



Air-Conditioners For Building Application

# 2001

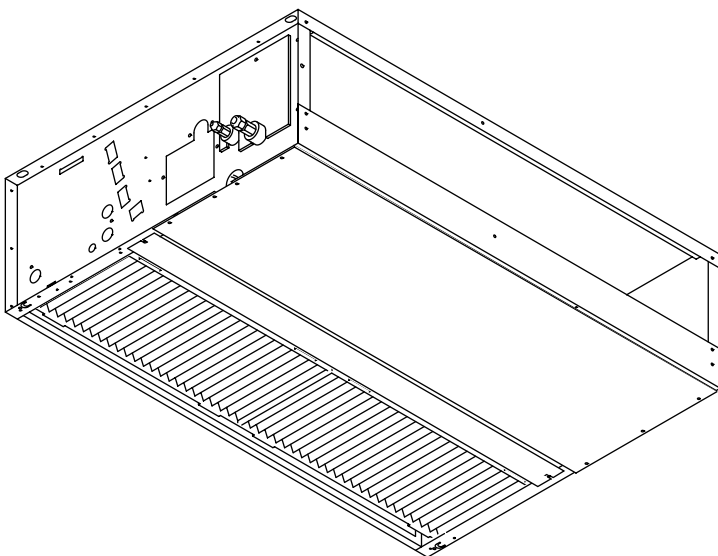
## TECHNICAL & SERVICE MANUAL

### Series PDFY Ceiling Concealed Built-in

<Indoor unit>

Models

**PDFY-P20VM-A, PDFY-P63VM-A**  
**PDFY-P25VM-A, PDFY-P71VM-A**  
**PDFY-P32VM-A, PDFY-P80VM-A**  
**PDFY-P40VM-A, PDFY-P100VM-A**  
**PDFY-P50VM-A, PDFY-P125VM-A**



#### CONTENTS

SAFETY PRECAUTIONS .....	1
1. FEATURES.....	3
2. PART NAMES AND FUNCTIONS .....	4
3. SPECIFICATION .....	6
4. OUTLINES AND DIMENSIONS.....	8
5. WIRING DIAGRAM .....	10
6. REFRIGERANT SYSTEM DIAGRAM....	12
7. TROUBLE SHOOTING.....	13
8. DISASSEMBLY PROCEDURE .....	18

# CITY MULTI

For use with the R407C & R22

# SAFETY PRECAUTIONS

## 1. Before installation and electric work

- ▶ Before installing the unit, make sure you read all the "Safety precautions".
- ▶ The "Safety precautions" provide very important points regarding safety. Make sure you follow them.
- ▶ This equipment may not be applicable to EN61000-3-2: 1995 and EN61000-3-3: 1995.
- ▶ This equipment may have an adverse effect equipment on the same electrical supply system.
- ▶ Please report to or take consent by the supply authority before connection to the system.

### Symbols used in the text

#### **Warning:**

Describes precautions that should be observed to prevent danger of injury or death to the user.

#### **Caution:**

Describes precautions that should be observed to prevent damage to the unit.

### Symbols used in the illustrations



: Indicates an action that must be avoided.



: Indicates that important instructions must be followed.



: Indicates a part which must be grounded.



: Indicates that caution should be taken with rotating parts. (This symbol is displayed on the main unit label.) <Color: Yellow>



: Beware of electric shock (This symbol is displayed on the main unit label.) <Color: Yellow>

#### **Warning:**

Carefully read the labels affixed to the main unit.

#### **Warning:**

- **Ask the dealer or an authorized technician to install the air conditioner.**
  - Improper installation by the user may result in water leakage, electric shock, or fire.
- **Install the air unit at a place that can withstand its weight.**
  - Inadequate strength may cause the unit to fall down, resulting in injuries.
- **Use the specified cables for wiring. Make the connections securely so that the outside force of the cable is not applied to the terminals.**
  - Inadequate connection and fastening may generate heat and cause a fire.
- **Prepare for typhoons and other strong winds and earthquakes and install the unit at the specified place.**
  - Improper installation may cause the unit to topple and result in injury.
- **Always use an air cleaner, humidifier, electric heater, and other accessories specified by Mitsubishi Electric.**
  - Ask an authorized technician to install the accessories. Improper installation by the user may result in water leakage, electric shock, or fire.

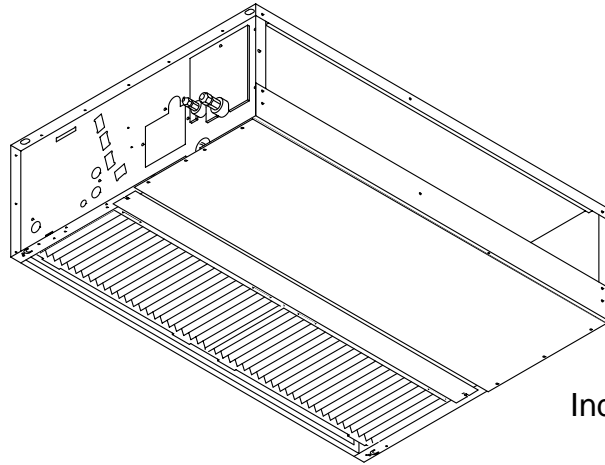
- **Never repair the unit. If the air conditioner must be repaired, consult the dealer.**
  - If the unit is repaired improperly, water leakage, electric shock, or fire may result.
- **Do not touch the heat exchanger fins.**
  - Improper handling may result in injury.
- **If refrigerant gas leaks during installation work, ventilate the room.**
  - If the refrigerant gas comes into contact with a flame, poisonous gases will be released.
- **Install the air conditioner according to this Installation Manual.**
  - If the unit is installed improperly, water leakage, electric shock, or fire may result.
- **Have all electric work done by a licensed electrician according to "Electric Facility Engineering Standard" and "Interior Wire Regulations" and the instructions given in this manual and always use a special circuit.**
  - If the power source capacity is inadequate or electric work is performed improperly, electric shock and fire may result.
- **Securely install the cover of control box and the panel.**
  - If the cover and panel are not installed properly, dust or water may enter the outdoor unit and fire or electric shock may result.
- **When installing and moving the air conditioner to another site, do not charge the it with a refrigerant different from the refrigerant (R407C or R22) specified on the unit.**
  - If a different refrigerant or air is mixed with the original refrigerant, the refrigerant cycle may malfunction and the unit may be damaged.
- **If the air conditioner is installed in a small room, measures must be taken to prevent the refrigerant concentration from exceeding the safety limit even if the refrigerant should leak.**
  - Consult the dealer regarding the appropriate measures to prevent the safety limit from being exceeded. Should the refrigerant leak and cause the safety limit to be exceeded, hazards due to lack of oxygen in the room could result.
- **When moving and reinstalling the air conditioner, consult the dealer or an authorized technician.**
  - If the air conditioner is installed improperly, water leakage, electric shock, or fire may result.
- **After completing installation work, make sure that refrigerant gas is not leaking.**
  - If the refrigerant gas leaks and is exposed to a fan heater, stove, oven, or other heat source, it may generate noxious gases.
- **Do not reconstruct or change the settings of the protection devices.**
  - If the pressure switch, thermal switch, or other protection device is shorted and operated forcibly, or parts other than those specified by Mitsubishi Electric are used, fire or explosion may result.

## 2. Precautions for devices that use R407C refrigerant

### ⚠ Caution:

- **Do not use the existing refrigerant piping.**
  - The old refrigerant and refrigerator oil in the existing piping contains a large amount of chlorine which may cause the refrigerator oil of the new unit to deteriorate.
- **Use refrigerant piping made of C1220 (CU-DHP) phosphorus deoxidized copper as specified in the \*JIS H3300 "Copper and copper alloy seamless pipes and tubes". In addition, be sure that the inner and outer surfaces of the pipes are clean and free of hazardous sulphur, oxides, dust/dirt, shaving particles, oils, moisture, or any other contaminant.**
  - Contaminants on the inside of the refrigerant piping may cause the refrigerant residual oil to deteriorate.

\*JIS: Japanese Industrial Standard
- **Store the piping to be used during installation indoors and keep both ends of the piping sealed until just before brazing. (Store elbows and other joints in a plastic bag.)**
  - If dust, dirt, or water enters the refrigerant cycle, deterioration of the oil and compressor trouble may result.
- **Use ester oil, ether oil or alkylbenzene (small amount) as the refrigerator oil to coat flares and flange connections.**
  - The refrigerator oil will degrade if it is mixed with a large amount of mineral oil.
- **Use liquid refrigerant to fill the system.**
  - If gas refrigerant is used to seal the system, the composition of the refrigerant in the cylinder will change and performance may drop.
- **Do not use a refrigerant other than R407C.**
  - If another refrigerant (R22, etc.) is used, the chlorine in the refrigerant may cause the refrigerator oil to deteriorate.
- **Use a vacuum pump with a reverse flow check valve..**
  - The vacuum pump oil may flow back into the refrigerant cycle and cause the refrigerator oil to deteriorate.
- **Do not use the following tools that are used with conventional refrigerants.**  
**(Gauge manifold, charge hose, gas leak detector, reverse flow check valve, refrigerant charge base, vacuum gauge, refrigerant recovery equipment)**
  - If the conventional refrigerant and refrigerator oil are mixed in the R407C, the refrigerant may deteriorate.
  - If water is mixed in the R407C, the refrigerator oil may deteriorate.
  - Since R407C does not contain any chlorine, gas leak detectors for conventional refrigerants will not react to it.
- **Do not use a charging cylinder.**
  - Using a charging cylinder may cause the refrigerant to deteriorate.
- **Be especially careful when managing the tools.**
  - If dust, dirt, or water gets in the refrigerant cycle, the refrigerant may deteriorate.

