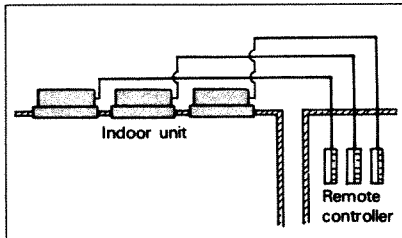


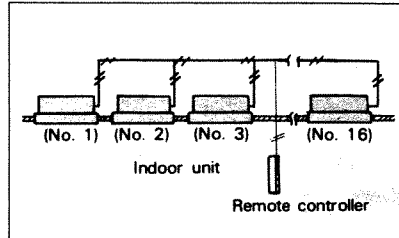
4.6 SYSTEM CONTROL

① Individual Control by Gathering Remote Controllers.



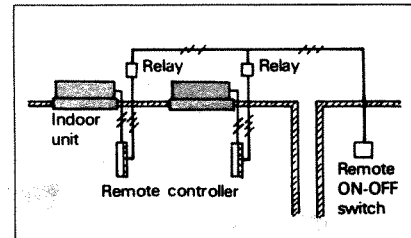
A built-in thermistor in each indoor unit controls its cooling or heating operation to maintain desired room temperature. Non-polar, two wire connection cables can be extended up to 550yards.

② Group Control by a Single Remote Controller.



Each unit starts in sequence at one second intervals, and a built-in thermistor in each indoor unit controls its cooling or heating operation to maintain desired room temperature.

③ Both Remote ON/OFF Control and Individual Control.



Relays and remote ON-OFF switch are not supplied. Timer Control is also possible.

Group Control by a Single Remote Controller.

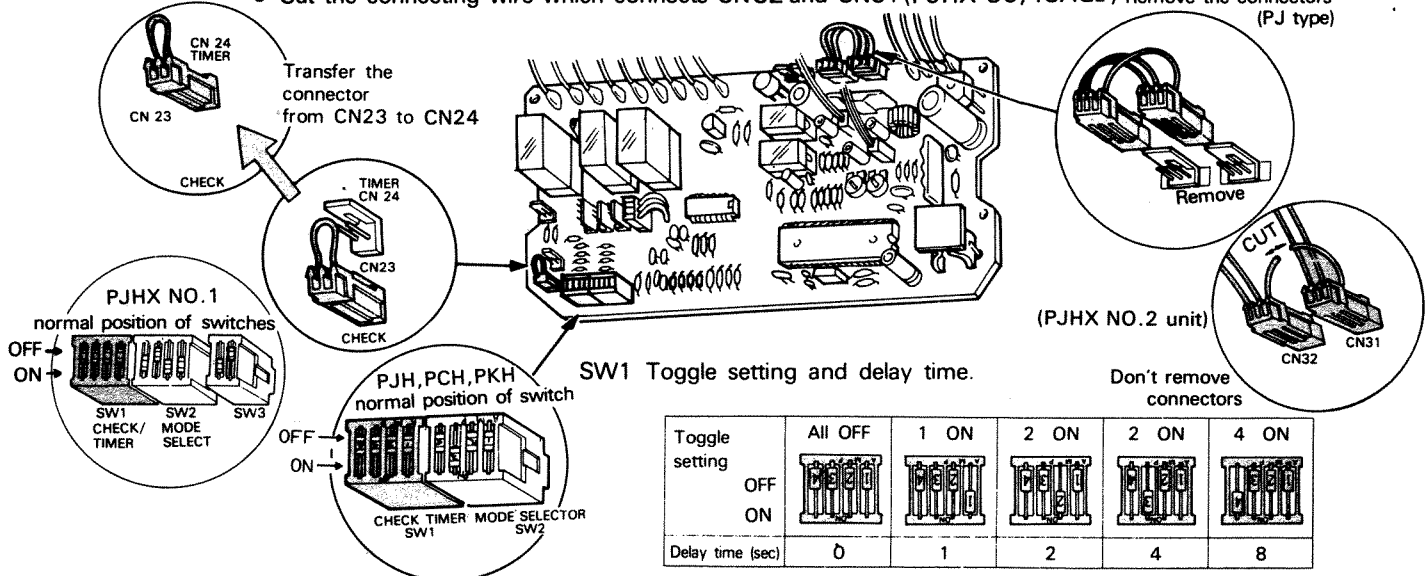
Fig. 1 How to Set the Indoor Microprocessor Boards (from No.2 unit to the last unit.)for delayed starting.

Fig.3 How to Set the Indoor Microprocessor Boards (from No.2 unit to the last unit.) for delayed starting.

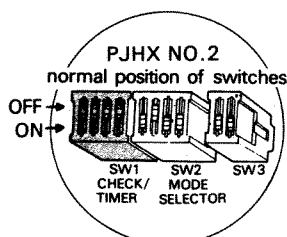
I) Transfer the receptacle connector with jumper cable from CN23 to CN24.

II) ● Remove the connectors from CN30 and CN31

● Cut the connecting wire which connects CN32 and CN31 (PJHX-36,48AG2) Remove the connectors (PJ type)



III) Program the delay using DIP switch SW1 as shown below.

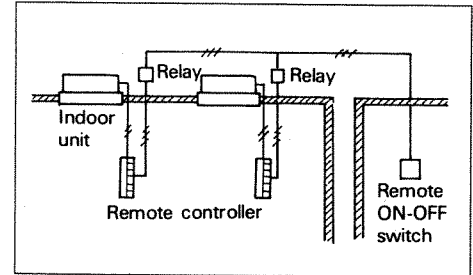


No.1 unit	No.2 unit	No.3 unit	No.4 unit	No.5 unit	No.6 unit	No.7 unit	No.8 unit
Immediately	1sec delay	2sec delay	3sec delay	4sec delay	5sec delay	6sec delay	7sec delay
No.9 unit	No.10 unit	No.11 unit	No.12 unit	No.13 unit	No.14 unit	No.15 unit	No.16 unit
8sec delay	9sec delay	10sec delay	11sec delay	12sec delay	13sec delay	14sec delay	15sec delay

