MITSUBISHI ELECTRIC

Air-Conditioners For Building Application

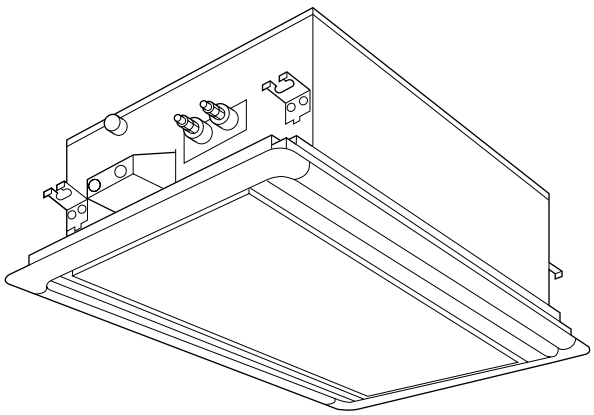
2001

TECHNICAL & SERVICE MANUAL

Series PLFY Ceiling Cassettes

<Indoor unit>

Models **PLFY-P20VLMD-A,PLFY-P63VLMD-A**
PLFY-P25VLMD-A,PLFY-P80VLMD-A
PLFY-P32VLMD-A,PLFY-P100VLMD-A
PLFY-P40VLMD-A,PLFY-P125VLMD-A
PLFY-P50VLMD-A



INDOOR UNIT

CONTENTS

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 cause the adverse effect on the same 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:

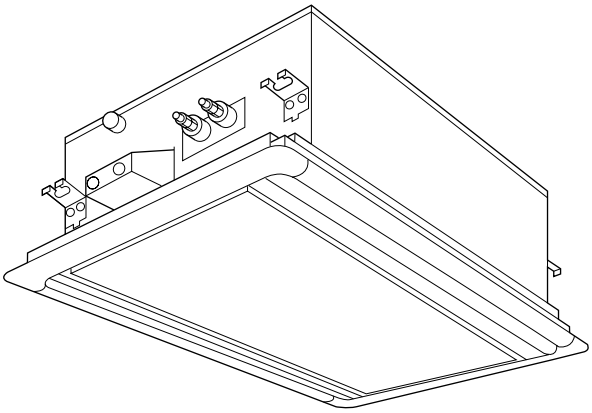
- **Do not use the existing refrigerant piping.**
  - The old refrigerant and refrigerator oil in the existing piping contains a large amount of chlorine which may cause the refrigerator oil of the new unit to deteriorate.
- **Use refrigerant piping made of C1220 (CU-DHP) phosphorus deoxidized copper 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 deteriorated.
  - 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 PLFY Ceiling Cassettes

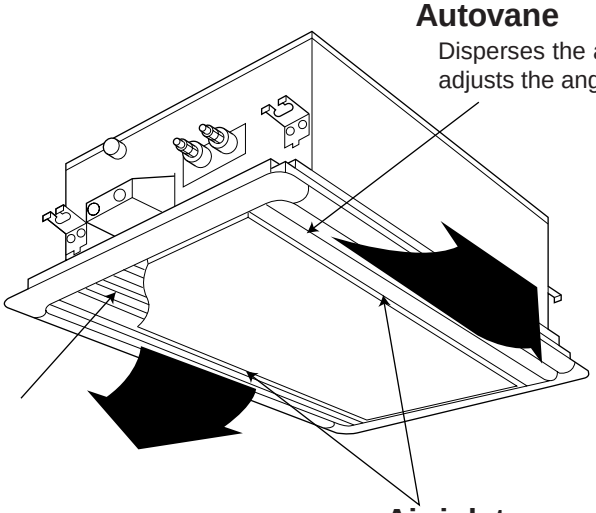


Indoor unit

Models	Cooling capacity/Heating capacity
	kW
PLFY-P20VLMD-A	2.2/ 2.5
PLFY-P25VLMD-A	2.8/ 3.2
PLFY-P32VLMD-A	3.6/ 4.0
PLFY-P40VLMD-A	4.5/ 5.0
PLFY-P50VLMD-A	5.6/ 6.3
PLFY-P63VLMD-A	7.1/ 8.0
PLFY-P80VLMD-A	9.0/ 10.0
PLFY-P100VLMD-A	11.2/ 12.5
PLFY-P125VLMD-A	14.0/ 16.0

2 PART NAMES AND FUNCTIONS

● **Indoor (Main) Unit**



Autovane

Disperses the airflow up and down and adjusts the angle of the airflow.

Long-life filter

Removes the sucked-in dust and dirt. Since the long-life filter is used as an air filter, it should be cleaned at the beginning of air-cooling and heating seasons. (During seasons with large amounts of dust and dirt, more frequent cleaning are recommended.)

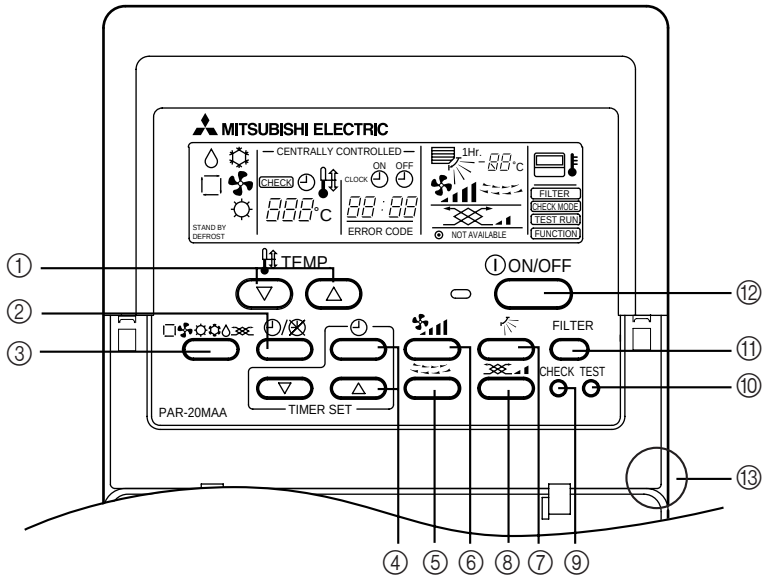
Air inlet

Sucks the ambient air in.

