

July 2006

No. OC310
REVISED EDITION-A

TECHNICAL & SERVICE MANUAL

Series PKFY Wall Mounted **R410A** / **R407C** / **R22**

<Indoor unit>
[Model names]

PKFY-P32VGM-E

PKFY-P40VGM-E

PKFY-P50VGM-E

[Service Ref.]

PKFY-P32VGM-E
PKFY-P40VGM-E
PKFY-P50VGM-E

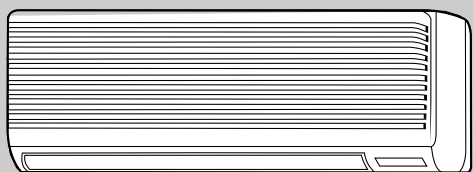
Revision:

- RoHS PARTS LIST is added.
- Some descriptions have been modified.

- Please void OC310.

Note:

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



Indoor unit

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1

SAFETY PRECAUTION

CAUTIONS RELATED TO NEW REFRIGERANT

Cautions for units utilizing refrigerant R407C

Do not use the existing refrigerant piping.

The old refrigerant and lubricant in the existing piping contains a large amount of chlorine which may cause the lubricant deterioration of the new unit.

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.

Use "low residual oil piping"

If there is a large amount of residual oil (hydraulic oil, etc.) inside the piping and joints, deterioration of the lubricant will result.

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.

Store the piping to be used during installation indoors with keep 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 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.

Use ESTR, ETHER or HAB as the lubricant to coat flares and flange connection parts.

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

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

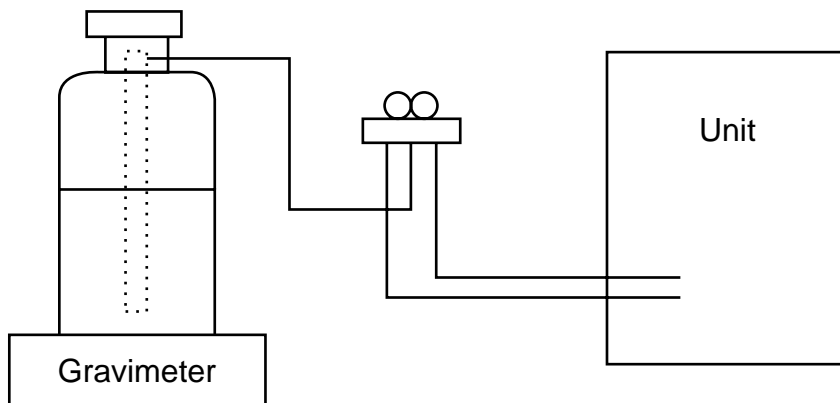
[1] Cautions for service

- After recovering the all 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

- ① Direct 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	·Only for R407C.
		·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

Do not use the existing refrigerant piping.

The old refrigerant and lubricant in the existing piping contains a large amount of chlorine which may cause the lubricant deterioration of the new unit.

Use "low residual oil piping"

If there is a large amount of residual oil (hydraulic oil, etc.) inside the piping and joints, deterioration of the lubricant will result.

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

If dirt, dust or moisture enter 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 enter, 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

Keep the tools with care.

If dirt, dust or moisture enter 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.

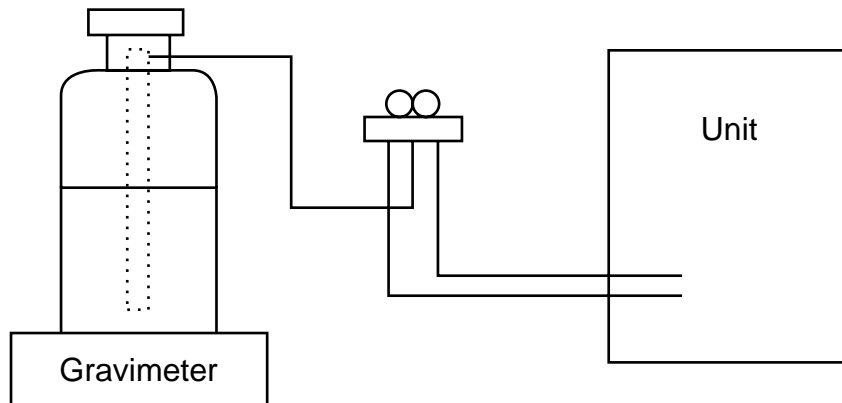
[1] Cautions for service

- (1) Perform service after collecting 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.		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	Adaptor 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	—

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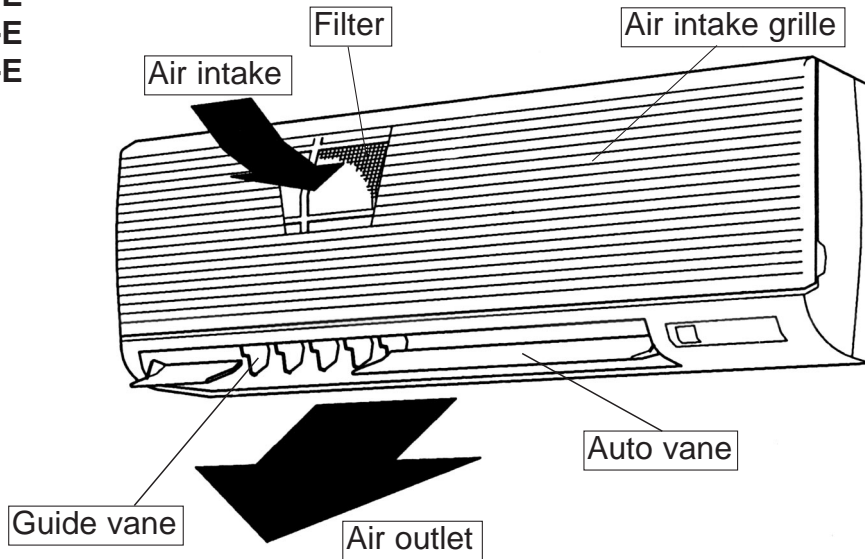
PART NAMES AND FUNCTIONS