Both Remote ON-OFF Control and Individual Control

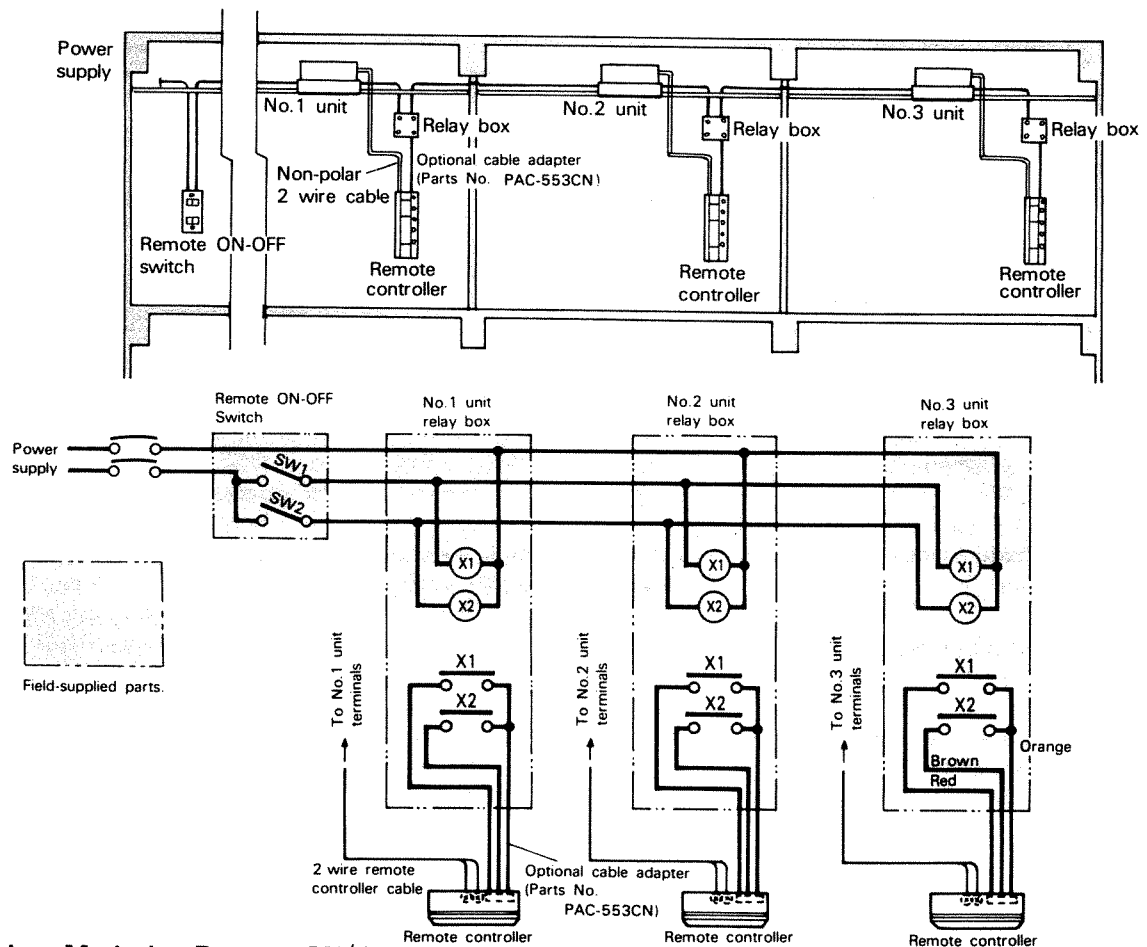
All units can be turned on and off simultaneously using the remote ON-OFF switch, and also individual units can be controlled from the remote controllers.

This system is well suited to buildings having a large number of rooms. In offices, for example, all units can be started together to cool the premises before workers arrive, operated as necessary by individual remote controllers during the day, and stopped together at the end of business.



* Relays and remote ON-OFF switch are not supplied.

Fig.4 Remote ON-OFF/Individual Control



Operation Mode by Remote ON/OFF Switch

		SW2 (Change-over switch : Remote ON-OFF/Individual Control)	
		ON (Remote ON-OFF control by remote ON-OFF switch)	OFF (Individual control by each remote controller)
SW1 (Remote ON-OFF Switching)	ON (Start)	Start Together * 1	Enable operation by each remote controller.
	OFF (Stop)	Stop Together * 2	

* 1. After starting all units together, if SW2 is turned OFF, each unit can be individually stopped by its own remote controller.

* 2. After stopping all units together, if SW2 is turned OFF, each unit can be individually started by its own remote controller.

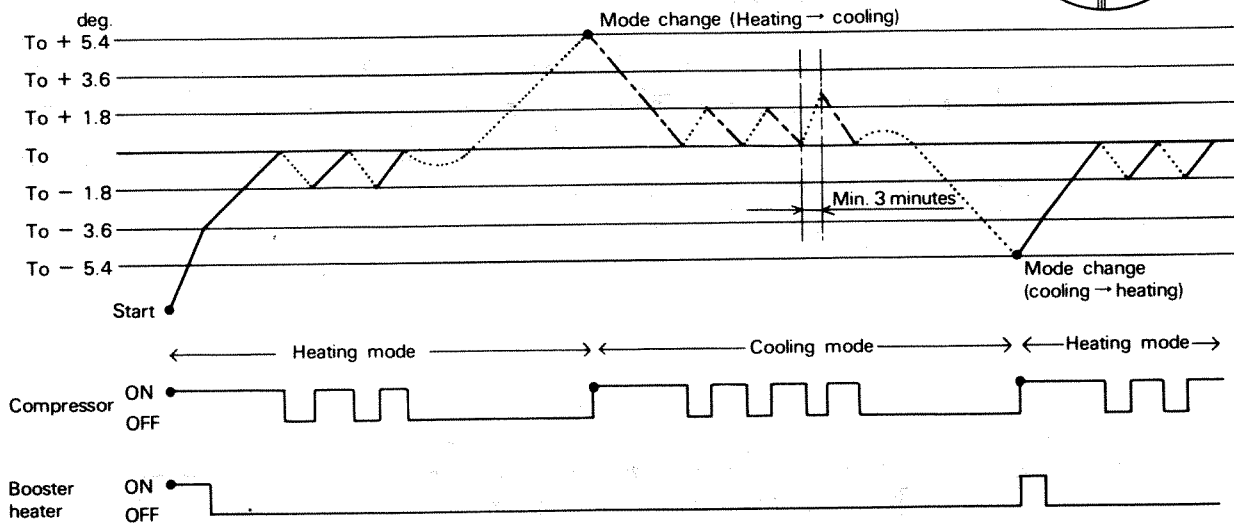
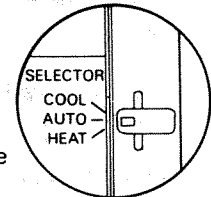
4.7 AUTOMATIC COOLING/HEATING CHANGEOVER OPERATION