● **Remote controller** **[PAR-20MAA]**

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

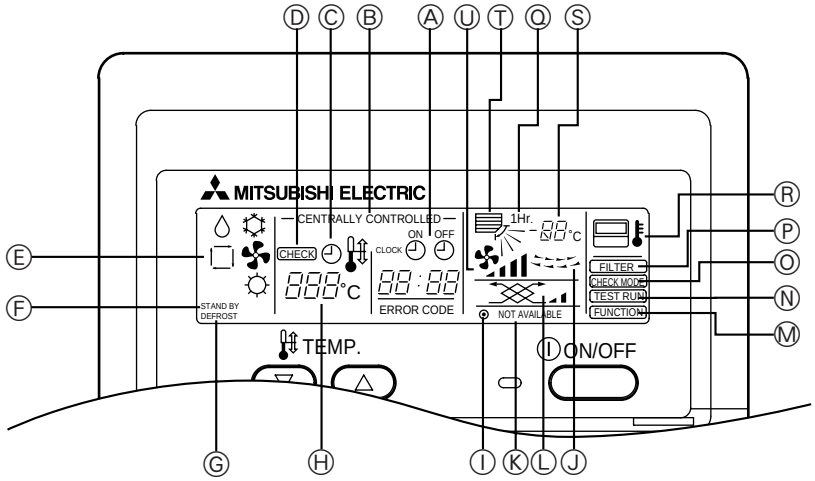
● **Operation buttons**



① [Room temperature adjustment] Button
② [Timer/continuous] Button
③ [Selecting operation] Button
④ [Time selection] Button
[Time-setting] Button
⑤ [Louver] Button
⑥ [Fan speed adjustment] Button
⑦ [Up/down airflow direction] Button
⑧ [Ventilation] Button
⑨ [Checking/built-in] Button
⑩ [Test run] Button
⑪ [Filter] Button
⑫ [ON/OFF] 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			PLFY-P20 VLMD-A	PLFY-P25 VLMD-A	PLFY-P32 VLMD-A	PLFY-P40 VLMD-A	PLFY-P50 VLMD-A	
Power source	Voltage	~V	220-240					
	Frequency	Hz	50					
Cooling capacity		kW	2.2	2.8	3.6	4.5	5.6	Note:1
Heating capacity		kW	2.5	3.2	4.0	5.0	6.3	Note:1
Power consumption	Cooling	kW	0.09		0.10	0.16		
	Heating	kW	0.08		0.09	0.15		
Current	Cooling	A	0.43		0.48	0.77		
	Heating	A	0.38		0.43	0.71		
External finish (Munsel No.)			Unit: Galvanized steel plate Panel: 0.70Y8.59/0.97					
Dimension	Height	mm	338<8>					Note:2
	Width	mm	768<1,060>			1,008<1,300>		Note:2
	Depth	mm	606<670>					Note:2
Net weight		kg	24<7>		25<7>	33.5<8>	35<8>	Note:2
Heat exchanger			Cross fin(Alminium plate fin and copper tube)					
Fan	Type		Sirocco fanX1			Sirocco fanX2		
	Airflow rate (Low-Middle2-Middle1-High)	m^3/min	6.0-6.5-7.3-8.0		6.5-7.0-7.8-8.5	9.0-10.5-11.5-12.5	10.0-11.0-12.0-13.0	
	External static pressure	Pa	0					
Motor	Type		Single phase induction motor					
	Output	kW	0.033			0.075		
Air filter			Synthetic fiber unwoven cloth filter(long life)					
Refrigerant pipe dimension	Gas(Flare)	mm	ø12.7				ø15.88	
	Liquid(Flare)	mm	ø6.35				ø9.52	
Drain pipe dimension			VP-25					
Noise level (Low-Middle2-Middle1-High)		dB(A)	28-30-33-35		29-31-34-36	29-32-34-36	32-34-36-38	

Item \ Model			PLFY-P63 VLMD-A	PLFY-P80 VLMD-A	PLFY-P100 VLMD-A	PLFY-P125 VLMD-A	
Power source	Voltage	~V	220-240				
	Frequency	Hz	50				
Cooling capacity		kW	7.1	9.0	11.2	14.0	Note:1
Heating capacity		kW	8.0	10.0	12.5	16.0	Note:1
Power consumption	Cooling	kW	0.22	0.23	0.25	0.28	
	Heating	kW	0.21	0.22	0.24	0.27	
Current	Cooling	A	1.05	1.10	1.20	1.35	
	Heating	A	1.00	1.05	1.15	1.33	
External finish (Munsel No.)			Unit: Galvanized steel plate Panel: 0.70Y8.59/0.97				
Dimension	Height	mm	338<8>				Note:2
	Width	mm	1,358<1,650>		1,708<2,000>		Note:2
	Depth	mm	606<670>				Note:2
Net weight		kg	39<10>	41<10>	56<11.5>		Note:2
Heat exchanger			Cross fin(Alminium plate fin and copper tube)				
Fan	Type		Sirocco fanX2		Sirocco fanX4		
	Airflow rate (Low-Middle2-Middle1-High)	m^3/min	13.0-14.0-16.0-18.0	15.0-17.0-19.0-21.0	21.0-23.0-26.0-29.0	24.0-27.0-30.0-33.0	
	External static pressure	Pa	0				
Motor	Type		Single phase induction motor				
	Output	kW	0.078		0.078X2		
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)		dB(A)	32-34-37-39	36-38-41-43	37-39-41-43	40-42-44-46	

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.The figure in < > indicates panel´s.

3-2. Electrical parts specifications

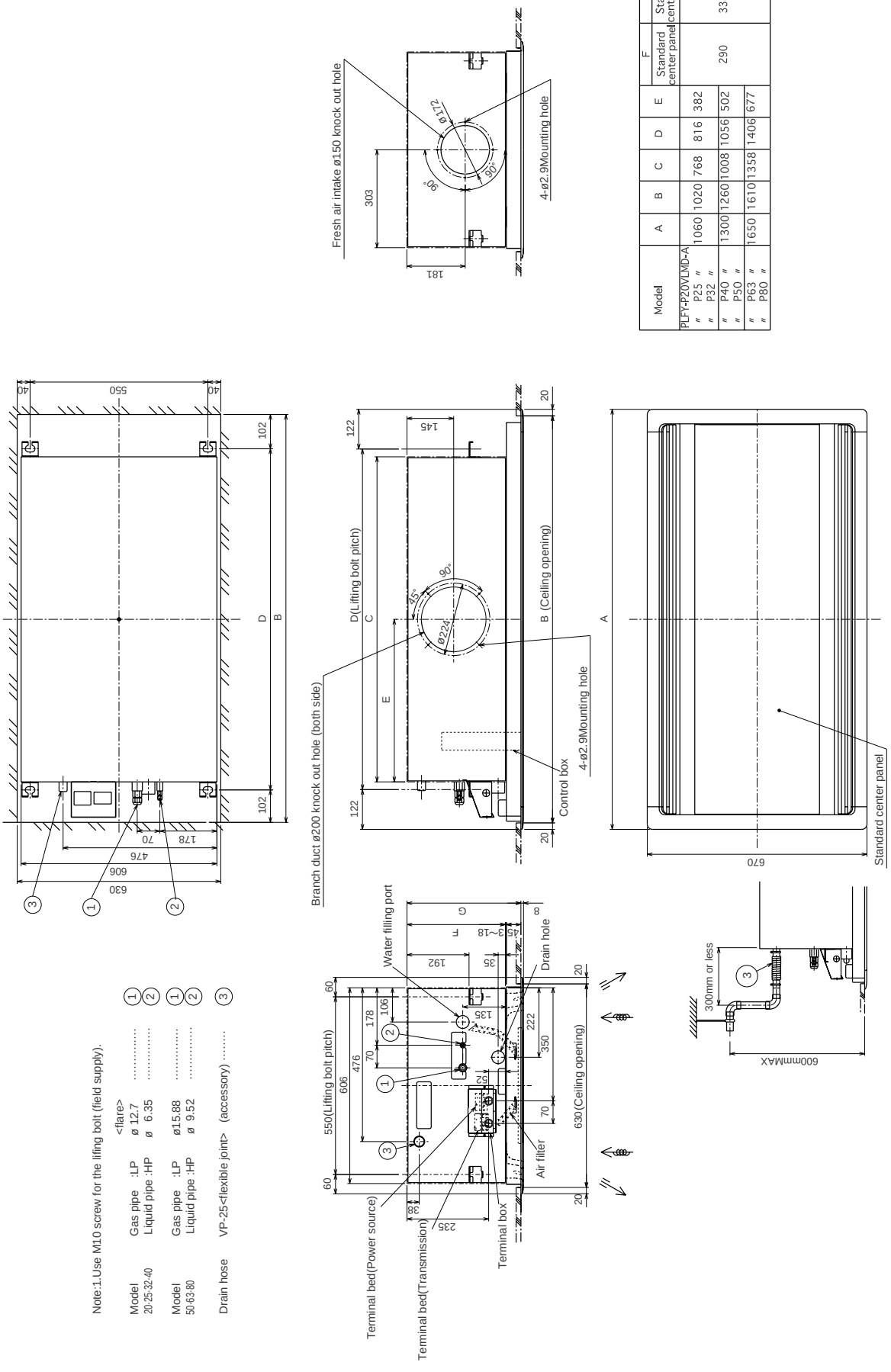
Parts name \ Model	Symbol	PLFY-P20 VLMD-A	PLFY-P25 VLMD-A	PLFY-P32 VLMD-A	PLFY-P40 VLMD-A	PLFY-P50 VLMD-A	PLFY-P63 VLMD-A	PLFY-P80 VLMD-A	PLFY-P100 VLMD-A	PLFY-P125 VLMD-A
Tranrsformer	T	(Primary) 50/60Hz 220-240V (Secondry) (18.4V 1.7A)								
Room temperature thermistor	TH21	Resistance 0˚C/15kΩ,10˚C/9.6kΩ˚C/6.3kΩ,25˚C/5.4kΩ,30˚C/4.3kΩ,40˚C/3.0kΩ								
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 con-troller board)	FUSE	250V 6.3A								
Fan motor (with Inner-thermostat)	MF1,2	4-pole OUTPUT 33W D094P35MW			4-pole Output 75W D104P85MW		4-pole Output 78W D104P95MW			
Inner-thermostat (Fan motor)		OFF 130˚C±5˚C ON 90˚C±20˚C								
Fan motor capacitor	C1	2.5μFX440V			5.0μF X440V	4.0μF X440V	6.0μF X440V	5.0μFX440V		
Vane motor (with limit switch)	MV	MULB49Z 2.5/2W 4.99/5.99R.P.M								
Drain-up mechanism	DP	PJV-0720 INPUT 8/7.5W 24 ℓ /Hr								
Drain sensor	DS	Heater resistance 82Ω/25˚C Thermistor resistance 0˚C/15kΩ,10˚C/9.6kΩ,20˚C/6.3kΩ,25˚C/5.4kΩ,30˚C/4.3kΩ,40˚C/3.0kΩ								
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) 300V 10A								

