Changes for the Better

MITSUBISHI ELECTRIC

SPLIT-TYPE, HEAT PUMP AIR CONDITIONERS

October 2009

No. OC307
REVISED EDITION-D

TECHNICAL & SERVICE MANUAL

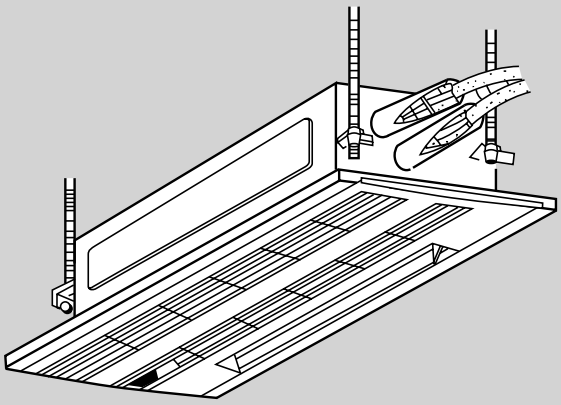
Series PMFY Ceiling Cassettes R410A / R407C / R22

Indoor unit [Model names]	[Service Ref.]
PMFY-P20VBM-E	PMFY-P20VBM-E
	PMFY-P20VBM-E$_1$
	PMFY-P20VBM-E#2
	PMFY-P20VBM-ER3
PMFY-P25VBM-E	PMFY-P25VBM-E
	PMFY-P25VBM-E$_1$
	PMFY-P25VBM-E#2
	PMFY-P25VBM-ER3
PMFY-P32VBM-E	PMFY-P32VBM-E
	PMFY-P32VBM-E$_1$
	PMFY-P32VBM-E#2
	PMFY-P32VBM-ER3
PMFY-P40VBM-E	PMFY-P40VBM-E
	PMFY-P40VBM-E$_1$
	PMFY-P40VBM-E#2
	PMFY-P40VBM-ER3

Revision:
- PMFY-P20/25/32/40VBM-ER3 are added in REVISED EDITION-D.
- Some descriptions have been modified.

- Please void OC307 REVISED EDITION-C.

Note:
- This manual describes only service data of the indoor units.
- RoHS compliant products have <G> mark on the spec name plate.
- For servicing RoHS compliant products, refer to the RoHS Parts List.



INDOOR UNIT

CONTENTS

1 TECHNICAL CHANGES

PMFY-P20VBM-E#2 → PMFY-P20VBM-ER3
PMFY-P25VBM-E#2 → PMFY-P25VBM-ER3
PMFY-P32VBM-E#2 → PMFY-P32VBM-ER3
PMFY-P40VBM-E#2 → PMFY-P40VBM-ER3

1. DRAIN PIPE has been changed.
2. JOINT SOCKET (FOR DRAIN PIPE) has been added.

PMFY-P20VBM-E$_1$ → PMFY-P20VBM-E#2
PMFY-P25VBM-E$_1$ → PMFY-P25VBM-E#2
PMFY-P32VBM-E$_1$ → PMFY-P32VBM-E#2
PMFY-P40VBM-E$_1$ → PMFY-P40VBM-E#2

1. CONTROLLER BOARD (I.B) has been changed.
2. PANEL has been changed.
   PMP-40BM → PMP-40BMW
   (White : 0.98Y 8.99/0.63) (Pure white : 6.4Y 8.9/0.4)
3. FAN MOTOR (MF) has been changed.
4. THERMISTOR (TH22, TH23) have been changed.

PMFY-P20VBM-E → PMFY-P20VBM-E$_1$
PMFY-P25VBM-E → PMFY-P25VBM-E$_1$
PMFY-P32VBM-E → PMFY-P32VBM-E$_1$
PMFY-P40VBM-E → PMFY-P40VBM-E$_1$

1. FAN MOTOR (MF) has been changed.
2. CONTROLLER BOARD (I.B) has been changed.

2 SAFETY PRECAUTION

CAUTIONS RELATED TO NEW REFRIGERANT

Cautions for units utilizing refrigerant R407C

Use new refrigerant pipes.

In case of using the existing pipes for R22, be careful with the followings.
· Change flare nut to the one provided with this product. Use a newly flared pipe.
· Avoid using thin pipes.

Make sure that the inside and outside of refrigerant piping is clean and it has no contamination such as sulfur hazardous for use, oxides, dirt, shaving particles, etc.
In addition, use pipes with specified thickness.

Contamination inside refrigerant piping can cause deterioration of refrigerant oil etc.

Store the piping to be used indoors during installation, and both ends 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 ESTR , ETHER or HAB as the lubricant to coat flares and flange connection parts.

If large amount of mineral oil enters, that can cause deterioration of refrigerant oil etc.

Use liquid refrigerant to seal 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 lubricant deterioration.

Use a vacuum pump with a reverse flow check valve.

The vacuum pump oil may flow back into the refrigerant cycle and cause the lubricant deterioration.

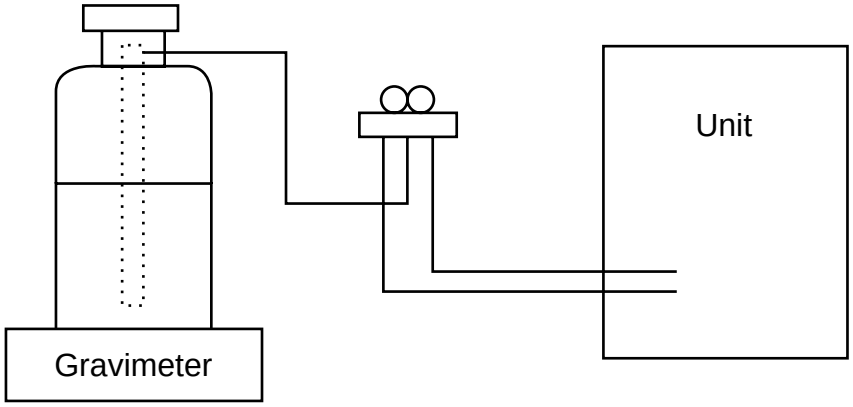
Ventilate the room if refrigerant leaks during operation. If refrigerant comes into contact with a flame, poisonous gases will be released.

[1] Cautions for service

· After recovering all the refrigerant in the unit, proceed to working.
· Do not release refrigerant in the air.
· After completing the repair service, recharge the cycle with the specified amount of liquid refrigerant.

[2] Refrigerant recharging

(1) Refrigerant recharging process
①Direct charging from the cylinder
· R407C cylinder are available on the market has a syphon pipe.
· Leave the syphon pipe cylinder standing and recharge it.
(By liquid refrigerant)



(2) Recharge in refrigerant leakage case
· After recovering the all refrigerant in the unit, proceed to working.
· Do not release the refrigerant in the air.
· After completing the repair service, recharge the cycle with the specified amount of liquid refrigerant.

[3] Service tools

Use the below service tools as exclusive tools for R407C refrigerant.

No.	Tool name	Specifications
①	Gauge manifold	· Only for R407C
		· Use the existing fitting SPECIFICATIONS. (UNF7/16)
		· Use high-tension side pressure of 3.43MPa·G or over.
②	Charge hose	· Use the existing fitting SPECIFICATIONS. (UNF7/16)
		· Use pressure performance of 5.10MPa·G or over.
③	Electronic scale	—
④	Gas leak detector	· Use the detector for R134a or R407C.
⑤	Adapter for reverse flow check	· Attach on vacuum pump.
⑥	Refrigerant charge base	—
⑦	Refrigerant cylinder	· For R407C · Top of cylinder (Brown) · Cylinder with syphon
⑧	Refrigerant recovery equipment	—

Cautions for units utilizing refrigerant R410A

Use new refrigerant pipes.

In case of using the existing pipes for R22, be careful with the followings.
· Change flare nut to the one provided with this product. Use a newly flared pipe.
· Avoid using thin pipes.

Make sure that the inside and outside of refrigerant piping is clean and it has no contamination such as sulfur hazardous for use, oxides, dirt, shaving particles, etc.
In addition, use pipes with specified thickness.

Contamination inside refrigerant piping can cause deterioration of refrigerant oil etc.

Store the piping to be used indoors during installation, and both ends of the piping sealed until just before brazing. (Leave elbow joints, etc. in their packaging.)

If dirt, dust or moisture enters into refrigerant cycle, that can cause deterioration of refrigerant oil or malfunction of compressor.

Use ester oil, ether oil or alkylbenzene oil (small amount) as the refrigerant oil applied to flares and flange connections.

If large amount of mineral oil enters, that can cause deterioration of refrigerant oil etc.

Charge refrigerant from liquid phase of gas cylinder.

If the refrigerant is charged from gas phase, composition change may occur in refrigerant and the efficiency will be lowered.

Do not use refrigerant other than R410A.

If other refrigerant (R22 etc.) is used, chlorine in refrigerant can cause deterioration of refrigerant oil etc.

Use a vacuum pump with a reverse flow check valve.

Vacuum pump oil may flow back into refrigerant cycle and that can cause deterioration of refrigerant oil etc.

Use the following tools specifically designed for use with R410A refrigerant.

The following tools are necessary to use R410A refrigerant.

Tools for R410A	
Gauge manifold	Flare tool
Charge hose	Size adjustment gauge
Gas leak detector	Vacuum pump adaptor
Torque wrench	Electronic refrigerant charging scale

Handle tools with care.

If dirt, dust or moisture enters into refrigerant cycle, that can cause deterioration of refrigerant oil or malfunction of compressor.

Do not use a charging cylinder.

If a charging cylinder is used, the composition of refrigerant will change and the efficiency will be lowered.

Ventilate the room if refrigerant leaks during operation. If refrigerant comes into contact with a flame, poisonous gases will be released.

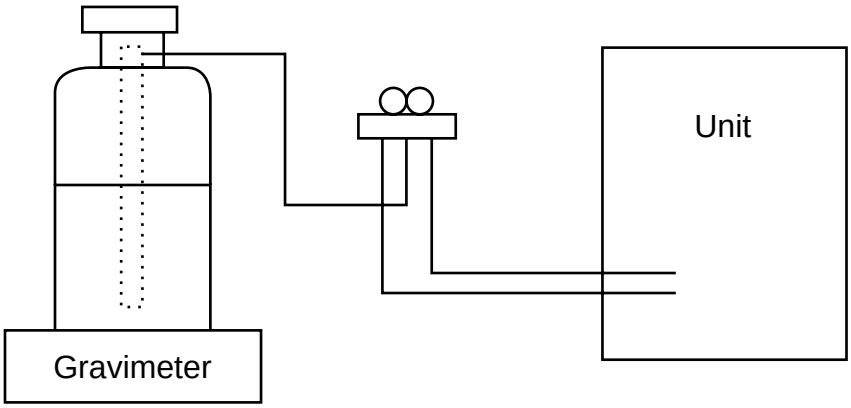
[1] Cautions for service

(1) Perform service after recovering the refrigerant left in unit completely.
(2) Do not release refrigerant in the air.
(3) After completing service, charge the cycle with specified amount of refrigerant.
(4) When performing service, install a filter drier simultaneously.
Be sure to use a filter drier for new refrigerant.

[2] Additional refrigerant charge

When charging directly from cylinder

· Check that cylinder for R410A on the market is syphon type.
· Charging should be performed with the cylinder of syphon stood vertically. (Refrigerant is charged from liquid phase.)



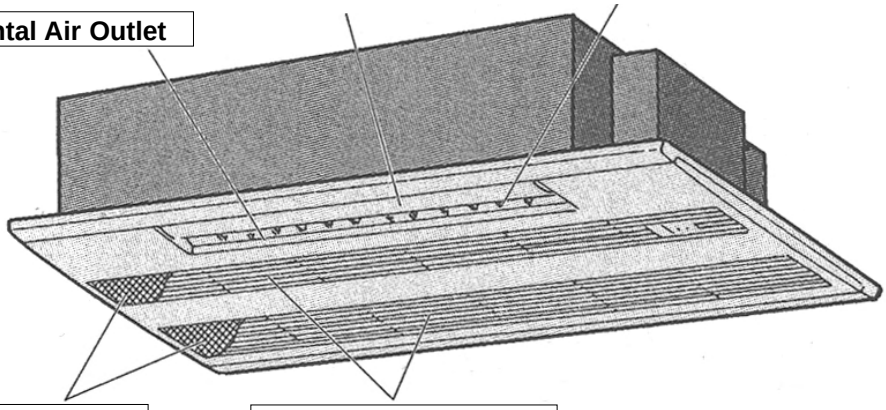
[3] Service tools

Use the below service tools as exclusive tools for R410A refrigerant.

No.	Tool name	Specifications
①	Gauge manifold	· Only for R410A
		· Use the existing fitting specifications. (UNF1/2)
		· Use high-tension side pressure of 5.3MPa·G or over.
②	Charge hose	· Only for R410A
		· Use pressure performance of 5.09MPa·G or over.
③	Electronic scale	—
④	Gas leak detector	· Use the detector for R134a, R407C or R410A.
⑤	Adapter for reverse flow check	· Attach on vacuum pump.
⑥	Refrigerant charge base	—
⑦	Refrigerant cylinder	· Only for R410A · Top of cylinder (Pink) · Cylinder with syphon
⑧	Refrigerant recovery equipment	—

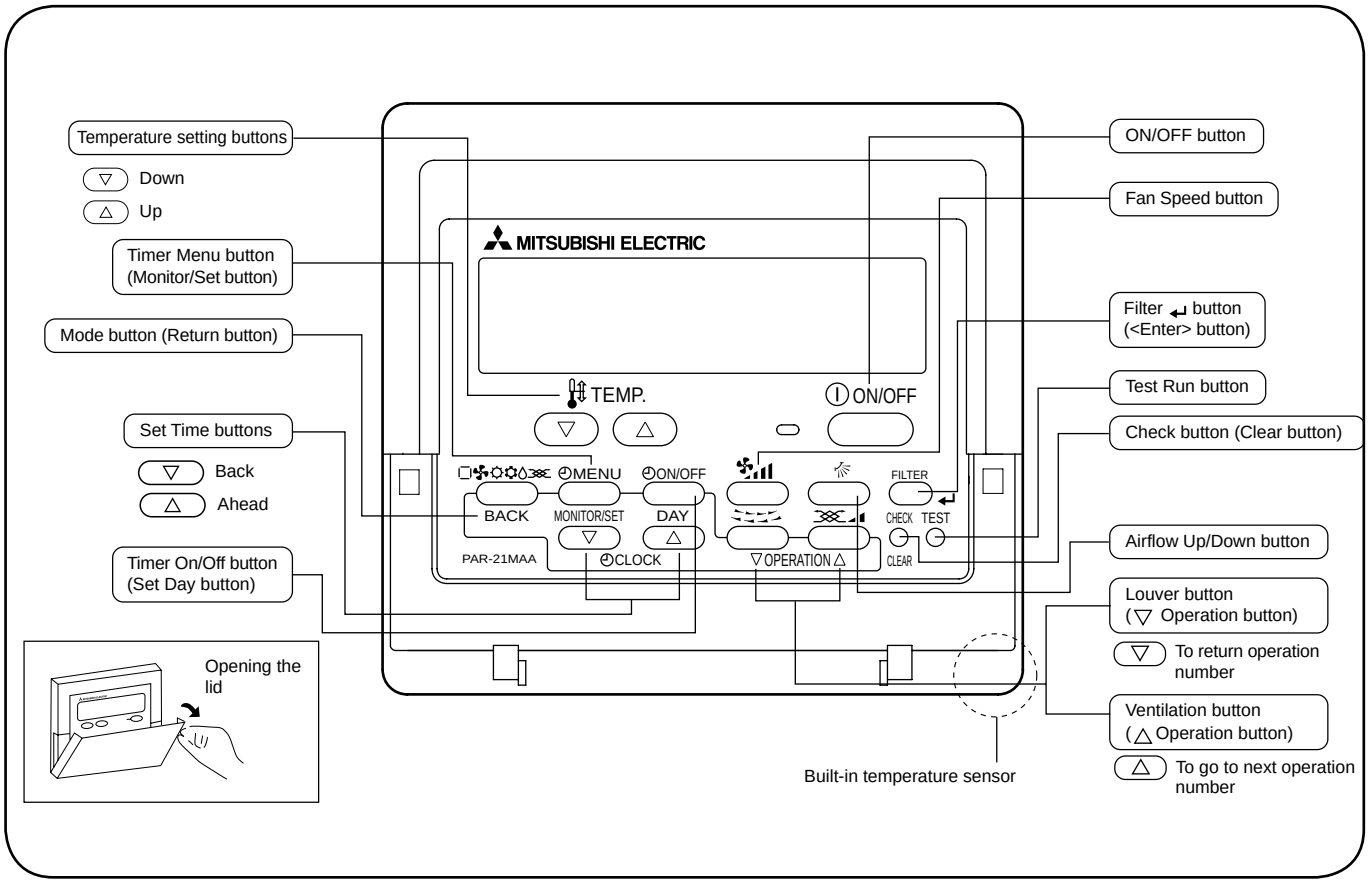
3 PART NAMES AND FUNCTIONS

● Indoor Unit



● Wired remote controller

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



● Wired remote controller

Display Section

For purposes of this explanation, all parts of the display are shown as lit. During actual operation, only the relevant items will be lit.

Day-of-Week
Shows the current day of the week.