● Indoor Unit

PKFY-P32VGM-E

PKFY-P40VGM-E

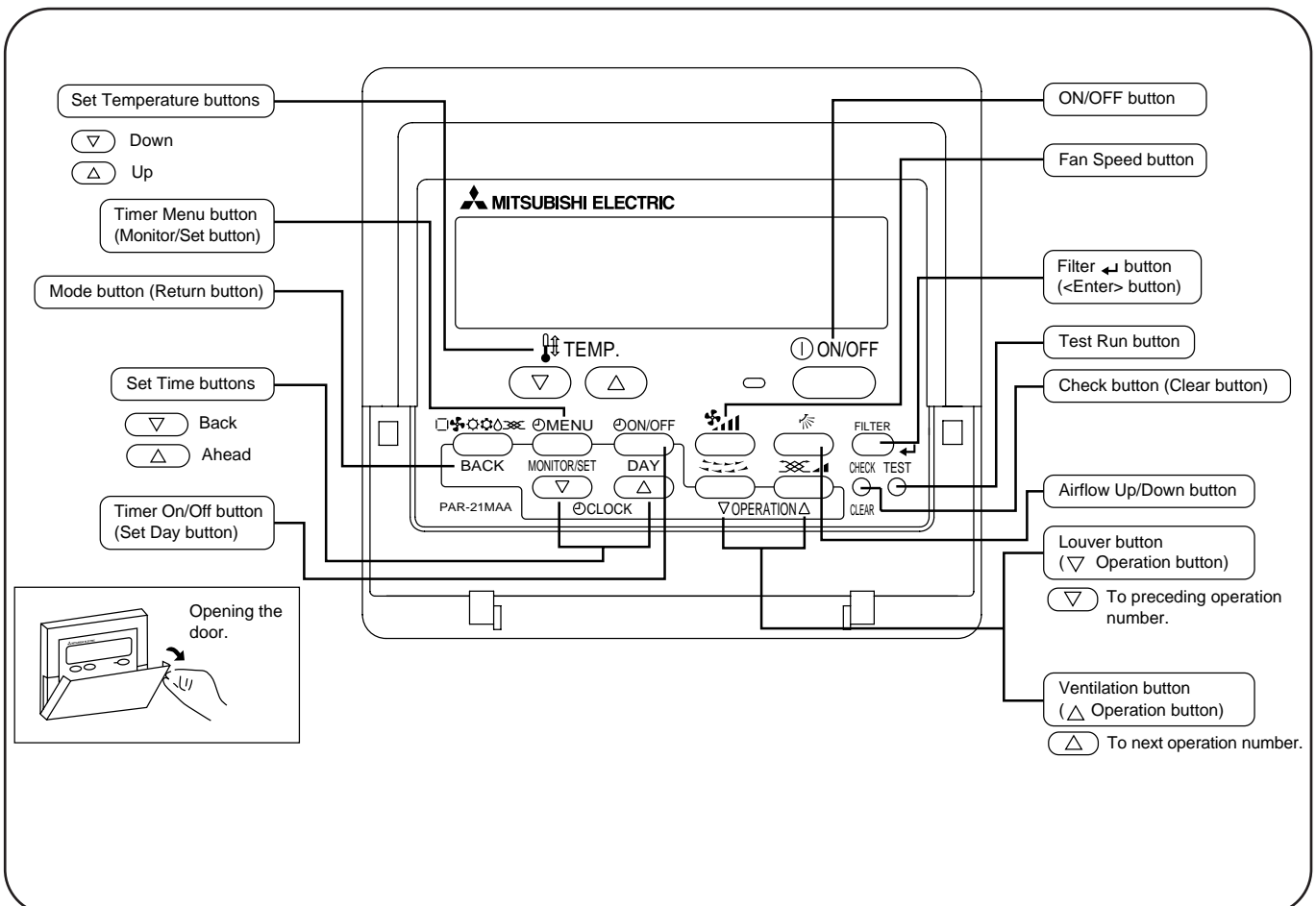
PKFY-P50VGM-E



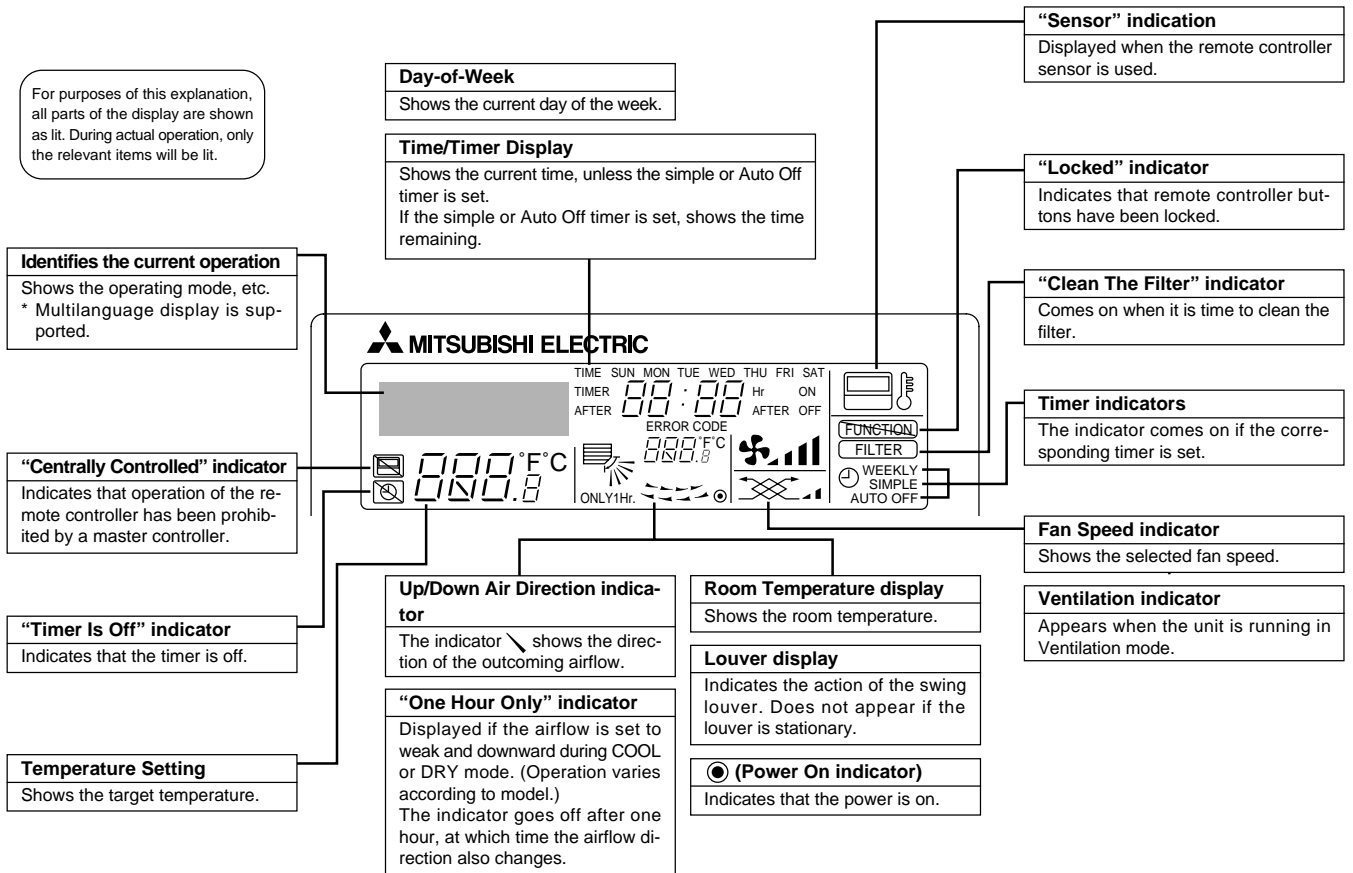
● Wired remote controller

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

● Operation buttons



● Display



Caution

- Only the Power on indicator lights when the unit is stopped and power supplied to the unit.
- If you press a button for a feature that is not installed at the indoor unit, the remote controller will display the “Not Available” message.
If you are using the remote controller to drive multiple indoor units, this message will appear only if the feature is not present at the parent unit.
- When power is turned ON for the first time, it is normal that “PLEASE WAIT” is displayed on the room temperature indication (For max. 2minutes). Please wait until this “PLEASE WAIT” indication disappear then start the operation.

3

SPECIFICATIONS

3-1. SPECIFICATION

Item		PKFY-P32VGM-E	PKFY-P40VGM-E	PKFY-P50VGM-E
Power	V•Hz	Single phase 220V-230V-240V · 50Hz / 220V · 60Hz		
Cooling capacity	kW	3.6	4.5	5.6
Heating capacity	kW	4.0	5.0	6.3
Electric characteristic	Input	Cooling	kW	
		Heating	kW	
	Current	Cooling	A	
		Heating	A	
Exterior (munsell symbol)	—	Plastic , white : <0.70Y 8.59/0.97>		
Dimensions	Height	mm		
	Width	mm		
	Depth	mm		
Heat exchanger	—	Cross fin (Aluminum plate fin and copper tube)		
Fan	Fan X No	—	Linflow fan X 1	
	Air flow *2	m ³ /min	11.5-10.5-9.5-8	12-11-10-9
	External static pressure	Pa	0	
	Fan motor output	kW	0.03	
Insulator	—	Polyethylene sheet		
Air filter	—	PP honey comb		
Pipe dimensions	Gas side	φmm(in.)	12.7(1/2")	12.7(1/2") / 15.88(5/8")
	Liquid side	φmm(in.)	6.35(1/4")	6.35(1/4") / 9.52(3/8")
Unit drain pipe size	φmm	O.D.20 (PVC pipe VP-20 connectable)		
Noise level *2	dB	41-38-36-33		43-40-37-34
Product weight	kg	16		

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

*2. Air flow and the noise level are indicated as High – Middium1 – Middium2 – Low .

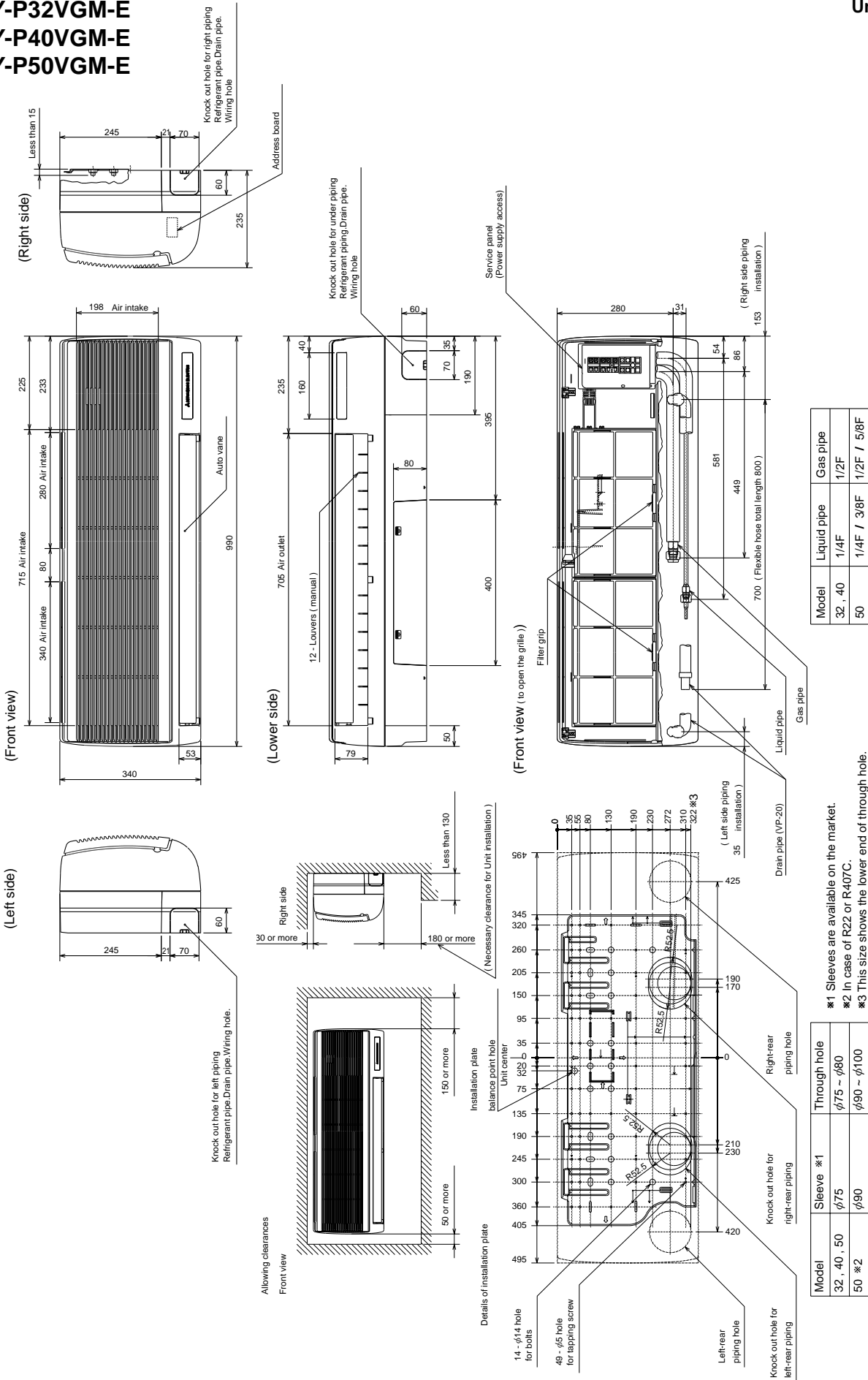
3-2. ELECTRICAL PARTS SPECIFICATIONS

Parts name	Model	Symbol	PKFY-P32VGM-E	PKFY-P40VGM-E	PKFY-P50VGM-E
Room temperature thermistor		TH21	Resistance 0°C/15kΩ, 10°C/9.6kΩ, 20°C/6.3kΩ, 25°C/5.4kΩ, 30°C/4.3kΩ, 40°C/3.0kΩ		
Liquid pipe temperature 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 temperature thermistor		TH23	Resistance 0°C/15kΩ, 10°C/9.6kΩ, 20°C/6.3kΩ, 25°C/5.4kΩ, 30°C/4.3kΩ, 40°C/3.0kΩ		
Fuse (Indoor controller board)		FUSE	250V 6.3A		
Fan motor (with inner-thermostat)		MF	PM4V30-K 220-240V/220V , 50/60Hz 4 pole Output 30W		
			Inner-thermostat OFF 125±5°C		
Fan motor capacitor		C1	2.0μF 440V		
Vane motor		MV	MP 35 EA DC12V		
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		

OUTLINES AND DIMENSIONS

Unit : mm

PKFY-P32VGM-E
 PKFY-P40VGM-E
 PKFY-P50VGM-E



Model	Liquid pipe	Gas pipe
32 , 40	1/4F	1/2F
50	1/4F / 3/8F	1/2F / 5/8F

*1 Sleeves are available on the market.
 *2 In case of R22 or R407C.
 *3 This size shows the lower end of through hole.