4 OUTLINES AND DIMENSIONS

Indoor Unit PLFY-P20·25·32·40·50·63·80VLMD-A

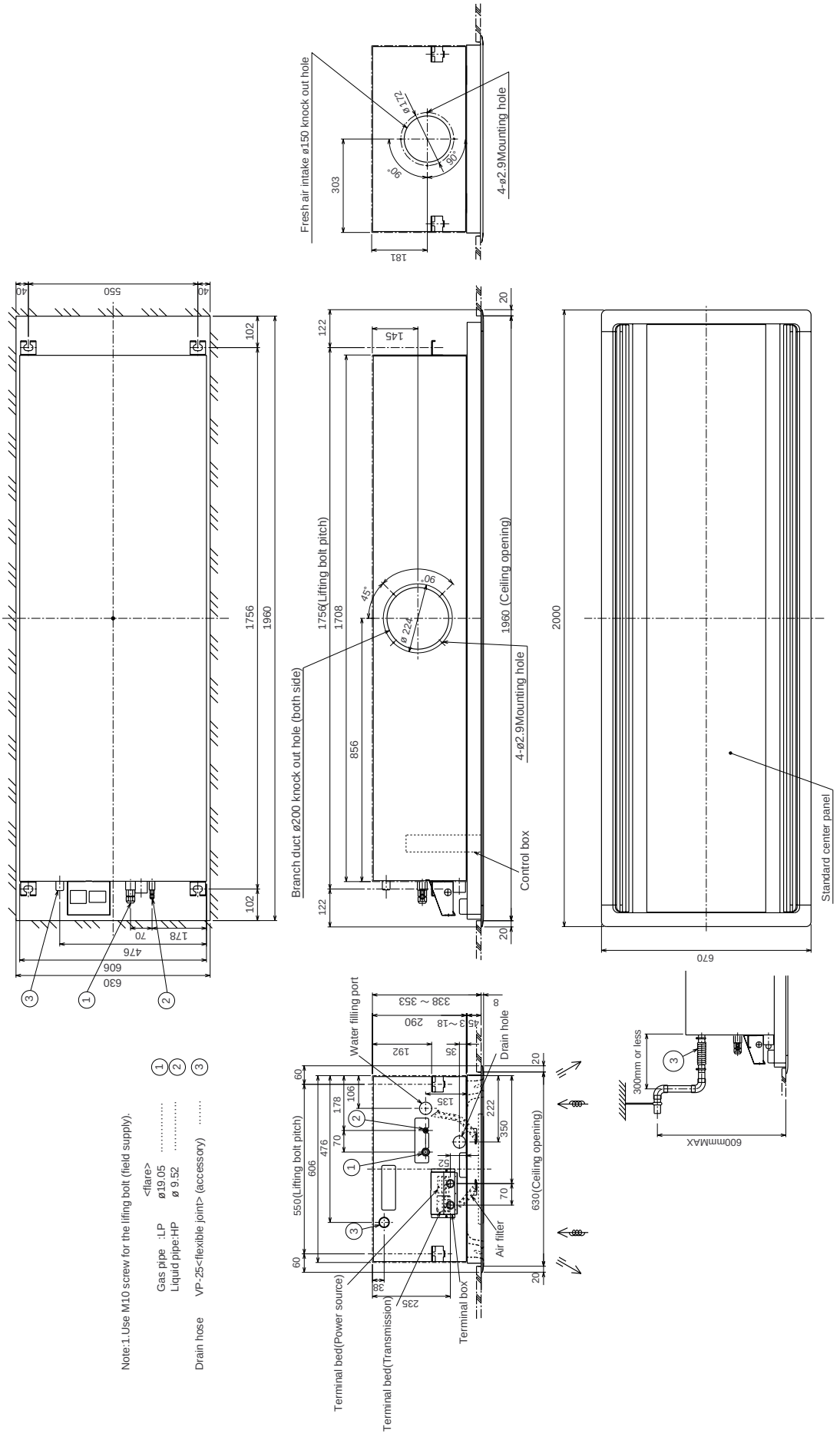
Unit : mm

Model	A	B	C	D	E	F Standard center panel	G Standard center panel
PLFY-P20VLMD-A	1060	1020	768	816	382	290	338~353
〃 P25 〃							
〃 P32 〃							
〃 P40 〃	1300	1260	1008	1056	502		
〃 P50 〃							
〃 P63 〃	1650	1610	1358	1406	677		
〃 P80 〃							

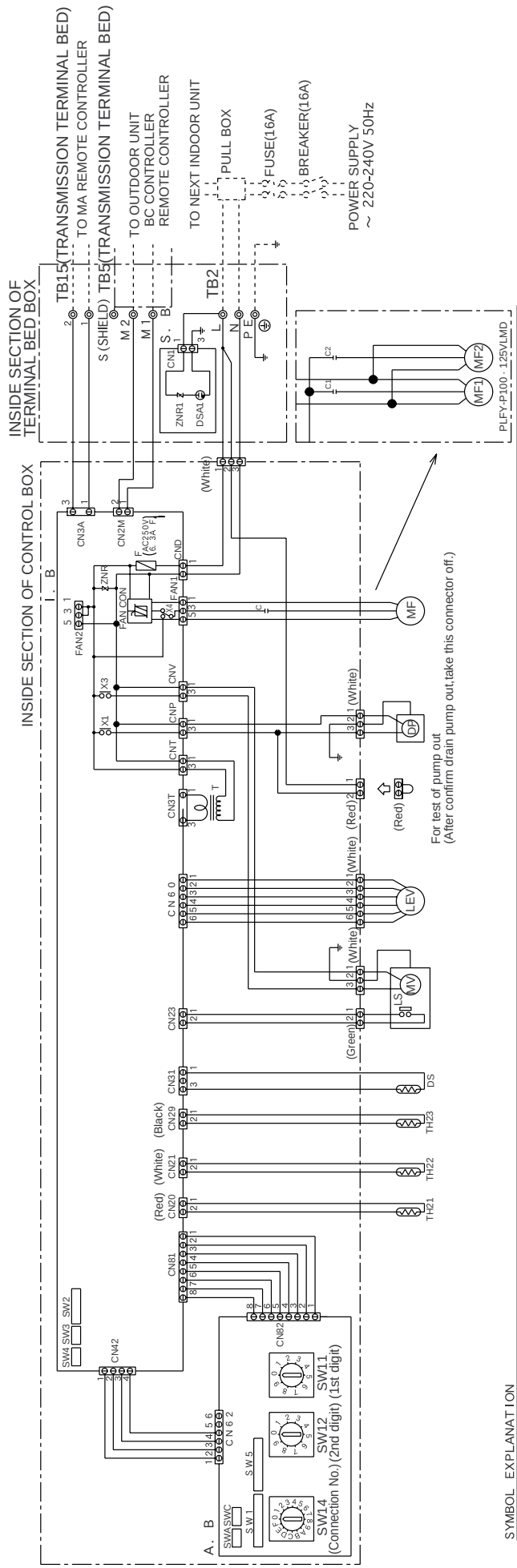


Indoor Unit PLFY-P100·125VLMD-A

Unit : mm



5 WIRING DIAGRAM



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.