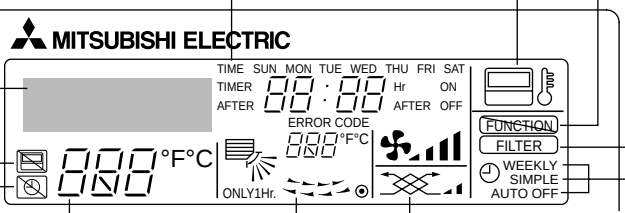
Time/Timer Display
Shows the current time, unless the simple or Auto Off timer is set.
If the simple or Auto Off timer is set, the time to be switched off is shown.

Identifies the current operation
Shows the operating mode, etc.
*Multilanguage display is available.

"Centrally Controlled" indicator
Indicates that operation from the remote controller has been prohibited by a master controller.

"Timer is Off" indicator
Indicates that the timer is off.

Temperature Setting
Shows the target temperature.



Up/Down Air Direction indicator
The indicator ＼ shows the direction of the outcoming airflow.

"One Hour Only" indicator
Displayed if the airflow is set to low or downward during COOL or DRY mode. (Operation varies according to model.)
The indicator goes off in one hour, when the airflow direction also changes.

Room Temperature display
Shows the room temperature. The room temperature display range is 8-39℃.
The display blinks if the temperature is less than 8℃ or 39℃ or more.

Louver display
Indicates the action of the swing louver. Does not appear if the louver is not running.

◉ (Power On indicator)
Indicates that the power is on.

"Sensor" indication
Displayed when the remote controller sensor is used.

"Locked" indicator
Indicates that remote controller buttons have been locked.

"Clean The Filter" indicator
To be displayed on when it is time to clean the filter.

Timer indicators
The indicator comes on if the corresponding timer is set.

Fan Speed indicator
Shows the selected fan speed.

Ventilation indicator
Appears when the unit is running in Ventilation mode.

Note:
- "PLEASE WAIT" message
  This message is displayed for approximately 3 minutes when power is supplied to the indoor unit or when the unit is recovering from a power failure.
- "NOT AVAILABLE" message
  This message is displayed if an invalid button is pressed (to operate a function that the indoor unit does not have).
  If a single remote controller is used to operate multiple indoor units simultaneously that are different types, this message will not be displayed as far as any of the indoor units is equipped with the function.

4 SPECIFICATIONS

4-1. SPECIFICATION

Item				PMFY-P20VBM-E PMFY-P20VBM-E$_1$ PMFY-P20VBM-E#2 PMFY-P20VBM-ER3	PMFY-P25VBM-E PMFY-P25VBM-E$_1$ PMFY-P25VBM-E#2 PMFY-P25VBM-ER3	PMFY-P32VBM-E PMFY-P32VBM-E$_1$ PMFY-P32VBM-E#2 PMFY-P32VBM-ER3	PMFY-P40VBM-E PMFY-P40VBM-E$_1$ PMFY-P40VBM-E#2 PMFY-P40VBM-ER3
Power			V･Hz	Single phase 220V-230V-240V 50Hz / 220V 60Hz			
Cooling capacity			kW	2.2	2.8	3.6	4.5
Heating capacity			kW	2.5	3.2	4.0	5.0
Electric characteristic	Input	Cooling	kW	0.042	0.044	0.044	0.054
		Heating	kW	0.042	0.044	0.044	0.054
	Current	Cooling	A	0.20	0.21	0.21	0.26
		Heating	A	0.20	0.21	0.21	0.26
Exterior (munsell symbol)			—	Unit : Galvanized sheets · Standard grilles : ABS resin acrylic coating Munsell <0.98Y 8.99/0.63> (PMFY-P·VBM-E$_{(1)}$) / <6.4Y 8.9/0.4> (PMFY-P·VBM-E#2/ER3)			
Dimensions		Height	mm	230<30>			
		Width	mm	812<1,000>			
		Depth	mm	395<470>			
Heat exchanger			—	Cross fin			
Fan	Fan × No		—	Line flow fan × 1			
	Air flow ※3		m^3/min	8.7-8.0-7.2-6.5	9.3-8.6-8.0-7.3		10.7-9.7-8.7-7.7
	External static pressure		Pa	0			
	Fan motor output		kW	0.028			
Insulator			—	Polyethylene sheet			
Air filter			—	PP honey comb fabric			
Pipe dimensions		Gas side	ϕmm(in.)	12.7(1/2")			
		Liquid side	ϕmm(in.)	6.35(1/4")			
Field drain pipe size			ϕmm	O.D.26 (PVC pipe VP-20 connectable)			
Noise level ※3			dB	35-33-30-27	37-36-34-32		39-37-35-33
Product weight			kg	14<3.0>			

Note 1. Rating conditions (JIS B 8615-1)
Cooling: Indoor: D.B. 27°C W.B. 19°C
outdoor: D.B. 35°C
Heating: Indoor: D.B. 20°C
outdoor: D.B. 7°C W.B. 6°C

Note 2. The number indicated in < > is for the grille.

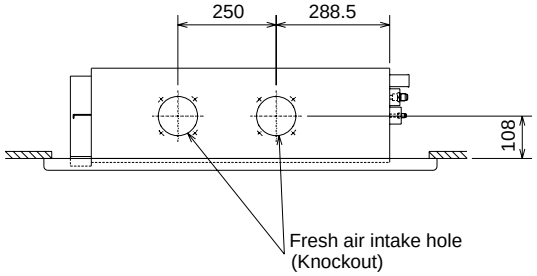
※ 3. Air flow and the noise level are indicated as High – Medium1 – Medium2 – Low.

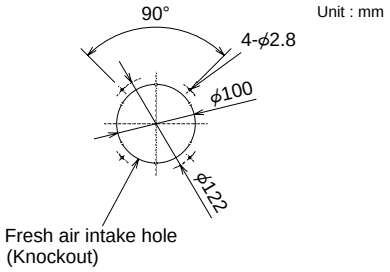
4-2. ELECTRIC PARTS SPECIFICATIONS

Service ref. / Parts name	Symbol	PMFY-P20VBM-E PMFY-P20VBM-E$_1$ PMFY-P20VBM-E#2 PMFY-P20VBM-ER3	PMFY-P25VBM-E PMFY-P25VBM-E$_1$ PMFY-P25VBM-E#2 PMFY-P25VBM-ER3	PMFY-P32VBM-E PMFY-P32VBM-E$_1$ PMFY-P32VBM-E#2 PMFY-P32VBM-ER3	PMFY-P40VBM-E PMFY-P40VBM-E$_1$ PMFY-P40VBM-E#2 PMFY-P40VBM-ER3
Room temperature thermistor	TH21	Resistance 0℃/15kΩ, 10℃/9.6kΩ, 20℃/6.3kΩ, 25℃/5.4kΩ, 30℃/4.3kΩ, 40℃/3.0kΩ			
Liquid pipe thermistor	TH22	Resistance 0℃/15kΩ, 10℃/9.6kΩ, 20℃/6.3kΩ, 25℃/5.4kΩ, 30℃/4.3kΩ, 40℃/3.0kΩ			
Gas pipe thermistor	TH23	Resistance 0℃/15kΩ, 10℃/9.6kΩ, 20℃/6.3kΩ, 25℃/5.4kΩ, 30℃/4.3kΩ, 40℃/3.0kΩ			
Fuse (Indoor controller board)	FUSE	250V 6.3A			
Fan motor	MF	DC Brushless Motor 8-pole OUTPUT 28W PN0H28-MB			
Vane motor	MV	MSFJC 20M23 12V/380Ω			
Drain pump	DP	PJV-1046 220-240V 50/60Hz			
Drain sensor	DS	Thermistor resistance 0℃/6kΩ, 10℃/3.9kΩ, 20℃/2.6kΩ, 25℃/2.2kΩ, 30℃/1.8kΩ, 40℃/1.3kΩ			
Linear expansion valve	LEV	DC12V Stepping motor drive, Port dimension ϕ3.2 (0~2000pulse)			
Power supply terminal block	TB2	(L, N, ⏚) 330V 30A			
Transmission terminal block	TB5	(M1, M2, S) 250V 20A			
MA-remote controller terminal block	TB15	(1,2) 250V 10A			

4-3. AIR CAPACITY TAKEN FROM OUTSIDE

PMFY-P·VBM-E series enables to take fresh air from outside. When taking fresh air, the duct fan is used. The air capacity should be 20% or less of the air flow SPEC(Hi).

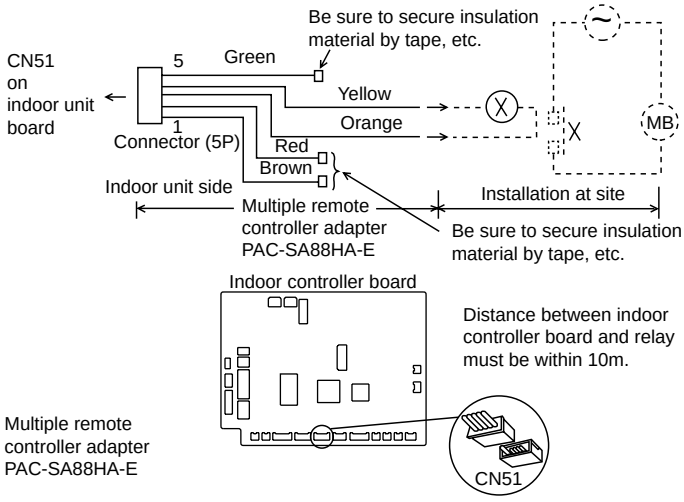




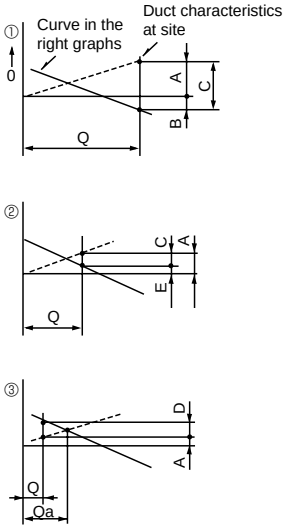
Service Ref.	Air flow (Hi)	Air capacity from outside
PMFY-P20VBM-E PMFY-P20VBM-E1 PMFY-P20VBM-E#2 PMFY-P20VBM-ER3	8.7m³/min	Max 1.74m³/min
PMFY-P25VBM-E PMFY-P25VBM-E1 PMFY-P25VBM-E#2 PMFY-P25VBM-ER3	9.3m³/min	Max 1.86m³/min
PMFY-P32VBM-E PMFY-P32VBM-E1 PMFY-P32VBM-E#2 PMFY-P32VBM-ER3	9.3m³/min	Max 1.86m³/min
PMFY-P40VBM-E PMFY-P40VBM-E1 PMFY-P40VBM-E#2 PMFY-P40VBM-ER3	10.7m³/min	Max 2.14m³/min

Operation in conjunction with duct fan (Booster fan)

- Whenever the indoor unit is operating, the duct fun operates.
  (1) Connect the optional multiple remote controller adapter(PAC-SA88HA-E) to the connector CN51 on the indoor controller board.
  (2) Drive the relay after connecting the 12V DC relay between the Yellow and Orange connector lines.
  (※) Use a relay of 1W or smaller.
  MB: Electromagnetic switch power relay for duct fan.
  X: Auxiliary relay (12V DC LY-1F)

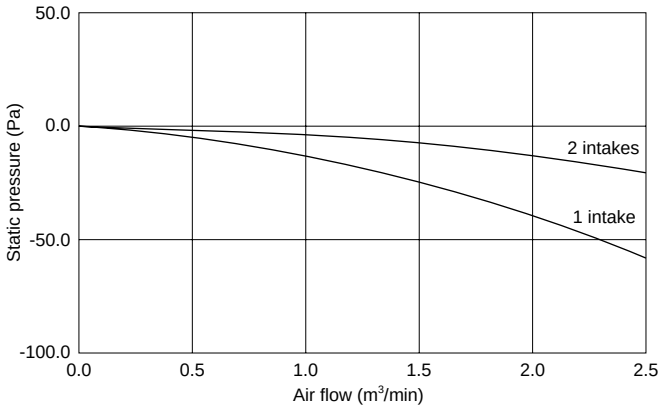


How to read curves



Q…Designed amount of fresh air intake <m³/min>
A…Static pressure loss of fresh air intake duct system with air flow amount Q <Pa>
B…Forced static pressure at air conditioner inlet with air flow amount Q <Pa>
C…Static pressure of booster fan with air flow amount Q <Pa>
D…Static pressure loss increase amount of fresh air intake duct system for air flow amount Q <Pa>
E…Static pressure of indoor unit with air flow amount Q <Pa>
Qa…Estimated amount of fresh air intake without D <m³/min>

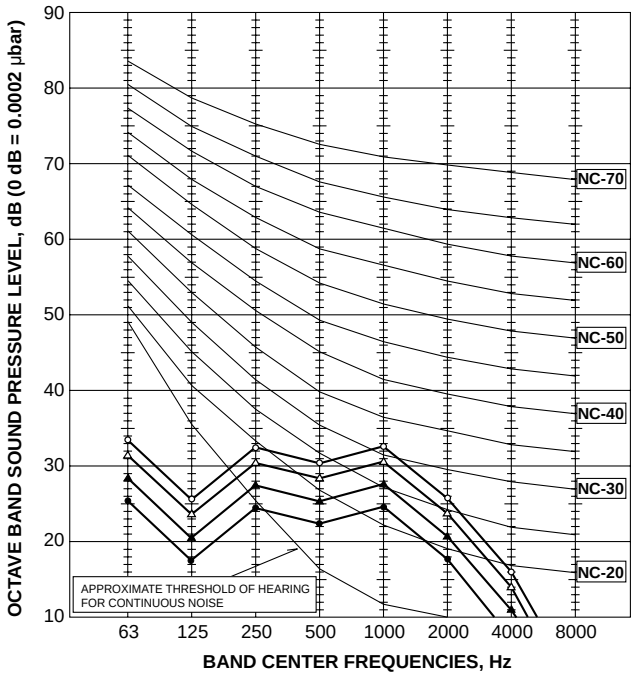
Characteristic diagram of fresh air taken capacity



4-4. NOISE CRITERION CURVES

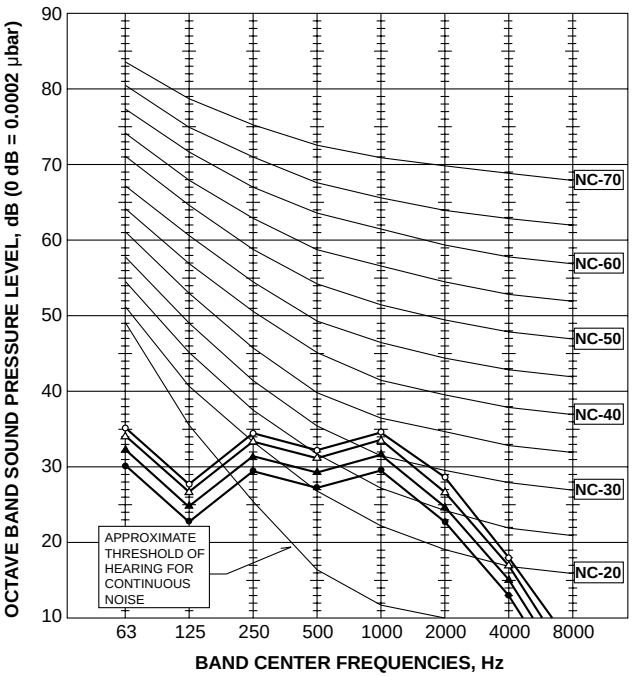
PMFY-P20VBM-E
PMFY-P20VBM-E$_1$
PMFY-P20VBM-E#2
PMFY-P20VBM-ER3

NOTCH	SPL(dB)	LINE
High	35	
Medium1	33	
Medium2	30	
Low	27	



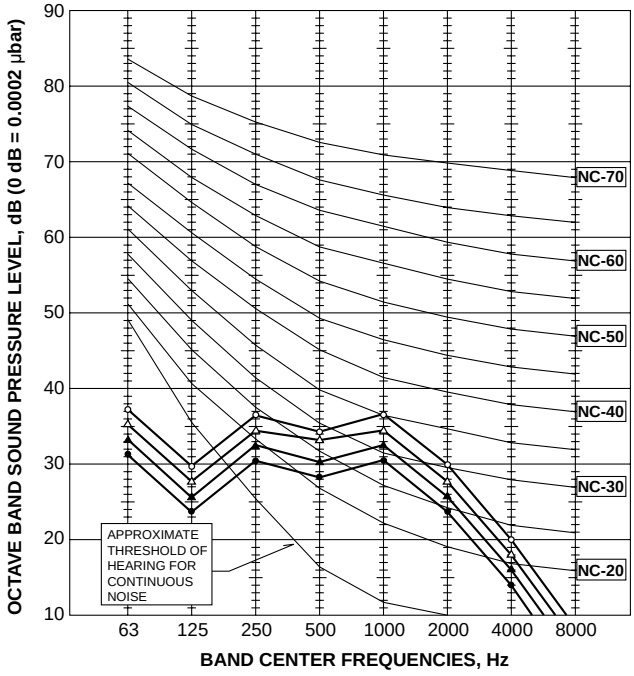
PMFY-P25VBM-E
PMFY-P32VBM-E
PMFY-P25VBM-E$_1$
PMFY-P32VBM-E$_1$
PMFY-P25VBM-E#2
PMFY-P32VBM-E#2
PMFY-P25VBM-ER3
PMFY-P32VBM-ER3