Model	Sleeve *1	Through hole
32 , 40 , 50	$\phi 75$	$\phi 75 \sim \phi 80$
50 *2	$\phi 90$	$\phi 90 \sim \phi 100$

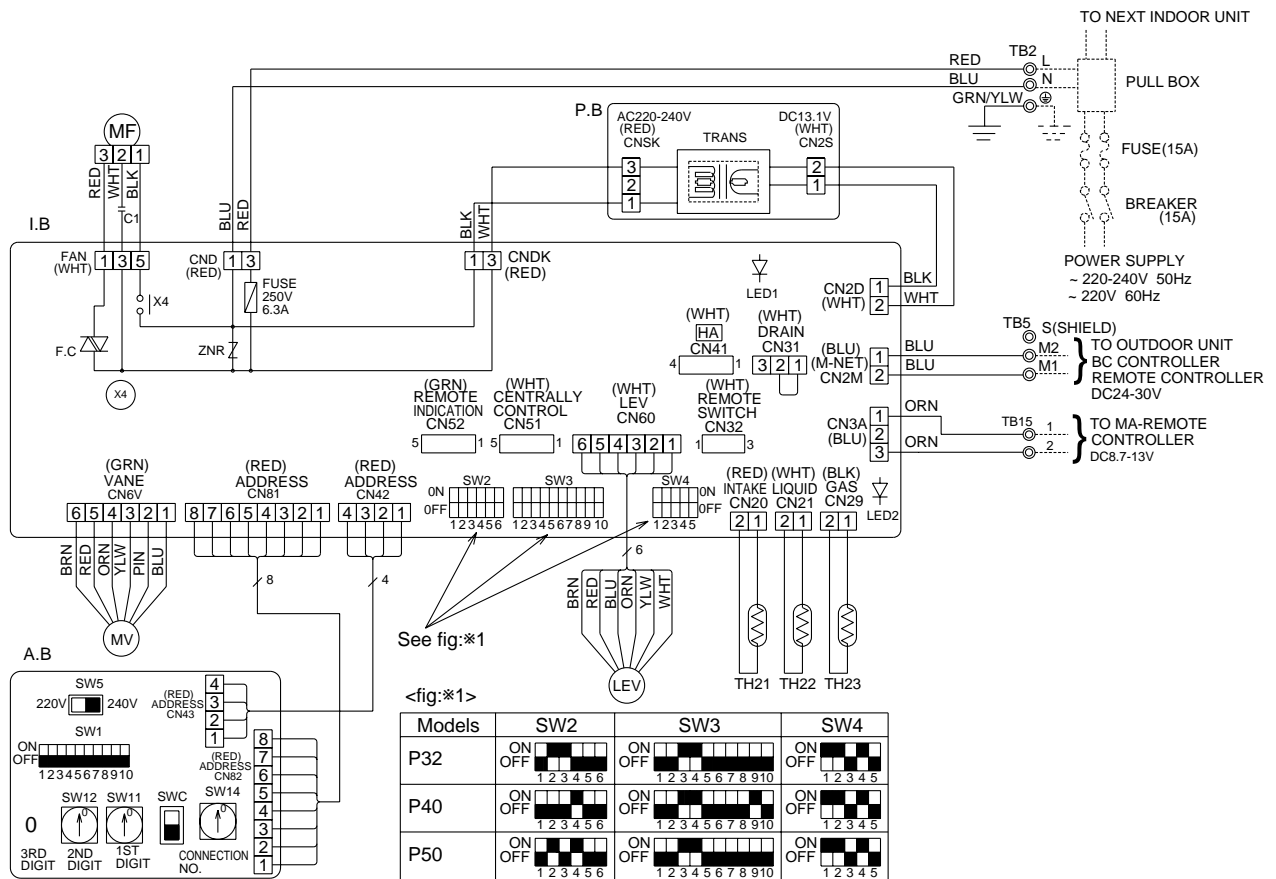
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WIRING DIAGRAM

PKFY-P32VGM-E PKFY-P40VGM-E PKFY-P50VGM-E

Legend

Symbol	Name	Symbol	Name	Symbol	Name	
I.B	Indoor controller board	C1	Capacitor (fan motor)	TH23	Thermistor Pipe temperature detection/Gas (0°C/15kΩ, 25°C/5.4kΩ)	
CN32	Connector	Remote switch	LEV	Linear expansion valve	A.B Circuit board	
CN41	HA terminal-A	MF	Fan motor (with inner thermo)	SW1		Switch Mode selection
CN51	Centrally control	MV	Vane motor	SW5		Voltage selection
CN52	Remote indication	P.B	Indoor power board	SW11		Address setting 1st digit
F.C	Fan phase control	TB2	Terminal block	Power supply	SW12	Address setting 2nd digit
FUSE	Fuse (6.3A)	TB5	Transmission	MA-Remote Controller	SW14	Connection No.
SW2	Switch	Capacity code	TH21	Thermistor	SWC	Option selector
SW3	Mode selection					
SW4	Model selection					
X4	Aux.Relay (Fan motor)	TH22	Thermistor			
ZNR	Varistor					



Note

- At servicing for outdoor unit, always follow the wiring diagram of outdoor unit.
- In case of using MA-Remote controller, please connect to TB15.
(Remote controller wire is non-polar.)
- In case of using M-NET, please connect to TB5.
(Transmission line is non-polar.)
- Symbol[S] of TB5 is the shield wire connection.
- Symbols used in wiring diagram above are, ⊙: terminal block, □: connector.
- The setting of the SW2 dip switches differs in the capacity for the detail, refer to the fig:*1.
- 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.

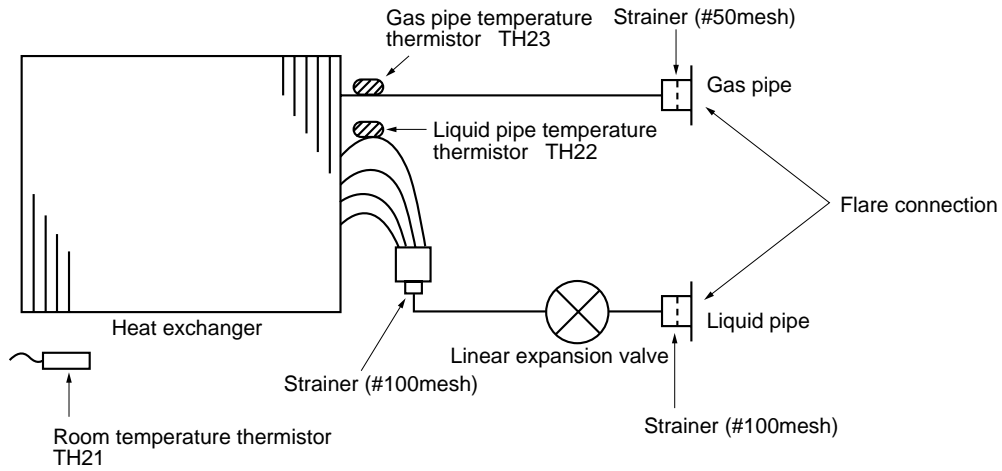
LED on indoor board for service

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

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REFRIGERANT SYSTEM DIAGRAM

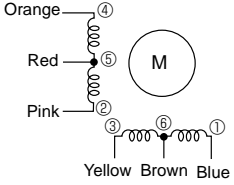
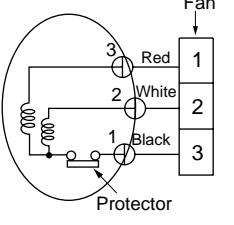
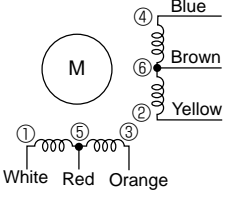
PKFY-P32VGM-E
 PKFY-P40VGM-E
 PKFY-P50VGM-E



Item	Capacity	
	PKFY-P32VGM-E	PKFY-P40VGM-E
Gas pipe	$\phi 12.7$ (1/2")	$\phi 12.7$ (1/2") or $\phi 15.88$ (5/8")
Liquid pipe	$\phi 6.35$ (1/4")	$\phi 6.35$ (1/4") or $\phi 9.52$ (3/8")

7-1. HOW TO CHECK

PKFY-P32VGM-E PKFY-P40VGM-E PKFY-P50VGM-E

Parts name	Check method	
Room temperature thermistor (TH21)	Disconnect the connector then measure the resistance with the tester. (Surrounding temperature 10°C~30°C)	
Liquid pipe temperature thermistor (TH22)	Normal	Abnormal
Gas pipe temperature thermistor (TH23)	4.3kΩ~9.6kΩ	Open or short
	Refer to the next page for the details.	
Vane motor	Measure the resistance between the terminals using the tester. (Surrounding temperature 20°C~30°C)	
	Connector	Normal
	Brown - Yellow	186Ω ~ 214Ω
	Brown - Blue	
	Red - Orange	
	Red - Pink	
		Abnormal
		Open or short
Fan motor	Measure the resistance between the terminals using the tester. (Surrounding temperature 20°C)	
	Motor terminal or relay connector	Normal
	Red - Black	141.2Ω
	White - Black	131.5Ω
		Abnormal
		Open or short
Linear expansion valve	Disconnect the connector then measure the resistance with the tester. (Surrounding temperature 20°C)	
	Normal	
	(1)-(5) White-Red	(2)-(6) Yellow-Brown
	(3)-(5) Orange-Red	(4)-(6) Blue-Brown
	150Ω ±10%	
		Abnormal
		Open or short
	Refer to the next page for the details.	