*Capacitor

MODELS	20/25/32 2.5μF
MODELS	40/80 5.0μF
MODEL	50 4.0μF
MODEL	63 6.0μF
MODELS	100/125 5.0μF X 2

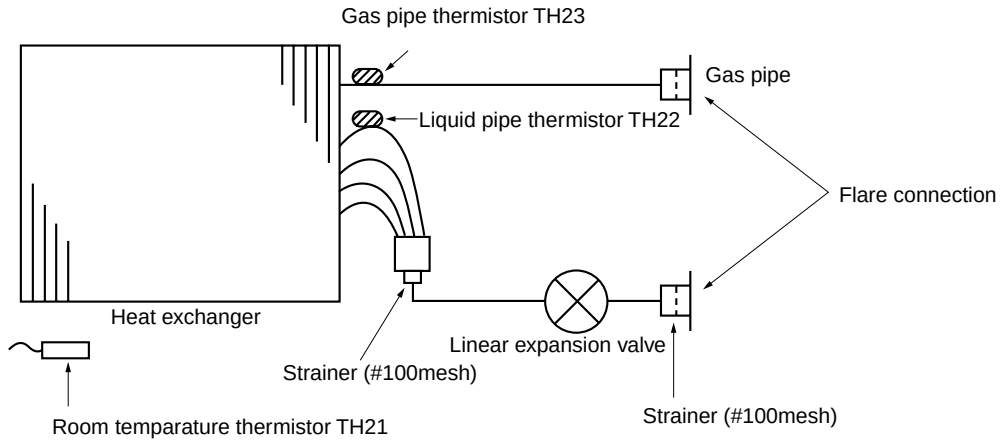
SYMBOL EXPLANATION

SYMBOL	NAME
MF,MF1,MF2	Fan motor
C,C1,C2	*Capacitor(for MF,MF1·MF2)
I.B	Indoor controller board
A.B	Address board
TB2	Power source terminal bed
TB5	Transmission terminal bed
TB15	Transmission terminal bed
F	Fuse AC250V 6.3AF
T	Transformer
DP	Drain pump

SYMBOL	NAME
LEV	Electronic linear expan. valve
S.B	Surge absorber board
LS	Limit switch (MV built in)
MV	Motor for vane (with limit switch)
DS	Drain sensor
TH21	Thermistor (inlet temp.detection)
TH22	Thermistor (piping temp.detection/liquid)
TH23	Thermistor (piping temp.detection/gas)
SW11(A.B)	Switch (1st digit address set)
SW12(A.B)	Switch (2nd digit address set)

SYMBOL	NAME
SW14(A.B)	Switch (connection No.set)
X1,X3,X4	Aux.relay
SW1(A.B)	Switch(for mode selection)
SW2(I.B)	Switch(for capacity code)
SW3(I.B)	Switch(for mode selection)
SW4(I.B)	Switch(for model selection)
SW5(A.B)	Switch(for voltage selection)
SWA(A.B)	Switch(optional parts)
SWC(A.B)	Switch(optional parts)

6 REFRIGERANT SYSTEM DIAGRAM



Item \ Capacity	PLFY-P20,25,32,40VLMD-A	PLFY-P50,63,80VLMD-A	PLFY-P100,125VLMD-A
Gas pipe	Ø12.7<1/2F>	Ø15.88<5/8F>	Ø19.05<3/4F>
Liquid pipe	Ø6.35<1/4F>	Ø9.52<3/8F>	Ø9.52<3/8F>

7 TROUBLE SHOOTING

7-1. How to check the parts

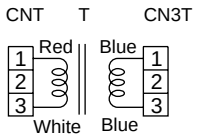
Room temparature thermistor (TH21) / Liquid pipe thermistor (TH22) / Gas pipe thermistor (TH23)

Disconnect the connector, then measure the resistance using a tester.
(Sorrounding temperature 10°C~30°C)

Normal	Abnormal
4.3kΩ~9.6kΩ	Open or short

(Refer to the thermistor)

Trans



Disconnect the connector and measure the resistance using a tester.

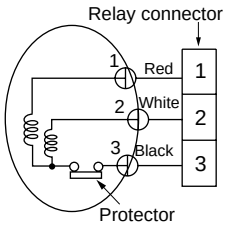
	Normal	Abnormal
CNT(1)-(3)	App.45Ω	Open or short
CN3T(1)-(3)	App.1Ω	

Vane motor

Measure the resistance between the terminals using a tester.
(Surrounding temperature 20˚C~30˚C)

Normal	Abnormal
App.18kΩ	Open or short

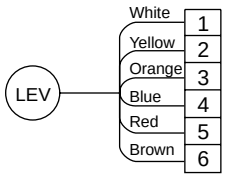
Fan motor



Measure the resistance between the terminals using a tester.

Motor terminal or Relay connector	Normal			Abnormal
	25,25,32	40,50	63,80,100,125	
Red-Black	109.6Ω	43.1Ω	40.5Ω	Open or short
White-Black	141.6Ω	53.6Ω	48.8Ω	

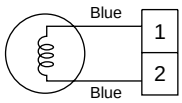
Linear expansion valve



Disconnect the connector then measure the resistance valve using a tester.
Refer to the next page for a detail.

Normal				Abnormal
(1)-(5) White-Red	(2)-(6) Yellow-Blown	(3)-(5) Orange-Red	(4)-(6) Blue-Brown	Open or short
150Ω ±10%				

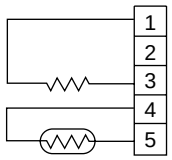
Drain-up mechanism



Measure the resistance between the terminals using a tester.(Surrounding temperature : 20˚C~30˚C)

Normal	Abnormal
0.43kΩ	Open or short

Drain sensor



Measure the resistance between the terminals using a tester.

	Normal	Abnormal
(1)-(3)	82Ω	Open or short
(4)-(5)	4.3kΩ~9.6kΩ	

(Refer to the thermistor)

<Thermistor Characteristic graph>

Thermistor for lower temperature

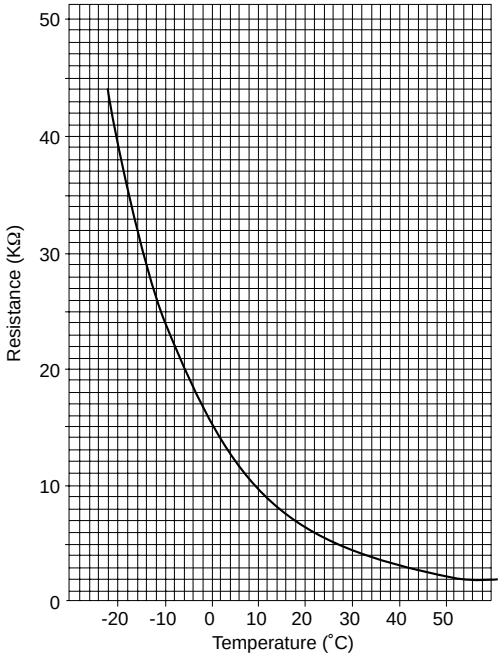
Room temparature thermistor(TH21)
Liquid pipe thermistor(TH22)
Gas pipe temparature thermistor(TH23)
Drain sensor(DS)

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

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

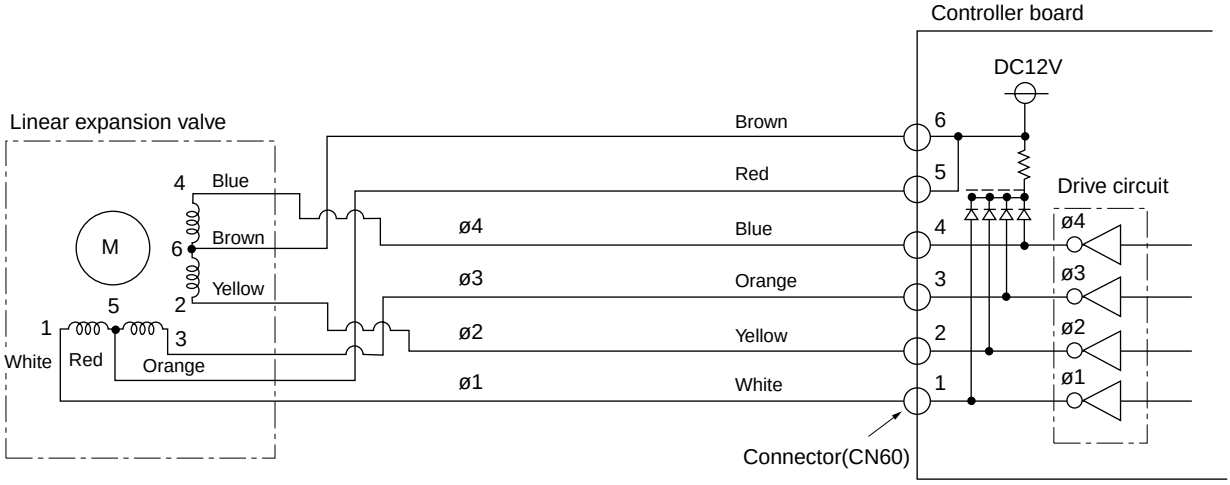
0˚C	15kΩ
10˚C	9.6kΩ
20˚C	6.3kΩ
25˚C	5.2kΩ
30˚C	4.3kΩ
40˚C	3.0kΩ