**1****FEATURES****Series PDFY Ceiling Concealed Built-in**

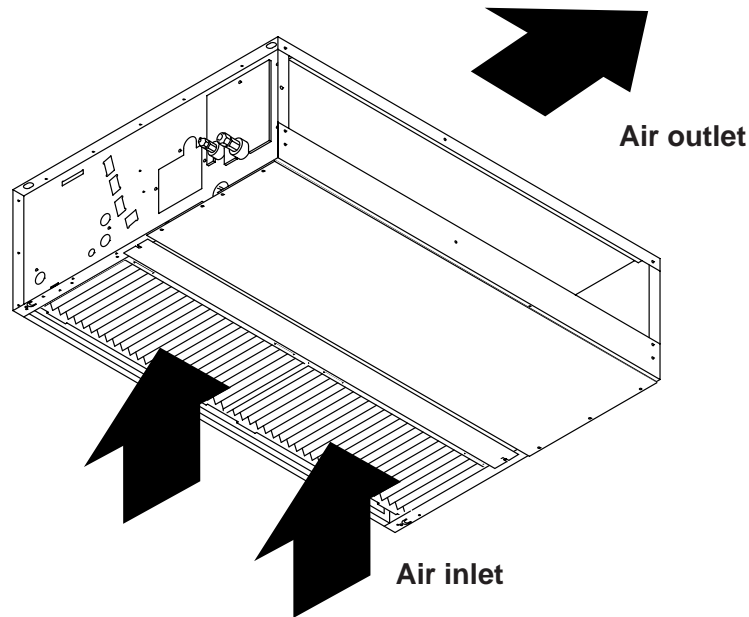
Indoor unit

Models	Cooling capacity/Heating capacity
	kW
PDFY -P20VM-A	2.2/ 2.5
PDFY -P25VM-A	2.8/ 3.2
PDFY -P32VM-A	3.6/ 4.0
PDFY -P40VM-A	4.5/ 5.0
PDFY -P50VM-A	5.6/ 6.3
PDFY -P63VM-A	7.1/ 8.0
PDFY -P71VM-A	8.0/ 9.0
PDFY -P80VM-A	9.0/ 10.0
PDFY -P100VM-A	11.2/ 12.5
PDFY -P125VM-A	14.0/ 16.0

## 2

# PART NAMES AND FUNCTIONS

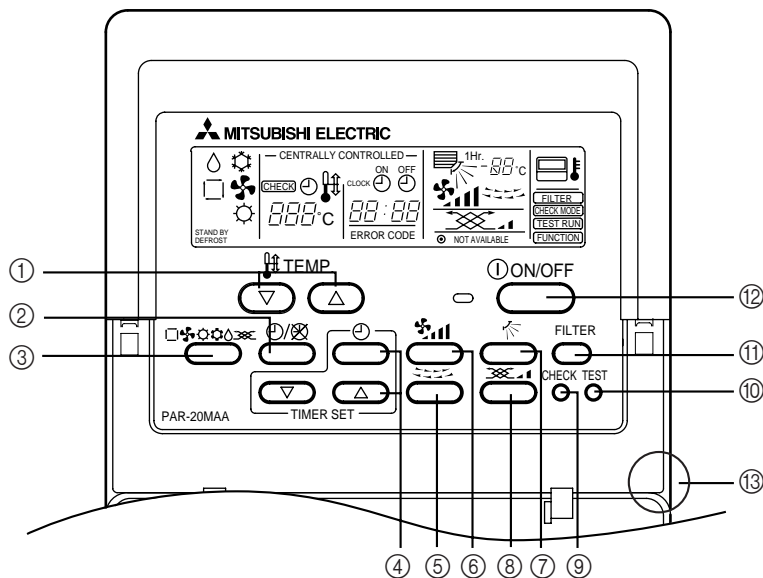
### ● Indoor (Main) Unit



### ● Remote controller [PAR-20MAA]

● Once the controls are set, the same operation mode can be repeated by simply pressing the ON/OFF button.

### ● Operation buttons

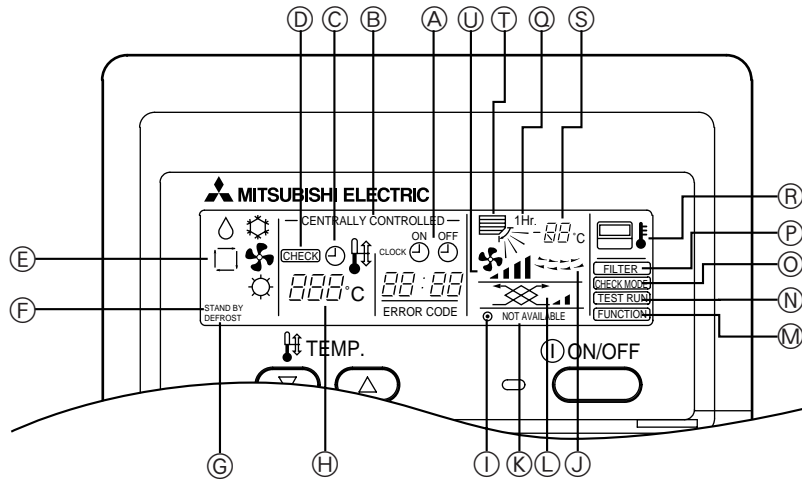


- |                                        |                                         |
|----------------------------------------|-----------------------------------------|
| ① [Room temperature adjustment] Button | ⑦ [Up/down airflow direction] Button    |
| ② [Timer/continuous] Button            | ⑧ [Ventilation] Button                  |
| ③ [Selecting operation] Button         | ⑨ [Checking/built-in] Button            |
| ④ [Time selection] Button              | ⑩ [Test run] Button                     |
| [Time-setting] Button                  | ⑪ [Filter] Button                       |
| ⑤ [Louver] Button                      | ⑫ [ON/OFF] Button                       |
| ⑥ [Fan speed adjustment] Button        | ⑬ Position of built-in room temperature |

• Never expose the remote controller to direct sunlight. Doing so can result in the erroneous measurement of room temperature.

• Never place any obstacle around the lower right-hand section of the remote controller. Doing so can result in the erroneous measurement of room temperature.

## ● Display



- (A) Current time/Timer
- (B) Centralized control
- (C) Timer ON
- (D) Abnormality occurs
- (E) Operation mode: COOL, DRY, AUTO, FAN, HEAT
- (F) Preparing for Heating mode
- (G) Defrost mode
- (H) Set temperature
- (I) Power ON
- (J) Louver
- (K) Not available function
- (L) Ventilation
- (M) Function setting mode
- (N) Test run mode
- (O) Error check mode
- (P) Filter sign
- (Q) Set effective for 1 hr.
- (R) Sensor position
- (S) Room temperature
- (T) Airflow
- (U) Fan speed

# 3

# SPECIFICATION

## 3-1. Specification

Item / Model			PDFY-P20 VM-A	PDFY-P25 VM-A	PDFY-P32 VM-A	PDFY-P40 VM-A	PDFY-P50 VM-A
Power source	Voltage	~V	220-240 / 220				
	Frequency	Hz	50 / 60				
Cooling capacity		kW	2.2	2.8	3.6	4.5	5.6
Heating capacity		kW	2.5	3.2	4.0	5.0	6.3
Power consumption	Cooling	kW	0.11/0.12		0.11/0.12	0.13/0.15	0.13/0.15
	Heating	kW	0.11/0.12		0.11/0.12	0.13/0.15	0.13/0.15
Current	Cooling	A	0.53/0.58		0.53/0.58	0.60/0.71	0.60/0.71
	Heating	A	0.53/0.58		0.53/0.58	0.60/0.71	0.60/0.71
External finish (Munsel No.)			Galvanizing				
Dimension	Height	mm	295				
	Width	mm	710			960	
	Depth	mm	735				
Net weight		kg	25.5	27	32	34	
Heat exchanger			Cross fin( Aluminium plate fin and copper tube)				
Fan	Type		Sirocco fanX1			Sirocco fanX2	
	Airflow rate (Low-Middle2-Middle1-High)	m <sup>3</sup> /min	6.0-6.5-7.5-8.5			10.0-11.0-12.5-14.0	
	External static pressure	Pa	30/50/100				
Motor	Type		Single phase induction motor				
	Output	kW	0.075				
Air filter			Synthetic fiber unwoven cloth filter( long life)				
Refrigerant pipe dimension	Gas(Flare)	mm	ø 12.7				ø 15.88
	Liquid(Flare)	mm	ø 6.35				ø 9.52
Drain pipe dimension			VP-25				
Noise level (Low-Middle2-Middle1-High)			28-30-33-36			34-36-37-39	

