application | Port |
|---|---|---|---|
| 00 | Not set | Not set | CN3 |
| 01 | Control by field-supplied room thermostat (cooling) | This signal controls the unit through an external thermostat.<br>**NOTE**<br>*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.<br>**NOTE**<br>*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.<br>**NOTE**<br>*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.<br>**NOTE**<br>*It is extremely practical in hotels and offices to control the indoor units from the building management system.* | CN3 |
| 05 | Function 2: unit stoppage (by pulse) | This signal controls the stoppage of the system from a remote location.<br>**NOTE**<br>*It is extremely practical in hotels and offices to control the indoor units from the building management system.* | CN3 |

| Indication | Input signal | Application | Port |
|---|---|---|---|
| 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

**NOTE**

*If an input signal is set, the on-screen display on the remote controller automatically changes to the following.*

| Indication | Output signal | Application | Port |
|---|---|---|---|
| 00 | Not set | Not set | • CN7 or CN8<br>• Only CN7 for RPK units |
| 01 | Operation signal | This signal permanently controls the status of the unit.<br>**NOTE**<br>*It is extremely useful for centralised applications.* | • CN7 or CN8<br>• Only CN7 for RPK units |
| 02 | Alarm signal | This signal enables devices that protect and indicate any faults in the unit.<br>**NOTE**<br>*It is extremely useful for rooms in which air conditioning must remain on at all times.* | • CN7 or CN8<br>• Only CN7 for RPK units |
| 03 | Cooling signal | This signal controls the status of the compressor.<br>**NOTE**<br>*It is extremely useful for controlling the thermostat switched off on indoor units.* | • CN7 or CN8<br>• 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<br>• Only CN7 for RPK units |
| 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<br>• 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<br>• Only CN7 for RPK units |

### 6.1.3 Programming with remote controller

For a complete and detailed explanation regarding the programming with the remote controller, refer to the *"Remote controller PC-ARFPE installation and operation manual"*.

### 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 *"6.1.1 Available ports"*.

Example:

- Room thermostat Input (for Cooling) is set to terminals 2 and 3 of CN3
- Room thermostat Input (for Heating) is set to terminals 1 and 2 of CN3

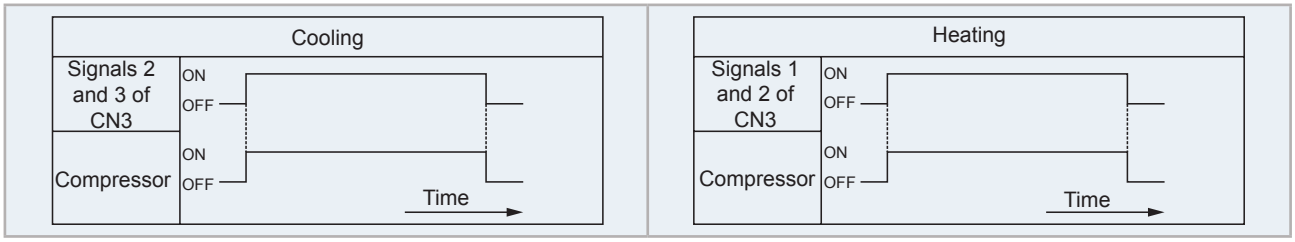
Operation

- Cooling operation: Compressor is ON by closing terminals 2 and 3 of CN3

Compressor is OFF by opening terminals 2 and 3 of CN3

- Heating operation: Compressor is ON by closing terminals 1 and 2 of CN3

Compressor is OFF by opening terminals 1 and 2 of CN3




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.

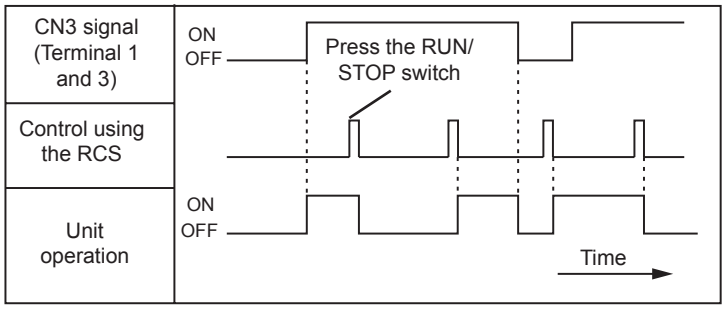
### Function 1: remote on/off of the unit

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 *"6.1.1 Available ports"*. (Example: terminals 1 and 3 of CN3)

**NOTE**

- *When the unit is started using the remote ON/OFF switch, the fan speed depends on the mode stored in the remote control.*
- *The collection of signals during the first 10 seconds after connecting the power supply is not available due to component initialization. Do not change the signal in this period.*
- *Operation priority is given to the remote on/off signal or to the remote control, whichever is transmitted last.*
- *If multiple indoor units are connected to the same transmission wiring for remote control switch, input the signal to any of these indoor units. When the transmission wiring is not used in a multiple indoor unit system for simultaneous operation, input the signal to the main indoor unit.*




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 *"6.1.1 Available ports"*. (Example: terminal 2 and 3 of CN3)

### 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.

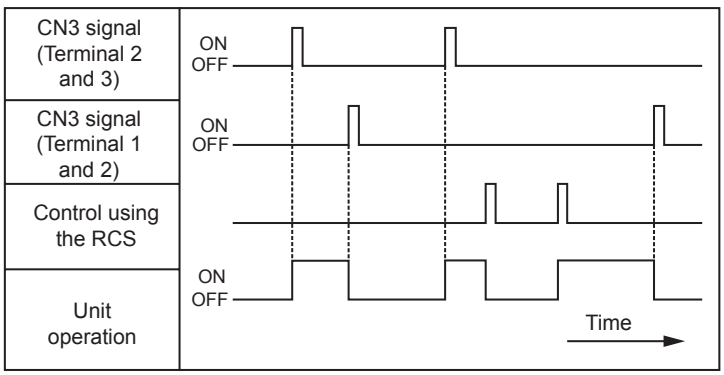
If a signal is input during the stoppage of the system, it remains unchanged.

Connect the wiring and use the materials as indicated in *"6.1.1 Available ports"*. (Example: terminal 1 and 2 of CN3)

A time chart with the uses of functions 2 is shown below.

**NOTE**

*The collection of signals during the first 10 seconds after connecting the power supply is not available due to component initialization. Do not change the signal in this period.*



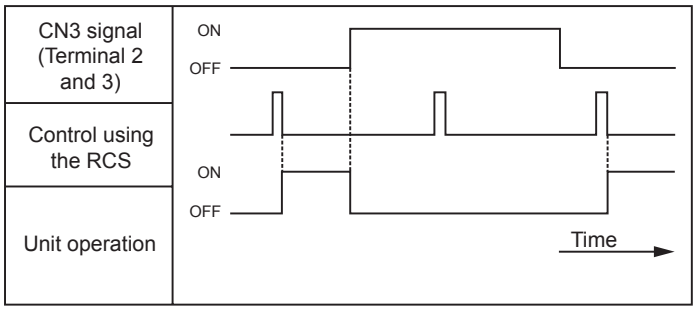
### Cancellation of commands from the remote control after a forced stoppage

On-screen display: 05.

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 *"6.1.1 Available ports"*. (Example: terminal 2 and 3 of CN3)

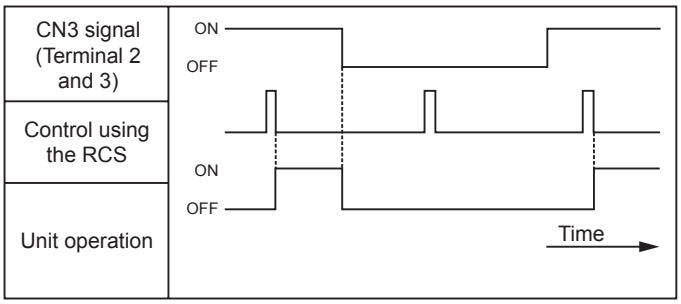
A time chart with the uses of the function is shown below.




**NOTE**

*The collection of signals during the first 10 seconds after connecting the power supply is not available due to component initialization.*

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 *"6.2.1 List of optional remote control functions. (PC-ARFPE)"* for further details on contacts A and B.




**NOTE**

*This function is not available after the manual (forced) stoppage because commands from remote control switch are cancelled. (Remote control switch is required).*

### Cooling or heating mode setting

On-screen display: 07.

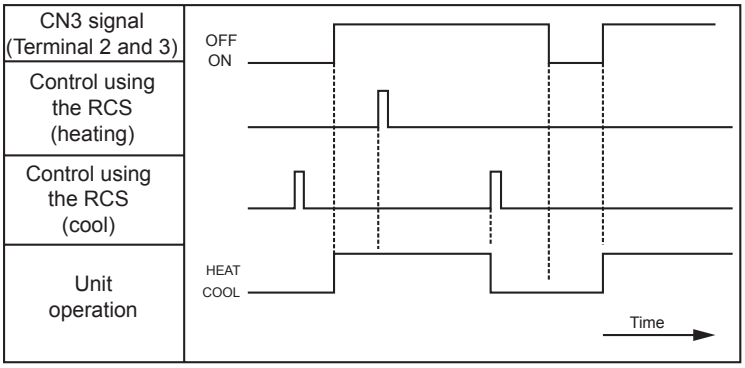
This optional signal can be used to change the heating or cooling operating mode by sending a contact signal from outside the unit. The operating mode is controlled by the field-supplied switch or by the remote control, whichever is used last.

Connect the wiring and use the materials as indicated in *"6.1.1 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 initialization.*
- *This function is not available after the manual (forced) stoppage because commands from remote control switch are cancelled. (Remote control switch is required).*

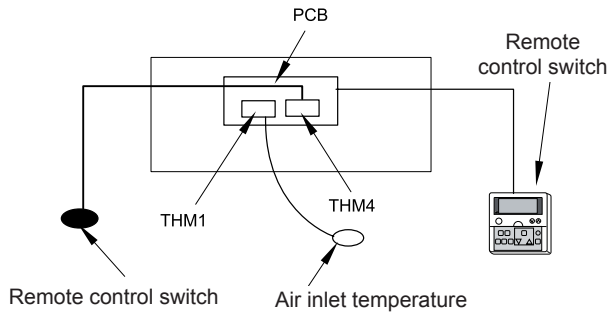



### Control by use of a remote temperature sensor

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, for example, the outdoor air intake fan operation can be stopped.

Connect the wiring and use the materials as indicated in *"6.1.1 Available ports"*. (Example: terminal 1 and 2 of CN7)

**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 *"6.1.1 Available ports"*. (Example: terminal 1 and 3 of CN7)

**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. The X2 auxiliary relay contact closes when the cooling operation signal is enabled, regardless of whether the thermostat signal is enabled or disabled.

Connect the wiring and use the materials as indicated in *"6.1.1 Available ports"*. (Example: terminal 1 and 3 of CN7)

#### 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 (thermo-ON).

Connect the wiring and use the materials as indicated in *"6.1.1 Available ports"*. (Example: terminal 1 and 3 of CN7)

**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 *"6.1.1 Available ports"*. (Example: terminal 1 and 3 of CN7)

#### 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 (thermo-ON) during the heating process and to control, for example, a circulation pump or humidifier.

Connect the wiring and use the materials as indicated in *"6.1.1 Available ports"*. (Example: terminals 1 and 2 of CN8)

**NOTE**

*The X2 auxiliary relay contact closes when the thermostat signal is enabled during heating mode.*

## 6.2 Optional functions through Remote control

The next list refers to the optional functions available to indoor units from the remote control switch. Note that not all remote control switch have access to all the optional functions. Check the Technical Catalogue for Indoor units remote controls.

### 6.2.1 List of optional remote control functions. (PC-ARFPE)

| Elem. | Optional function | Individual setting | Settings | Setting conditions | Description |
|---|---|---|---|---|---|
| b1 | Correction of setting temperature in heating<br>Models:<br>RCD-FSN3<br>RCIM-FSN4(E) | O | 00 | Normal (Setting Temperature + 4ºC) | This function is used to adjust the difference of temperature between the setting temperature of the remote control switch and the inlet air temperature of the indoor unit.<br>This is useful when the inlet air thermistor is not placed inside the indoor unit. |
| | | | 01 | Release (Setting Temperature) | |
| | | | 02 | Setting Temperature + 2ºC | |
| | | | 03 | Setting Temperature + 3ºC | |
| | | | 04 | Setting Temperature + 1ºC | |
| | Correction of setting temperature in heating<br>Models:<br>RPI-FSN3(P)E<br>RPC-FSN3E<br>RPF(I)-FSN2E<br>RPI-FSN4E<br>RPIM-FSN4E(-DU) | O | 00 | Normal (Setting Temperature + 4ºC or Setting temperature + 2ºC)<br>Standard setting. It increases the temperature +4ºC | |
| | | | 01 | Release (Setting Temperature)<br>Removal | |
| | | | 02 | Setting Temperature + 2ºC<br>Increases the temperature +2ºC (1). | |
| | Correction of setting temperature in heating<br>Models:<br>RCI-FSN4<br>RPC-FSN3<br>RPK-FSN3M | O | 00 | Normal (Setting Temperature + 4ºC<br>Standard setting. Increases the temperature +4ºC | |
| | | | 01 | Release (Setting Temperature)<br>Removal | |
| | | | 02 | Setting Temperature + 2ºC<br>It increases the temperature +2ºC (1). | |
| b2 | Circulator function at heating Thermo-OFF | O | 00 | Not activated function | This function means that the fan unit 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 through C7 setting | O | 00 | Not activated function<br>(C7 setting possible) | This function is used to allow the setting of C7: protect the compressor, preventing it from being started or stopped for periods of less than three minutes.<br>Not available for models:<br>RCIM-FSN4(E)<br>RCD-FSN3 |
| | | | 01 | Activated function<br>(C7 setting not possible) | |
| b4 | Change the filter cleaning period. | O | 00 | Standard (1200 h factory setting) | This function is used to modify the period during which the remote control indicates the air filter replacement. |
| | | | 01 | 100 hours | |
| | | | 02 | 1200 hours | |
| | | | 03 | 2500 hours | |
| | | | 04 | No indication | |
| 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 control. |
| | | | 01 | Activated function | |
| b6 | Fixing of setting temperature | X | 00 | Not activated function | Once the unit temperature has been selected, this function prevents from being modified from the remote control. |
| | | | 01 | Activated function | |

| Elem. | Optional function | Individual setting | Settings | Setting conditions | Description |
|---|---|---|---|---|---|
| b7 | Fixing of operation as exclusive cooling mode only | 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 from being modified from the remote control. |
| | | | 01 | Activated function | |
| bA | Not available | X | "- -" Permanent | Not available | – |
| bb | Cooling temperature compensation due to uneven load | X | 00 | Standard setting. No compensation | This function is used to obtain longer cooling periods. |
| | | | 01 | It decreases the temperature -1ºC | |
| | | | 02 | It decreases 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 | Not available | 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.<br>Not available for models:<br>RCIM-FSN4(E)<br>RCD-FSN3 |
| | | | 01 | Activated function | |
| C5 | Static pressure selection<br>Models<br>RPI-FSN4E<br>RPIM-)FSN4E(-DU)<br>RPI-FSN3(P)E | O | 00 | Standard static pressure (factory set) | This function is used to change the static pressure of the RPI units from the remote control. |
| | | | 01 | High static pressure | |
| | | | 02 | Low static pressure | |
| | Increasing fan speed<br>Models<br>RPC-FSN3E<br>RPF(I)-FSN2E<br>RCI-FSN4<br>RPC-FSN3<br>RPK-FSN3M<br>RCD-FSN3<br>RCIM-FSN4(E) | O | 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 | Hi speed at heating Thermo-OFF | O | 00 | Not activated function | This function is used to increase the fan speed when the thermostat reaches the set temperature in heating using function C5. |
| | | | 01 | Activated function | |

| Elem. | Optional function | Individual setting | Settings | Setting conditions | Description |
|---|---|---|---|---|---|
| C7 | Release Compressor 3 min OFF Guard | O | 00 | Activated function | Function available depending on the settings in b3. |
| | | | 01 | Not activated function | |
| C8 (7) | Selection of the thermistor of remote control switch | O | 00 | Not available (Suction thermistor) | 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<br>Suction + Remote Control / 2 | |
| | Remote Sensor Selection is connected<br>Models<br>RPI-FSN3(P)E<br>RPC-FSN3E<br>RPF(I)-FSN2E<br>RCI-FSN4<br>RPC-FSN3 | O | 00, 01, 02 | Air temperature control using remote sensor | |
| | Remote Sensor Selection is connected<br>Models<br>RPK-FSN3M | | 00, 01, 02 | Air temperature control using the average value of the air inlet thermistor and the remote control thermistor | |
| | Remote Sensor Selection is connected<br>Models<br>RPI-FSN4E<br>RPIM-FSN4E(-DU)<br>RCD-FSN3<br>RCIM-FSN4(E) | | 00, 02 | Air temperature control using the average value of the air inlet thermistor and the remote control thermistor | |
| | | | 00,01 | Air temperature control using remote sensor | |
| C9 | Not available | – | "- -" permanent | Not available | |
| CA | Not available | – | "- -" permanent | Not available | – |
| Cb | Selection of forced stoppage logic | X | 00 | Forced stoppage input: A contact | This function determines the logic operation for the forced stoppage contacts. |
| | | | 01 | Forced stoppage input: B contact | |
| CC | Not available | – | 00 | Not available<br>Use at 00 conditions | – |
| | | | 01 | | – |
| Cd | Not available | O | 00 | Not available<br>Use at 00 conditions | |
| | | | 01 | | |
| CE | Fan stop at heating thermo-off | O | 00 | Air flow volume: Low | |
| | | | 01 | If C8 setting 00: Slow<br>If C8 setting 01 or 02: fan operation stops | |
| CF | Modification of Louver Swing Range<br>Series<br>RCI, RPC, RCD, RPK | O | 00 | Standard (7 steps) | This function adjusts the angle of the air outlet louver. |
| | | | 01 | Cold draft prevention<br>(5 steps)<br>(Lower 2 steps cut off) | |
| | | | 02 | High ceilings<br>(5 steps)(3)<br>(Higher 2 steps cut off) | |
| 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 | |

| Elem. | Optional function | Individual setting | Settings | Setting conditions | Description |
|---|---|---|---|---|---|
| d4 | Cooling air temperature drop prevention.<br>Models,<br>RPI-FSN3(P)E<br>RPC-FSN3E<br>RPF(I)-FSN2E<br>RCI-FSN4<br>RPC-FSN3<br>RPK-FSN3M<br>RPI-FSN4E<br>RPIM-FSN4E(-DU) | O | 00 | Not activated function | This function changes the cooling operating conditions to avoid cold draughts.<br>Not available for models<br>RCD-FSN3<br>RCIM-FSN4(E)<br>(Use as 00 conditions) |
| | | | 01 | Activated function | |
| d5 | Prevention of decrease of heating discharge air temperature | 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.<br>Function of the outdoor unit<br>Not available for models<br>RCD-FSN3<br>RCIM-FSN4(E)<br>(Use as 00 conditions) |
| | | | 01 | Activated function | |
| d7 | Econofresh: OA Damper minimum opening | O | 00 | 6º | This function is used to set the fresh outdoor air damper minimum opening selection. |
| | | | 01 | 12º | |
| | | | 02 | 18º | |
| | | | 03 | 24º | |
| | | | 04 | 30º | |
| | | | 05 | 36º | |
| | | | 06 | 42º | |
| | | | 07 | 48º | |
| E1 | Econofresh cooling mode | O | 00 | Standard Process | This function allows to the outdoor air damper to be opened in All Fresh Operation mode. This mode able to fully open the outdoor air damper (according to the control system) |
| | | | 01/02 | All-fresh | |
| E2 | Econofresh enthalpy sensor | O | 00 | Not activated function | This function selects the enthalpy sensor input. |
| | | | 01 | Activated function | |
| E3 | Not available | O | 00 | Not available<br>Use at 00 conditions | – |
| | | | 01 | | |
| E4 | Econofresh: CO2 sensor | O | 00 | Standard | This function selects the CO2 gas sensor input. |
| | | | 01/02 | CO2 sensor | |
| E5 | Not available | O | 00 | Not available<br>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<br>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<br>Use at 00 conditions | – |
| | | | 01 | | |

| Elem. | Optional function | Individual setting | Settings | Setting conditions | Description |
|---|---|---|---|---|---|
| EA | Not available | O | 00 | Not available<br>Use at 00 conditions | – |
| | | | 01 | | |
| Eb | Fan operation control at cooling Thermo-OFF | O | 00 | Not activated function | This function decreases 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<br>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 | |
| EF | Automatic indoor fan speed mode (supporting High H)<br>Models<br>RPI-FSN4E<br>RPIM-FSN4E(-DU)<br>RCD-FSN3<br>RCIM-FSN4(E) | O | 00 | Not activated function | |
| | | | 01 | Activated function | |
| F0 | Not available | - | - | Not available | |
| F1 | Automatic OFF timer setting<br>Models<br>RCI-FSN4<br>RPC-FSN3<br>RPK-FSN3M<br>RPI-FSN4E<br>RPIM-FSN4E(-DU)<br>RCD-FSN3<br>RCIM-FSN4(E) | 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.<br>(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 | |
| | | | 0C | 40 min | |
| | | | 0D | 45 min | |
| | | | 0E | 50 min | |
| | | | 0F | 55 min | |
| | Automatic OFF timer setting<br>Models<br>RPI-FSN3(P)E<br>RPC-FSN3E<br>RPF(I)-FSN2E | 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. |
| | | | 01 | 1 h | |
| | | | 02 | 2 h | |
| | | | 03 | 3 h | |
| | | | 04-24 | (04-24) h | |
| | | | 0A | 30 min | |
| | | | 0B | 90 min | |
| F2 | Remote control main/sub setting | X | 00 | Main (Master Remote Control) | This function is used when two remote controls are installed in a system. |
| | | | 01 | Sub (Slave Remote Control) | |
| F3 | 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 | |
| F4 | Automatic reset time | X | 00 | 30 minutes<br>(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 | |

| Elem. | Optional function | Individual setting | Settings | Setting conditions | Description |
|---|---|---|---|---|---|
| F5 | 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)ºC | |
| | | | 29 | 29ºC | |
| | | | 30 | 30ºC | |
| F6 | Automatic reset temperature for heating<br>Heating Automatic Return Temperature | X | 17 | 17ºC | This function is used to set automatic temperature release in HEAT mode. |
| | | | 18-20 | (18-20)ºC | |
| | | | 21 | 21ºC (factory setting) | |
| | | | 25-28 | (25-28)ºC | |
| | | | 29 | 29ºC | |
| | | | 30 | 30ºC | |
| F7 | Operation stoppage prevention by remote control switch operational error (5) | X | 00 | Not activated function | – |
| | | | 01 | Activated function | |
| 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) | |
| FC | Lower limit of setting temperature for cooling<br>Minimum value of setting temperature in cooling | X | 00 | 19ºC (Standard) | This function is used to define a lower temperature setting limit for FAN/COOL/DRY modes. |
| | | | 01 | Lower limit 20ºC | |
| | | | 02 | Lower limit 21ºC | |
| | | | 03-08 | Lower limit (22~27)ºC | |
| | | | 09 | Lower limit 28ºC | |
| | | | 10 | Lower limit 29ºC | |
| Fd | Upper limit of setting temperature for heating | X | 00 | 30ºC (Standard) | This function is used to define an upper temperature setting limit for HEAT mode.<br>RPC-FSN3E<br>RPF(I)-)FSN2E<br>RPI-FSN3(P)E<br>models up to 20ºC |
| | | | 01 | Lower limit 29ºC | |
| | | | 02 | Lower limit 28ºC | |
| | | | 03-10 | Lower limit (27~20)ºC | |
| | | | 11 | Lower limit 19ºC | |
| | | | 12 | Lower limit 18ºC | |
| FE | Not available | – | 00 | Not available<br>Use at 00 conditions | – |
| | | | 01 | | |
| | | | 02 | | |
| FF | Not available | – | 00 | Not available<br>Use at 00 conditions | |
| | | | 01 | | |
| H1 | Not available | – | 00 | Not available<br>Use at 00 conditions | |
| | | | 01 | | |
| H2 | Indication of hot start | O | 00 | Display | This function is used to display or hide the automatic control indication. |
| | | | 01 | Hide | |

| Elem. | Optional function | Individual setting | Settings | Setting conditions | Description |
|---|---|---|---|---|---|
| H3 | Operating mode change restriction | O | 00 | Operating mode change disabled (factory setting) | This function is used to configure restrictions to the HEAT mode.<br>Not available for models:<br>RPI-FSN3(P)E<br>RPC-FSN3E<br>RPF(I)-FSN2E<br>RCIM-FSN4(E)<br>RCD-FSN3 |
| | | | 01 | Operating mode set by the central control + FAN mode | |
| | | | 02 | Unlimited operating mode | |
| H4 | Central Equipment Operation during Forced Stop | O | 00 | Not activated function | Not available for models:<br>RPI-FSN3(P)E<br>RPC-FSN3E<br>RPF(I)-FSN2E<br>RCIM-FSN4(E)<br>RCD-FSN3 |
| | | | 01 | Activated function | |
| | KPI: Operating modes for the ventilation unit with energy recovery | O | 00 | Air conditioning only | This function is only available for the ventilation unit with energy recovery. |
| | | | 01 | Ventilation only | |
| | | | 02 | Air conditioning + ventilation | |
| J1 | Not available | – | 00 | Not activated function | Not available for models:<br>RPI-(8.0-20.0)FSN3(P)E(-f)<br>RPC-(3.0-6.0)FSN3E<br>RPF(I)-(1.0-2.5)FSN2E |
| | | | 01 | Activated function | |
| J2 | Not available | – | 00 | Not activated function | Not available for models:<br>RPI-(8.0-20.0)FSN3(P)E(-f)<br>RPC-(3.0-6.0)FSN3E<br>RPF(I)-(1.0-2.5)FSN2E |
| | | | 01 | Activated function | |
| J3 | Run indicator color | – | 00 | Green | |
| | | | 01 | Red | |
| J4 | Not available | X | 00 | Not available (Use as 00 conditions) | |
| | | | 01 | | |
| | | | 02 | | |
| J5 | Not available | – | 00 | Not available (Use as 00 conditions) | |
| | | | 01 | | |
| J6 | Not available | – | 00 | Not available (Use as 00 conditions) | |
| | | | 01 | | |
| J7 | Not available | – | 00 | Not available (Use as 00 conditions) | |
| | | | 01 | | |
| J8 | Eco-operation [6] | X | 00 | Not activated function | Not available for models:<br>RPI-(8.0-20.0)FSN3(P)E<br>RPC-(3.0-6.0)FSN3E<br>RPF(I)-(1.0-2.5)FSN2E |
| | | | 01 | Activated function | |
| J9 | Not available | – | 00 | Not available (Use as 00 conditions) | |
| | | | 01 | | |
| JA | Not available | – | – | Not available (Use as 00 conditions) | |
| Jb | Not available | – | 00 | Not available (Use as 00 conditions) | |
| | | | 01 | | |
| K1 | Not available | – | – | Not available (Use as 00 conditions) | |
| K2 | Not available | – | – | Not available (Use as 00 conditions) | |
| K3 | Not available | – | – | Not available (Use as 00 conditions) | |
| K4 | Not available | – | – | Not available (Use as 00 conditions) | |

| Elem. | Optional function | Individual setting | Settings | Setting conditions | Description |
|---|---|---|---|---|---|
| K5 | Human sensor detection level<br>Models<br>RCD-FSN3<br>RCIM-FSN4(E)<br>RCI-FSN4<br>RPC-FSN3 | – | 00 | Standard | |
| | | | 01 | High | |
| | | | 02 | Low | |
| K6 | Selection of available operation modes upon selection of either remote control thermo or remote sensor<br>Models<br>RCD-FSN3<br>RCIM-FSN4(E) | O | 00 | ALL | |
| | | | 01 | COOL/DRY | |
| | | | 02 | HEAT | |
| | | | 03 | ALL | |

## NOTE

*When a particular model is not specified, the Optional functions described in the above table are suitable for all the models in this manual.*

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 restarted 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.*

### 6.2.2 Description of the optional remote control functions (PC-ARFPE)

#### 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.

**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 19ºC.*

### 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

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.

**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 |

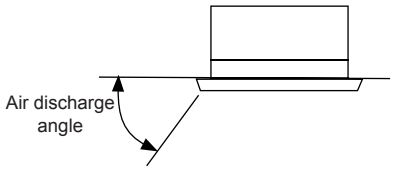
### CC – Not available

### 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 <11ºC maintained for 3 minutes.
- Thermostat on conditions (thermostat switched ON when the discharge air temperature is low):
  - Indoor discharge air temperature >13ºC.
  - 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 – Only for Econofresh kit

This function is used to set the fresh outdoor air damper minimum opening selection.

### 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. |

### E1 – Econofresh cooling mode

This function allows to the outdoor air damper to be opened.

### E2 – KPI 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.

### E2 – Econofresh enthalpy sensor

This function selects the enthalpy sensor input.

### 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 thermo off.

### E9 – Not available

### EA – Not available

### Eb – Fan operation control at cooling 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.

### EF – Automatic fan speed control - (Corresponding to Hi2)

This function is used to increase the maximum fan speed to “High2” condition when the max speed remains on “high” by the EE function

### F1 – Automatic OFF timer setting

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.*

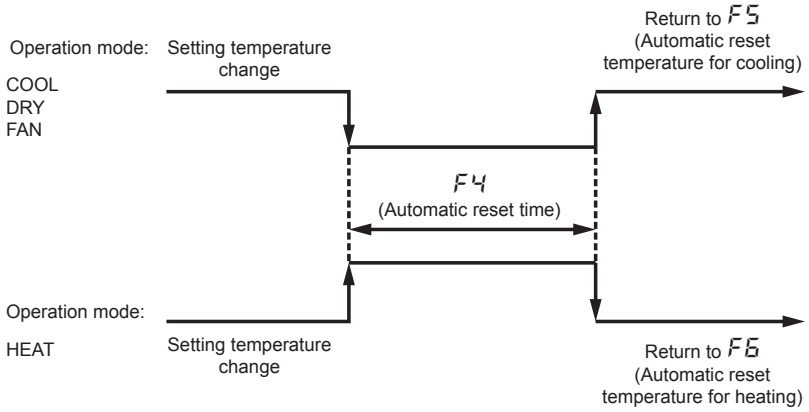
### F2 – Remote control main-sub setting

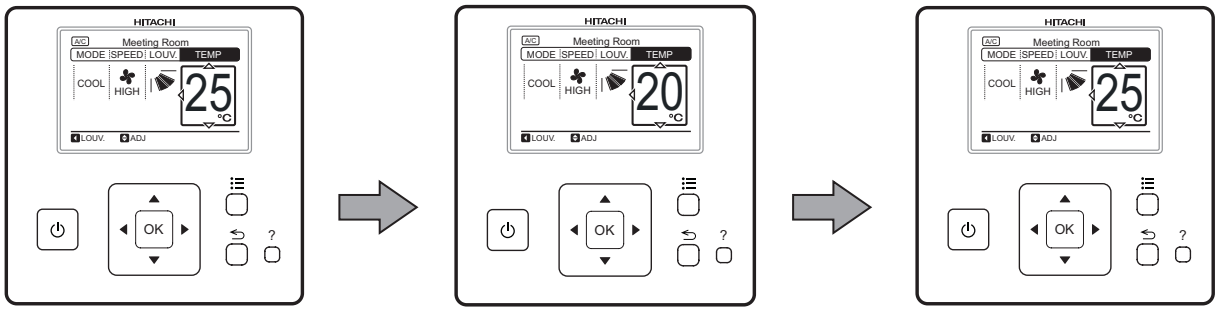
This function is useful when configuring two remote controls for the same installation: one in main mode and the other in secondary mode.

### F3 – Automatic reset of setting temperature

This function is used to economize the operation. When this function is activated, in the case that the set temperature has not been changed for the time period configured by F4 (Automatic reset time), the set temperature automatically returns to F5 (Automatic reset temperature for Cooling) or F6 (Automatic reset temperature for heating).

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.




The setting temperature is changed from 25ºC to 20ºC by remote control switch.

Cooling operation at 20ºC is performed temporally.

If no operation is done for a defined period, the setting temperature returns to 25ºC automatically.

### F4 – Automatic reset time

This function is used to set the automatic reset time with the temperature setting.

| Setting condition | Automatic reset time of setting temperature |
|---|---|
| 00 | 30 minutes (Factory setting) |
| 01 | 15 minutes |
| 02 | 60 minutes |
| 03 | 90 minutes |

### F5 – Automatic reset temperature for cooling

This function is used to set automatic temperature reset in FAN/COOL/DRY modes.

| Setting condition | Setting temperature for automatic reset |
|---|---|
| 19 | 19ºC |
| 20 | 20ºC |
| ⋮ | ⋮ |
| 25 | 25ºC (Factory setting) |
| ⋮ | ⋮ |
| 29 | 29ºC |
| 30 | 30ºC |

### F6 – Automatic reset temperature for heating

This function is used to set automatic temperature reset in HEAT mode.

| Setting condition | Setting temperature for automatic reset |
|---|---|
| 17 | 17ºC |
| 18 | 18ºC |
| ⋮ | ⋮ |
| 21 | 21ºC (Factory setting) |
| ⋮ | ⋮ |
| 29 | 29ºC |
| 30 | 30ºC |

### F7 – Operation stoppage prevention by remote control switch operational error

**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.

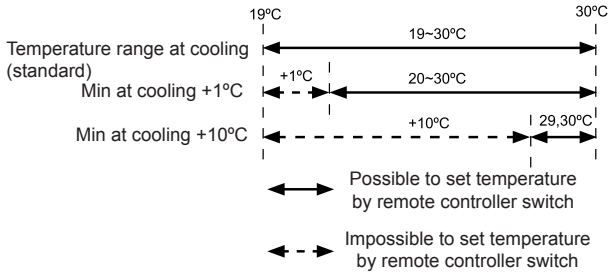
### Fb – Lock function for swing louver operation

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.

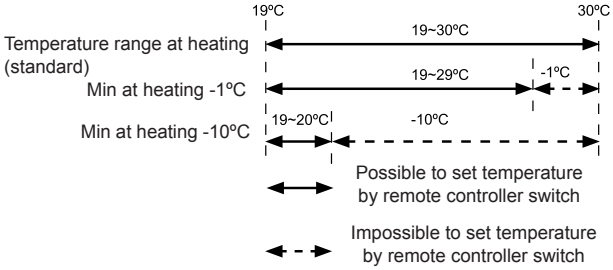
An example is shown in the following figure:




### 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

This function is used to lock timer activation.

### H1 – Maintenance alarms

This function is used to display or hide maintenance alarms.

### H2 – Automatic control indication

This function is used to display or hide the automatic control indication.

### H3 – Operation mode change restriction

This function is used to configure restrictions to the HEAT mode.

### H4 – Operation modes for the ventilation unit with energy recovery

This function is only available for the ventilation unit with energy / heat recovery.

### J3 – Run indicator color

This function is used to set the run indicator colour.

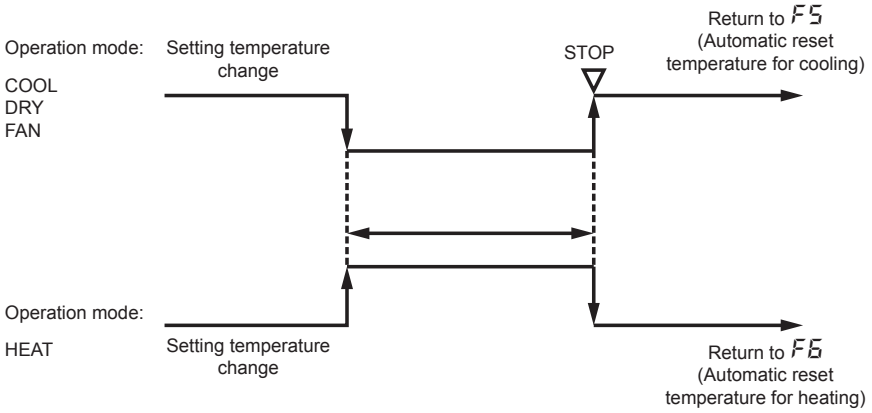
| Setting conditions | Colour |
|---|---|
| 00 | Green |
| 01 | Red |

### J8 – Eco-operation

This function is used to optimize the setting of temperature and provide energy saving.

When the setting temperature is changed during the air conditioning operation and while the operation is started/stopped by RUN/STOP on the remote control switch, the set temperature automatically returns to “Automatic Reset Temperature for Cooling/Heating (F5/F6)” (as shown in the next illustration).

However, the setting temperature is not automatically reset in the case that “Automatic COOL/HEAT Operation” mode, or “Prohibiting Operation by Remote Control Switch” is set by the centralized controller.




### P5 – Motion sensor detection level

This function is used to determine the amount of human activity depending on the reaction rate.

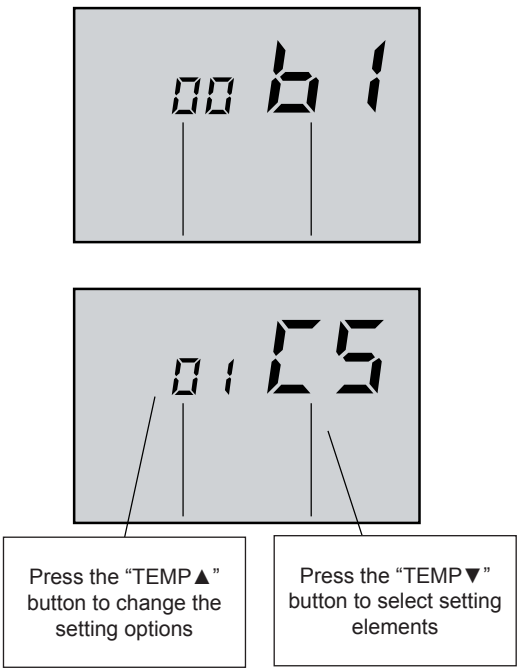
When “High” is set, the detection level becomes more sensitive. When “Low” is set the sensor becomes lower.

| | Setting conditions | | |
|---|---|---|---|
| | 00 (factory setting) | 01 | 02 |
| Human activity | Standard | High sensitive | Low sensitive |
| Large | 30% ≤ Reaction rate | 20% ≤ Reaction rate | 40% ≤ Reaction rate |
| Small | 3% < Reaction rate < 30% | 3% < Reaction rate < 20% | 3% < Reaction rate < 40% |
| Not available | Reaction rate ≤ 3% | Reaction rate ≤ 3% | Reaction rate ≤ 3% |

### 6.2.3 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 +4ºC) |
| | | 01: Cancelled (temperature setting) |
| | | 02: Temperature setting +2ºC *(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 +1ºC - +10ºC |
| Fd | Maximum heating temperature setting (*4) | 00: Normal temperature range |
| | | 01-10: Maximum heating limit -1ºC - 10ºC |
| H1 | Maintenance alarm | 00: Display |
| | | 01: Hide |
| H2 | Non-automatic control indication | 00: Display |
| | | 01: Hide |
| H3 | Operating mode change restriction (*5) | 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.

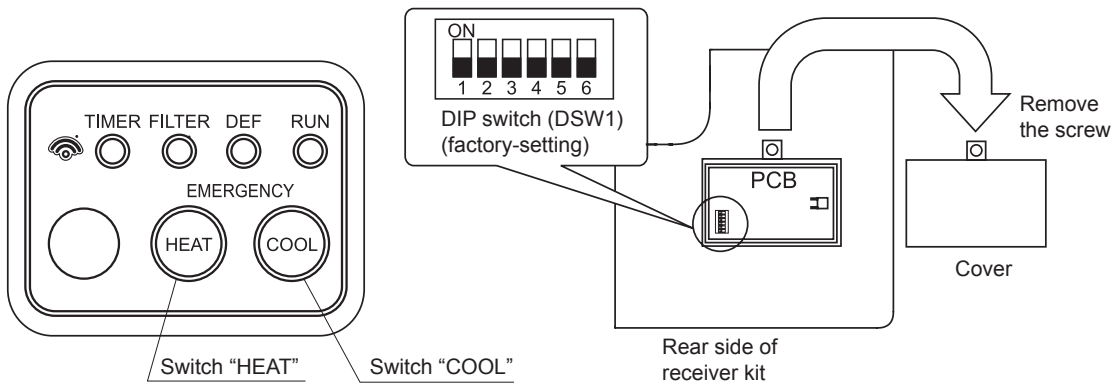
*(5): Setting 01 is only available when a remote control is used. Do not use this setting when two controls (main/secondary) are used.

**NOTE**

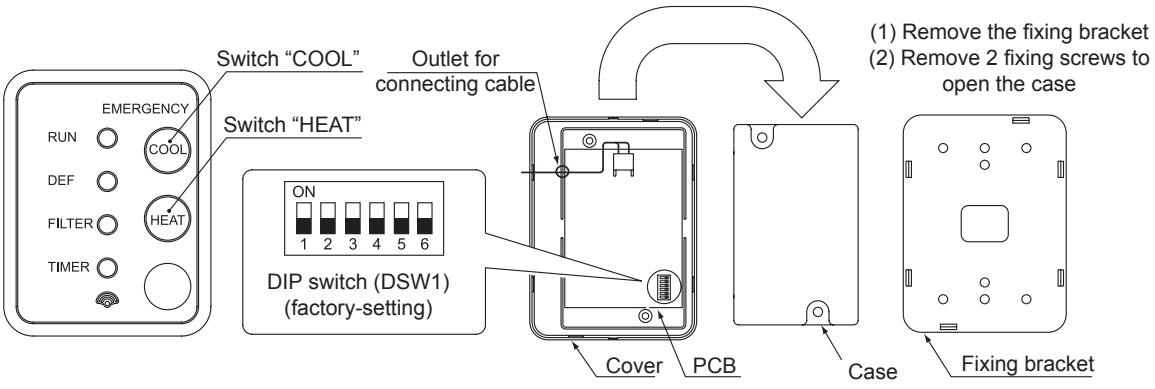
- *When several indoor units are connected, the same settings apply to them all.*
- *To change the settings, wait for over 3 minutes after switching on the power supply.*
- *Some indoor and outdoor units do not accept certain settings or do not include functions corresponding to the enabled settings. Check the available settings beforehand.*

### 6.2.4 Settings on wireless remote controls

**PC-ALH3**



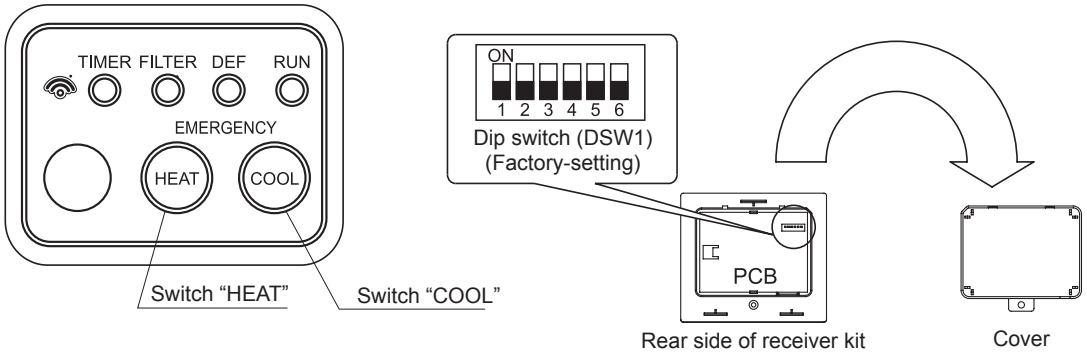

**PC-ALHZF**




#### Secondary receiver setting

To enable this setting, enable terminal 1 on the DIP switch.

**PC-ALHP1**



# 6.3 Complementary systems

## 6.3.1 KPI and DX-Interface

### Optional functions

The following optional functions as shown in next table are available by setting of PC-ARFPE. Contact your distributor or dealer of HITACHI for the detailed information.

| Where | Code | Function | DX | KPI-E4E | KPI-X4E | Setting Status | Remarks |
|---|---|---|---|---|---|---|---|
| RCS setting | b3 | Compressor 3 min off guard | O | - | O | 00: Invalid<br>01: Valid | |
| | b4 | Filter sign | O | O | O | 00: Indoor setting<br>01: 100h<br>02: 1200h<br>03: 2500h<br>04: no indication | |
| | b5 | Run mode fix | O | - | O | 00: Normal<br>01: Fix | |
| | b6 | Setting temperature fix | O | O | O | 00: Normal<br>01: Fix | |
| | b7 | Cooling only fix | O | - | O | 00: Normal<br>01: Fix | |
| | b8 | Auto Cool/Heat | O | - | O | 00: Invalid<br>01: Valid | |
| | b9 | Air flow fix (Fixed air fan speed) | O | - | O | 00: Normal<br>01: Fix | |
| | C1 | Electrical heater signal | - | O | O | 00: Disabled<br>01: Enabled | |
| | C3 | Fan stoppage delay | O | O | O | 00: Disabled (Default)<br>01: 60 minutes | |
| | C5 | Static pressure selection | - | O | O | 00: Standard<br>01: High pressure<br>02: Low pressure | |
| | C6 | Fan speed up when heating thermo OFF | O | - | - | 00: Invalid<br>01: Valid | |
| | C7 | CO2 sensor enabled | - | O | O | 00: Disabled (Default)<br>01: Enabled | |
| | C8 | Thermistor selection | O | - | - | 00: Inlet<br>01: Remote controller<br>02: inlet+Remote controller/2 | |
| | Cb | Forced stop logic selection | O | O | O | 00: A contact<br>01: B contact | |
| | CC | High ventilation speed | O | O | O | 00: Disabled<br>01: Enabled | |
| | d1 | Power ON/OFF 1 | O | O | O | 00: Invalid<br>01: Valid | |
| | d3 | Power ON/OFF 2 | O | O | O | 00: Invalid<br>01: Valid | |
| | E1 | Ventilation mode | - | O | - | 00: Automatic ventilation<br>01: Heat exchanger ventilation<br>02: Bypass ventilation | Bypass not available for KPI-Active |
| | | "A" offset for Thermo OFF in control by Outlet for DX-Kit | O | - | - | 00: 0<br>01: 2<br>02: 4 | |
| | E2 | Air Volume increasing | - | O | O | 00: Not activated<br>01: Activated | This function is used to make higher the room pressure than the surrounded rooms. One of the fans increases its speed while the other runs according to the remote controller.<br>Hi/Me/Lo --> Hi/Hi/Me |
| | E3 | E2 Fan mode selection | - | O | O | 00: Activated for supply fan<br>01: Activated for exhaust fan | |

| Where | Code | Function | DX | KPI-E4E | KPI-X4E | Setting Status | Remarks |
|---|---|---|---|---|---|---|---|
| RCS setting | E4 | Precooling / Preheating period | - | O | O | 00: 0 minutes<br>01: 30 minutes<br>02: 60 minutes | The unit starting is delayed a certain time while A/C system starts working. |
| | E5 | High ventilation after switch ON | O | O | O | 00: 0 minutes<br>01: 60 minutes | |
| PCB1 & RCS | i1 | CN3 1#-2# input (*1)(*2) | O | O | O | 00:No setting<br>01:Room Thermo (Cooling)<br>02:Room Thermo (Heat)<br>03:Remote ON/OFF 1 (Contact)<br>04: Remote ON/OFF 2 (Pulse)<br>05:Remote ON/OFF2 (Stoppage/ Pulse)<br>06:Forced Stop<br>07: Remote H/C changeover | When Thermo ON/OFF input enabled (PCB2-DSW16=ON), i1 optional signal is not available |
| | i2 | CN3 2#-3# input | O | O | O | | |
| | o1 | CN7 1#-2# output | O | O | O | 00:No setting<br>01:Run<br>02:Alarm<br>03:Cooling<br>04:Thermo ON<br>05:Heating<br>06:Defrost | |
| | o2 | CN7 1#-3# output | O | O | O | | |
| | o3 | CN8 1#-2# output | O | O | O | | |
| PCB1 (PSW) | Ct | CO2 sensor type | O | O | O | 00: ON/OFF CO2 signal<br>01: Activated 4-20mA signal<br>02: Activated 0-10V signal | |
| | | S1: Set minimum | O | O | O | Default (00: 4 / 01: 0)<br>Range (00:4~S2 / 01: 0~S2) | |
| | | S2: Set maximum | O | O | O | Default (00: 20 / 01: 10)<br>Range (00: S1~20 / 01: S1~10) | |
| | dF | Defrost Fan | O | - | O | 00: Fan Low operation (Default)<br>01: Fan kept operation<br>02: Fan stopped operation | |

**NOTE**

- *(*1): CO2 sensor signal must be an ON/OFF signal. CO2 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).*
- *(*2): When using this option i1 standard functions become deactivated i2 input signal is not affected.*

### 6.3.1.1 DX-Interface

#### Main optional functions on DX-Interface series 2

| Optional function | Explanation |
|---|---|
| EC Fan or Tap Fan | The control of tap fans and EC fans is possible from the DX-Interface series 2. |
| 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 2 - Input / Output signals

| Input signal | Available from DX-Interface series 2 |
|---|---|
| 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 | Function 2 - turns unit ON.(by pulse). |
| 5 | Function 2 - 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 2 |
|---|---|
| 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 2 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.<br>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.<br>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.<br>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 (0V or 4mA) 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.<br>Setting note: No additional setting is required once the demand control setting has been set as Duty control. |

## 6.3.2 Econofresh Kit

### ◆ Available ports

The system has three optional input signals programmed into the PCB using connector CN3 on the RPI unit and using the remote control. Connector CN3 has two ports for configuring the optional input signals of the Econofresh kit.

The outdoor cooling function E1 requires no CN3 connector setting.

**NOTE**

*When the RPI unit DSW6 is set for use of the Econofresh kit, CN3 connectors 1 and 2 are locked on the RPI unit PCB.*

### ◆ Description of optional input signals

#### Enthalpy sensor

On-screen display: E2.

The signal opens and closes the air inlet valves and the outlet damper, mixing the outdoor air and the return air of the Econofresh kit. This function is based on the air quality parameters that provide precise control of the air quality.

Connect the cables as indicated in point *“6.1.1 Available ports”*. Only CN3 contacts 1 and 2 can be connected.

The signal has the following control logic:

| Connector | Contact number | X1 | Damper valve |
|---|---|---|---|
| CN3 | 1, 2 | ON | — |
| | | OFF | Enabled |

### $CO_2$ sensor

On-screen display: E4.

This signal controls the inlet of outdoor air according to the concentration of $CO_2$ inside the room.

Connect the cables as indicated in point *"6.1.1 Available ports"*. Only CN3 contacts 1 and 2 can be connected.