< Thermistor for lower temperature >



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 expasion valve>



<Output pulse signal and the valve operation>

Output (Phase)	Output			
	1	2	3	4
ø1	ON	OFF	OFF	ON
ø2	ON	ON	OFF	OFF
ø3	OFF	ON	ON	OFF
ø4	OFF	OFF	ON	ON

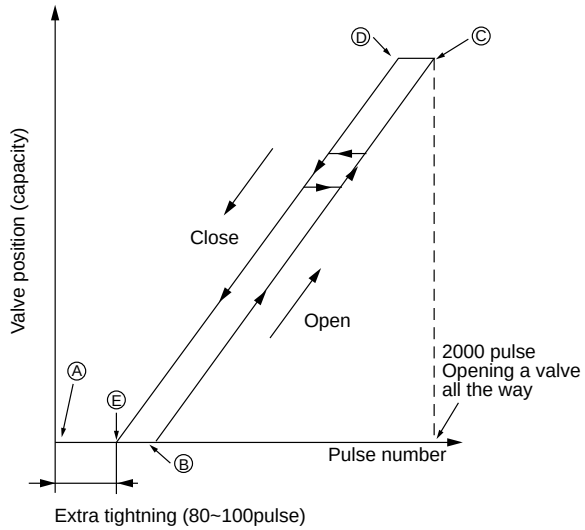
Closing a valve : 1 → 2 → 3 → 4 → 1
Opening a valve : 4 → 3 → 2 → 1 → 4

The output pulse shifts in above order.

*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

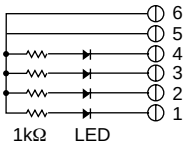
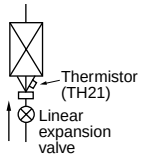


* When the switch is turned on, 2200 pulse closing valve signal will be send till it goes to Ⓐ point in order to define the valve position.

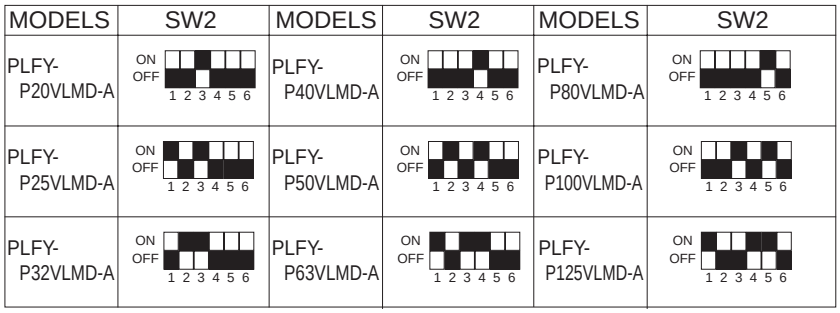
When the valve move smoothly, there is no noise or vibration occurring from the linear expansion valve : however, when the pulse number moves from Ⓔ to Ⓐ or when the valve is locked, more noise can be heard than normal situation.

* 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

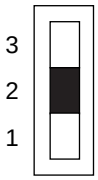
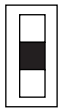
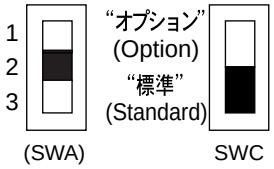
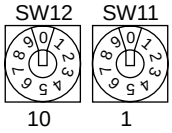
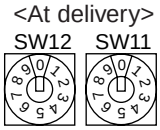
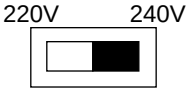
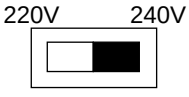
Symptom	Check points	Countermeasures
Operation circuit failure of the micro processor.	Disconnect the connector on the controller board, then connect LED for checking.  Pulse signal will be sent out for 10 seconds as soon as the main switch is turn on. If there is LED with lights on or lights off, it 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 150Ω ± 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.

7-2. FUNCTION OF DIP-SWICH

<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">Remarks</th></tr>
<tr><th>ON</th><th>OFF</th></tr>
<tr><td rowspan="10">SW1
Mode
Selection</td><td>1</td><td>Thermistor<Intake temperature detection>position</td><td>Built-in remote controller</td><td>Indoor unit</td><td rowspan="10">Address board
<At delivery>
 
</td></tr>
<tr><td>2</td><td>Filter crogging detection</td><td>Provided</td><td>Not provided</td></tr>
<tr><td>3</td><td>Filter life</td><td>2,500hr</td><td>100hr</td></tr>
<tr><td>4</td><td>Air intake</td><td>Effective</td><td>Not effective</td></tr>
<tr><td>5</td><td>Remote indication switching</td><td>Thermostat ON signal indication</td><td>Fan output indication</td></tr>
<tr><td>6</td><td>Humidifier control</td><td>Always operated while the heat is ON</td><td>Operated depends on the condition</td></tr>
<tr><td>7</td><td>Air flow st</td><td>Low</td><td>Extra low</td></tr>
<tr><td>8</td><td>Heat thermostat OFF</td><td>Setting air flow</td><td>Reset to SW1-7</td></tr>
<tr><td>9</td><td>Auto reset function</td><td>Effective</td><td>Not effective</td></tr>
<tr><td>10</td><td>Power 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"> 
</td><td>Indoor controller board
Set while the unit is off.
<At delivery>
Set for each capacity.</td></tr>
<tr><td rowspan="8">SW3
Function
Selection</td><td>1</td><td>Heat pump/Cool only</td><td>Cooling only</td><td>Heat pump</td><td rowspan="8">Indoor controller board
Set while the unit is off.
<At delivery>
 

(Note) At cooling mode, each angle can be used only 1 hour.</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 holizontal angle</td><td>Second setting</td><td>First setting</td></tr>
<tr><td>6</td><td>Vane cooling limit angle setting</td><td>Horizontal angle</td><td>Down blow</td></tr>
<tr><td>7</td><td>—</td><td>—</td><td>—</td></tr>
<tr><td>8</td><td>Heating 4deg up</td><td>Not effective</td><td>Effective</td></tr>
<tr><td>SW4
Unit
Selection</td><td>1~4</td><td colspan="3"> 
</td><td>Indoor controller board
Set while the unit is off.
<At delivery>
 
</td></tr>
</table>

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

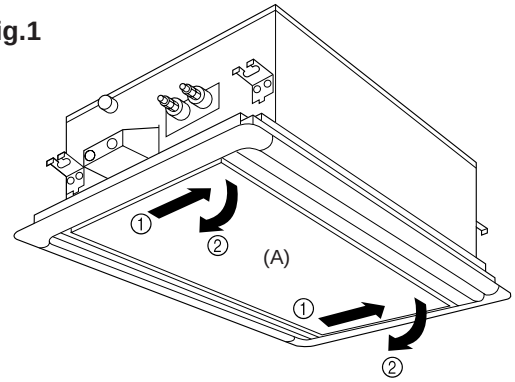
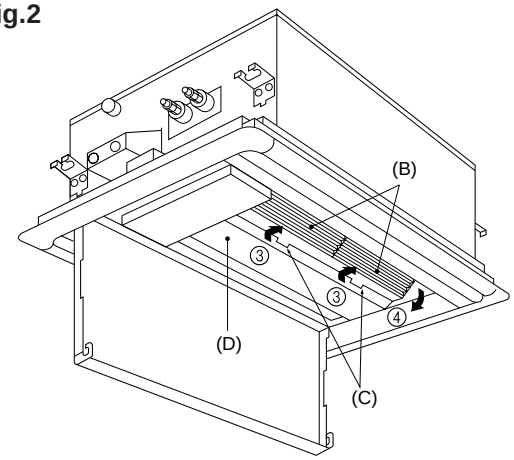
Switch	Pole	Operation by switch	Remarks
SWA Option Note:1	1~3	 * As this switch is used by interlocking with SWC,refer to the item of SWC for detail	Address board <At delivery> 
SWC Option Note:1	2	 When attach the optional high performance filter elements (filter casement) to the unit, be sure to attach it to the option side in order to prevent the air-flow reducing.	Address board <At delivery> 
SW11 1st digit address setting SW12 2nd degit address setting Note:2	Rotary switch	 Address setting should be done when network remote controller (PAR-F25MA) is being used.	Address board Address can be set while the unit is stopped. <At delivery> 
SW14 Connection No. setting Note:2	Rotary switch	 This is the switch to be used when the indoor unit is operated with R2 series outdoor unit as a set.	Address board <At delivery> 
SW5 Voltage Selection Note:2	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 <At delivery> 

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. SERVICE PANEL and FILTER

Be careful on removing heavy parts.