Note:1

Note:1

Item / Model			PDFY-P63 VM-A	PDFY-P71 VM-A	PDFY-P80 VM-A	PDFY-P100 VM-A	PDFY-P125 VM-A
Power source	Voltage	~V	220-240 /220				
	Frequency	Hz	50 / 60				
Cooling capacity		kW	7.1	8.0	9.0	11.2	14.0
Heating capacity		kW	8.0	9.0	10.0	12.5	16.0
Power consumption	Cooling	kW	0.14/0.17	0.15/0.18	0.17/0.21	0.27-0.31/0.29	0.33-0.38/0.39
	Heating	kW	0.14/0.17	0.15/0.18	0.17/0.21	0.27-0.31/0.29	0.33-0.38/0.39
Current	Cooling	A	0.68/0.82	0.72/0.88	0.82/1.01	1.28-1.34/1.36	1.55-1.63/1.84
	Heating	A	0.68/0.82	0.72/0.88	0.82/1.01	1.28-1.34/1.36	1.55-1.63/1.84
External finish (Munsel No.)			Galvanizing				
Dimension	Height	mm	295			335	
	Width	mm	1,160			1,510	
	Depth	mm	735			775	
Net weight		kg	39			52	
Heat exchanger			Cross fin( Aluminium plate fin and copper tube)				
Fan	Type		Sirocco fanX2				
	Airflow rate (Low-Middle2-Middle1-High)	m <sup>3</sup> /min	12.5-14.0-16.0-18.0	13.5-15.5-17.5-19.5	14.5-16.5-18.5-21.0	19.5-28.0	24.0-34.0
	External static pressure	Pa	30/50/100			50/100/130	
Motor	Type		Single phase induction motor				
	Output	kW	0.078		0.140	0.190	
Air filter			Synthetic fiber unwoven cloth filter( long life)				
Refrigerant pipe dimension	Gas(Flare)	mm	ø15.88			ø19.05	
	Liquid(Flare)	mm	ø9.52				
Drain pipe dimension			VP-25				
Noise level (Low-Middle2-Middle1-High)			30-34-36-39	31-35-37-40	32-36-38-41	34(37)-42(44)	40(42)-45(46)

Note:1

Note:1

Note:2

Note: 1.Cooling / Heating capacity indicates the maximum value at operation under the following condition.

Cooling :Indoor 27°CDB/19 °CWB :Outdoor 35°CDB	Heating :Indoor 20°C :Outdoor 7°CDB/6°CWB
---------------------------------------------------	----------------------------------------------

2.Value in ( ) indicates Noise level at the 240volt/50Hz .

### 3-2. Electrical parts specifications

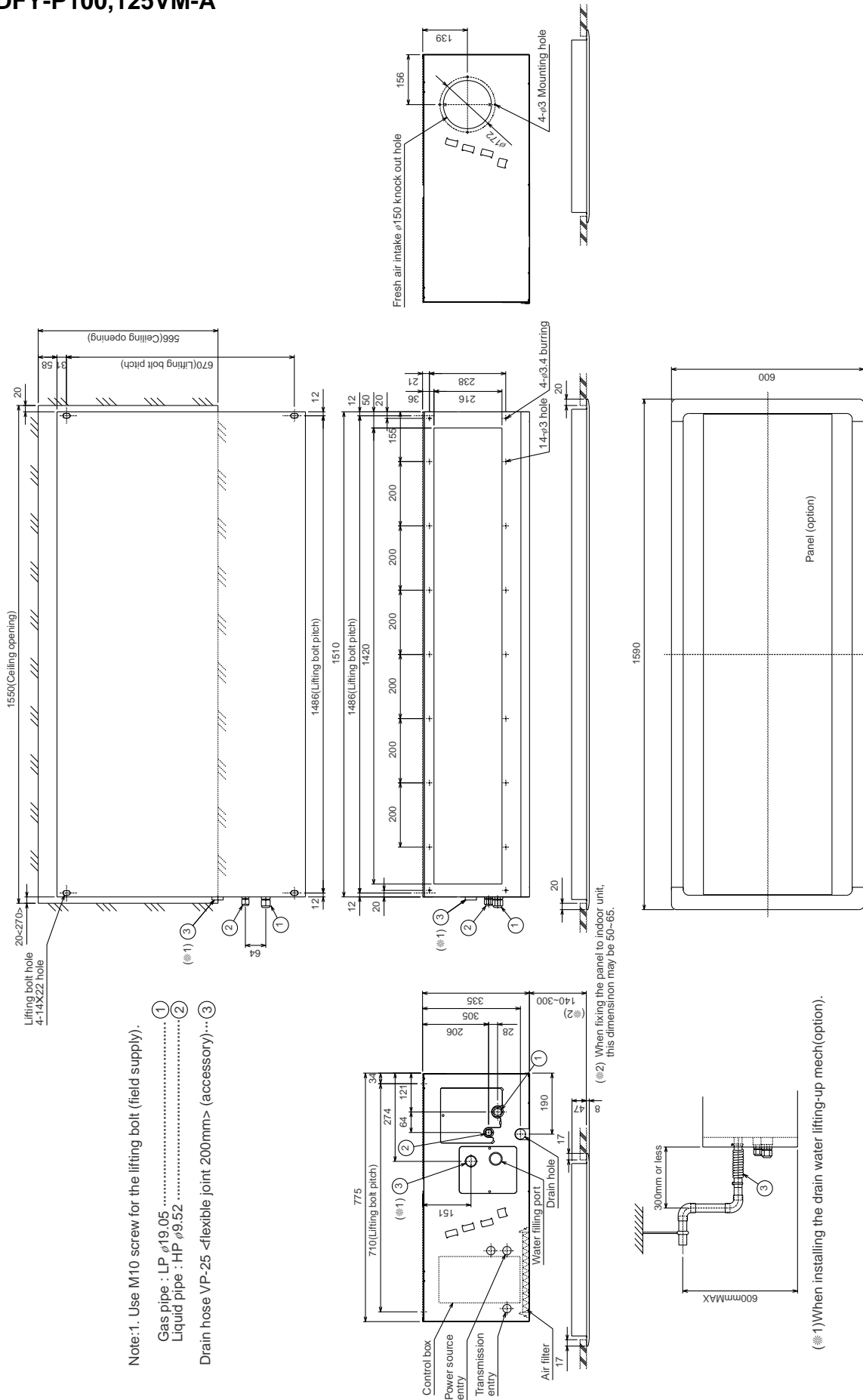
Model Parts name	Symbol	PDFY-P20 VM-A	PDFY-P25 VM-A	PDFY-P32 VM-A	PDFY-P40 VM-A	PDFY-P50 VM-A	PDFY-P63 VM-A	PDFY-P71 VM-A	PDFY-P80 VM-A	PDFY-P100 VM-A	PDFY-P125 VM-A	
Transformer	T	(Primary) 240V 50Hz (Secondary) (23.5V 0.9A)										
Room temperature thermistor	TH21	Resistance 0°C/15kΩ, 10°C/9.6kΩ, 20°C/6.3kΩ, 25°C/5.4kΩ, 30°C/4.3kΩ, 40°C/3.0kΩ										
Liquid pipe thermistor	TH22	Resistance 0°C/15kΩ, 10°C/9.6kΩ, 20°C/6.3kΩ, 25°C/5.4kΩ, 30°C/4.3kΩ, 40°C/3.0kΩ										
Gas pipe thermistor	TH23	Resistance 0°C/15kΩ, 10°C/9.6kΩ, 20°C/6.3kΩ, 25°C/5.4kΩ, 30°C/4.3kΩ, 40°C/3.0kΩ										
Fuse (Indoor controller board)	FUSE	250V 6.3A										
Fan motor (with Inner-thermostat)	MF1,2	4-pole OUTPUT 75W D104P75MW			4-pole Output 75W D104P85MW		4-pole Output 78W D10C4P95MW			4-pole Output 140W NC-100VM1	4-pole Output 190W NC-125VM1	
Inner-thermostat (Fan motor)		OFF 130°C±5°C ON 90°C±20°C								OFF 150°C±5°C ON 96°C±15°C		
Fan motor capacitor	C1	3.0μF X 440V			5.0μF X 440V		6.0μF X 440V			5.0μF X 440V	8.0μF X 440V	
Linear expansion valve	LEV	DC12V Stepping motor drive port dimension 3.2Ω (0~2000pulse) EDM-402MD						DC12V Stepping motor drive port dimension 5.2Ω (0~2000pulse) EDM-804MD				
Power supply terminal bed	TB2	(L,N,⊕) 330V 30A										
Transmission terminal bed	TB5 TB15	(1,2),(M1,M2,S) 330V 10A										





# Indoor Unit PDFY-P100,125VM-A

Unit : mm



Note:1. Use M10 screw for the lifting bolt (field supply).