An automatic cooling and heating switchover operation system is equipped to ensure easy control and year-round air conditioning.

Once the desired temperature is set, unit operation is switched automatically between cooling and heating, in accordance with the room temperature. In addition, the use of outdoor unit fan speed controller enables cooling operation at outdoor temperatures as low as 32°F.

(Diagram for automatic cooling/heating changeover operation)

- Heating operation To : Selected temperature 62~84°F
- - - Cooling operation To is more than Room temperature : Heating mode
- Compressor off To is equal or less than Room temperature : Cooling mode



Cooling mode is set without condition and three seconds later cooling or heating mode will be set, based on set temperature.

4.8 ROLES PLAYED BY MICROPROCESSORS

1) Green sign system

The microprocessor displays both the selected temperature and actual room temperature.

2) System control for meeting today's complex air conditioning needs

Two-microprocessor control makes group control, remote on/off control, and individual control possible without troublesome modification to the unit.

3) Self diagnostic function for easy troubleshooting

The microprocessor has a self-diagnostic function that greatly simplifies troubleshooting.

4) Detection of outdoor unit abnormal operation

The microprocessor is always measuring the temperature difference between the indoor intake air and indoor coil to check the outdoor unit operation. If the microprocessor judges that the outdoor unit is in abnormal operation mode, then all operation is interrupted and a red alarm lamp lights. (Except PJHX).

In cooling, the coil must be 9°F colder than return air after 5 min. of compressor operation. In heating, the coil must be 9°F hotter than return air after 5 min. of compressor operation and during operation ~~should it fall below the 9°F and remain there for over 25 min., the red alarm lamp lights.~~

5) Frost prevention

If after 16 minutes of compressor operation the indoor coil goes below 34°F, the microprocessor will stop the compressor and allow the indoor coil to rise above 50°F and then restart the compressor (no red light) providing 3 min. time delay is satisfied.

6) The microprocessor stops all operation

If the indoor coil temperature stays below 5°F for 3 minutes with the compressor running.
(The alarm lamp lights)

7) Crankcase heater ON-OFF control

When power is applied to outdoor unit, the crankcase heater will remain energized until the compressor starts. It will remain OFF while compressor is running, when the compressor is OFF the crankcase heater will cycle ON and OFF, one hour ON one hour OFF. This will result in a 50% saving of heater usage.

8) Booster heater control

In heating, the microprocessor will turn on the booster heater any time the difference between set temperature and room temperature exceeds 4°F.

9) Overheat prevention

The microprocessor stops the booster heater operation when indoor coil temperature exceeds 140°F. When the temperature drops below 131°F the heater is allowed to operate.

10) Overheat protection during heating operation.

The microprocessor stops all operation, if the indoor coil temperature exceeds 158°F during heating operation in order to safeguard the unit. (The alarm lamp lights.)

11) Hot adjust system for comfortable heating

Heating always begins with warm air. There is no initial discharge of unpleasant cold air at the start of heating. The indoor fan automatically starts from the low position when the indoor coil temperature exceeds 95°F or 5 minutes after the compressor turned on, and then, 1 minute later, the fan speed will be changed to high speed if fan speed is set to high position.

12) Cold air stop system for pleasant heating

During heating operation, the microprocessor controls the fan operation not to discharge uncomfortable cold air.

- While the compressor does not operate, the indoor fan automatically stops its operation, if the indoor coil temperature is below 95°F, and in case the indoor coil temperature is over 95°F, the indoor fan operates at low speed regardless of high or low fan speed setting.

- In case the compressor does not restart within 5 minutes, the indoor fan automatically cycles 1 minute.
(On 5 minutes off at low speed until the compressor will operate.)

13) Excess heat elimination on the booster heater

After stopping the booster heater, the indoor fan operates at low speed for 1 minute to eliminate the heat even if the on/off switch is turned off.

14) Automatic cooling/heating changeover operation

Refer to page 25.

15) Compressor has 3 minute time-delay to prevent short cycling.

16) In case of power failure system must be re-started manually at the remote controller.

17) Restart kit

A restart kit is available to automatically restart the system, 3 min after power is restored. (optional part No. RESTART AG)

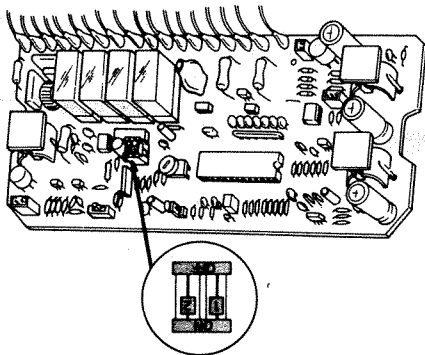
18) Defrost control

Defrost is an independent function of the outdoor unit. However the indoor microprocessor can detect when the outdoor unit is in the defrost mode by measuring the difference between indoor air and indoor coil temperature. To start defrost a period of accumulated compressor run time (Adjustable on the outdoor board for 20,30,50 or 60 minutes) must be satisfied and then if the outdoor coil thermistor (TH-4) is 23 °F or below defrost will begin.

When defrost starts, the reversing valve is deenergized, the outdoor fan stops, the indoor fan stops, and the booster heater turned off.