OPERATING PROCEDURE	PHOTOS&ILLUSTRATIONS
1.Removing the service panel (A) (1) Slide the service panel (A) in the direction of the arrow ① while lifting it.(depending on the local installation,the slide direction is reverse) (2) After sliding, if it is opened in direction ②, the service panel (A) drops down as shown in fig. 2. (3) Remove the service panel (A) from the two pins. (Be careful not to allow it to drop). **2.Removing the filter (B)** (1) Move the fixing claws (C) of the filter (B) in the direction of the arrow ③. (Pull them while lifting them up.) (2) After removing the fixing claws (C) of the filter (B) from the filter support plate (D), pull out the filter (B) in the direction of the arrow ④.	**fig.1**  **fig.2** 

8-2. CONTROL BOX

Be careful on removing heavy parts.

OPERATING PROCEDURE	PHOTOS&ILLUSTRATIONS

1.Remove the service panel and filter with procedure 8-1.

2.Removing the connector cover (A).

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

* At this stage, the following servicing is possible. (It is even possible with the filter attached.)

1 Operation and check of the switches (listed below) which are on the address board (B).
- Rotary switches SW11, 12 Address setting
- Rotary switch SW14·····Branch port setting
- Dip switch SW1·····Function change (main)
- Slide switches SWA, C·····Airflow rate change

2 Connection check and local connection of lead wires (listed below) which are connected to the control box (C).
- Power supply lead wire (Connected at the factory)
- Drain pump lead wire (Connected at the factory)
- LEV lead wire (Connected at the factory)
- Panel vane motor lead wire (Connected locally)
- Panel limit switch lead wire (Connected locally)
- Drain pump trial operation connector (Connected locally)

3.Removing the control box (C)

(1) Remove the fixing screws (three) of the filter fixed plate (D). (Fig. 2)
(2) Also remove the fixing screws (three) of the control box cover (F) and remove it. (Fig. 3)

* At this stage, the following servicing is possible.

1 Operation and check of the switches (listed below) which are on the control board.
- Dip switch SW2·····Capacity code setting
- Dip switch SW3·····Function change (auxiliary)
- Dip switch SW4·····Model code setting

And the address board exchange.

2 Connection check of the lead wires (listed below) which are connected to the control box
- Power supply lead wire
- Remote control communication lead wire
- Fan motor lead wire
- LEV lead wire
- Drain pump lead wire
- Drain sensor lead wire
- Intake air sensor lead wire
- Liquid piping sensor lead wire
- Gas piping sensor lead wire
- Power supply transformer lead wire
- Address board lead wire
- Panel vane motor lead wire
- Panel limit switch lead wire

fig.1

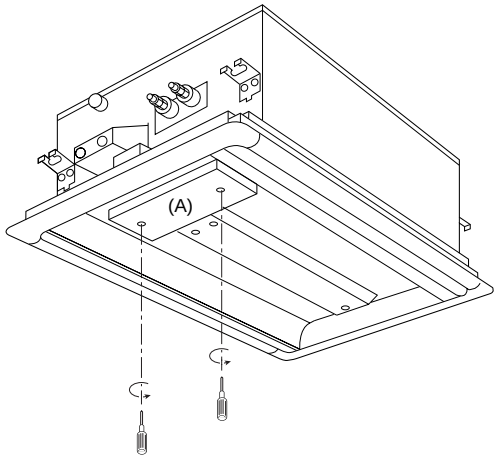


fig.2

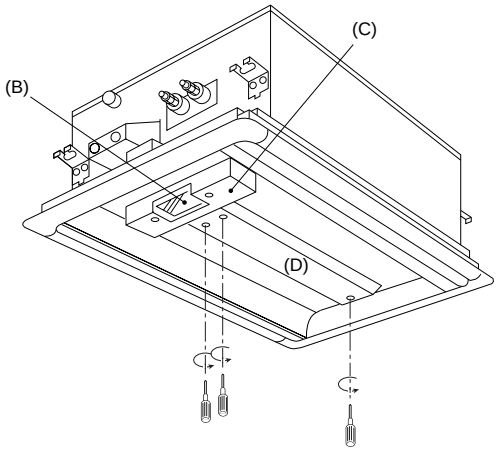
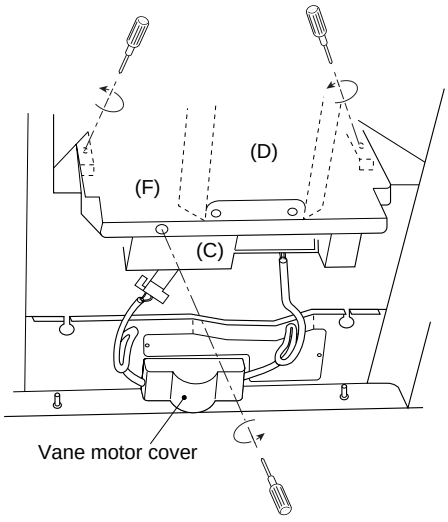


fig.3



CONTROL BOX

Be careful on removing heavy parts.

OPERATING PROCEDURE	PHOTOS&ILLUSTRATIONS

3.Removing the control box (C)

(3) If the control box (C) fixing screws (two) are removed, the control box (C) is left hanging from the main unit by the falling prevention claws.If the control box (C) is lifted the claws are released and the control box (C) can be lowered down.Also, in order to completely lower the control box (C), it is necessary to remove the following lead wire connectors.

Control box
- Power supply lead wire connector (3P : White)
- Drain pump lead wire connector (3P : White)
- LEV lead wire connector (6P : White)
- Panel vane motor lead wire connector (4P : White)
- Panel limit switch lead wire connector (2 : Green)

Control Board
- Remote control communication lead wire connector (2P : Blue)
- Drain sensor lead wire connector (5P : Red)
- Intake air sensor lead wire connector (2P : Red)
- Liquid piping sensor lead wire connector (2P : White)
- Gas piping sensor lead wire connector (2P : Black)
- Fan motor lead wire connector ····· motor side connector (Black)

(4) Remove the control box earth wire (green/yellow) from the control box (C), and remove the control box (C).

* At this stage, the following servicing is possible.