Gas pipe : LP ø19.05 ..... ①

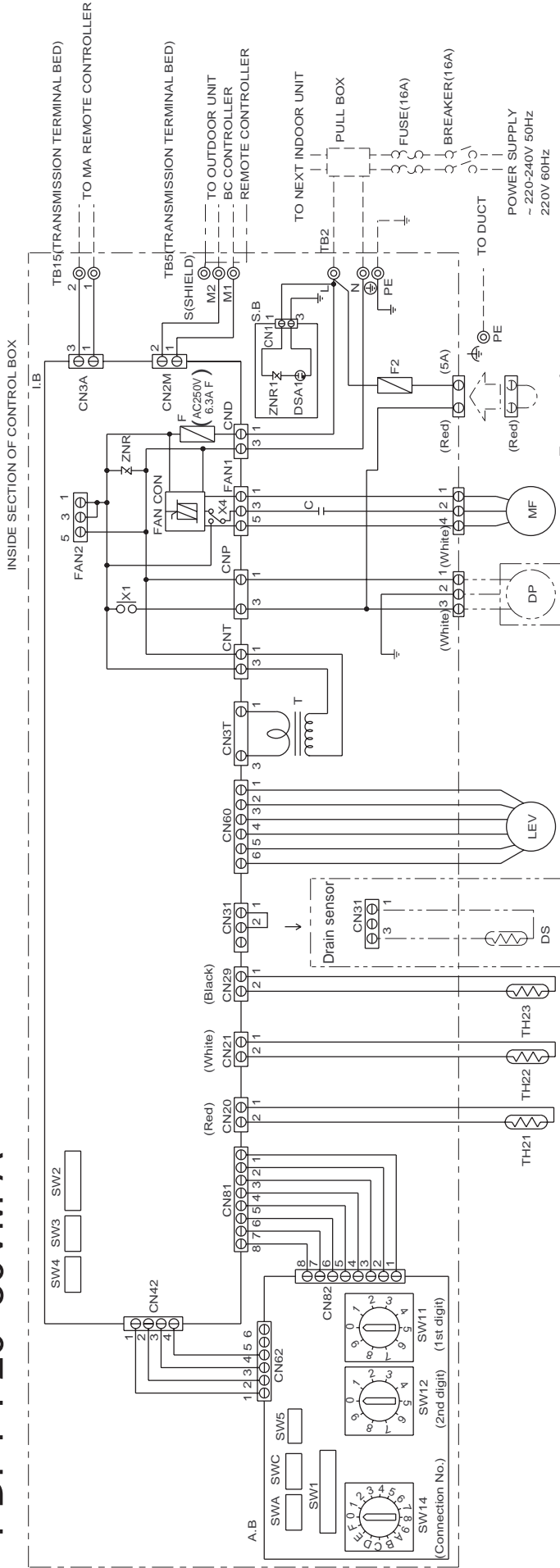
Liquid pipe : HP ø9.52 ..... ②

Drain hose VP-25 <flexible joint 200mm> (accessory)..... ③

(※2) When fixing the panel to indoor unit, this dimension may be 50-66.

(※1)When installing the drain water lifting-up mech(option).

PDFY-P20~80VM-A



SYMBOL EXPLANATION

SYMBOL	NAME	SYMBOL	NAME
MF	Fan motor	TH22	Thermistor (piping temp.detection/liquid)
C	* Capacitor (for MF)	TH23	Thermistor (piping temp.detection/gas)
I . B	Indoor controller board	SWA(A . B)	Switch (option parts)
A . B	Address board	SWC(A . B)	Switch (option parts)
T B 2	Power source terminal bed	SW11 (A . B)	Switch (1st digit address set)
T B 5	Transmission terminal bed	SW12 (A . B)	Switch (2nd digit address set)
T B 1 5	Transmission terminal bed	SW14 (A . B)	Switch (connection No.set)
F	Fuse AC250V 6.3A F	SW1 (A . B)	Switch(for mode selection)
< F 2 >	Fuse AC250V 5A F	SW2 (I . B)	Switch(for capacity code)
T	Transformer	SW3 (I . B)	Switch(for mode selection)
< D P >	Drain pump	SW4 (I . B)	Switch(for model selection)
< D S >	Drain sensor	SW5 (A . B)	Switch(for voltage selection)
LE V	Electronic linear expans. valve	X 1 , X 4	Aux. relay
T H 2 1	Thermistor (inlet temp.detection)	S . B	Surge absorber board

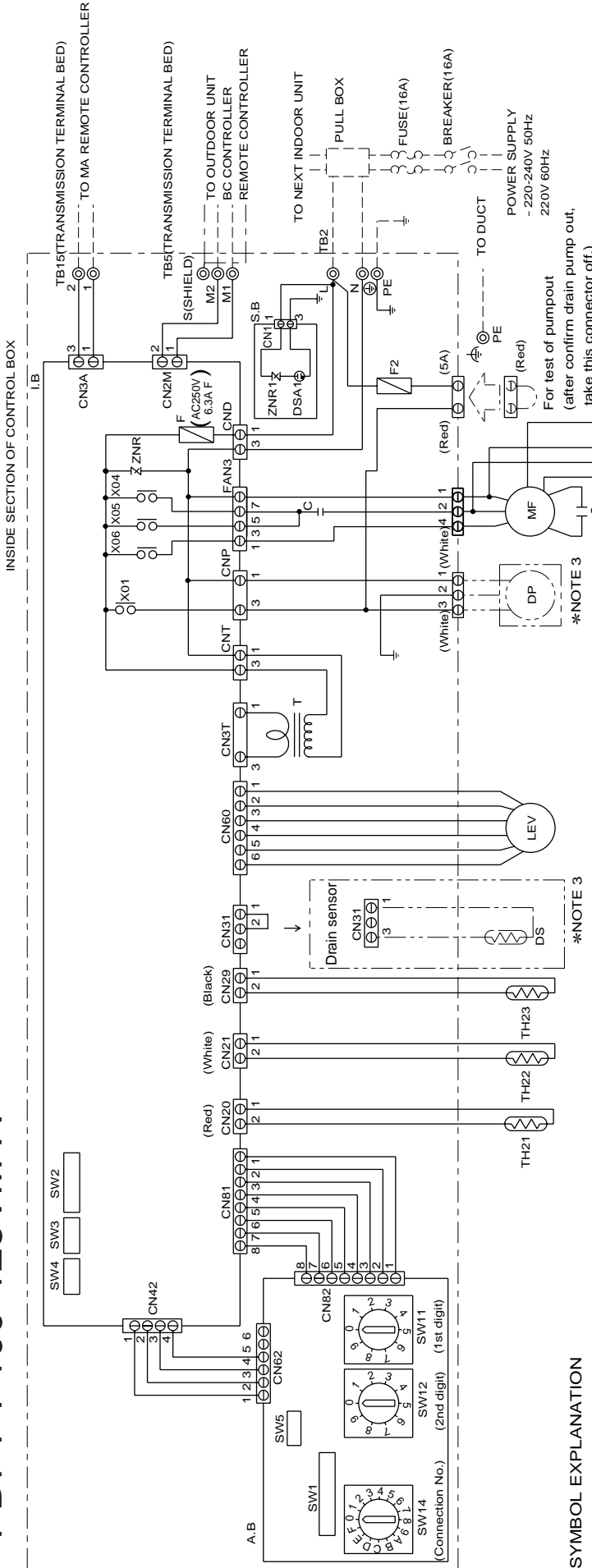
For test of pumpout (after confirm drain pump out, take this connector off.)

- NOTE; 1. TB2, TB5 shown in dotted line are field work.  
 2. Mark ⊕ indicates terminal bed, ⊕ connector, ⊕ board insertion connector or fastening connector of control board.  
 3. ----- : optional parts

- \*Capacitor  
 MODELS 20/25/32 3.0μF  
 MODELS 40/50 5.0μF  
 MODELS 63/71/80 6.0μF

inside < > is the optional parts.

# PDFY-P100•125VM-A



SYMBOL EXPLANATION

SYMBOL	NAME	SYMBOL	NAME
MF	Fan motor	TH22	Thermistor (piping temp.detection/liquid)
C	* Capacitor (for MF)	TH23	Thermistor (piping temp.detection/gas)
I . B	Indoor controller board	SW A (A . B)	Switch (option parts)
A . B	Address board	SW C (A . B)	Switch (option parts)
T B 2	Power source terminal bed	SW 1 1 (A . B)	Switch (1st digit address set)
T B 5	Transmission terminal bed	SW 1 2 (A . B)	Switch (2nd digit address set)
T B 1 5	Transmission terminal bed	SW 1 4 (A . B)	Switch (connection No.set)
F	Fuse AC250V 6.3A F	SW 1 (A . B)	Switch(for mode selection)
< F 2 >	Fuse AC250V 5A F	SW 2 (I . B)	Switch(for capacity code)
T	Transformer	SW 3 (I . B)	Switch(for mode selection)
< D P >	Drain pump	SW 4 (I . B)	Switch(for model selection)
< D S >	Drain sensor	SW 5 (A . B)	Switch(for voltage selection)
LE V	Electronic linear expan. valve	X01, X04 ~ X06	Aux.relay
T H 2 1	Thermistor (inlet temp.detection)	S . B	Surge absorber board

inside < > is the optional parts.

\* The following external static pressure indicate using fore-sided duct flange.