The signal has the following control logic:

| Connector | Contact number | X1 | Damper valve |
|---|---|---|---|
| CN3 | 1, 2 | ON | — |
| | | OFF | Enabled |

Compatibilities between optional signals

The following table shows the compatibility between the different optional signals:

| | PC-ARPFE optional functions | Room thermostat | Remote control thermistor | Remote thermistor | Wireless remote control | Outdoor cooling mode | Enthalpy sensor | $CO_2$ sensor |
|---|---|---|---|---|---|---|---|---|
| Room thermostat | – | – | – | – | – | – | – | – |
| Remote control thermistor | C8 | – | – | – | – | O | O | O |
| Remote thermistor | – | – | – | – | – | – | – | – |
| Wireless remote control | – | – | – | – | – | O | O | O |
| Outdoor cooling mode | E1 | – | O | – | O | – | – | – |
| Enthalpy sensor | E2 | – | O | – | O | – | – | – |
| $CO_2$ sensor | E4 | – | O | – | O | – | – | – |

Not available: –
Available: O

# 7. Commissioning

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## 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:*
  - *Do not touch any component in the discharge gas area. The compressor chamber and the piping are at temperatures of over 90ºC. They may cause burns.*
  - *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 DB 21.5 ºC and higher.
  b. Indoor WB 16 ºC and higher.
  c. Outdoor DB 0 ºC and higher.
- Heating operation
  a. Indoor DB27 ºC 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.

### 7.1.3 PC-ARFPE remote control

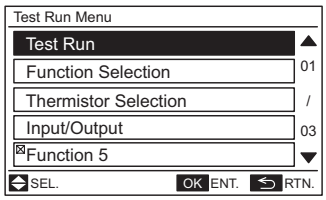
(1) Turn ON the power supply for all the indoor units.

(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.

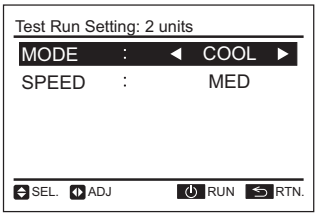
(3) Press and hold “☰” (menu) and “⮌” (return) simultaneously for at least 3 seconds.

**Test run screen**

a. The test run menu will be displayed.

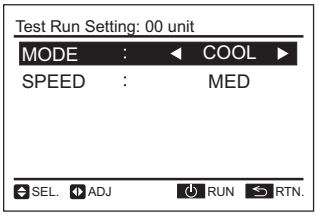



b. Select “Test Run” and press “OK”. The test run settings will be displayed.

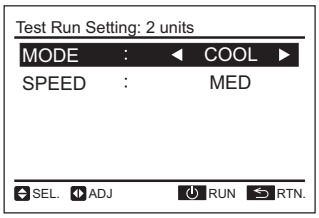



**NOTE**

*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”.



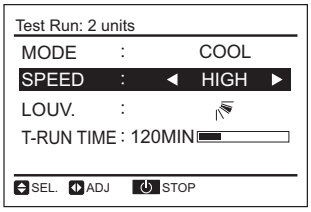

a. If the indicated number is not equal to the actual connected number of indoor unit, the auto-address function is not performed correctly due to incorrect wiring, the electric noise or etc. Turn OFF the power supply and correct the wiring after checking the following points; (Do not repeat turning ON and OFF within 10 seconds.)

- Power supply for indoor unit is not turned ON or incorrect wiring.
- Incorrect connection 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.

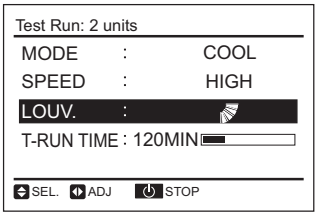
b. Press "⏻" (run/stop) to start the test run.

c. Press "△ ▽ ◁ ▷" and set each item.

(5) Press "⏻" (run/stop). Start the test run when indicating the air flow volume "HIGH" (default setting) and light the operation lamp. At this time, 2-hour OFF timer will be set automatically.



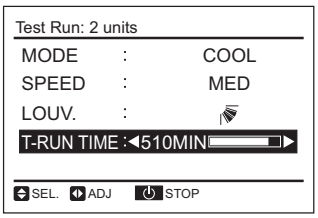

(6) Press "△" or "▽", select "LOUV." and select "" (auto swing) by pressing "◁" or "▷". The auto swing operation will be started. Check the operating sound at the louvers. If abnormal sound is not generated, press "◁" or "▷" again to stop the auto swing operation.




(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.

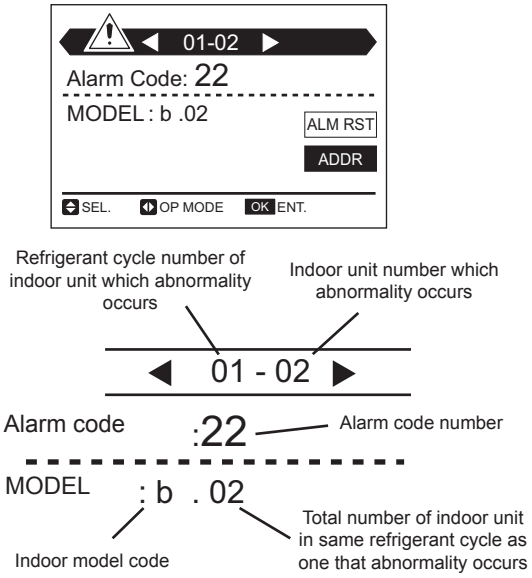
(9) To finish the test run, press "⏻" (run/stop) again or pass over the set test run time. When changing the test run time, press "△" or "▽" to select "T-RUN TIME". Then, set the test run time (30 to 600 minutes) by pressing "◁" or "▷"




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-ARFPE 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 *Alarm Code* and perform for troubleshooting.

Consult to authorized service engineers if abnormality can not be recovered.



## 7.2 Test procedure using the wireless remote control

### 7.2.1 PC-AWR wireless remote control

**⚠ CAUTION**

*Test running by the controller can not be performed in case that the wired remote control switch is used together; in case that multiple units are operated simultaneously (SET-FREE and UTOPIA series). In such cases, perform the test running by the wired remote control switch.*

1 Perform the test run after the installation work is completed.

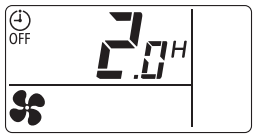
a. Set the batteries for the controller.

b. Turn ON the power supply for the indoor and outdoor units.

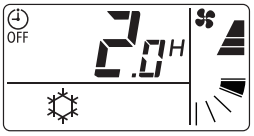
c. "((•))" lamp (yellow) on the receiver of the indoor unit flashes (0.25 seconds ON ◄► 0.25 seconds OFF), and then turns OFF. While the lamp is flashing, the unit will not operate because it is initializing.

2 Set the test run mode by pressing "LOUVER" and "ON TIMER" switch simultaneously for more than 3 seconds. The LCD should be as shown in the figure on the below.

3 Set the operation mode by pressing the "MODE" switch.



Test run mode is under suspension



Test run mode is under operating

4 Operate the test run by pointing the transmitter towards the receiver of the indoor unit and press the "⏻ On" switch. When the commands are received by the indoor unit, the "((•))" lamp (yellow) of the receiver will come on briefly. Check the commands are received well and the mode selected 3) is set correctly.

In the test run mode, the red lamp (RUN) of the receiver is turned ON and the green lamp (TIMER) flashes (0.5 seconds ON ◄► 0.5 seconds OFF) (*2). And then set off timer for 2 hours.

**NOTE**

- *In the case that the "((•))" lamp (yellow) does not turn ON, the controls may not have reached the receiver. Send the commands again.*
- *(*2) In the case of RPK model, "TIMER" lamp is turned ON without flashing.*

5 Adjust the angle of the air louver as follows.

Check the commands are received correctly using the lamp and buzzer of the receiver kit. Use the wireless remote controller pointing the transmitter toward the receiver.

**⚠ CAUTION**

*The air louver has a mechanism for the auto-swing function. Do not move the louver by hand forcefully.*

a. Select the FAN mode by pressing the 'MODE' switch.

b. Set the louver angle by pressing the 'LOUVER' switch. The louver direction is changed as follows. (For heating and fan operation).

LCD Indication



6 Stop the test run

a. Test run is stopped after 2 hours automatically.

b. Test run is stopped by pressing " ○ Off" switch.

After Test Run is finished, check that the red lamp (RUN) and the green lamp (TIMER) are turned OFF.

## 7.3 Test run check list

| | |
|---|---|
| MODEL: | |
| SERIAL NUMBER | |
| 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 _____ºC | Nº 2 | DB/WB _____ºC | Nº 3 | DB/WB _____ºC | Nº 4 | DB/WB _____ºC |
| Outlet: | | DB/WB _____ºC | | DB/WB _____ºC | | DB/WB _____ºC | | DB/WB _____ºC |
| Inlet: | Nº 5 | DB/WB _____ºC | Nº 6 | DB/WB _____ºC | Nº 7 | DB/WB _____ºC | Nº 8 | DB/WB _____ºC |
| Outlet: | | DB/WB _____ºC | | DB/WB _____ºC | | DB/WB _____ºC | | DB/WB _____ºC |

4 Check the outside temperature:

| | |
|---|---|
| Inlet | DB/WB _____ºC |
| Outlet | DB/WB _____ºC |

5 Check the temperature of the refrigerant: Operating mode (cooling or heating).

| | |
|---|---|
| Discharge gas temperature | Td = _____ºC |
| Liquid pipe temperature | Te = _____ºC |

6 Check the pressure:

| | |
|---|---|
| Discharge pressure | Pd = _____kg/cm$^2$G |
| Suction pressure | Ps = kg/cm$^2$G |

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. Electrical check of main parts

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## 8.1 Thermistor

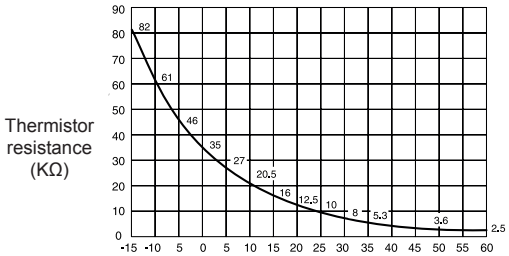
Check that the thermistors are connected to the PCB inlet and, if not, connect them.

Use a multimeter to check that the thermistor resistances are between 240 Ω and 840 kΩ. Otherwise, replace any defective thermistors.

**NOTE**

*This figure is applicable to the following thermistors.*

*1. Inlet Air Thermistor (THM1), 2. Liquid Pipe Thermistor (Freeze Protection) (THM3), 3. Gas Pipe Thermistor (THM5), 4. Outlet Air Thermistor (THM2)*




**Thermistor characteristics**

## 8.2 Electronic expansion valve

1 Check that the voltage of the valve ranges between 12Vdc±1.2V.

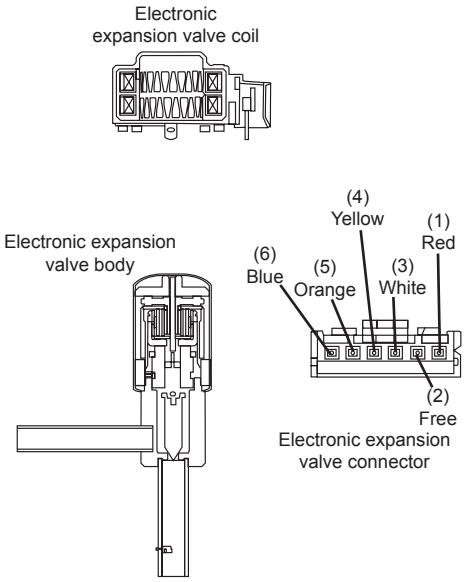
2 Use a multimeter to check the coil resistance (per phase). This ranges between 100 Ω±10% at an ambient temperature of 20°.

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.

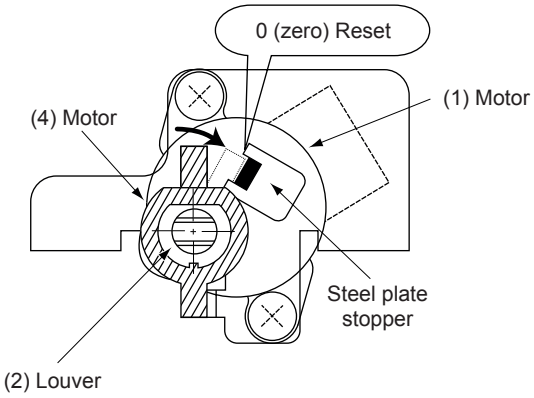


# 8.3 Automatic louver mechanism

## 8.3.1 RCI 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.



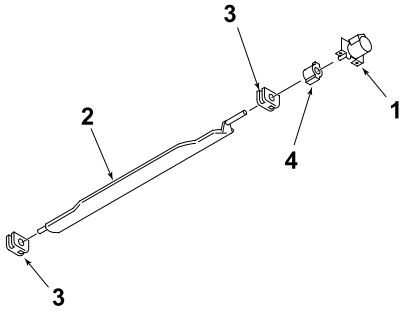

Remove the optional air panel.

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 |



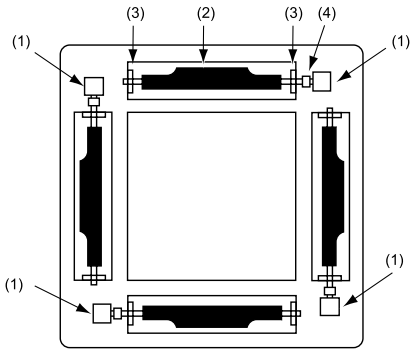

Check that the motor connectors are correctly connected to the power supply.

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.

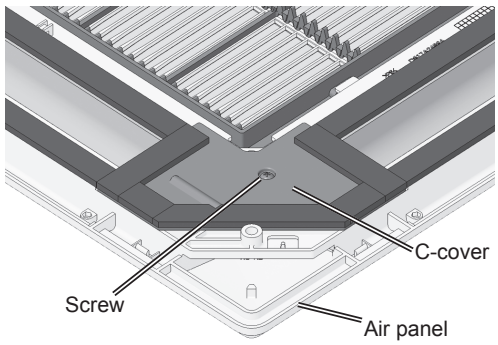
### 8.3.2 RCIM indoor units

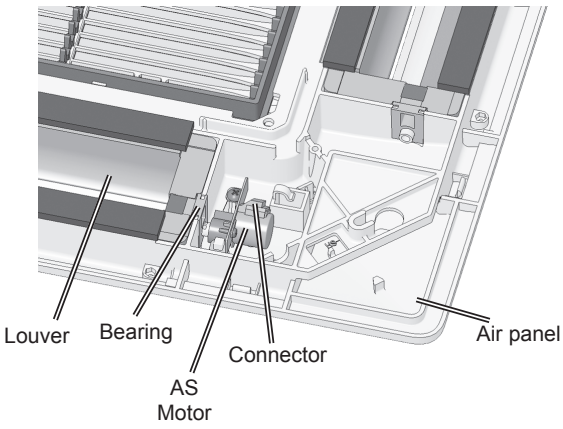
Stop the automatic louver:

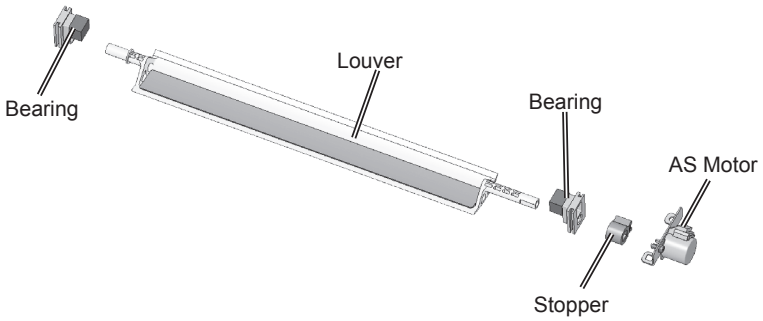
1 Press AUTO LOUVER on the remote control while the automatic louver is operating.
2 The crank touches the end of the motor securing plate and the louver returns to position 0.
3 The motor power supply switches off when the louver is at the set position.
4 The louver stops at the set position.

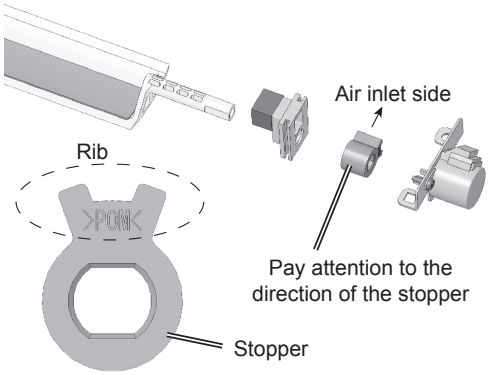
Removing the auto louver motors and the louver:

1 Remove the air panel:
   a. Remove the auto swing motor connector (CN17) from PCB.
   b. Remove the corner pocket covers.
2 Remove the fixing screw for C-cover and remove the C-cover.
3 Remove the fixing screw for AS Motor from the air panel. Then remove the louver, louver bearing and AS motor.
4 Remove the AS motor, stopper and bearing from the louver.
5 Disconnect the connector for the AS motor. Press the catch to disconnect the connector to avoid breakage.



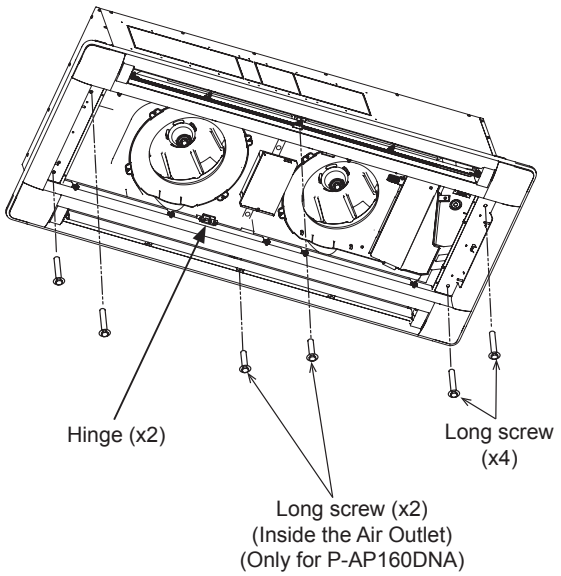
### 8.3.3 RCD indoor units

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:

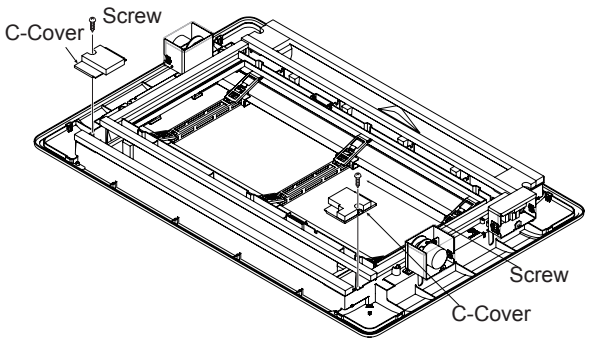
a. Remove the auto louver motor connector (CN17) from PCB.
b. Hang the air panel from the indoor unit by hooking the hinges and remove the long screws (4 for P-AP90DNA, 6 for P-AP160DNA) for air panel.
c. Then remove the air panel by unhooking the hinges (x2) from the indoor unit drain pan.



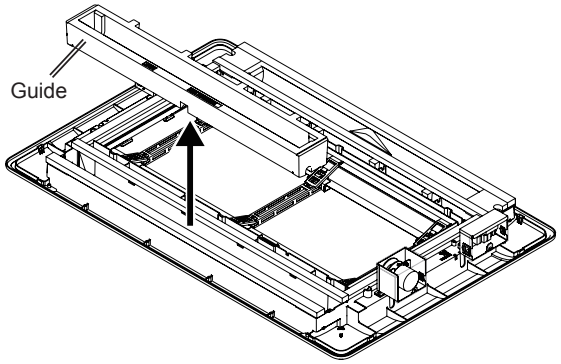

Remove the automatic louver motors and louver.

Check for dust, dirt, damp and cracks on the parts.

1 Remove the fixing screw for C-cover and remove the C-cover.

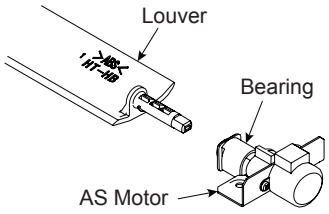


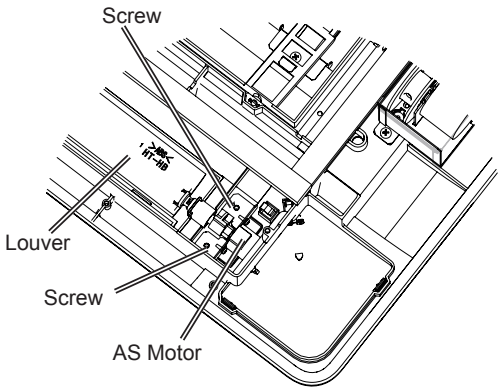

2 Pull the guide upwards and remove it.



3 Disconnect the connector from the AS motor.

4 Remove two fixing screws for AS motor from the air panel. Then remove the louver and AS motor form the air panel.




5 Remove the louver from the bearing for AS motor.

### 8.3.4 RPC-FSN3E indoor units

Stop the automatic louver:

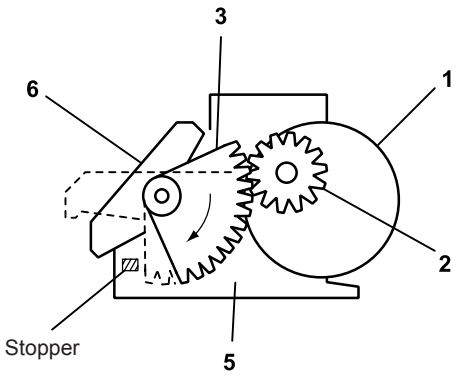
1 Press AUTO LOUVER on the remote control while the automatic louver is operating.

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 12v.

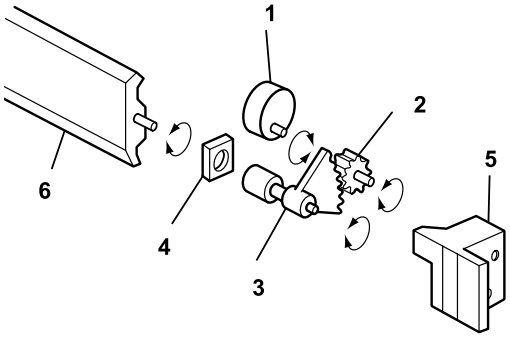
Start the panels.

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.



# 9. Servicing

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# 9.1 RCI-(1.0-6.0)FSN4 - 4-way cassette

## 9.1.1 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.

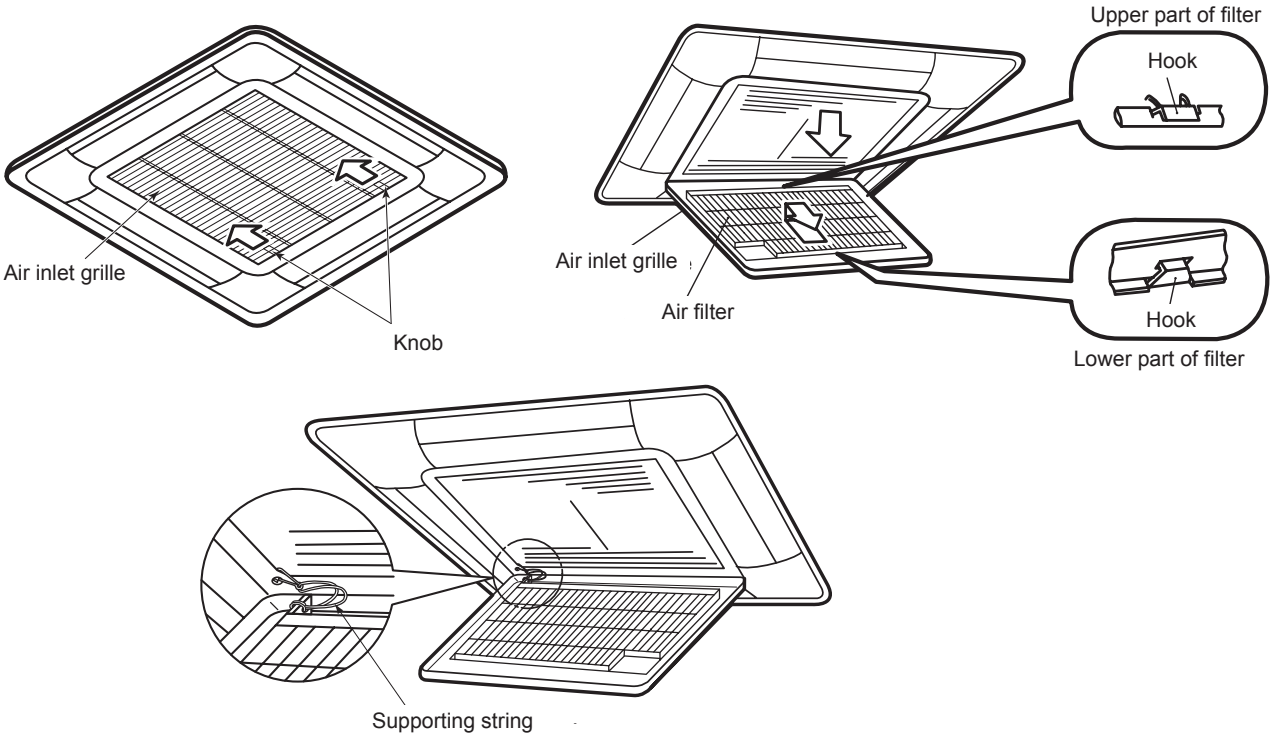
2 Hold the lower side of the air inlet grille keeping it inclined. Remove the hooks of air filter from the air inlet grille and remove the air filter.

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.*



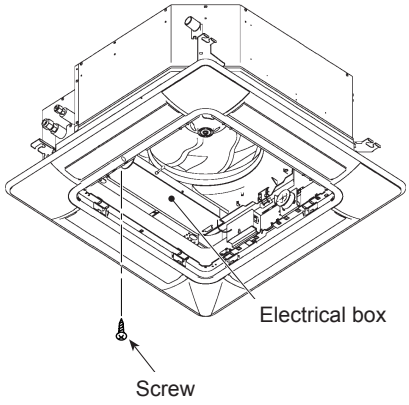

## 9.1.2 Removing Electrical Box Cover

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.*



### 9.1.3 Removing Optional Air Panel

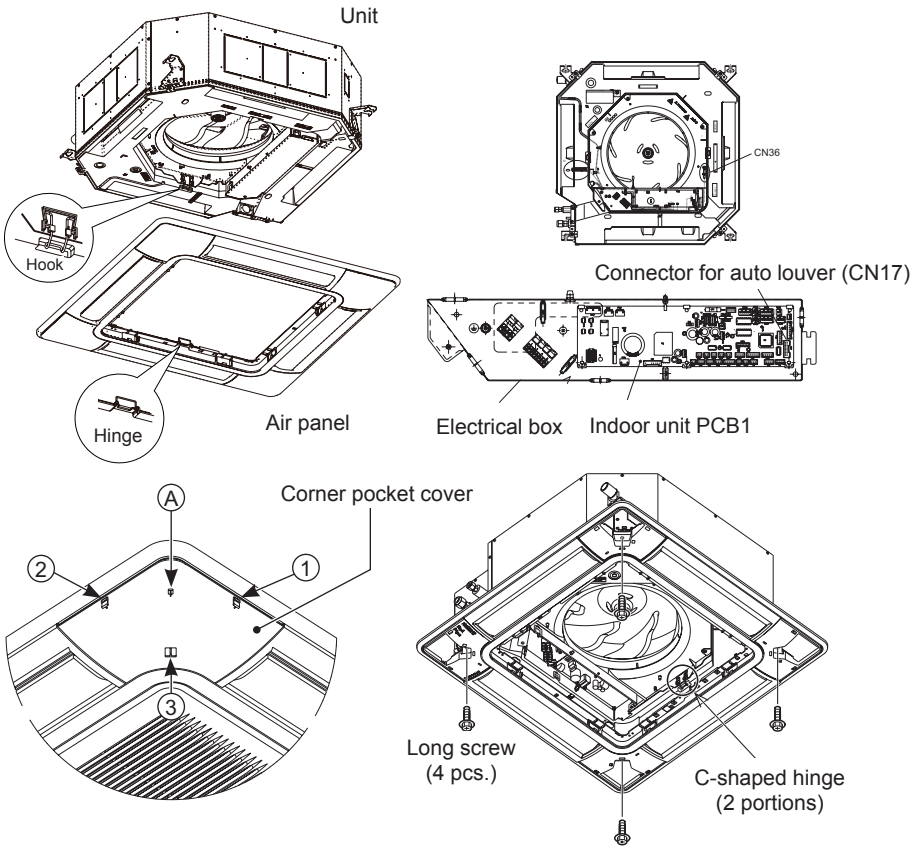
1 Open the air inlet grille. Remove the connector (CN36) at the air panel from the connector for auto louver (CN17) on the indoor unit PCB1.

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.



### 9.1.4 Removing turbo fan and fan motor

1 Remove the air inlet grille and the electrical box cover according to the item *"9.1.1 Removing Air Filter and Air Inlet Grille"* and the item *"9.1.2 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.

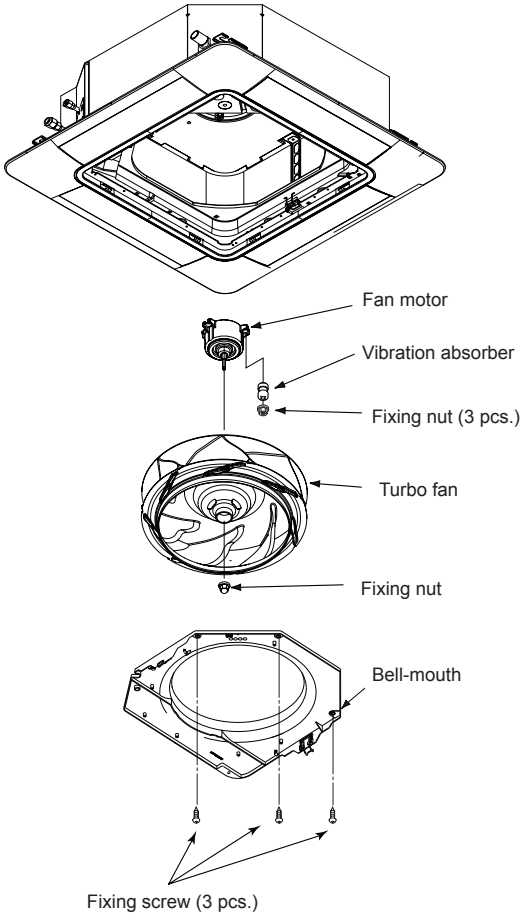
3 Removing Bell-Mouth. Remove three (3) fixing screws ①, ② and ③ for bell-mouth fixed to the drain pan, and remove the bell-mouth.

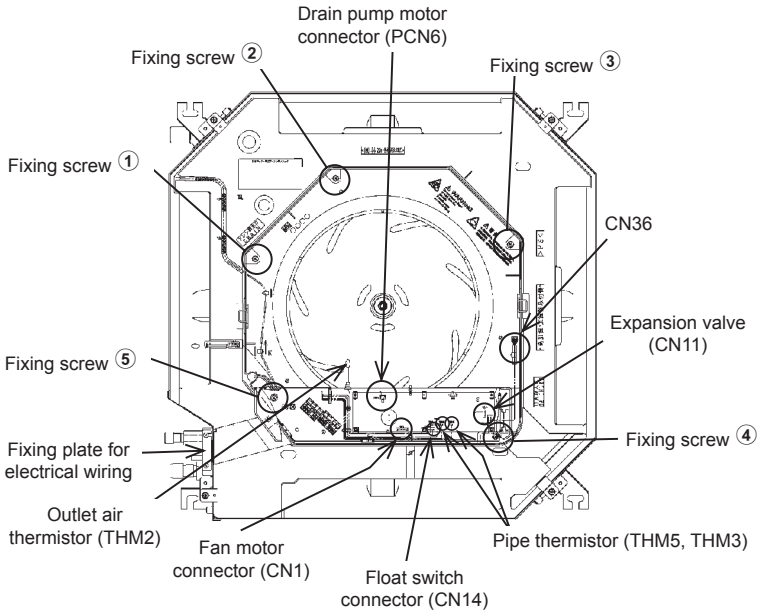
4 Removing Turbo Fan and Fan Motor

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**

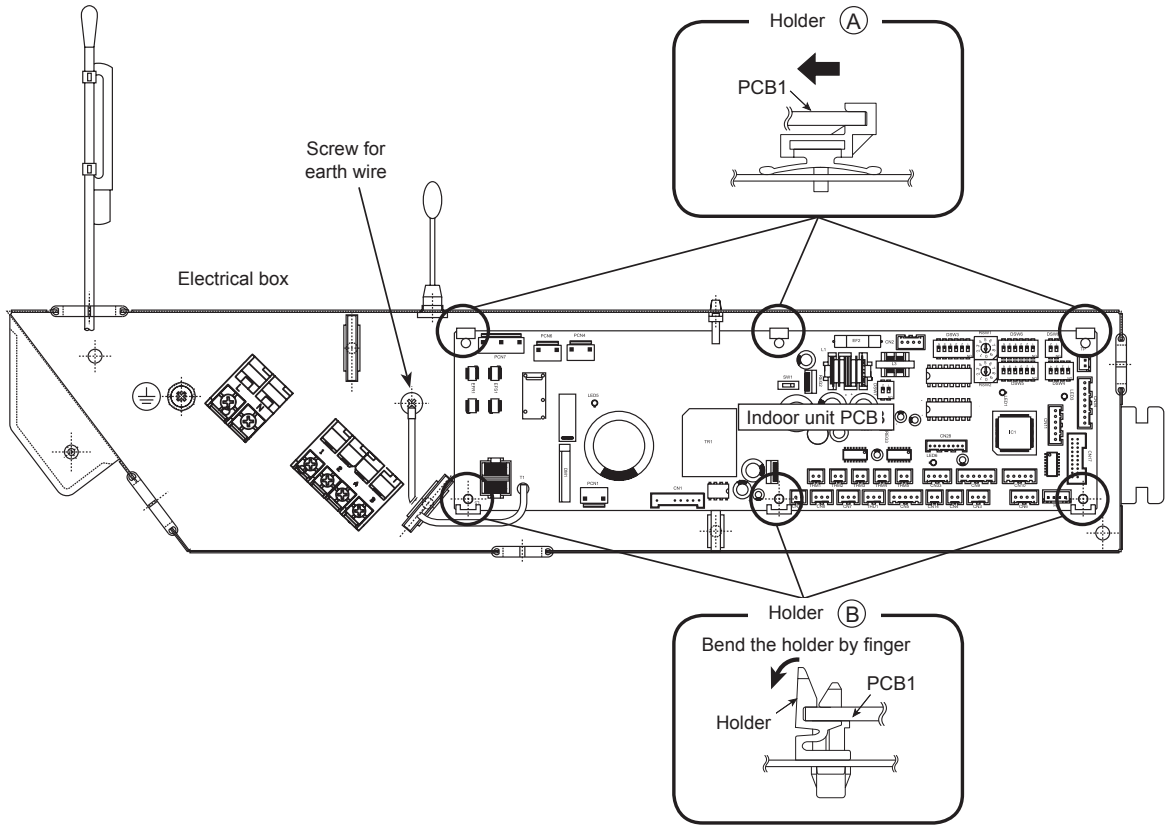
*When reassembling, temporally fix the fixing screws (① to ⑤), and align the centre of turbo fan and bell-mouth to match. Tighten securely after keeping the clearance between the turbo fan and the bell-mouth evenly. In addition, securely fix lead wires for fan motor, 2 pipe thermistors and expansion valve by the cord clamp attaching at the partition plate.*



### 9.1.5 Removing Printed Circuit Board (PCB1)

1 Remove the air inlet grille according to the item *"9.1.1 Removing Air Filter and Air Inlet Grille"*.
2 Remove the electrical box according to the item *"9.1.2 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.*

### 9.1.6 Removing Drain Pan

1 Remove the air panel according to the item *"9.1.3 Removing Optional Air Panel"*.

2 Remove the electrical box cover according to the item *"9.1.2 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.

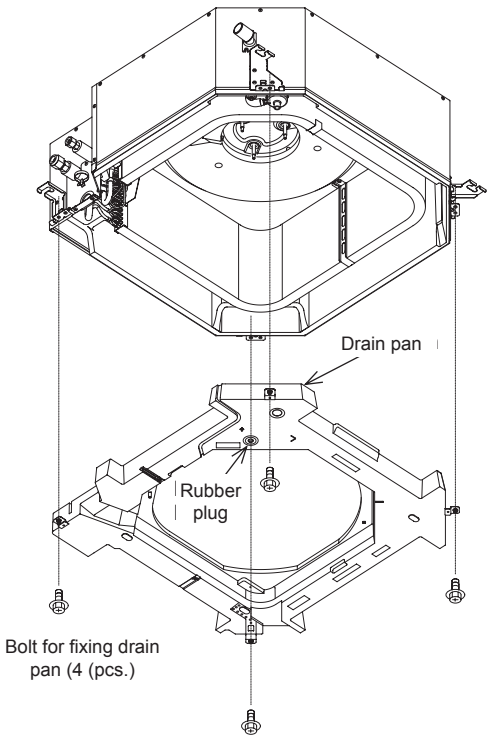
3 Remove the electrical box and the bell-mouth according to the item *"9.1.4 Removing turbo fan and fan motor"*.

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.*

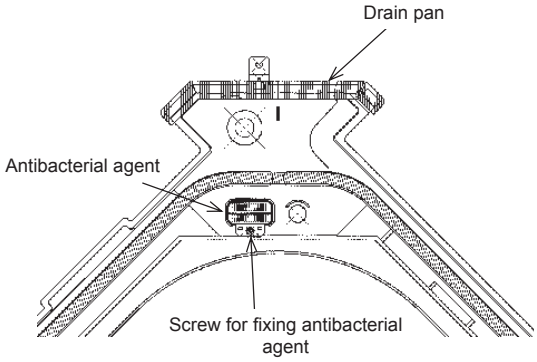
### 9.1.7 Removing Antibacterial Agent

1 Remove the air panel according to the item *"9.1.3 Removing Optional Air Panel"*.

2 Remove the electrical box cover according to the item *"9.1.2 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 *"9.1.6 Removing Drain Pan"*.

4 Remove the antibacterial agent (cased) fixed inside the drain pan by screw.

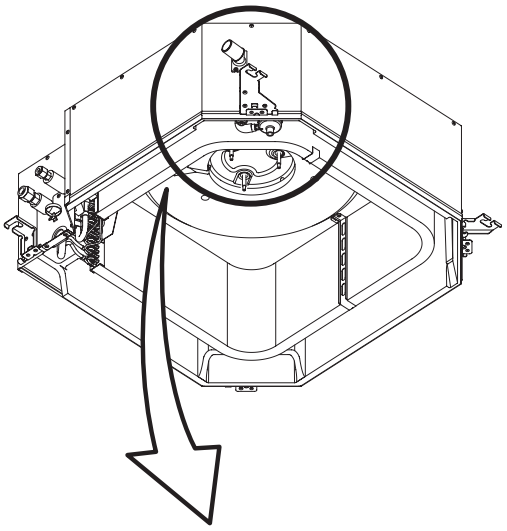


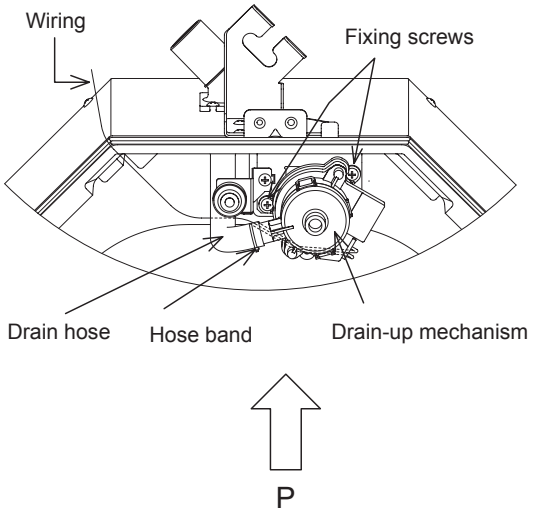
### 9.1.8 Removing Drain-Up Mechanism

1 Remove the drain pan according to the item *"9.1.6 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.

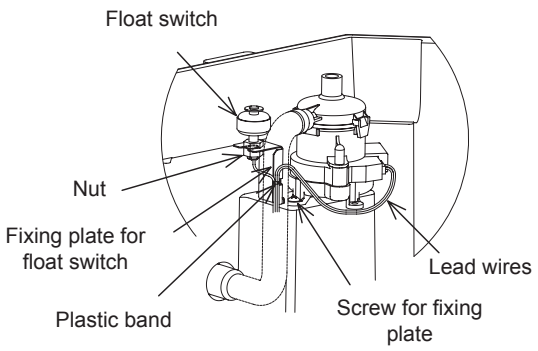
**NOTE**

*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.*






VIEW FROM P



### 9.1.9 Removing Float Switch

1 Remove the drain pan according to the item *"9.1.6 Removing Drain Pan"*.

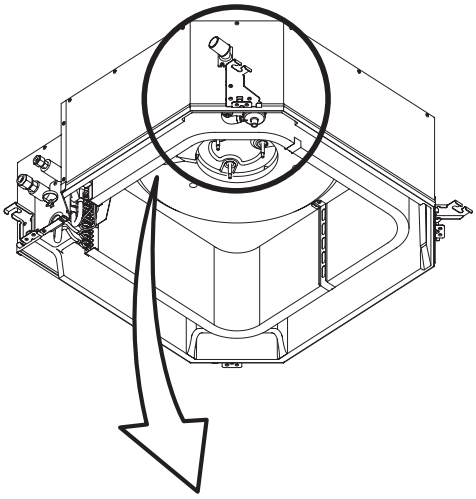
2 Remove the insulation which attaches the wires for float switch and drain-up mechanism together.

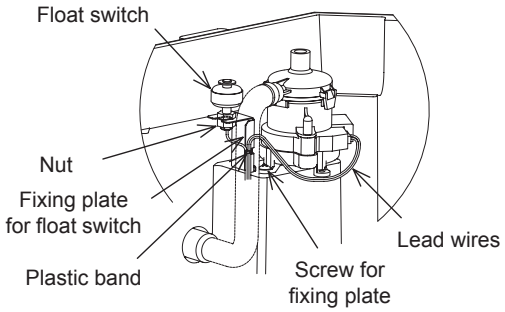
3 Cut the plastic band fixing the wires at the fixing plate for float switch.

4 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.*
- *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.)*





### 9.1.10 Removing Thermistors for Liquid Pipe and Gas Pipe

1 Remove the air panel according to the item *"9.1.3 Removing Optional Air Panel"*.

2 Remove the bell-mouth according to the item *"9.1.4 Removing turbo fan and fan motor"*.

3 Remove the drain pan according to the item *"9.1.6 Removing Drain Pan"*.

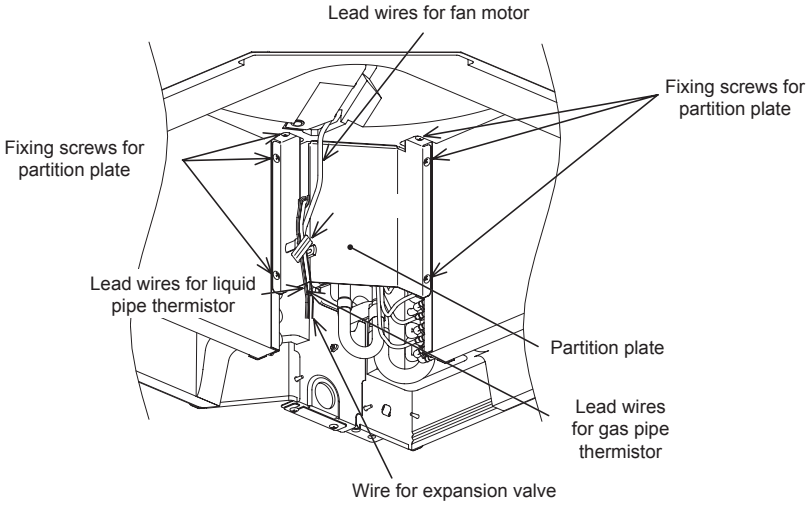
4 Removing Partition Plate. Remove six (6) fixing screws for partition plate. Remove lead wires (for fan motor, 2 pipe thermistors and expansion valve) from the cord clamp.

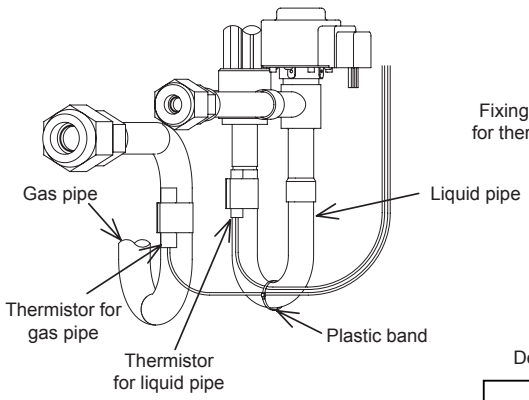
* When reassembling, bind lead wires (for liquid pipe and gas pipe thermistors) together by the plastic band (field-supplied).

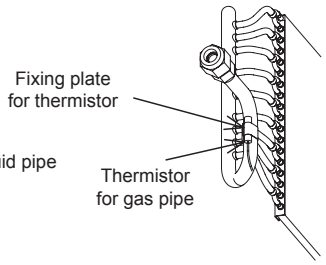
5 Remove the fixing plate for thermistor from the gas pipe, and remove the gas pipe thermistor.

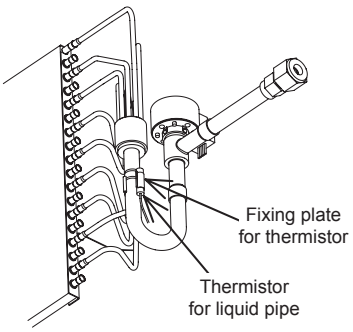
6 Remove the fixing plate for thermistor from the liquid pipe, and remove the liquid pipe thermistor.

* 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.

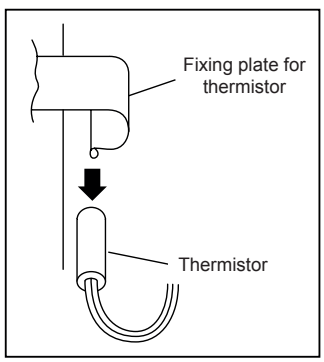



Details of thermistor installation




**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 "9.1.11 Removing Electronic Expansion Valve Coil". If the lead wires are not fixed correctly, it may cause water leakage.*

### 9.1.11 Removing Electronic Expansion Valve Coil

**CAUTION**

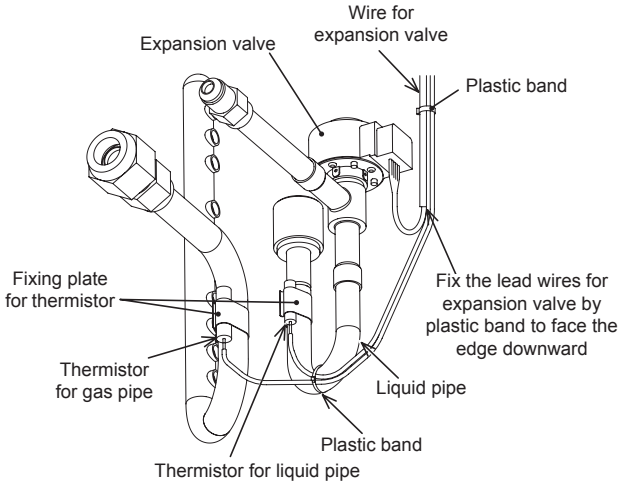
*TURN OFF all power source switches.*

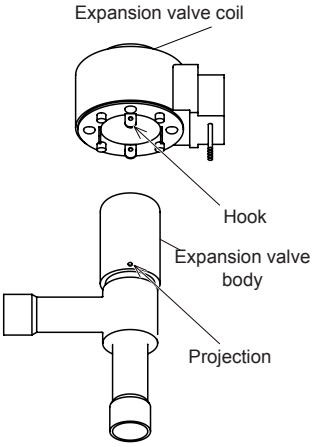
1 Remove the air panel according to the item *"9.1.3 Removing Optional Air Panel"*.

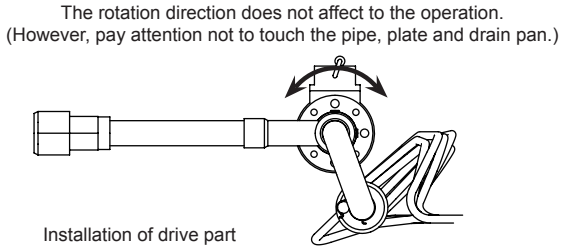
2 Remove the bell-mouth according to the item *"9.1.4 Removing turbo fan and fan motor"*.