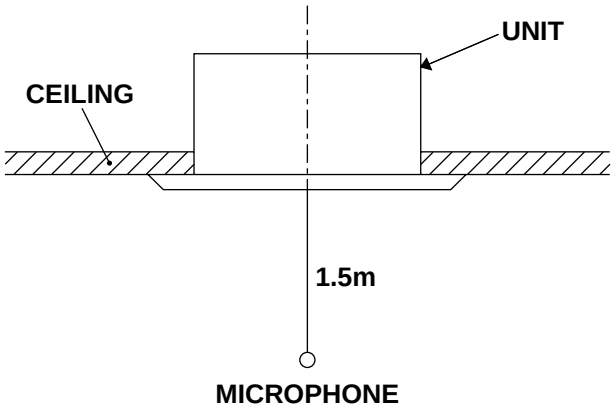
NOTCH	SPL(dB)	LINE
High	37	
Medium1	36	
Medium2	34	
Low	32	



PMFY-P40VBM-E
PMFY-P40VBM-E$_1$
PMFY-P40VBM-E#2
PMFY-P40VBM-ER3

NOTCH	SPL(dB)	LINE
High	39	
Medium1	37	
Medium2	35	
Low	33	

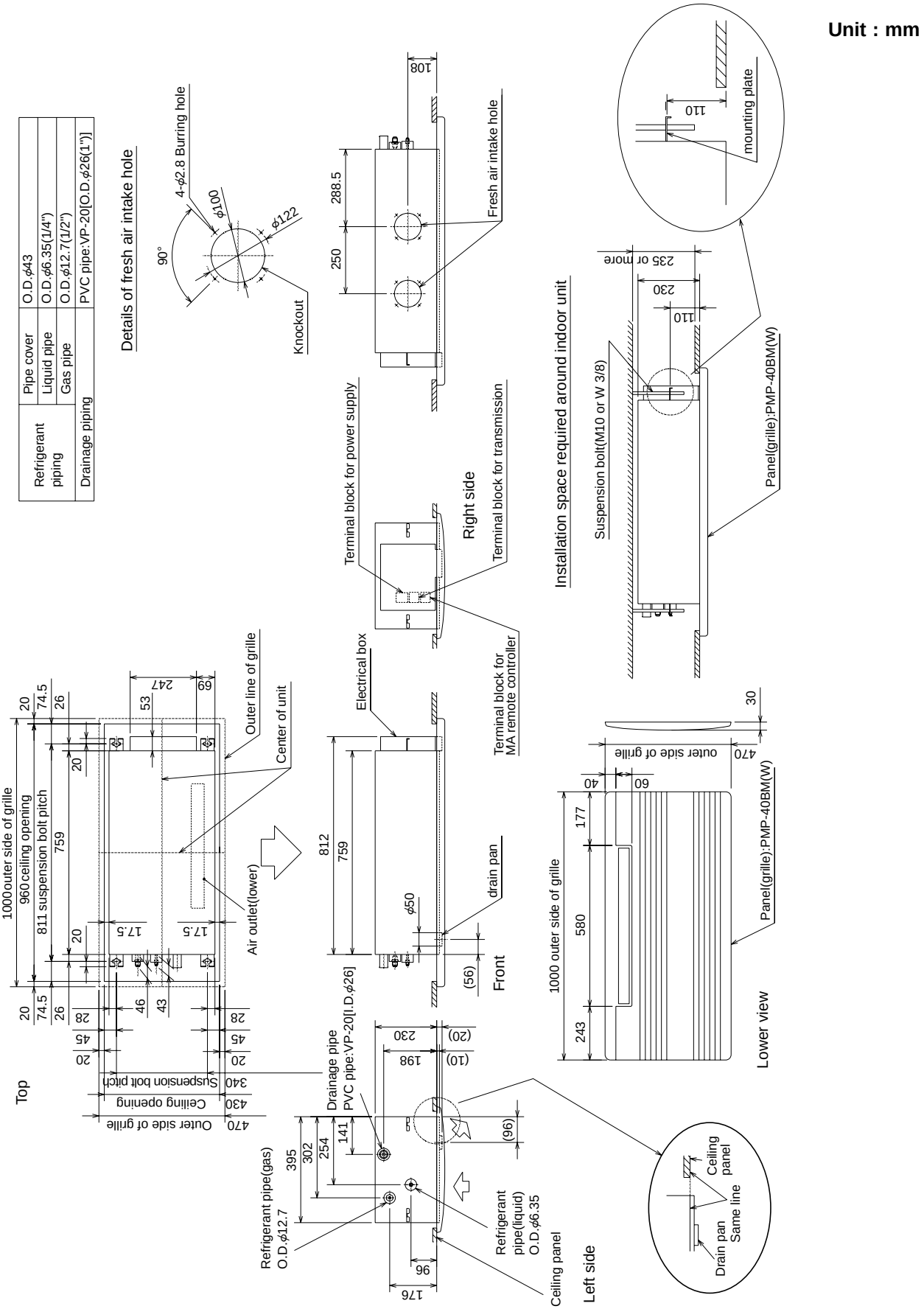




5 OUTLINES AND DIMENSIONS

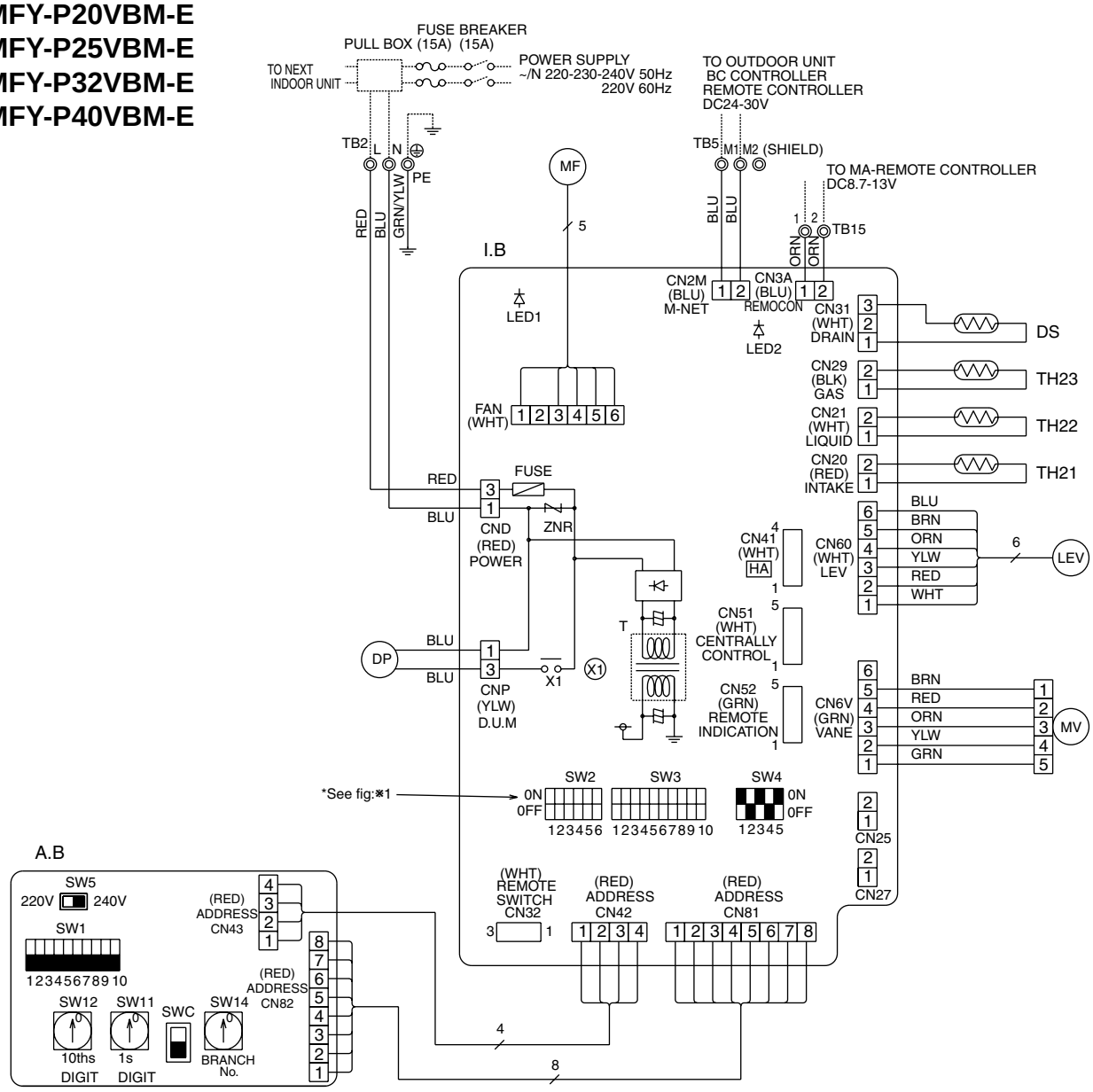
PMFY-P20VBM-E PMFY-P20VBM-E$_1$ PMFY-P20VBM-E#2 PMFY-P20VBM-ER3
PMFY-P25VBM-E PMFY-P25VBM-E$_1$ PMFY-P25VBM-E#2 PMFY-P25VBM-ER3
PMFY-P32VBM-E PMFY-P32VBM-E$_1$ PMFY-P32VBM-E#2 PMFY-P32VBM-ER3
PMFY-P40VBM-E PMFY-P40VBM-E$_1$ PMFY-P40VBM-E#2 PMFY-P40VBM-ER3

Unit : mm



6 WIRING DIAGRAM

PMFY-P20VBM-E
PMFY-P25VBM-E
PMFY-P32VBM-E
PMFY-P40VBM-E



[LEGEND]

SYMBOL	NAME		SYMBOL	NAME	
I.B	INDOOR CONTROLLER BOARD		MF	FAN MOTOR	
CN25	CONNECTOR	HUMIDIFIER	MV	VANE MOTOR	
CN27		DAMPER	DP	DRAIN PUMP	
CN32		REMOTE SWITCH	DS	DRAIN SENSOR	
CN41		HA TERMINAL-A	TB2	TERMINAL	POWER SUPPLY
CN51		CENTRALLY CONTROL	TB5	BLOCK	TRANSMISSION
CN52		REMOTE INDICATION	TB15		MA-REMOTE CONTROLLER
SW2	SWITCH	CAPACITY CODE	TH21	THERMISTOR	ROOM TEMPERATURE DETECTION (0℃/15kΩ, 25℃/5.4kΩ)
SW3		MODE SELECTION			
SW4		MODEL SELECTION	TH22		PIPE TEMPERATURE DETECTION/LIQUID (0℃/15kΩ, 25℃/5.4kΩ)
ZNR	VARISTOR		TH23		PIPE TEMPERATURE DETECTION/GAS (0℃/15kΩ, 25℃/5.4kΩ)
FUSE	FUSE(6.3A/250V)		LEV	LINEAR EXPANSION VALVE	
X1	AUX.RELAY	DRAIN PUMP			
T	TRANSFORMER				
LED1	POWER SUPPLY(I.B)				
LED2	POWER SUPPLY(I.B)				
A.B	CIRCUIT BOARD				
SW1	SWITCH	MODE SELECTION			
SW5		VOLTAGE SELECTION			
SW11		ADDRESS SETTING 1s DIGIT			
SW12		ADDRESS SETTING 10ths DIGIT			
SW14		BRANCH NO.			

<※1>

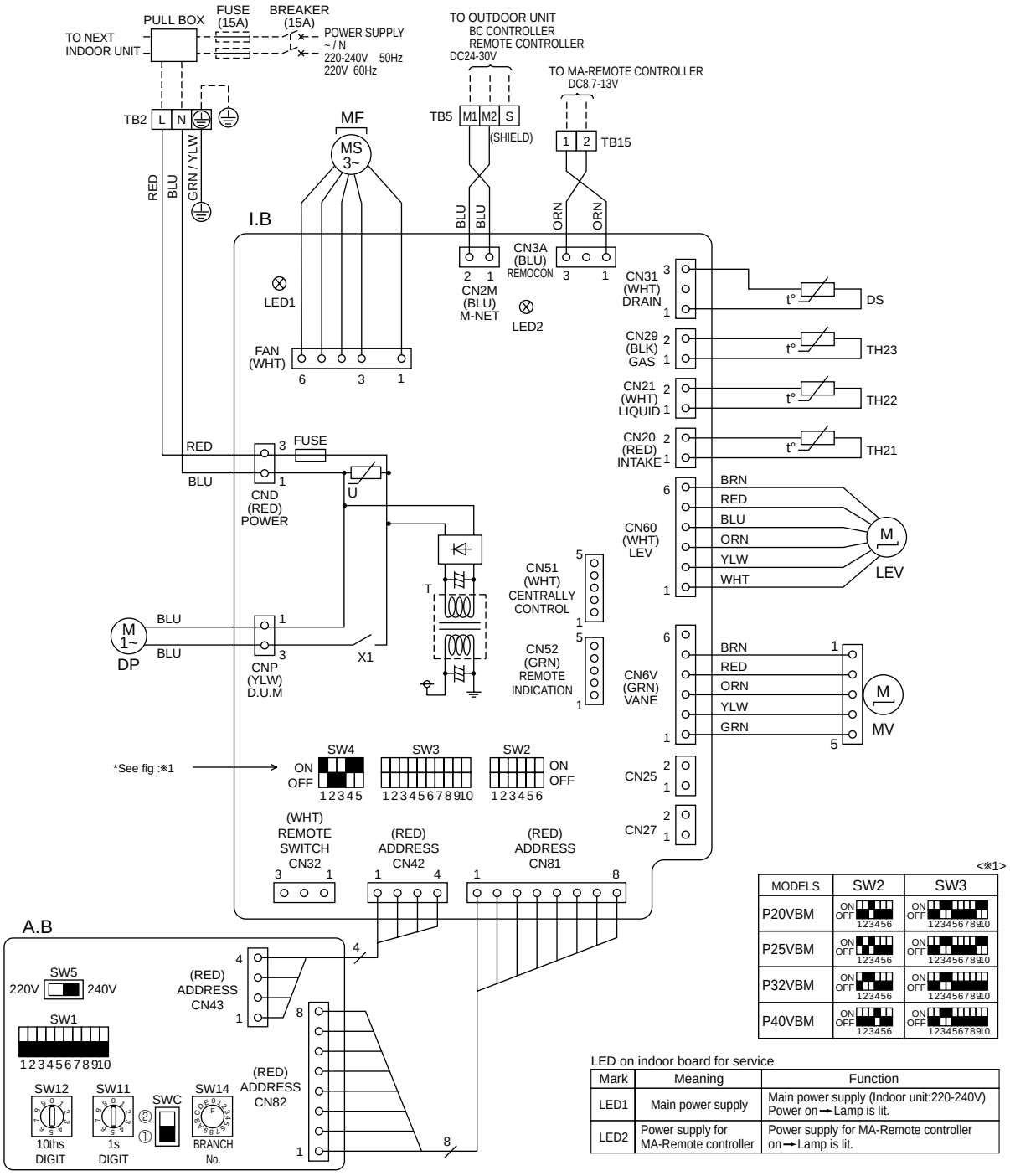
MODELS	SW2	SW3
P20VBM	0N 0FF 123456	0N 0FF 12345678910
P25VBM	0N 0FF 123456	0N 0FF 12345678910
P32VBM	0N 0FF 123456	0N 0FF 12345678910
P40VBM	0N 0FF 123456	0N 0FF 12345678910

LED on indoor board for service

Mark	Meaning	Function
LED1	Main power supply	Main power supply(Indoor unit:220-240V) power on → Lamp is lit.
LED2	Power supply for MA-Remote controller	Power supply for MA-Remote controller on → Lamp is lit.

NOTES:
1. At servicing for outdoor unit, always follow the wiring diagram of outdoor unit.
2. In case of using MA-Remote controller, please connect to TB15. (Remote controller wire is non-polar.)
3. In case of using M-NET, please connect to TB5.(Transmission wire is non-polar.)
4. Symbol [S] of TB5 is the shield wire connection.
5. Symbols used in wiring diagram above are, ◎ : terminal block, □□□: connector.
6. The setting of the SW2 dip switches differs in the capacity. For the detail, refer to the table above.
7. Please set the switch SW5 according to the power supply voltage. Set SW5 to 240V side when the power supply is 230 and 240 volts. When the power supply is 220 volts, set SW5 to 220V side.

PMFY-P20VBM-E1 PMFY-P25VBM-E1 PMFY-P32VBM-E1 PMFY-P40VBM-E1



<※1>

MODELS	SW2	SW3
P20VBM	ON OFF 1 2 3 4 5 6	ON OFF 1 2 3 4 5 6 7 8 9 10
P25VBM	ON OFF 1 2 3 4 5 6	ON OFF 1 2 3 4 5 6 7 8 9 10
P32VBM	ON OFF 1 2 3 4 5 6	ON OFF 1 2 3 4 5 6 7 8 9 10
P40VBM	ON OFF 1 2 3 4 5 6	ON OFF 1 2 3 4 5 6 7 8 9 10

LED on indoor board for service

Mark	Meaning	Function
LED1	Main power supply	Main power supply (Indoor unit:220-240V) Power on→Lamp is lit.
LED2	Power supply for MA-Remote controller	Power supply for MA-Remote controller on→Lamp is lit.