<Thermistor Characteristic graph>

Thermistor for lower temperature

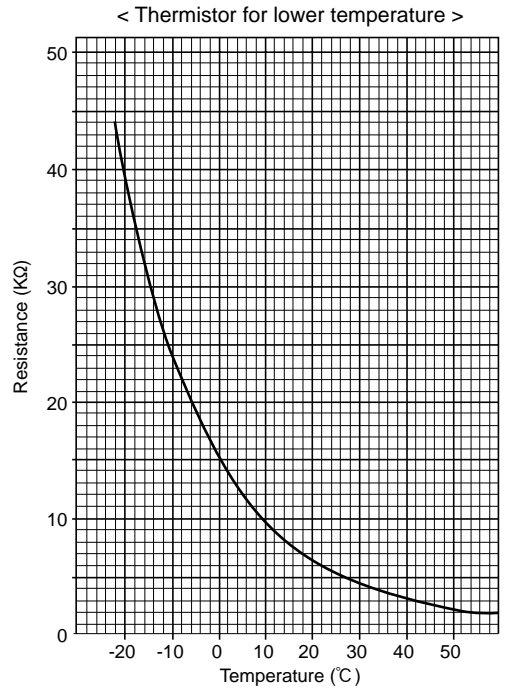
- Room temperature thermistor (TH21)
- Liquid pipe temperature thermistor (TH22)
- Gas pipe temperature thermistor (TH23)

Thermistor $R_0=15k\Omega \pm 3\%$

Fixed number of $B=3480K \pm 2\%$

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

0°C	15kΩ
10°C	9.6kΩ
20°C	6.3kΩ
25°C	5.4kΩ
30°C	4.3kΩ
40°C	3.0kΩ

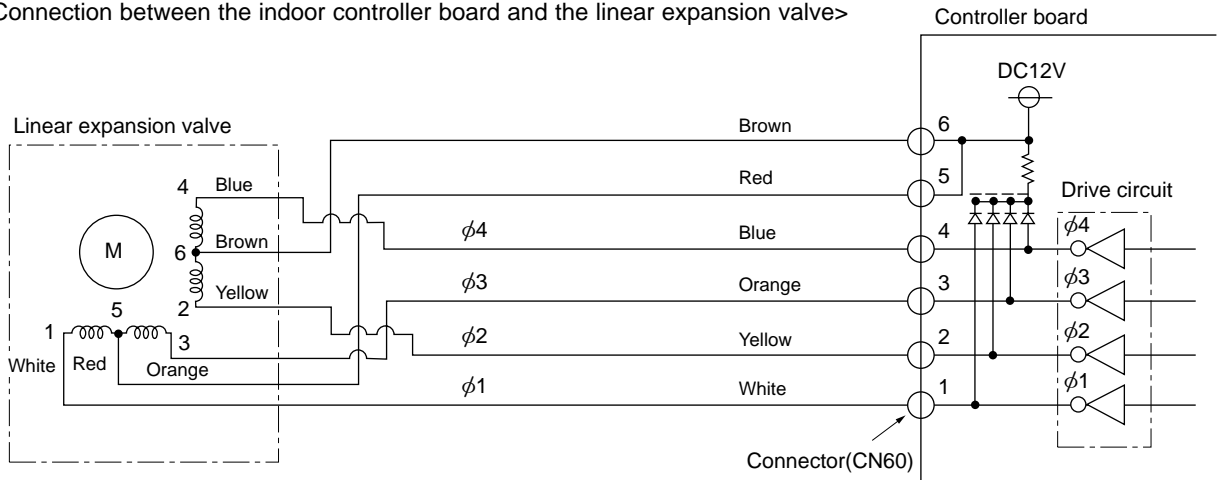


Linear expansion valve

① Operation summary of the linear expansion valve.

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

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



<Output pulse signal and the valve operation>

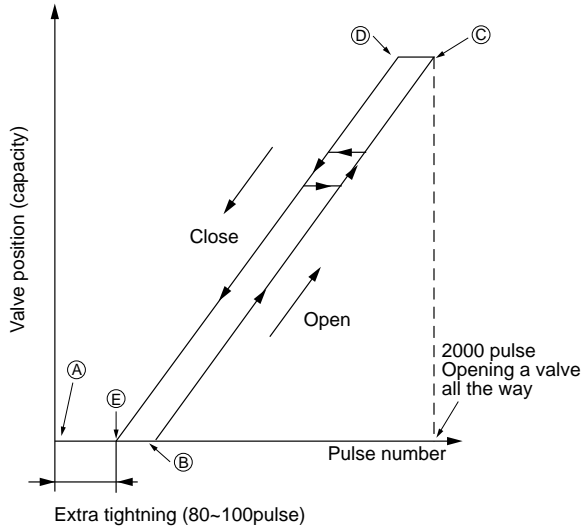
Output (Phase)	Output			
	1	2	3	4
φ1	ON	OFF	OFF	ON
φ2	ON	ON	OFF	OFF
φ3	OFF	ON	ON	OFF
φ4	OFF	OFF	ON	ON

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 locks and vibrates.

② Linear expansion valve operation

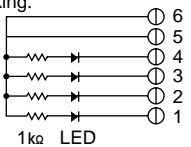
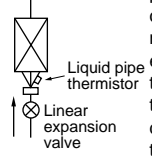


- * When the switch is turned on, 2200 pulse closing valve signal will be send till it goes to A point in order to define the valve position.

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



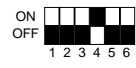


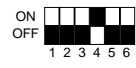


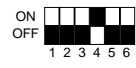


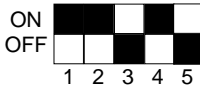
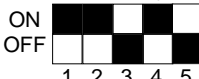
- * Noise can be detected by placing the ear against the screw driver handle while putting the screw driver to the linear expansion valve.

③ Trouble shooting

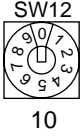
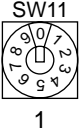
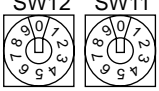
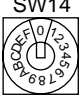

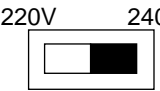
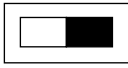
Symptom	Check points	Countermeasures
Operation circuit failure of the micro processor.	Disconnect the connector on the controller board, then connect LED for checking.  Pulse signal will be sent out for 10 seconds as soon as the main switch is turned on. If there is LED with lights on or lights off,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

PKFY-P32VGM-E PKFY-P40VGM-E PKFY-P50VGM-E

Switch	Pole	Function	Operation by switch		Remarks												
			ON	OFF													
SW1 Mode Selection	1	Thermistor<Intake temperature detection>position	Built-in remote controller	Indoor unit	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">Address board</div> <p style="text-align: center;"><At delivery></p>  <p>NOTE:</p> <ul style="list-style-type: none"> *1 At Heating mode, fan operating. *2 At Heating mode, operating heat thermostat ON. *3 SW1-7=OFF, SW1-8=ON →Setting air flow. SW1-7=ON, SW1-8=ON →Indoor fan stop. 												
	2	Filter clogging detection	Provided	Not provided													
	3	Filter cleaning sign	2500hr	100hr													
	4	Air intake	Effective	Not effective													
	5	Remote indication switching	Thermostat ON signal indication	Fan output indication													
	6	Humidifier control	Always operated while the heating mode *1	Operated depends on the condition *2													
	7	Air flow set in case of	Fix to LOW *3	Fix to EXTRA LOW *3													
	8	Heat thermostat OFF	Depends on setting Remote controller *3	Depends on SW1-7													
	9	Auto restart	Effective	Not effective													
	10	Power source ON/OFF	Effective	Not effective													
SW2 Capacity code setting	1~6	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>Capacity</th> <th>SW2</th> <th>Capacity</th> <th>SW2</th> <th>Capacity</th> <th>SW2</th> </tr> </thead> <tbody> <tr> <td>P32</td> <td></td> <td>P40</td> <td></td> <td>P50</td> <td></td> </tr> </tbody> </table>			Capacity	SW2	Capacity	SW2	Capacity	SW2	P32		P40		P50		<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">Indoor controller board</div> <p>Set while the unit is off.</p> <p style="text-align: center;"><At delivery></p> <p>Set for each capacity.</p>
Capacity	SW2	Capacity	SW2	Capacity	SW2												
P32		P40		P50													
SW3 Function Selection	1	Heat pump/Cooling only	Cooling only models	Heat pump models	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">Indoor controller board</div> <p>Set while the unit is off.</p> <p style="text-align: center;"><At delivery></p>  <p>NOTE:</p> <ul style="list-style-type: none"> *4 At cooling mode, each angle can be used only 1 hour. *5 sw3-9 setting P32 = OFF P40 = ON P50 = OFF 												
	2	Louver	Available	Not available													
	3	Vane	Available	Not available													
	4	Vane swing function	Available	Not available													
	5	Vane horizontal angle	Second setting	First setting													
	6	Vane cooling limit angle setting *4	Horizontal angle	Down B,C													
	7	Indoor linear expansion valve opening	Effective	Not effective													
	8	Heater 4deg up	Not effective	Effective													
	9	Target Superheat setting *5	9degrees	6degrees													
	10	Target Sub cool setting	15degrees	10degrees													
SW4 Unit Selection	1~5				<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">Indoor controller board</div> <p>Set while the unit is off.</p> <p style="text-align: center;"><At delivery></p> 												



Switch	Pole	Operation by switch	Remarks
SW11 1st digit address setting SW12 2nd digit address setting	Rotary switch	  <p>Address setting should be done when M-NET remote controller is being used.</p>	<div style="border: 1px solid black; padding: 2px; text-align: center;">Address board</div> <p>Address can be set while the unit is stopped.</p> <p><At delivery></p> 
SW14 Connect ion No. setting	Rotary switch	 <p>This is the switch to be used when the indoor unit is operated with R2 series outdoor unit as a set.</p>	<div style="border: 1px solid black; padding: 2px; text-align: center;">Address board</div> <p><At delivery></p> 
SW5 Voltage Selection	2	 <p>If the unit is used at the 230V or 240V area, set the voltage to 240V. If the unit is used at the 220V, set the voltage to 220V.</p>	<div style="border: 1px solid black; padding: 2px; text-align: center;">Address board</div> <p><At delivery></p> <p>220V 240V</p> 