3 Remove the drain pan according to the item *"9.1.6 Removing Drain Pan"*.

4 Remove the partition plate according to the item *"9.1.10 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**

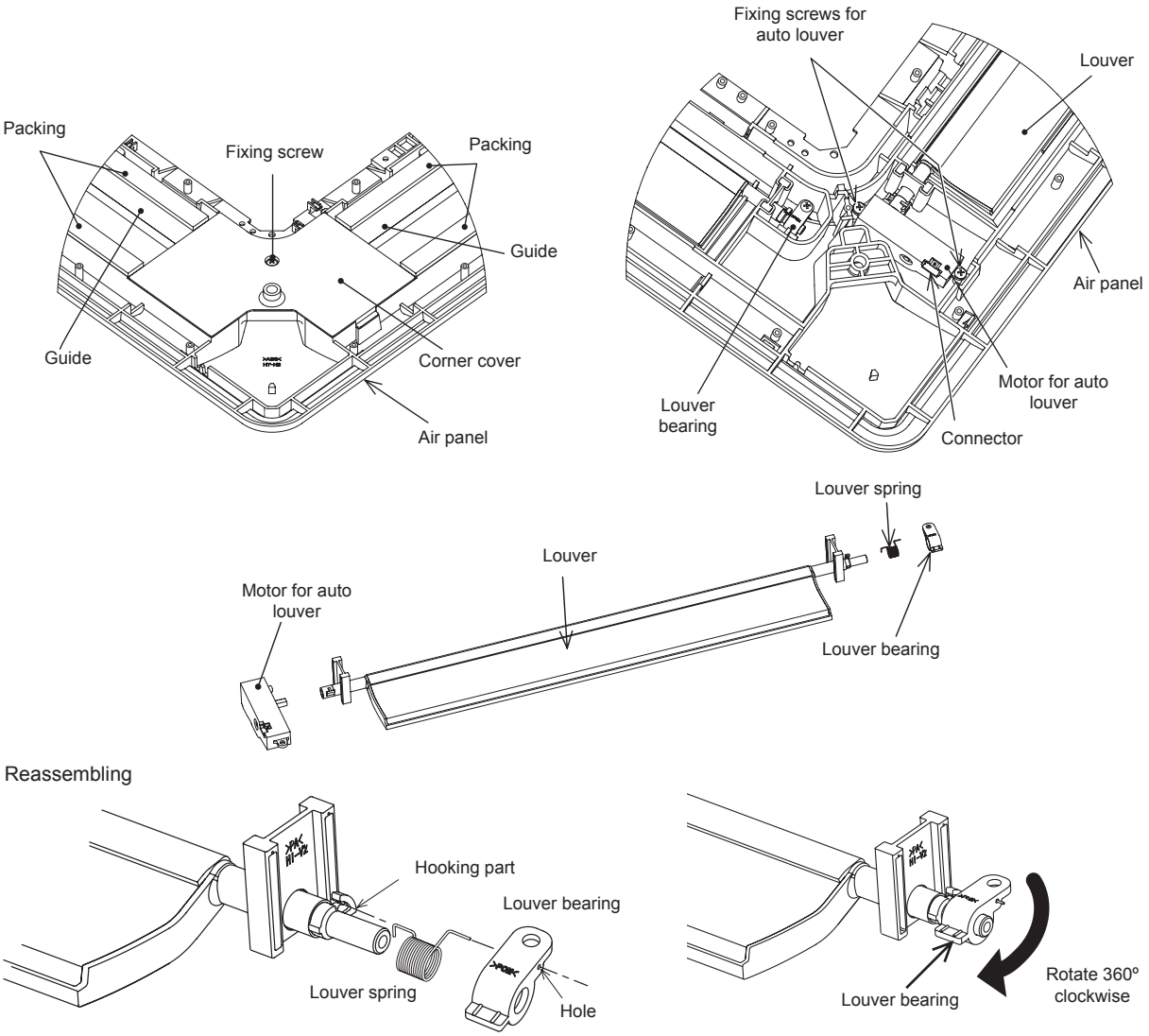
*When reassembling, securely fix lead wires (for fan motor, 2 pipe thermistors and expansion valve) together by the cord clamp attaching at the partition plate.*

### 9.1.12 Removing Auto Louver Motors

1 Remove the air panel according to the item *"9.1.3 Removing Optional Air Panel"*.
2 Remove the fixing screws for each corner cover and remove the corner covers.
3 Remove the packing and guides.
4 Remove two (2) fixing screws for each motor from the air panel.
5 Remove the screw for louver bearing, and pull it out from the air panel. Then, remove the louvres, louver bearings and motors.
6 Remove the motors from the louvres.
7 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.*

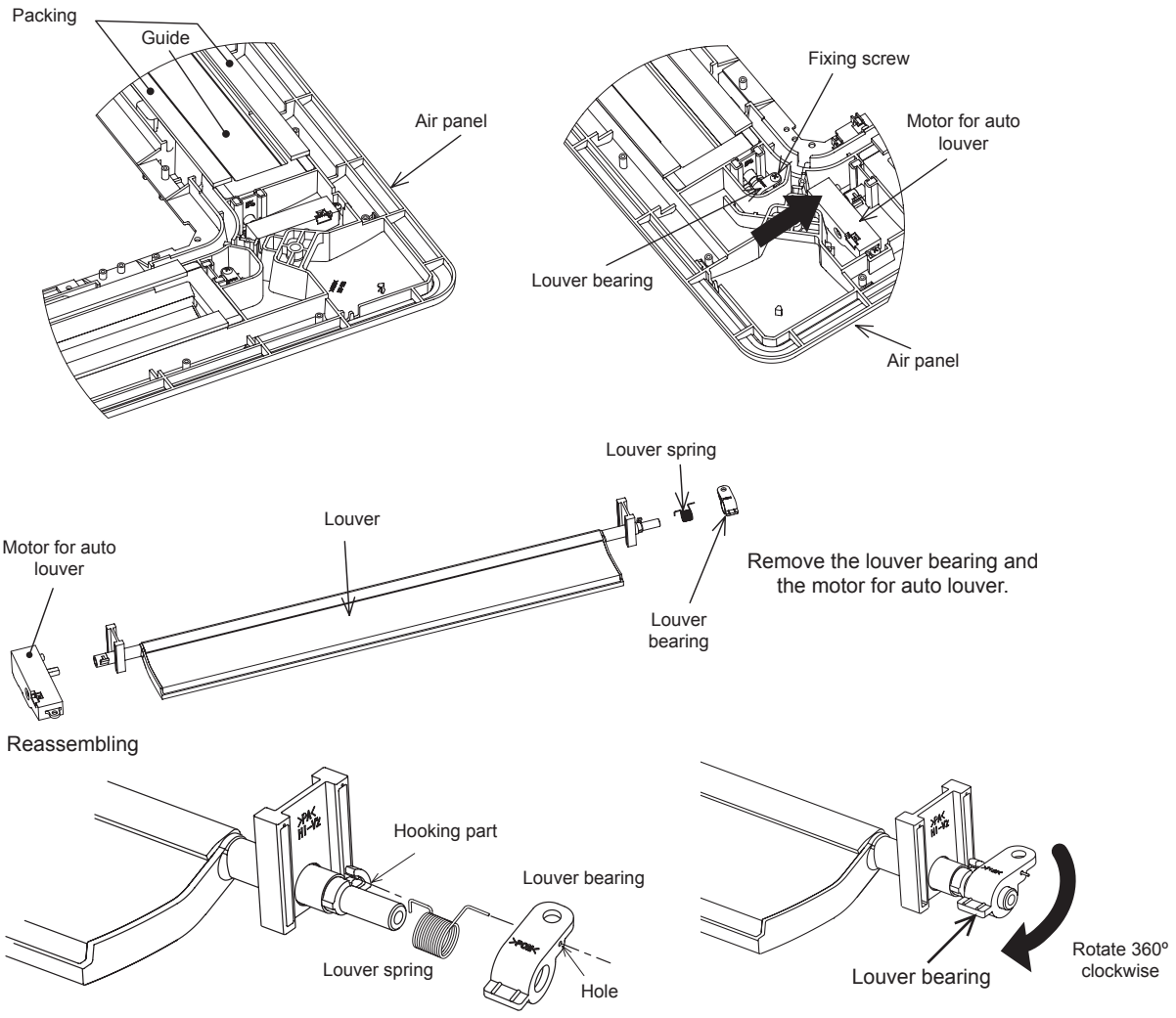


### 9.1.13 Removing Louver

1 Remove the air panel according to the item *"9.1.3 Removing Optional Air Panel"*.
2 Remove the corner cover according to the item *"9.1.12 Removing Auto Louver Motors"*.
3 Remove the packing 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 louvres, louver bearings and motors.
5 Remove the motors for auto louver according to the item *"9.1.12 Removing Auto Louver Motors"*.
6 Remove each louver bearing and louver spring.

**NOTE**

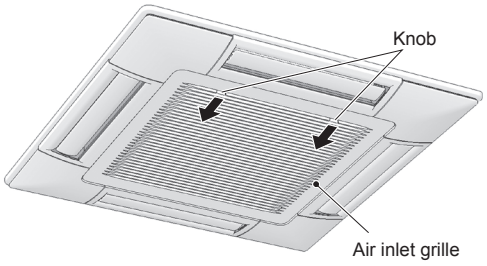
- *When reassembling, securely catch the C-shaped part of louver spring onto the hooking part of louver. Additionally, insert the L-shaped part of louver spring into the hole of louver bearing.*
- *Rotate the louver bearing 360o clockwise before fixing the screw for louver bearing.*



## 9.2 RCIM-(0.6-2.5)FSN4(E) - 4-way cassette (compact)

### 9.2.1 Removal of the air filter

1 The long-lasting filter is located inside the air inlet grille.
2 Press the knobs in the direction indicated by the arrows and open the air inlet grille.
3 Remove the filter from the grille by holding onto the lower part of the grille and the filter and detaching the blocked part.

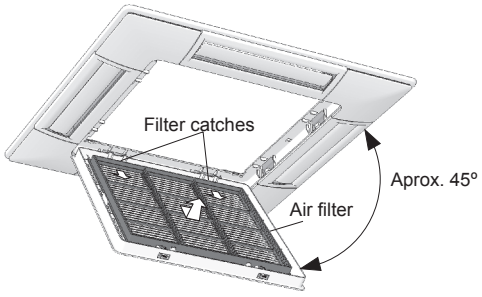



### 9.2.2 Removal of the air inlet grille

1 Lift the grille approximately 45° angle from the air panel surface..
2 Tilt the air inlet grille, lift it up to draw it forward

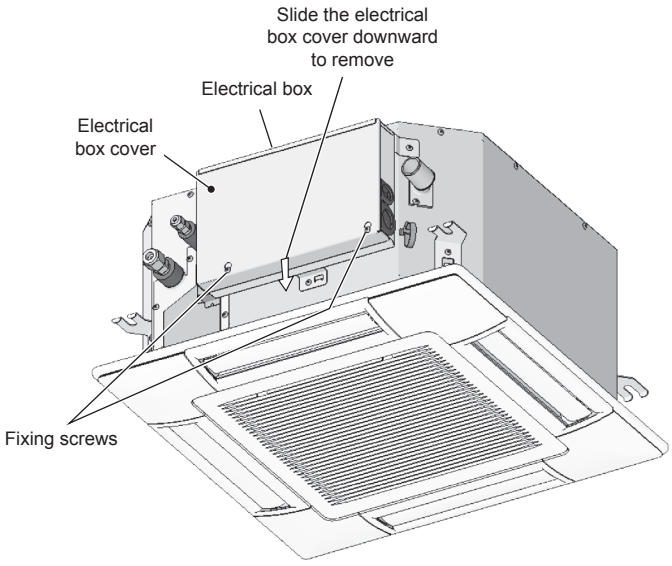
**NOTE**

- *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.*




### 9.2.3 Removal of the electrical box cover

1 The electrical box can be removed by opening the air inlet grille.
2 Loosen 2 fixing screws from the electrical box cover and remove it.

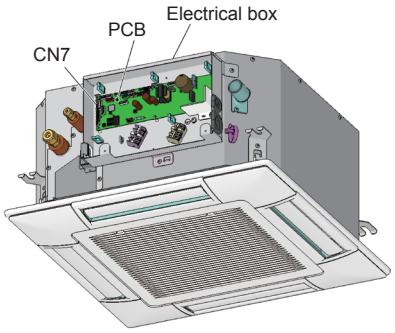



**NOTE**

*The electrical box is placed outside the unit. Access to the electrical box must be by the hatch close to the indoor unit.*

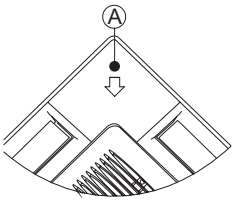
### 9.2.4 Removal of the optional air panel

1 Remove the auto swing motor connector (CN17) from PCB

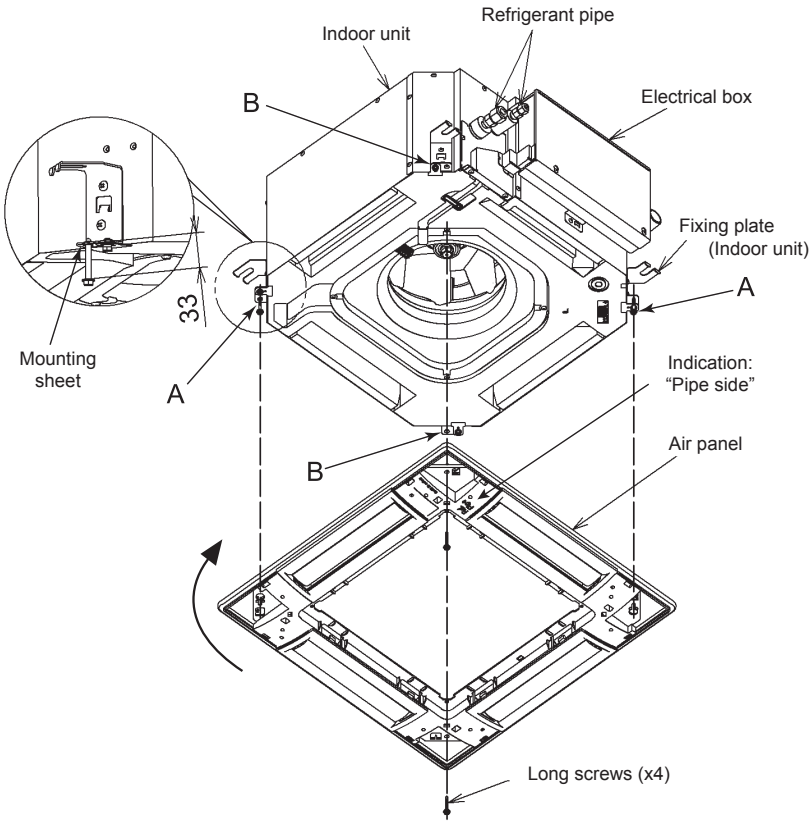



2 Remove the corner covers.

Corner covers can be removed pulling “A” part, toward the arrow direction, shown in the figure below.




3 Remove the long screws of “A” at the air panel. Loosen the long screws of “B”, and rotate the air panel to the arrow direction to remove the air panel.



### 9.2.5 Removal of the fan runner and the fan motor

1 Remove the air inlet grille as indicated in *"9.3.1 Removal of the Air filter and the Air inlet grille"*.

2 Remove the bell-mouth. Remove the 4 fixing screws attaching the bell-mouth to the drain pan and remove the bell-mouth.

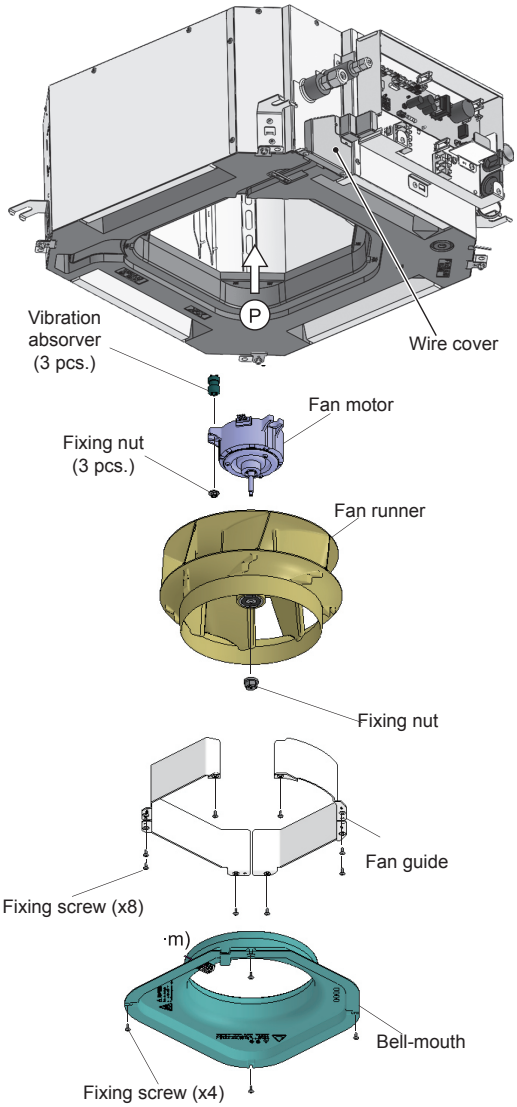
3 Removing the fan guide. Remove the 8 fixing screws and remove the drain pan.

4 Removing the Fan runner and the Fan Motor

a. Remove the nut and the washer fixing the fan runner.

b. Remove 3 nuts fixing the fan motor.

c. Then remove the fan motor.

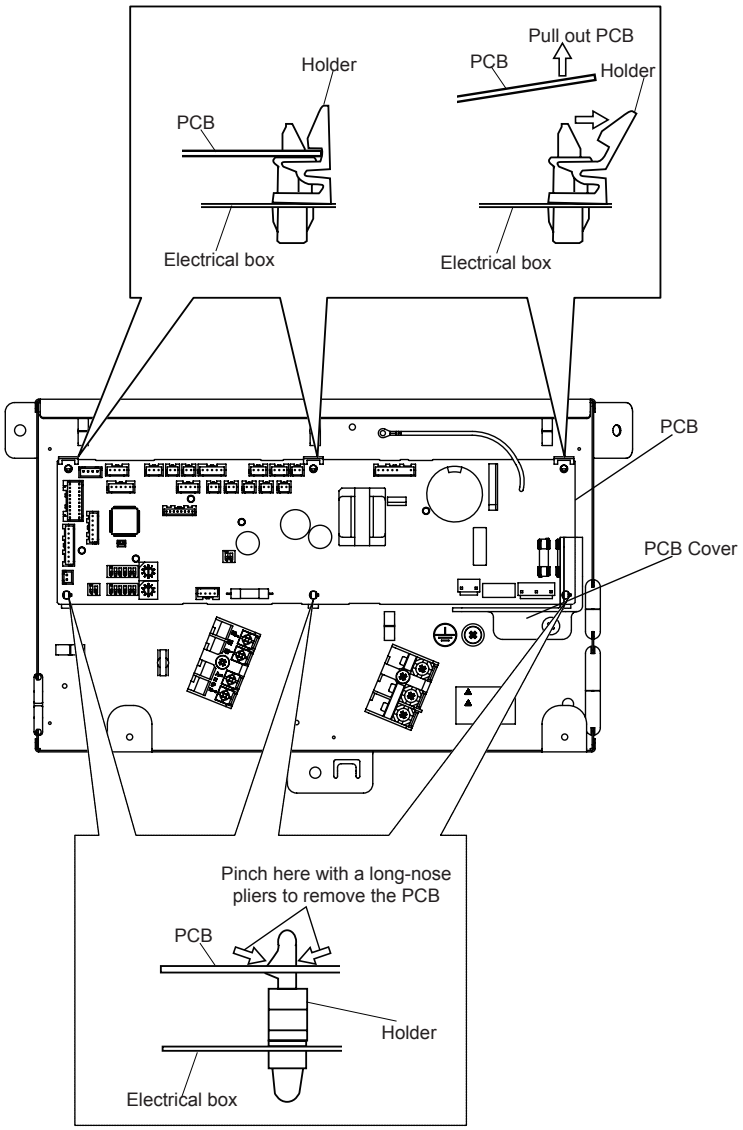



**NOTE**

*When reassembling these parts, tighten the nuts with a tightening torque of 8N-m.*

### 9.2.6 Removal of the printed circuit board (PCB)

1 Remove the electrical box cover as indicated in chapter *"9.2.3 Removal of the electrical box cover"*.
2 Disconnect all wire connectors from the indoor unit PCB.
3 Remove the screw fixing the earth wire terminal.
4 Remove the screw fixing the PCB cover. THen, remove the PCB cover.
5 The indoor unit PCB is fixed by 6 plastic holders. Carefully Pull out the PCB from each holder, 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.*

### 9.2.7 Removal of the drain pan

1 Remove the air panel in line with the instructions given in chapter *"9.2.4 Removal of the optional air panel"*.

2 Remove the screw of the wire cover. Then, remove the wire cover.

3 Remove the electrical box cover as indicated in chapter *"9.2.3 Removal of the electrical box cover"*.

Separate the connectors from:

a. The liquid pipe thermistor.

b. The gas pipe thermistor.

c. The electronic expansion valve.

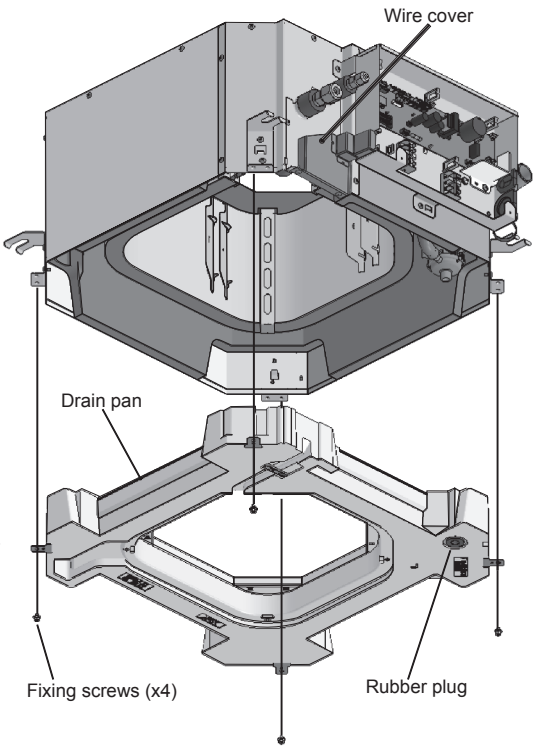
d. The fan motor.

4 Remove the bell-mouth as described in *"9.2.5 Removal of the fan runner and the fan motor"*

5 Drain the water

a. Pull out the rubber plug from the drain pan, and drain the water remaining in the drain pan. Although silicon sealant is aplied over the rubber plug, the rubber plug can be removed by pulling the bottom side.

6 Check any clogging in the drain hole. Proceed to empty the pan of water by removing the rubber plug.




**⚠ 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.*

7 Remove the drain pan after removing the 4 set screws, pulling it carefully downwards.

**⚠ CAUTION**

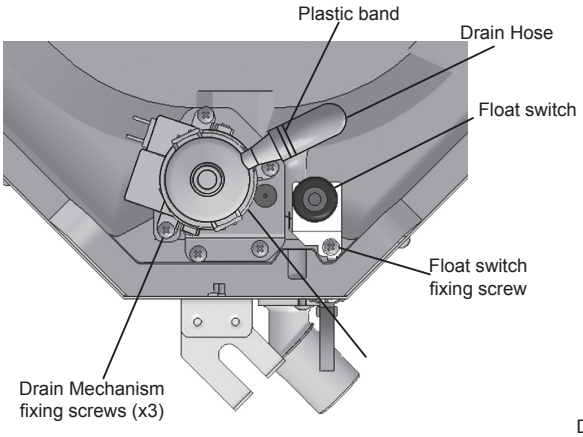
- *Do not use a sharp tool, such as a screwdriver, to fit the rubber plug, as this could damage it.*
- *After fitting the plug, there must be a clearance of 2 - 3 mm between it and the drain pan.*

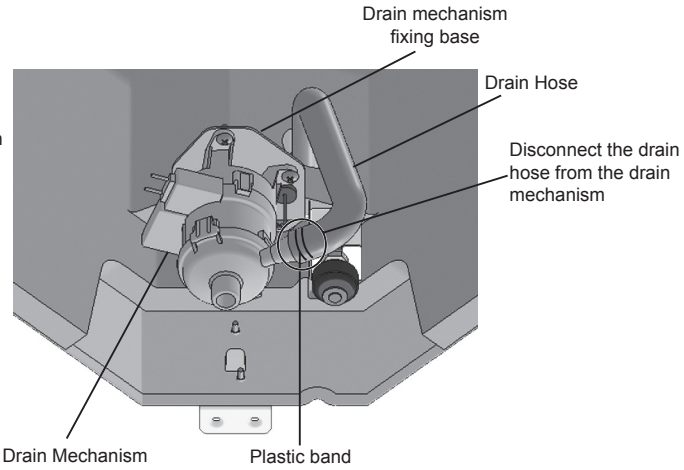
### 9.2.8 Removal of the drain mechanism

1 Remove the drain pan as indicated in chapter *"9.2.7 Removal of the drain pan"*.
2 Remove the lead wires of the drain pan mechanism, float switch and outlet air thermistor gathered with vinyl tube and a clamping band.
3 Cut the plastic band and disconnect the drain hose from the drain mechanism.
4 Hold the drain mechanism and remove the 3 screws from the mechanism securing plate.
5 Remove the mechanism with the securing plate.

**NOTE**

- *When installing, fit the drain hose as far as possible in the pump.*
- *After attaching the drain mechanism, check that the drain hose does not contact the fixing base of the drain mechanism. If it contacts, adjust the position of the drain hose.*
- *When reassembling, wrap up the lead wires for the drain mechanism, the float switch, and the outlet air thermistor together with the vinyl tube, seal with filament tape and then tighten with the clamping. Fix the gathered wires with the plastic band attached to the fixing base of the drain mechanism.*




### 9.2.9 Removal of the float switch

1 Remove the drain pan as indicated in chapter *"9.2.7 Removal of the drain pan"*.
2 Remove the lead wires for the drain mechanism, the float switch and the outlet air thermistor, as described in section *"9.2.8 Removal of the drain mechanism"*

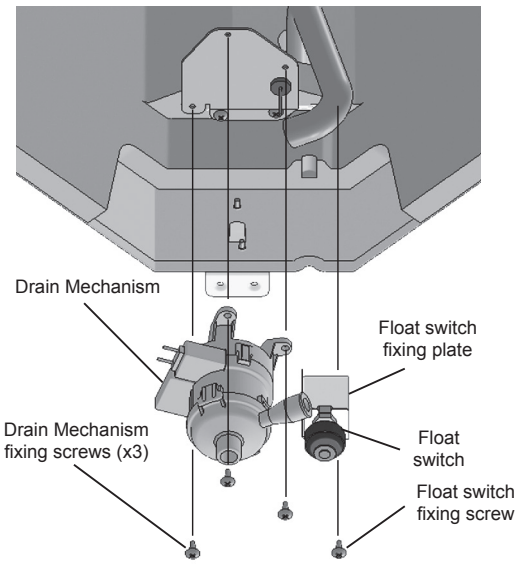
**NOTE**

*The float switch is attached to the drain pan.*

3 Remove the 3 screws securing the drain mechanism to remove the mechanism.
4 Remove the fixing plate for the float switch by removing the fixing screws.
5 Loosen the resin nut securing the float switch and remove it.

**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.*

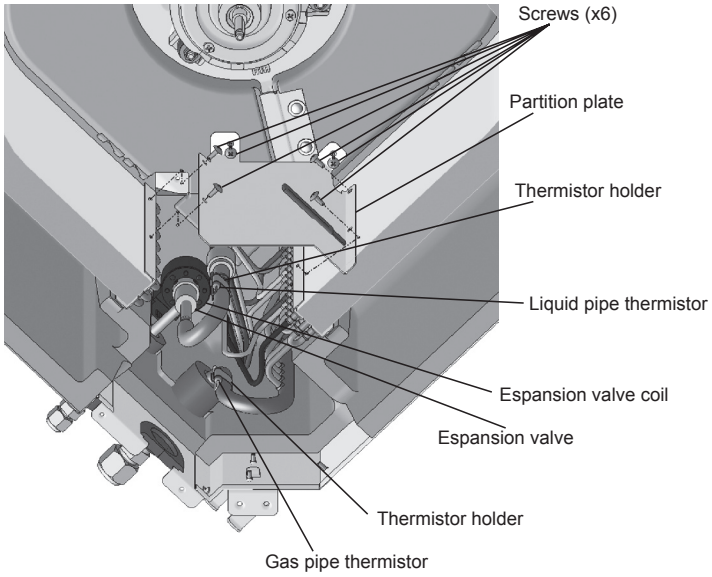


### 9.2.10 Removal of the thermistors from the liquid and gas pipes

1 Remove the optional air panel in line with the instructions given in chapter *"9.2.4 Removal of the optional air panel"*.
2 Remove the bell-mouth and the fan runner as explained in chapter *"9.2.5 Removal of the fan runner and the fan motor"*.
3 Remove the drain pan as indicated in chapter *"9.2.7 Removal of the drain pan"*.
4 Remove the evaporator partition plate securing the heat exchanger by removing the five screws.
5 Remove the thermistors:
   a. Remove the butyl sheet attached to each thermistor
   b. Remove each thermistor for the gas and the liquid pipe. Note that each thermistor is fixed with a thermistor holder.

**NOTE**

- *The thermistor protection and securing system is the same on the gas and liquid pipe.*
- *The thermistors are secured with brackets.*

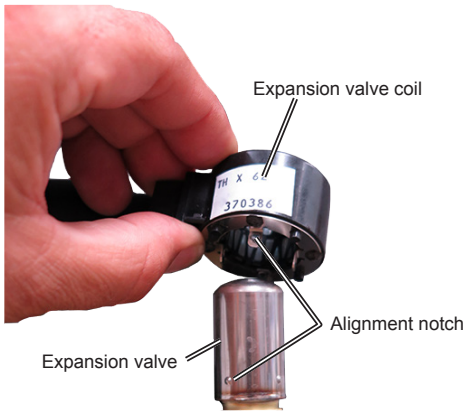



### 9.2.11 Removal of the electronic expansion valve coil

1 Remove the optional air panel in line with the instructions given in chapter *"9.2.4 Removal of the optional air panel"*.
2 Remove the bell-mouth and the fan runner as indicated in chapter *"9.2.5 Removal of the fan runner and the fan motor"*.
3 Remove the evaporator partition plate securing the heat exchanger by removing the five screws.
4 Remove the electronic expansion valve butyl sheet.
5 Remove the expansion valve coil by firmly pushing it.

**NOTE**

*The coil has a fixation system which comprises a protrusion at the Expansion valve that has to match with the orifices located at the coil. (See the picture beside), called alignment notch.*

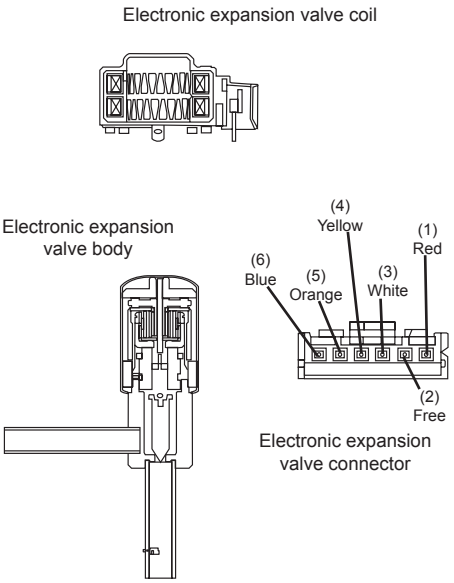


6 Once replaced, fit the electronic expansion valve in the reverse manner as indicated for the removal process.

7 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.*



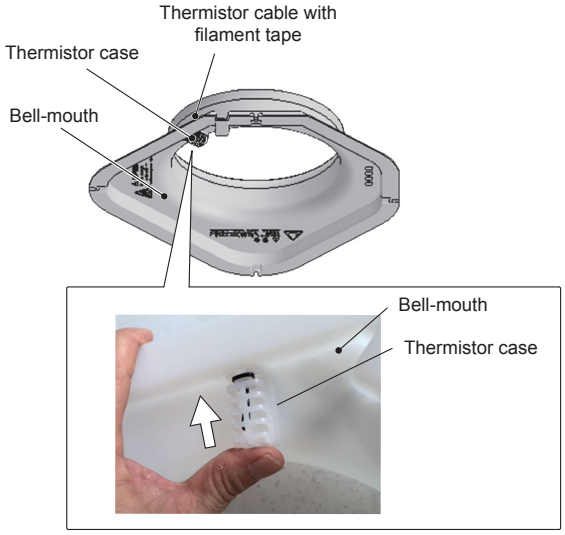

## 9.2.12 Removal of the inlet air thermistor

1 Remove the air inlet thermistor.

2 Remove the bell-mouth as described in *"9.2.5 Removal of the fan runner and the fan motor"*

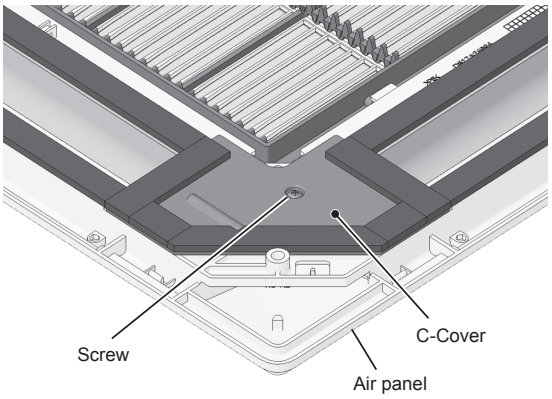
3 Tear off the filament tape, then remove the thermistor cable attached to the bell-mouth.

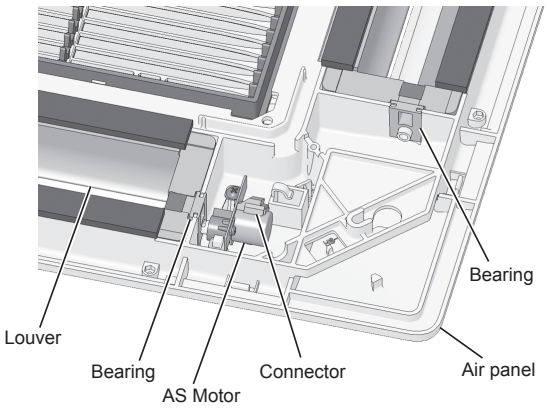
4 Push the thermistor case to the direction shown in the picture below to remove the air inlet thermistor with the thermistor case.

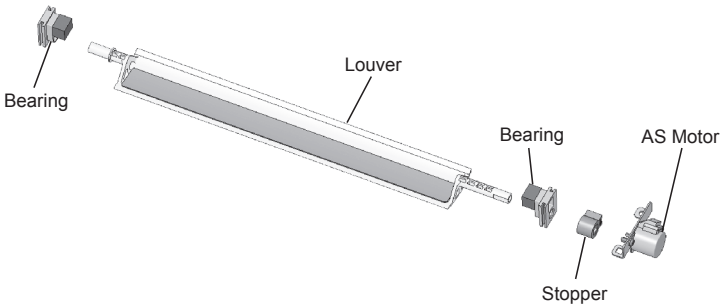


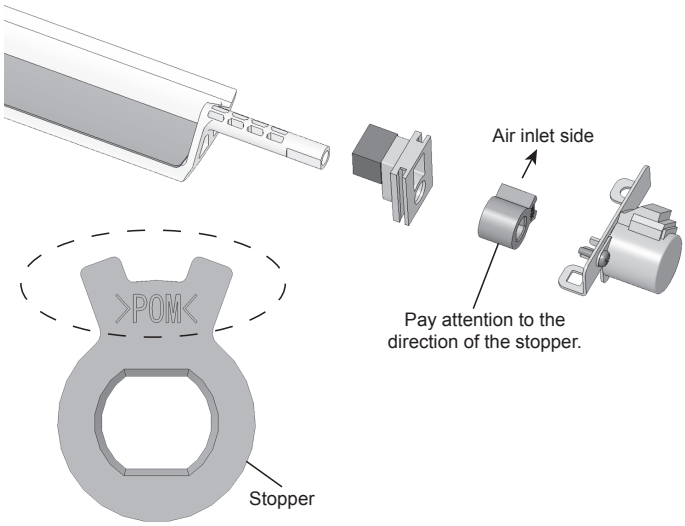
### 9.2.13 Removal of the automatic louver motor

1 Remove the optional air panel in line with the instructions given in chapter *"9.2.4 Removal of the optional air panel"*.
2 Remove the fixing screw for C-cover and remove the C-cover.
3 Remove the fixing screw on the AS motor from the air panel. Then, remove the louver, the louver bearing and the AS motor.
4 Disconnect the connector for the AS motor. Press the catch to disconnect the connector to avoid breakage.



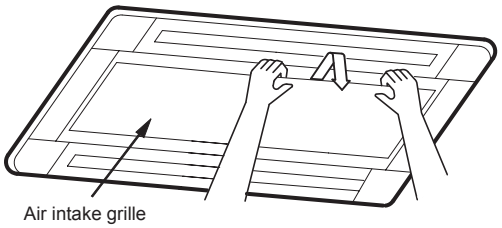
# 9.3 RCD-(0.8-6.0)FSN3 - 2-way cassette

## 9.3.1 Removal of the Air filter and the Air inlet grille

**NOTE**

*The Air filter is located inside the air inlet grille.*

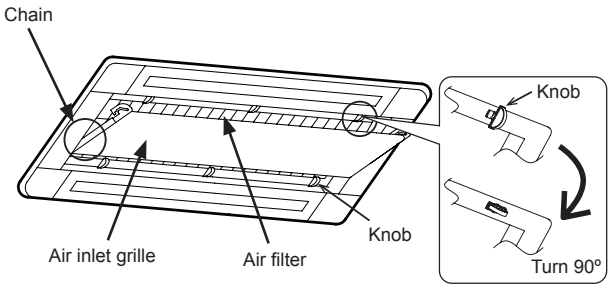
1 Lift up one side of the air inlet flat grille then slide to arrow direction. Pull the air inlet flat grille to the downward.




2 Turn all the knobs 90° then remove the air filter. (6 knobs for RCD-0.8 to 3.0FSN3, 10 points for RCD-4.0 to 6.0FSN3).

3 Remove the chain from the air panel.

4 Open the air inlet flat grille at an approximately 40º angle from the air panel surface. Tilting the air inlet flat grille, lift it up to draw forward then remove it.




**NOTE**

*The air inlet flat grille can be opened up to 90°. However, it cannot be removed from the air panel at that angle.*

## 9.3.2 Removal of the electrical box

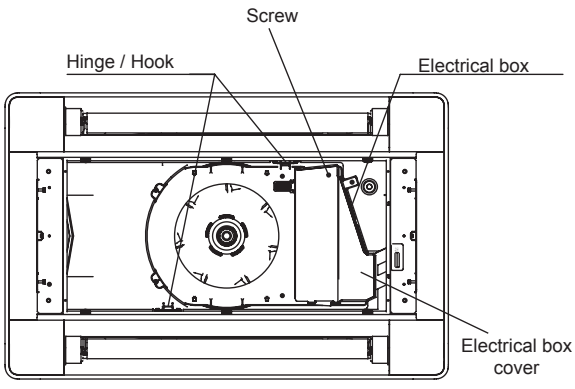
**NOTE**

*The Electrical box appears when opening the air inlet grille.*

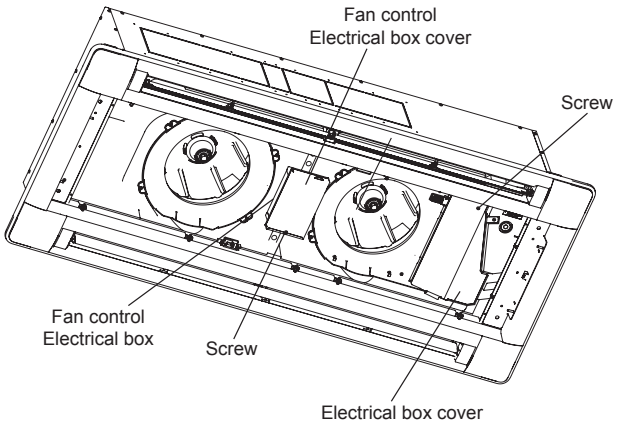
1 Open the air inlet grille.

2 Loosen the screw securing the electrical box cover. The electrical box cover does not need to be removed but keep hooked for maintenance work.

**RCD-(0.8-3.0)FSN3**




**RCD-(4.0-6.0)FSN3**

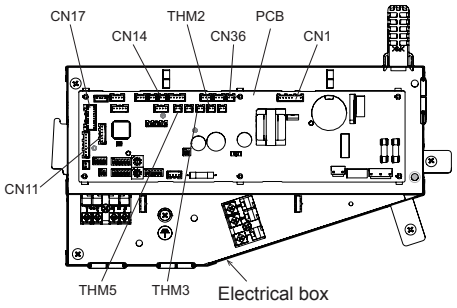


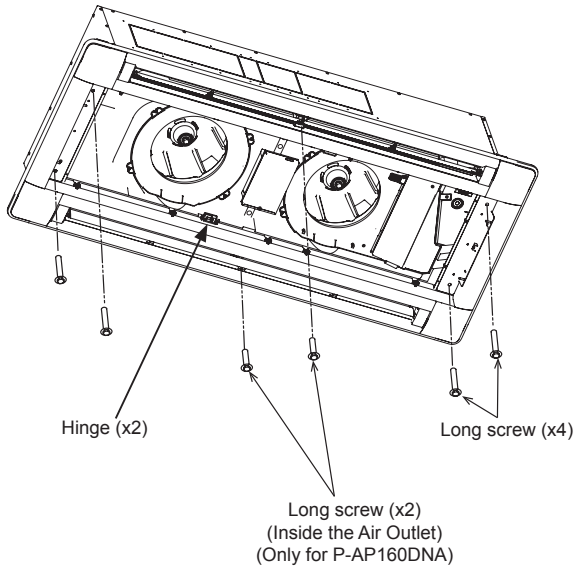

**CAUTION**

*Pay attention during the removing work as the Electrical box may fall.*

### 9.3.3 Removal of the optional air panel

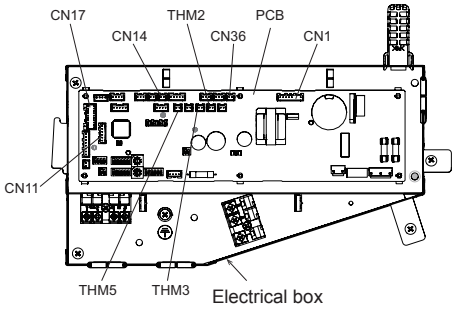
1 Open the air inlet grille.
2 Remove the electrical box cover.
3 Remove the connector (CN17) of the automatic louver on the indoor unit PCB.
4 Hang the air panel from the indoor unit by hooking the hinges and remove the long screws (4 for P-AP90DNA, 6 for P-AP160DNA) for air panel.
5 Then, remove the air panel by unhooking the hinges (x2) from the indoor unit drain pan.




### 9.3.4 Removal of the fan duct and the fan

1 Remove the electrical box cover according to the item *"9.1.2 Removing Electrical Box Cover"*.
2 Remove the electrical box.
   a. Remove the outlet air thermistor (THM2), the drain-up mechanism connector (CN36), the float switch connector (CN14), the liquid pipe and gas pipe thermistors (THM5, THM3), the expansion valve (CN11), the fan motor connector (CN1) and the auto louver motor connector (CN17) from the PCB.
   For RCD-(4.0-6.0)FSN3, remove the fan control lead wire (x2) from the bell-mouth then remove the fan motor connector (CN4) inside the fan control electrical box.
   b. Remove the 2 fixing screws for the electrical box and remove the electrical box.
   For RCD-(4.0-6.0)FSN3, remove the 2 fixing screws for the fan control electrical box and remove the fan control electrical box.




3 Removing the Bell-mouth. Remove 4 fixing screws for the bell-mouth fixed to the drain pan, and remove the bell-mouth (1 Bell-mouth for RCD-(0.8-3.0)FSN3, 2 bell-mouth for RCD-(4.0-6.0)FSN3).

4 Removing Turbo Fan and Fan Motor:

a. Hold the turbo fan and remove the fixing nut then remove the turbo fan.

b. Remove the 2 screws from the plate holding the fan motor lead wire then remove the fan motor.

c. Remove the fan motor lead wire from 2 code clamp for evaporator partition plate.

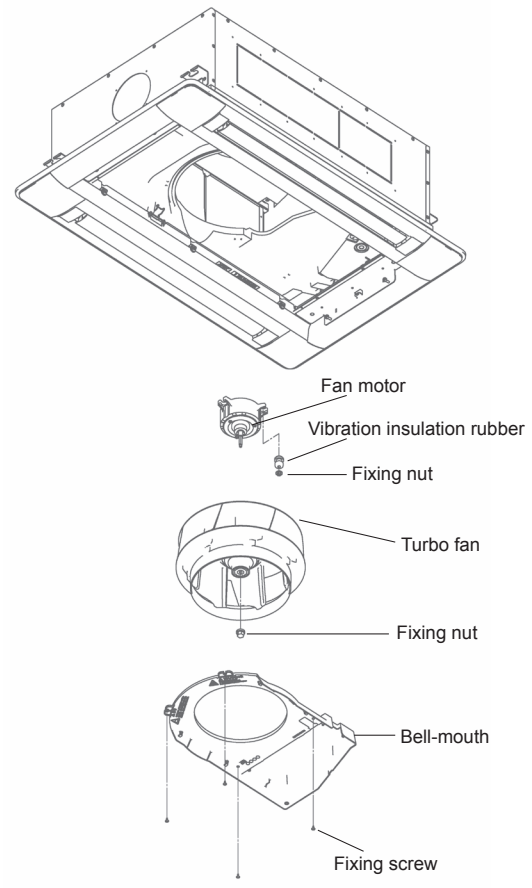
d. Remove the fixing nut and 3 vibration insulation rubber fixing the fan motor then remove the fan motor.

e. For RCD-(4.0-6.0)FSN3, remove the fan motor lead wire from 1 code clamp for fan partition plate placed on the centre of the indoor unit.
Remove the fixing nut and 3 vibration rubber fixing the fan motor the remove the fan motor.

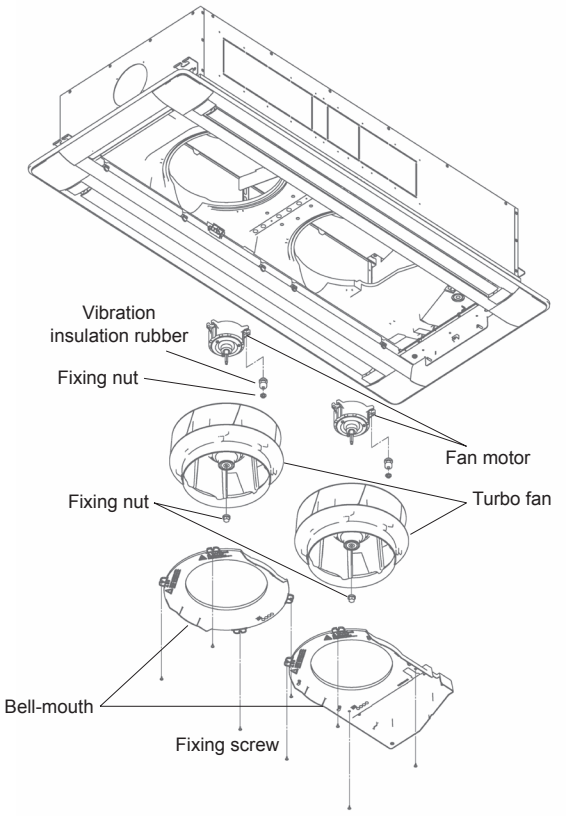
f. For reassembling, fix the bell-mouth to the drain pan with fixing screws temporarily then fix the fan motor lead wire to 2 code clamp for the evaporator partition plate.
For RCD-(4.0-6.0)FSN3, fix the fan motor lead wire to 1 code clamp for the fan partition plate placed on the centre of the indoor unit.

g. Center the turbo fan and bell-mouth to get enough clearance then fasten the fixing screws.

**RCD-(0.8-3.0)FSN3**




**RCD-(4.0-6.0)FSN3**

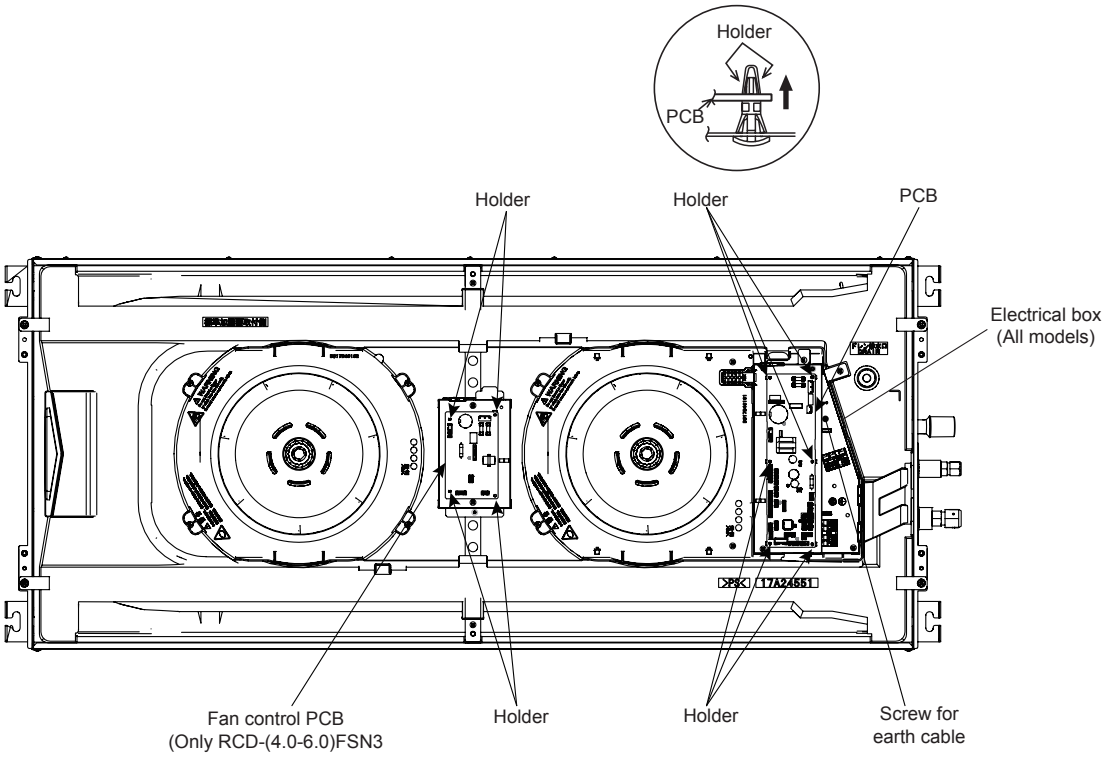


### 9.3.5 Removal of the printed circuit board (PCB)

1 Remove the electrical box cover according to the item *"9.1.2 Removing Electrical Box Cover"*.
2 Disconnect all wire connectors from the indoor unit PCB.
3 Remove the screw for earth wire.
4 Remove the screw then remove the PCB cover.
5 The indoor unit PCB is fixed by holders (6 holders for PCB, 4 holders for fan control PCB). Pinch the holder with long-nose pliers and pull out PCB from the holders.

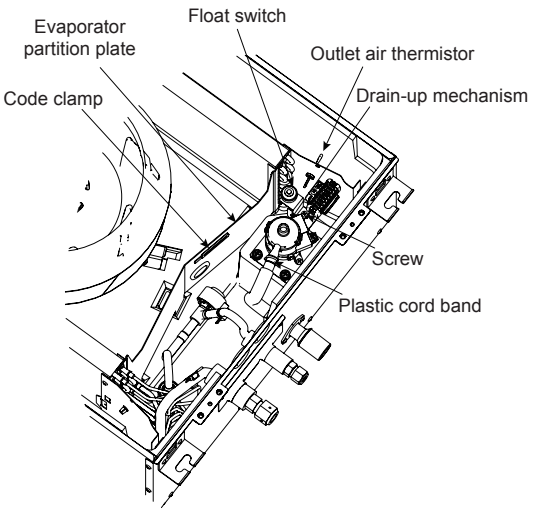
**⚠ CAUTION**

- *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.*
- *Make sure that all connectors are properly connected. Otherwise the Indoor unit PCB maybe be damaged.*



### 9.3.6 Removal of the float switch

1 Remove the Drain pan, as explained in *"9.3.8 Removal of the drain pan"*
2 Remove the lead wires for the Drain up mechanism, the Float switch and the Outlet air thermistor, as explained in *"9.3.6 Removal of the float switch"*
3 Remove the Float switch lead wire from the core clamp at the evaporator partition plate.
4 Cut the plastic cord bands gathering the lead wires of the Float switch, the drain mechanism and the Outlet air thermistor.
5 Remove the Float switch by removing the fixing screws of the Float switch fixing plate and remove the Float switch.