Defrost is terminated when the outdoor coil reaches 46°F or 15 minutes.

Outdoor board



Time change patterns.

Dip SW2	1		2	Operating time (min)
	OFF	OFF	OFF	20
	ON	OFF	OFF	30
	ON	ON	ON	50(Standard)
	OFF	ON	ON	60

Note.

Changing SW2 setting changes the accumulated compressor run time.

X: 50(Standard)

20,30,60(Variable)

This timer counts the time only when the compressor is operating.

Integration time resets when defrost is completed or the system is turned off at the remote controller.

19) The indoor fan will run all the time in the cooling mode

4.9 OUTDOOR UNIT

208/230VAC is supplied directly to the contacts of the contactor (52C) and to terminals R/1 and T/3 on the outdoor board. R/1 is jumpered to S/2 and then 208/230VAC is supplied to the primary of two transformers. One secondary supplies 23VAC to CN4 to power the outdoor board and the other secondary supplies 6VAC to the circuit that in conjunction with TH4 (Outdoor coil temperature) thermistor controls outdoor fan speed in cooling and defrost in heating. All wire terminals PO through M2 are at 208/230VAC potential

Note that the PUH-5G6.US compressor has start components. Two 300 mfd capacitors in series and a start relay. (See page 28 for check out procedure.)

The 12VDC control voltage from the indoor unit is polar. 1-1,2-2,3-3. No1 is common, No2 energizes relays that supplies voltage to the contactor and fans. No3 energizes a relay that supplies voltage to the reversing valve solenoid in the heating mode.

4.10 TROUBLE-SHOOTING PUH-5G₆ . US COMPRESSOR

1) Manually press the contactor. Does compressor start?

(Condenser Fans will not start during this test.)

If compressor starts, check the following:

A. 12VDC from indoor to outdoor unit (wiring must be polar, 1-1,2-2,3-3).

B. 23VAC from transformer in outdoor unit to outdoor board.

C. If 12VDC and 23VAC are good, there should be 230VAC available at the contactor, if not replace the outdoor board.

If the compressor does not start check the following:

A. Power supply voltage.

B. All connecting wires are correctly connected to the compressor terminals with their colors matching as shown below:

		TERMINAL	COLOR
UNIT	PUH-5G ₆ .US	R (RUN)	BLUE
COMPRESSOR	JH-512NEL	S (START)	RED
		C (COMMON)	WHITE

C. Measure the resistance between compressor terminals and check that the below listed are satisfied:

	JH-512NEL	Resistance
Run to Start	R-S	2.42 Ω
Run to Common	R-C	0.44 Ω
Start to Common	S-C	1.98 Ω

The internal overload protector is located in the common leg of the motor winding (compressor). If readings are good from run to start but open from run to common and start to common, wait for an hour and recheck.

D. Check the compressor grounding by setting the meter to its highest Ohm scale. Read the resistance between each terminal to the compressor shell. If the meter needle moves even a little it means that the compressor is grounded.

If any trouble is found with C or D above it means the compressor is defective and must be replaced.

Order parts No. for compressor is T97507242 (JH-512NEL)

2) Before starting a new compressor check the start capacitor and relay.

(A) Check the starting capacitor for short or open using a capacitor checker. Also check the relief hole at the top of the case (electrolyses type 300 μ F-160V).

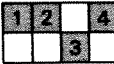
Also check that resistance of shorting resistor is 15k Ω .

(B) Check the starting relay coil and contacts using an Ohm meter. Remove 2 small screws at the top and bottom of the relay and remove relay from the case, then check the contacts for any pitting or sticking.

4.11 DIP SWITCH SETTINGS

The indoor microprocessor contains either two or three DIP switches depending on the unit. DIP stands for dual inline program. In normal operation all toggle switches on DIP switch No. 1 should be in the off position unless it is being used to delay starting of multiple units. Toggles 1 and 2 are also used in the self diagnostic test. Toggles on DIP switch No. 2 and 3 are factory set and should never be moved. For correct setting see chart.

Model (SW2 and SW3 setting position)

MODEL	SW2	SW3
PCH-AG PJH-AG PKH-AG		Without SW3 
PJHX-AG (No.1)		
PJHX-AG (No.2)		

NOTE: Units with only two DIP switches may use a replacement board with three DIP switches providing the toggles on DIP switch No. 3 are set to off.

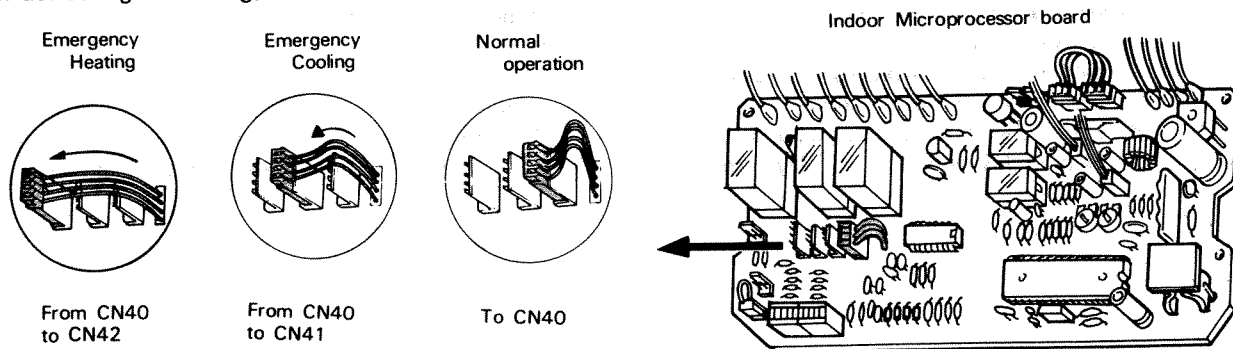
4.12 EMERGENCY OPERATION

The emergency operation function bypasses the remote controller and the indoor microprocessor and energizes the relays to start the indoor and outdoor unit. Check that compressor and fan motors are operable as this function is only available in case of microprocessor circuit troubles.