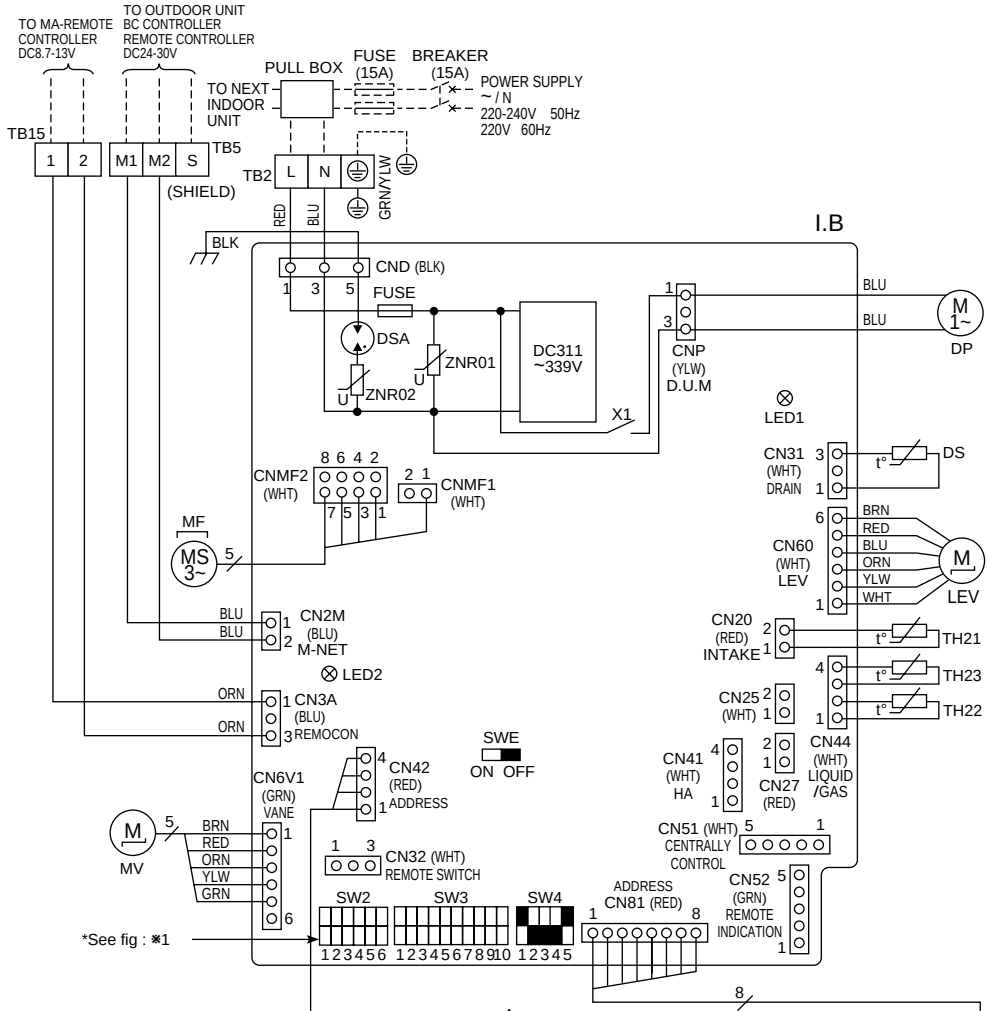
[LEGEND]

SYMBOL	NAME		SYMBOL	NAME	
I.B	INDOOR CONTROLLER BOARD		TB2	TERMINAL BLOCK	POWER SUPPLY
CN25	CONNECTOR	HUMIDIFIER	TB5		TRANSMISSION
CN27		DAMPER	TB15		MA-REMOTE CONTROLLER
CN32		REMOTE SWITCH	TH21	THERMISTOR	ROOM TEMP. DETECTION (0℃/15kΩ, 25℃/5.4kΩ)
CN51		CENTRALLY CONTROL			
CN52		REMOTE INDICATION	TH22		PIPE TEMP. DETECTION / LIQUID (0℃/15kΩ, 25℃/5.4kΩ)
SW2	SWITCH	CAPACITY CODE			
SW3		MODE SELECTION	TH23		PIPE TEMP. DETECTION / GAS (0℃/15kΩ, 25℃/5.4kΩ)
SW4		MODEL SELECTOR			
ZNR	VARISTOR		LEV	LINEAR EXPANSION VALVE	
FUSE	FUSE (6.3A / 250V)		A.B	CIRCUIT BOARD	
X1	AUX.RELAY	DRAIN PUMP	SW1	SWITCH	MODE SELECTION
T	TRANSFORMER		SW5		VOLTAGE SELECTION
LED1	POWER SUPPLY(I.B)		SW11		ADDRESS SETTING 1s DIGIT
LED2	POWER SUPPLY(I.B)		SW12		ADDRESS SETTING 10ths DIGIT
MF	FAN MOTOR		SW14		BRANCH No.
MV	VANE MOTOR				
DP	DRAIN PUMP				
DS	DRAIN SENSOR				

NOTES:

1. At servicing for outdoor unit, always follow the wiring diagram of outdoor unit.
2. In case of using MA-Remote controller, please connect to TB15. (Remote controllerwire is non-polar.)
3. In case of using M-NET, please connect to TB5. (Transmission wire is non-polar.)
4. Symbol [S] of TB5 is the shield wire connection.
5. Symbols used in wiring diagram above are, ◎:terminal block, □□□:connector.
6. The setting of the SW2 dip switches differs in the capacity. For the detail, refer to the table above.
7. Please set the switch SW5 according to the power supply voltage. Set SW5 to 240V side when the power supply is 230 and 240 volts. When the power supply is 220 volts, set SW5 to 220V side.

PMFY-P20VBM-E#2 PMFY-P25VBM-E#2 PMFY-P32VBM-E#2 PMFY-P40VBM-E#2
PMFY-P20VBM-ER3 PMFY-P25VBM-ER3 PMFY-P32VBM-ER3 PMFY-P40VBM-ER3



<※1>

MODELS	SW2	SW3
P20VBM	ON OFF 123456	ON OFF 12345678910
P25VBM	ON OFF 123456	ON OFF 12345678910
P32VBM	ON OFF 123456	ON OFF 12345678910
P40VBM	ON OFF 123456	ON OFF 12345678910

LED on indoor board for service

Mark	Meaning	Function
LED1	Main power supply	Main power supply (Indoor unit:220-240V) Power on → lamp is lit
LED2	Power supply for MA-Remote controller	Power supply for MA-Remote controller on → lamp is lit

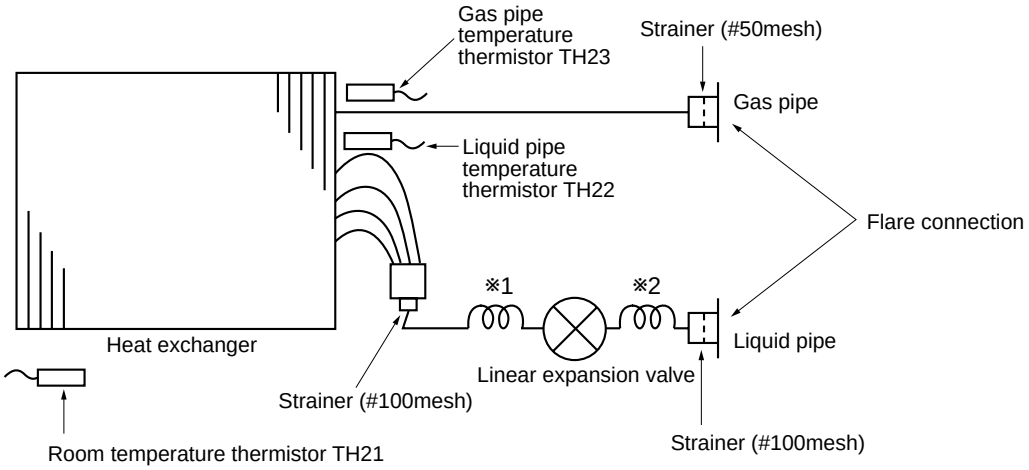
[LEGEND]

SYMBOL	NAME		SYMBOL	NAME	
I.B	INDOOR CONTROLLER BOARD		DS	DRAIN SENSOR	
CN25	CONNECTOR	HUMIDIFIER	TB2	TERMINAL BLOCK	POWER SUPPLY
CN27		DAMPER	TB5		TRANSMISSION
CN32		REMOTE SWITCH	TB15		MA-REMOTE CONTROLLER
CN51		CENTRALLY CONTROL	TH21	THERMISTOR	ROOM TEMP. DETECTION (0°C/15kΩ, 25°C/5.4kΩ)
CN52		REMOTE INDICATION			
SW2	SWITCH	CAPACITY CORD	TH22		PIPE TEMP. DETECTION / LIQUID (0°C/15kΩ, 25°C/5.4kΩ)
SW3		MODE SELECTION			
SW4		MODEL SELECTOR	TH23		PIPE TEMP. DETECTION / GAS (0°C/15kΩ, 25°C/5.4kΩ)
SWE		DRAIN UP MACHINE(TEST MODE)			
ZNR	VARISTOR		LEV	LINEAR EXPANSION VALVE	
FUSE	FUSE (T6.3AL 250V)		A.B	CIRCUIT BOARD	
X1	AUX.RELAY	DRAIN PUMP	SW1	SWITCH	MODE SELECTION
LED1	POWER SUPPLY (I.B)		SW5		VOLTAGE SELECTION
LED2	POWER SUPPLY (I.B)		SW11		ADDRESS SETTING 1s DIGIT
MF	FAN MOTOR		SW12		ADDRESS SETTING 10ths DIGIT
MV	VANE MOTOR		SW14		BRANCH No.
DP	DRAIN PUMP				

NOTES:
1.At servicing for outdoor unit,always follow the wiring diagram of outdoor unit.
2.In case of using MA-Remote controller, please connect to TB15.
(Remote controller wire is non-polar.)
3.In case of using M-NET, please connect to TB5. (Transmission line is non-polar.)
4.Symbol [S] of TB5 is the shield wire connection.
5.Symbols used in wiring diagram above are,
□□□ : terminal block, ⊙⊙⊙ :connecter.
6.The setting of the SW2 dip switches differs in the capacity. For the detail, refer to the table below.
7.Please set the switch SW5 according to the power supply voltage.
Set SW5 to 240V side when the power supply is 230 and 240 volts.
When the power supply is 220 volts, set SW5 to 220V side.

7 REFRIGERANT SYSTEM DIAGRAM

PMFY-P20VBM-E PMFY-P20VBM-E$_1$ PMFY-P20VBM-E#2 PMFY-P20VBM-ER3
PMFY-P25VBM-E PMFY-P25VBM-E$_1$ PMFY-P25VBM-E#2 PMFY-P25VBM-ER3
PMFY-P32VBM-E PMFY-P32VBM-E$_1$ PMFY-P32VBM-E#2 PMFY-P32VBM-ER3
PMFY-P40VBM-E PMFY-P40VBM-E$_1$ PMFY-P40VBM-E#2 PMFY-P40VBM-ER3



Unit:mm(inch)

Item \ Service Ref.	PMFY-P20, P25, P32, P40VBM-E PMFY-P20, P25, P32, P40VBM-E$_1$ PMFY-P20, P25, P32, P40VBM-E#2 PMFY-P20, P25, P32, P40VBM-ER3
Gas pipe	ϕ12.7(1/2")
Liquid pipe	ϕ6.35(1/4")

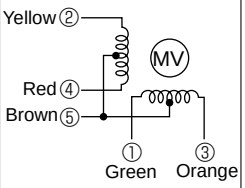
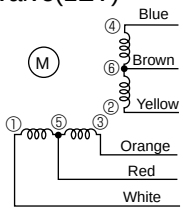
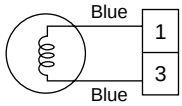
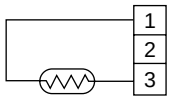
Unit:mm

	PMFY-P20, P25VBM-E PMFY-P20, P25VBM-E$_1$ PMFY-P20, P25VBM-E#2 PMFY-P20, P25VBM-ER3	PMFY-P32, P40VBM-E PMFY-P32, P40VBM-E$_1$ PMFY-P32, P40VBM-E#2 PMFY-P32, P40VBM-ER3
Capillary tube ※1	O.D.ϕ4.6 × I.D.ϕ3.4 × ℓ 200	O.D.ϕ3.6 × I.D.ϕ2.4 × ℓ 200
Capillary tube ※2	O.D.ϕ3.6 × I.D.ϕ2.4 × ℓ 80	

8 TROUBLE SHOOTING

8-1. HOW TO CHECK THE PARTS

PMFY-P20VBM-E PMFY-P20VBM-E$_1$ PMFY-P20VBM-E#2 PMFY-P20VBM-ER3
PMFY-P25VBM-E PMFY-P25VBM-E$_1$ PMFY-P25VBM-E#2 PMFY-P25VBM-ER3
PMFY-P32VBM-E PMFY-P32VBM-E$_1$ PMFY-P32VBM-E#2 PMFY-P32VBM-ER3
PMFY-P40VBM-E PMFY-P40VBM-E$_1$ PMFY-P40VBM-E#2 PMFY-P40VBM-ER3

<table>
<tr><th>Parts name</th><th>Check points</th></tr>
<tr><td>Room temperature thermistor (TH21)
Liquid pipe temperature thermistor (TH22)
Gas pipe temperature thermistor (TH23)</td><td>Disconnect the connector then measure the resistance with a tester.
(At the ambient temperature 10℃~30℃)
<table><tr><th>Normal</th><th>Abnormal</th></tr><tr><td>4.3kΩ~9.6kΩ</td><td>Open or short</td></tr></table>Refer to the next page for the details.</td></tr>
<tr><td>Vane motor (MV)
 
</td><td>Measure the resistance between the terminals with a tester.
(At the ambient temperature 20℃~30℃)
<table><tr><th>Connector</th><th>Normal</th><th>Abnormal</th></tr><tr><td>Brown — Yellow</td><td rowspan="4">380Ω ±7%</td><td rowspan="4">Open or short</td></tr><tr><td>Brown — Red</td></tr><tr><td>Brown — Orange</td></tr><tr><td>Brown — Green</td></tr></table></td></tr>
<tr><td>Linear expansion valve(LEV)
 
</td><td>Disconnect the connector then measure the resistance valve with a tester.
Refer to the next page for a detail.
<table><tr><th colspan="4">Normal</th><th>Abnormal</th></tr><tr><td>(1)-(5)
White-Red</td><td>(2)-(6)
Yellow-Brown</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">200Ω ±10%</td></tr></table>Refer to the next page for the details.</td></tr>
<tr><td>Drain pump (DP)
 
</td><td>Measure the resistance between the terminals with a tester.
(At the ambient temperature 20℃)
<table><tr><th>Normal</th><th>Abnormal</th></tr><tr><td>400Ω~480Ω</td><td>Open or short</td></tr></table></td></tr>
<tr><td>Drain sensor (DS)
 
</td><td>Measure the resistance after 3 minutes have passed since the power supply was intercepted.
(At the ambient temperature 0℃~60℃)
<table><tr><th>Normal</th><th>Abnormal</th></tr><tr><td>0.6kΩ~6.0kΩ</td><td>Open or short</td></tr></table>Refer to the next page for the details.</td></tr>
</table>

<Thermistor Characteristic graph>

Thermistor for lower temperature

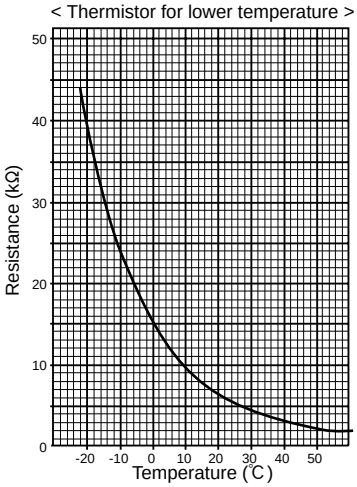
Room temperature thermistor (TH21)
Liquid pipe temperature thermistor (TH22)
Gas pipe temperature thermistor (TH23)

Thermistor R_0=15kΩ ± 3%
Fixed number of B=3480 ± 2%

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

0℃ : 15kΩ
10℃ : 9.6kΩ
20℃ : 6.3kΩ
25℃ : 5.4kΩ
30℃ : 4.3kΩ
40℃ : 3.0kΩ

< Thermistor for lower temperature >



Thermistor for lower temperature

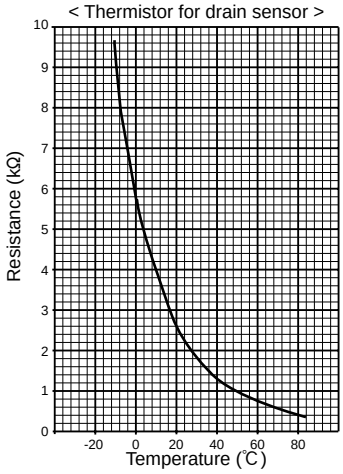
Drain sensor (DS)

Thermistor R_0=6.0kΩ ± 3%
Fixed number of B=3390 ± 2%

$$Rt=6\exp\{3390(\frac{1}{273+t}-\frac{1}{273})\}$$

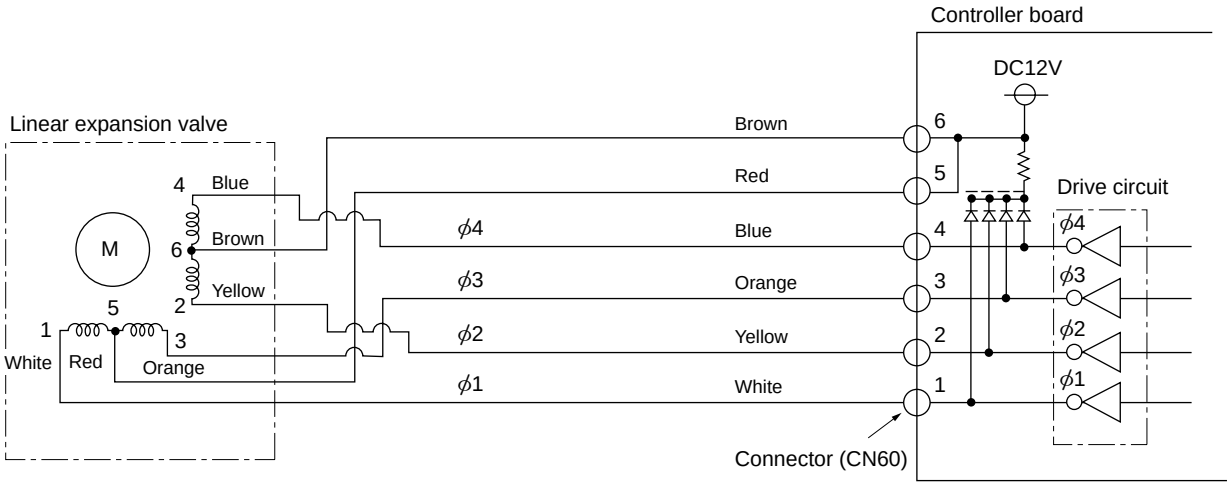
0℃ : 6 kΩ
10℃ : 3.9kΩ
20℃ : 2.6kΩ
25℃ : 2.2kΩ
30℃ : 1.8kΩ
40℃ : 1.3kΩ

< Thermistor for drain sensor >



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>



Note : Since the number of the connector at the controller board side and the relay connector are different, follow the colour of the lead wire.