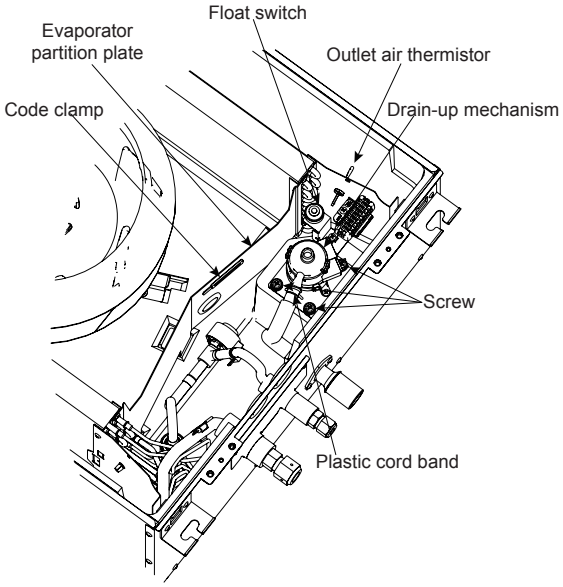



**NOTE**

- *for the reassembling, proceed in the reverse way than disassembling.*
- *The torque value of the resin nut is 0.3 - 0.4 Nm. If the torque value is higher, the nut will be damaged.*

### 9.3.7 Removal of the drain mechanism

1 Remove the drain pan according to the item *"9.1.6 Removing Drain Pan"*.
2 Remove the drain-up mechanism lead wire from the code clamp attached to the evaporator partition plate.
3 Cut the clamping band gathering the lead wires for drain-up mechanism, float switch and outlet air thermistor.
4 Spread out the plastic band for drain hose the remove the drain hose from drain-up mechanism.
5 Remove three fixing screws for the drain-up mechanism. Make sure to hold the drain-up mechanism by hand so that it will not fall off.
6 Then remove the drain-up mechanism.




### 9.3.8 Removal of the drain pan

1 Remove the air panel according to the item *"9.1.4 Removing turbo fan and fan motor"*.
2 Remove the screw then remove the wire cover.
3 Remove the electrical box cover according to the item *"9.1.2 Removing Electrical Box Cover"*. Disconnect the connectors of the gas pipe thermistor, the liquid pipe thermistor, the expansion valve and the fan motor.
4 Remove the bell-mouth according to the item *"9.1.4 Removing turbo fan and fan motor"*.
5 Draining:

a. Pull out the rubber plug from the drain pan, and drain the water remaining in the drain pan. Although silicon sealant is applied over the rubber plug, the rubber plug can be removed by pulling the bottom side.

**NOTE**

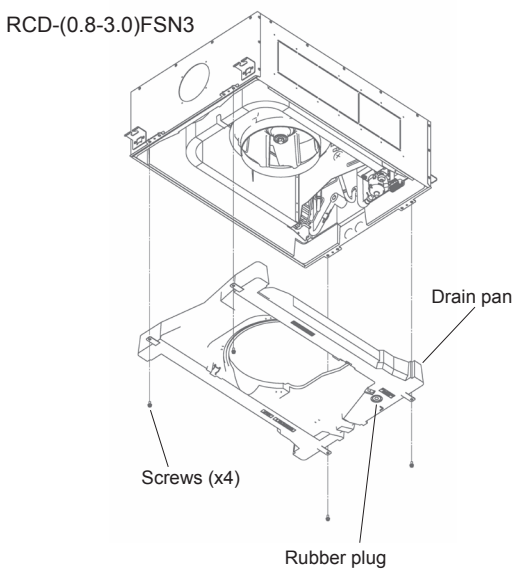
*Be careful not to damage the rubber plug with a cutter knife.*

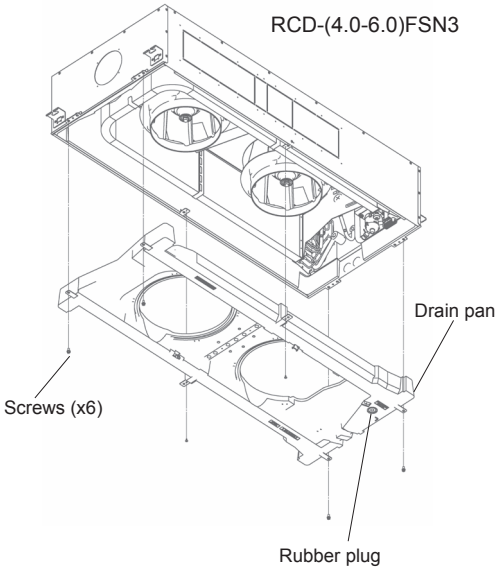
b. Check any clogging in the drain hole.

6 Removing Drain Pan

a. Remove the screws fixing the drain pan to the unit (4 screws for RCD-(0.8-3.0)FSN3, 6 screws for RCD-(4.0-6.0) FSN3).

b. Then remove the drain pan from the unit.




### 9.3.9 Removal of the thermistors from the liquid and gas pipes

1 Remove the air inlet grille as indicated in chapter *"9.3.1 Removal of the Air filter and the Air inlet grille"*.

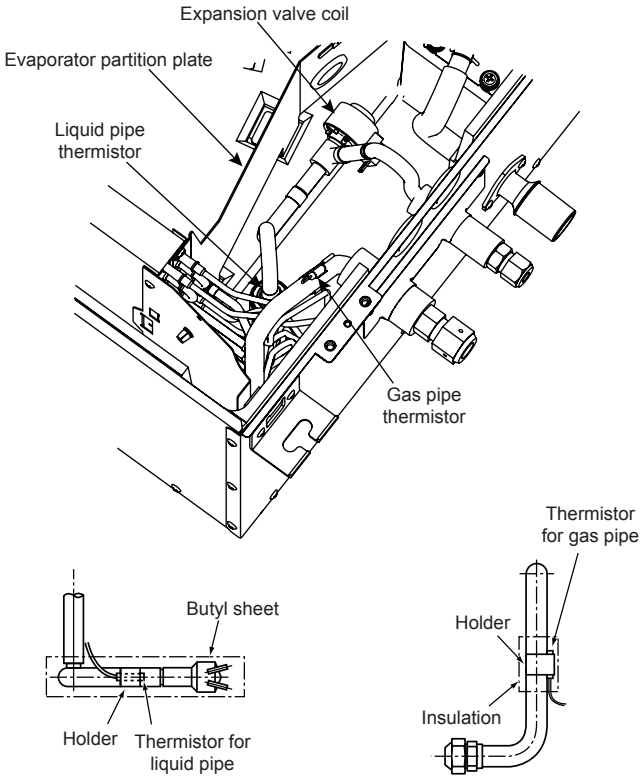
2 Remove the fan duct and the fan as indicated in chapter *"9.3.4 Removal of the fan duct and the fan"*.

3 Remove the drain pan as indicated in chapter *"9.3.8 Removal of the drain pan"*.

4 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.*

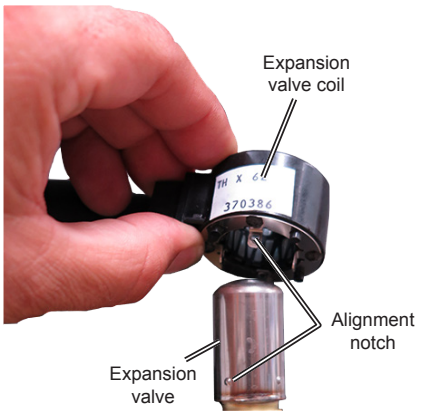


### 9.3.10 Removal of the electronic expansion valve coil

1 Remove the optional air panel in line with the instructions given in chapter *"9.2.4 Removal of the optional air panel"*.
2 Remove the bell-mouth and the fan runner as indicated in chapter *"9.2.5 Removal of the fan runner and the fan motor"*.
3 Remove the evaporator partition plate securing the heat exchanger by removing the five screws.
4 Remove the electronic expansion valve butyl sheet.
5 Remove the expansion valve coil by firmly pushing it.

**NOTE**

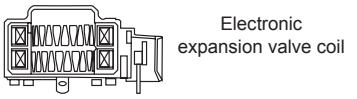
*The coil has a fixation system which comprises a protrusion at the Expansion valve that has to match with the orifices located at the coil. (See the picture beside), called alignment notch.*

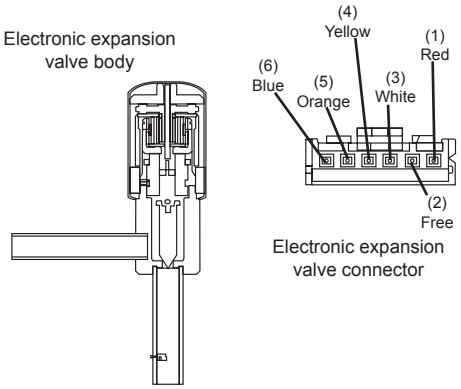



6 Once replaced, fit the electronic expansion valve in the reverse manner as indicated for the removal process.
7 Position the butyl sheet, attaching it correctly to the valve.

**NOTE**

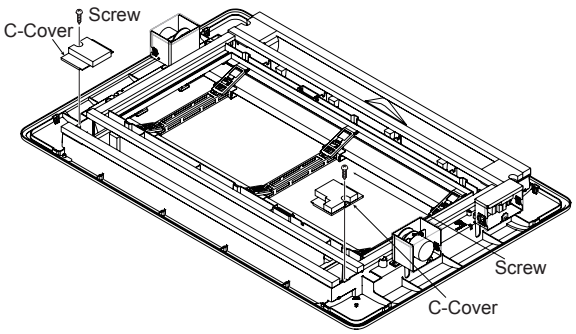
*Check that the cables do not touch the fan duct after installation is complete.*



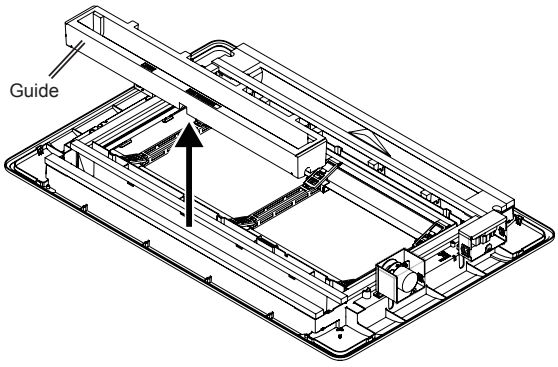




### 9.3.11 Removal of the automatic louver motor

1 Remove the air panel according to the item *"9.1.3 Removing Optional Air Panel"*.
2 Remove the fixing screw for C-cover and remove the C-cover.

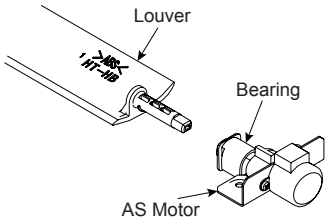


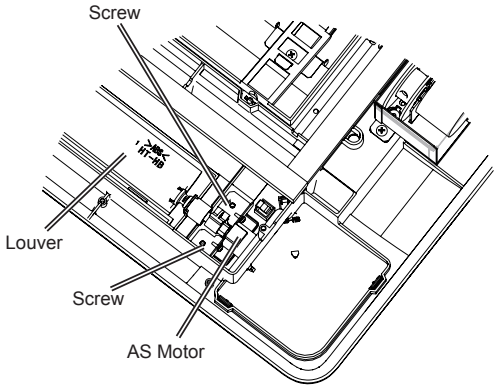

3 Peel off the off the panel rib for the sealing gasket the remove the guide.




4 Disconnect the connector from the AS motor.

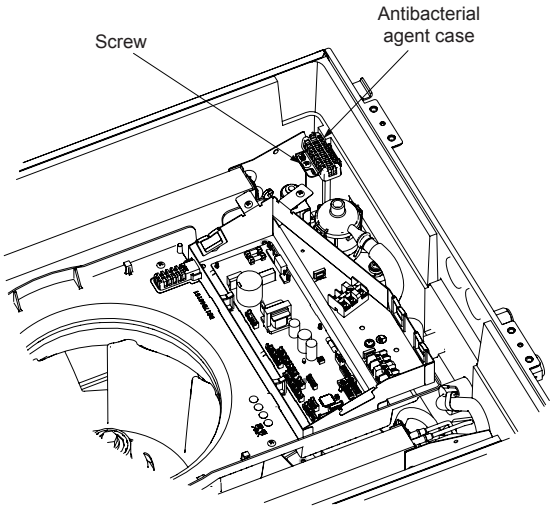
5 Remove two fixing screws for AS motor from the air panel. Then remove the louver and AS motor form the air panel.
6 Remove the louver from the bearing for AS motor.




### 9.3.12 Remove the Anti bacterial agent case

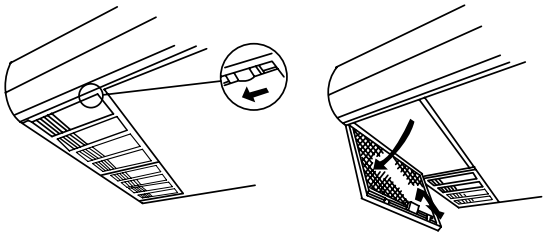
1 Remove the air panel according to the item *"9.1.3 Removing Optional Air Panel"*.
2 Remove the bell-mouth and turbo fan according to the item *"9.1.4 Removing turbo fan and fan motor"*.
3 Remove the drain pan according to the item *"9.1.6 Removing Drain Pan"*.
4 Remove 1 screw for antibacterial agent case then remove the antibacterial agent case.



# 9.4 RPC-(3.0-6.0)FSN3E - Ceiling type

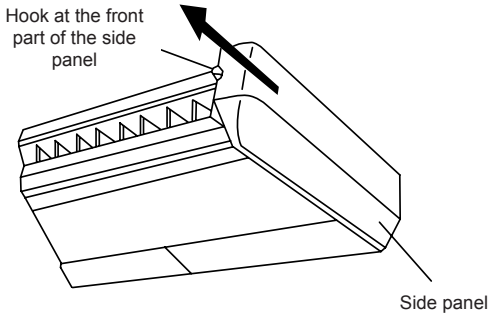
## 9.4.1 Removal of the air filter

1 Press the buttons on the grille backwards.
2 Open the air inlet grille downwards.
3 Lift the button and remove the filter.

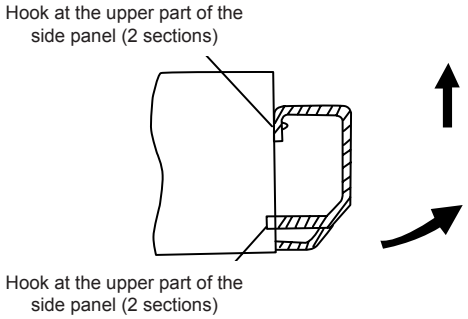


## 9.4.2 Removal of the side panel

1 Pull the side panel forwards.




2 Release the hook from the lower part of the panel.
3 Lift the side panel.

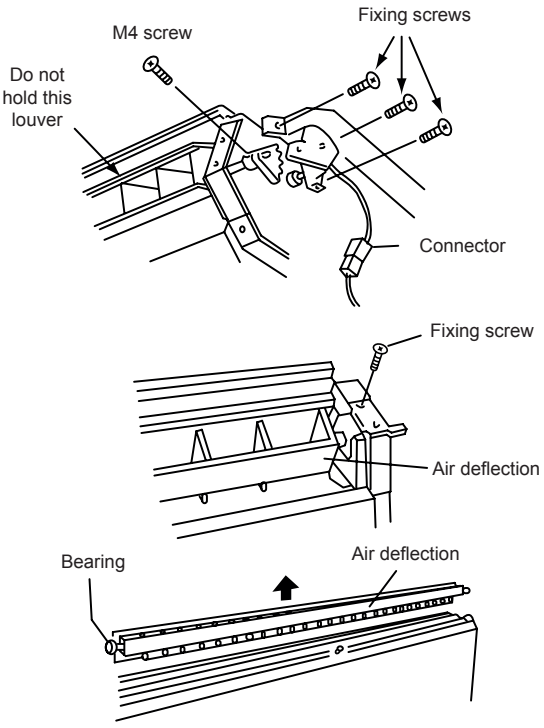



## 9.4.3 Removal of the air outlet grille

1 Remove the side panel in line with the instructions given in chapter *"9.4.2 Removal of the side panel"*.
2 Remove the right shaft crank on the air louver.
3 Remove the four set screws from the louver and remove it.

**NOTE**

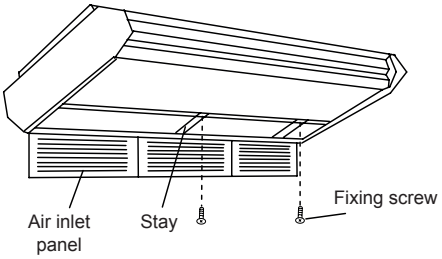
*The louver includes the linkage brackets.*



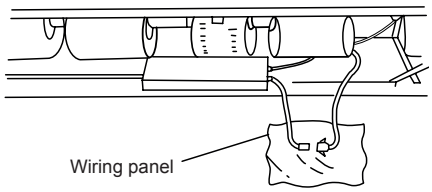
### 9.4.4 Removal of the fan motor

1 Open the air inlet grille as indicated in chapter *"9.4.1 Removal of the air filter"*.

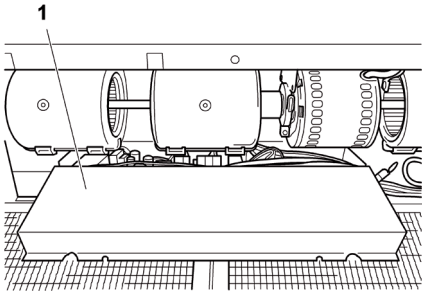
2 Remove the air inlet clip.




3 Separate the indoor fan motor connector.



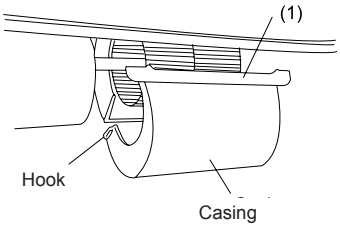

| Nº | Part |
|---|---|
| 1 | Electrical box |




4 Remove the screws securing the box and attach to the lower frame.

**⚠ CAUTION**

*Hold onto the electrical box to prevent it from falling.*



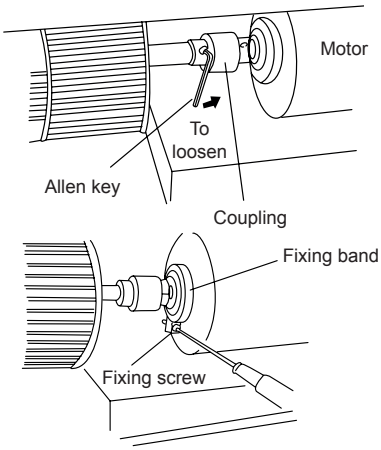

5 Press the four attachment points of the cover (1) inwards and remove it.

6 Loosen the coupling screws using a wrench.

7 Remove the securing flange and remove the fan motor by sliding it backwards.

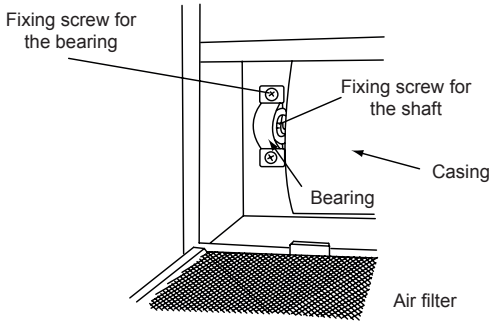
**⚠ CAUTION**

*Hold onto the motor to prevent it from falling.*



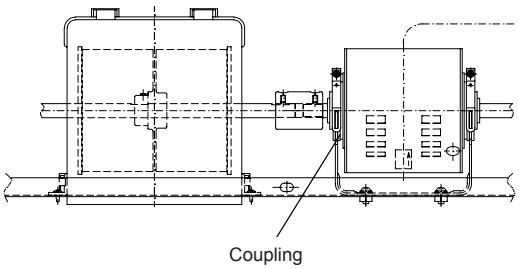
### 9.4.5 Removal of the fan shaft support

1 Remove the side panel in line with the instructions given in chapter *"9.4.2 Removal of the side panel".*
2 Loosen the two bolts securing the support and the shaft using a hexagonal wrench.
3 Remove the four M8 set screws from the support and remove it.




### 9.4.6 Removal of the coupling

1 Remove the side panel in line with the instructions given in chapter *"9.4.2 Removal of the side panel"*.
2 Remove the cover in two parts, as indicated in section *"9.4.4 Removal of the fan motor"*.
3 Loosen the coupling screw using a hexagonal wrench.
4 Remove the M8 bolt securing the support as indicated in section *"9.4.5 Removal of the fan shaft support"*.
5 Remove the coupling after removing the shaft and fan unit.



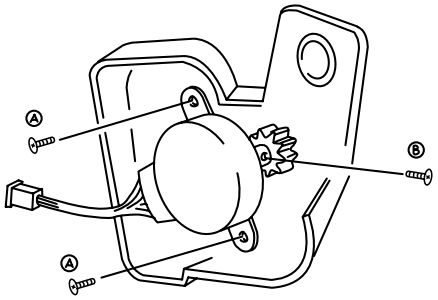

### 9.4.7 Removal of the automatic louver motor

1 Remove the side panel in line with the instructions given in chapter *"9.4.2 Removal of the side panel"*.
2 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.*

3 Remove the two bolts securing the automatic louver motor and remove the AS motor assembly securing plate.
4 Remove the bolt securing the automatic louver motor shaft and the AS pinion.



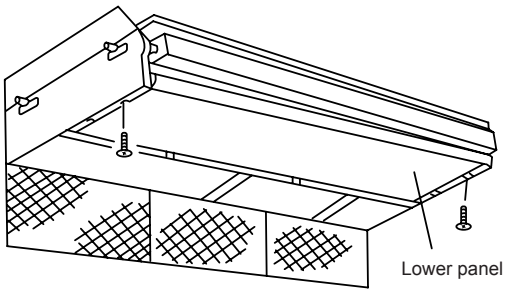

**NOTE**

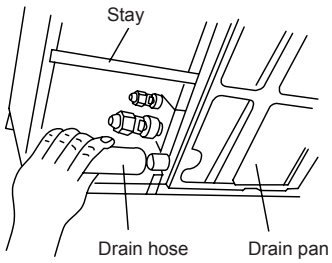
- *Torque value of the two screws securing the automatic louver motor: 0.8 Nm.*
- *Torque value of the screw securing the automatic louver motor shaft: 0.4 Nm.*
- *Apply the torque value using a torque wrench.*

### 9.4.8 Removal of the thermistors from the liquid and gas pipes

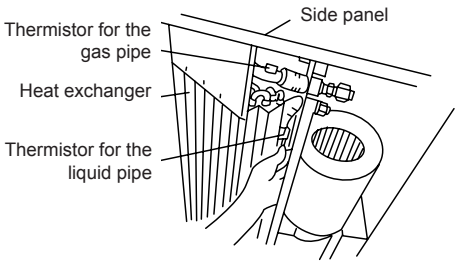
1 Remove the side panel in line with the instructions given in chapter *"9.4.2 Removal of the side panel"*.

2 Remove the lower panel.



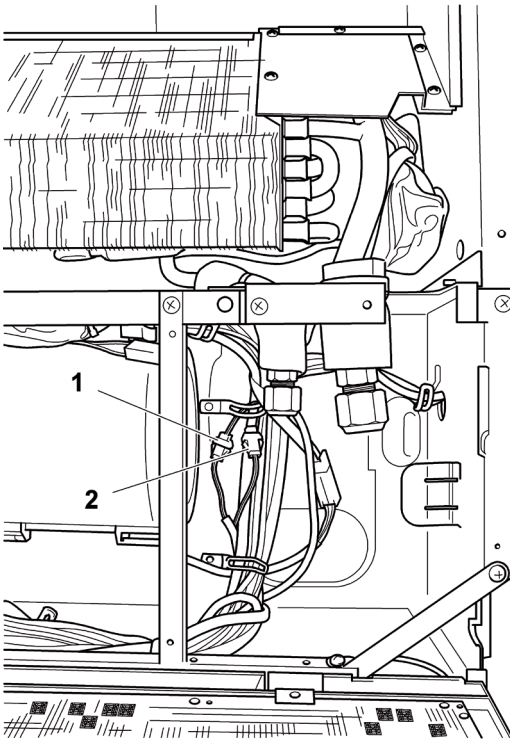




3 Disconnect the drain hose and remove the drain pan.




4 Remove the thermistors from the liquid and gas pipe.

| Nº | Part |
|---|---|
| 1 | Gas thermistor (yellow connector) |
| 2 | Liquid thermistor (black connector) |



### 9.4.9 Removal of the printed circuit board (PCB)

1 Open the air inlet panel as indicated in chapter *"9.4.1 Removal of the air filter"*.

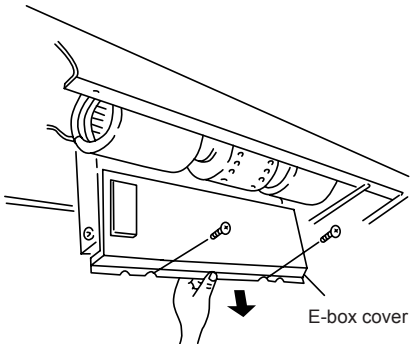
2 Separate the connector from the fan motor wiring.

3 Remove the screws securing the box and attach to the lower frame.

**⚠ CAUTION**

*Hold onto the electrical box to prevent it from falling.*

4 Remove the panel.

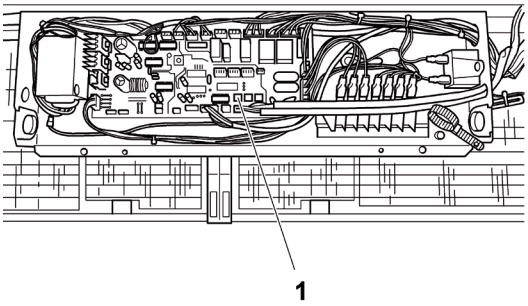



5 Carefully remove the securing supports from the printed control board (PCB) (four) by pressing carefully on the support tabs with long-tipped pliers.

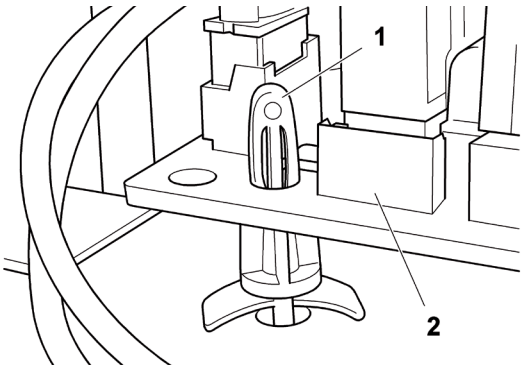
**⚠ CAUTION**

- *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 | PCB |



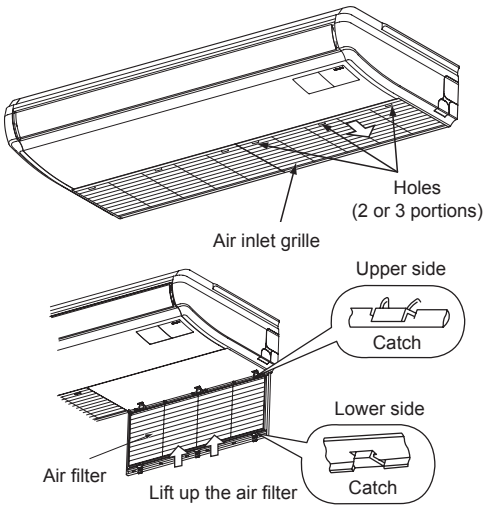

| Nº | Part |
|---|---|
| 1 | Extended support part |
| 2 | PCB |



# 9.5 RPC-(1.5-6.0)FSN3 - Ceiling type

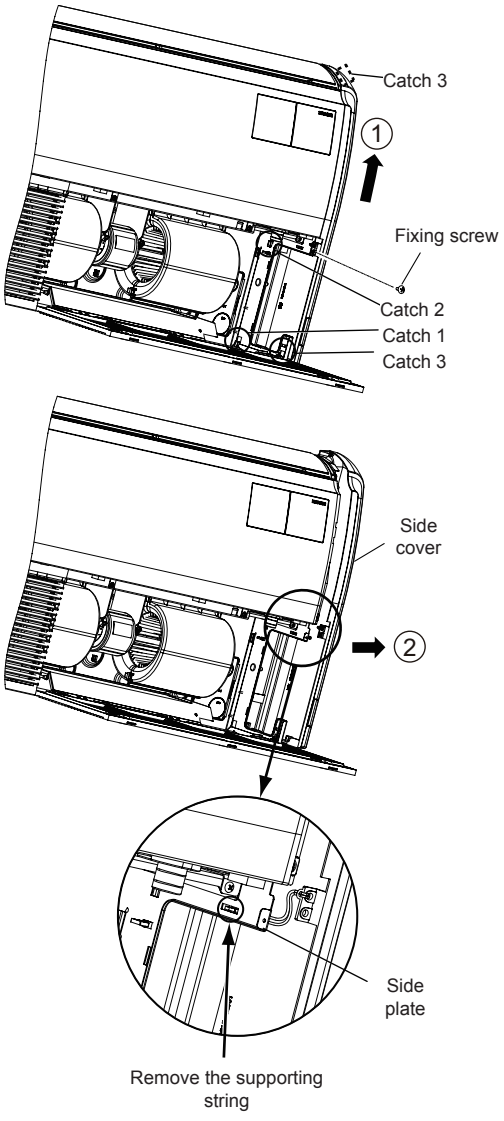
## 9.5.1 Removing Air Filter and Air Inlet Grille

1 The air filter is attached inside the air inlet grille. Open the air inlet grille and remove the air filter.
2 Press and slide the cover of the air inlet grille in the direction of the arrow with fingers in the holes on the cover.
3 Then the air inlet grille is opened downward.
4 Lift up the air filter and release the catches on the air inlet grille to remove the air filter.




## 9.5.2 Removing Side Cover

1 Open the air inlet grille downward according to the item *"9.5.1 Removing Air Filter and Air Inlet Grille"*.
2 Remove the fixing screw for side cover.
3 Slide the side cover in the direction of the arrow (①) and release 3 catches. Then remove the side cover in the direction of the arrow (②).
4 Remove the supporting string from the side plate.



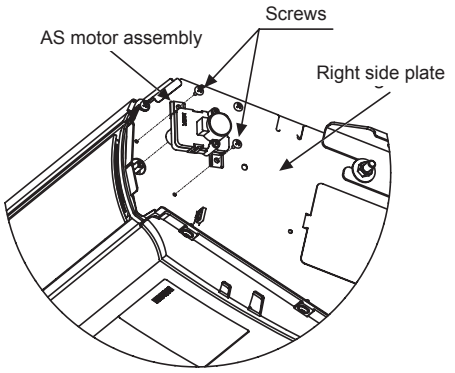
### 9.5.3 Removing Louver

1 Remove the side covers according to *"9.5.2 Removing Side Cover"*.

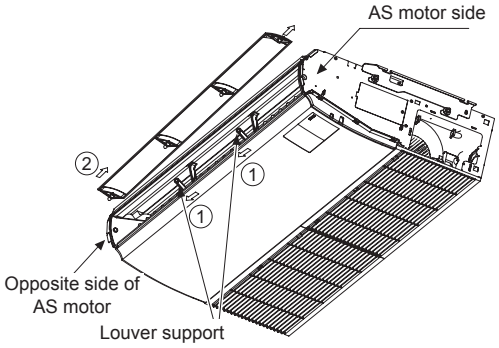
2 Remove 2 screws fixing AS motor assembly to the right side plate.

**NOTE**

*The louver includes the linkage brackets.*




3 Bend the louver support (①) slightly and remove the louver from the louver support. Bend the louver in the direction of the arrow (②). Remove the louver shaft on the opposite side of the AS motor and then pull out the louver.



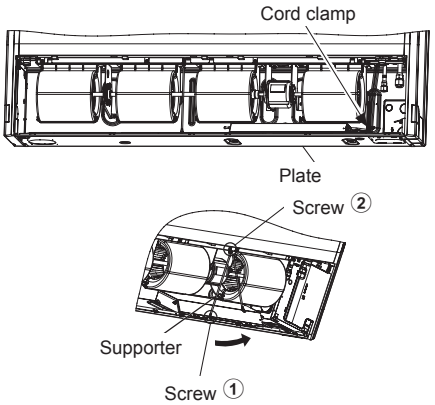

### 9.5.4 Removal of the fan motor

1 Open the air inlet grille as indicated in chapter *"9.4.1 Removal of the air filter"*.

2 Open the air inlet grille downward according to the item *"9.5.1 Removing Air Filter and Air Inlet Grille"*.

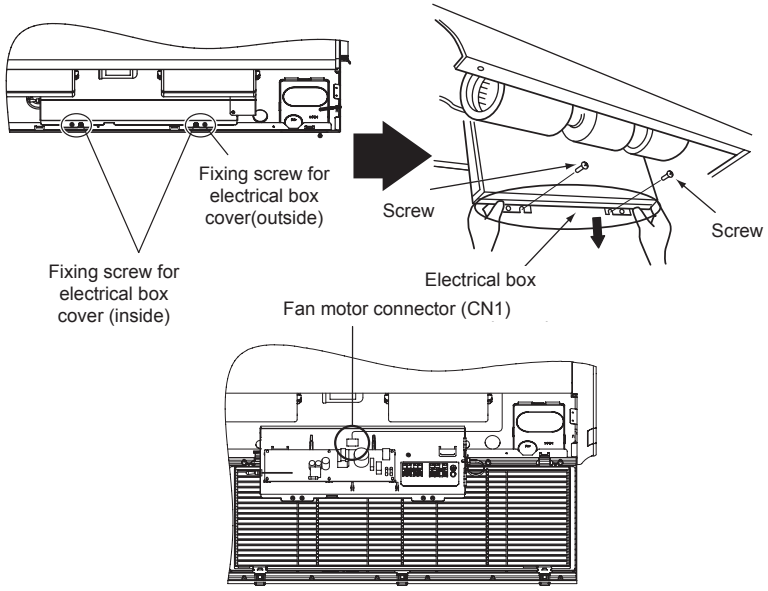
3 Remove the lead wires from the cord clamp on the plate (1 portion). (Only for RPC-(2.5/3.0)FSN3)

4 Remove the fixing screw for supporter (①) and loosen the fixing screw (②). Then rotate the supporter in the direction of the arrow.



5 Remove 2 fixing screws for the electrical box cover. Remove 2 fixing screws for the electrical box and hook the electrical box on the frame at the lower part of the unit. Hold the electrical box not to drop it during the work.

6 Remove the fan motor connector (CN1) from the Indoor Unit PCB.

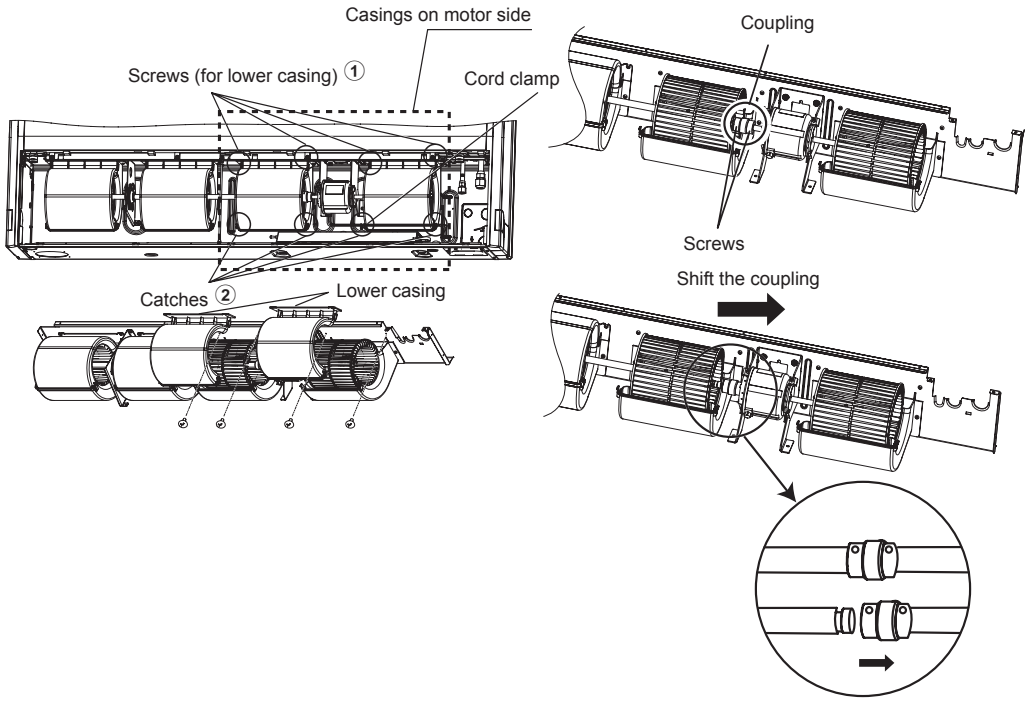



7 Remove the lead wires for the fan motor from the cord clamp on the plate.

8 Remove 2 fixing screws for each lower casing (①). Remove the lower casings by pushing 2 catches (②) inward. (Only 2 casings on the motor side shall be removed.) (Except for RPC-1.5 and 2.0FSN3).

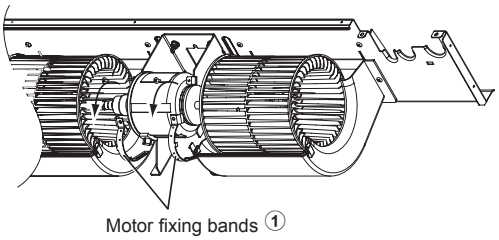
9 Loosen 2 fixing screws for the coupling with a hexagon wrench.

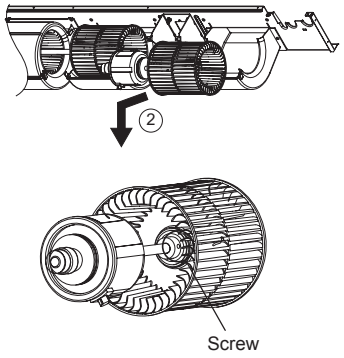
10 Shift the coupling to the fan motor.



11 Remove 2 motor fixing bands (①). Remove the fan runner on the right and fan motor by shifting them in the direction of the arrow (②) with care not to drop them. It takes 2 people to carry out the work.

12 Remove the fixing screw for the fan runner with a hexagon wrench and remove the fan runner from the fan motor.




### 9.5.5 Removing Bearing (Except for RPC-1.5 and 2.0FSN3)

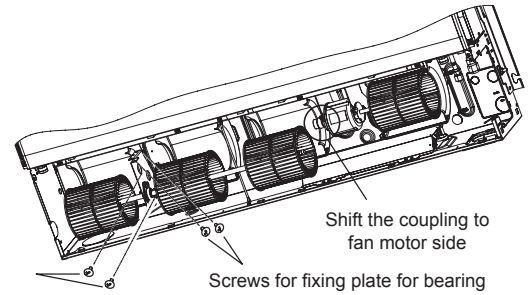
1 Open the air inlet grille downward according to *"9.5.1 Removing Air Filter and Air Inlet Grille"*.

2 Remove the lower casing according to *"9.5.4 Removal of the fan motor"*.

3 Loosen 2 fixing screws for the coupling with a hexagon wrench and shift the coupling to the fan motor side according to *"9.5.4 Removal of the fan motor"*.

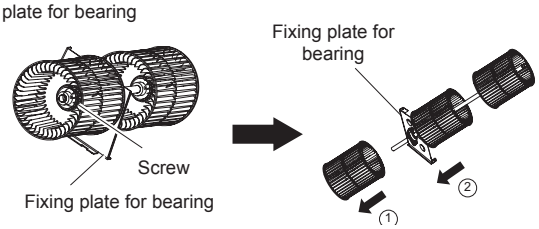
4 Remove 4 screws for the fixing plate for the bearing as shown in the figure. Remove the fixing plate for the bearing together with the shaft and fan runner. It takes 2 people to carry out the work.

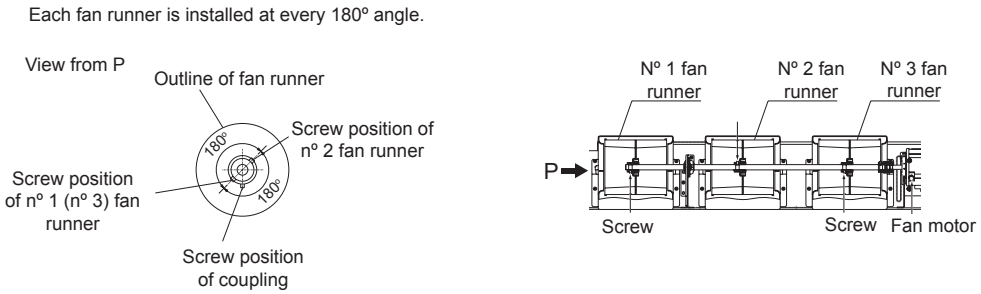
5 Loosen 1 fixing screw for the fan runner with a hexagon wrench and remove the fan runner (①) from the shaft. Then pull the fixing plate for the bearing out from the shaft (②).



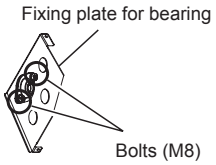

**NOTE**

*When pulling the fixing plate for the bearing out, do not damage the shaft surface contacting the bearing. If it is damaged, an abnormal noise may occur. When remounting the fan runners, mount them with each of them rotated by 180º as shown in the figure.*



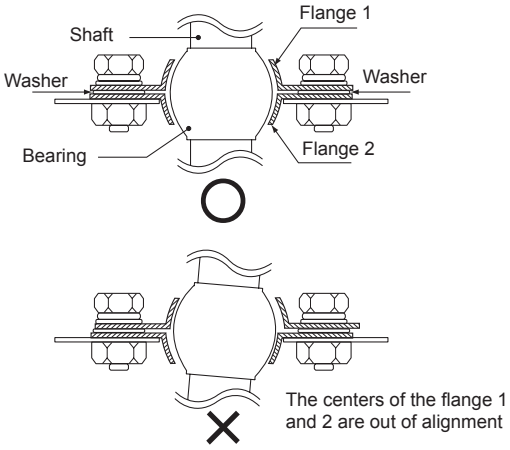

6 Remove 2 fixing bolts (M8) for the bearing and remove it. When mounting it, refer to the following notes.



### Notes for Mounting Bearing

Mount the fixing plate for a flange bearing according to the following notes:

- Align the shaft centers of the flange 1 and flange 2.
- Insert washers between the flanges.
- The tightening torque for bolts shall be 6N-m. This indoor unit utilizes the self-aligning bearing which enables the self-alignment by reducing the alignment torque for the bearing. Therefore, if the tightening work is not performed correctly, an abnormal noise may occur.
- Check that only the bearing body rotates and moves with the bolts tightened.



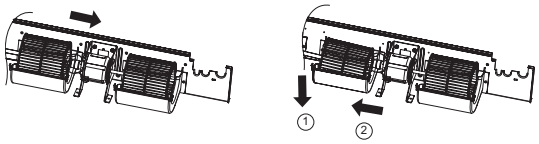

## 9.5.6 Removing Coupling (Except for RPC-1.5 and 2.0FSN3)

1 Open the air inlet grille downward according to *"9.5.1 Removing Air Filter and Air Inlet Grille"*.

2 Remove the lower casing according to *"9.5.4 Removal of the fan motor"*.

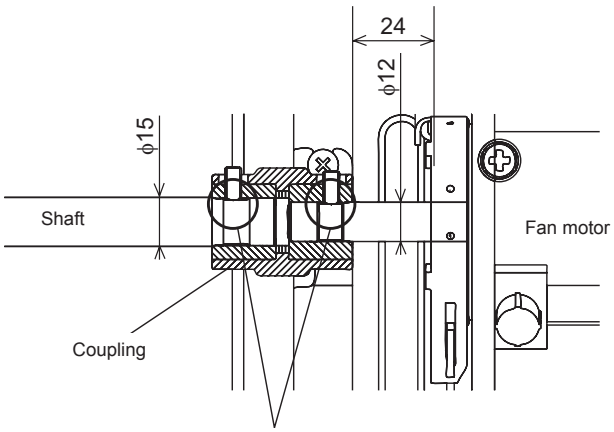
3 Loosen 2 fixing screws for the coupling with a hexagon wrench and shift the coupling to the fan motor according to *"9.5.4 Removal of the fan motor"*.

4 Shift the shaft to the plate in the direction of the arrow (①). Then remove the coupling from the fan motor (②).




### Notes for Remounting Coupling

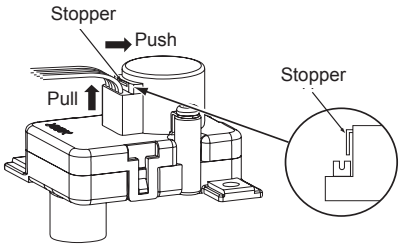
- Tighten the fixing screws, inserting them into the grooves on the shaft.
- Pay attention to the insertion direction of the coupling because the diameters of the shaft and the motor shaft are different.
- The coupling shall be located 24mm away from the fan motor.

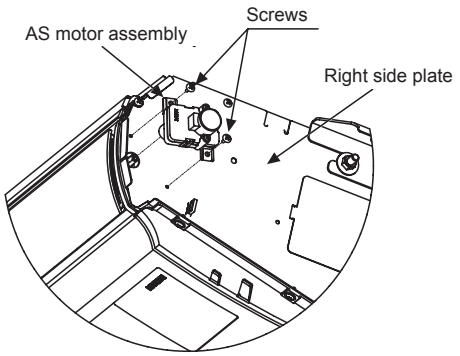



Tighten the fixing screws, inserting them into the grooves on the shaft

### 9.5.7 Removing Auto Louver Motor

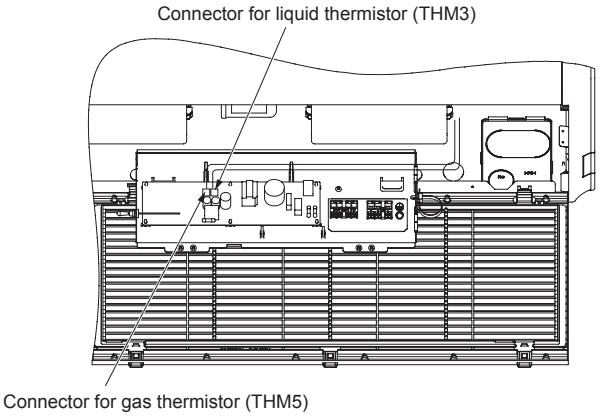
1 Remove the right side cover according to *"9.5.2 Removing Side Cover"*.
2 Remove the AS motor assembly attached to the right end of the louver shaft.
3 Push the stopper to disconnect the connector.



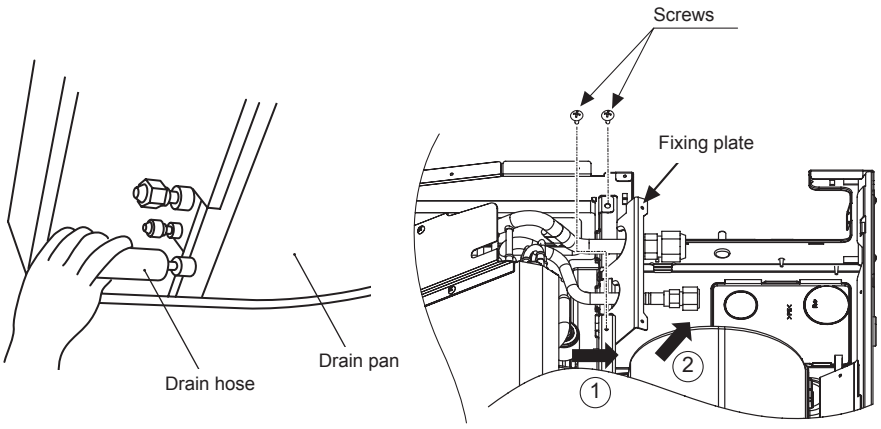




### 9.5.8 Removal of the thermistors from the liquid and gas pipes

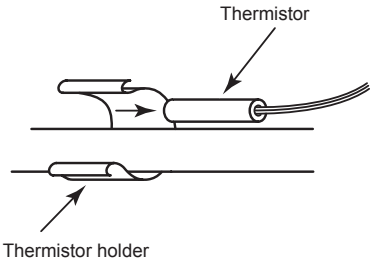
1 Open the air inlet grille downward according to *"9.5.1 Removing Air Filter and Air Inlet Grille"*.
2 Remove the side covers according to *"9.5.2 Removing Side Cover"*.
3 Remove the electrical box and hook it on the flame at the lower part of the unit according to *"9.5.4 Removal of the fan motor"*.
4 Open the electrical box cover and disconnect the connectors for the gas pipe thermistor (yellow, THM5) and the liquid pipe thermistor (black, THM3) from the indoor unit PCB.

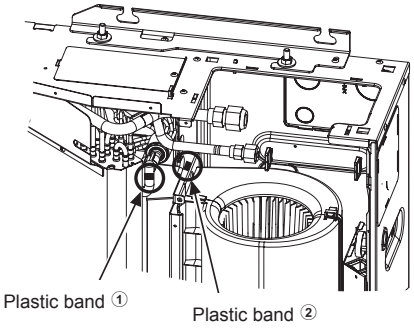


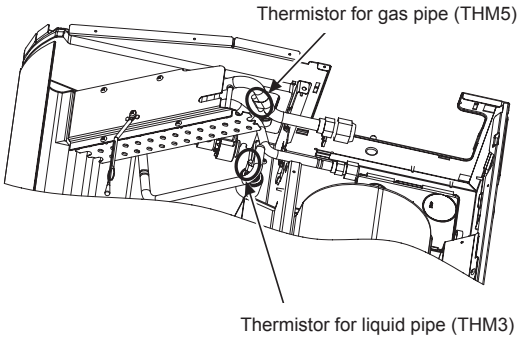

5 Remove the drain hose from the drain pan. Remove the screws (1.5 and 2HP: 9, 2.5 to 6HP: 10) fixing the drain pan to the indoor unit. Be careful in removing the drain pan because the water may have collected in the drain pan.
6 Remove the drain pan.
7 Remove 2 screws for the fixing plate and pull it out in the direction of the arrow (① → ②) to remove it.