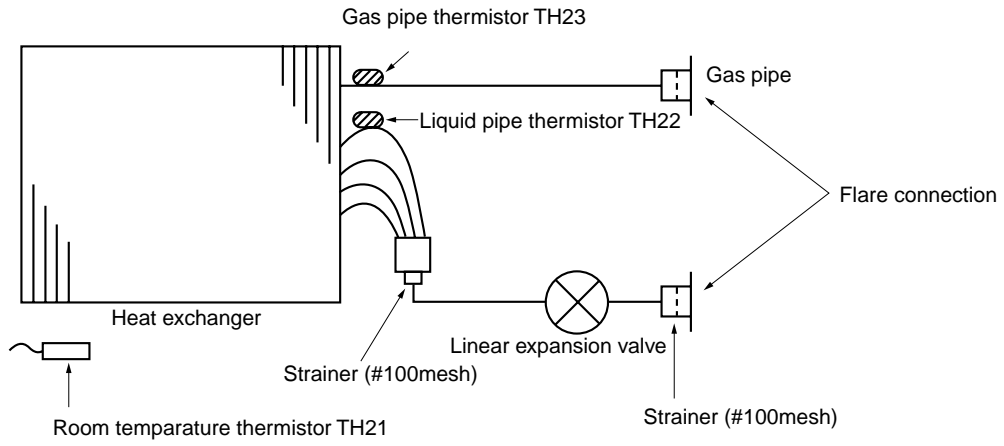
Connector color  
 White... In case of used 50Pa.  
 Red ... In case of used 100Pa or 70Pa included <h.e.f>.  
 Blue ... In case of used 130Pa or 100Pa included <h.e.f>.  
 (<h.e.f>:high efficiency filter)

- NOTE: 1. TB2, TB5 shown in dotted line are field work.  
 2. Mark ⊙ indicates terminal bed, ⊕ connector, ⊞ board insertion connector or fastening connector of control board.  
 3. --- : optional parts

\*Capacitor  
 MODELS 100 5.0μF  
 MODELS 125 8.0μF

# 6

# REFRIGERANT SYSTEM DIAGRAM

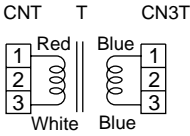
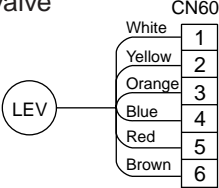
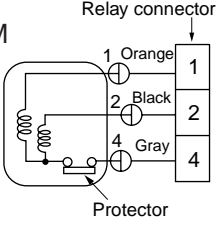
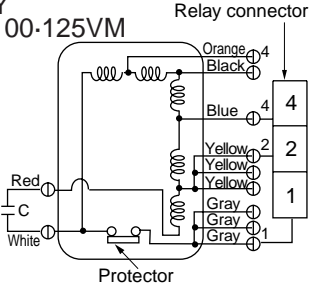


Item \ Capacity	PDFY-P20,25,32,40VM-A	PDFY-P50,63,71,80VM-A	PDFY-P100,125VM-A
Gas pipe	$\phi 12.7 < 1/2F >$	$\phi 15.88 < 5/8F >$	$\phi 19.05 < 3/4F >$
Liquid pipe	$\phi 6.35 < 1/4F >$	$\phi 9.52 < 3/8F >$	$\phi 9.52 < 3/8F >$

# 7

# TROUBLE SHOOTING

## 7-1. How to check the parts

Parts name	Check points																									
Room temperature thermistor (TH21) Liquid pipe thermistor (TH22) Gas pipe thermistor (TH23)	Disconnect the connector, then measure the resistance using a tester. (Surrounding temperature 10°C~30°C) <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Normal</th> <th>Abnormal</th> </tr> </thead> <tbody> <tr> <td>4.3kΩ ~9.6kΩ</td> <td>Open or short</td> </tr> </tbody> </table> (Refer to the thermistor)	Normal	Abnormal	4.3kΩ ~9.6kΩ	Open or short																					
Normal	Abnormal																									
4.3kΩ ~9.6kΩ	Open or short																									
Transformer 	Disconnect the connector and measure the resistance using a tester. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th></th> <th>Normal</th> <th>Abnormal</th> </tr> </thead> <tbody> <tr> <td>CNT(1)-(3)</td> <td>App.45Ω</td> <td rowspan="2">Open or short</td> </tr> <tr> <td>CN3T(1)-(3)</td> <td>App.1Ω</td> </tr> </tbody> </table>		Normal	Abnormal	CNT(1)-(3)	App.45Ω	Open or short	CN3T(1)-(3)	App.1Ω																	
	Normal	Abnormal																								
CNT(1)-(3)	App.45Ω	Open or short																								
CN3T(1)-(3)	App.1Ω																									
Linear expansion valve 	Disconnect the connector then measure the resistance valve using a tester. Refer to the next page for a detail. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="4">Normal</th> <th>Abnormal</th> </tr> </thead> <tbody> <tr> <td>(1)-(5) White-Red</td> <td>(2)-(6) Yellow-Blown</td> <td>(3)-(5) Orange-Red</td> <td>(4)-(6) Blue-Brown</td> <td rowspan="2">Open or short</td> </tr> <tr> <td colspan="4" style="text-align: center;">150Ω ±10%</td> </tr> </tbody> </table>	Normal				Abnormal	(1)-(5) White-Red	(2)-(6) Yellow-Blown	(3)-(5) Orange-Red	(4)-(6) Blue-Brown	Open or short	150Ω ±10%														
Normal				Abnormal																						
(1)-(5) White-Red	(2)-(6) Yellow-Blown	(3)-(5) Orange-Red	(4)-(6) Blue-Brown	Open or short																						
150Ω ±10%																										
Fan motor PDFY - P20~80VM 	Measure the resistance between the terminals using a tester. (at 20°C) <table border="1" style="margin-left: 20px;"> <thead> <tr> <th rowspan="2">Motor terminal or Relay connector</th> <th colspan="2">Normal</th> <th rowspan="2">Abnormal</th> </tr> <tr> <th>P20~P50</th> <th>P63~P80</th> </tr> </thead> <tbody> <tr> <td>Orange-Gray</td> <td>43.1Ω</td> <td>40.5Ω</td> <td rowspan="2">Open or short</td> </tr> <tr> <td>Brack-Gray</td> <td>53.6Ω</td> <td>53.6Ω</td> </tr> </tbody> </table>	Motor terminal or Relay connector	Normal		Abnormal	P20~P50	P63~P80	Orange-Gray	43.1Ω	40.5Ω	Open or short	Brack-Gray	53.6Ω	53.6Ω												
Motor terminal or Relay connector	Normal		Abnormal																							
	P20~P50	P63~P80																								
Orange-Gray	43.1Ω	40.5Ω	Open or short																							
Brack-Gray	53.6Ω	53.6Ω																								
PDFY - P100~125VM 	Measure the resistance between the terminals using a tester. (at 20°C) <table border="1" style="margin-left: 20px;"> <thead> <tr> <th rowspan="2">Motor terminal or Relay connector</th> <th colspan="2">Normal</th> <th rowspan="2">Abnormal</th> </tr> <tr> <th>P100</th> <th>P125</th> </tr> </thead> <tbody> <tr> <td>Gray-Orange</td> <td>23.5Ω</td> <td>16.45Ω</td> <td rowspan="6">Open or short</td> </tr> <tr> <td>Orange-Black</td> <td>4.79Ω</td> <td>8.30Ω</td> </tr> <tr> <td>Black-Blue</td> <td>6.78Ω</td> <td>1.454Ω</td> </tr> <tr> <td>Blue-Yellow</td> <td>13.77Ω</td> <td>7.94Ω</td> </tr> <tr> <td>Yellow-Red</td> <td>29.8Ω</td> <td>21.9Ω</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Motor terminal or Relay connector	Normal		Abnormal	P100	P125	Gray-Orange	23.5Ω	16.45Ω	Open or short	Orange-Black	4.79Ω	8.30Ω	Black-Blue	6.78Ω	1.454Ω	Blue-Yellow	13.77Ω	7.94Ω	Yellow-Red	29.8Ω	21.9Ω			
Motor terminal or Relay connector	Normal		Abnormal																							
	P100	P125																								
Gray-Orange	23.5Ω	16.45Ω	Open or short																							
Orange-Black	4.79Ω	8.30Ω																								
Black-Blue	6.78Ω	1.454Ω																								
Blue-Yellow	13.77Ω	7.94Ω																								
Yellow-Red	29.8Ω	21.9Ω																								

<Thermistor Characteristic graph>

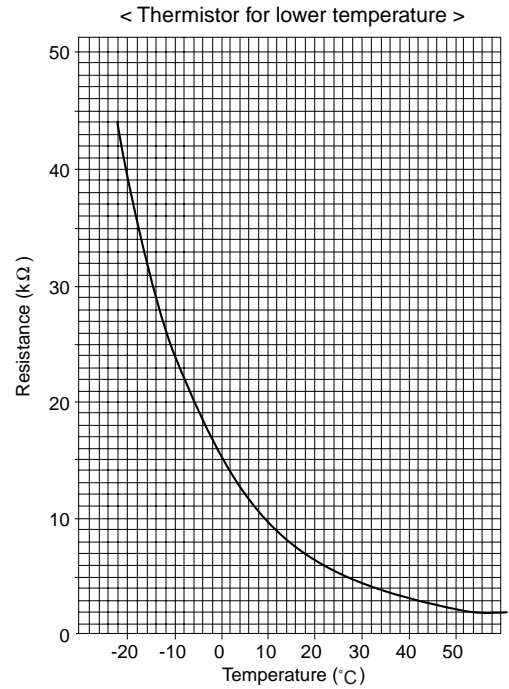
Thermistor for lower temperature

- Room temperature thermistor(TH21)
- Liquid pipe thermistor(TH22)
- Gas pipe temperature thermistor(TH23)
- Drain sensor(DS)

Thermistor  $R_0=15k\Omega \pm 3\%$   
 Fixed number of  $B=3480k\Omega \pm 2\%$

$$R_t=15 \exp \left\{ 3480 \left( \frac{1}{273+t} - \frac{1}{273} \right) \right\}$$