* Change the emergency receptacle connector on the indoor microprocessor board from CN40 to CN41 for cooling and from CN40 to CN42 for heating.

NOTE: ● ON/OFF switch on remote controller will not work.

- Swing louvers will not operate.
- Indoor fan runs at low speed only and compressor runs continuously.
- No temperature control.
- If defrosting in heating, cold air will come from indoor unit.

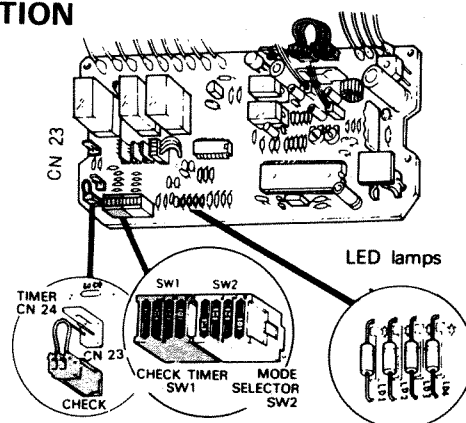


* Be certain all power is off to indoor unit. After moving connector restore power.

4.13 SELF-DIAGNOSTIC TROUBLE-SHOOTING FUNCTION

(Procedure) can only be used when LD 1 is lit.

- I) Check that the receptacle connector with jumper cable is connected to CN23 connector, and all the toggles of DIP switch (SW1) is set to OFF position.
- II) In the event of malfunction, LD1 lights, in normal operation, LD2 lights, and in the case of power off, no LED lamp lights.
※In fault of outdoor unit, LDI and LD2 light.
- III) The location of faults can be determined by changing the toggle setting of SW1 and noting which LED lights.

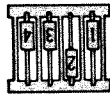
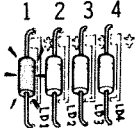
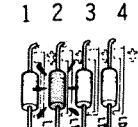
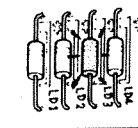
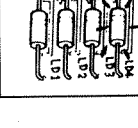


Self-Diagnostic chart Indoor unit

Setting	LED lights	Diagnosis of malfunction	Cause	Remedy
SW1 No.1: ON	LD 1 lights 	Transmission/ reception error	Poor contact or open in remote controller cables. Fault of transmission circuit on remote controller board. Fault of reception circuit on indoor microprocessor board.	1. Check and repair the remote controller cables. 2. Replace the remote controller board. 3. Replace the indoor microprocessor board.
	LD 2 lights 	Freezing/over heating protection mechanism of indoor coil works. (Cooling 5°F) (Heating 159°F)	Miswiring of indoor/outdoor cables. Short-cycle of indoor discharge air. Air filter is dirty, clogged with dirt. Cooling load is too small.	1. Check and repair the wiring of indoor/outdoor cables. 2. Confirm that air outlet has sufficient space. (remove obstacles) 3. Clean the air filter. 4. Check the operating condition. (Beyond the guaranty working range?)
	LD 3 lights 	Drain water overflow protection function works.	Malfunction of drain water lift-up mechanism. Fault of drain water overflow sensor position. Bad heater should cause this also.	1. Check and repair the drain water lift-up mechanism. 2. Check and correct position of the drain sensor. 3. Replace the indoor microprocessor board. (if 1, 2 are no problem)
	LD 4 lights 	*Fault of outdoor unit.	Miswiring of indoor/outdoor cables. No 12V DC to outdoor unit. Fuses of control circuit are open. Malfunction of relay, contactor, Compressor protector parts operate. (49.C, 51C 63H or 63L: OFF)	1. Check and repair the wiring of indoor/outdoor cables. 2. Check the control circuit wiring, and replace the fuse. 3. Inspect and repair the relay, contactor, and etc. 4. Inspect the outdoor fan and compressor operation, and replace as required. Inspect that refrigerant charge is proper. If necessary, repair and recharge the gas.

* If PJHX outdoor unit is in abnormal operation, there will be no alarm light on either indoor unit.

Self-Diagnostic chart Indoor unit

Setting	LED lights	Diagnosis of malfunction	Cause	Remedy
SW1  No.2: ON	LD 1 lights 	Fault of indoor microprocessor board. (Clock error)	Fault of microprocessor input circuit on the indoor microprocessor board.	Replace the indoor microprocessor board.
	LD 2 lights 	Fault of drain water overflow sensor. (short or open)	Poor contact or disconnect of thermistor's connector. Fault of thermistor. Fault of detective circuit on indoor microprocessor board.	1. Check and repair the connectors of the thermistor. 2. Check and replace the thermistor.* 3. Replace the indoor microprocessor board. (if 1, 2 are no problem.)
	LD 3 lights 	Fault of thermistor (TH2) for indoor coil pipe temperature. (short or open)	Poor contact or disconnect of thermistor's connector. Fault of thermistor. Fault of detective circuit on indoor microprocessor board.	1. Check and repair the connectors of the thermistor. 2. Check and replace the thermistor.* 3. Replace the indoor microprocessor board. (If 1,2 are no problem)
	LD 4 lights 	Fault of thermistor (TH5) for indoor intake air temperature. (short or open)	Poor contact or disconnect of thermistor's connector. Fault of thermistor. Fault of detective circuit on indoor microprocessor board.	1. Check and repair the connectors of the thermistor. 2. Check and replace the thermistor.* 3. Replace the indoor microprocessor board. (If 1,2 are no problem)

IV) Repair the faulty parts.

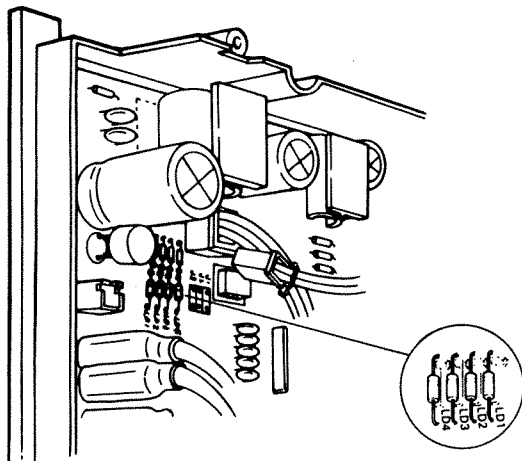
V) Make a test-run after repairing work.