8 Remove 2 plastic bands (① and ②) tying the lead wires for the thermistors in a bundle.
9 Remove the butyl sheets attached to the thermistors.
10 Remove the thermistors for the liquid pipe and gas pipe from the unit.



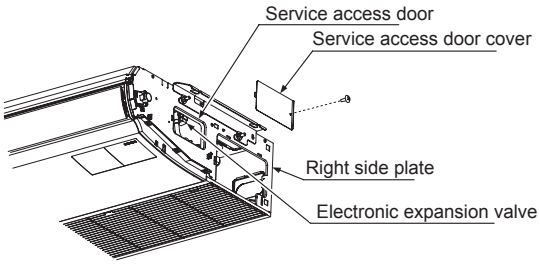



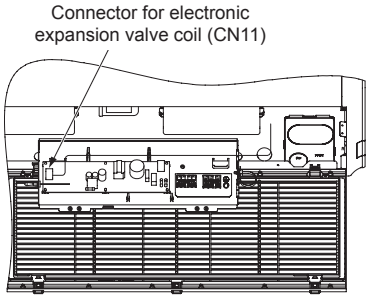

**CAUTION**

*Take special care not to be injured by the heat exchanger fins.*

### 9.5.9 Removing Electronic Expansion Valve Coil

1 Remove the right side cover according to *"9.5.2 Removing Side Cover"*.
2 Remove the service access door cover from the right side plate. Then the electronic expansion valve can be seen from the service access door.
3 Check the motion of the electronic expansion valve by hand.
4 Remove the electrical box and hook it on the flame at the lower part of the unit according to *"9.5.4 Removal of the fan motor"*.
5 Open the electrical box cover and disconnect the connector (CN11) for the electronic expansion valve coil from the indoor unit PCB.




6 Remove the gas and liquid pipe thermistors according to *"9.5.8 Removal of the thermistors from the liquid and gas pipes"*.
7 Remove 2 plastic bands tying the lead wires for the thermistors in a bundle according to *"9.5.8 Removal of the thermistors from the liquid and gas pipes"*.
8 Rotate the expansion valve coil. 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**

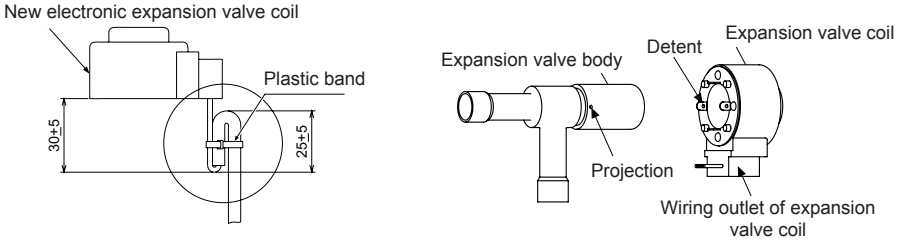
*Take care not to twist the piping.*

9 Tie the lead wires for a new expansion valve coil together with a plastic band as shown in the figure below.

10 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.

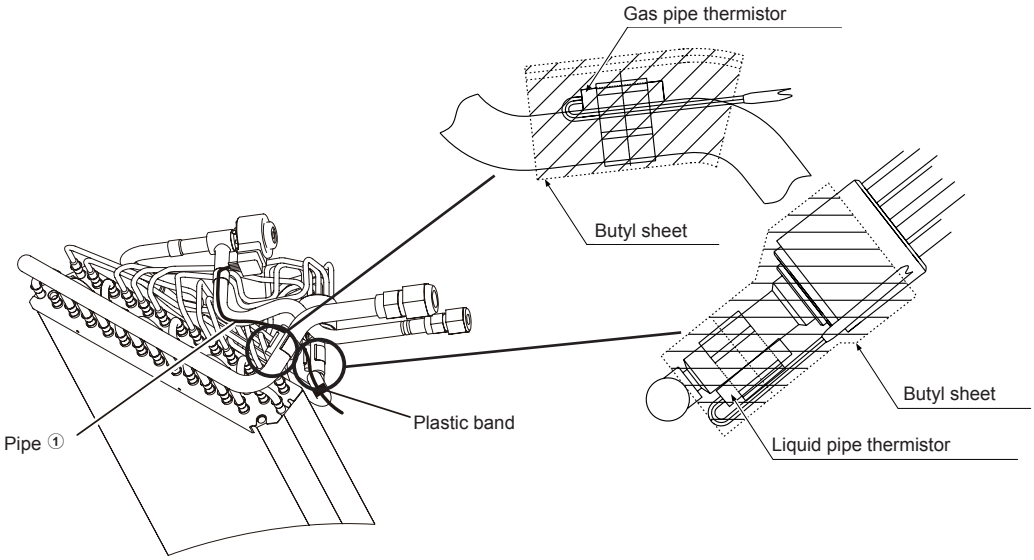
**NOTE**

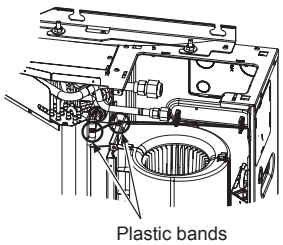
*The detents are located 90º apart in a circle and the projections are located 180º apart in a circle. Fit the projection portions into the detents. If inserting the coil incorrectly, it may cause malfunction of the expansion valve coil.*

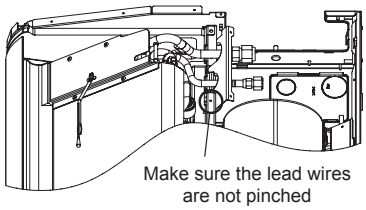



### Notes for Mounting Pipe Thermistors and Expansion Valve Coil

- When mounting the pipe thermistors, pay attention to the outlet direction and position of the lead wires. Seal the thermistors with butyl sheets after mounting them.
- Run the lead wires for the expansion valve coil along the outside of the pipe (①). Tie the wires and the pipe thermistors in a bundle at 2 portions with plastic bands as shown in the figure below.
- Attach the fixing plate for the liquid and gas pipes carefully so that the lead wires are not pinched.



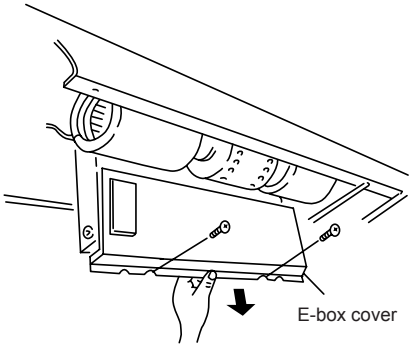
### 9.5.10 Removal of the printed circuit board (PCB)

1 Open the air inlet grille downward according to *"9.5.1 Removing Air Filter and Air Inlet Grille"*.

2 Remove the electrical box and hook it on the flame at the lower part of the unit according to *"9.5.4 Removal of the fan motor"*.

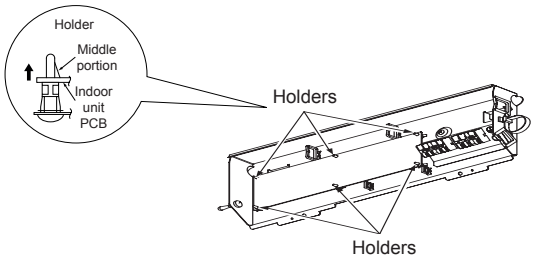
3 Remove 2 fixing screws for the electrical box cover and remove it.

4 Remove the 6 holders fixing the indoor unit PCB. Pinch the middle portion with a long-nose pliers and pull them out.

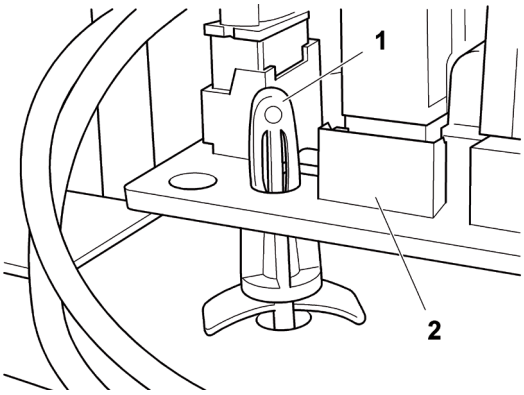



**⚠ CAUTION**

- *Do not touch the electrical components on the PCB.*
- *Do not apply an excessive force to the PCB nor bend it. Otherwise, it will lead to a PCB failure*
- *An incorrect position during installation may damage the PCB.*




Carefully remove the securing supports from the printed control board (PCB) by pressing carefully on the support tabs with long-tipped pliers.

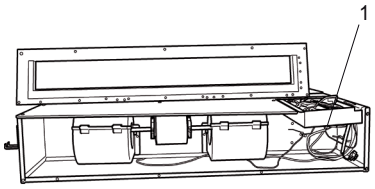



| Nº | Part |
|---|---|
| 1 | Extended support part |
| 2 | PCB |

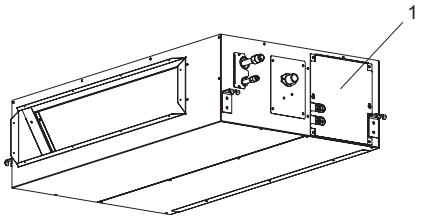
# 9.6 RPI-(0.6-6.0)FSN4E - Ducted indoor unit

## 9.6.1 Removal of the electrical box

**RPI-(0.6-1.5)FSN4E**

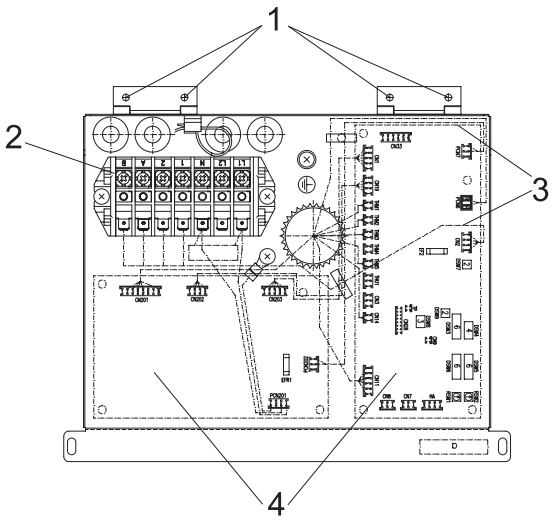



**RPI-(2.0-6.0)FSN4E**

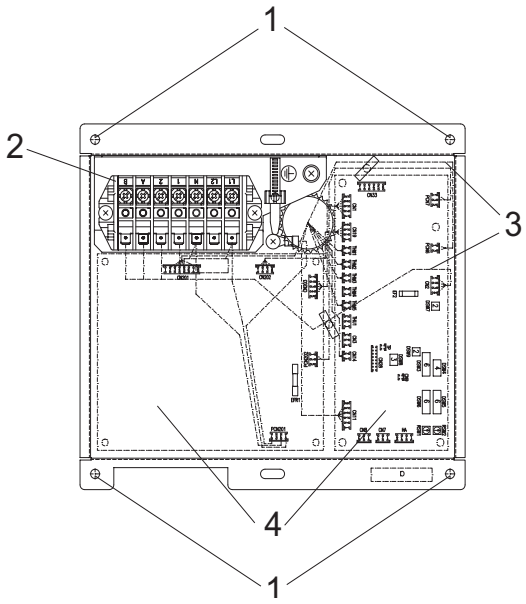



| Nº | Part |
|---|---|
| 1 | Location of the electrical box cover |

**RPI-(0.6-1.5)FSN4E**




**RPI-(2.0-6.01)FSN4E**




| Nº | Part |
|---|---|
| 1 | Set screw |
| 2 | Terminal board |
| 3 | Transformer |
| 4 | PCB |

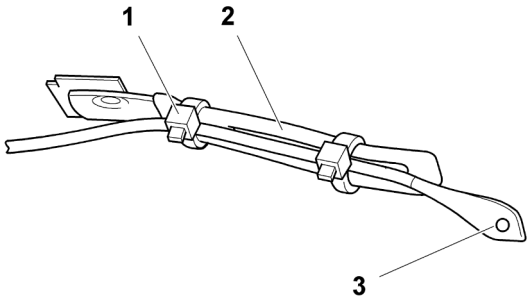
## 9.6.2 Removal of the inlet and outlet air thermistors

### Inlet air thermistor

**NOTE**

*Disconnect and remove the thermistor. The thermistor is located on the outlet side of the unit.*

| Nº | Part |
|---|---|
| 1 | Tie |
| 2 | Cable clamp |
| 3 | Thermistor |



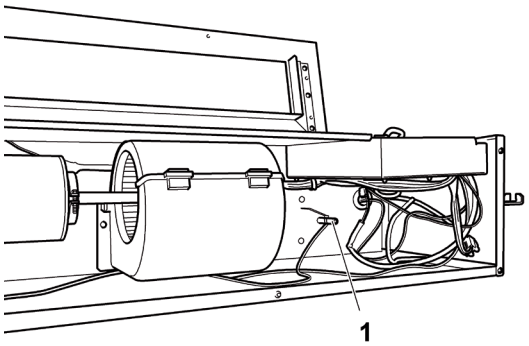

**NOTE**

*To disconnect and remove the appropriate thermistor, previously see the chapter corresponding to the wiring diagrams in this Manual.*

1 Remove the screws securing the rear cover of the unit.

2 Disconnect and remove the thermistor.

| Nº | Part |
|---|---|
| 1 | Location of the air inlet thermistor |

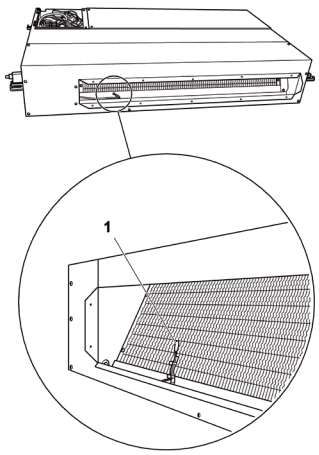



### Outlet air thermistor

**NOTE**

*To disconnect and remove the appropriate thermistor, previously see the chapter corresponding to the wiring diagrams in this Manual.*

| Nº | Part |
|---|---|
| 1 | Air outlet thermistor |



### 9.6.3 Removal of the thermistors from the liquid and gas pipes

**NOTE**

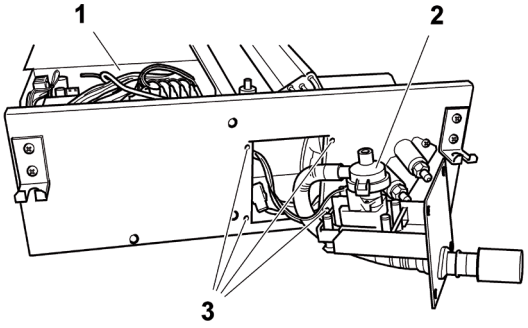
- *To disconnect and remove the appropriate thermistor, previously see the chapter corresponding to the wiring diagrams in this Manual.*
- *Cover the thermistors with cork tape or pipe insulation, depending on the location. Both materials are factory-supplied. Replace them if damaged during maintenance work.*

1 Remove the electrical box cover.

2 Remove the service cover.

The liquid and gas pipe thermistors are secured to the copper piping by a special clamp.

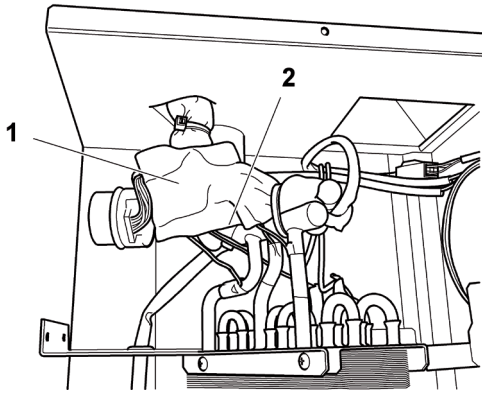
- Liquid pipe thermistor: covered with cork tape.
- Gas pipe thermistor: covered with pipe insulation.




| Nº | Part |
|---|---|
| 1 | Electrical box |
| 2 | Drain pump |
| 3 | Screws |

**NOTE**

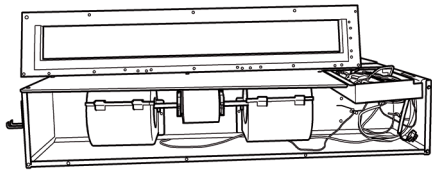
- *Black connector: liquid thermistor.*
- *Yellow connector: gas thermistor.*

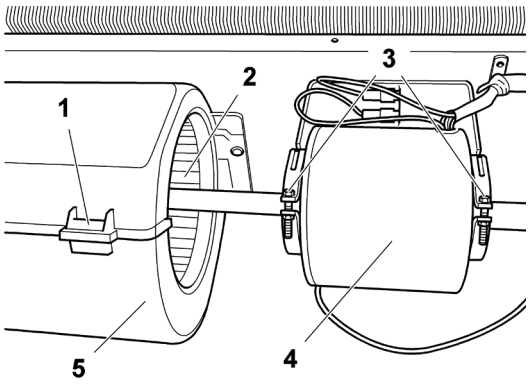



| Nº | Part |
|---|---|
| 1 | Location of the thermistor |
| 2 | Location of the thermistor |

### 9.6.4 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 |

1 Remove the rear cover as indicated in chapter *"9.6.2 Removal of the inlet and outlet air thermistors"*.
2 Remove the tape located in the centre of the casing.
3 Press the locks and remove half of the fan casing.
4 Remove the fixture support screws and carefully remove the motor together with the fans.
5 Loosen the screws securing the fans to the motor shaft.

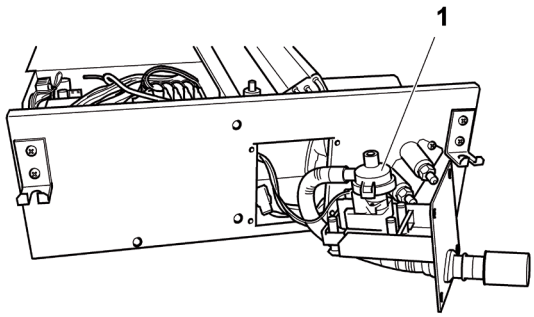
**NOTE**

*If the fan casing is to be fully removed, remove the screws securing the other half to the fan motor fixture.*

### 9.6.5 Removal of the drain mechanism

**NOTE**

*To disconnect and remove the drain mechanism, previously see the chapter corresponding to the wiring diagrams in this Manual.*



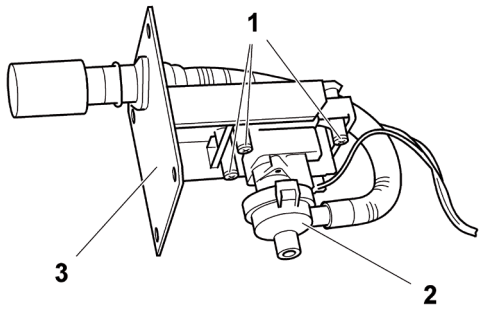

1 Remove the drain pump support screws and remove it.

| Nº | Part |
|---|---|
| 1 | Drain pump |

**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 *"9.6.1 Removal of the electrical box"*.
2 Seal the drain hose gaskets correctly.




| Nº | Part |
|---|---|
| 1 | Bolts |
| 2 | Drain pump |
| 3 | Service cover |

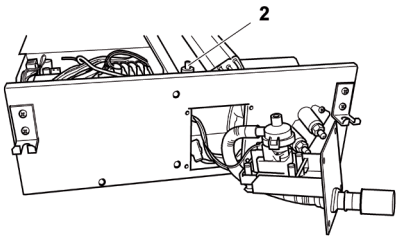
### 9.6.6 Removal of the float switch

**NOTE**

*To disconnect and remove the float switch, previously see the chapter corresponding to the wiring diagrams in this Manual.*

1 Remove the drain pump support screws and remove it.
2 Loosen the screws securing the float switch to the support.
3 Loosen the resin nut securing the float switch and remove it.

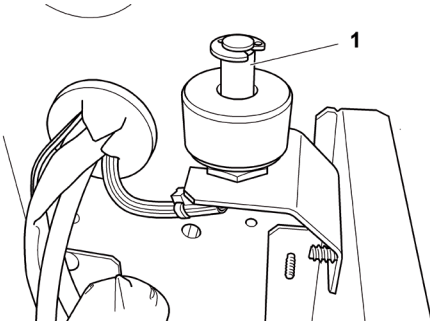
| Nº | Part |
|---|---|
| 1 | Float switch position |




**NOTE**

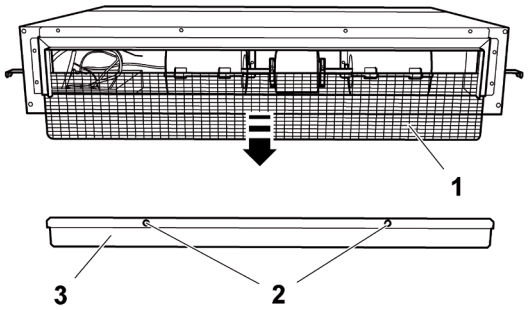
*The torque value of the resin nut is 0.3 - 0.4 Nm. If the torque value is higher, the nut will be damaged.*

| Nº | Part |
|---|---|
| 1 | Float switch |




### 9.6.7 Removal of the air filter

| Nº | Part |
|---|---|
| 1 | Air filter |
| 2 | Screws |
| 3 | Air filter fixture bar |



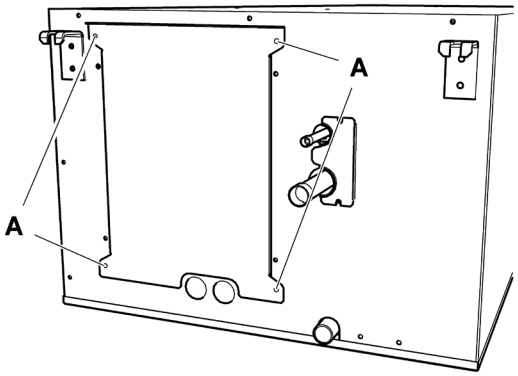
## 9.7 RPI-(8.0-20.0)FSN3(P)E(-f) - Ducted indoor unit

**NOTE**

*In the following general illustrations are examples for RPI-(8.0/10.0)FSN3E(-f), but they are applicable for RPI-(16.0/20.0)FSN3PE(-f) as well. In the specific cases where there are differences between both units, the illustrations are shown separately for each one.*

### 9.7.1 Removal of the electrical box cover

1 Remove the set screws -A- from the electrical box cover to access the electrical components.

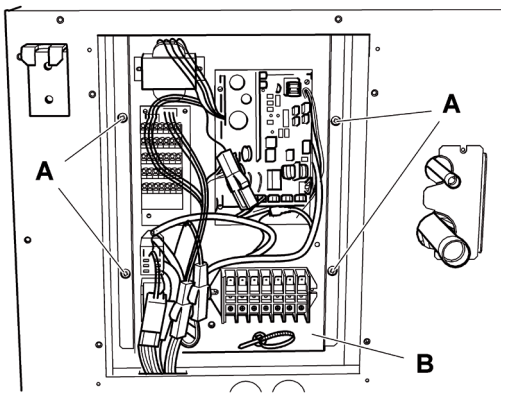



### 9.7.2 Removal of electrical components

1 Remove the electrical box cover as indicated in chapter *"9.7.1 Removal of the electrical box cover"*.
2 Separate the connections of all electrical components.
3 Remove the set screws -A- and separate the full electrical component support -B-.

**CAUTION**

*Handle the support carefully to avoid damaging the electrical components.*



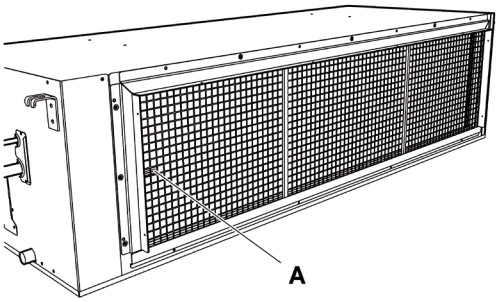

### 9.7.3 Removal of the inlet and outlet air thermistors

#### Inlet air thermistor

1 Remove the air filter as indicated in chapter *"9.7.8 Removal of the air filter"*.

**NOTE**

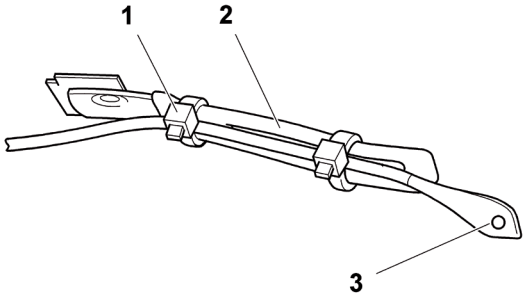
*The inlet air thermistor -A- is located on the left-hand side of the air inlet to the unit.*




2 Remove the electrical box cover as indicated in chapter *"9.7.1 Removal of the electrical box cover"*.
3 Disconnect and remove the thermistor (x2 thermistors in RPI-(16.0/20.0)FSN3PE(-f))

**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

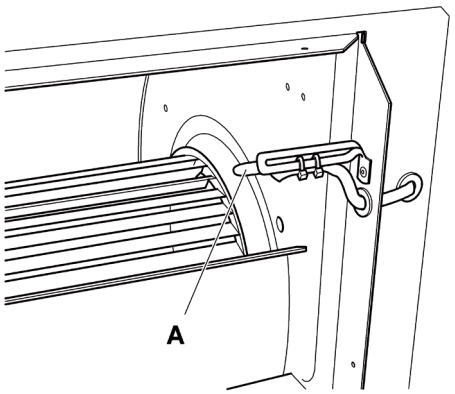
The outlet air thermistor -B- is located on the right-hand side of the air outlet from the unit.

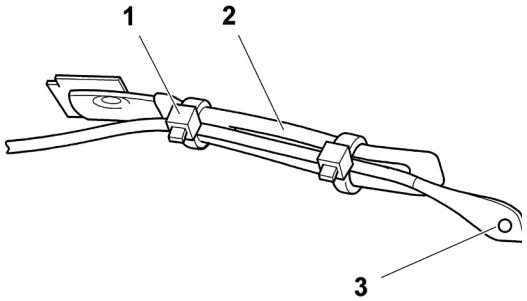
1 Remove the electrical box cover as indicated in chapter *"9.7.1 Removal of the electrical box cover"*.

2 Disconnect and remove the thermistor (x2 thermistors in RPI-(16.0/20.0)FSN3PE(-f)).

**NOTE**

*To disconnect and remove the appropriate thermistor, previously see the chapter corresponding to the wiring diagrams in this Manual.*



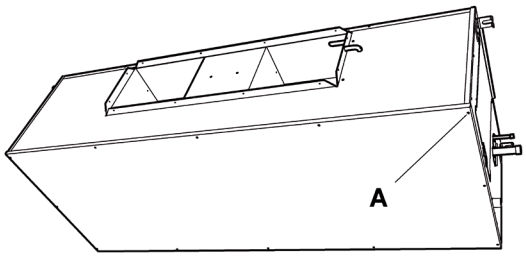

| Nº | Part |
|---|---|
| 1 | Tie |
| 2 | Cable clamp |
| 3 | Thermistor |

### 9.7.4 Removal of the thermistors from the liquid and gas pipes

1 Remove the appropriate service cover for accessing to the liquid / gas thermistors.

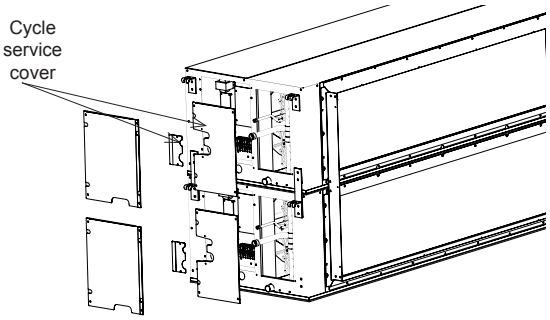
   a. For (8.0/10.0)HP: Remove all the screws (A) from the lower cover of the unit and remove the cover.

   b. For (16.0/20.0)HP: Remove the screws from the cycle service cover and remove it.




2 Remove the electrical box cover as indicated in chapter *"9.7.1 Removal of the electrical box cover"*.

3 Disconnect the thermistor.

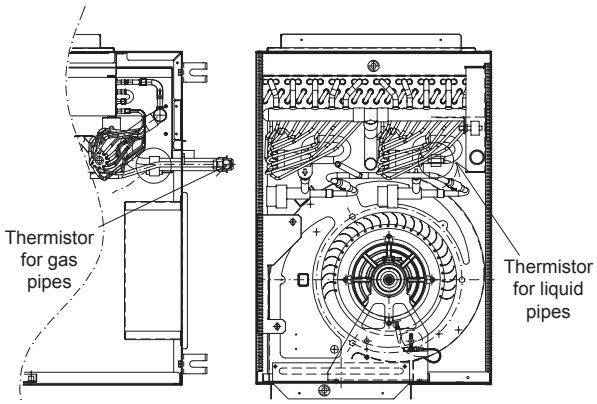



**NOTE**

- *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.*

4 Remove the gas and liquid thermistor insulation cover.

5 Remove the special clamp holding the thermistor to the copper piping and remove it.




**NOTE**

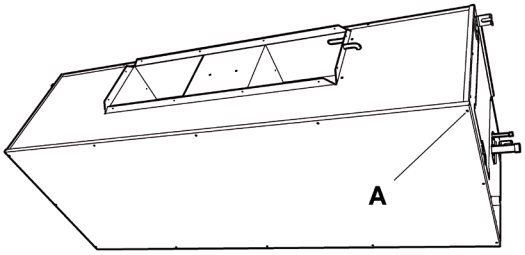
*When fitting the thermistors, remember that they must be secured correctly by the special clamp and completely covered by the previously removed insulation.*

### 9.7.5 Removal of the drain pan

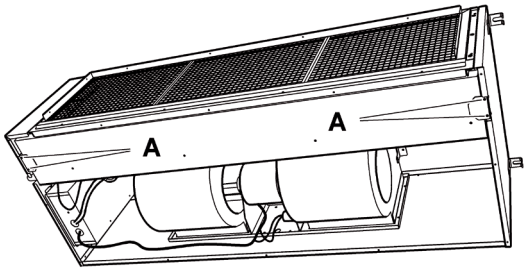
#### ◆ For RPI-(8.0/10.0)FSN3E(-f)

1 Remove all screws -A- from the lower cover of the unit and separate it.

2 Release the unit drainage connection.




3 Remove the screws -A- securing the drain pan and remove it.

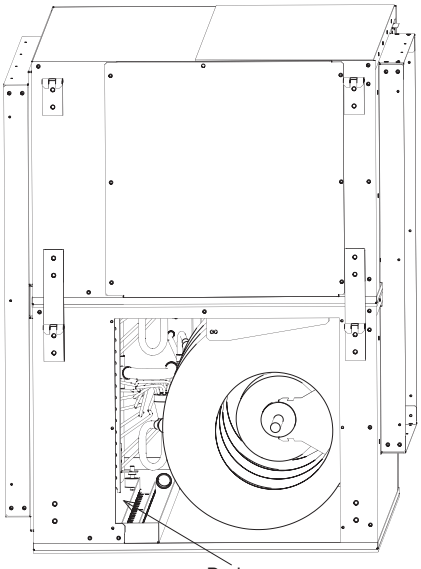



**NOTE**

*When fitting, seal the drain hose gasket correctly.*

### ◆ For RPI-(16.0/20.0)FSN3PE(-f)

1 The servicing of these units can be carried out either by the fan motor side cover or by the cycle service cover. Access to the drain pan through any of these covers and clean it in order to guarantee a correct operation.




## 9.7.6 Fan removal

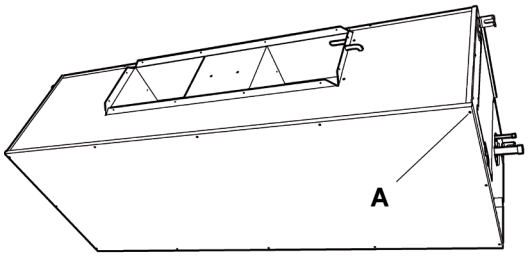
### ◆ For RPI-(8.0/10.0)FSN3E(-f)

1 Remove all screws -A- from the lower cover of the unit and separate it.
2 Remove the electrical box cover as indicated in chapter *"9.7.1 Removal of the electrical box cover"*.
3 Disconnect the fan motor.

**NOTE**

*To disconnect and remove the fan motor, previously see the chapter corresponding to the wiring diagrams in this Manual.*

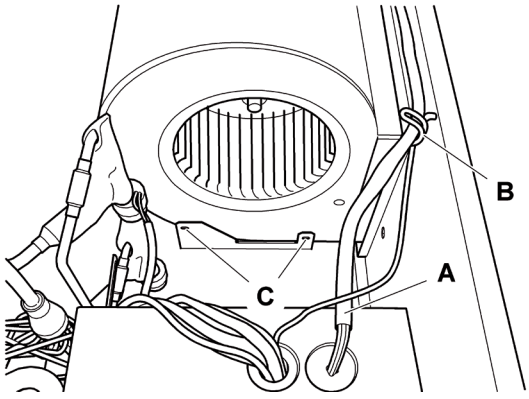
4 Remove the drain pan as indicated in chapter *"9.7.5 Removal of the drain pan"*.




5 Remove the wiring A- from the electrical box and release it from the support -B-.
6 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.*

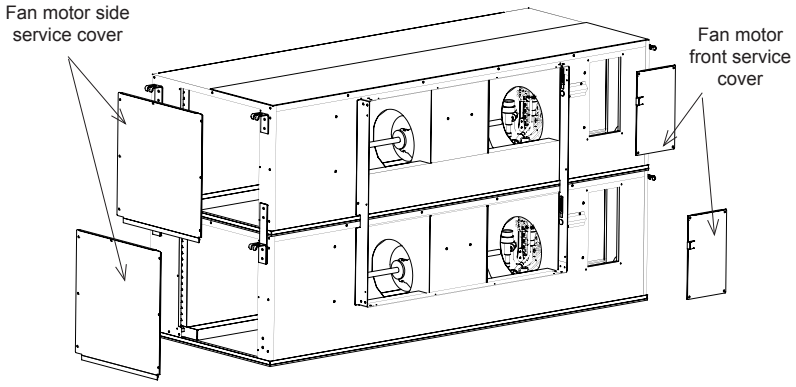


### ◆ For RPI-(16.0/20.0)FSN3PE

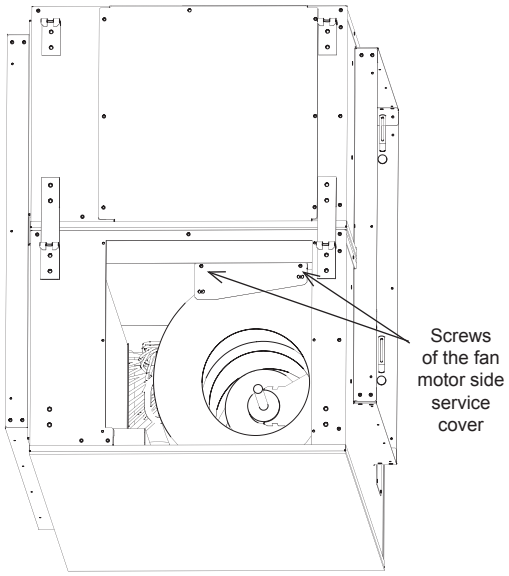
**NOTE**

*The following procedure applies to both upper and lower fan motor groups.*

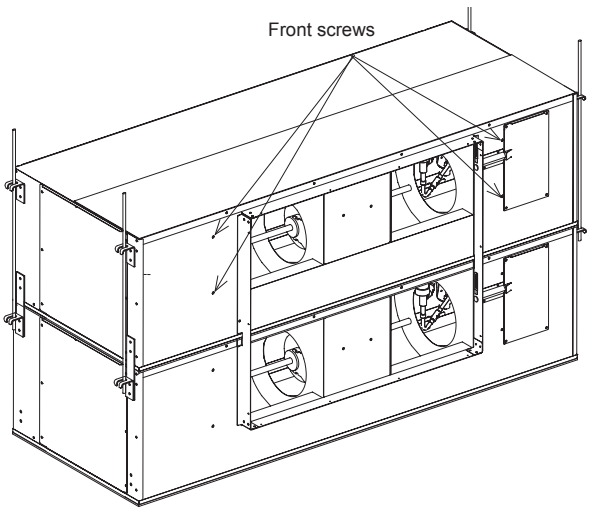
1 Unscrew and remove the 7 screws of the fan motor side service cover and the 4 screws of the fan motor front service cover.




2 After removing the service covers, remove the screws which fix the fan motor to its supports (4 screws at the fan motor side service cover and 2 screws at the fan motor service cover).



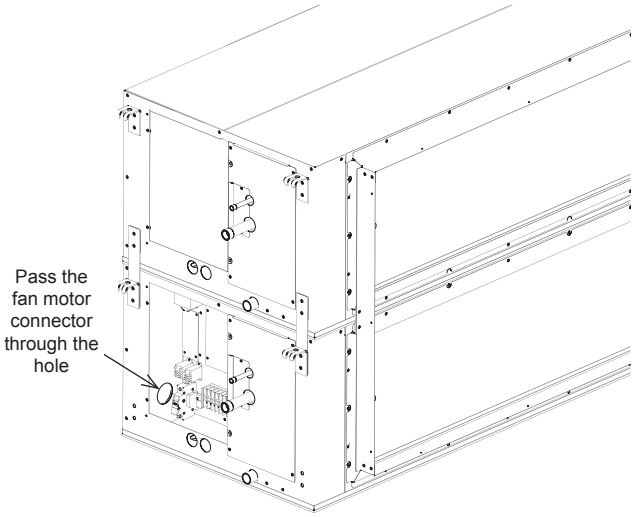

3 Remove the 4 front screws which fix the fan motor group to the front side of the unit.



4 Once the fan motor group has been released, disconnect the fan motor connector from the electrical box and pass it through the electrical box hole.

**⚠ CAUTION**

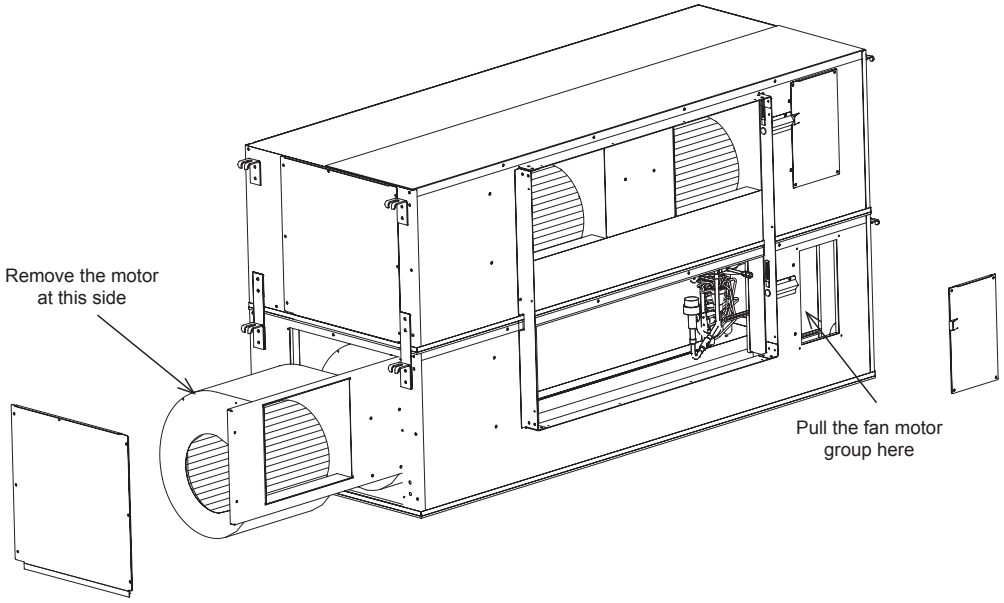
*Loosen the clamp around the fan motor connector cable to ease the release of fan motor group.*




5 Remove the fan motor group. One person shall push the fan motor group from the position of the front service cover, while a second person is pulling from the position of the fan motor side service cover.

**⚠ CAUTION**

*The fan motor group has an approximate weight of 25 kg, and therefore removal operation shall be carried out by two persons at least.*

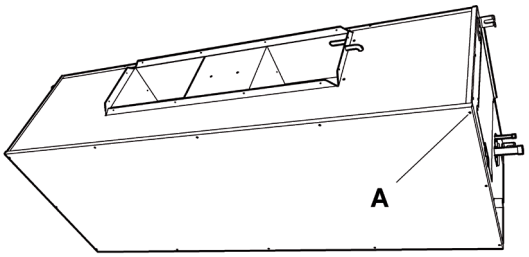


### 9.7.7 Removal of the float switch

◆ **For RPI-(8.0/10.0)FSN3E(-f)**

1 Remove all screws -A- from the lower cover of the unit and separate it.

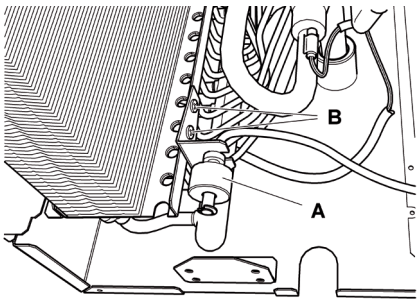
2 Remove the drain pan as indicated in chapter *"9.7.5 Removal of the drain pan"*.




**NOTE**

*To disconnect and remove the float switch, previously see the chapter corresponding to the wiring diagrams in this Manual.*

3 Loosen the resin nut securing the float switch -A- and remove it. If the switch support is to be removed, remove screws -B-.



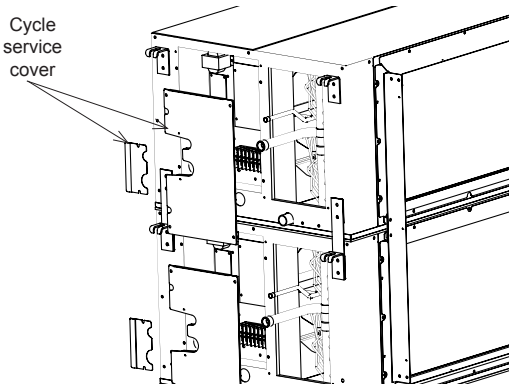

**NOTE**

*The torque value of the resin nut is 0.3 - 0.4 Nm. If the torque value is higher, the nut will be damaged.*

◆ **For RPI-(16.0/20.0)FSN3PE(-f)**

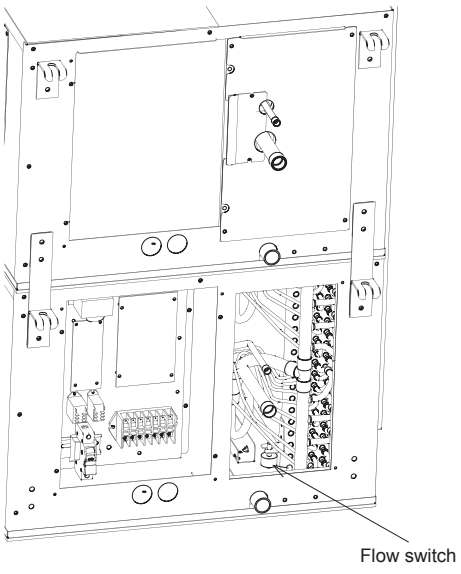
1 Remove the cycle service cover by unscrewing its fixing screws

2 Loosen the resin nut securing the float switch and remove it. If the switch support is to be removed, remove screws.




**NOTE**

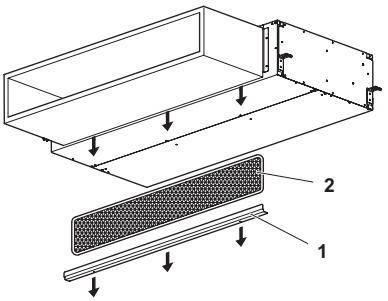
*The torque value of the resin nut is 0.3 - 0.4 Nm. If the torque value is higher, the nut will be damaged.*



### 9.7.8 Removal of the air filter

◆ **For RPI-(8.0/10.0)FSN3E(-f)**

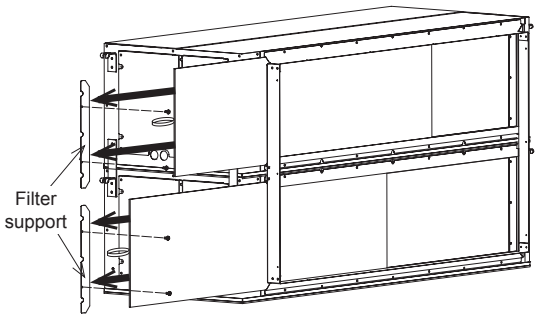
Remove the four set screws from the support fixture -1- of the air filter -2- and separate both parts.




◆ **For RPI-(16.0/20.0)FSN3PE(-f)**

Filter maintenance can be performed from right or left side of the unit.

Remove filter support (x2 screws / each support) and pull out the filter from the handle. In those installations where the servicing space is narrow, the filter could be bent (in three pieces) when pulling it out.

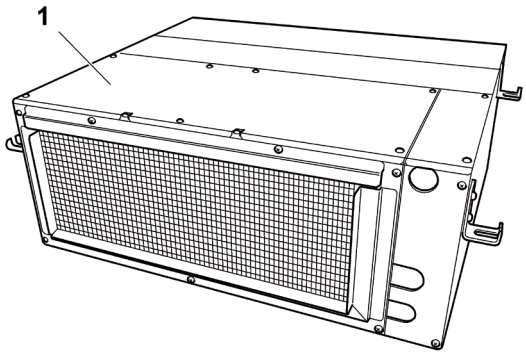


# 9.8 RPIM-(0.6-1.5)FSN4E - Ducted indoor unit

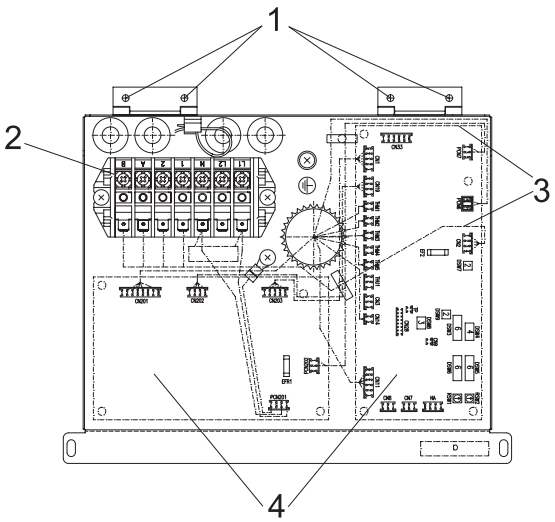
## 9.8.1 Removal of the electrical box

1 Remove the electrical box cover to access the electrical components.

| Nº | Part |
|---|---|
| 1 | Location of the electrical box cover |



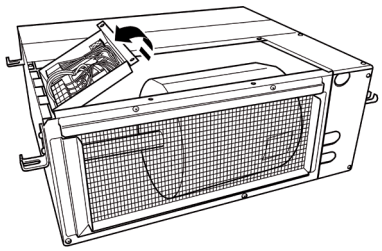

| Nº | Part |
|---|---|
| 1 | Set screws |
| 2 | Terminal board |
| 3 | Transformer |
| 4 | PCB |




2 Remove the set screws and remove the electrical box from the unit.

**NOTE**

*The electrical box is fitted with a hinge.*



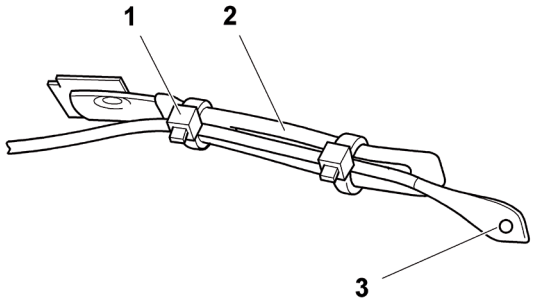
## 9.8.2 Removal of the inlet and outlet air thermistors

### Inlet air thermistor

**NOTE**

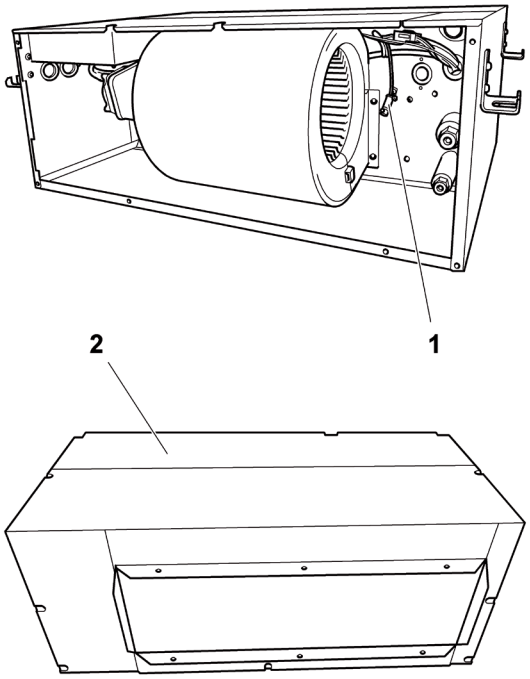
*To disconnect and remove the appropriate thermistor, previously see the chapter corresponding to the wiring diagrams in this Manual.*

| Nº | Part |
|---|---|
| 1 | Tie |
| 2 | Cable clamp |
| 3 | Thermistor |



1 Remove the screws securing the rear cover of the unit.
2 Disconnect and remove the thermistor.

| Nº | Part |
|---|---|
| 1 | Location of the air inlet thermistor |
| 2 | Rear cover |



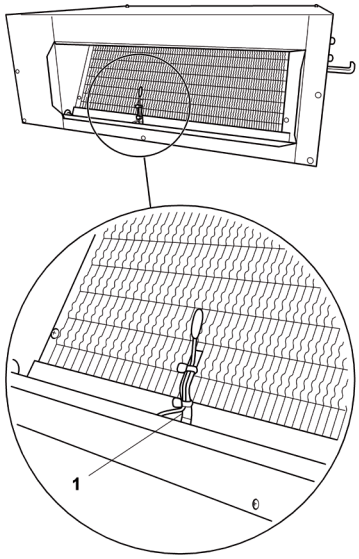

### 9.8.3 Outlet air thermistor

**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.*

1 Disconnect and remove the thermistor.

| Nº | Part |
|---|---|
| 1 | Outlet thermistor |

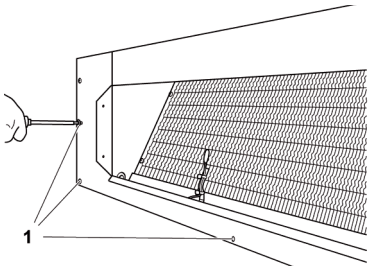



**NOTE**

- *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.*

2 Disconnect and remove the thermistor. Removal of the thermistors from the liquid and gas pipes.

| Nº | Part |
|---|---|
| 1 | Screws |




**NOTE**

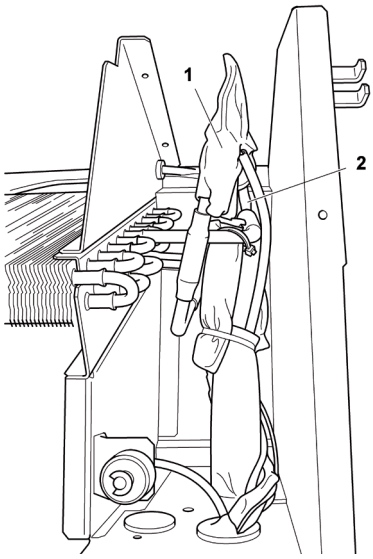
- *To disconnect and remove the appropriate thermistor, previously see the chapter corresponding to the wiring diagrams in this Manual.*
- *Cover the thermistors with cork tape or pipe insulation, depending on the location. Both materials are factory-supplied. Replace them if damaged during maintenance work.*

3 Remove the electrical box cover.
4 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 |



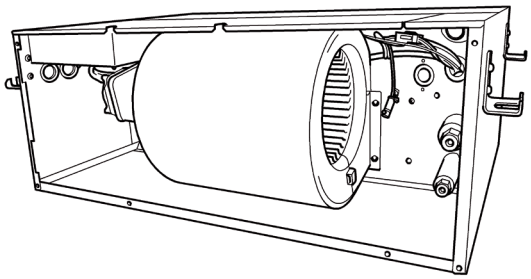

**NOTE**

- *Black connector: liquid thermistor.*
- *Yellow connector: gas thermistor.*

### 9.8.4 Removal of the fan parts

Fan parts: fan motor, fan casing and duct.