0°C	15kΩ
10°C	9.6kΩ
20°C	6.3kΩ
25°C	5.2kΩ
30°C	4.3kΩ
40	3.0kΩ

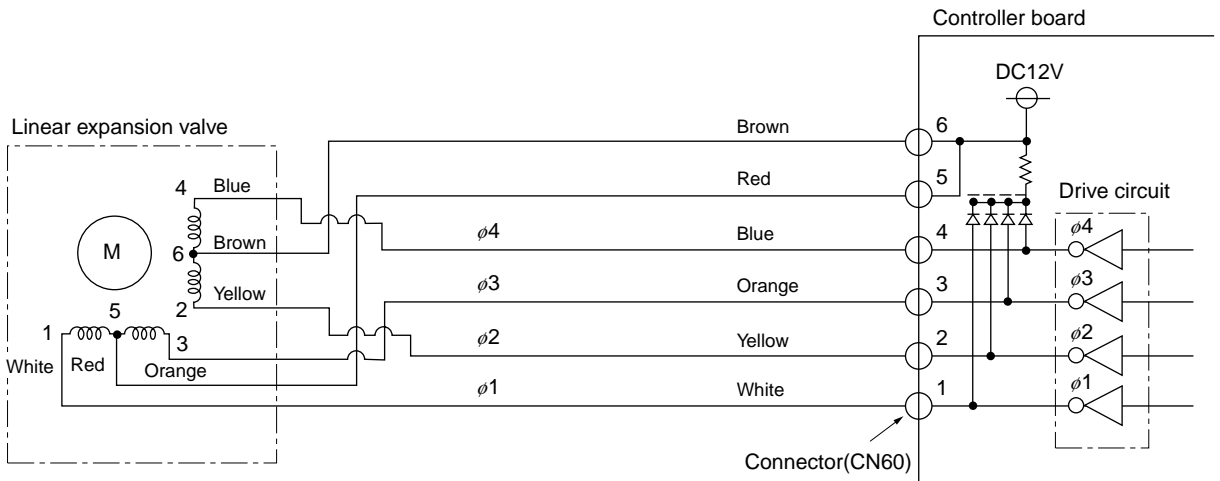


Linear expansion valve

① Operation summary of the linear expansion valve.

- Linear expansion valve open/close through stepping motor after receiving the pulse signal from the indoor controller board.
- Valve position can be changed in proportion to the number of pulse signal.

<Connection between the indoor controller board and the linear expansion valve>



## <Output pulse signal and the valve operation>

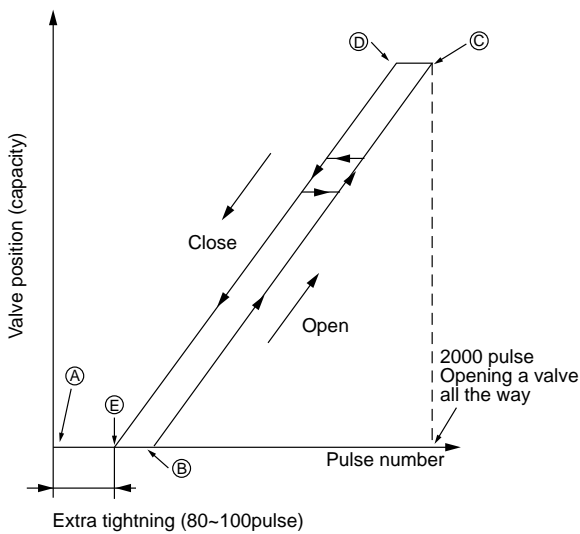
Output (Phase)	Output			
	1	2	3	4
φ1	ON	OFF	OFF	ON
φ2	ON	ON	OFF	OFF
φ3	OFF	ON	ON	OFF
φ4	OFF	OFF </td <td>ON</td> <td>ON</td>	ON	ON

Closing a valve : 1 → 2 → 3 → 4 → 1  
 Opening a valve : 4 → 3 → 2 → 1 → 4

The output pulse shifts in above order.

- \* 1. When linear expansion valve operation stops, all output phase become OFF.
- 2. At phase interruption or when phase does not shift in order, motor does not rotate smoothly and motor will locks and vibrates.

### ② Linear expansion valve operation



- \* When the switch is turned on, 2200 pulse closing valve signal will be send till it goes to A point in order to define the valve position.

When the valve move smoothly, there is no noise or vibration occurring from the linear expansion valve : however, when the pulse number moves from E to A or when the valve is locked, more noise can be heard than normal situation.

- \* Noise can be detected by placing the ear against the screw driver handle while putting the screw driver to the linear expansion valve.

### ③ Trouble shooting

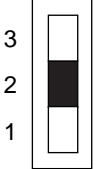
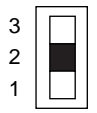
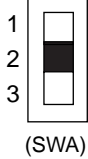
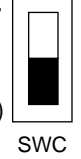


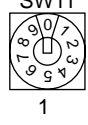


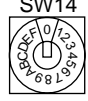

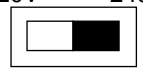
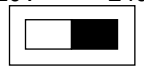
Symptom	Check points	Countermeasures
Operation circuit failure of the micro processor.	Disconnect the connector on the controller board, then connect LED for checking.  Pulse signal will be sent out for 10 seconds as soon as the main switch is turn on. If there is LED with lights on or lights off, it means the operation circuit is abnormal.	Exchange the indoor controller board at drive circuit failure.
Linear expansion valve mechanism is locked.	Motor will idle and make ticking noise when motor is operated while the linear expansion valve is locked. This ticking sound is the sign of the abnormality.	Exchange the linear expansion vale.
Short or breakage of the motor coil of the linear expansion valve.	Measure the resistance between the each coil (red-white, red-orange, brown-yellow, brown-blue) using a tester. It is normal if the resistance is in the range of $150\Omega \pm 10\%$ .	Exchange the linear expansion valve.
Valve doesn't close completely (thermistor leaking).	To check the linear expansion valve, operate the indoor unit in fan mode and at the same time operate other indoor units in cooling mode, then check the pipe temperature <liquid pipe temperature> of the indoor unit by the outdoor multi controller board operation monitor. During fan operation, linear expansion valve is closed completely and if there are some leaking, detecting temperature of the thermistor will go lower. If the detected temperature is much lower than the temperature indicated in the remote controller, it means the valve is not closed all the way. It is not necessary to exchange the linear expansion valve, if the leakage is small and not making any trouble. 	If large amount of refrigeration is leaked, exchange the linear expansion valve.
Wrong connection of the connector or contact failure.	Check the color of lead wire and missing terminal of the connector.	Disconnect the connector at the controller board, then check the continuity.



Switch	Pole	Function	Operation by switch		Remarks																														
			ON	OFF																															
SW1 Mode Selection	1	Thermistor<Intake temperature detection>position	Built-in remote controller	Indoor unit	<div style="border: 1px solid black; padding: 5px; width: fit-content;">Address board</div> <p>&lt;At delivery&gt;</p>																														
	2	Filter crogging detection	Provided	Not provided																															
	3	Filter life	2,500hr	100hr																															
	4	Air intake	Effective	Not effective																															
	5	Remote indication switching	Thermostat ON signal indication	Fan output indication																															
	6	Humidifier control	Always operated while the heat is ON	Operated depends on the condition																															
	7	Air flow st	Low	Extra low																															
	8	Heat thermostat OFF	Setting air flow	Reset to SW1-7																															
	9	Auto reset function	Effective	Not effective																															
	10	Power ON/OFF	Effective	Not effective																															
SW2 Capacity code setting	1~6	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>MODELS</th> <th>SW2</th> <th>MODELS</th> <th>SW2</th> <th>MODELS</th> <th>SW2</th> </tr> </thead> <tbody> <tr> <td>PDFY-P20VM-A</td> <td></td> <td>PDFY-P50VM-A</td> <td></td> <td>PDFY-P100VM-A</td> <td></td> </tr> <tr> <td>PDFY-P25VM-A</td> <td></td> <td>PDFY-P63VM-A</td> <td></td> <td>PDFY-P125VM-A</td> <td></td> </tr> <tr> <td>PDFY-P32VM-A</td> <td></td> <td>PDFY-P71VM-A</td> <td></td> <td></td> <td></td> </tr> <tr> <td>PDFY-P40VM-A</td> <td></td> <td>PDFY-P80VM-A</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	MODELS	SW2	MODELS	SW2	MODELS	SW2	PDFY-P20VM-A		PDFY-P50VM-A		PDFY-P100VM-A		PDFY-P25VM-A		PDFY-P63VM-A		PDFY-P125VM-A		PDFY-P32VM-A		PDFY-P71VM-A				PDFY-P40VM-A		PDFY-P80VM-A						<div style="border: 1px solid black; padding: 5px; width: fit-content;">Indoor controller board</div> <p>Set while the unit is off.</p> <p>&lt;At delivery&gt;</p> <p>Set for each capacity.</p>
		MODELS	SW2	MODELS	SW2	MODELS	SW2																												
		PDFY-P20VM-A		PDFY-P50VM-A		PDFY-P100VM-A																													
		PDFY-P25VM-A		PDFY-P63VM-A		PDFY-P125VM-A																													
		PDFY-P32VM-A		PDFY-P71VM-A																															
PDFY-P40VM-A		PDFY-P80VM-A																																	
SW3 Function Selection	1	Heat pump/Cool only	Cooling only	Heat pump	<div style="border: 1px solid black; padding: 5px; width: fit-content;">Indoor controller board</div> <p>Set while the unit is off.</p> <p>&lt;At delivery&gt;</p> <p>(Note) At cooling mode, each angle can be used only 1 hour.</p>																														
	2	Louver	Available	Not available																															
	3	Vane	Available	Not available																															
	4	Vane swing function	Available	Not available																															
	5	Vane horizontal angle	Second setting	First setting																															
	6	Vane cooling limit angle setting	Horizontal angle	Down blow																															
	7	—	—	—																															
	8	Heating 4deg up	Not effective	Effective																															
SW4 Unit Selection	1~4	<table style="width: 100%;"> <tr> <td style="width: 50%;">           P20~P80  </td> <td style="width: 50%;">           P100,125  </td> </tr> </table>	P20~P80 	P100,125 		<div style="border: 1px solid black; padding: 5px; width: fit-content;">Indoor controller board</div> <p>Set while the unit is off.</p>																													
P20~P80 	P100,125 																																		

Note :The DipSW setting is effective during unit stopping ( remote controller OFF ) for SW1,2,3 and 4 commonly and the power source is not required to reset.