Set the No.1 and No.2 toggles to OFF position, then check again that LD1 does not light.

If LD1 lights, meaning still in malfunction, repeat same procedure from item-III).

* Thermistor should read about 15,000 ohms when bulb is at 32°F.

4.14 SELF DIAGNOSTIC TROUBLE-SHOOTING FUNCTION OF OUTDOOR BOARD



- If there is a problem in outdoor unit but no LED on outdoor board are lighted check the following:
 - (1) Main power fuses.
 - (2) Control circuit fuses.
 - (3) Compressor for locked rotor or grounded.
 - (4) Condenser fan motors.
 - (5) Transformers in outdoor unit.
 - (6) If all check normal, change outdoor board.
- In case of abnormal operation in the outdoor unit and LED lights come on, they will stay on as an indicator for the service contactor although the system will operate if the system is re-started at the remote controller. The LED lights can be turned off only by turning off and restarting main power.

LED lights	Diagnosis of malfunction	Cause	Remedy
No LD light 4 3 2 1 	Compressor protector parts operation	● Gas leak ● Low voltage operation. ● Overload operation. ● Fault of compressor.	● Check the power supply voltage. ● Inspect that refrigerant gas is leaking. If necessary, re charge by weight. ● Check the wiring around the compressor. ● Replace the compressor.
LD 1 light 4 3 2 1 	Power failure	● Power circuit is faulty (poor connection)	● Inspect and repair power circuit.
LD 2 lights 4 3 2 1 	High pressure switch operation	● Overcharge of refrigerant gas. ● Overload of operation. ● Fault of outdoor fan motor.	● Check the pressure of suction and discharge line. ● Inspect that refrigerant gas is overcharge. If necessary, repair and purge the gas. ● Clean the condenser coil. ● Replace the fan motor.
LD 3 lights 4 3 2 1 	Low pressure switch operation	● Gas leak	● Inspect that refrigerant gas is leaking. Repair and recharge as necessary.
LD 4 lights 4 3 2 1 	Fault of thermistor (TH4)	● Poor contact or disconnect of thermistor's connector. ● Fault of thermistor.	● Check and repair the connectors of the thermistor. ● Check and replace the thermistor.
ALL LD lights 4 3 2 1 	Fault of outdoor board	● Fault of transformer.	● Check the voltage of transformer and replace the outdoor board.

5.1 DRAIN WATER LIFT-UP MECHANISM

Condensate drain connection can be done easily because the outlet is located 12-3/8" above the ceiling surface, therefore, when extended drain piping is required, the installation is

All drainage is by gravity flow and requires a slope of 1 in 100 or more.

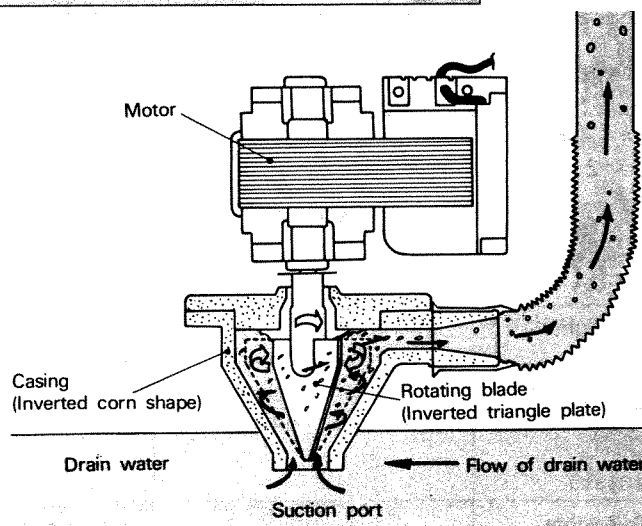
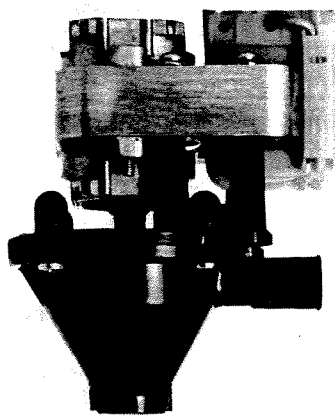
Caution:

The condensate drain water lift-up mechanism is quite different from the normal condensate pump. The lift-up mechanism is designed to move condensate only from the drain pan to the drain outlet and must not be piped to lift water above the drain outlet.

In the drain pan there are a heater element and a thermistor (DS). The thermistor measures the temperature of the heater. When water level is low, the thermistor senses the

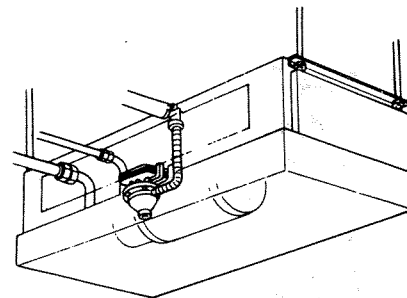
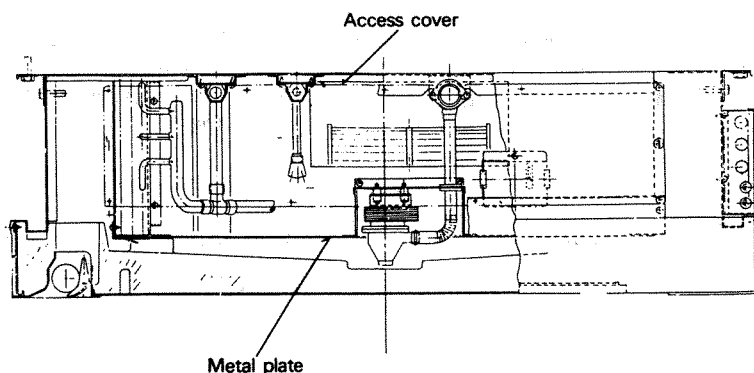
heat of the heater and the drain lift-up mechanism continues to run.