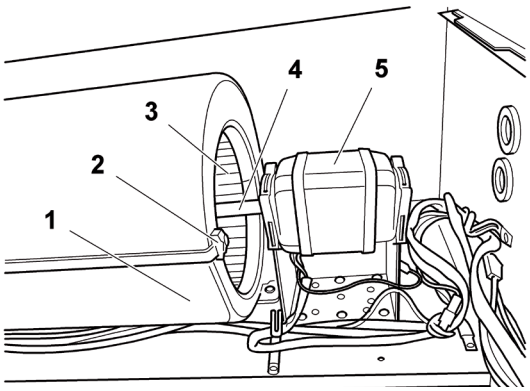
1 Remove the rear cover as indicated in chapter *"9.8.2 Removal of the inlet and outlet air thermistors"*.
2 Remove the tape located in the centre of the casing.
3 Press the locks and remove half of the fan casing.
4 Remove the fixture support screws and carefully remove the motor together with the fans.
5 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.*

| Nº | Part |
|---|---|
| 1 | Fan casing |
| 2 | Lock |
| 3 | Fan duct |
| 4 | Shaft |
| 5 | Fan motor |



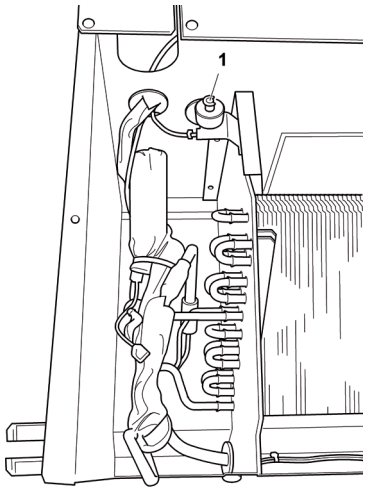
### 9.8.5 Removal of the float switch

**NOTE**

*To disconnect and remove the float switch, previously see the chapter corresponding to the wiring diagrams in this Manual.*

1 Remove the necessary covers to access the float switch.

2 Loosen the screws securing the float switch to the support.

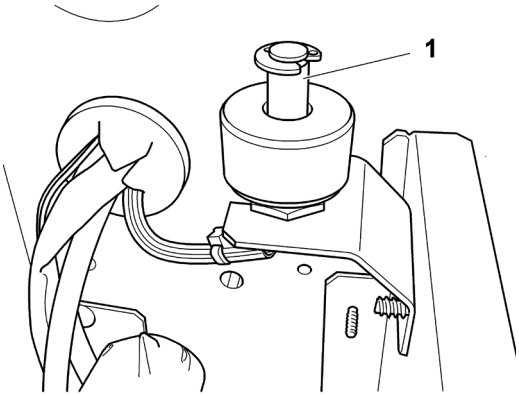



**NOTE**

*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 position |

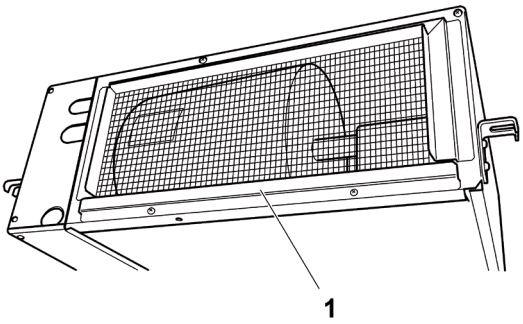
3 Loosen the resin nut securing the float switch and remove it.




| Nº | Part |
|---|---|
| 1 | Float switch |

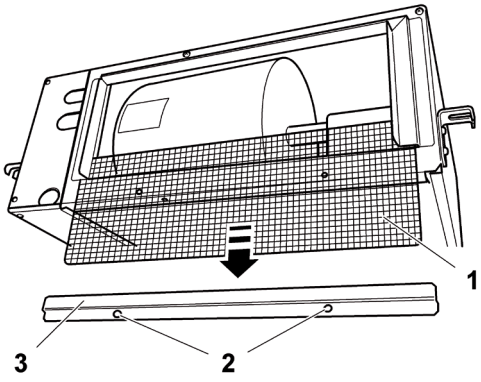
### 9.8.6 Removal of the air filter

1 Remove the air filter fixture support screws and remove the air filter.




| Nº | Part |
|---|---|
| 1 | Air filter fixture bar |

2 Pull the air filter downwards.



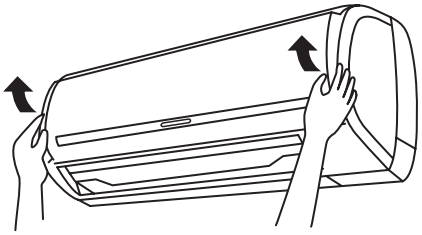

| Nº | Part |
|---|---|
| 1 | Air filter |
| 2 | Screws |
| 3 | Air filter fixture bar |

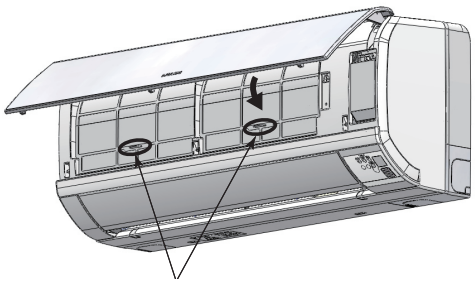
## 9.9 RPK-FSN(H)3M - Wall mounted

### 9.9.1 Removal of the air filter

◆ **For RPK-(0.6-1.5)FSN(H)3M**

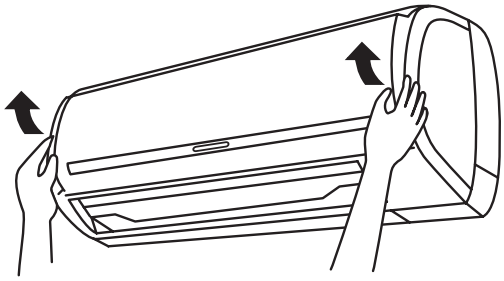
1 Open the flat panel. Hold the both sides of flat panel and pull it up

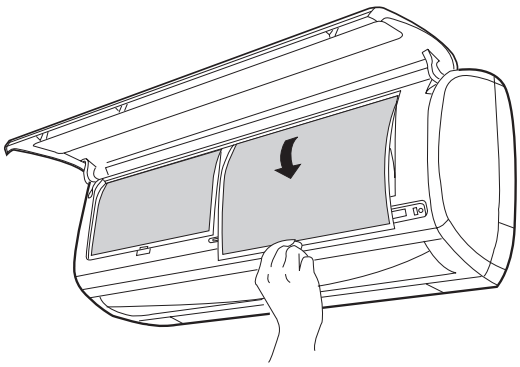




Filter catches (2 portions)

◆ **For for RPK-(2.0-4.0)FSN(H)3M**





### 9.9.2 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-(0.6-1.5)FSN(H)3M**

1 Remove the air filter according to the *"9.9.1 Removal of the air filter"* chapter.

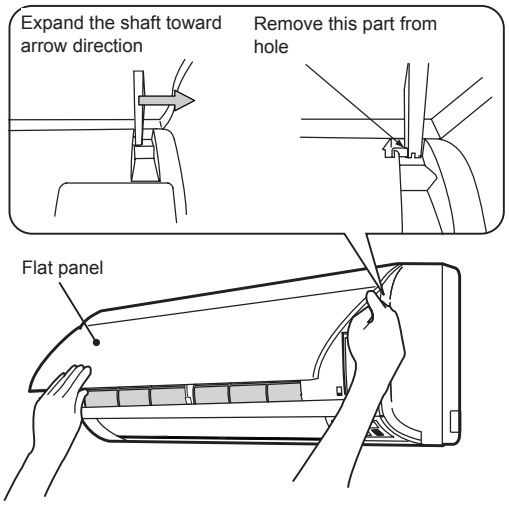
2 Open the flat panel fully and slightly extend the right arm shaft outward. After the shaft is removed from the front panel, pull the flat panel frontward with the right arm shaft slightly extended outward and then remove the flat panel.

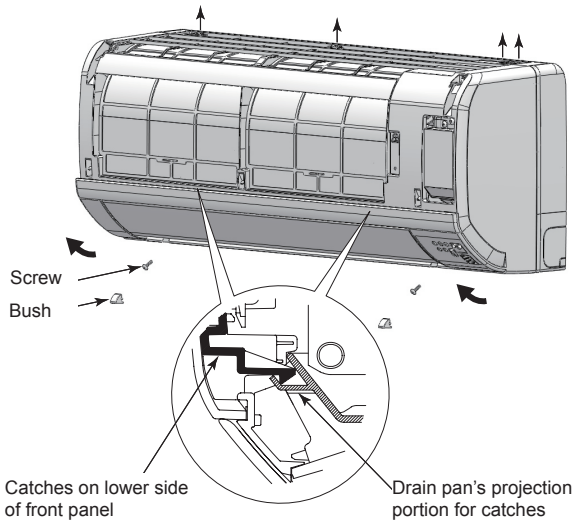
3 Remove 2 bushes and then 2 screws. Pull the lower side of the front panel forward to release the catches. Then remove the front panel carefully so that it does not touch the horizontal louver attached to the air outlet.

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

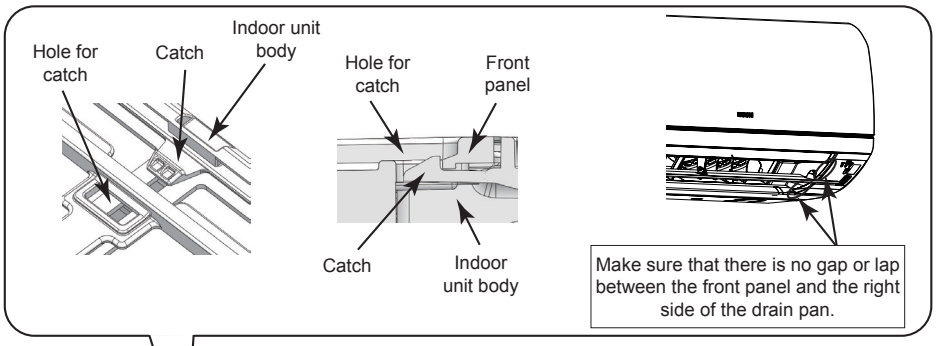
5 When mounting the front panel, firstly attach the air outlet side of the panel to the unit and then put the catches (four portions) on the upper side of the unit into the holes on the panel. Push the lower side of the panel to fasten the catches.

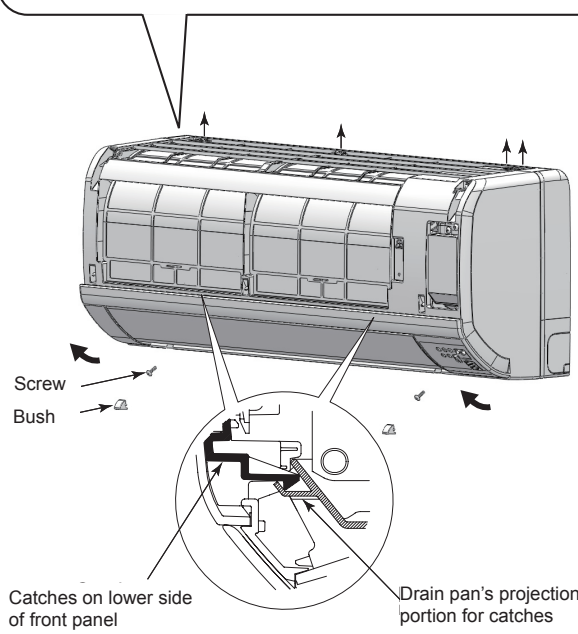
**NOTE**

*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.

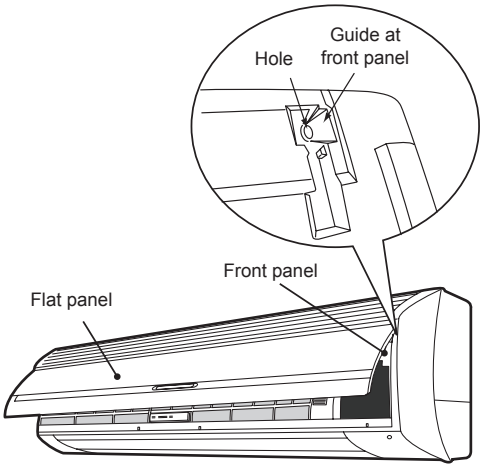



Do not apply an excessive force to the catches

Attaching flat panel.

Insert completely the left and right arm shafts of flat panel into the holes along the guide at the front panel. After 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 *"9.9.1 Removal of the 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.

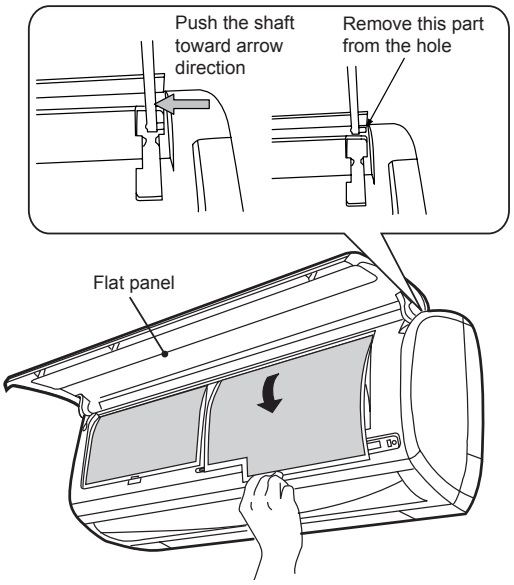
**⚠ CAUTION**

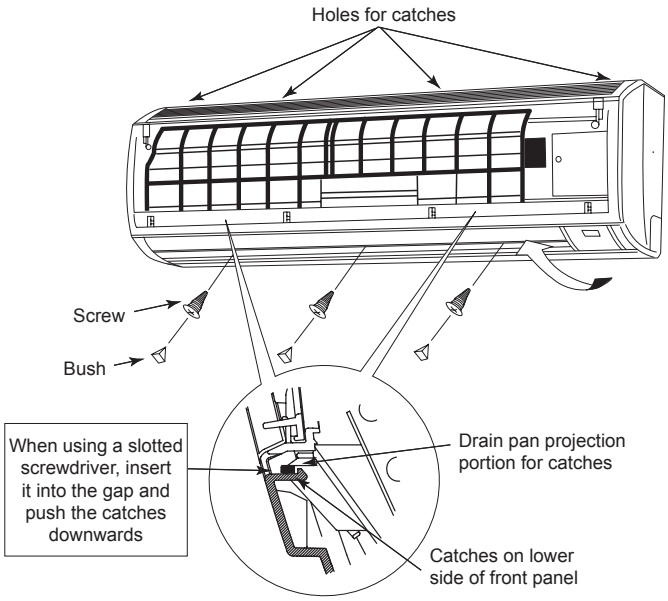
*Take special care not to be injured by the heat exchanger fins.*

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.*



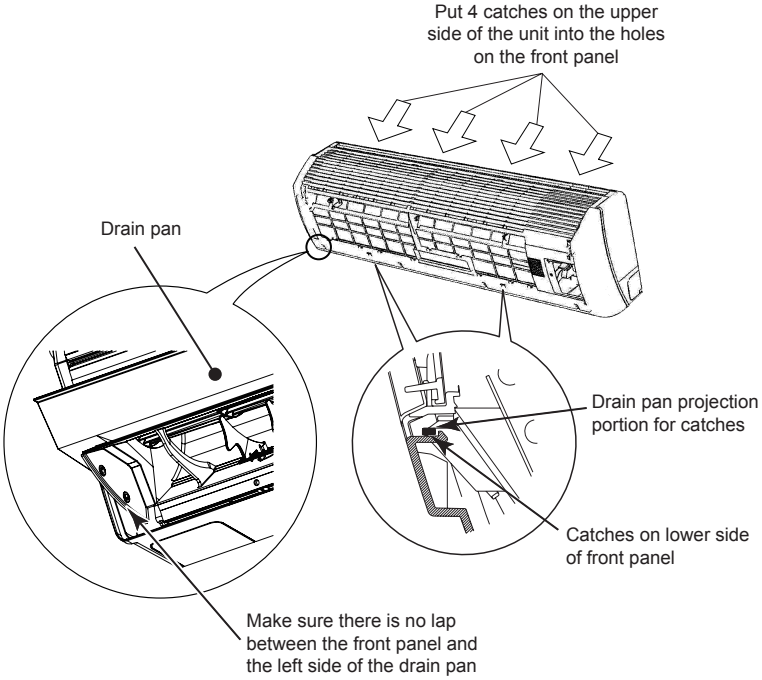
5 When mounting the front panel, be careful that it does not touch the horizontal louver. Paying attention to both sides of the panel, put the catches (four portions) on the upper side of the unit into the holes on the panel. Then push the lower side of the panel (2 portions) to fasten the catches.

**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.*

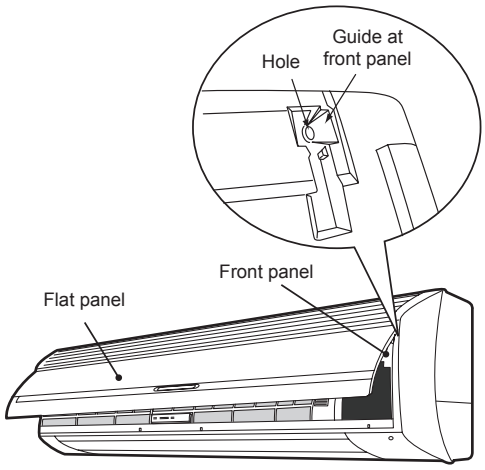
6 Tighten 3 screws and attach 3 bushes. And then mount the air filter.

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

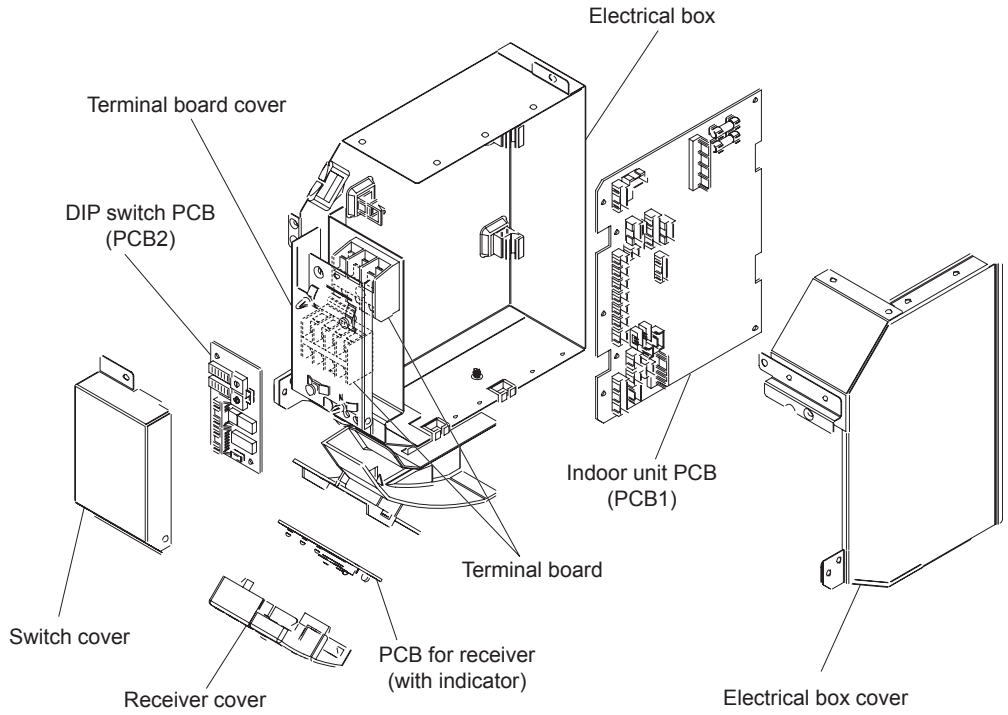
Insert completely the left and right arm shafts of flat panel into the holes along the guide at the front panel. After the flat panel is attached completely, insert the catches for air filter to fix.



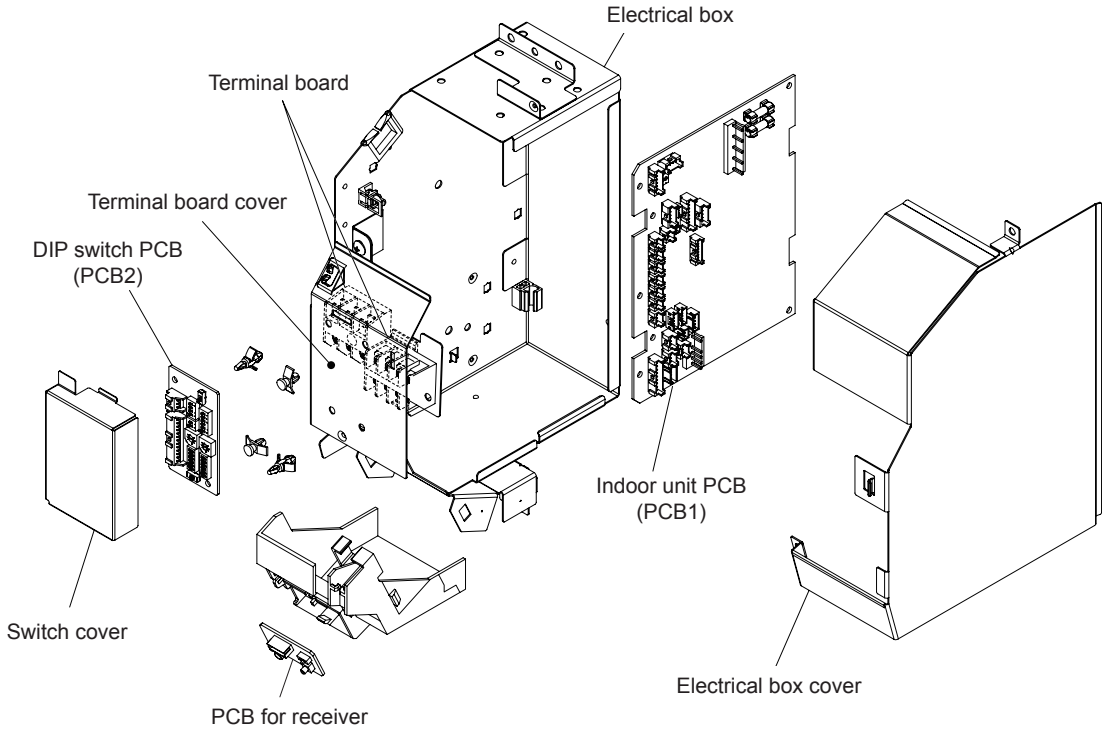
### 9.9.3 Electrical Box Structure

The electrical box for a wall type indoor unit is composed of the following components.

0.8HP and 1.5HP



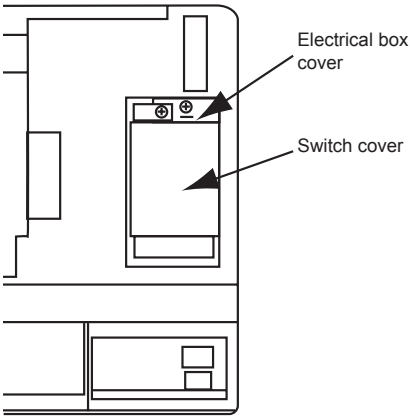

2.0HP to 4.0HP



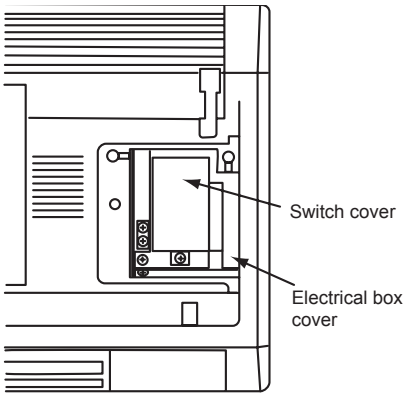
### 9.9.4 Remove the electrical box cover

Remove the flat panel as indicated in section *"9.9.2 Removal of the front panel"*. The electrical box cover can be opened without removing the front panel.

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

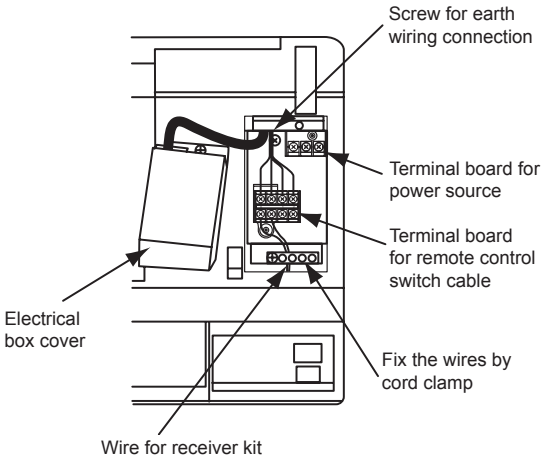



**RPK-(2.0-4.0)FSN3M**

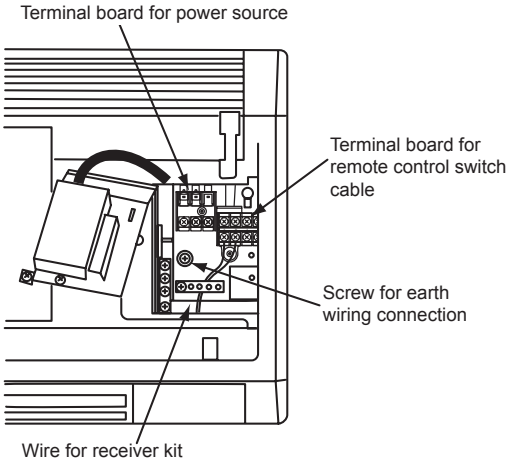



Open the electrical box cover by unscrewing the screw.

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



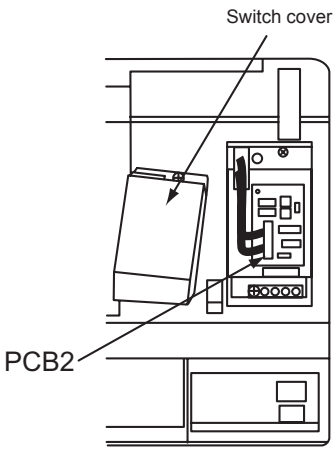

**RPK-(2.0-4.0)FSN3M**



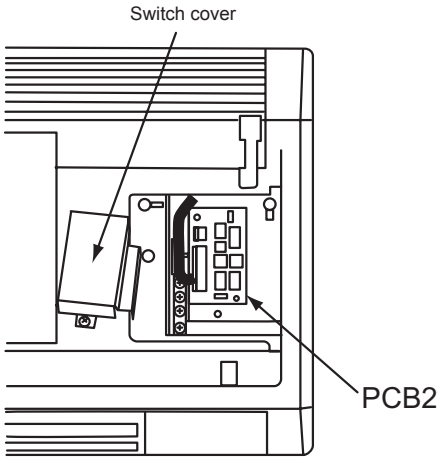

### 9.9.5 Remove the switch cover

Remove the flat panel as indicated in section *"9.9.2 Removal of the front 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**



### 9.9.6 Replacing PCB1 for Control

#### ◆ For RPK-(0.6-1.5)FSN(H)3M

1 Remove the electrical box according to the *"9.9.7 Removing Electrical Box"* chapter.

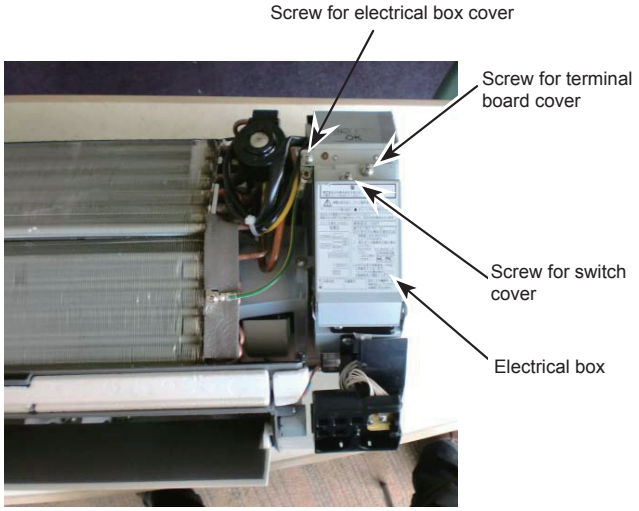
**NOTE**

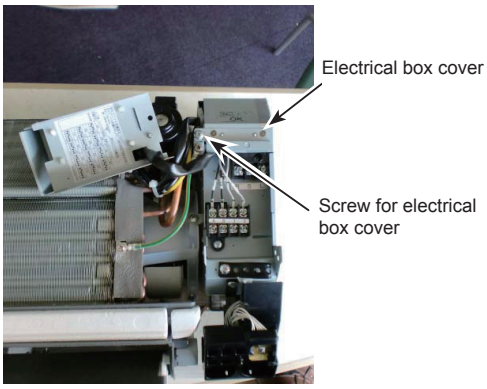
*If there is enough service space to the right side of the electrical box, PCB1 can be replaced without removing the electrical box.*

2 Remove 1 screw fixing the terminal board cover to remove it.

3 Remove 1 screw fixing the electrical box cover located to the right side of the electrical box. Then remove the electrical box cover.

4 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.



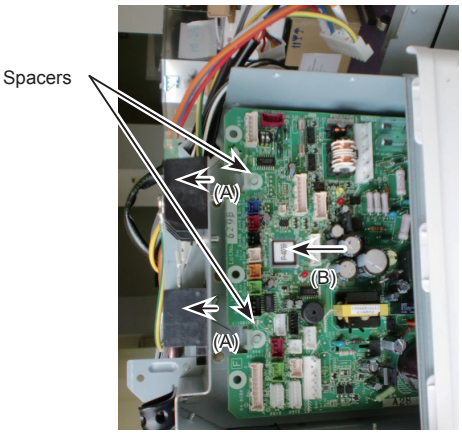




5 Remove 2 spacers in the direction of the arrow (A) and also remove PCB1 in the direction of the arrow (B).

6 After the replacement, attach them in the reverse procedure.

**NOTE**

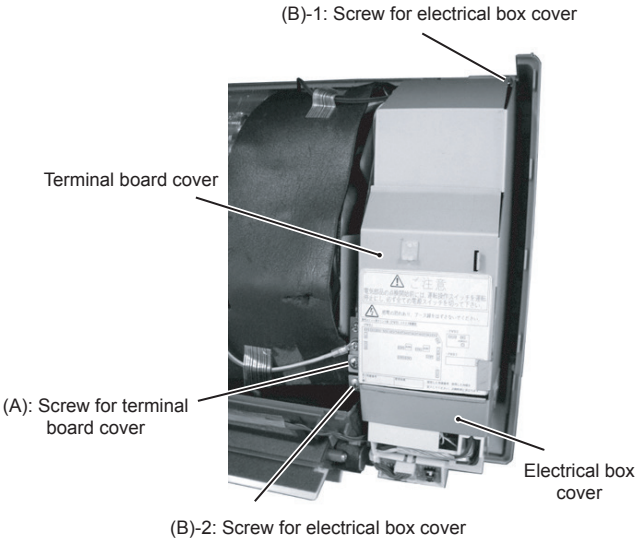
*If the unit with the expansion valve kit is used, regard "expansion valve coil" as "expansion valve relay cord."*

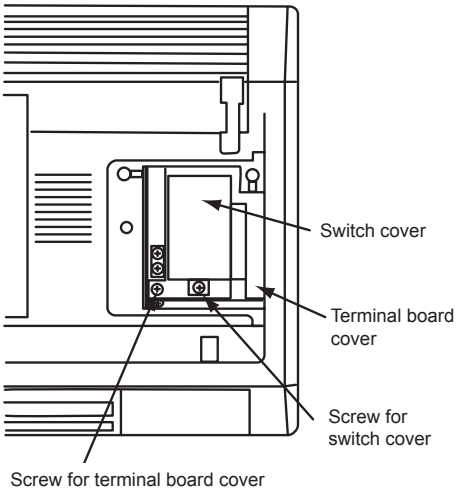


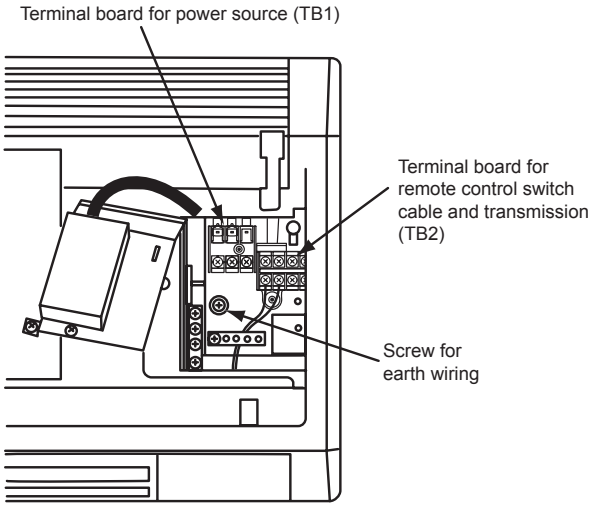
## ◆ For RPK-(2.0-4.0)FSN(H)3M

1 Remove the front panel according to the *"9.9.2 Removal of the front panel"* chapter.

2 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.

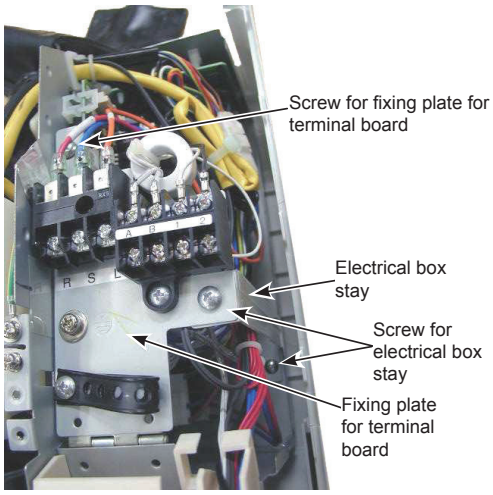


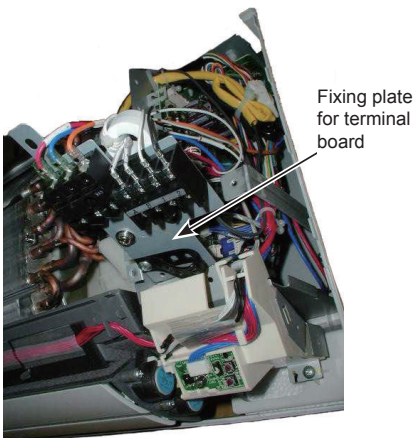




3 Remove 2 screws for the electrical box stay to remove it.

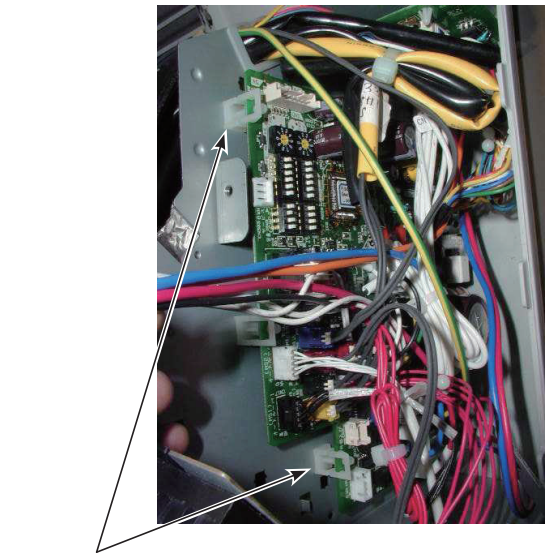
4 Remove 1 screw for the fixing plate for the terminal board and tilt the board frontward.




5 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.

6 Undo the hook of the spacers (2 portions) on the front side. Then remove the PCB1 from the electrical box.

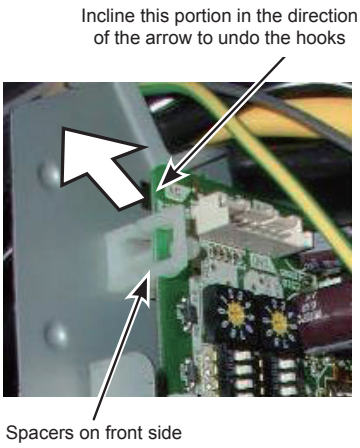


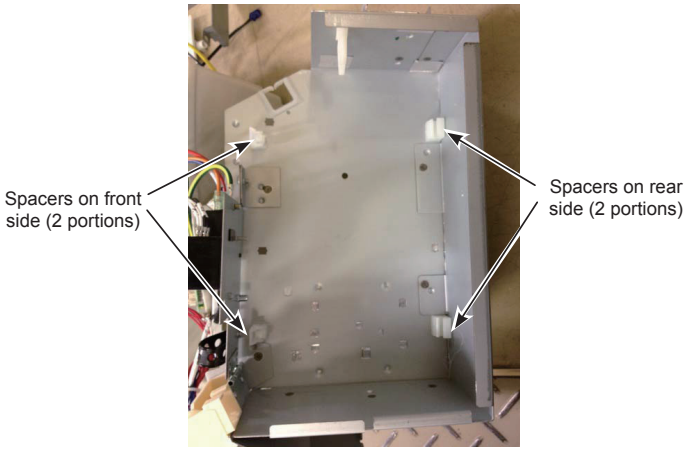

7 Insert the new PCB1 for replacement into the grooves of two (2) spacers on the rear side. Then attach the PCB1 to the hooks on the front side to fix it.

8 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."*




## 9.9.7 Removing Electrical Box

### ◆ For RPK-(0.6-1.5)FSN(H)3M

1 Remove the front panel according to the *"9.9.2 Removal of the 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 transmission wiring and the wiring for the remote control switch from the terminal board.

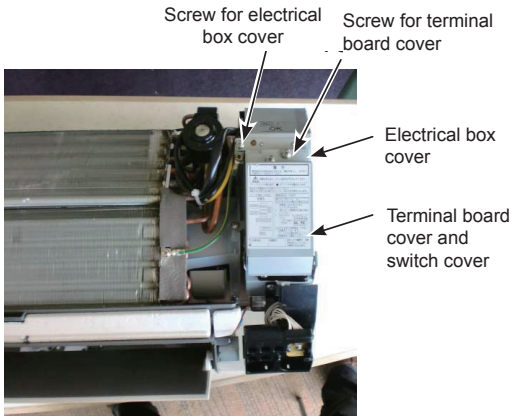
4 Remove the connectors (on the PCB1) for the freeze protection thermistor, gas pipe thermistor, inlet air thermistor, outlet thermistor, auto-louver, fan motor and expansion valve coil, and the earth wire.

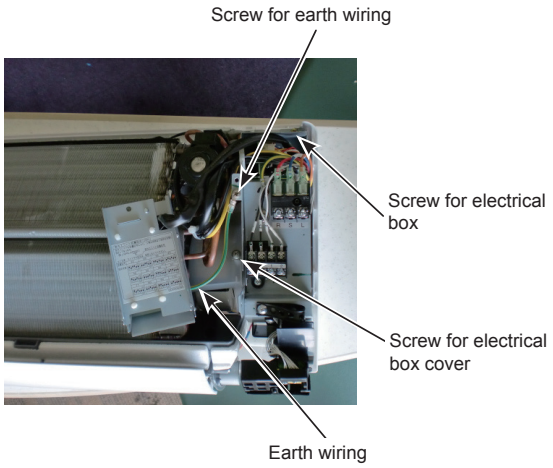
5 Remove the wirings for the freeze protection thermistor, gas pipe thermistor, inlet air thermistor and the expansion valve coil from the wiring outlet at the upper part. Also remove the wirings for the outlet air thermistor, auto-louver and fan motor from the wiring outlet at the lower part.

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 *"9.9.2 Removal of the front panel"* chapter

2 Remove the terminal board cover and the electrical box cover according to *"9.1.5 Removing Printed Circuit Board (PCB1)"* chapter

3 Then, remove the power source wiring, the transmission 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.

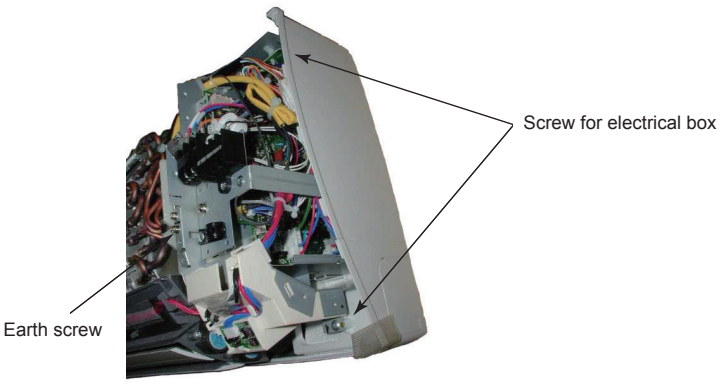
6 Remove 2 screws fixing the electrical box to dismount it from the indoor unit body.

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."*



### 9.9.8 Removing AS Motor

#### ◆ For RPK-(0.6-1.5)FSN(H)3M

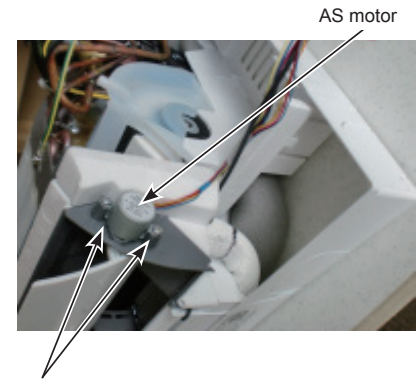
1 Remove the front panel according to the *"9.9.2 Removal of the front panel"* chapter.
2 Remove the electrical box according to the *"9.9.7 Removing Electrical Box"* chapter.
3 Remove 2 screws fixing the AS motor to remove it. Then pull the AS motor outward and remove it from the shaft of the horizontal 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.

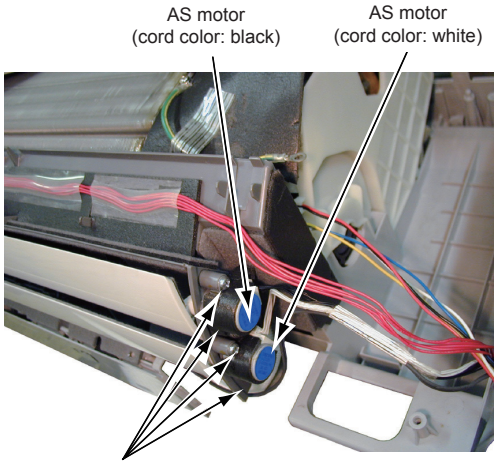
#### ◆ For RPK-(2.0-4.0)FSN(H)3M

1 Remove the front panel according to the *"9.9.2 Removal of the front panel"* chapter.
2 Remove the electrical box from the cabinet according to the *"9.9.7 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.*




### 9.9.9 Removing Drain Pan

Take care when removing the drain pan, as water may have collected in the drain pan.

#### ◆ For RPK-(0.6-1.5)FSN(H)3M

Do not remove the horizontal louver. Otherwise, some component may be damaged.

1 Remove the front panel according to the *"9.9.2 Removal of the front panel"* chapter.
2 Remove the electrical box according to the *"9.9.7 Removing Electrical Box"* chapter.
3 Release the catches fixing the drain pan.
- 1.0HP (3 portions): (A)×1, (B)×1 and (C)×1
- 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.

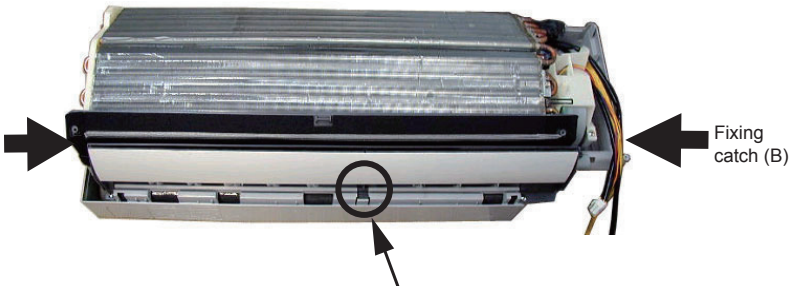
**NOTE**

*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.*

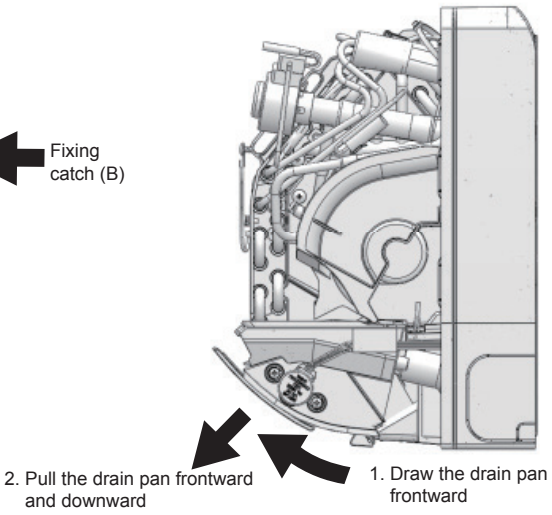
4 When mounting the drain pan, mount it in the reverse procedure. Make sure that the catches fixing the drain pan, mentioned in the procedure (3), are fastened.

Positions of fixing catches for drain pan

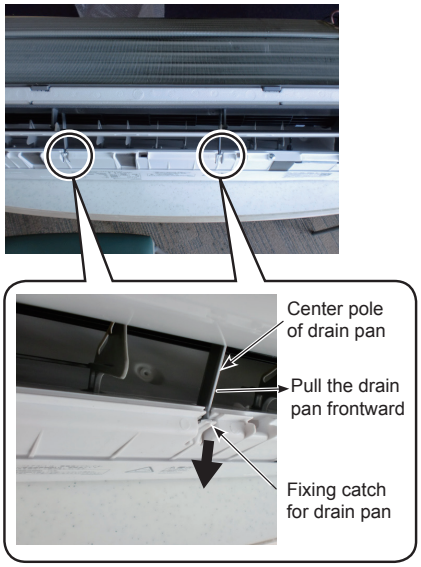
(Example: 1.5HP)



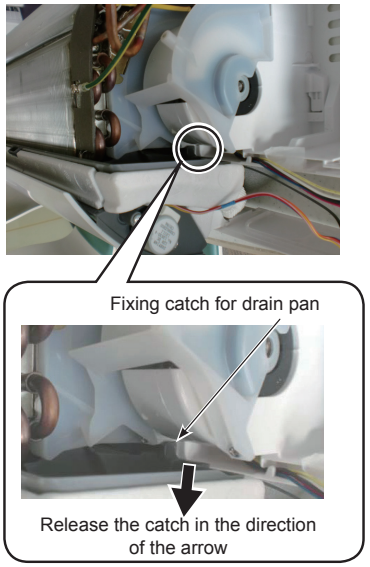

Direction for removing drain pan



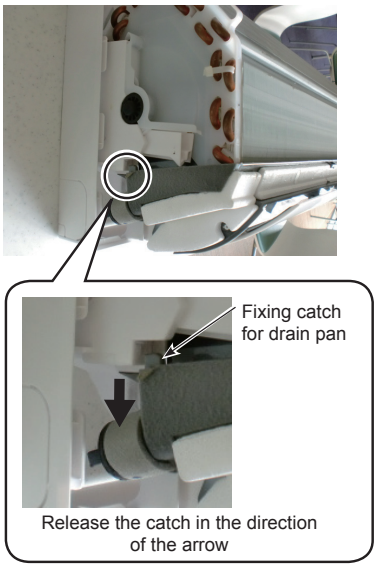

(A)




(B)




(C)



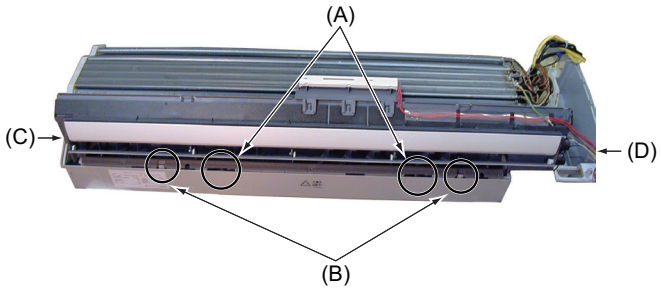
### ◆ For RPK-(2.0-4.0)FSN(H)3M

1 Remove the front panel according to the *"9.9.2 Removal of the front panel"* chapter.
2 Remove the electrical box according to the *"9.9.7 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.