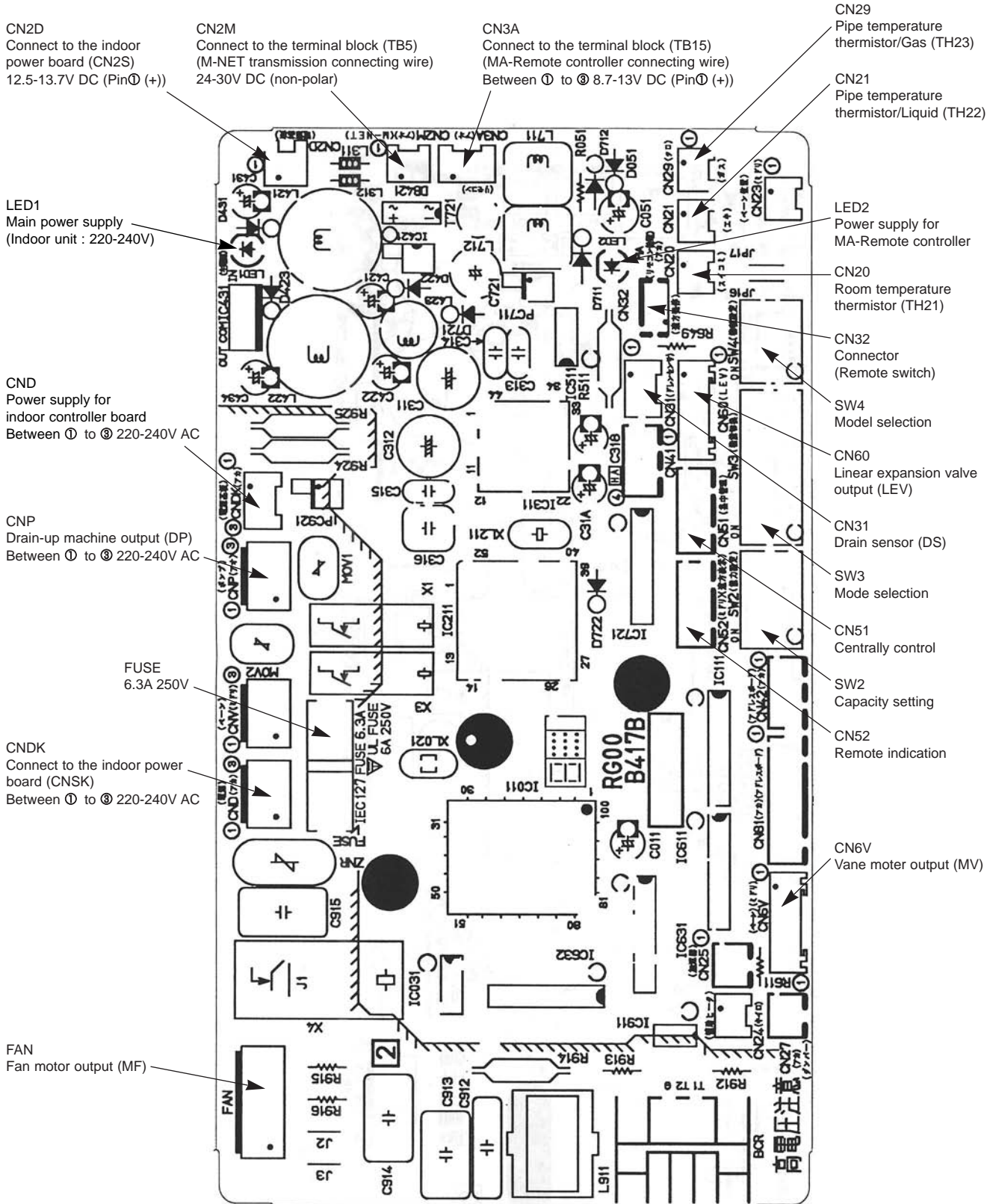
7-3. TEST POINT DIAGRAM

7-3-1. Indoor controller board

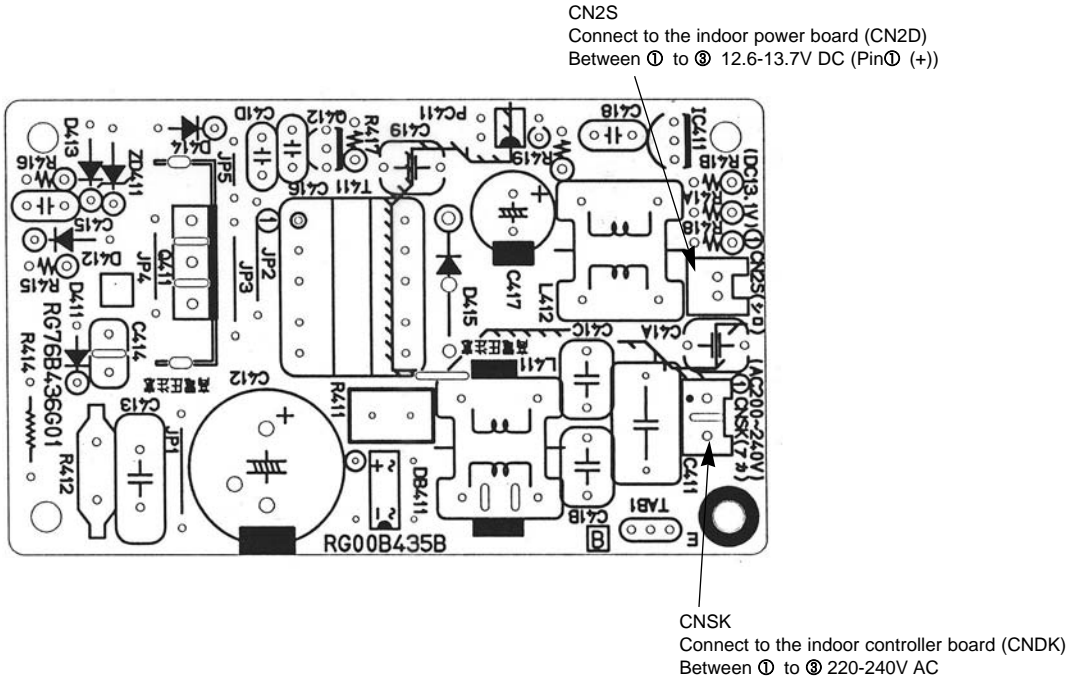
PKFY-P32VGM-E

PKFY-P40VGM-E

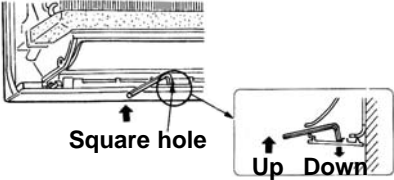
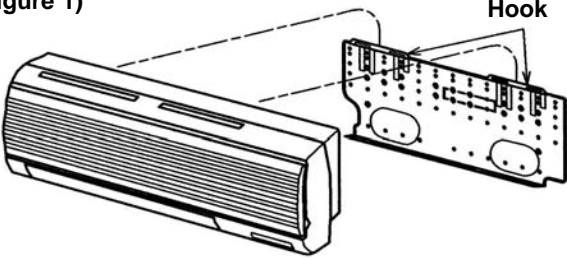
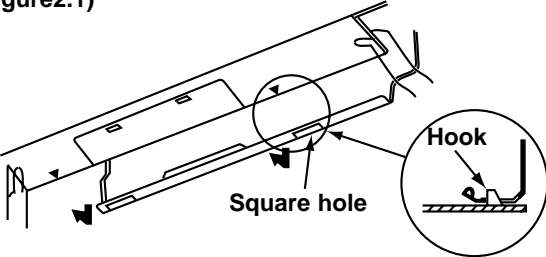
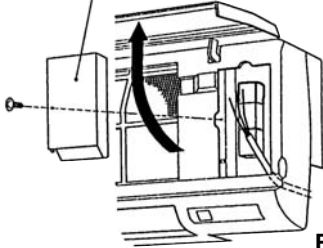
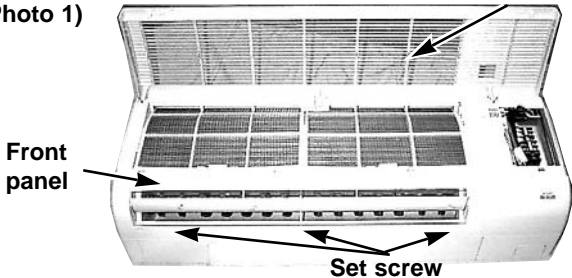
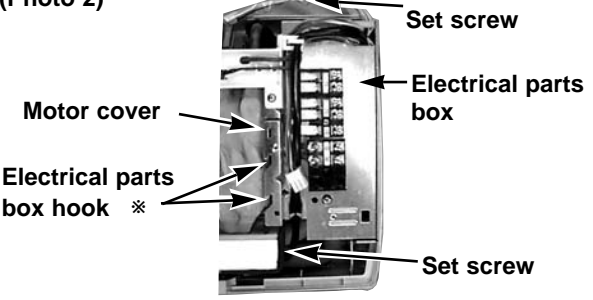
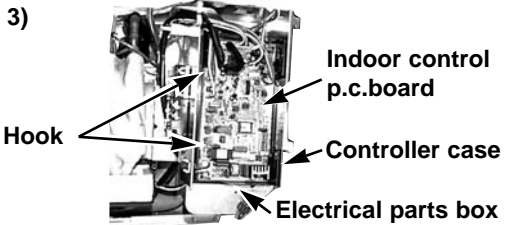
PKFY-P50VGM-E