<Output pulse signal and the valve operation>

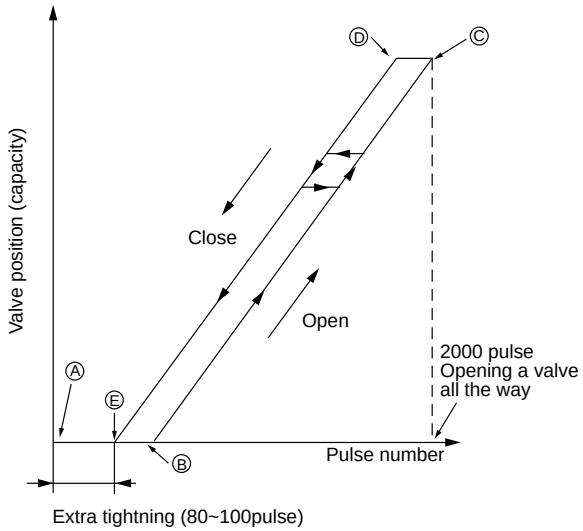
Output (Phase)	Output			
	1	2	3	4
ϕ1	ON	OFF	OFF	ON
ϕ2	ON	ON	OFF	OFF
ϕ3	OFF	ON	ON	OFF
ϕ4	OFF	OFF	ON	ON

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

The output pulse shifts in above order.

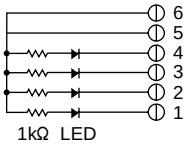
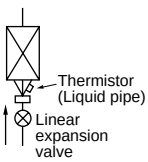
- When linear expansion valve operation stops, all output phase become OFF.
- At phase interruption or when phase does not shift in order, motor does not rotate smoothly and motor will lock and vibrate.

② Linear expansion valve operation



- When the switch is turned on, 2200 pulse closing valve signal will be send till it goes to Ⓐ point in order to define the valve position.
- When the valve move smoothly, there is no sound or vibration occurring from the linear expansion valve : however, when the pulse number moves from Ⓔ to Ⓐ or when the valve is locked, more sound can be heard than normal situation.
- Sound 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 turned 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 valve.
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) with a tester. It is normal if the resistance is in the range of 200 Ω ± 10%.	Exchange the linear expansion valve.
Valve does not 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 refrigerant 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.

8-2. TROUBLE SHOOTING

Check method of indoor fan motor (fan motor / controller board)

① Notes

· High voltage is applied to the connecter (FAN)(CNMF1, 2) for the fan motor. Pay attention to the service.

· Do not pull out the connector (FAN)(CNMF1, 2) for the motor with the power supply on, doing so may result in damage to the board.

(FAN)

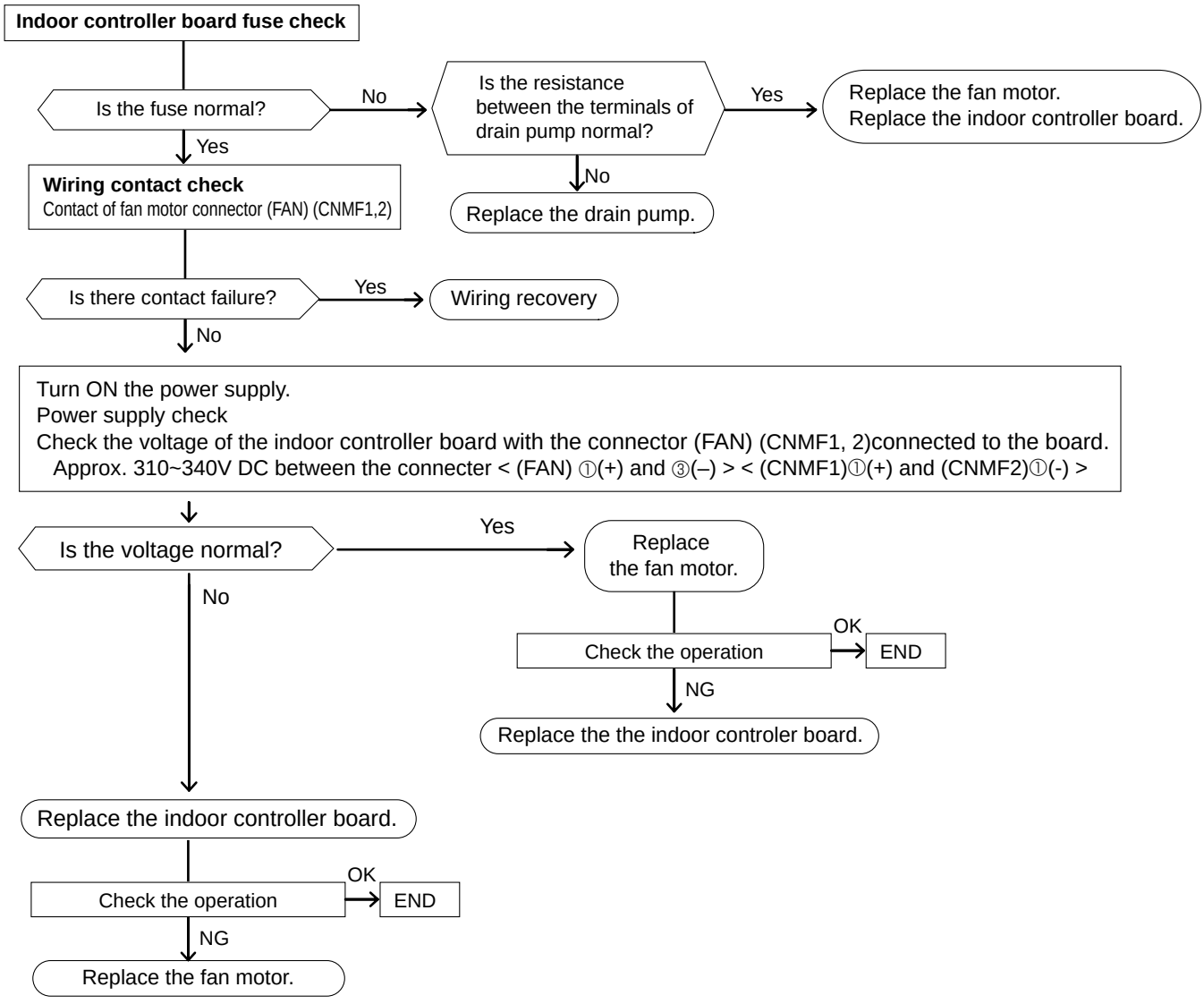
PMFY-P20/25/32/40VBM-E PMFY-P20/25/32/40VBM-E1

(CNMF1, 2)

PMFY-P20/25/32/40VBM-E#2 PMFY-P20/25/32/40VBM-ER3

② Self check

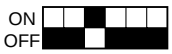
Symptom : The indoor fan can not rotate.



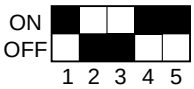
8-3. FUNCTION OF DIP SWITCH

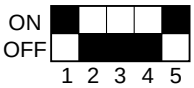
PMFY-P20VBM-E PMFY-P20VBM-E$_1$ PMFY-P20VBM-E#2 PMFY-P20VBM-ER3
PMFY-P25VBM-E PMFY-P25VBM-E$_1$ PMFY-P25VBM-E#2 PMFY-P25VBM-ER3
PMFY-P32VBM-E PMFY-P32VBM-E$_1$ PMFY-P32VBM-E#2 PMFY-P32VBM-ER3
PMFY-P40VBM-E PMFY-P40VBM-E$_1$ PMFY-P40VBM-E#2 PMFY-P40VBM-ER3

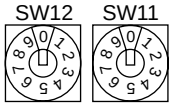
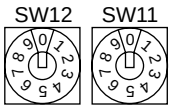
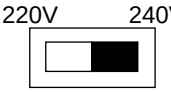
<table>
<tr><th rowspan="2">Switch</th><th rowspan="2">Pole</th><th rowspan="2">Function</th><th colspan="2">Operation by switch</th><th rowspan="2">Effective timing</th><th rowspan="2">Remarks</th></tr>
<tr><th>ON</th><th>OFF</th></tr>
<tr><td rowspan="10">SW1
Mode
Selection</td><td>1</td><td>Thermistor <Room temperature detection> position</td><td>Bult-in remote controller</td><td>Indoor unit</td><td rowspan="10">Under suspension</td><td rowspan="10">Address board
<Initial setting>
 

※
<table><tr><td>SW 1-7</td><td>SW 1-8</td><td>SW 1-8</td></tr><tr><td>OFF</td><td>OFF</td><td>Extra low</td></tr><tr><td>ON</td><td>OFF</td><td>Low</td></tr><tr><td>OFF</td><td>ON</td><td>Setting air flow</td></tr><tr><td>ON</td><td>ON</td><td>stop</td></tr></table></td></tr>
<tr><td>2</td><td>Filter clogging detection</td><td>Provided</td><td>Not provided</td></tr>
<tr><td>3</td><td>Filter cleaning sign</td><td>2,500h</td><td>100h</td></tr>
<tr><td>4</td><td>Fresh air intake</td><td>Effective</td><td>Not effective</td></tr>
<tr><td>5</td><td>Switching remote display</td><td>Thermo ON signal indication</td><td>Fan output indication</td></tr>
<tr><td>6</td><td>Humidifier control</td><td>Fan operation at Heating mode</td><td>Thermo On operation at heating mode</td></tr>
<tr><td>7</td><td rowspan="2">Air flow at
Heat thermo OFF</td><td>Low ※</td><td>Extra low ※</td></tr>
<tr><td>8</td><td>Setting air flow</td><td>Depends on SW1-7</td></tr>
<tr><td>9</td><td>Auto restart function</td><td>Effective</td><td>Not effective</td></tr>
<tr><td>10</td><td>Power source ON/OFF</td><td>Effective</td><td>Not effective</td></tr>
<tr><td>SW2
Capacity code setting</td><td>1~6</td><td colspan="3"><table><tr><td>Capacity</td><td>SW 2</td><td>Capacity</td><td>SW 2</td></tr><tr><td>P20</td><td> 
</td><td>P32</td><td> 
</td></tr><tr><td>P25</td><td> 
</td><td>P40</td><td> 
</td></tr></table></td><td>Before power supply ON</td><td>Indoor controller board
<Initial setting>
Set for each capacity.</td></tr>
<tr><td rowspan="11">SW3
Function Selection</td><td>1</td><td>Heat pump / Cool only</td><td>Cooling only</td><td>Heat pump</td><td rowspan="11">Under suspension</td><td rowspan="11">Indoor controller board
Set while the unit is off.
<Initial setting>
 

※4 At cooling mode, each angle can be used only 1 hour.
※5 Please do not use SW3-9, 10 as trouble might be caused by the usage condition.
※6 Second setting means first setting.</td></tr>
<tr><td>2</td><td>Louver</td><td>Available</td><td>Not available</td></tr>
<tr><td>3</td><td>Vane</td><td>Available</td><td>Not available</td></tr>
<tr><td>4</td><td>Vane swing function</td><td>Available</td><td>Not available</td></tr>
<tr><td>5</td><td>Vane horizontal angle</td><td>Second setting ※6</td><td>First setting</td></tr>
<tr><td>6</td><td>Vane cooling limit angle setting ※4</td><td>Horizontal angle</td><td>Down B, C</td></tr>
<tr><td>7</td><td>Indoor linear expansion valve opening change</td><td>Effective</td><td>Not effective</td></tr>
<tr><td>8</td><td>Heating 4deg. up</td><td>Not effective</td><td>Effective</td></tr>
<tr><td>9</td><td>Target superheat setting ※5</td><td>—</td><td>—</td></tr>
<tr><td>10</td><td>Target sub cool setting ※5</td><td>—</td><td>—</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td>SW4
Unit Selection</td><td>1~5</td><td colspan="3">PMFY-P·VBM-E
 

PMFY-P·VBM-E$_1$
 

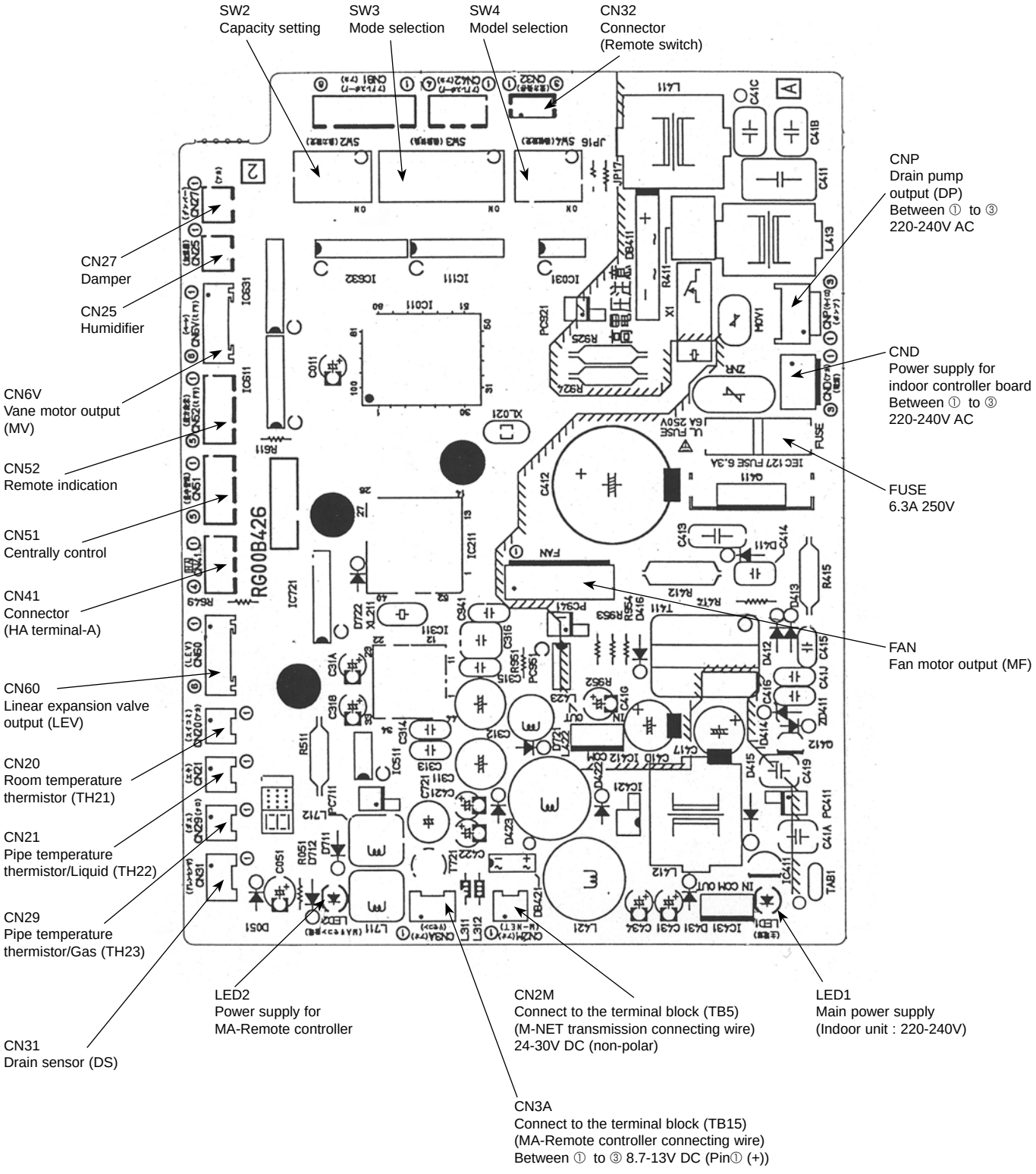
PMFY-P·VBM-E#2/ER3
 
</td><td>Before power supply ON</td><td>Indoor controller board</td></tr>
</table>

Switch	Pole	Operation by switch	Effective timing	Remarks
SW11 1s digit address setting SW12 10ths digit address setting	Rotary switch	 How to set addresses Example : If address is “3”, remain SW12 (for over 10) at “0”, and match SW11 (for 1 to 9) with “3”.	Before power supply ON	Address board <Initial setting> 
SW14 Branch No. setting	Rotary switch	 How to set branch numbers SW14 (Series R2 only) Match the indoor unit’s refrigerant pipe with the BC controller’s end connection number. Remain other than series R2 at “0”.		Address board <Initial setting> 
SW5 Voltage Selection	2	 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.		Address board <Initial setting> 