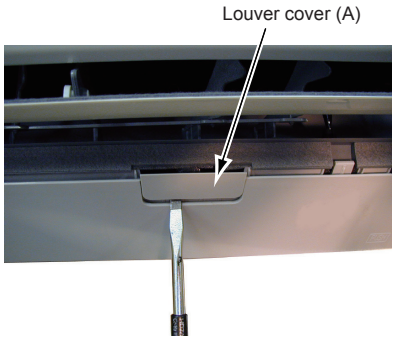
**NOTE**

*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.*

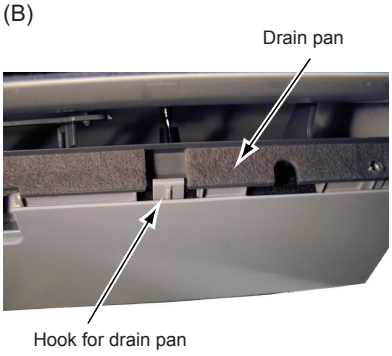
5 Remove 3 catches at (C) and (D) in the following procedure. Apply a force in the direction of the arrow (1) and release 1 catch (C) fixing the drain pan to the cabinet. Then apply a force in the direction of the arrow (2) and release 2 catches (D). Remove the drain pan.
6 When mounting the drain pan, mount it in the reverse procedure.



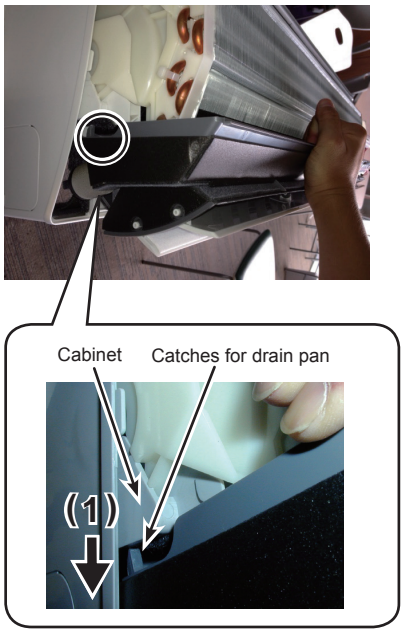

(A)



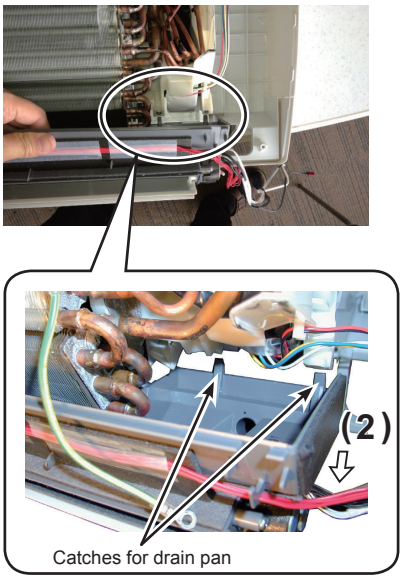

(B)




(C)




(D)




**NOTE**

*The catches are hidden from view by the fan motor. The figure above shows an example with the fan motor removed.*

### 9.9.10 Removing Heat Exchanger

**DANGER**

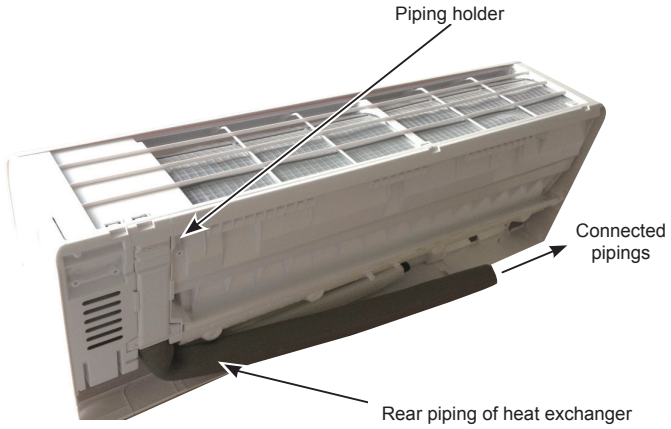
***TURN OFF all power source switches.***

**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-(0.6-1.5)FSN(H)3M

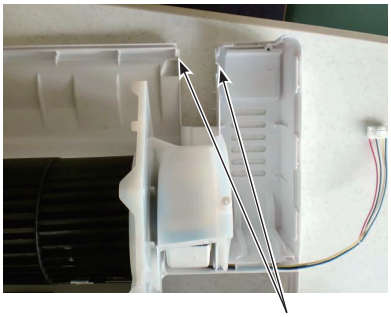
1 Remove the power source wiring, the transmission wiring and the wiring for the remote control switch.
2 Push the portion indicated by “PUSH” on the underside of the unit to release the catches at the lower part of the unit.
3 Remove the flare nuts attached to the rear piping of the heat exchanger to disconnect the pipings. Then lift the indoor unit up and draw it frontward to remove it.
4 Remove the front panel according to the *“9.9.2 Removal of the front panel”* chapter.
5 Remove the electrical box according to the *“9.9.7 Removing Electrical Box”* chapter.
6 Remove the drain pan according to the *“9.9.9 Removing Drain Pan”* chapter.

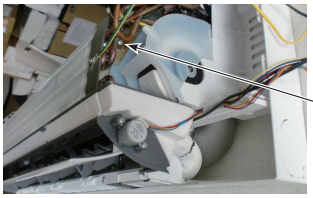


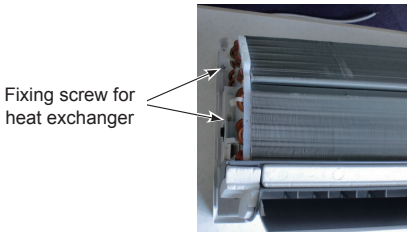

Rear side of indoor unit

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.

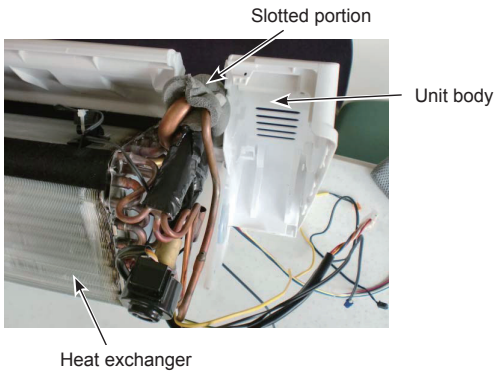
**NOTE**

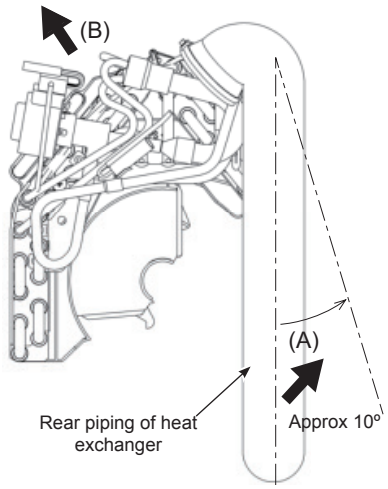
*Make sure that the heat exchanger and the unit body will not be damaged when removing the heat exchanger.*

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 transmission 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.

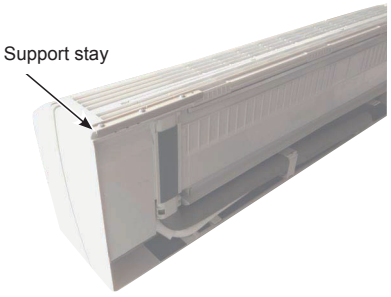
3 Remove the flare nuts attached to the rear pipings of the heat exchanger to disconnect the piping. Then lift the indoor unit up and draw it frontward to remove it.

4 Remove the front panel according to the *“9.9.2 Removal of the front panel”* chapter.

5 Remove the electrical box according to the *“9.9.7 Removing Electrical Box”* chapter.

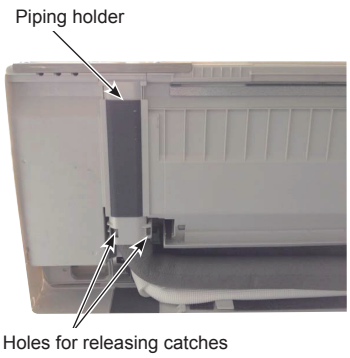
6 Remove the drain pan according to the *“9.9.9 Removing Drain Pan”* chapter.

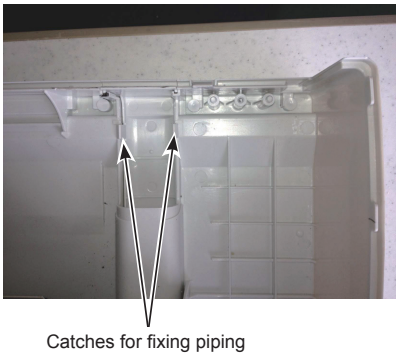
7 Remove 3 screws fixing the support stay attached to the rear side of the indoor unit and remove it.




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.

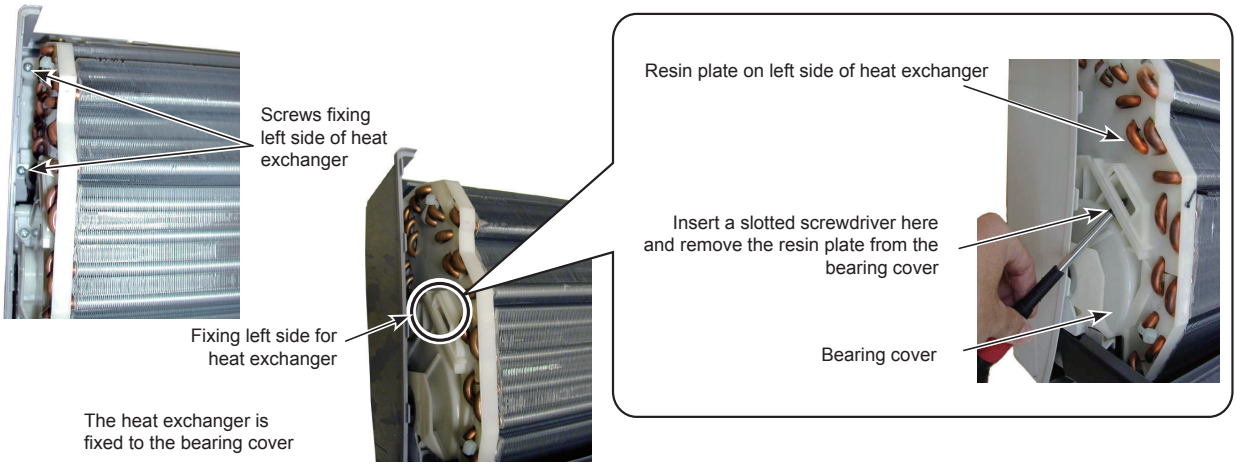



10 Remove 2 screws fixing the left side of the heat exchanger and undo 1 hook for the heat exchanger. Then remove butyl sheet covering piping between the heat exchanger and the electrical box.

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.

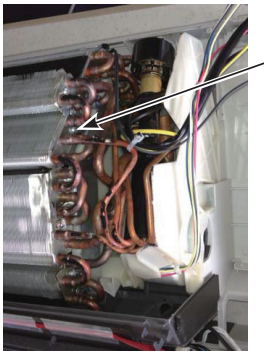
**NOTE**

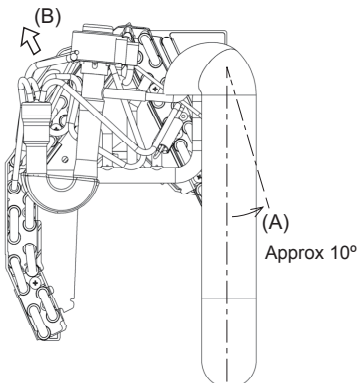
*Make sure that the heat exchanger and the unit body will not be damaged when removing the heat exchanger.*

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.*

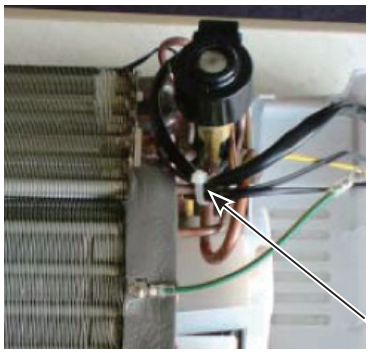


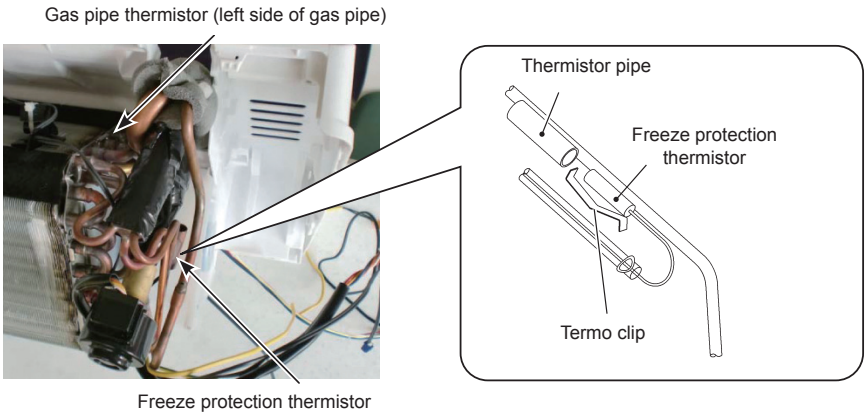
### 9.9.11 Removing Thermistors for Freeze Protection, Gas Pipe, Outlet Air and Inlet Air

#### ◆ For RPK-(0.6-1.5)FSN(H)3M

1 Remove the front panel according to the *"9.9.2 Removal of the front panel"* chapter.
2 Remove the electrical box according to the *"9.9.7 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.

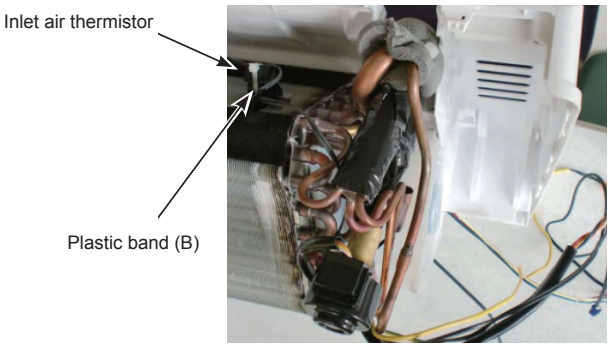


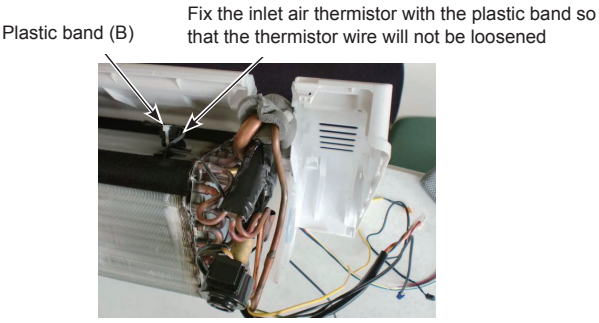
6 Removing Inlet Air Thermistor

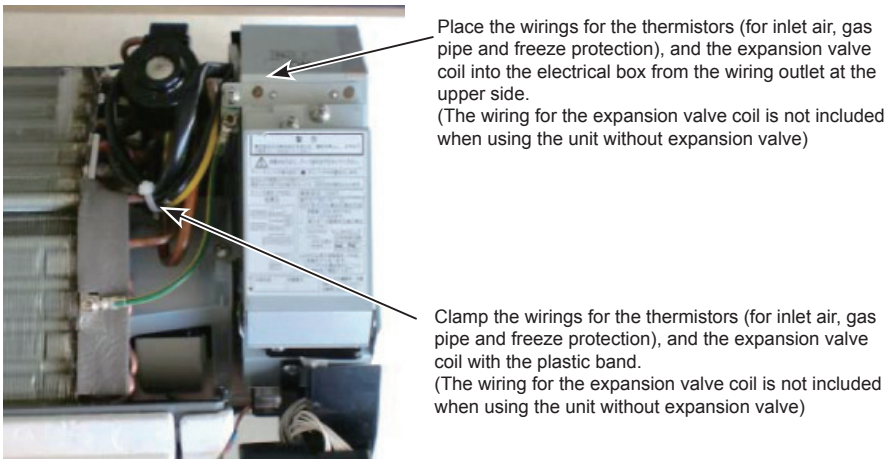
a. The inlet air thermistor is clamped with 1 plastic band (B) to the resin component for fixing the thermistor inserted into the heat exchanger fins. Remove the plastic band to remove the thermistor.

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.



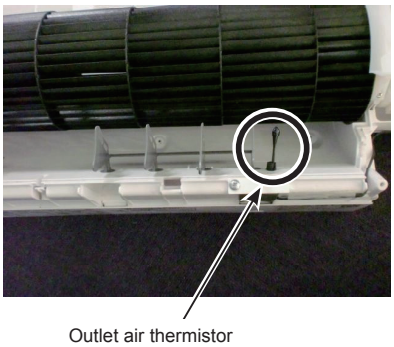



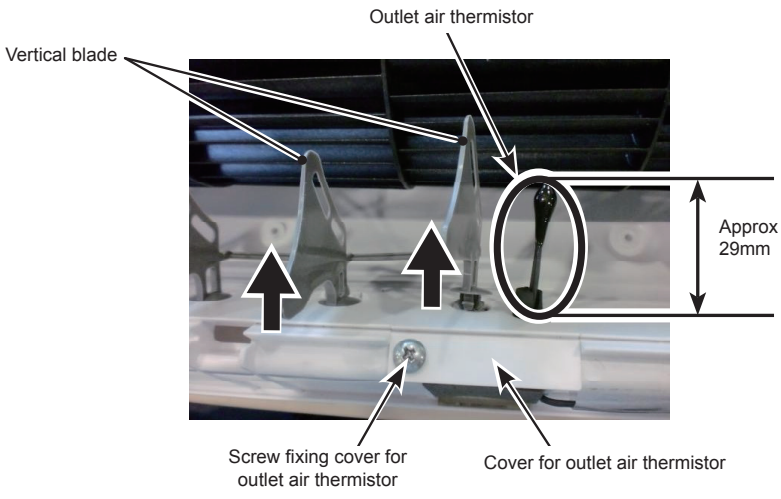

7 Removing Outlet Air Thermistor

a. Remove the front panel according to the *"9.9.2 Removal of the 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.



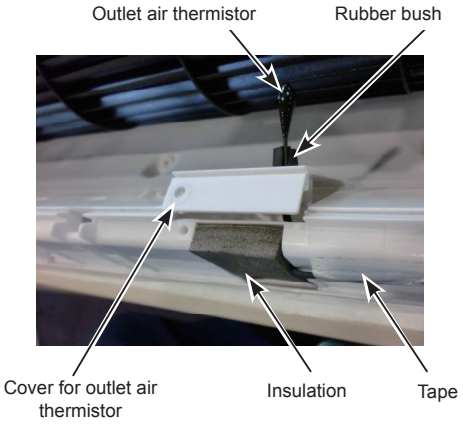

a. After removing the insulation, pull out the rubber bush to remove the outlet air thermistor.

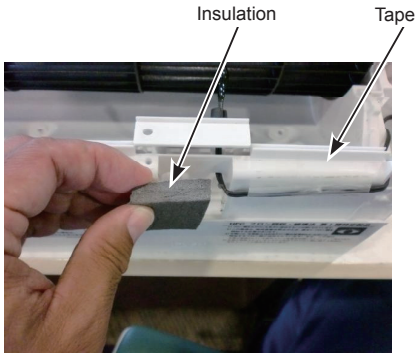
b. Remove the tape fixing the thermistor to remove the thermistor.

c. 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 *"9.9.2 Removal of the front panel"* chapter.
2 Remove the electrical box according to the *"9.9.7 Removing Electrical Box"* chapter.
3 Remove the heat exchanger according to the *"9.9.10 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.

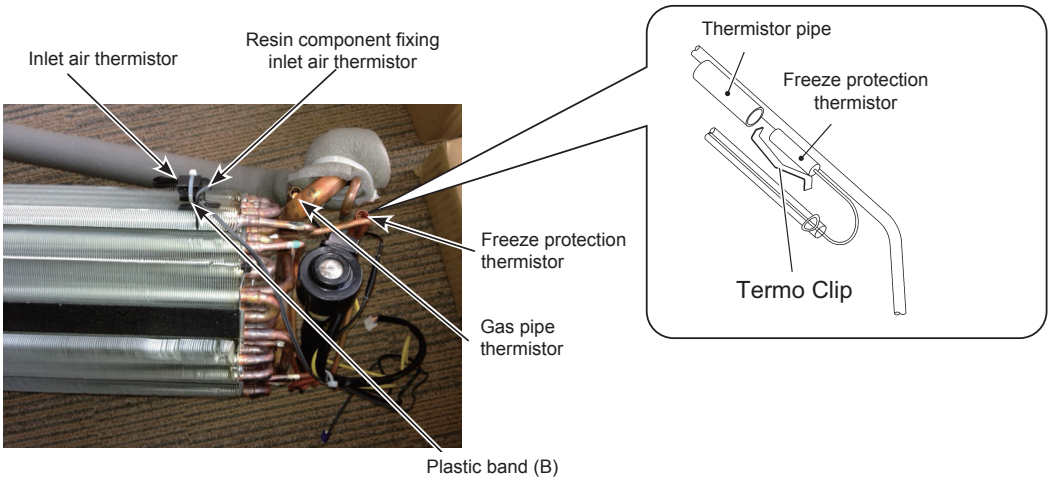
c. After attaching the thermistor, clamp the wiring for the expansion valve, freeze protection thermistor, gas pipe thermistor and inlet air thermistor with 1 plastic band.

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.



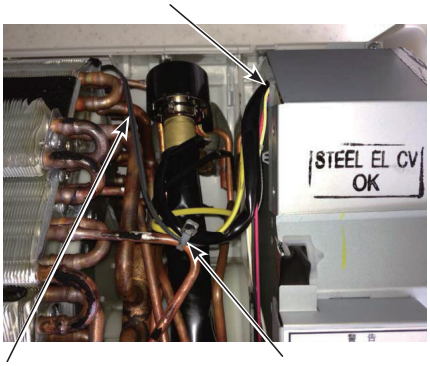

7 Removing Inlet Air Thermistor

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 electrical 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.

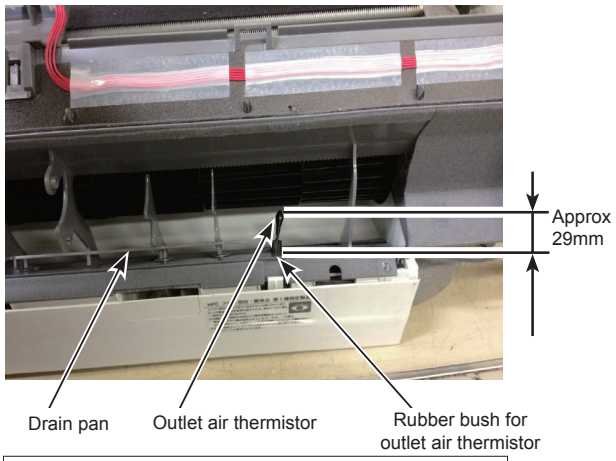
Clamp the wirings for the thermistors (for inlet air, gas pipe and freeze protection), and the expansion valve coil with the plastic band.
(The wiring for the expansion valve coil is not included when using the unit without expansion valve)

8 Removing Outlet Air Thermistor

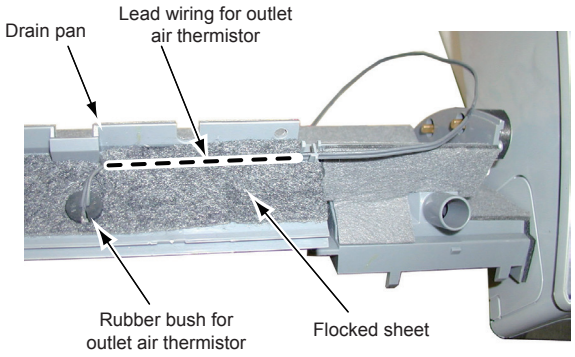
a. Remove the drain pan according to the item *"9.9.9 Removing Drain Pan"*.

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.




### 9.9.12 Removing Fan and Fan Motor

**DANGER**

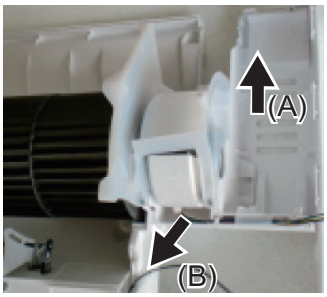
***TURN OFF all power source switches.***

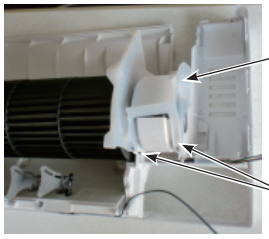
◆ **For RPK-(0.6-1.5)FSN(H)3M**

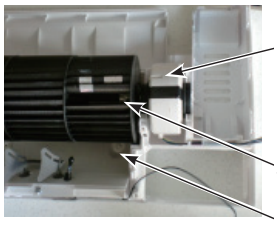
1 Remove the heat exchanger according to the *"9.9.10 Removing Heat Exchanger"* chapter.

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.



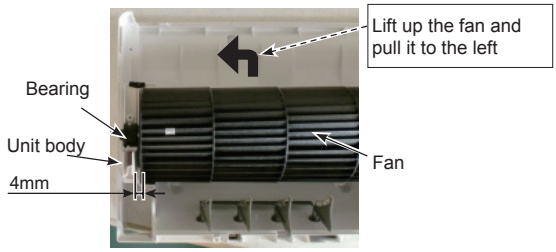



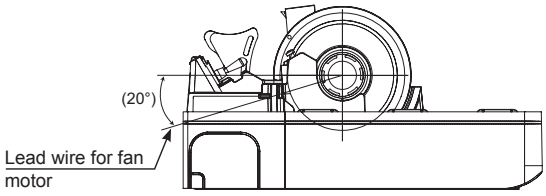




4 Hold the fan with hands and lift the bearing side up slightly. Then pull out the fan in the direction of the arrow to remove the fan and the motor as shown in the figure below.

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.



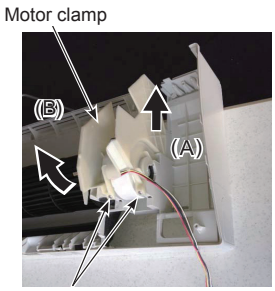



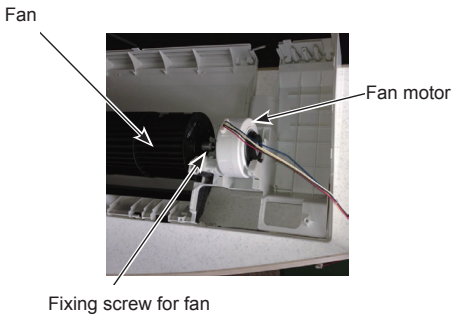

### ◆ For RPK-(2.0-4.0)FSN(H)3M

1 Remove the heat exchanger according to the *"9.9.10 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.



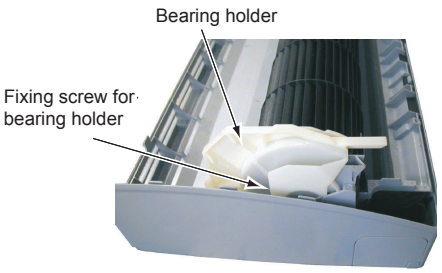



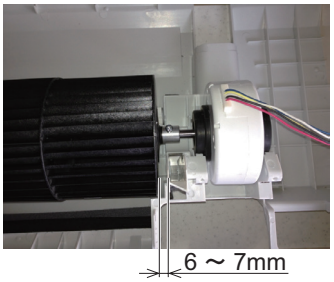

4 Remove 1 screw fixing the bearing holder and remove the bearing holder.

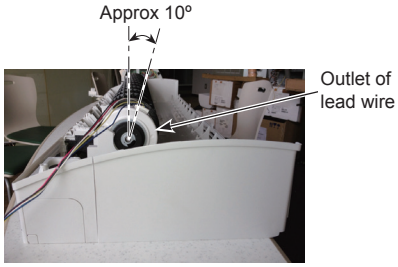
5 Hold the fan with hands and lift the bearing side up slightly. Then pull out the fan to the left to remove the fan and the motor.

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.



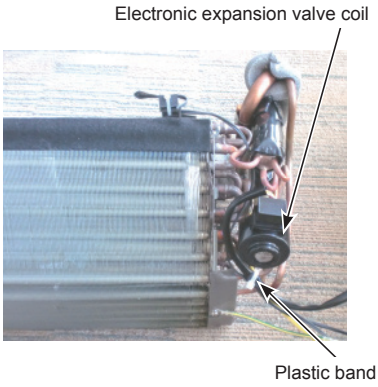



### 9.9.13 Removing Electronic Expansion Valve Coil

#### ◆ For RPK-(0.6-1.5)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**

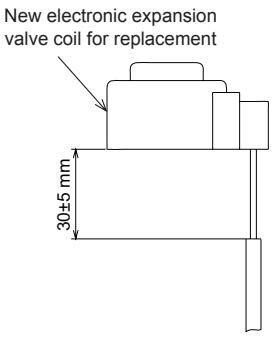
*Take care not to twist the piping.*

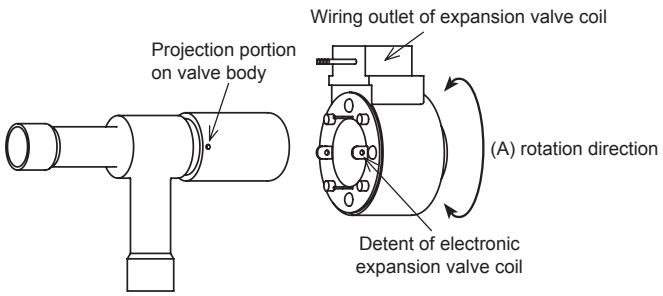
3 Insert the new expansion valve coil for replacement into the expansion valve body. Fit the projection portions into the detents with the wiring outlet facing up.

**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.*

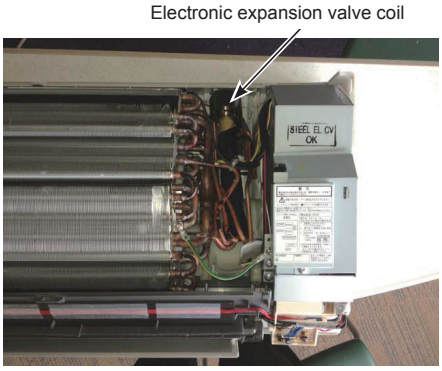
4 After the work, clamp the wirings for the expansion valve, the freeze protection thermistor, gas pipe thermistor and inlet air thermistor with one (1) plastic band.



### ◆ 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**

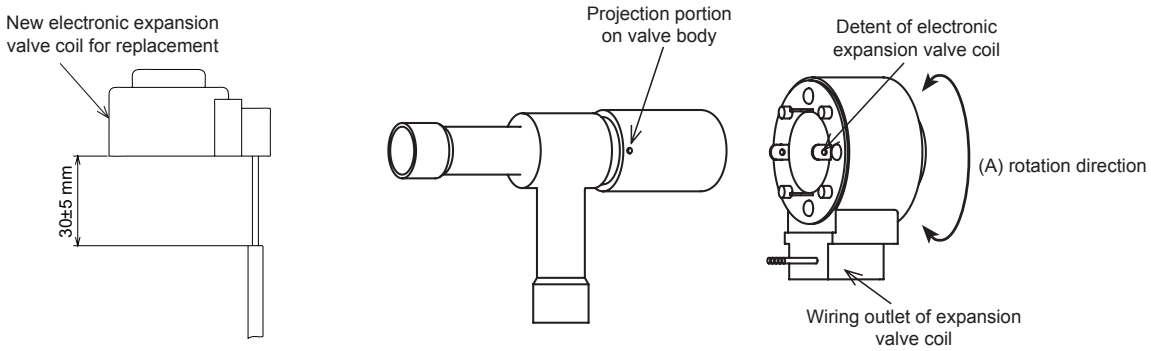
*Take care not to twist the piping.*

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.



## 9.9.14 Removing Horizontal Louver

### ◆ For RPK-(0.6-1.5)FSN(H)3M

Do not remove the horizontal louver when removing the drain pan. Removing the horizontal louver will result in component failures.

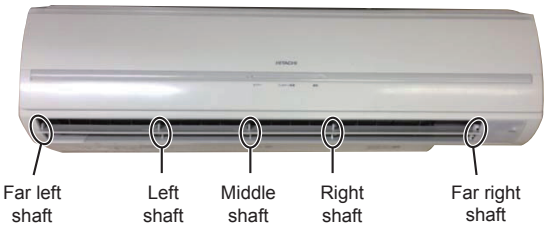
### ◆ For RPK-(2.0-4.0)FSN(H)3M

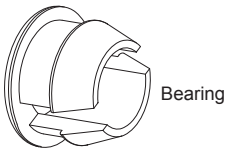
Do not lose the bearings for each shaft at the right, middle, left and far left.

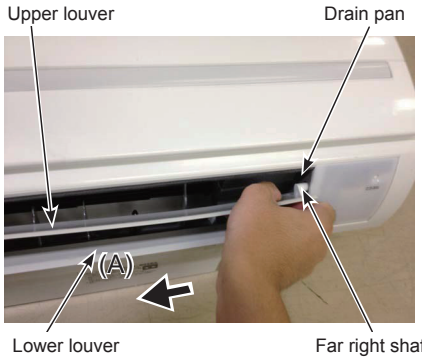
1 Open the upper and lower horizontal louver slightly.

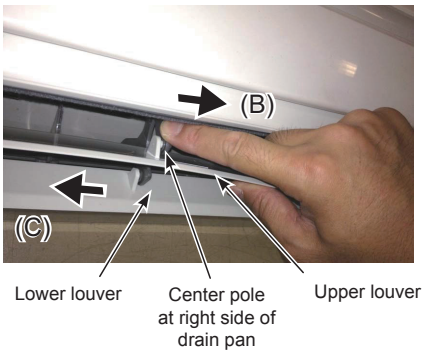
2 Slightly bend the upper horizontal louver and pull it in the direction of the arrow (A) to remove the shaft at the far right from the drain pan.

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.

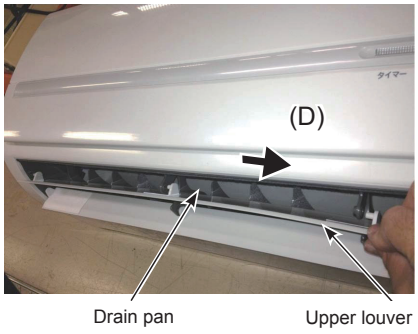



4 Pull out the upper horizontal louver in the direction of the arrow (D) to remove it.




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**

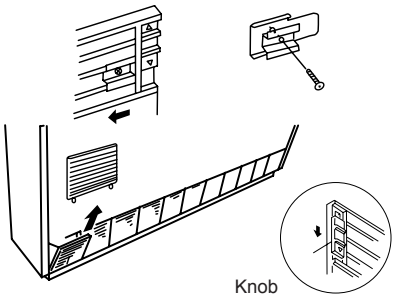
*When mounting the horizontal louvers, insert the D-cut portions at the far right shafts of the louvers into the AS Motor shafts.*

# 9.10 RPF(I)-(1.0-2.5)FSN2E - Floor and Floor concealed type

## 9.10.1 Removal of the air inlet grille

### RPF-(1.0-2.5)FSN2E

1 Loosen the screws on the securing plate of the right part of the grille then remove the plates.
2 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.
3 Remove the air inlet grille from the hinges.

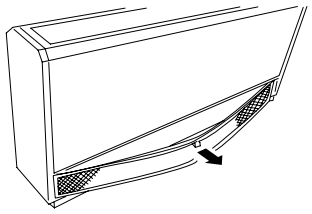



## 9.10.2 Removal of the air filter

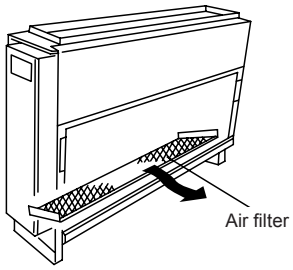
### RPF-(1.0-2.5)FSN2E

The air filter is located inside the air inlet grille.

1 Remove the air inlet grilles as indicated in section *"9.10.1 Removal of the air inlet grille"*.



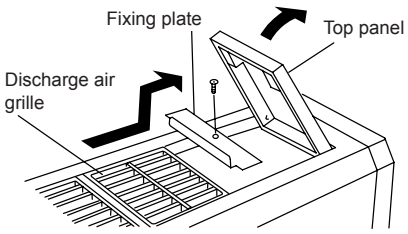
2 Remove the filter by pulling the filter button.




## 9.10.3 Removal of the air outlet grille

### RPF-(1.0-2.5)FSN2E

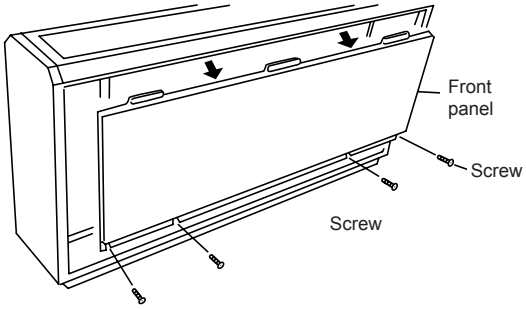
1 Remove the screw holding the securing plate.
2 Open the upper panel so that it is vertical.
3 Slide and remove the air outlet grille.



### 9.10.4 Removal of the front panel

1 Remove the central panel air filter in line with the instructions given in chapter *"9.10.2 Removal of the air filter"*.

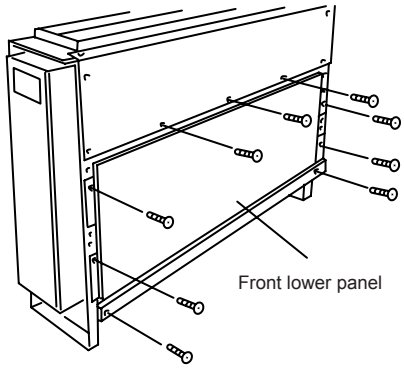
2 Remove the screws from the lower part of the front panel.




**NOTE**

- *RPF-(1.0-2.5)FSN2E: 4 screws.*
- *RPFI -1.0FSN2E: 9 screws.*
- *RPFI -1.5FSN2E: 10 screws.*

3 Remove the 11 set screws and remove the front panel.




### 9.10.5 Removal of the fan motor

1 Remove the air inlet grille as indicated in chapter *"9.10.1 Removal of the air inlet grille"*.

2 Remove the air filter as indicated in section *"9.10.2 Removal of the air filter"*.

3 Remove the four set screws from the fan motor assembly plate and remove it.

4 Disconnect the wiring from the fan motor connector. Remove the wiring board and the connector.

5 Remove the cover by pressing the four attachment points inwards.

6 Loosen the bolts using a wrench.

7 Remove the securing plate.

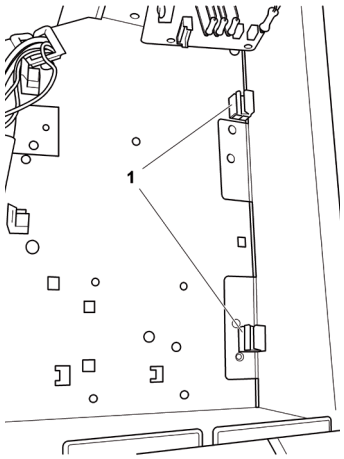
8 Remove the fan motor by sliding it backwards.

**NOTE**

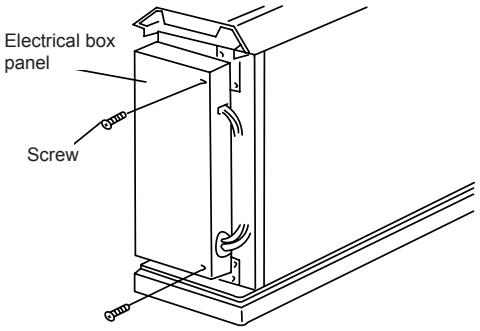
*Be careful when releasing the fan motor, as it could fall.*

### 9.10.6 Removal of the printed circuit board (PCB)

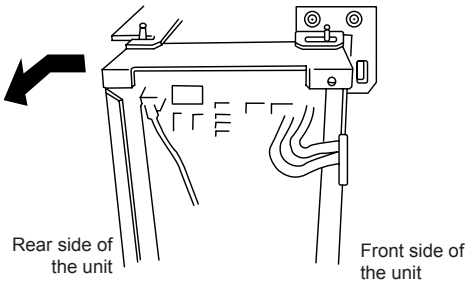
1 Remove the air inlet grille as indicated in section *"9.10.1 Removal of the air inlet grille"*.
2 Remove the air filter as indicated in section *"9.10.2 Removal of the air filter"*.
3 Remove the front panel as indicated in section *"9.10.4 Removal of the front panel"*.
4 Remove the side panel, removing the 3 set screws and pulling the panel downwards.




5 Remove the panel from the electrical box after removing the four set screws.
6 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.




7 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.

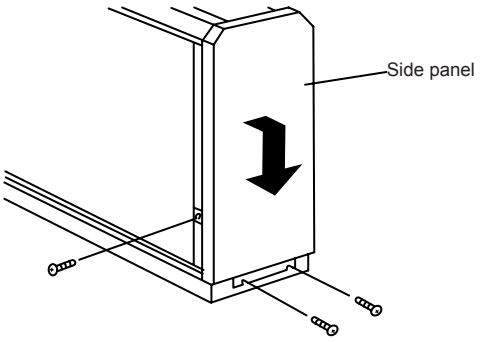



**⚠ CAUTION**

- *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.*

### 9.10.7 Removal of the thermistors from the liquid and gas piping

1 Remove the air inlet grille as indicated in section *"9.10.1 Removal of the air inlet grille"*.
2 Remove the air filter as indicated in section *"9.10.2 Removal of the air filter"*.
3 Remove the front panel as indicated in section *"9.10.4 Removal of the front panel"*.
4 Remove the side panel, removing the 3 set screws and pulling the panel downwards.
5 Disconnect the wiring from the thermistor and remove the thermistor.



# 9.11 KPI-(252-2002)(E/X)4E - Energy recovery and active energy recovery ventilation units

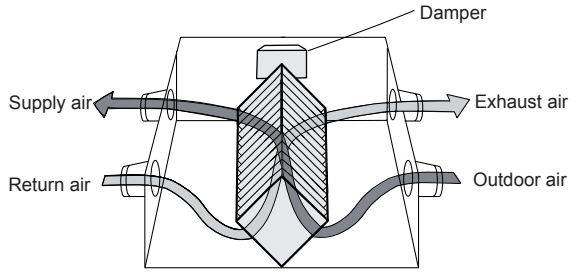
## 9.11.1 System description

An example of the system is shown below. Make sure the system has been checked by a HITACHI distributor.

**Exchange mode**

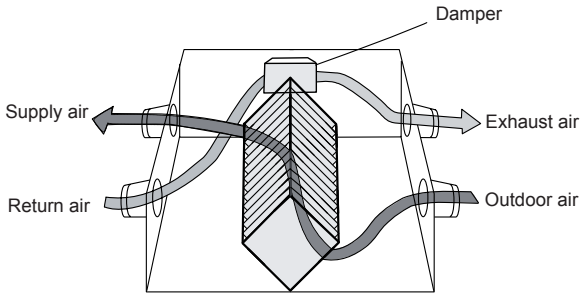
The air returning from the indoor part passes through the total heat exchanger unit and is expelled outdoors.

The outdoor air is supplied through the total heat exchanger.




**Ventilation bypass mode**

The air from indoors is expelled without heat exchange.



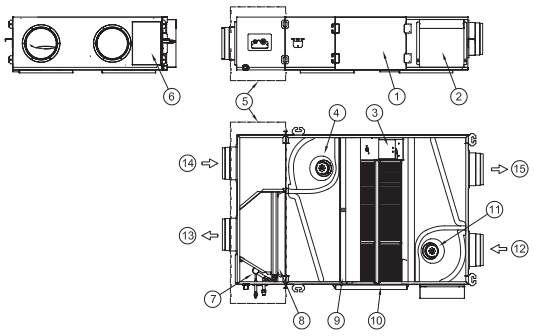

**Automatic selection mode**

(Factory-set). The operating mode is selected automatically according to the temperature conditions (outdoor, indoor and set).

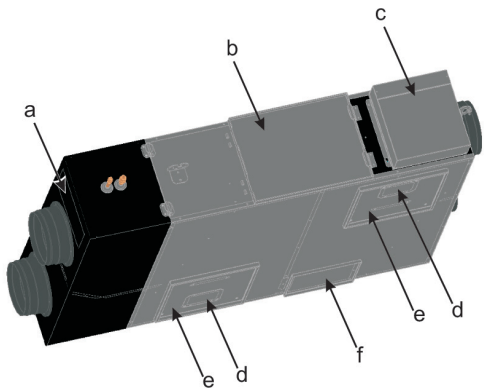
## 9.11.2 Structure and part names

### KPI-(252-2002)E4E and KPI-(502-1002)X4E

| Nº | Part |
|---|---|
| 1 | HEX/Filters Service Cover |
| 2 | Electrical Box |
| 3 | Damper |
| 4 | Return air fan motor |
| 5 | Active module (only KPI-(502-1002)X4E) |
| 6 | Evaporator service cover (only KPI-(502-1002)X4E) |
| 7 | Expansion Valve (only KPI-(502-1002)X4E) |
| 8 | Evaporator (only KPI-(502-1002)X4E) |
| 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 |




## 9.11.3 Service cover location



### 9.11.4 Removal of Heat Exchanger

1 Pull the hinges back. Open and remove the service cover (b).

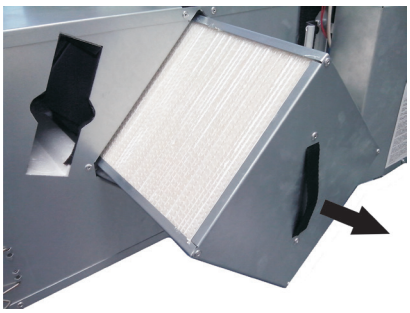
**⚠ CAUTION**

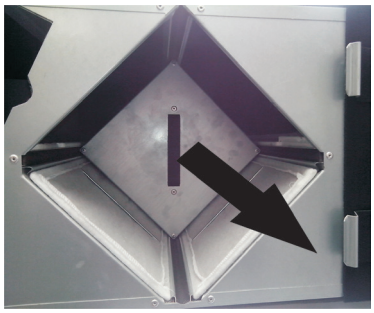
*The service cover (b) is not fixed, pay attention when pull the hinges back because the cover can fall.*



2 Hold onto the handle.

3 Remove the two total heat exchanger elements from the main unit.





### 9.11.5 Removal of the air filter

1 Pull the hinges back.

2 Open and remove the service cover (b).

**⚠ CAUTION**

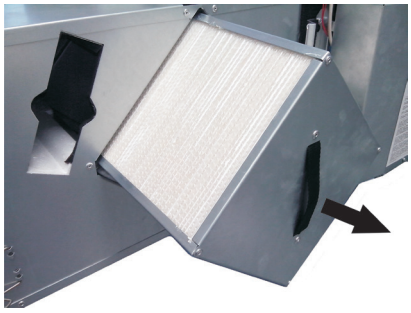
*The service cover (b) is not fixed, pay attention when pull the hinges back because the cover can fall.*

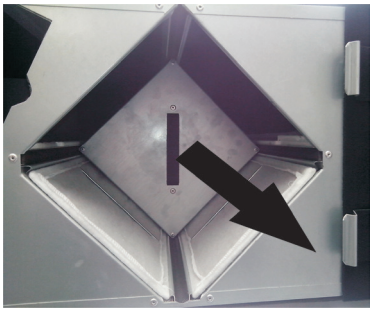


It is recommended to remove the two heat exchanger

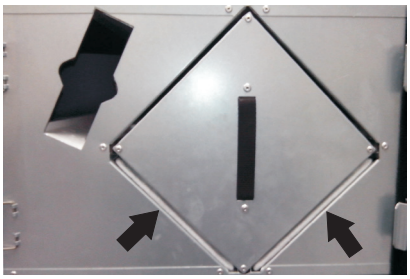
3 Hold onto the handle.

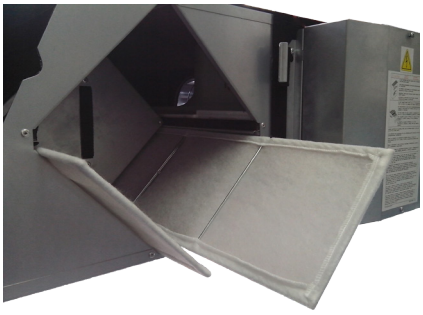
4 Remove the two total heat exchanger elements from the main unit.





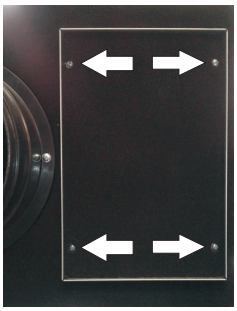
5 Draw out the air filters (2 pieces) which are located at the bottom of the heat exchanger elements.



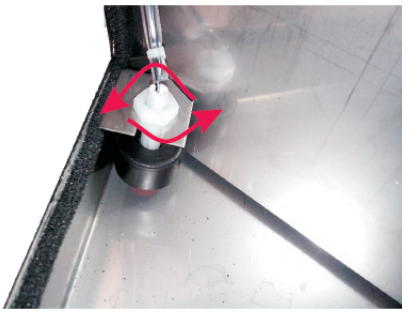


### 9.11.6 Removal of the float switch (X4E series only)

1 Remove the 4 screw from the service cover (a) situated closed the SA duct connector and remove the service cover.



2 Float switch is on the bottom left side, close de service window.



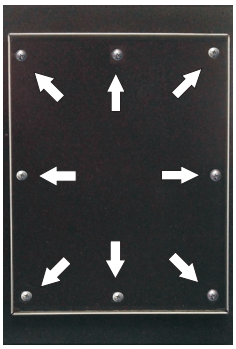
3 Unscrew the nut on the float switch and remove from its bracket.

4 Unplug the connector that is inside the protection cap and take out the float switch.

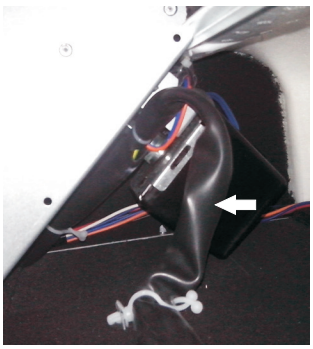


### 9.11.7 Removal of the damper motor

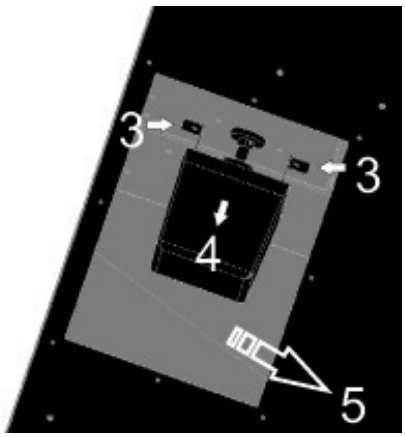
1 Unscrew the 6 screw form the service cover (f).