1 Control board exchange
2 Condenser exchange
3 Power supply transformer exchange

fig 4

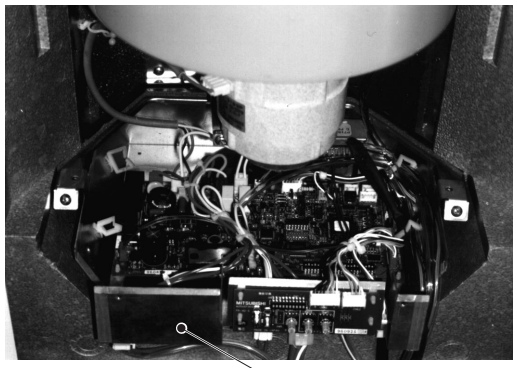


fig.5

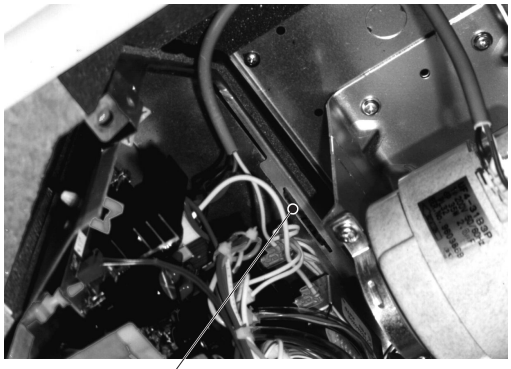


fig.6

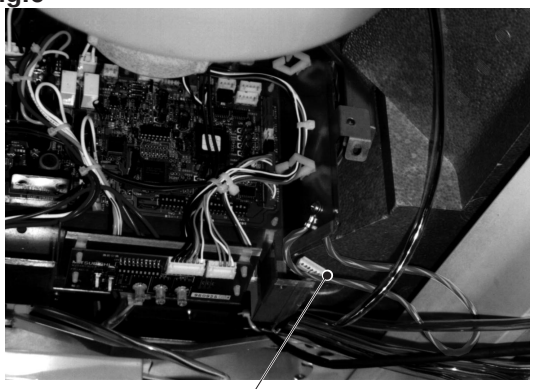
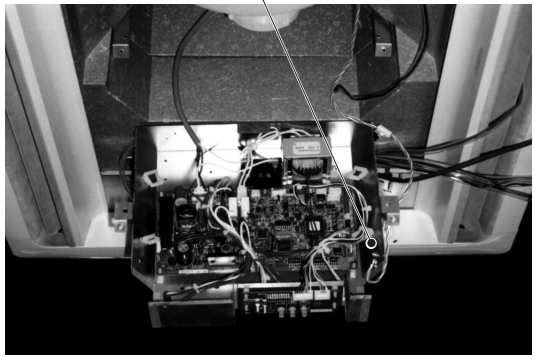


fig.7



8-3. FAN and FAN MOTOR

Be careful on removing heavy parts.

OPERATING PROCEDURE	PHOTOS&ILLUSTRATIONS

1.Remove the service panel and filter with procedure 8-1.

2.Removing the filter fixed plate (A)

Remove the fixing screws (three) of the filter fixed plate(A) and remove it. (Fig.1)

3.Removing the under-fan-casing (C)

Push the fixing claws of the under-fan-casing(C) and remove it.

4.Removing the fan motor (D)

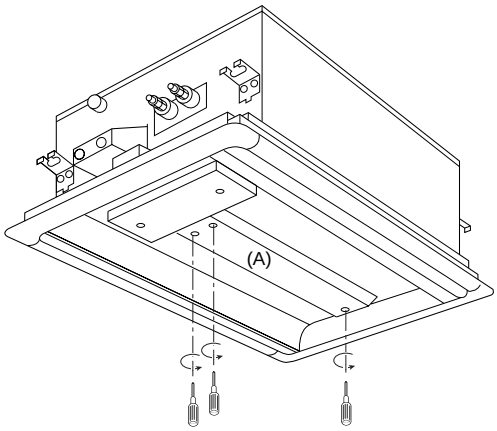
Remove the lead wire connectors which are connected to the fan motor (D), and remove the motor fixtures (E) (two for each motor.Each motor is screwed down in two.)

Note:There are no falling prevention measures for the fan motor.In order to prevent the fan motor from falling when it is removed, the work is to be performed by two people. (It is dangerous to do this alone.)

5.Removing the sirocco fan (F)

Remove the fan motor shaft fixing screw (one for each fan), and remove the sirocco fan (F).

fig 1



Fixing claws (Four for each casing)

fig.2

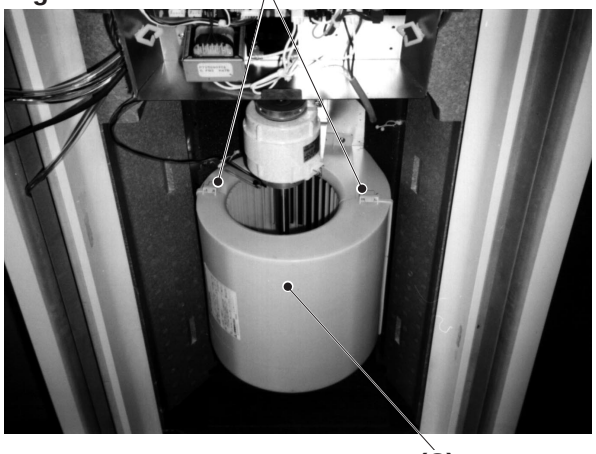
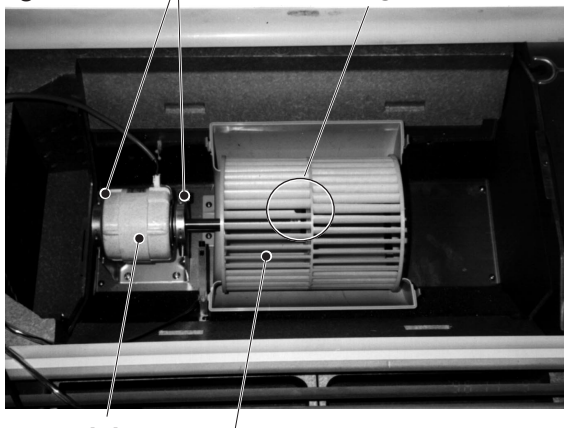
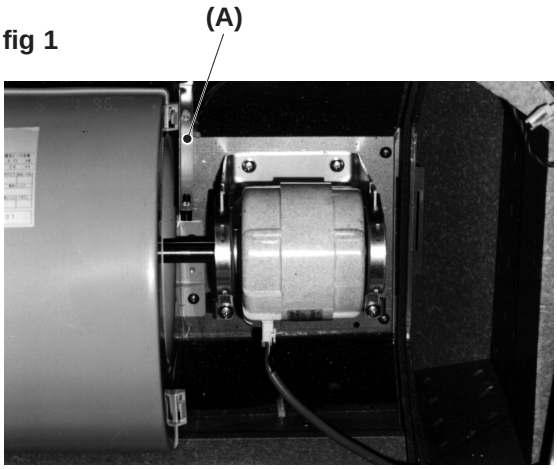


fig 3



8-4. THERMISTOR (Intake air temperature detection)

Be careful on removing heavy parts.

OPERATING PROCEDURE	PHOTOS&ILLUSTRATIONS
1.Remove the service panel and filter with procedure 8-1. **2.Remove the control box cover with the procedure up to 3. (2) of 8-2.** **3.Removing the thermistor** (1) Remove the fixing screw (one) of the thermistor installation plate (A), and pull down the thermistor with installation plate. (2) Remove the thermistor lead wire which is connected to the control board.	**fig 1** 

8-5. THERMISTOR (Liquid and gas piping temperature detection)

Be careful on removing heavy parts.

OPERATING PROCEDURE	PHOTOS&ILLUSTRATIONS

1.Remove the service panel and filter with procedure 8-1.

2.Remove the control box with procedure 8-2.

3.Removing the decorative panel frame (A)

(1) Loosen the panel fixing staired screws (four), and the panel frame (A) is left hanging in midair. (Fig. 1)

(2) The panel frame (A) is pushed (or pulled) in the length direction, the staired screws come out of the pear-shaped holes in the panel frame (A), and the panel fame (A) can be removed.

4.Removing the drain pan (B)

(1) Remove the screws which are fixing the drain pan fixing plates (C) (two), and remove the plates.

(2) Remove the drain pan falling prevention parts. (fixing pin (D), fixing plate (E) and filter fixing plate installation plate (F).)

(3) Loosen the rubber plug (G) which in is the drain socket of the drain pan (B), and drain the water which is still in.

(4) Pull down the drain pan (B).

Note:Take it out by moving a little in all four directions.The drain pan is made from polystyrene.Handle it carefully so that it is not broken.

5.Removing the partition plate (H).