CONSTRUCTION of DRAIN WATER LIFT-UP MECHANISM



5.2 OPERATION CHECK ON DRAIN WATER LIFT-UP MECHANISM

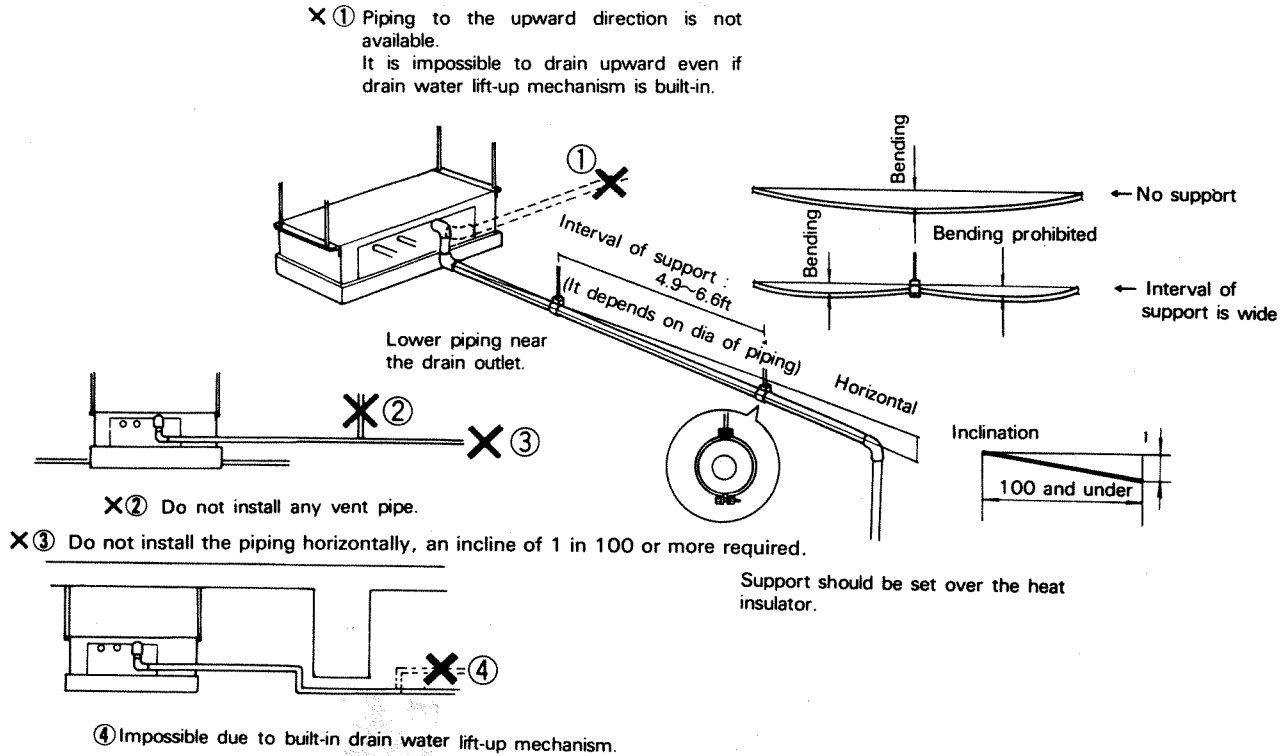
Confirm operation of drain up mechanism by removing side access cover and pouring water onto the metal plate covering drain pan, water will flow into drain pan.



DRAIN PIPING

On multiple unit applications the pipe from the drain hole to the main drain pipe on all units will be the same size. However the size of the main drain pipe must be increased to handle condensate of more than one unit draining at the same time. No vent pipes or traps allowed in drain.

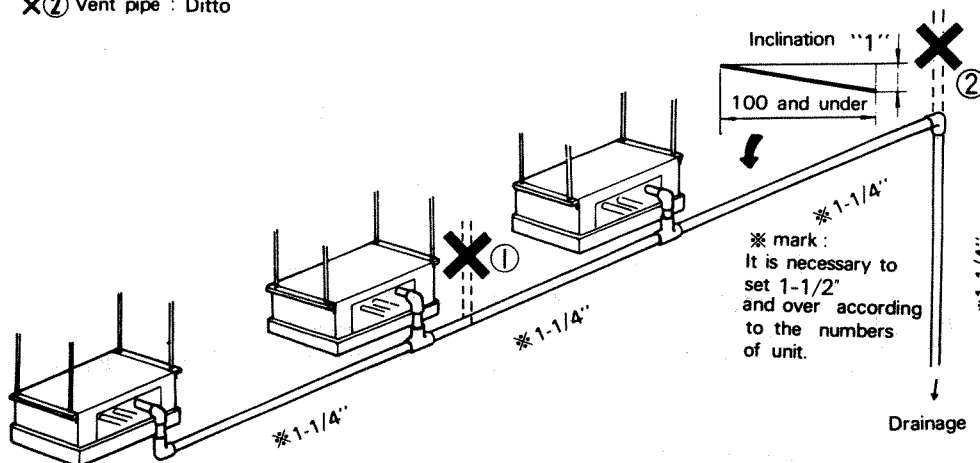
1. Cautions on drain piping (side-drawing).



2. Cautions on drain piping.

Use a larger diameter pipe as it comes near the end.

- X ① Vent pipe : Impossible due to built-in drain water lift-up mechanism.
 X ② Vent pipe : Ditto



6

OPTIONAL PARTS

6.1 REFRIGERANT PIPES

For model : PCH-3AG, PKH-18AG, PKH-24AG, PJH-18AG, PJH-24AG (2 sets) PJHX-36AG, PJHX-48AG

Parts No.	PAC-05FFS-E	PAC-07FFS-E	PAC-10FFS-E	PAC-15FFS-E
Pipe length	16ft (5m)	23ft (7m)	33ft (10m)	49ft (15m)
Pipe size OD	Liquid 3/8in.		Gas : 5/8in.	
Connection method	Indoor unit : Flared		Outdoor unit : Flared	

For model : PCH-4AG, PCH-5AG, PKH-30AG

(1 set) PJHX-36AG, PJHX-48AG

Parts No.	PAC-05FF-E	PAC-07FF-E	PAC-10FF-E	PAC-15FF-E
Pipe length	16ft (5m)	23ft (7m)	33ft (10m)	49ft (15m)
Pipe size OD	Liquid : 1/2in.		Gas : 3/4in.	
Connection method	Indoor unit : Flared		Outdoor unit : Flared	

Note 1. How to connect refrigerant pipes.