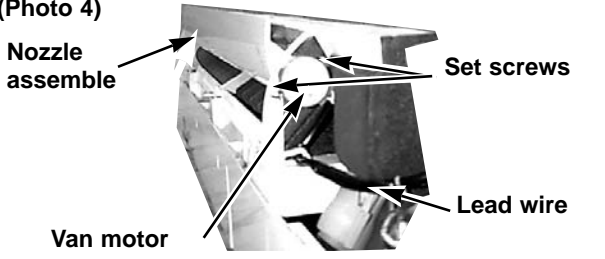
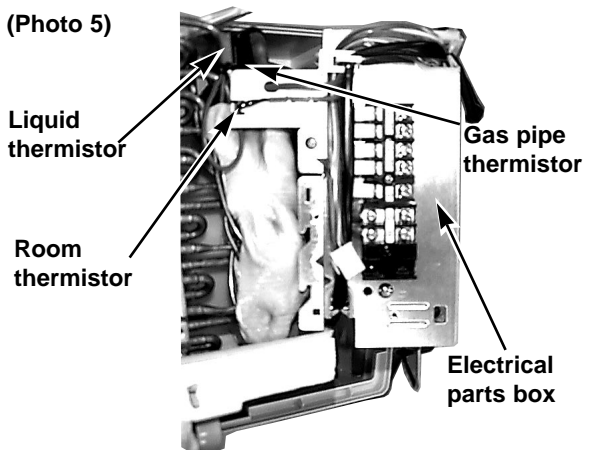
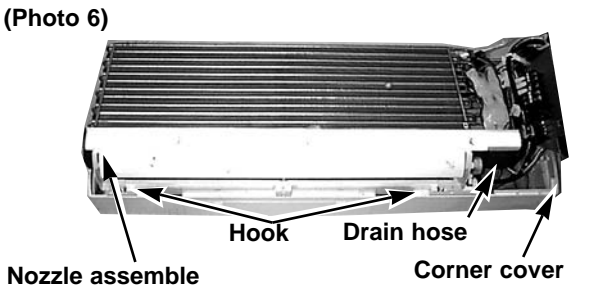
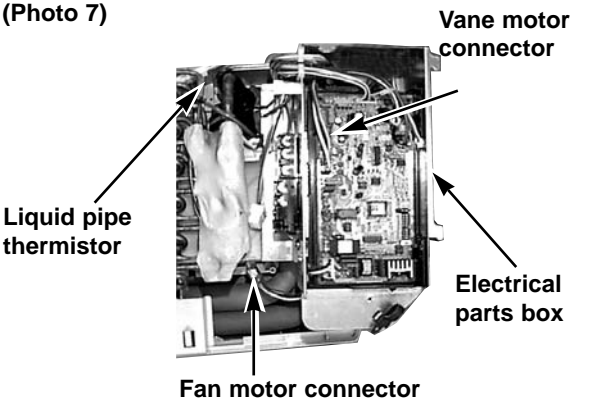
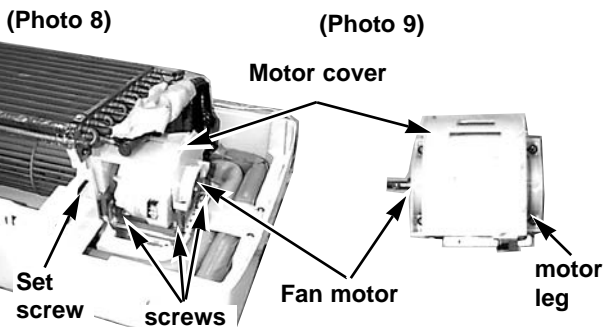
7-3-2. Indoor power board
 PKFY-P32VGM-E
 PKFY-P40VGM-E
 PKFY-P50VGM-E



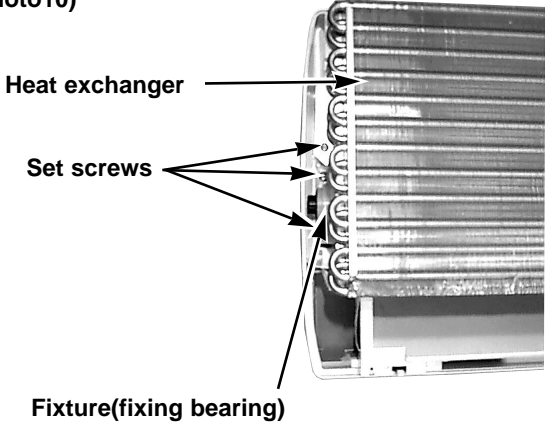
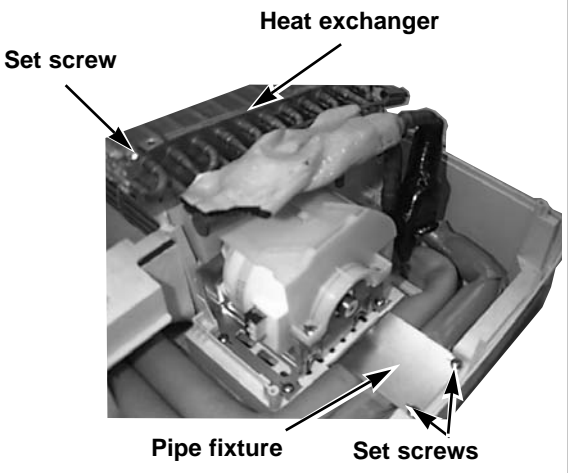
PKFY-P32VGM-E PKFY-P40VGM-E PKFY-P50VGM-E

OPERATION PROCEDURE	PHOTOS & ILLUSTRATION
<p>1. REMOVE THE LOWER SIDE OF THE INDOOR UNIT FROM THE INSTALLATION PLATE</p> <p>(1) Remove the left / right corner box of the indoor unit.</p> <p>(2) Hold and pull down the lower and both ends of the indoor unit, and remove the ▼ section from the square hole. (Refer to the figure 2.1) Or remove the front panel and push the ▼ section down by using alankey ,etc. from the front side. (Refer to the figure 2.2).</p> <p>(3) Unhook the top of the indoor unit from the back plate catch.</p> <p>(Figure 2.2)</p> 	<p>(Figure 1)</p>  <p>(Figure2.1)</p> 
<p>2. REMOVING THE FRONT PANEL</p> <p>(1) Open the front grille.</p> <p>(2) Remove the terminal block cover with a screw.</p> <p>(3) Remove the screw 3caps then remove the set 3screws.</p> <p>(4) After removing the lower side of the front panel a little, remove it as pulling toward upper.</p>	<p>(Figure 3)</p>  <p>(Photo 1)</p> 
<p>3. REMOVING THE INDOOR CONTROLLER BOARD</p> <p>(1) Remove the terminal block cover.</p> <p>(2) Remove the front panel. (See the photo 1)</p> <p>(3) Remove the electrical parts box(2screws).</p> <p>(4) Remove the electrical parts box cover(1 screw).</p> <p>(5) Disconnect the connector on the indoor controller board and remove the controller board by Pulling up the hook of the controller case.</p> <p>※ To smooth works, hang the side hooks of the electrical parts box on the hook of the motor cover. (See the photo 3)</p>	<p>(Photo 2)</p>  <p>(Photo 3)</p> 



OPERATION PROCEDURE	PHOTOS & ILLUSTRATION
<p>4. REMOVING THE VANE MOTOR</p> <p>(1) Disconnect the connector CN6V on the indoor controller board.</p> <p>(2) Remove the 2 screws of the vane motor, disconnect the lead wire and remove the vane motor from the shaft.</p>	<p>(Photo 4)</p>  <p>Nozzle assemble</p> <p>Set screws</p> <p>Van motor</p> <p>Lead wire</p>
<p>5. REMOVING THE THERMISTOR</p> <p>(1) Removing the room thermistor TH21.</p> <p>① Disconnect the connector CN20 <red> on the indoor controller board.</p> <p>② Remove the room thermistor from the holder.</p> <p>(2) Removing the liquid pipe thermistor TH22.</p> <p>① Disconnect the connector CN21 <white> on indoor controller board.</p> <p>② Remove the liquid pipe thermistor with set to the pipe.</p> <p>(3) Removing the gas pipe thermistor TH23.</p> <p>① Disconnect the connector CN29 <black> on indoor controller board.</p> <p>② Remove the gas pipe thermistor with set to the pipe.</p>	<p>(Photo 5)</p>  <p>Liquid thermistor</p> <p>Room thermistor</p> <p>Gas pipe thermistor</p> <p>Electrical parts box</p>
<p>6. REMOVING THE NOZZLE ASSEMBLY</p> <p>(1) Disconnect the connector CN6V on the indoor controller board.</p> <p>(2) Disconnect the lead wire of the vane motor.</p> <p>(3) Remove the corner cover.</p> <p>(4) Pull the drain hose out from the nozzle assemble.</p> <p>(5) Unhook the hook of the lower nozzle assemble and pull the nozzle assemble toward you, then remove the nozzle assemble by sliding it down.</p>	<p>(Photo 6)</p>  <p>Nozzle assemble</p> <p>Hook</p> <p>Drain hose</p> <p>Corner cover</p>
<p>7. REMOVING THE ELECTRICAL PARTS BOX</p> <p>(1) Remove the terminal block cover.</p> <p>(2) Remove the front panel.(See the photo 1)</p> <p>(3) Disconnect the vane motor connector.</p> <p>(4) Disconnect the fan motor connector from the fan motor.</p> <p>(5) Remove the liquid / gas pipe thermistor.(See the photo 5)</p> <p>(6) Remove the electrical parts box (2 screws).</p>	<p>(Photo 7)</p>  <p>Liquid pipe thermistor</p> <p>Fan motor connector</p> <p>Vane motor connector</p> <p>Electrical parts box</p>
<p>8. REMOVING THE FAN MOTOR</p> <p>(1) Remove the terminal block cover.</p> <p>(2) Remove the front panel.(See the photo 1)</p> <p>(3) Remove the electrical parts box.(See the photo 7)</p> <p>(4) Remove the nozzle assemble.(See the photo 6)</p> <p>(5) Remove the fan motor leg fixing 3 screws.</p> <p>(6) Unscrew the set screws using by alankey and remove it by sliding the fan motor to right.</p> <p>(7) Remove the 4 screws and remove the motor cover from the fan motor leg.</p>	<p>(Photo 8) (Photo 9)</p>  <p>Set screw</p> <p>screws</p> <p>Motor cover</p> <p>Fan motor</p> <p>motor leg</p>



OPERATION PROCEDURE	PHOTOS & ILLUSTRATION
<p>9. REMOVING THE LINE FLOW FAN</p> <ol style="list-style-type: none">(1) Remove the terminal block cover.(2) Remove the front panel.(See the photo 1)(3) Remove the electrical parts box.(See the photo 7)(4) Remove the nozzle assembly.(See the photo 6)(5) Remove the fan motor.(See the photo 8)(6) Remove the pipe fixture with 2 screws.(See the photo 11)(7) Remove the left / right screws of the heat exchanger and pull the left-hand side up.(8) Remove the 2screws by sliding it toward you remove the fixture(fixing bearing). * The fan motor is removable first , when the fan removing is hard. * When resetting the fan to the fan motor. Locate and fix the shaft after installing the fan.	<p>(Photo10)</p>  <p>Heat exchanger</p> <p>Set screws</p> <p>Fixture(fixing bearing)</p>
<p>10. REMOVING THE HEAT EXCHANGER</p> <ol style="list-style-type: none">(1) Remove the terminal block cover.(2) Remove the front panel.(See the photo 1)(3) Remove the electrical parts box.(See the photo 7)(4) Remove the corner box.(5) Remove the nozzle assemble.(See the photo 6)(6) Remove the 2screws and the pipe fixture.(7) Remove the 2screws and heat exchanger.	<p>(Photo 11)</p>  <p>Heat exchanger</p> <p>Set screw</p> <p>Pipe fixture</p> <p>Set screws</p>