Note:Take it out by moving a little in all four directions.The partition plate is made from polystyrene.Handle it carefully so that it is not broken.

fig 1

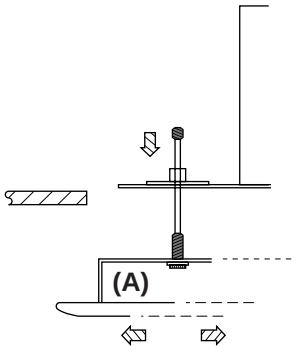


fig.2

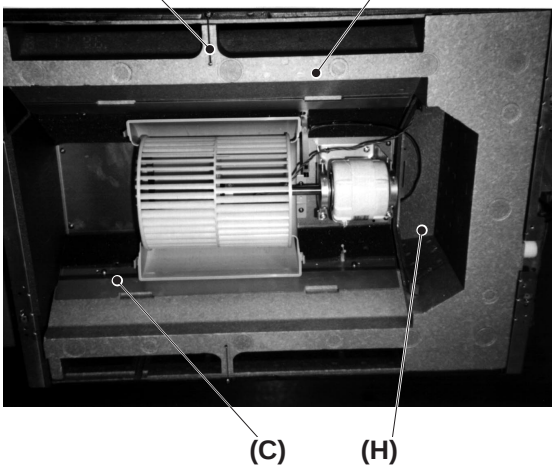
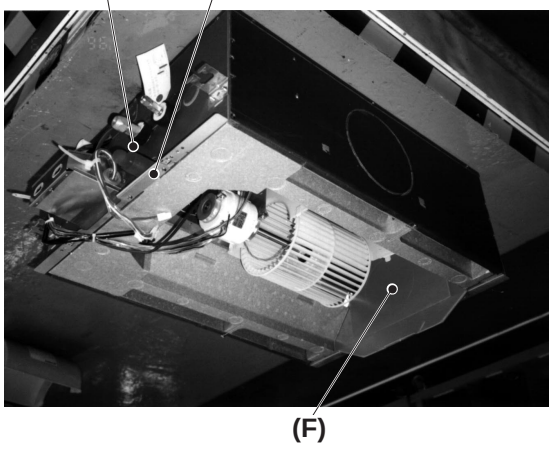
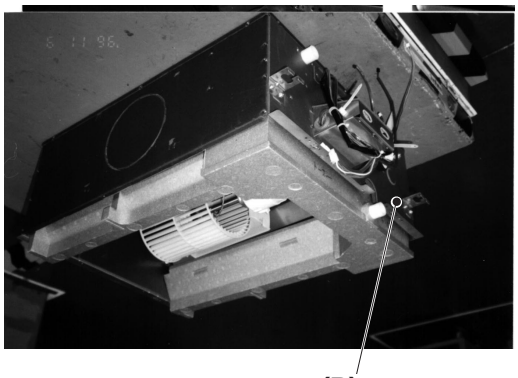
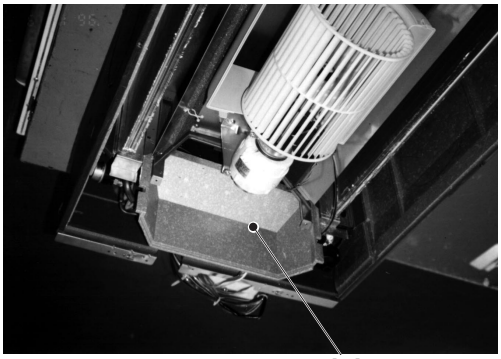
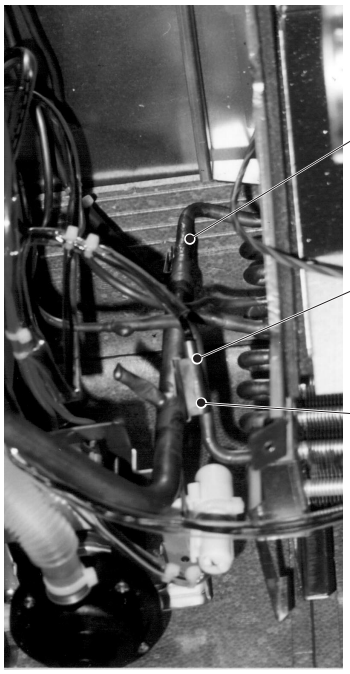


fig 3



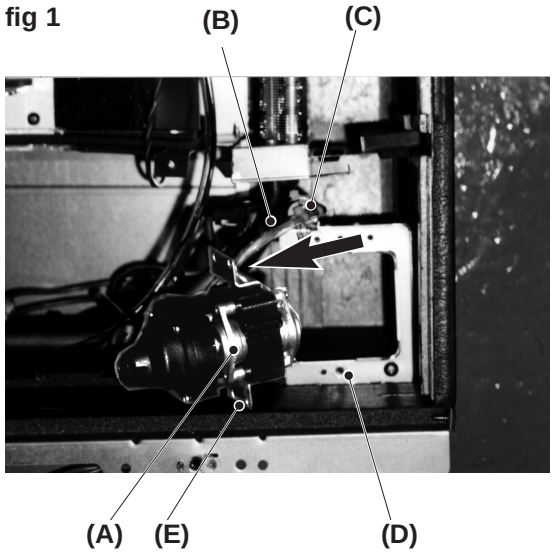
THERMISTOR (Liquid and gas piping temperature detection)

Be careful on removing heavy parts.

OPERATING PROCEDURE	PHOTOS&ILLUSTRATIONS
6.Removing the thermistors Remove the thermistors (K and L) from the thermistor holders (I and J) which are installed on the steel piping (liquid piping ····· fine piping, gas piping ····· thick piping).	**fig 4**  (B) **fig 5**  (H) **fig 6**  (J) (L) (K) (I)

8-6. DRAIN PUMP and DRAIN SENSOR

Be careful on removing heavy parts.

OPERATING PROCEDURE	PHOTOS&ILLUSTRATIONS
1.Remove the service panel and filter with procedure 8-1. **2.Remove the controle box with procedure 8-2.** **3. Remove the decorative panel frame, drain pan and partition plate with the procedure up to 3.~5. of 8-5.** **4.Removing the drain pump(A)** (1) Cut the drain hose fixing binder(C) , which hose is connected to the drain pump (A) (2) Remove the fixing screws (two) which fix the bracket (E) to the unit fixtures (D), and remove the drain pump (A) from the main unit.	**fig 1** 

8-7. LEV and HEAT EXCHANGER

Be careful on removing heavy parts.

OPERATING PROCEDURE	PHOTOS&ILLUSTRATIONS

1.Remove the service panel and filter with procedure 8-1.

2.Remove the controle box with procedure 8-2.

3. Remove the decorative panel frame, drain pan and partition plate with the procedure up to 3.~5. of 8-5.

4.Removing the LEV driving motor (B)
Remove the LEV driving motor (B) with a double spanner.

5.Removing the heat exchanger (C)
After removing the liquid piping connection flare (D) and gas piping connection flare (E), lower the unit and remove the heat exchanger (C).

(1) Remove the non-piping side frame (F).
(Secured by seven screws.)
(2) Remove the side frames (G and H).
(secured by seven screws each.)
(3) Remove the piping side frame (I) and the piping fixing plate (J).
(The frame (I) is secured by three screws and the piping fixing plate (J) by two screws.)
(4) Slide the heat exchanger (C) towards the non-piping side, and remove it from the ceiling (K) hanging holes.

fig 1

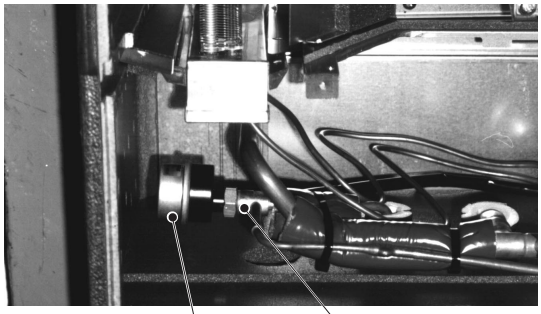


fig 2

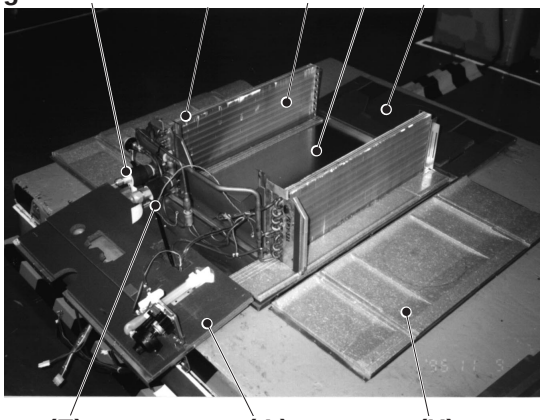


fig 3

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