8-4. TEST POINT DIAGRAM

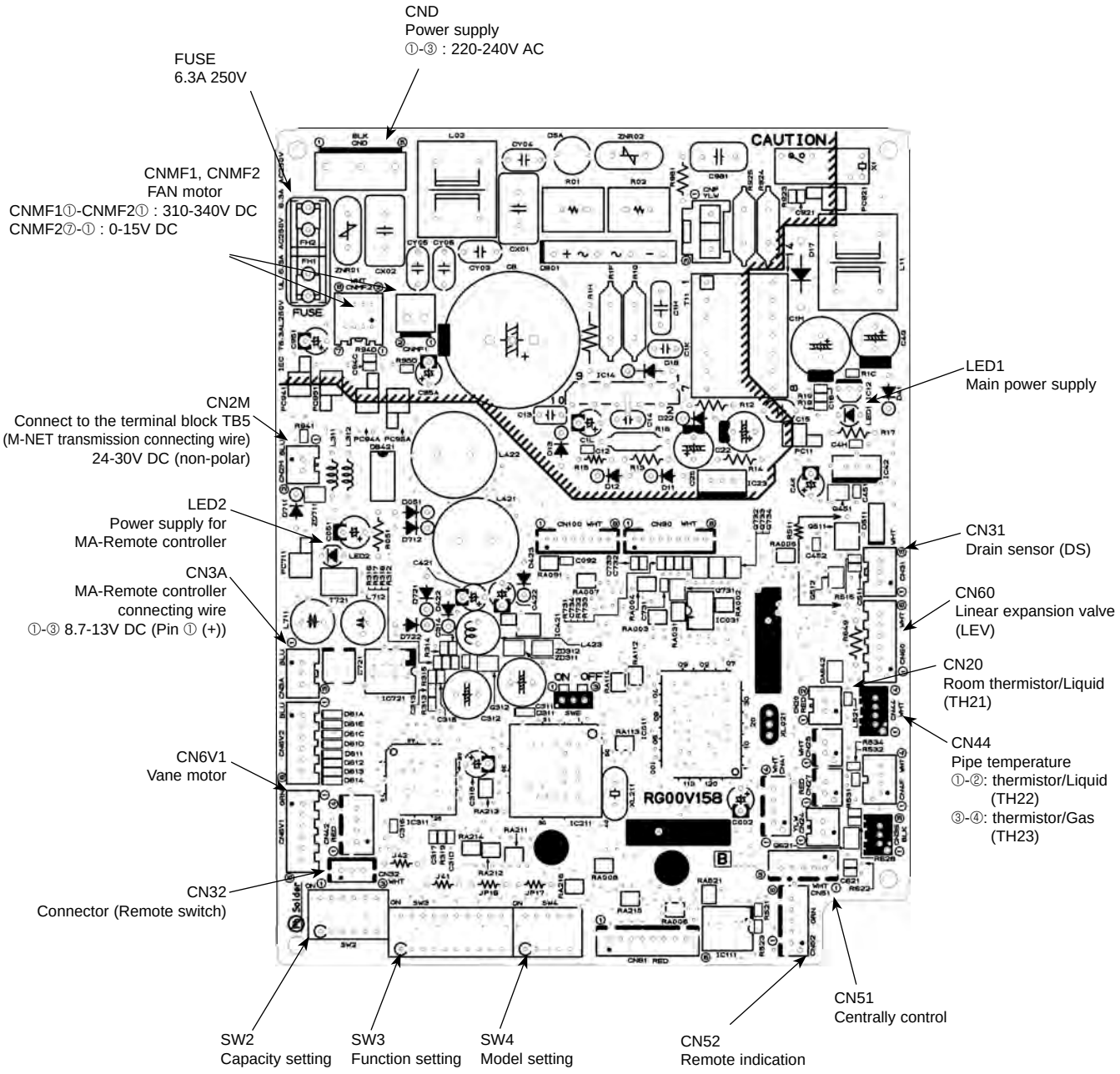
8-4-1. Indoor controller board

PMFY-P20VBM-E PMFY-P20VBM-E1
PMFY-P25VBM-E PMFY-P25VBM-E1
PMFY-P32VBM-E PMFY-P32VBM-E1
PMFY-P40VBM-E PMFY-P40VBM-E1



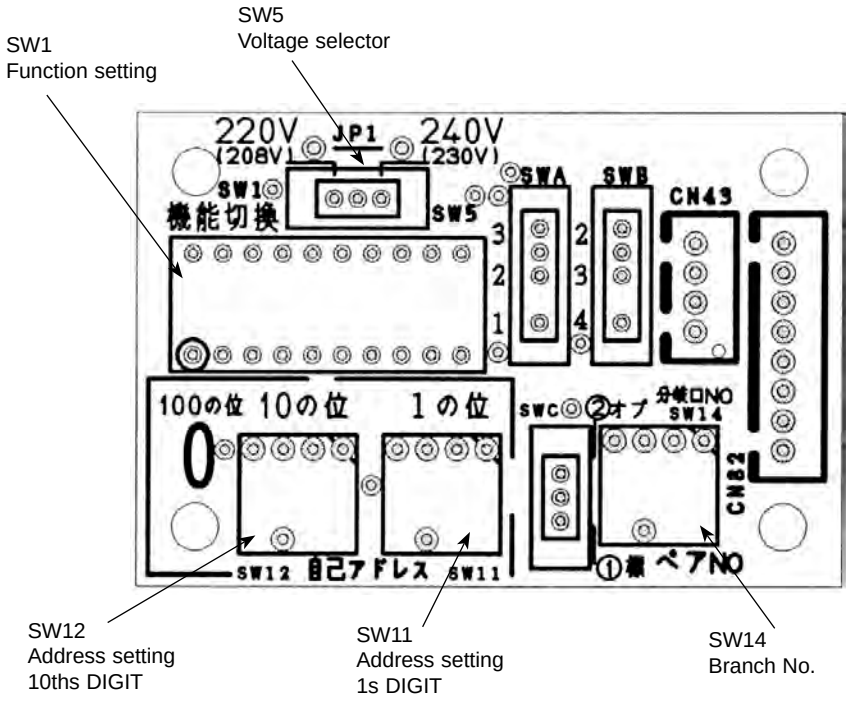
Indoor controller board

PMFY-P20VBM-E#2 PMFY-P25VBM-E#2 PMFY-P32VBM-E#2 PMFY-P40VBM-E#2
PMFY-P20VBM-ER3 PMFY-P25VBM-ER3 PMFY-P32VBM-ER3 PMFY-P40VBM-ER3



8-4-2. Address board

PMFY-P20VBM-E	**PMFY-P25VBM-E**	**PMFY-P32VBM-E**	**PMFY-P40VBM-E**
PMFY-P20VBM-E$_1$	**PMFY-P25VBM-E$_1$**	**PMFY-P32VBM-E$_1$**	**PMFY-P40VBM-E$_1$**
PMFY-P20VBM-E#2	**PMFY-P25VBM-E#2**	**PMFY-P32VBM-E#2**	**PMFY-P40VBM-E#2**
PMFY-P20VBM-ER3	**PMFY-P25VBM-ER3**	**PMFY-P32VBM-ER3**	**PMFY-P40VBM-ER3**



9 DISASSEMBLY PROCEDURE

PMFY-P20VBM-E **PMFY-P25VBM-E** **PMFY-P32VBM-E** **PMFY-P40VBM-E**
PMFY-P20VBM-E$_1$ **PMFY-P25VBM-E$_1$** **PMFY-P32VBM-E$_1$** **PMFY-P40VBM-E$_1$**
PMFY-P20VBM-E#2 **PMFY-P25VBM-E#2** **PMFY-P32VBM-E#2** **PMFY-P40VBM-E#2**
PMFY-P20VBM-ER3 **PMFY-P25VBM-ER3** **PMFY-P32VBM-ER3** **PMFY-P40VBM-ER3**

Be careful when removing heavy parts.

OPERATING PROCEDURE

1. Removing the grille

Opening the air intake grille

(1) Press the PUSH of the air intake grille. (See Figure 1)
(2) Put your fingers on the both ends of nut of the air intake grille and put it down after the grille clicked.

Removing the air intake grille

(1) Press the PUSH of the air intake grille, and pull down the both ends of nut with your fingers after the grille clicked. (See Figure 1)
(2) Pull out the handle of air intake grille strongly toward you. (See Figure 2)
(3) Draw the string of the air intake grille to prevent the air intake grille from dropping. (See Figure 3)

Checks before setting the grille in place

(1) Before installing the grille, make sure the indoor unit is square with the ceiling opening (or parallel to the angle between the wall and the ceiling).
(2) Check that the 4 points where the grille will be secured are in contact with the ceiling surface.
(3) Check that the insulation for the refrigerant pipes, drainage pipes, etc. is in place and that wiring connections and arrangements are complete.

Figure 4

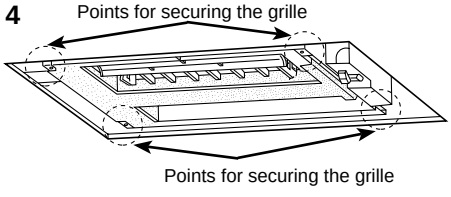
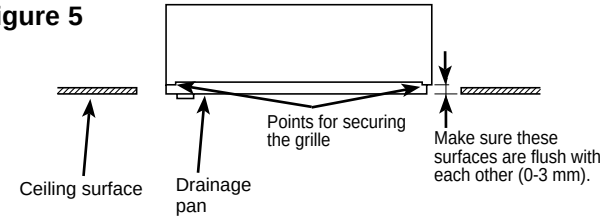


Figure 5



PHOTOS&ILLUSTRATIONS

Photo 1

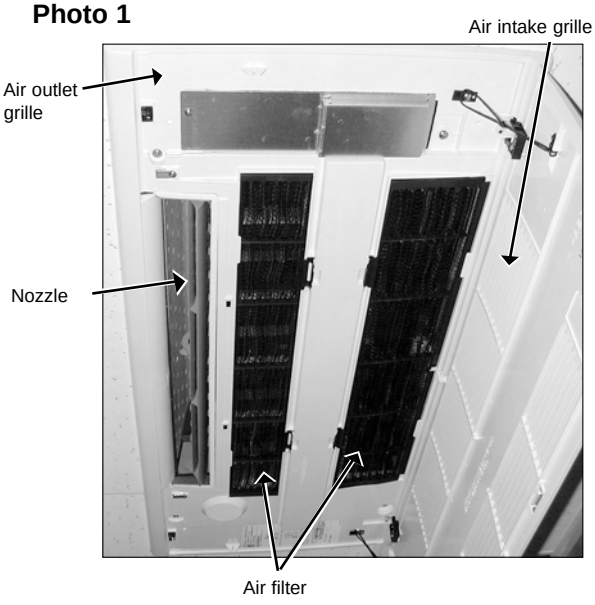


Figure 1

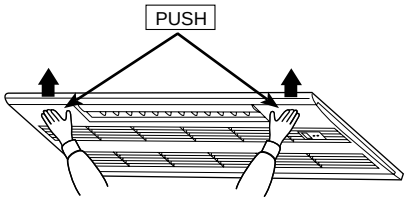


Figure 2

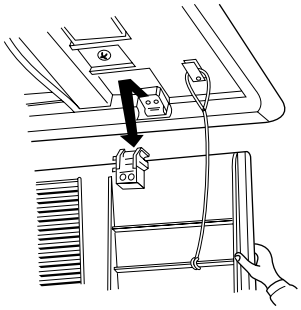
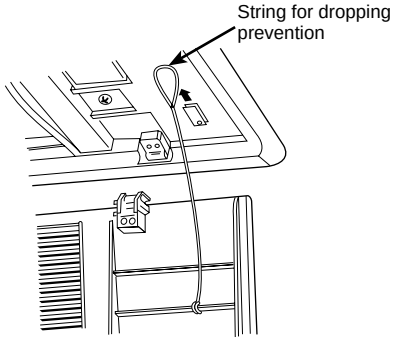


Figure 3



OPERATING PROCEDURE

Removing the grille

(1) Open the intake grille by pressing PUSH of the air intake grille and remove the air filter (× 2). (See Figure 1)
(2) Remove the screw cover in the middle of the air outlet. (See Figure 7)
(3) Open the upper and lower flaps on the indoor unit completely. (See Figure 7)
(4) Remove the securing screws (× 7).
(Ⓐ: M5 × 0.8 × 16, 6pcs)
(Ⓑ: 4 × 16, 1pc)
(5) Remove the temporary holding tabs on the grille to the hooks on the indoor unit.

Attaching the grille

(1) Open the upper and lower flaps on the indoor unit completely.
(2) Hook the temporary holding tabs on the front panel to the hooks on the indoor unit.
(3) Adjust the grille so that it fits properly in the angle between the ceiling and the wall, and install the securing screws Ⓐ (supplied with this grille) in their 4 places at left and right, leaving them slightly loose.
(4) Tighten the securing bolts Ⓐ and securing screws Ⓑ in the centre 3 places. (See Figure 6)
(5) Tighten the securing bolts Ⓐ in the 4 places at left and right.
* Make sure there are no gaps between the indoor unit and the grille, and between the grille and the ceiling surface. If there are gaps, the wind may come in and it may cause water to drip. (See Figure 8)
* Tighten the securing bolts Ⓐ and securing screws Ⓑ completely.
(6) Replace the air filter and screw cover, and press PUSH of the intake grille until you hear it snap into place.

Checks after setting the grille

(1) Check that there are no gaps between the indoor unit and the grille, between the grille and the ceiling surface. If there are gaps, the wind may come in and condensation may result.
(2) Check that the air filter is in place.

PHOTOS&ILLUSTRATIONS

Figure 6

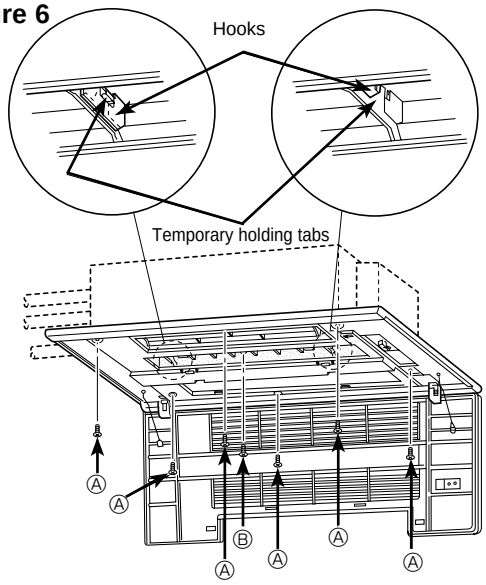


Figure 7

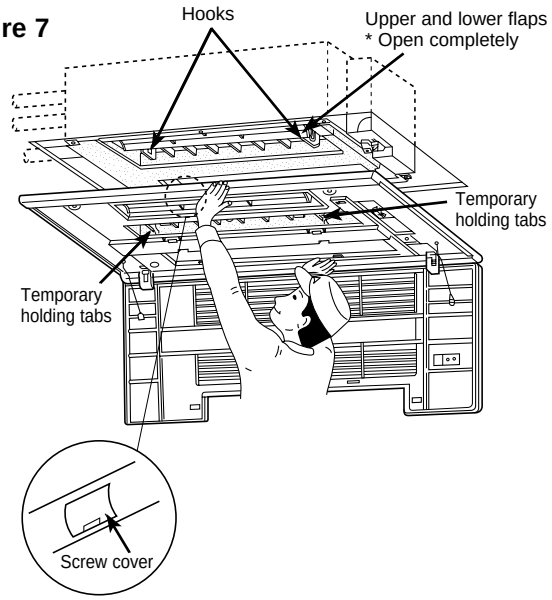
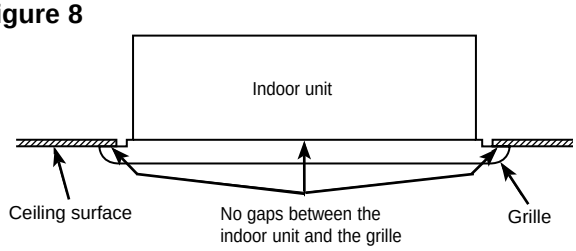
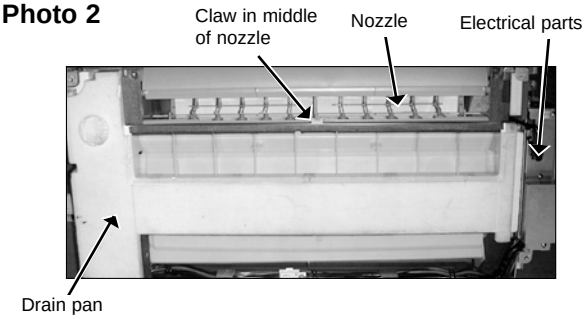
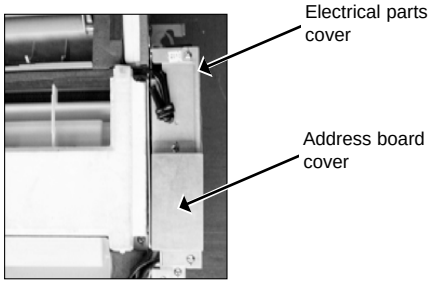
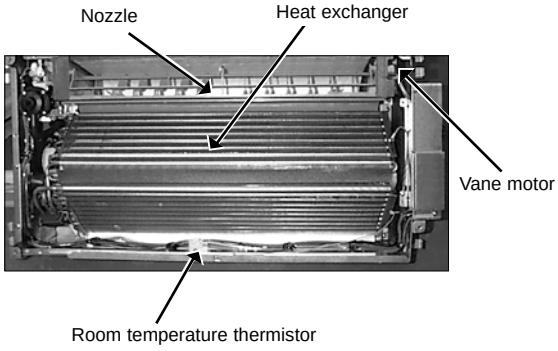
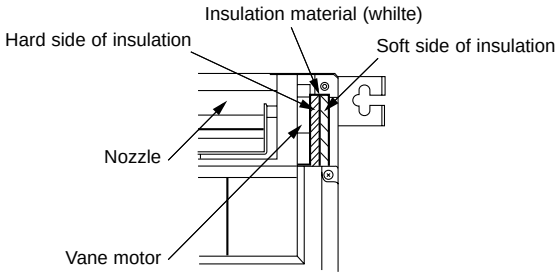
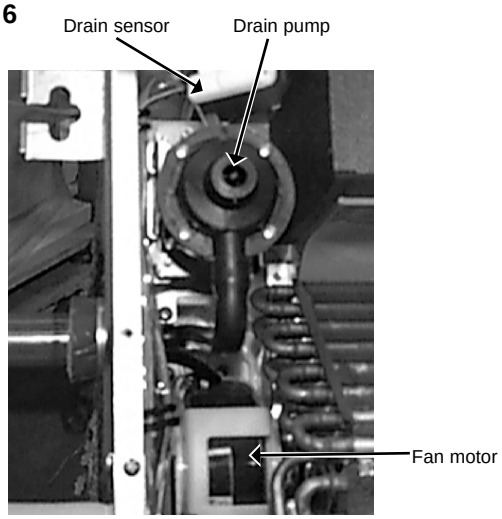
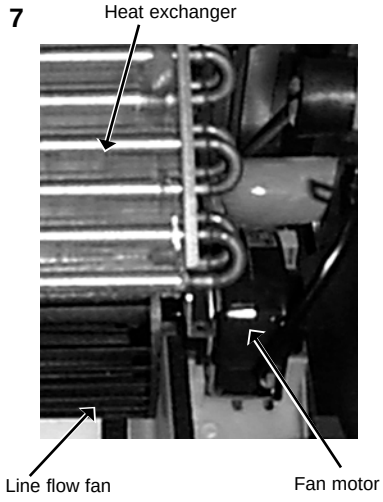