Switch	Pole	Operation by switch	Remarks
SWA Option Note:1	1~3	 <p>※ As this switch is used by interlocking with SWC, refer to the item of SWC for detail</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-bottom: 10px;">Address board</div> <p>&lt;At delivery&gt;</p> 
SWC Option Note:1	2	 <p>“オプション” (Option)</p>  <p>“標準” (Standard)</p> <p>(SWA) SWC</p> <p>When attach the optional high performance filter elements (filter casement) to the unit, be sure to attach it to the option side in order to prevent the air-flow reducing.</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-bottom: 10px;">Address board</div> <p>&lt;At delivery&gt;</p> <p>“オプション” (Option)</p>  <p>“標準” (Standard)</p>
SW11 1st digit address setting SW12 2nd digit address setting Note:2	Rotary switch	 <p>SW12 10</p>  <p>SW11 1</p> <p>Address setting should be done when network remote controller (PAR-F25MA) is being used.</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-bottom: 10px;">Address board</div> <p>Address can be set while the unit is stopped.</p> <p>&lt;At delivery&gt;</p>  <p>SW12</p>  <p>SW11</p>
SW14 Connect ion No. setting Note:2	Rotary switch	 <p>SW14</p> <p>This is the switch to be used when the indoor unit is operated with R2 series outdoor unit as a set.</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-bottom: 10px;">Address board</div> <p>&lt;At delivery&gt;</p> <p>SW14</p> 
SW5 Voltage Selection Note:2	2	 <p>220V 240V</p> <p>If the unit is used at the 230V or 240V area, set the voltage to 240V. If the unit is used at the 220V, set the voltage to 220V.</p>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-bottom: 10px;">Address board</div> <p>&lt;At delivery&gt;</p> <p>220V 240V</p> 

Note 1:The DipSW setting is effective always after powering ( remote controller ON ) for SWA and SWC.  
2:The DipSW setting is effective during unit stopping ( remote controller OFF ) for SW11,12,14 and 5

# 8 DISASSEMBLY PROCEDURE

## 8-1 CONTROL BOX

Be careful removing heavy parts.

### OPERATING PROCEDURE

#### 1.Removing the control box cover

(1)Remove the fixing screws(two) of the cover(A) and remove the cover.

#### 2.Removing the control box and cover

- (1)Remove the fixing screw and earth screw.
- (2)Slide the control box in direction of the arrow ①.
- (3)Remove the connector on the P.W.B.
- (4)Remove the fixing screws(two) of the cover(B) and remove the cover.

### PHOTOS

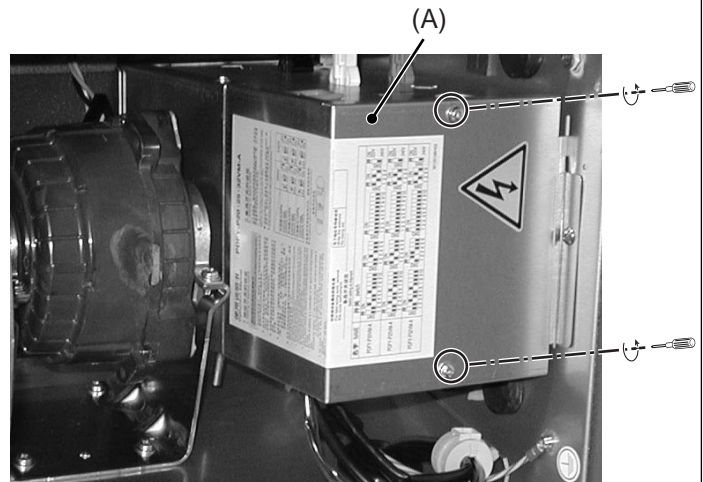


Fig.1

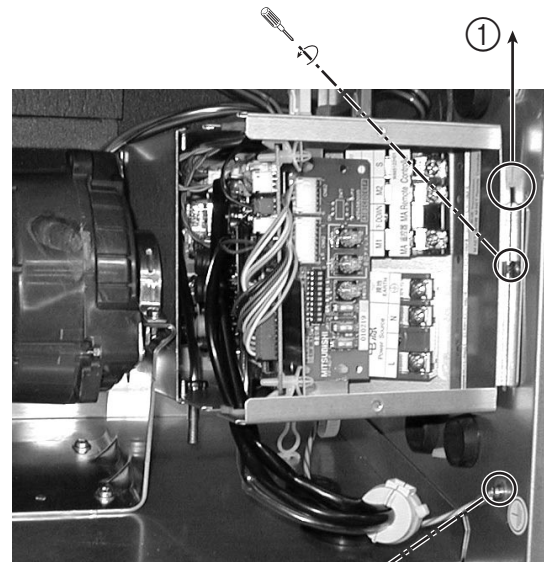


Fig.2

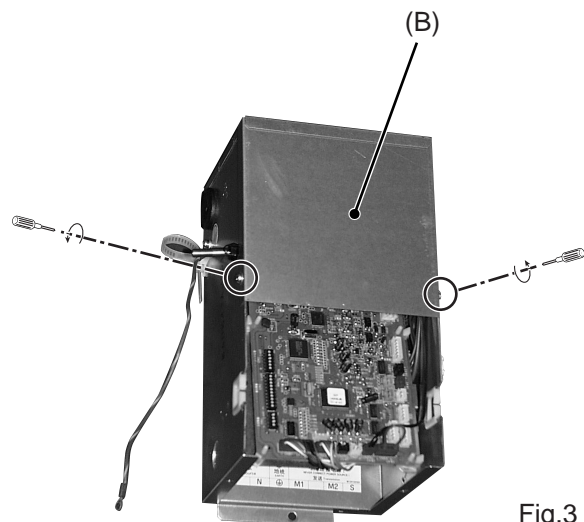
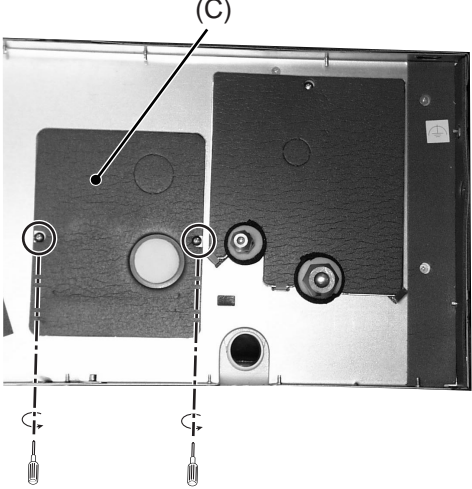
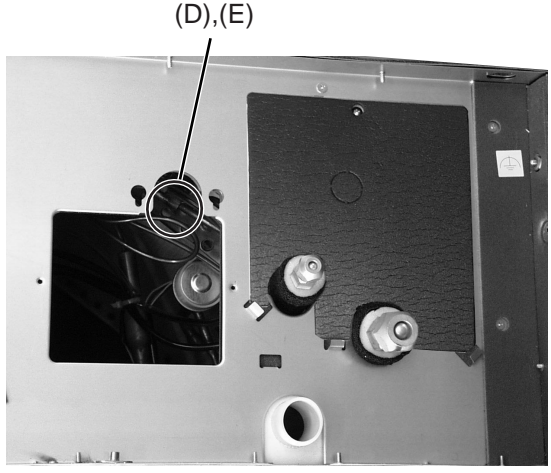


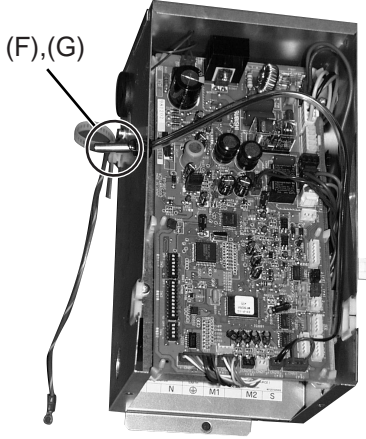
Fig.3

## 8-2 THERMISTOR (Liquid piping temperature detection)

Be careful removing heavy parts.