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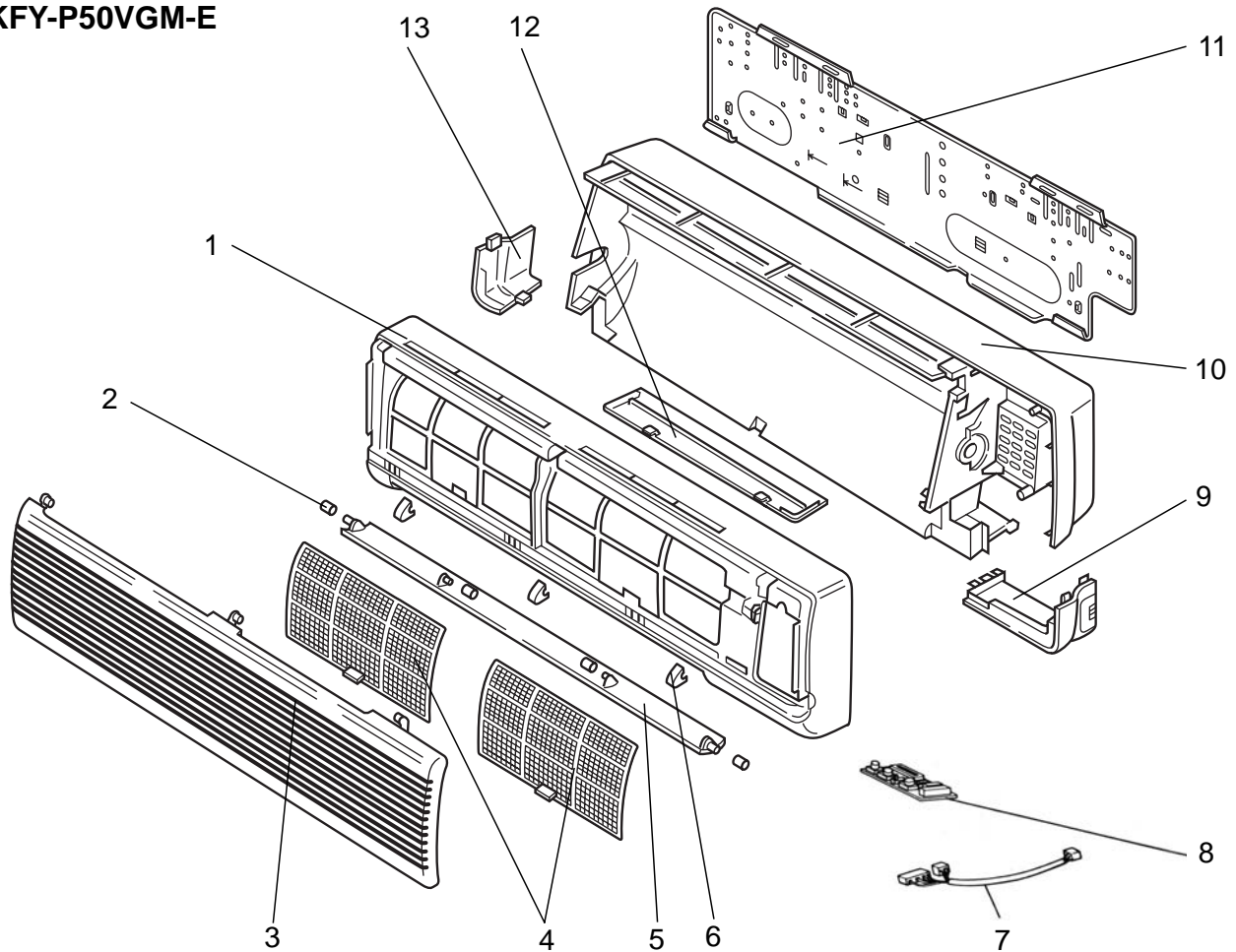
PARTS LIST (non-RoHS compliant)

STRUCTURAL PARTS

PKFY-P32VGM-E

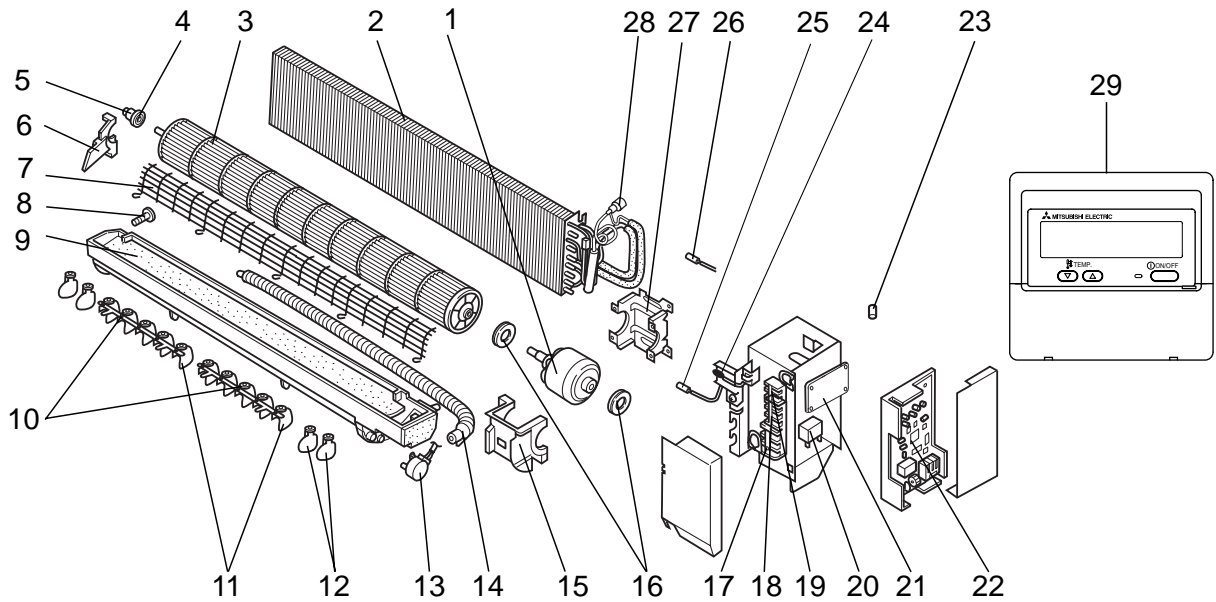
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PKFY-P50VGM-E



No.	Parts No.	Parts Name	Specifications	PKFY- P32,P40,P50VGM-E	Remarks (Drawing No.)	Wiring Diagram Symbol	Recom- mended Q'ty	Price	
								Unit	Amount
1	R01 89Y 651	FRONT PANEL		1					
2	R01 07Y 092	VANE SLEEVE		1					
3	R01 07Y 691	FRONT GRILLE		1					
4	R01 A16 500	AIR FILTER		2					
5	R01 07Y 002	AUTO VANE		1					
6	R01 07Y 096	SCREW CAP		3					
7	R01 85Y 304	ADDRESS CABLE		1					
8	T7W B01 294	ADDRESS BOARD		1		A.B			
9	R01 07Y 658	CORNER COVER		1					
10	R01 07Y 635	BOX ASSEMBLY		1					
11	R01 07Y 808	BACK PLATE		1					
12	R01 07Y 623	UNDER COVER		1					
13	R01 09Y 658	CORNER COVER		1					

ELECTRICAL PARTS
PKFY-P32VGM-E
PKFY-P40VGM-E
PKFY-P50VGM-E



No.	Parts No.	Parts Name	Specifications	PKFY-			Remarks (Drawing No.)	Wiring Diagram Symbol	Recom- mended Q'ty	Price	
				P32VGM- -E	P40VGM- -E	P50VGM- -E				Unit	Amount
1	T7W A01 762	FAN MOTOR		1	1	1		MF			
2	R01 H55 480	HEAT EXCHANGER		1							
	R01 H56 480	HEAT EXCHANGER			1						
	R01 H57 480	HEAT EXCHANGER				1					
3	R01 07Y 114	LINE FLOW FAN		1	1	1					
4	R01 005 103	SLEEVE BEARING		1	1	1					
5	R01 07Y 102	BEARING MOUNT		1	1	1					
6	R01 07Y 106	BEARING SUPPORT		1	1	1					
7	T7W A00 675	FAN GUARD		1	1	1					
8	R01 07Y 524	DRAIN PLUG		1	1	1					
9	R01 07Y 530	NOZZLE ASSY		1	1	1					
10	R01 07Y 059	ARM		2	2	2					
11	R01 07Y 038	GUIDE VANE		10	10	10					
12	R01 09Y 038	GUIDE VANE		4	4	4					
13	R01 E04 223	VANE MOTOR		1	1	1		MV			
14	R01 07Y 527	DRAIN HOSE		1	1	1					
15	R01 07Y 135	MOTOR COVER		1	1	1					
16	R01 07Y 105	RUBBER MOUNT		2	2	2					
17	T7W 512 716	TERMINAL BLOCK	2P(1,2)	1	1	1		TB15			
18	T7W E00 716	TERMINAL BLOCK	3P(M1,M2,S)	1	1	1		TB5			
19	T7W A14 716	TERMINAL BLOCK	3P(L,N,⊕)	1	1	1		TB2			
20	R01 588 255	RUN CAPACITOR	2.0μF 440V	1	1	1		C1			
21	R01 E02 313	POWER BOARD		1	1	1		P.B			
22	T7W E34 310	CONTROLLER BOARD		1	1	1		I.B			
23	T7W 520 239	FUSE	250V 6.3A	1	1	1		FUSE			
24	R01 E26 202	ROOM THERMISTOR		1	1	1		TH21			
25	R01 E28 202	LIQUID PIPE THERMISTOR		1	1	1		TH22			
26	R01 E34 202	GAS PIPE THERMISTOR		1	1	1		TH23			
27	R01 07Y 130	MOTOR SUPPORT		1	1	1					
28	R01 E63 401	LINEAR EXPANSION VALVE		1	1	1		LEV			
29	—	REMOTE CONTROLLER	PAR-21MAA	1	1	1					