2 Unplug the connector that is inside the protection cap.

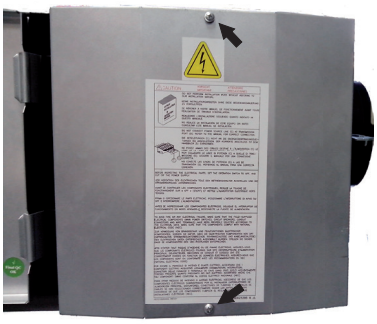


3 Unscrew the 2 screws that are fixing the motor brackets
4 Separate the damper motor from the housing
5 Remove the damper motor



### 9.11.8 Removal of the electrical box

1 Unscrew the 2 screw from the service cover (c)



2 Unplug all connectors.

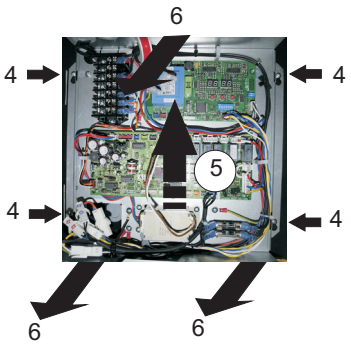
3 Disconnect the power supply and communication cables from the terminal board



4 Loosen all four screws

5 Move the electrical box slightly upwards

6 Pull it out towards yourself

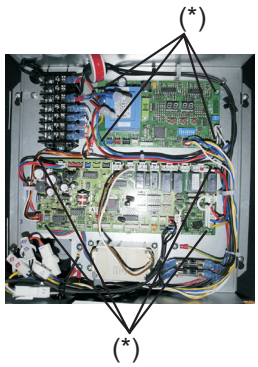



### 9.11.9 Removal of the PCB

1 Remove the electrical box

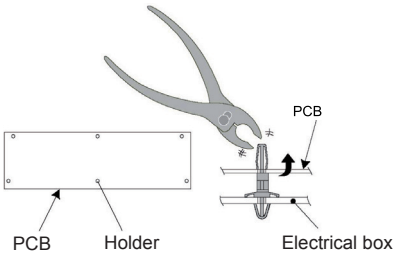
2 Disconnect all the connectors in the PCB.

3 Remove the PCB by unlocking the four (4) plastic holders (*) per PCB



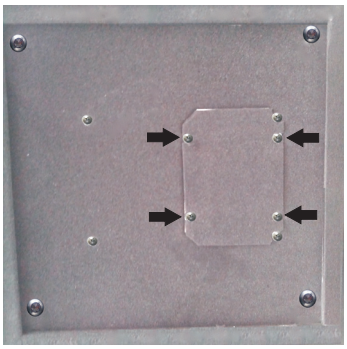

**⚠ CAUTION**

- *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.*



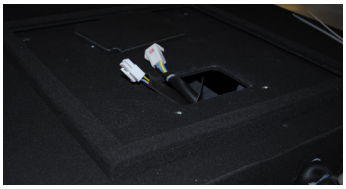
### 9.11.10 Removal of the fan motor

1 Remove all 4 screws from the fan service cover (d)



2 Unplug the connector that is inside the protection cap

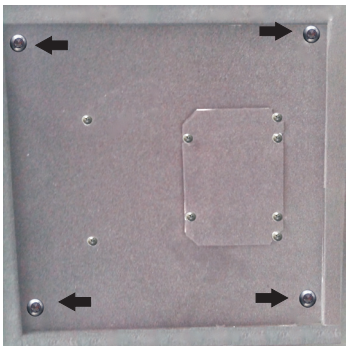




3 Remove all 4 screws from the fan assy (e)

**NOTE**

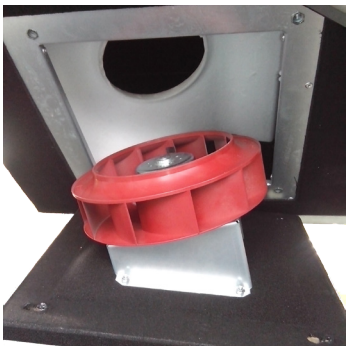
*Use a 5 mm allen key (hexagon key)*



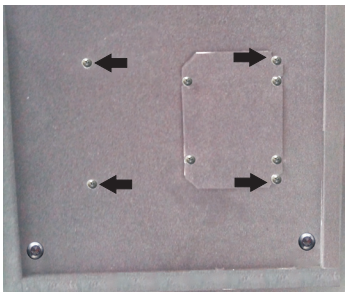
4 Remove the fan with the assembled cover

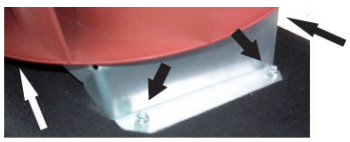
**CAUTION**

*The fan kit is not fixed, pay attention when all 4 screws are removed, the fan can fall.*



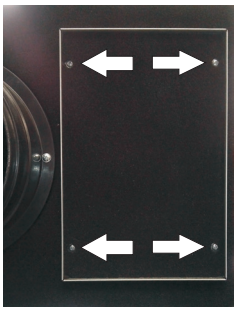
In order to remove de cover from the fan, unscrew all 4 screws.





### 9.11.11 Removal of the DX-Coil Module (X4E series only)

1 Unscrew the 4 screw from the service cover (a) situated closed the SA duct connector and remove the service cover.



2 Unplug the connector that is inside the protection cap

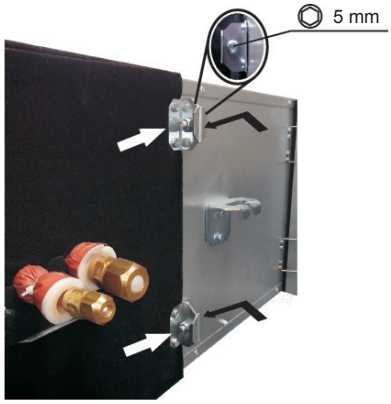
3 Cross the connector thought the hole in the end wall.



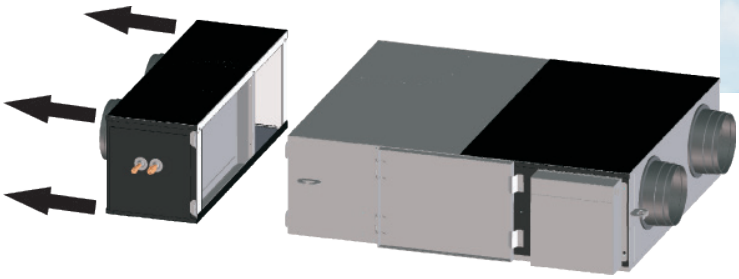
4 Unscrew all 4 screw (2 in on side and 2 in the other side)

**DANGER**

- ***When unscrew all 4 screw pay attention because the DX-Coil Module is not fixed,and can fall.***
- ***DX-Coil module it heavy, two persons are required for remove this component.***



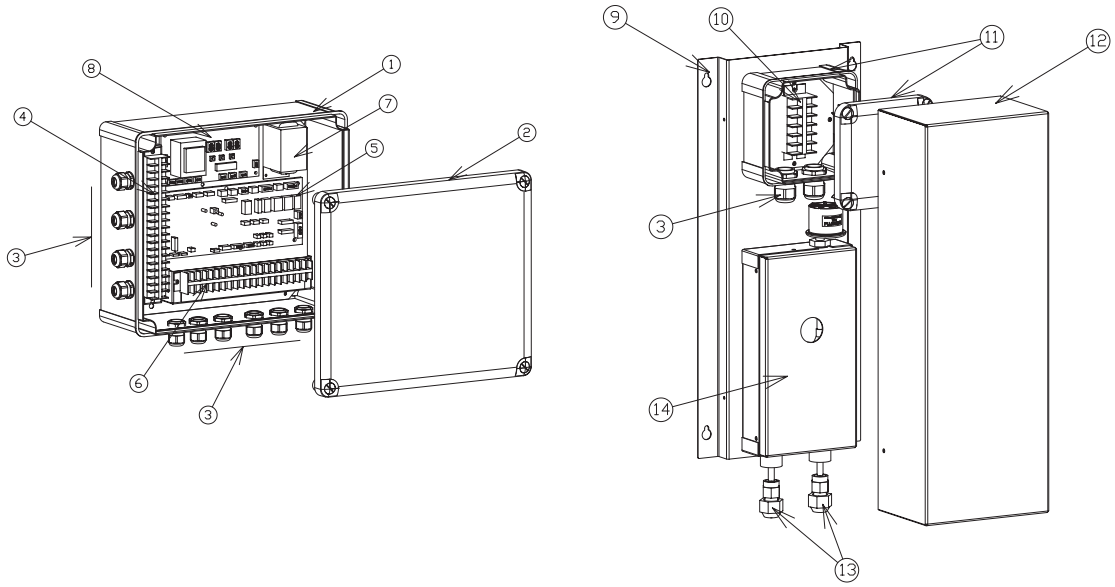

5 The DX-Coil Module can be removed



## 9.12 DX-Interface

### 9.12.1 Structure and part names

**DX-Interface EXV-(2.0-10.0)E2**




| 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 |

### 9.12.2 Removal of the electrical components

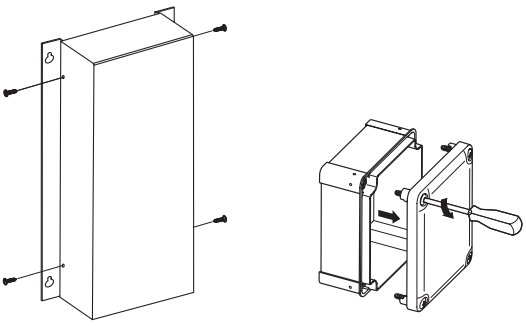
◆ **Control box**

1 Remove the control box cover unscrewing the 4 screws.

◆ **Expansion valve box**

1 Remove the expansion valve box cover unscrewing the 4 screws.

2 Remove the terminal box like the control box cover.

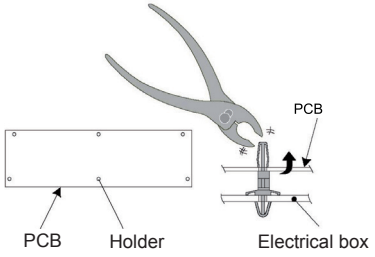


**⚠ CAUTION**

*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.*



# 10. Troubleshooting

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10.4 Outdoor and indoor alarm codes ..... 347
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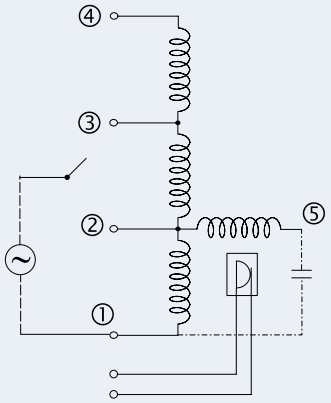
## 10.1 Electronic expansion valve check procedure

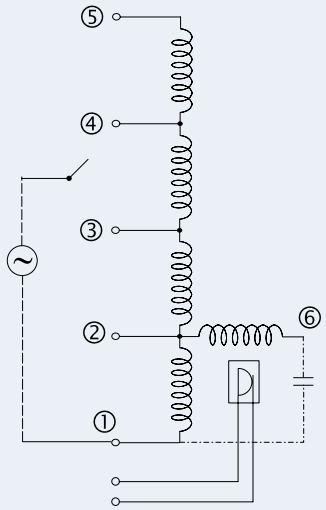
| Valve position | Electronic expansion valve |
|---|---|
| Locked fully closed | Check the temperature of the piping in the heating process. Failure of the temperature to rise indicates a fault. |
| Locked slightly open | The following conditions indicate a fault: |
| Locked fully open | Where the freeze protection thermistor temperature is lower than the intake air temperature. |
| | Where the unit being inspected stops and other units continue operating in cooling mode. |

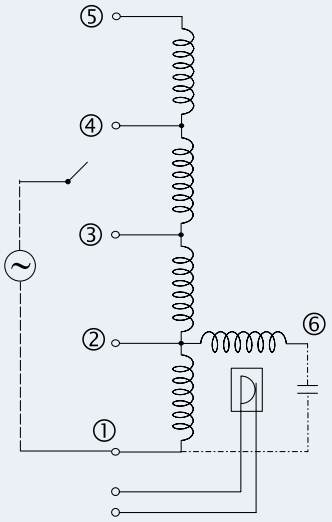
## 10.2 Procedure for checking fan motors in indoor units

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 number | Resistance (Ω) |
|---|---|---|---|---|
| RCI-1.0FSN4<br>RCI-1.5FSN4<br>RCI-2.0FSN4<br>RCI-2.5FSN4<br>RCI-3.0FSN4 | 57 W | DC motor | — | — |
| RCI-4.0FSN4<br>RCI-5.0FSN4<br>RCI-6.0FSN4 | 127 W | DC motor | — | — |
| RCIM-0.6FSN4(E)<br>RCIM-0.8FSN4(E)<br>RCIM-1.0FSN4(E)<br>RCIM-1.5FSN4(E)<br>RCIM-2.0FSN4(E)<br>RCIM-2.5FSN4(E) | 57 W | DC motor | — | — |
| RCD-0.8FSN2<br>RCD-1.0FSN2<br>RCD-1.5FSN2<br>RCD-2.0FSN2 | 57 W | DC Motor | — | — |
| RCD-2.5FSN2<br>RCD-3.0FSN2 | 55 W | | | |
| RCD-4.0FSN2 | 35 W x 2 | | | |
| RCD-5.0FSN2 | 55 W x 2 | | | |
| RPC-3.0FSN3E<br>RPC-4.0FSN3E<br>RPC-5.0FSN3E<br>RPC-6.0FSN3E | 145 W |  | BLK1-2RED<br>RED2-3YEL<br>YEL3-4GRY<br>RED2-6WHT | 32.10<br>24.50<br>24.50<br>44.70<br>to 25 ºC |
| RPC-1.5FSN3<br>RPC-2.0FSN3 | 50 W | DC motor | — | — |

| Indoor units | Power output | Wiring diagram | Cable number | Resistance (Ω) |
|---|---|---|---|---|
| RPC-2.5FSN3<br>RPC-3.0FSN3 | 80 W | DC motor | — | — |
| RPC-4.0FSN3<br>RPC-5.0FSN3<br>RPC-6.0FSN3 | 160 W | DC motor | — | — |
| RPI(M)-0.6FSN4E-(DU)<br>RPI(M)-0.8FSN4E-(DU)<br>RPI(M)-1.0FSN4E(-DU)<br>RPI(M)-1.5FSN4E(-DU)<br>RPI-2.0FSN4E | 60 W | DC motor | — | — |
| RPI-2.5FSN4E<br>RPI-3.0FSN4E | 150 W | | — | — |
| RPI-4.0FSN4E<br>RPI-5.0FSN4E<br>RPI-6.0FSN4E | 250 W | | — | — |
| RPI-(8.0/10.0)<br>FSN3E(-f)<br>RPI-(16.0/20.0)<br>FSN3PE(-f) | 1065 W |  | BLK1-2RED<br>RED2-3BLU<br>BLU3-4GRY<br>GRY4-5YEL<br>RED2-6WHT | 5.00<br>0.75<br>0.75<br>0.75<br>9.20<br>to 20 °C |
| RPK-0.6FSN(H)3M<br>RPK-0.8FSN(H)3M | 38 W | DC motor | — | |
| RPK-1.0FSN(H)3M<br>RPK-1.5FSN(H)3M<br>RPK-2.0FSN3M<br>RPK-2.5FSN3M<br>RPK-3.0FSN3M<br>RPK-4.0FSN3M | 40 W | DC motor | — | |

| Indoor units | Power output | Wiring diagram | Cable number | Resistance (Ω) |
|---|---|---|---|---|
| RPF(I)-1.0FSN2E | 20 W |  | BLK1-2RED<br>RED2-3WHT<br>WHT3-4BLU<br>BLU4-5ORN<br>ORN5-6YEL | 231.70<br>198.70<br>136.20<br>71.20<br>202.40<br>to 20 ºC |
| RPF(I)-1.5FSN2E | 28 W | | | |
| RPF(I)-2.0FSN2E<br>RPF(I)-2.5FSN2E | 45 W | | BLK1-2RED<br>RED2-3WHT<br>WHT3-4BLU<br>BLU4-5ORN<br>ORN5-6YEL | 97.90<br>138.10<br>61.60<br>35.20<br>61.00<br>to 20 ºC |



## 10.3 Inspection of other components

| Component name | Unit model | Model code | Resistance (MΩ) |
|---|---|---|---|
| Drain motor | RCI-FSN4 | TBC | TBC |
| | RCIM-FSN4(E) | PSB-12(A)HHT-2 | 100 |
| | RPI(M)-FSN4E(-f) | | |
| | RCD-FSN2E | KJV-1004 | 347 to 21ºC |

## 10.4 Outdoor and indoor alarm codes

The following alarm codes are displayed in the 7-segments on the PCB of the outdoor units.

| Code number | Category | Abnormality | Cause |
|---|---|---|---|
| 1 | Indoor unit | Activation of protection device (float switch)(*) | Failure of fan motor, drain discharge, PCB, relay, float switch activated (High water level in drain pan, abnormality of drain pipe, float switch or drain pan) |
| 2 | Outdoor unit | Activation of protection device (high pressure cut) | Activation of PSH, locked motor, abnormal operation in the power supply phase. Failure of fan motor, drain discharge, PCB, relay, float switch activated. (Pipe clogging, excessive refrigerant, inert gas mixing, fan motor locking at cooling operation) |
| 3 | Transmission | Abnormal transmission between outdoor and indoor units | Incorrect wiring. Loose terminals, Failure of PCB (control or inverter). Tripping of fuse. Power supply OFF. |
| 4 | | Abnormal transmission between inverter PCB (DIP-IPM) and outdoor unit PCB (PCB1) | Transmission failure between inverter PCBs. (Loose connector, wire breaking, blowout of fuse) |
| 5 | Power supply | Reception of abnormal operation code for detection of power source phase (Abnormal power source) | Power source with abnormal wave pattern. Main power supply phase is reversely connected or one phase is not connected. (units with power supply 3N~ 400V 50Hz only) |
| 6 | Voltage | Excessively low voltage or excessively high voltage for the inverter | Voltage drop in power supply. Incorrect wiring or insufficient capacity of power supply wiring. |
| 7 | Cycle | Decrease in discharge gas superheat (TdSH) | Excessive refrigerant charge, failure of thermistor, incorrect wiring, incorrect piping connection, expansion valve locking at opened position (disconnected connector). |
| 8 | | Excessively high discharge gas temperature at the top of compressor | Insufficient refrigerant charge, refrigerant leakage. Expansion valve closed or clogged. |
| 11 | Indoor units sensor | Air inlet thermistor(*) | Failure of thermistor, sensor, connection. (Incorrect wiring, disconnected wiring, wire breaking, short circuit). |
| 12 | | Air outlet thermistor(*) | |
| 13 | | Freeze protection thermistor(*) | |
| 14 | | Gas piping thermistor(*) | |
| 16 | | Remote thermistor | |
| 17 | | Thermistor of RCS | |
| 19 | Fan motor | Activation of the protection device for the indoor fan motor(*) | Failure of fan motor or CB activation (overcurrent) for RPI-(16.0/20.0)FSN3PE(-f) |
| 20 | Outdoor unit sensor | Compressor thermistor | Incorrect wiring, disconnected wiring, broken cable, short circuit. |
| 21 | | High pressure sensor | |
| 22 | | Thermistor for outdoor ambient temperature (THM7) | |
| 23 | | Thermistor for discharge gas temperature (THM9) | |
| 24 | | Thermistor for evaporating temperature (THM8) | Incorrect wiring, disconnected wiring, wire breaking, short circuit, fan motor locking at heating operation. |
| 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 capacity code setting, excessive or insufficient indoor unit total capacity code |
| 32 | | Incorrect setting signal from another Indoor Unit in same system (RPK only) | Abnormality of another indoor unit in the same refrigerant cycle (failure of power source, abnormality of PCB) |
| 35 | | Incorrect indoor unit number setting (Incorrect IU addversing) | Duplication of indoor unit number , number of indoor units over specifications. |
| 36 | | Incorrect of indoor unit combination | "Indoor Unit is designed for other refrigerant (R22 or R407C)." |
| 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) | OU pipe thermistor temperature is higher than 55 ºC and the compressor top temperature is higher than 95 ºC, OU protection device is activated. |
| 42 | | Heating overload (high-pressure device may be activated) | If IU freeze protection thermistor temperature is higher than 55 ºC and compressor top temperature is higher than 95 ºC, OU protection device is activated. |
| 43 | | Activation of the safety device from compression ratio decrease | Abnormal compressor (Compressor, Inverter damage) |
| 44 | | Activation of the safety device from excessively high suction pressure | Overload during cooling, high temperature with heating, locked expansion valve |
| 45 | Protection device | Activation of the safety device from excessively high discharge pressure | Overload (obstruction of HEX, short circuit) mixture of inert gas, excessive refrigerant. |
| 47 | | Activation of the safety device from excessively low suction pressure (protection from vacuum operation) (low pressure decrease prevention) | Shortage or leakage of refrigerant, piping clogging, expansion valve close-locked, fan motor locked. |
| 48 | | Activation of overcurrent protection | Overload, overcurrent. Failure of DIP IPM, IPM or PCB2, heat exchanger clogged, locked compressor. EVI/EVO failure. Cycle abnormality. |
| 51 | Inverter | Abnormal operation of the current sensor | Incorrect wiring of current sensor. Failure of control PCB, DIP IPM, IPM or PCB2. |
| 53 | | Inverter fin temperature increase | Inverter module (IPM, DIP-IPM) and PCB2 abnormality. Failure of compressor, clogging of heat exchanger. |
| 54 | | Abnormality of inverter fin temperature | Heat exchanger clogging. Fan motor failure |
| 55 | | Abnormality of inverter module (not working) | Failure of DIP-IPM, IPM or PCB2. |
| 57 | Outdoor fan | Fan Motor abnormality | Disconnected wire of incorrect wiring between control PCB and inverter PCB. Incorrect wiring or fan motor abnormality. |
| EE | Compressor | Compressor protection | "Compressor failure. This alarm code appears when the following alarms 02, 07, 08, 45, 47 occur three times within 6 hours." |
| b0 | IU model setting | Incorrect setting of unit model | No setting of unit capacity or incorrect setting of unit capacity |
| b1 | Number setting | Incorrect setting address or refrigerant cycle | Over 64 indoor units setting by number or indoor unit address. |
| b5 | | Incorrect setting of indoor unit number for H-LINK type | The number of indoor units connected to the H-Link II of one system is 17 or higher |

**NOTE**

*(*) In the case of RPI-16/20, the fan motor of both units is stopped immediately upon occurrence of an alarm at either of the units (upper or lower side). The remote control switch indicates the cause of alarm (codes 1, 11, 12, 13, 14, 19) for the unit where the alarm has occurred, while alarm code 19 (Fan motor stoppage) is indicated for the other unit. Therefore it is necessary to check both units only in case of occurrence of alarm 19.*

## 10.5 DX-Interface EXV-(2.0-10.0)E2 or KPI-(E/X)4E alarm codes

| Code number | DX-KIT2 | KPI-E3 | 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 |
| 73 | o | o | o | Indoor | Incorrect 4-20mA. 0-10V, 0-5V, 0-10kΩ setting | Loose, disconnected, broken or short-circuited connector |
| 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)E2 or KPI-(E/X)4E.**

HITACHI

# 11. Maintenance notes

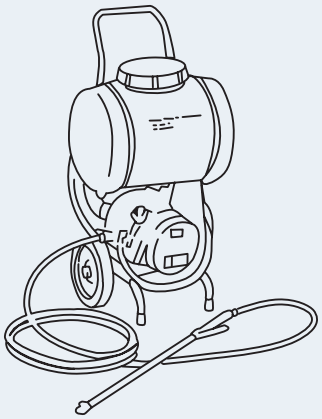
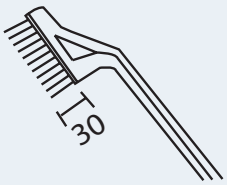
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# 11.1 Regular equipment maintenance

## 11.1.1 Necessary tools, equipment and consumable for regular maintenance

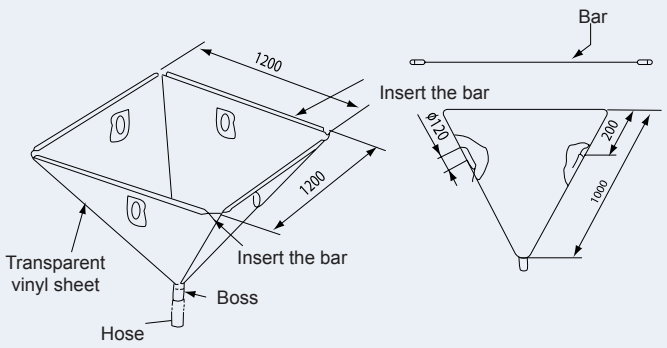
### ◆ Tools

| Tool | Remarks |
|---|---|
| Water pump for cleaning  | Use of a water pump with a tank is recommended |
| Water tank with clean water | Approx. 18 litres |
| Nozzle | Attached with Water Pump |
| Brush   | Nonmetal, with a brush length of 25 to 35 mm.<br>If the heat exchanger is heavily clogged with dust, remove it with this brush. |
| 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 |

### 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 |

### Equipment

| Equipment | Remarks |
|---|---|
| Cleaning water manifold<br>  <br>Inner side of Ø120 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 |

## 11.2 Indoor cleaning

### 11.2.1 Cleaning the built-in 4-way indoor unit RCI(M)

#### Preliminary procedure

1 Place a vinyl sheet on the floor to protect the furniture and other items from the cleaning water before starting this work.
2 Remove the optional air panel as indicated in section *"9.2.4 Removal of the optional air panel"*.
3 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 *"9.2.3 Removal of the electrical box cover"* and *"9.2.5 Removal of the fan runner and the fan motor"*.
4 Remove the bell mouth and fan as indicated in section *"9.2.6 Removal of the printed circuit board (PCB)"*.
5 Remove the drain pan, according to *"9.2.7 Removal of the drain pan"*.
6 Remove the float switch as indicated in sections *"9.2.8 Removal of the drain mechanism"*.
7 Remove the drain-up mechanism.

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.

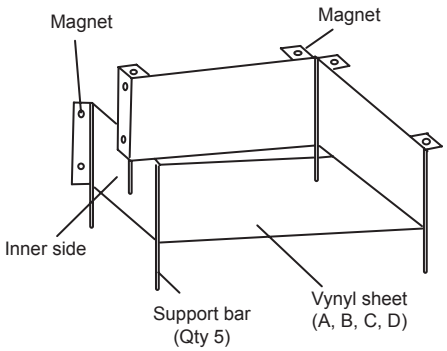
### Cleaning the indoor unit

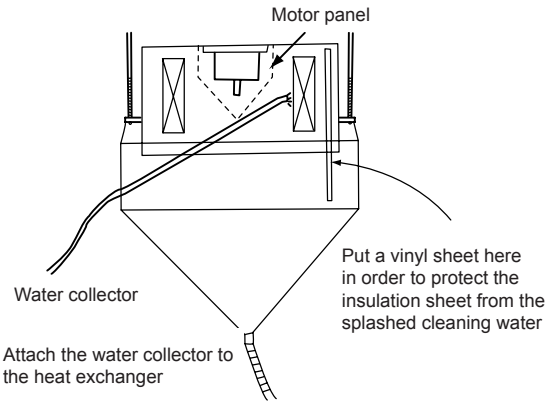
**NOTE**

*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.

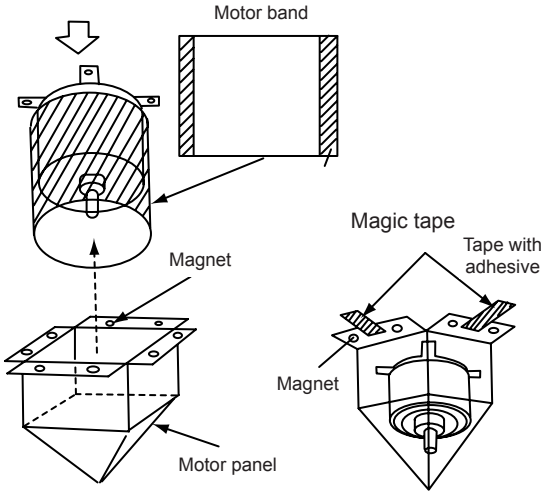
Secure the vinyl sheet to the side plate of the exchanger using adhesive tape and seal the gap between the vinyl sheets in the same manner.



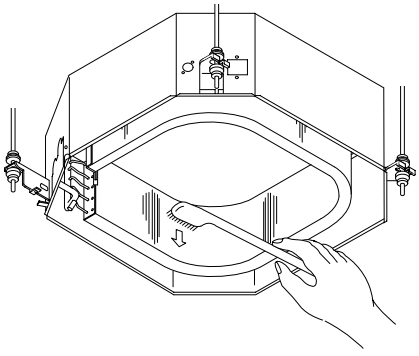




Place a vinyl sheet around the motor to prevent the cleaning water from splashing the electrical motor.

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.



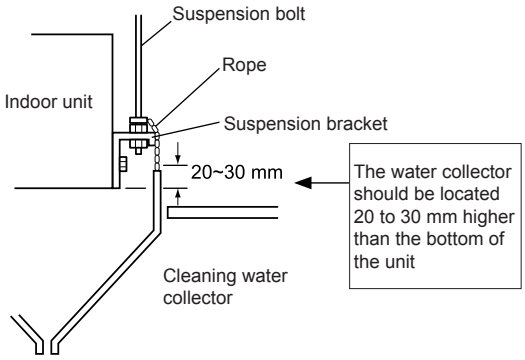
Hang the cleaning water manifold from the indoor unit.

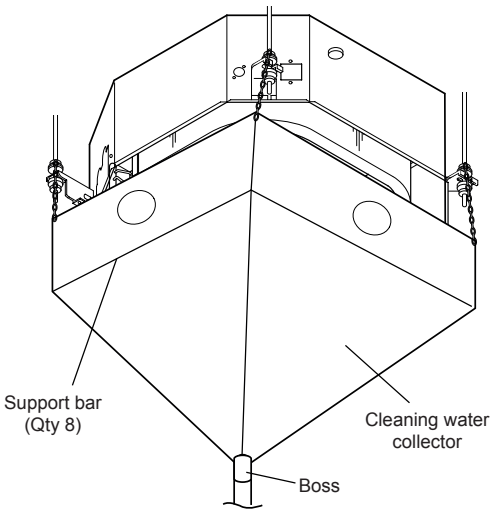
Tie the rope to the suspension bolts of the indoor unit and drop downwards.

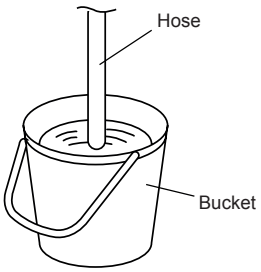
Insert the support bars into the holes in the water manifold.

Tie the rope to the support bar of the water manifold and hang the manifold.

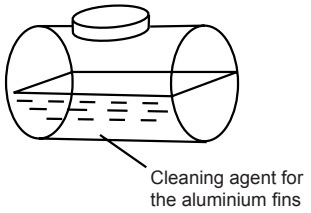
Connect a pipe to the boss and place the end inside the pipe.




Pour approximately 15 litres of cleaning product for the aluminium fins into a supply tank.

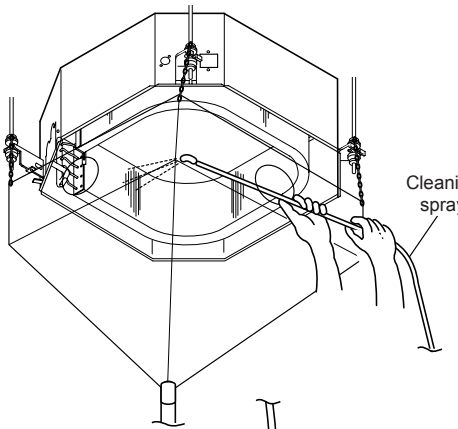



Insert the nozzle of the pressurised water gun into the hole in the cleaning water manifold. Start the water pump and clean the heat exchanger of any dust.

Adjust the pressure of the water pump in order not to damage the fins.

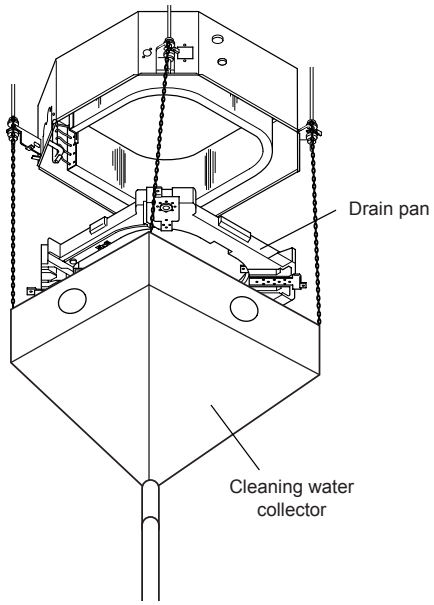
After cleaning, spray and remove all remains of water.

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.



After cleaning 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.




## 11.2.2 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 *"9.3.8 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.

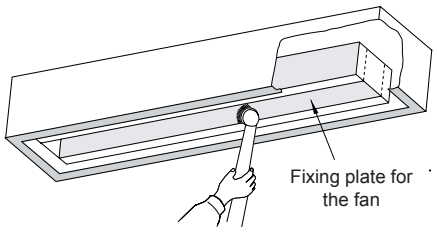
Remove the electrical box after opening the corresponding panel and then disconnect the connectors located between the indoor and outdoor units and other connectors, as indicated in section *"9.3.2 Removal of the electrical box"*.

Remove the float switch as indicated in section *"9.3.6 Removal of the float switch"*.

Remove the drainage mechanism as indicated in section *"9.3.7 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.

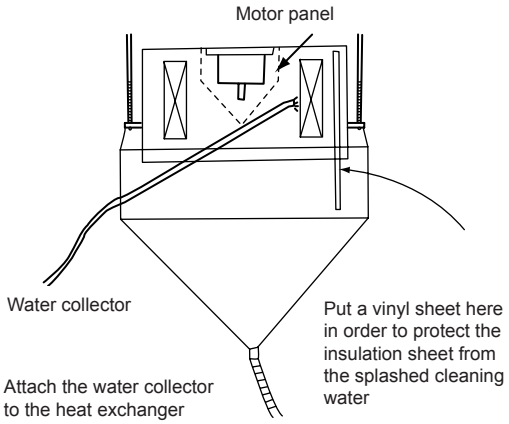



**NOTE**

*Wear gloves to avoid injuries caused by the heat exchanger fins.*

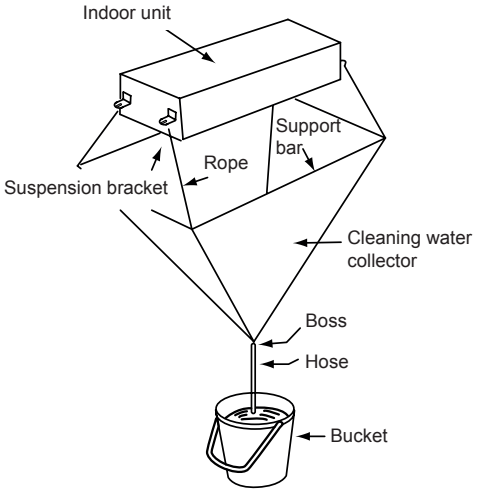
Place a vinyl sheet around the heat exchanger to prevent the cleaning water from splashing the insulation surface and drain pump. Secure the vinyl sheet to the side plate of the exchanger using adhesive tape and seal the gap between the vinyl sheets in the same manner.

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.

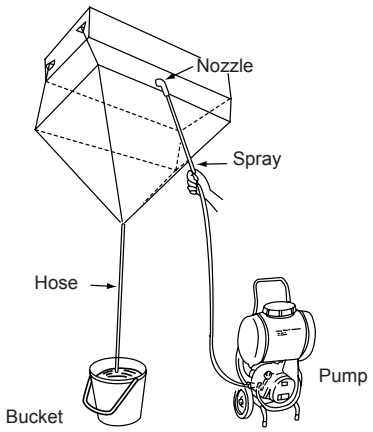
Insert the nozzle of the pressurised water gun into the hole in the cleaning water manifold. Start the water pump and clean the heat exchanger of any dust.

After cleaning, spray and remove all remains of water.

**NOTE**

*Set the pressure of the water pump so as not to damage the funs.*

*Any cleaning water left behind will rust the fins. Set the pump pressure to between 2.5 and 5 kg/cm³ 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.

### 11.2.3 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 *"3.5.11 RPK-(0.6-4.0)FSN(H)3M - Wall type"* section.

Remove the front panel as indicated in section *"9.9.2 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 *"9.9.7 Removing Electrical Box"*.

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 *"9.9.10 Removing Heat Exchanger"* and *"9.9.12 Removing Fan and Fan Motor"*.

#### Cleaning the indoor unit

**NOTE**

*Wear gloves to avoid injuries caused by the heat exchanger fins.*

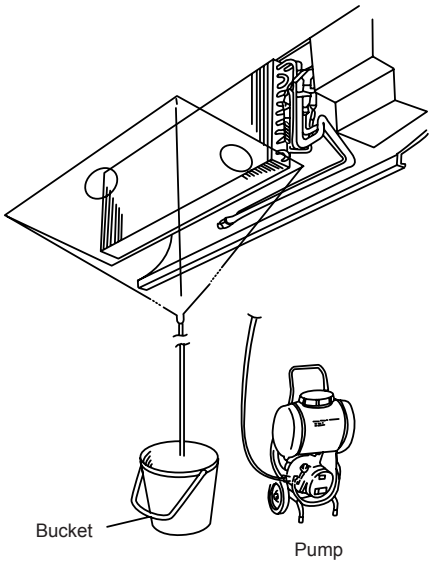
Clean the inner surface of dust. Collect all of the dust in a bucket or a cardboard box.

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**

- *Set the pressure of the water pump so as not to damage the funs.*
- *Any cleaning water left behind will rust the fins. Set the pump pressure to between 2.5 and 5 kg/cm³ 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.

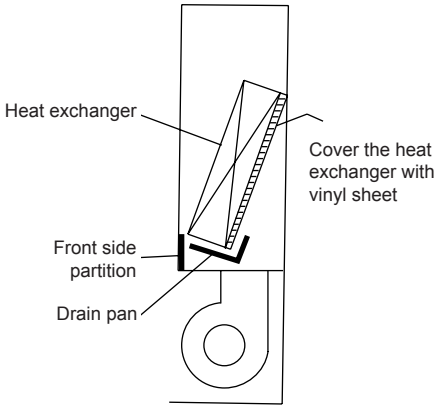
Perform the neutralisation treatment after cleaning.

After cleaning, fit the drain pan by lowering the rope.

Perform the neutralisation treatment after cleaning.

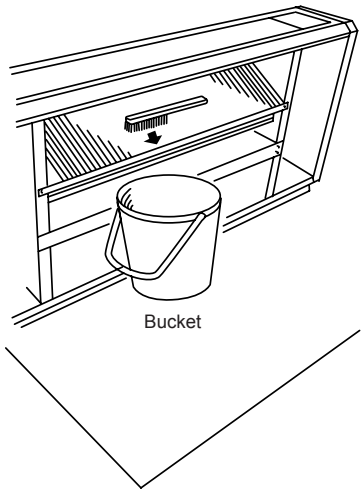
### 11.2.4 Cleaning the floor console and floor concealed console indoor unit RPF(I)

Remove the front panel in line with the instructions given in chapter *"9.10.4 Removal of the front panel"*.




Remove any dust from the heat exchanger.

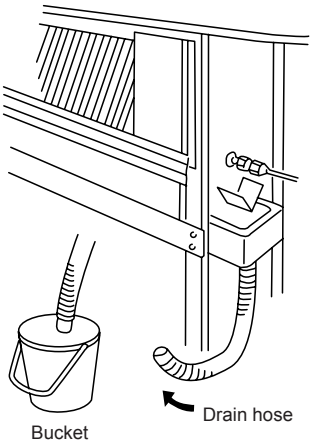
Remove the dust from the heat exchanger by brushing it in a downwards direction. Collect all of the dust in a bucket or a cardboard box.



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.




### 11.2.5 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 *"9.4.2 Removal of the side panel"*.

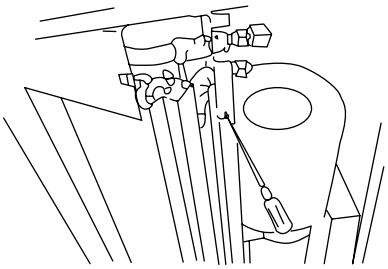
Remove the louver in line with the instructions given in chapter *"9.4.3 Removal of the air outlet grille"*.

Open the air inlet grille as indicated in chapter *"9.4.1 Removal of the air filter"*.

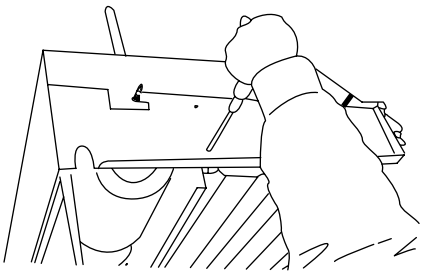
Remove the lower panel and drain pan in line with the instructions given in chapter *"9.4.8 Removal of the thermistors from the liquid and gas pipes"*.

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

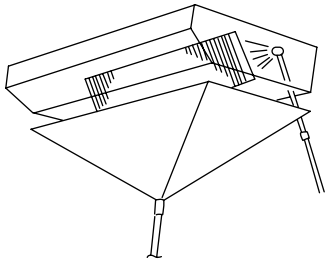
**NOTE**

*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**

- *Set the pressure of the water pump so as not to damage the funs.*
- *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.

## 11.3 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)E4E and KPI-(502-1002)X4E**

Pull the hinges back.

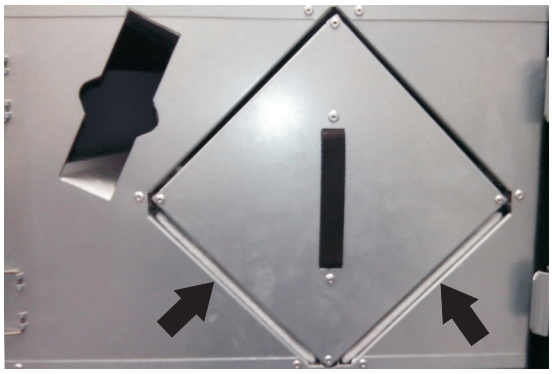
Open and remove the service cover.

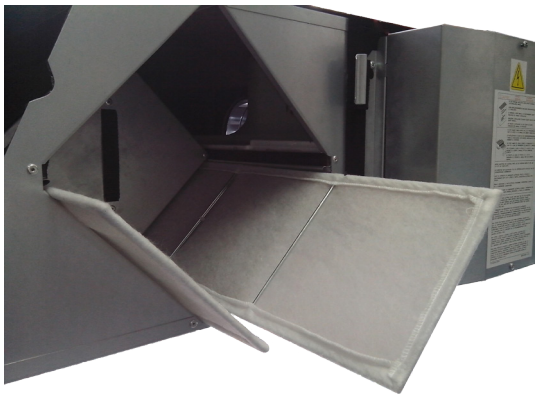


**CAUTION**

*The service cover is not fixed, pay attention when pull the hinges back because the cover can fall.*

Remove the air filters located at the bottom left and bottom right, close to the heat exchanger unit.





Use a vacuum cleaner to suck up any dust.

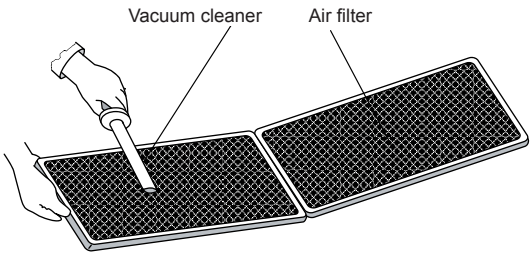
Dissolve a little neutral soap in cold or warm water to clean the dirt.

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

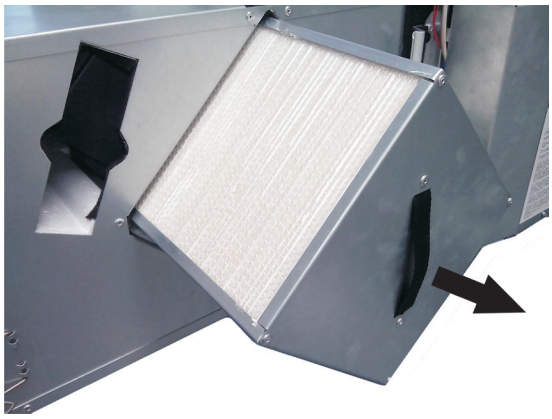
**NOTE**

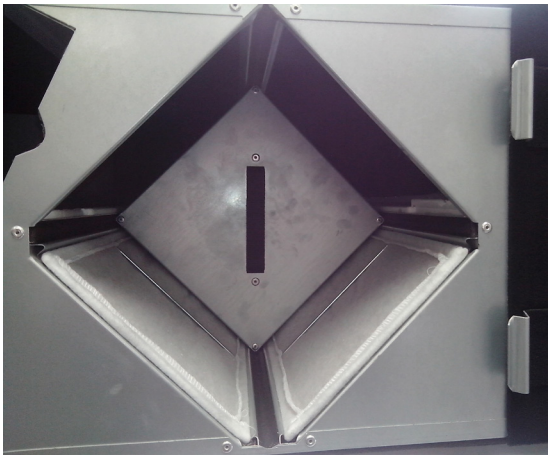
*Clean the element once or more every two years to prevent the air flow and efficiency from dropping.*

**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.*

Hold onto the handle. Remove the two total heat exchanger elements from the main unit.





**KPI-(252-2002)E4E and KPI-(502-1002)X4E**

Use a vacuum cleaner to suck up any dust and dirt from the exposed surfaces of the total exchanger elements.

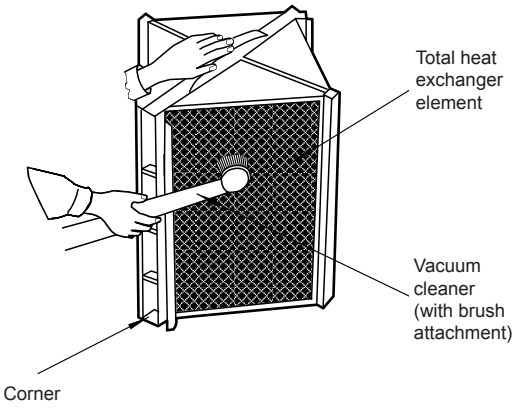
Fit a nozzle with a brush to a vacuum cleaner to carry out this task.

Clean the elements by brushing the exposed surfaces gently.

Fit the element.

Fit the air filter.

Close the service cover.



## 11.4 Econofresh kit

**DANGER**

***Wear gloves to avoid injuries when handling components.***

**CAUTION**

- *Clean the air filter more than once a year.*
- *Clean the heat exchanger unit once or more every two years.*

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.

Clean the exchanger and/or air filter.

**CAUTION**

- *Do not start the system without the air filter.*
- *Turn on the power supply after completing the maintenance work.*

## 11.5 Collection of refrigerant to replace the indoor unit

### ◆ Collection of refrigerant after replacing the indoor unit

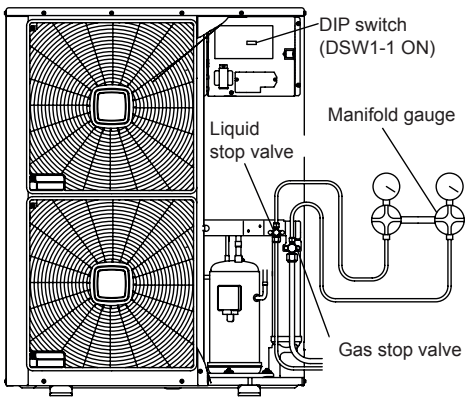
1 Connect the gauge manifold to the gas and liquid stop valve.
2 Switch the power supply ON.
3 Enable pin 1 of DSW1 on the outdoor unit PCB for cooling operation. Close the liquid stop valve and collect the refrigerant.
4 Carry out the following procedures immediately when the side pressure drops and 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.



## 11.6 Cleaning agents for heat exchanger

The aluminium fin surfaces of the heat exchanger for all the indoor units of packaged air conditioners are coated with a hydrophilic coating to prevent the increase of airstream resistance due the occurrence of condensing water during cooling operation.

However, if the Aluminium fin's hydrophilic is decreased by the adhesion of contaminants, etc., the following phenomenon will happen.

Dew will adhere between each aluminium fin space (Bridging Phenomenon)

↓

Increase of airstream resistance

↓

Decrease of the airflow volume

↓

Decrease of cooling capacity

↓

In some cases, dew may be splashed from the indoor unit

In order to avoid the malfunction of the unit, we recommend the use of cleaning agent for the aluminium fins.

### 11.6.1 Recommended specifications of cleaning agents for aluminium fins

| | | |
|---|---|---|
| Effect on hydrophilic coating | | No effect |
| Effectiveness against specific types of dirt | Grease and Oil | Specially effective |
| | Tar | Effective |
| | White powder (*1) | Ineffective |
| Possibility of occurrence of cracking (*2) | | Low |
| pH of the solution | | Alkaline or Weak alkaline |
| Requirement of dilution | | Yes or No |
| Personal Protection Equipment (PPE) to be used in handling (*3) | | Mask, Glasses, Gloves |

(*1): The hydroxide caused by the reaction of aluminium fins and the water condensed on the surface of the fins.

(*2): The possibility of occurrence of cracking was also examined taking into account the results of the examination of the possibility of occurrence of cracking in Acrylonitrile Butadiene Styrene (ABS) and Polystyrene (PS).

(*3): Personal Protection Equipment (PPE) must be used whenever manipulating chemical products, in order to ensure safety.

### 11.6.2 Particularities and benefits

HITACHI has ben tested the effect of cleaning benefits using special fin cleaners for hydrophilic coated fins on the indoor units. Those tests were focused on the wettability, and confirmed as follows:

- Cleaning aluminium fins makes its hydrophilicity possible to recover.
- The hydrophilic coating is not damaged even if it's washed repeatedly by using special cleaning special agents for hydrophilic aluminium coatings.

### 11.6.3 To consider

Before washing aluminium fins, protect the fan motor, the electrical box, the connectors and, in general, all the wiring of being splashed with the cleaning products and water. In addition, before starting an air-conditioning operation, after washing the alumimnium fins, be sure that there is no splashing water on those items.

If the cleaning agents are used incorrectly, it will cause damage to aluminium fins. When using those products, pay special attention to the indications referred on each instructions manual

HITACHI

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