Figure 8

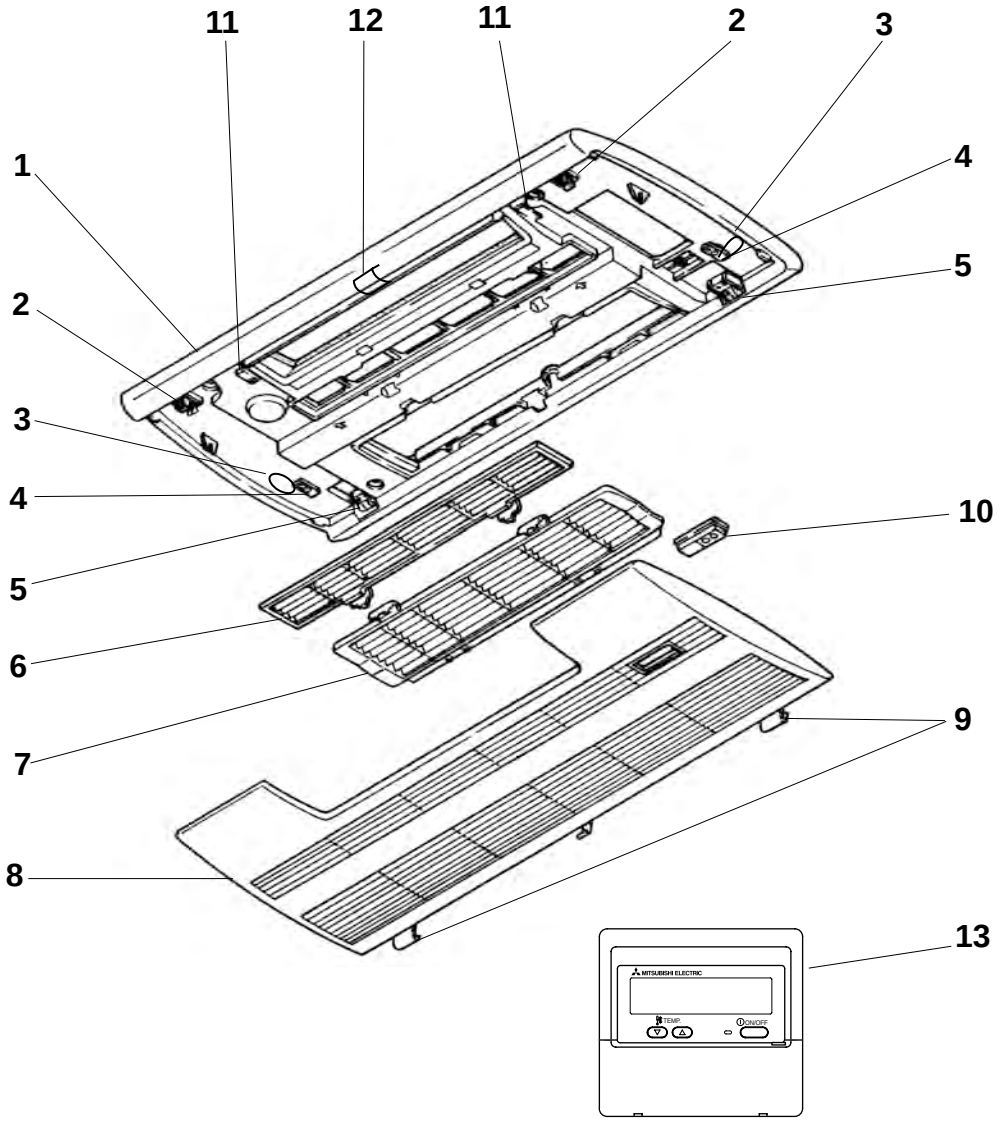


OPERATING PROCEDURE	PHOTOS&ILLUSTRATIONS
2. Removing the electrical parts box (1) Remove the grille. (2) Remove the address board cover. (3) Remove the electrical parts cover. (4) Disconnect the connectors of fan motor, vane motor, drain pump, room temperature thermistor, pipe temperature thermistor (Liquid, Gas), and drain sensor on the electrical controller board. (5) Disconnect the lead wire and earth wire from terminal block. (6) Remove the electrical parts box.	**Photo 2**  **Photo 3** 
3. Removing the nozzle **Note when the nozzle is removed** **· The white insulation material which prevents water drop is mounted to the side of vane motor. Remove the insulation material before removing nozzle. (See Figure 9)** **· After completing the service, re-mount the insulation material as before as shown in right figure.** **· After service, mount the double layer insulation without fail. The hard material side should be faced to the nozzle. (See Figure 9)** (1) Remove the grille. (2) Remove the room temperature thermistor. (3) Unhook the claws in the middle of nozzle and remove the drain pan. (5 screws) (See Photo 2) (4) Remove the nozzle side of the heat exchanger. (2 screws) (5) Remove the address board cover. (See Photo 3) (6) Remove the electrical parts cover. (See Photo 3) (7) Disconnect the connector of vane motor. (8) Remove the insulation material (white) on the right side of nozzle. (9) Remove the nozzle. (6 screws)	**Photo 4**  **Figure 9** 
4. Removing the vane motor (1) Remove the nozzle. Refer to above-mentioned 3. Removing the nozzle. (2) Remove the vane motor from the nozzle.	**Photo 5** 

OPERATING PROCEDURE	PHOTOS&ILLUSTRATIONS
5. Removing the drain pump (1) Remove the grille. (2) Unhook the claw in the middle of nozzle and remove the drain pan. (See Photo 2) (3) Remove the address board cover. (See Photo 3) (4) Remove the electrical parts cover. (See Photo 3) (5) Disconnect the connector of drain pump. (6) Remove the drain hose. (7) Remove the drain pump. (2 screws)	**Photo 6** 
6. Removing the fan motor and line flow fan (1) Remove the grille. (2) Unhook the claw in the middle of nozzle and remove the drain pan. (See Photo 2) (3) Unscrew 2 screws at the nozzle side of the heat exchanger. (4) Remove the address board cover. (See Photo 3) (5) Remove the electrical parts cover. (See Photo 3) (6) Disconnect the connector of vane motor, fan motor and drain pump. (7) Remove the nozzle side of the heat exchanger. (2 screws) (8) Remove the nozzle. (9) Remove the drain pump. (10) Unscrew 2 screws in the motor support. (11) Remove the fan motor and line flow fan (The fan motor and line flow fan can be removed without removing the heat exchanger.)	**Photo 7** 
7. Removing the thermistor<Intake temperature detector> (1) Remove the grille. (2) Remove the address board cover. (3) Remove the electrical parts cover. (4) Remove the thermistor <intake temperature detector>. (5) Disconnect the lead wire from the cord clamp (5 points). (6) Disconnect the connector (CN20) on the indoor controller board.	
8. Removing the thermistor<Liquid pipe temperature detector> <Gas pipe temperature detector> (1) Remove the grille. (2) Remove the address board cover. (3) Remove the electrical parts cover. (4) Remove the drain pan. (5) Remove the thermistor <Gas pipe temperature detector> /<Liquid pipe temperature detector>. (6) Disconnect the lead wire from the cord clamp. (7) Disconnect the connector (CN21)/(CN29), (CN44) on the indoor controller board. Connector (CN21) / Liquid ($VBM_{(1)}$) (CN29) / Gas ($VBM_{(1)}$) (CN44) / Liquid and Gas (VBM#2, VBMR3)	

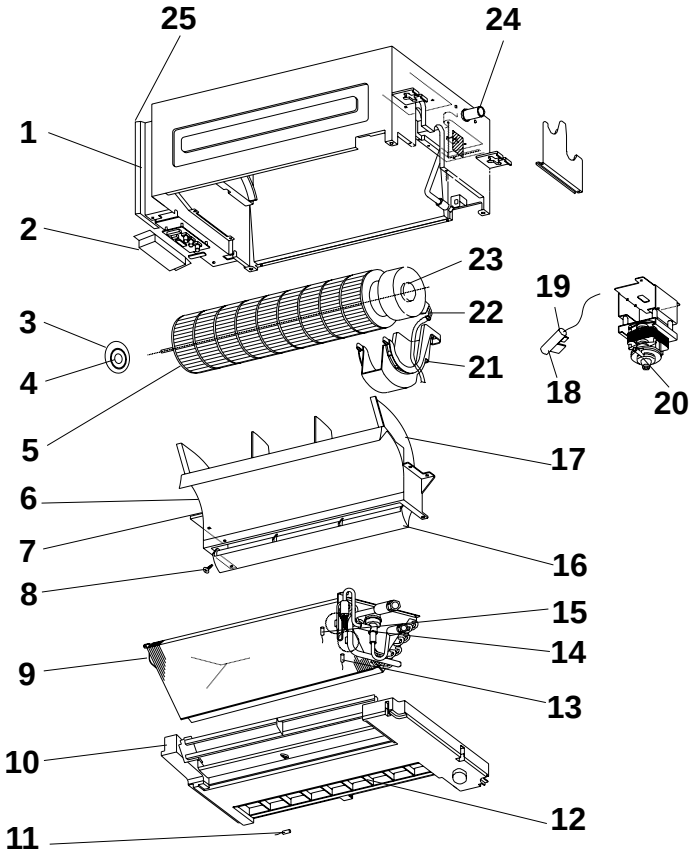
10 PARTS LIST (non-RoHS compliant)

PANEL PARTS FOR PMFY-P20/25/32/40VBM-E
PMP-40BM



No.	Part No.	Part Name	Specification	Q'ty/set	Remarks (Drawing No.)	Wiring Diagram Symbol	Recommended Q'ty
				PMP-40BM			
1	T7W E11 003	AIR OUTLET GRILLE		1			
2	R01 E00 055	LATCH		2			
3	—	HANGER		2	(DT88D360H03)		
4	R01 E00 099	PANEL HOOK		2			
5	R01 E01 054	GRILLE CATCH		2			
6	R01 E01 500	L.L.FILTER		1			
7	R01 E02 500	L.L.FILTER		1			
8	T7W E01 691	INTAKE GRILLE		1			
9	R01 E06 054	GRILLE CATCH		2			
10	R01 E00 648	RECEIVER COVER		1			
11	R01 E00 044	MAGNET		2			
12	R01 E00 096	SCREW CAP		1			
13	—	REMOTE CONTROLLER	PAR-21MAA	1		R.B	

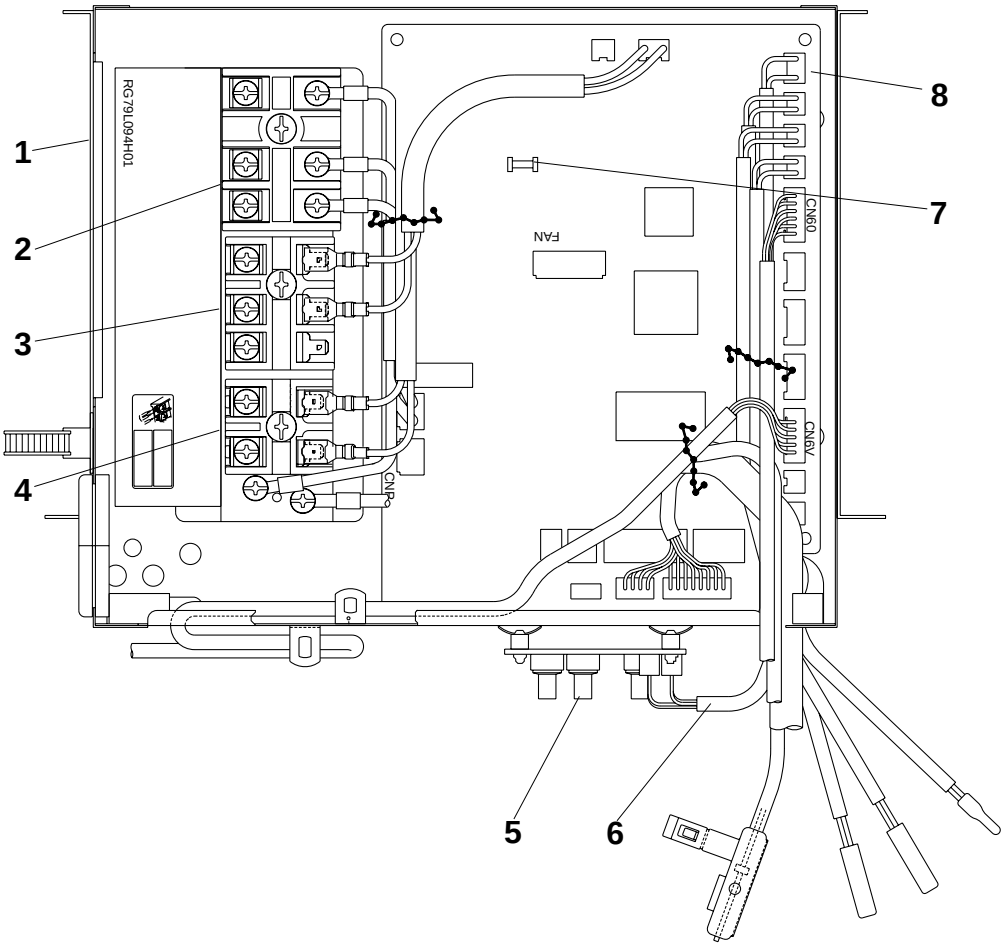
FUNCTIONAL PARTS
PMFY-P20VBM-E
PMFY-P25VBM-E
PMFY-P32VBM-E
PMFY-P40VBM-E



Part number that is circled is not shown in the figure.