OPERATING PROCEDURE	PHOTOS
<p><b>1.Removing the cover</b> (1)Remove the fixing screws(two) of the cover(C) and remove the cover.</p> <p><b>2.Removing the thermistor</b> (1)Remove the thermistor(D), from the thermistor holder(E), which are installed on the copper tube.</p>	 <p>Fig.1</p>  <p>Fig.2</p>

## 8-3 THERMISTOR (Intake air temperature detection)

OPERATING PROCEDURE	PHOTOS
<p><b>1.Removing the thermistor and thermistor holder</b> (1)Pull out the thermistor holder(F) and thermistor (G) which are fixed the control box.</p>	 <p>Fig.1</p>

## 8-4 DRAINPAN

### OPERATING PROCEDURE

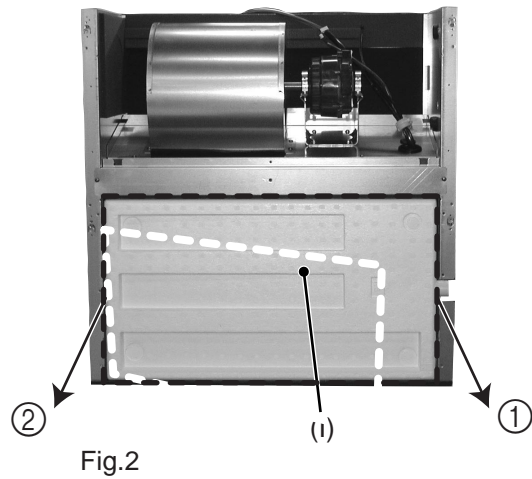
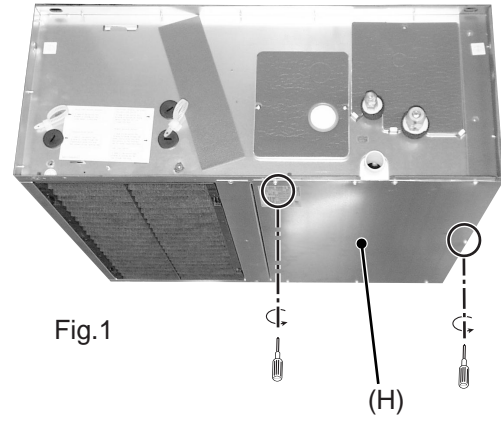
#### 1.Removing the cover

(1)Remove the fixing screws of the cover(H) and remove the cover.

#### 2.Removing the drainpan

(1)Pull and remove the drainpan in the direction of the arrow ① and ② alternatively.

### PHOTOS



## 8-5 THERMISTOR (Gus piping temperature detection)

### OPERATING PROCEDURE

#### 1.Removing the cover

(1)Remove the fixing screw of the cover(J) and remove the cover.

#### 2.Removing the thermistor

(1)Remove the thermistor(K), from the thermistor holder(L), which are installed on the copper tube.

### PHOTOS

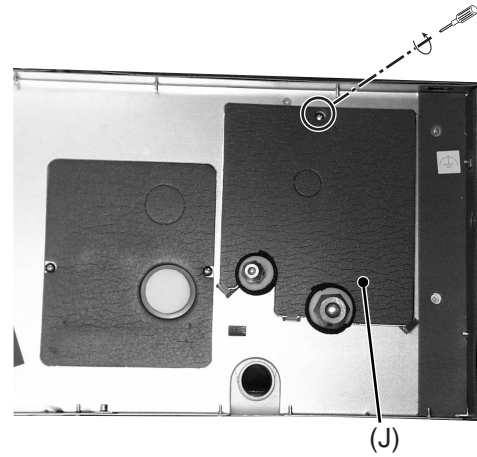


Fig.1

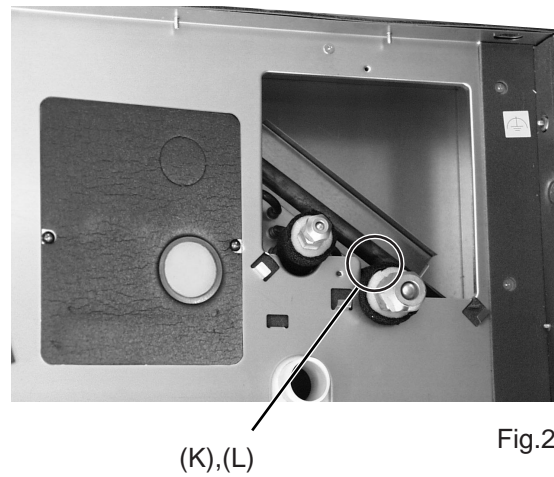
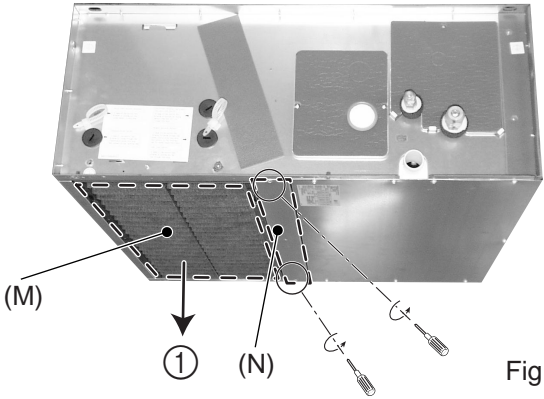
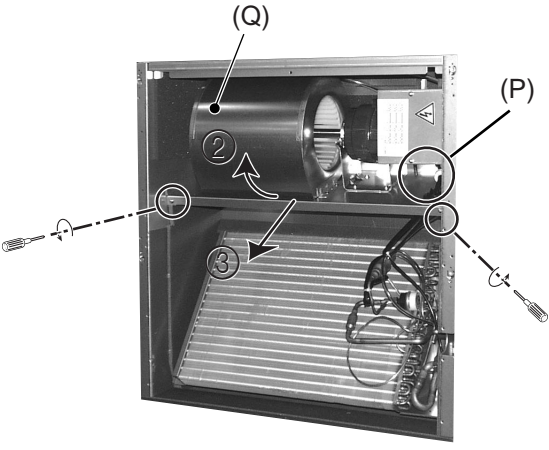
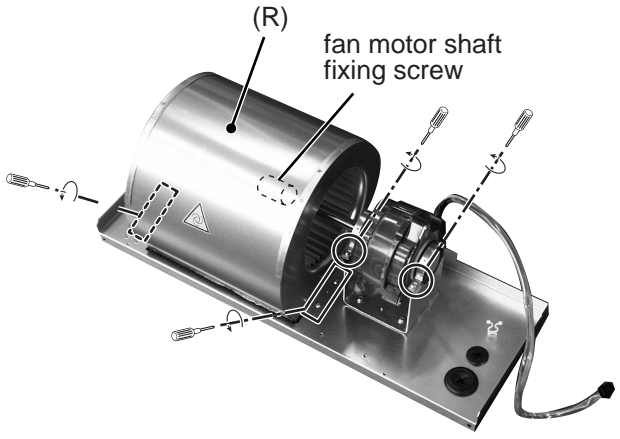


Fig.2



## 8-6 FAN and FAN MOTOR

OPERATING PROCEDURE	PHOTOS
<p><b>1.Removing the filter</b>            (1)Press the tabs of the filter and remove the filter in the direction of the arrow ①.</p> <p><b>2.Removing the control box with procedure 8-1</b></p> <p><b>3.Removing the bottom plate</b>            (1)Remove the fixing screws (two) of the bottom plate(N) and remove the plate.</p> <p><b>4.Removing the cable</b>            (1)Remove the cable(P) threw the rubber bush.</p> <p><b>5.Sliding the fan section</b>            (1)Remove the fixing screws(two) of the fan base plate.            (2)Pull up the fan section(Q) in direction of the arrow ② and slide the direction of the arrow ③.</p> <p><b>6.Removing fan casing and sirroco fan</b>            (1)Remove the fixing screws (four) of the fan casing(R).            (2)Remove the fan motor shaft fixing screw and remove the fan casing(R) and sirroco fan.</p> <p><b>7.Removing the fan motor</b>            (1)Remove the condensor cable            (in case of Model:PDFY-P100,125VM)            (2)Remove the fixing screws of the motor fixtures (two) and remove the motor.</p> <p>Notice:Incase of the Model(PDFY-P40~125VM) stick out the motor shafts on both side of the motor.</p>	 <p>Fig.1</p>  <p>Fig.2</p>  <p>Fig.3</p>

## 8-7 HEAT EXCHANGER

### OPERATING PROCEDURE

1.Removing the drainpan with procedure 8-4

2.Removing the cover(J) with procedure 8-5

### 3.Removing the Heat exchanger

(1)Remove the fixing screws of the heat exchanger(S) and remove the heat exchanger.

### PHOTOS

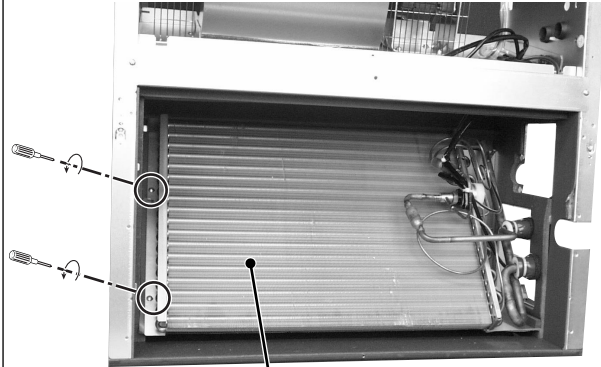


Fig.1

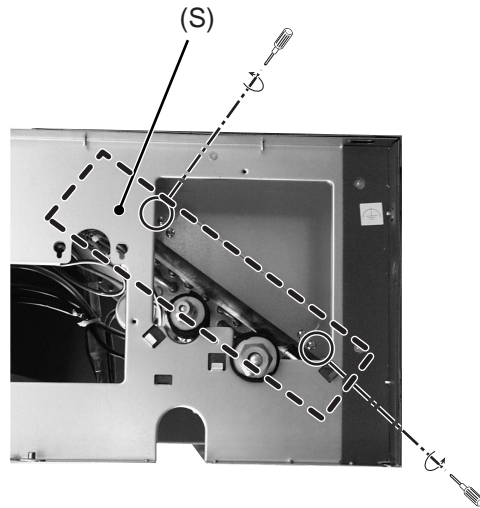


Fig.2











HEAD OFFICE: MITSUBISHI DENKI BLDG., 2-2-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN

---