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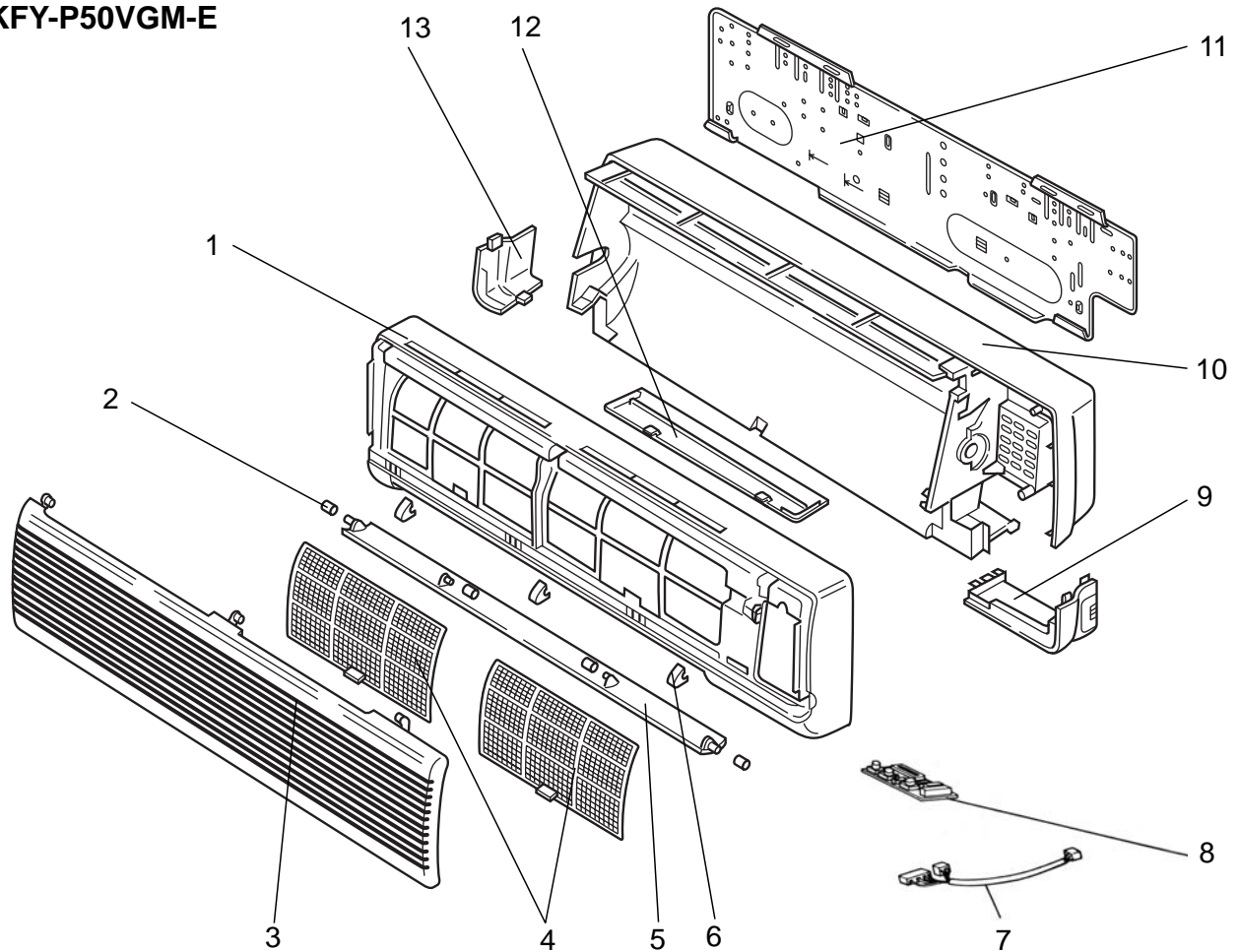
RoHS PARTS LIST

STRUCTURAL PARTS

PKFY-P32VGM-E

PKFY-P40VGM-E

PKFY-P50VGM-E



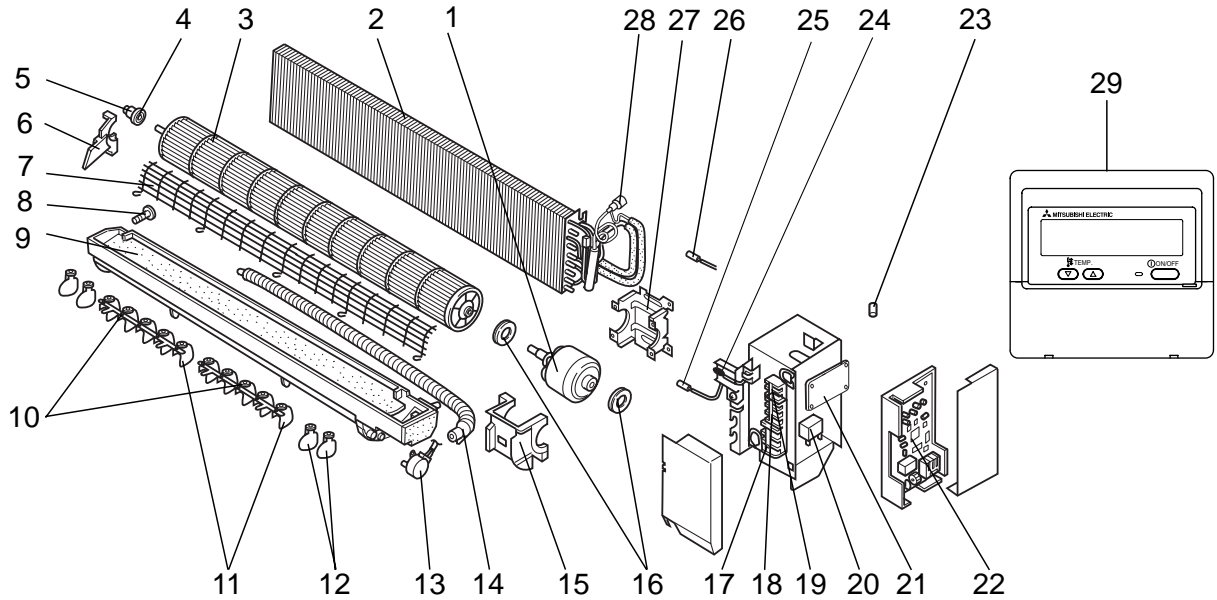
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									Unit	Amount
1	G	R01 E05 651	FRONT PANEL		1					
2	G	R01 08Y 092	VANE SLEEVE		1					
3	G	R01 08Y 691	FRONT GRILLE		1					
4	G	R01 A32 500	AIR FILTER		2					
5	G	R01 08Y 002	AUTO VANE		1					
6	G	R01 08Y 096	SCREW CAP		3					
7	G	R01 A00 304	ADDRESS CABLE		1					
8	G	T7W E01 294	ADDRESS BOARD		1		A.B			
9	G	R01 08Y 658	CORNER COVER		1					
10	G	R01 08Y 635	BOX ASSEMBLY		1					
11	G	R01 08Y 808	BACK PLATE		1					
12	G	R01 08Y 623	UNDER COVER		1					
13	G	R01 10Y 658	CORNER COVER		1					

ELECTRICAL PARTS

PKFY-P32VGM-E

PKFY-P40VGM-E

PKFY-P50VGM-E



No.	ROHS	Parts No.	Parts Name	Specifications	PKFY-			Remarks (Drawing No.)	Wiring Diagram Symbol	Recom- mended Q'ty	Price	
					P32VGM -E	P40VGM -E	P50VGM -E				Unit	Amount
1	G	T7W A02 762	FAN MOTOR		1	1	1		MF			
2	G	R01 J34 480	HEAT EXCHANGER		1							
	G	R01 J35 480	HEAT EXCHANGER			1						
	G	R01 J36 480	HEAT EXCHANGER				1					
3	G	R01 E22 114	LINE FLOW FAN		1	1	1					
4	G	R01 E04 103	SLEEVE BEARING		1	1	1					
5	G	R01 08Y 102	BEARING MOUNT		1	1	1					
6	G	R01 08Y 106	BEARING SUPPORT		1	1	1					
7	G	T7W A01 675	FAN GUARD		1	1	1					
8	G	R01 08Y 524	DRAIN PLUG		1	1	1					
9	G	R01 08Y 530	NOZZLE ASSY		1	1	1					
10	G	R01 08Y 059	ARM		2	2	2					
11	G	R01 08Y 038	GUIDE VANE		10	10	10					
12	G	R01 10Y 038	GUIDE VANE		4	4	4					
13	G	R01 E14 223	VANE MOTOR		1	1	1		MV			
14	G	R01 08Y 527	DRAIN HOSE		1	1	1					
15	G	R01 08Y 135	MOTOR COVER		1	1	1					
16	G	R01 08Y 105	RUBBER MOUNT		2	2	2					
17	G	T7W E33 716	TERMINAL BLOCK	2P(1,2)	1	1	1		TB15			
18	G	R01 E27 246	TERMINAL BLOCK	3P(M1,M2,S)	1	1	1		TB5			
19	G	T7W E32 716	TERMINAL BLOCK	3P(L,N,⊕)	1	1	1		TB2			
20	G	R01 E13 255	RUN CAPACITOR	2.0 μ F 440V	1	1	1		C1			
21	G	R01 E38 313	POWER BOARD		1	1	1		P.B			
22	G	T7W E53 310	CONTROLLER BOARD		1	1	1		I.B			
23	G	R01 E06 239	FUSE	250V 6.3A	1	1	1		FUSE			
24	G	R01 H08 202	ROOM THERMISTOR		1	1	1		TH21			
25	G	R01 H07 202	LIQUID PIPE THERMISTOR		1	1	1		TH22			
26	G	R01 H13 202	GAS PIPE THERMISTOR		1	1	1		TH23			
27	G	R01 08Y 130	MOTOR SUPPORT		1	1	1					
28	G	R01 H05 401	LINEAR EXPANSION VALVE		1	1	1		LEV			
29	G	—	REMOTE CONTROLLER	PAR-21MAA	1	1	1					

CITY MULTI

 **MITSUBISHI ELECTRIC CORPORATION**

HEAD OFFICE : TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO100-8310, JAPAN