No.	Part No.	Part Name	Specification	Q'ty/set		Remarks (Drawing No.)	Wiring Diagram Symbol	Recommended Q'ty
				PMFY-P · VBM-E				
				20, 25	32, 40			
1	—	CABINET		1	1	(DT00A478G88)		
2	—	ADDRESS BOARD COVER		1	1	(RG02L277H02)		
3	R01 22A 102	BEARING MOUNT		1	1			
4	R01 005 103	SLEEVE BEARING		1	1			
5	R01 E02 114	LINE FLOW FAN		1	1			
6	R01 E00 079	STABILIZER ASSY		1	1			
7	R01 E01 223	VANE MOTOR		1	1		MV	
8	R01 E00 092	VANE SLEEVE		1	1			
9	T7W E48 480	HEAT EXCHANGER		1				
	T7W E49 480	HEAT EXCHANGER			1			
10	R01 E10 529	DRAIN PAN		1	1			
11	R01 E00 202	THERMISTOR	ROOM	1	1		TH21	
12	R01 E00 038	GUIDE VANE		1	1			
13	R01 E01 202	THERMISTOR	LIQUID	1	1		TH22	
14	R01 E66 401	LINEAR EXPANSION VALVE		1	1		LEV	
15	R01 E03 202	THERMISTOR	GAS	1	1		TH23	
16	R01 E01 002	VANE		1	1			
17	R01 E00 110	CASING		1	1			
18	R01 31K 241	SENSOR HOLDER		1	1			
19	R01 E01 266	DRAIN SENSOR		1	1		DS	
20	T7W E02 355	DRAIN PUMP		1	1		DP	
21	R01 E00 130	MOTOR SUPPORT		1	1			
22	R01 E03 220	FAN MOTOR		1	1		MF	
23	R01 E01 105	MOTOR MOUNT		1	1			
24	R01 E00 527	DRAIN PIPE		1	1			
25	—	CONTROL BOX COVER		1	1	(RG00L311G11)		
(26)	R01 E01 673	SCREW ASSY		1	1			

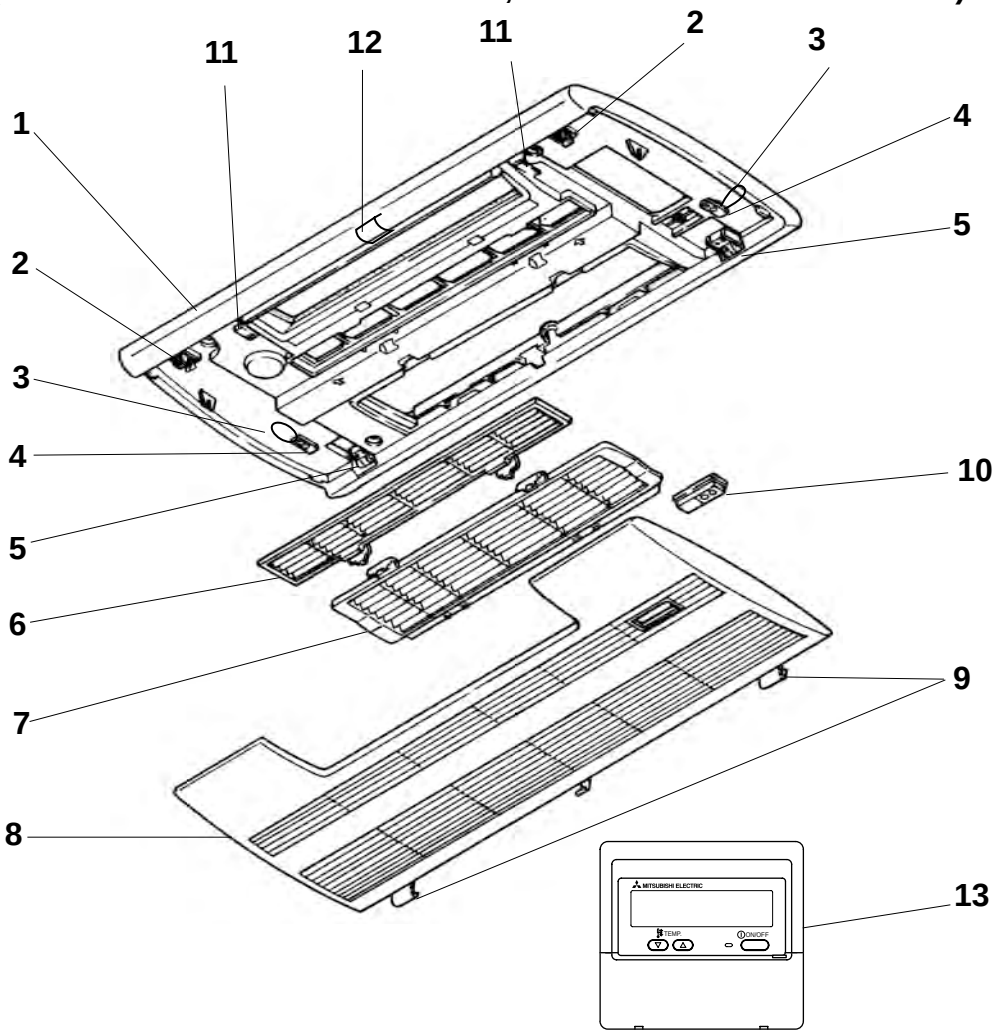
ELECTRICAL PARTS
PMFY-P20VBM-E
PMFY-P25VBM-E
PMFY-P32VBM-E
PMFY-P40VBM-E



No.	Part No.	Part Name	Specification	Q'ty/set	Remarks (Drawing No.)	Wiring Diagram Symbol	Recommended Q'ty
				PMFY-P20/25/32/40 VBM-E			
1	—	CONTROL BOX		1	(RG02B337G16)		
2	T7W A14 716	TERMINAL BLOCK	3P (L,N,⏚)	1		TB2	
3	T7W E00 716	TERMINAL BLOCK	3P (M1,M2,S)	1		TB5	
4	T7W 515 716	TERMINAL BLOCK	2P(1,2)	1		TB15	
5	T7W B01 294	ADDRESS BOARD		1		A.B	
6	R01 E00 304	CABLE ASSY		1			
7	T7W 520 239	FUSE	250V 6.3A	1		FUSE	
8	T7W E35 310	INDOOR CONTROLLER BOARD		1		I.B	

11 RoHS PARTS LIST

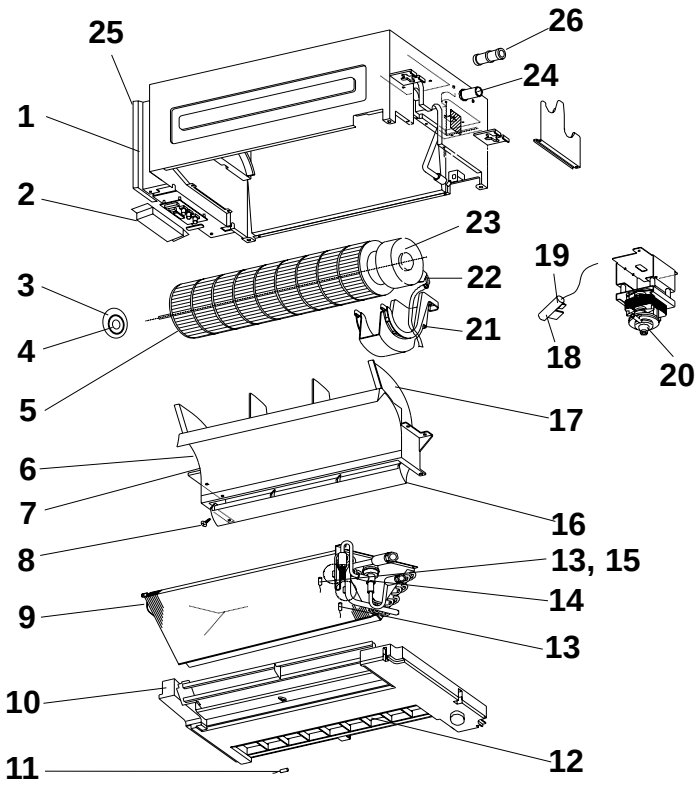
PANEL PARTS
PMP-40BM (FOR PMFY-P20/25/32/40VBM-E(1))
PMP-40BMW (FOR PMFY-P20/25/32/40VBM-E#2, PMFY-P20/25/32/40VBM-ER3)



No.	RoHS	Part No.	Part Name	Specification	Q'ty/set		Remarks (Drawing No.)	Wiring Diagram Symbol	Recommended Q'ty
					PMP-40BM	PMP-40BMW			
1	G	T7W E16 003	AIR OUTLET GRILLE		1				
	G	T7W E22 003	AIR OUTLET GRILLE			1			
2	G	R01 E01 055	LATCH		2	2			
3	G	—	HANGER		2	2	(DT88D360H03)		
4	G	R01 E01 099	PANEL HOOK		2	2			
5	G	R01 E07 054	GRILLE CATCH		2	2			
6	G	R01 E14 500	L.L.FILTER		1	1			
7	G	R01 E15 500	L.L.FILTER		1	1			
8	G	T7W E04 691	INTAKE GRILLE		1				
	G	T7W E06 691	INTAKE GRILLE			1			
9	G	R01 E06 054	GRILLE CATCH		2	2			
10	G	R01 E01 648	RECEIVER COVER		1	1			
11	G	R01 E01 044	MAGNET		2	2			
12	G	R01 E04 096	SCREW CAP		1				
	G	R01 E07 096	SCREW CAP			1			
13	G	—	REMOTE CONTROLLER	PAR-21MAA	1	1		R.B	

FUNCTIONAL PARTS

PMFY-P20VBM-E
PMFY-P25VBM-E
PMFY-P32VBM-E
PMFY-P40VBM-E
PMFY-P20VBM-E$_1$
PMFY-P25VBM-E$_1$
PMFY-P32VBM-E$_1$
PMFY-P40VBM-E$_1$
PMFY-P20VBM-E#2
PMFY-P25VBM-E#2
PMFY-P32VBM-E#2
PMFY-P40VBM-E#2
PMFY-P20VBM-ER3
PMFY-P25VBM-ER3
PMFY-P32VBM-ER3
PMFY-P40VBM-ER3

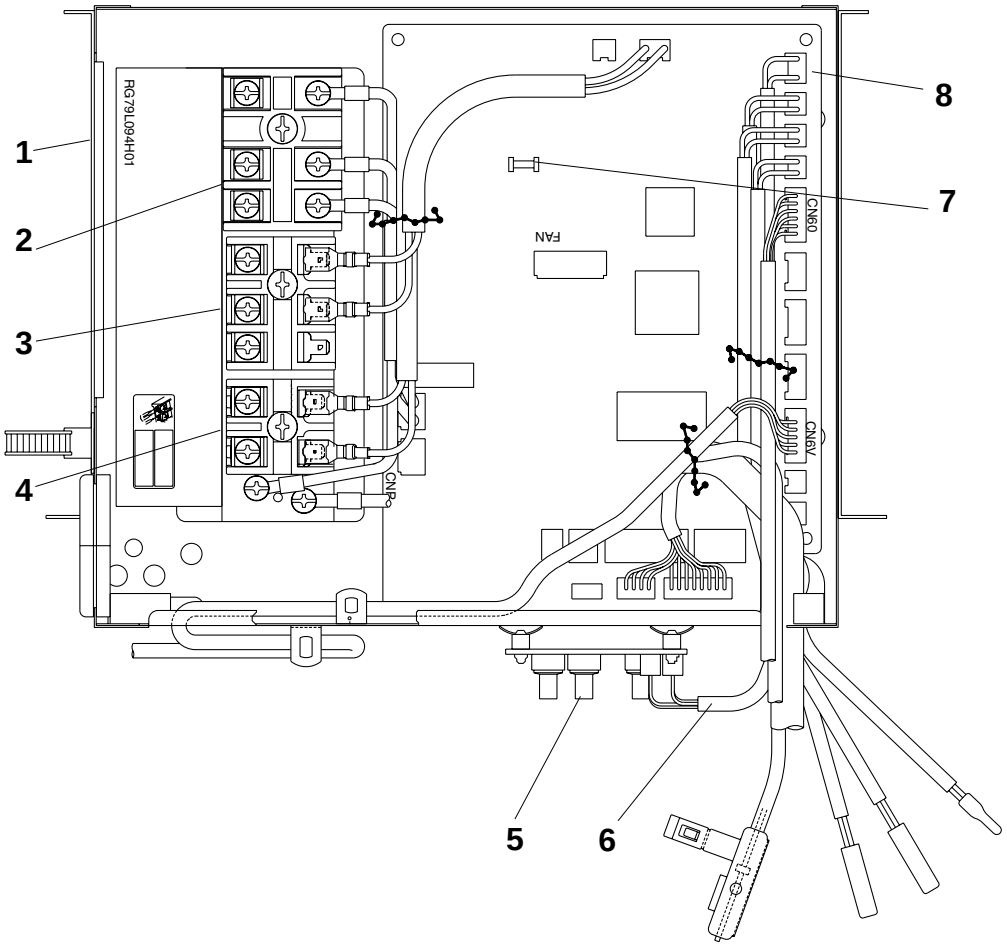


Part number that is circled is not shown in the figure.

No.	RoHS	Part No.	Part Name	Specification	Q'ty/set PMFY- P·VBM-E 20,25	P·VBM-E 32,40	P·VBM-E$_1$ 20,25	P·VBM-E$_1$ 32,40	P·VBM-E#2 20,25	P·VBM-E#2 32,40	P·VBM-ER3 20,25	P·VBM-ER3 32,40	Remarks (Drawing No.)	Wiring Diagram Symbol	Recommended Q'ty
1	G	—	CABINET		1	1	1	1	1	1	1	1	(DT00A478G99)		
2	G	—	ADDRESS BOARD COVER		1	1	1	1	1	1	1	1	(RG02L277H02)		
3	G	R01 23A 102	BEARING MOUNT		1	1	1	1	1	1	1	1			
4	G	R01 E04 103	SLEEVE BEARING		1	1	1	1	1	1	1	1			
5	G	R01 E32 114	LINE FLOW FAN		1	1	1	1	1	1	1	1			
6	G	R01 E01 079	STABILIZER ASSY		1	1	1	1	1	1	1	1			
7	G	R01 E18 223	VANE MOTOR		1	1	1	1	1	1	1	1		MV	
8	G	R01 E02 092	VANE SLEEVE		1	1	1	1	1	1	1	1			
9	G	T7W H06 480	HEAT EXCHANGER		1		1								
	G	T7W H07 480	HEAT EXCHANGER			1		1							
	G	T7W H94 480	HEAT EXCHANGER						1		1				
	G	T7W H95 480	HEAT EXCHANGER							1		1			
10	G	R01 E30 529	DRAIN PAN		1	1	1	1	1	1	1	1			
11	G	R01 H12 202	THERMISTOR	ROOM	1	1	1	1	1	1	1	1		TH21	
12	G	R01 E03 038	GUIDE VANE		1	1	1	1	1	1	1	1			
13	G	R01 H16 202	THERMISTOR	LIQUID	1	1	1	1						TH22	
	G	R01 N15 202	THERMISTOR	LIQUID/GAS					1	1	1	1		TH22/23	
14	G	R01 H06 401	LINEAR EXPANSION VALVE		1	1	1	1	1	1	1	1		LEV	
15	G	R01 H17 202	THERMISTOR	GAS	1	1	1	1						TH23	
16	G	R01 E16 002	VANE		1	1	1	1	1	1	1	1			
17	G	R01 E05 110	CASING		1	1	1	1	1	1	1	1			
18	G	R01 32K 241	SENSOR HOLDER		1	1	1	1	1	1	1	1			
19	G	R01 E11 266	DRAIN SENSOR		1	1	1	1	1	1	1	1		DS	
20	G	T7W E09 355	DRAIN PUMP		1	1	1	1	1	1	1	1		DP	
21	G	R01 E35 130	MOTOR SUPPORT		1	1	1	1	1	1	1	1			
22	G	R01 E24 220	FAN MOTOR		1	1								MF	
	G	R01 E45 220	FAN MOTOR				1	1						MF	
	G	R01 E49 220	FAN MOTOR						1	1	1	1		MF	
23	G	R01 E13 105	MOTOR MOUNT		1	1	1	1	1	1	1	1			
24	G	R01 E05 527	DRAIN PIPE		1	1	1	1	1	1					
	G	R01 E10 527	DRAIN PIPE								1	1			
25	G	—	CONTROL BOX COVER		1	1	1	1	1	1	1	1	(RG00L311G25)		
26	G	R01 18J 523	JOINT SOCKET								1	1			
(27)	G	R01 E03 673	SCREW ASSY		1	1	1	1	1	1	1	1			

ELECTRICAL PARTS

PMFY-P20VBM-E
PMFY-P25VBM-E
PMFY-P32VBM-E
PMFY-P40VBM-E
PMFY-P20VBM-E$_1$
PMFY-P25VBM-E$_1$
PMFY-P32VBM-E$_1$
PMFY-P40VBM-E$_1$
PMFY-P20VBM-E#2
PMFY-P25VBM-E#2
PMFY-P32VBM-E#2
PMFY-P40VBM-E#2
PMFY-P20VBM-ER3
PMFY-P25VBM-ER3
PMFY-P32VBM-ER3
PMFY-P40VBM-ER3



No.	RoHS	Part No.	Part Name	Specification	Q'ty/set				Remarks (Drawing No.)	Wiring Diagram Symbol	Recommended Q'ty
					PMFY-P20/25/32/40						
					P·VBM-E	P·VBM-E$_1$	P·VBM-E#2	P·VBM-ER3			
1	G	—	CONTROL BOX		1	1	1	1	(RG02B337G23)		
2	G	T7W E32 716	TERMINAL BLOCK	3P (L,N,⏚)	1	1	1	1		TB2	
3	G	T7W E35 716	TERMINAL BLOCK	3P (M1,M2,S)	1	1	1	1		TB5	
4	G	T7W E36 716	TERMINAL BLOCK	2P(1,2)	1	1				TB15	
	G	R01 E44 246	TERMINAL BLOCK	2P(1,2)			1	1		TB15	
5	G	T7W E01 294	ADDRESS BOARD		1	1	1	1		A.B	
6	G	R01 E07 304	CABLE ASSY		1	1					
	G	R01 E10 304	CABLE ASSY				1	1			
7	G	R01 E06 239	FUSE	250V 6.3A	1	1	1	1		FUSE	
8	G	T7W E52 310	INDOOR CONTROLLER BOARD		1					I.B	
	G	T7W E66 310	INDOOR CONTROLLER BOARD			1				I.B	
	G	R01 N77 310	INDOOR CONTROLLER BOARD				1	1		I.B	

CITY MULTI

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Distributed in Oct. 2009 No. OC307 REVISED EDITION-D PDF 7
Distributed in Sep. 2008 No. OC307 REVISED EDITION-C PDF 7
Distributed in Jul. 2007 No. OC307 REVISED EDITION-B PDF 8
Distributed in Jul. 2006 No. OC307 REVISED EDITION-A PDF 8
Distributed in Apr. 2004 No. OC307 PDF 9
Made in Japan

New publication, effective Oct. 2009
Specifications subject to change without notice