Factory supplied optional refrigerant pipings contain refrigerant at above atmospheric pressure, so that as long as connection take no more than 5 minutes, no air will enter, and there will be no need for air purging.

Remove the blind caps and make the connections within 5 minutes. When connections for the indoor and outdoor units have been made, open the stop valve on the outdoor unit to allow refrigerant gas to flow.

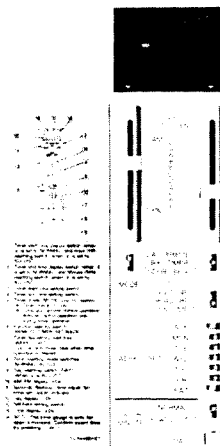
If piping length exceeds 25 ft, a charge of refrigerant will be needed. (Refer to page 2, 6, 9)

Note 2. The following parts are contained in optional refrigerant piping kit.

Heat insulating cover, vinyl tapes, nipples, sleeve and flange (for wall hole), connecting cables and etc.

6.2 WEEKLY TIMER CONTROLLER PAC506 ST

This weekly timer controller is exclusively developed for AG series, giving more features and superior performance. Simple to install, simple to set and simple to operate.



Mr. SLIM

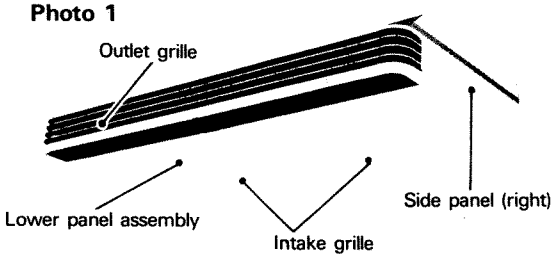
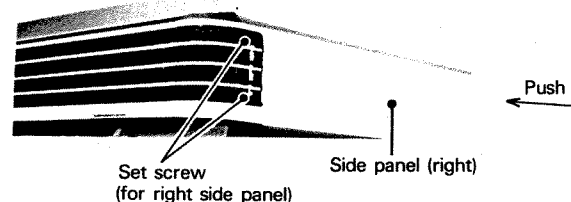
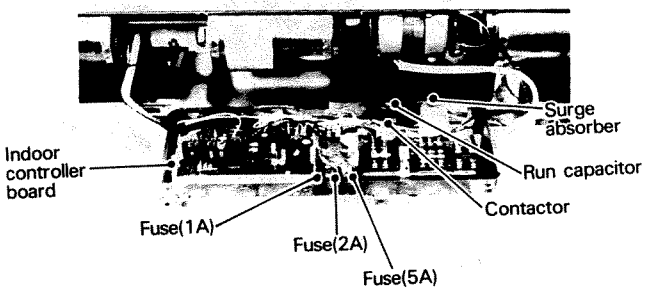
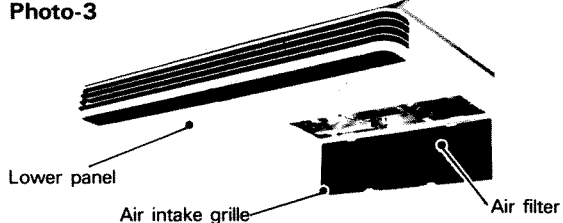
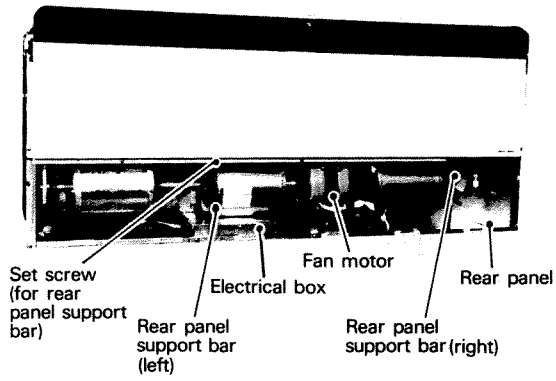
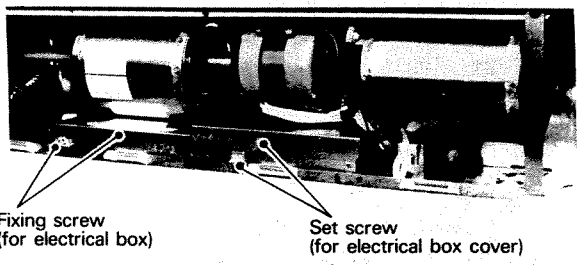
- Setback control (4, 8 or 12DEG.)
- 3 types of timer control (constant temperature setting)
 - 1) Automatic start and stop at set time. (disable switching by remote controller)
 - 2) Automatic start and stop at set time, and enable switching by remote controller at any time.
 - 3) Enable switching by remote controller during set time. (not start automatically, but stop automatically)
- LED display (clock, set time and seven days of the week)
- Quartz clock
- Seven day programming.
- Can control up to eight remote controllers. RESTART KIT(RESTART AG)

6.3 CABLE ADAPTER (PAC-553CN)

6.4 RESTART KIT

Part No : RESTART AG

1 INDOOR UNIT (PCH-3AG)

OPERATING PROCEDURE	PHOTOS
1. Removing the side panel. (1) Remove two set screws of the side panel. (Refer to photo-2) (2) Pull out the panel forward. (Refer to photo-2) (Same in procedure for right and left panels.)	Photo 1  Outlet grille Lower panel assembly Intake grille Side panel (right) Photo-2  Set screw (for right side panel) Side panel (right) Push
2. Removing the electrical box. (1) Remove the air intake grilles and air filters. (Refer to photo-3) (2) Remove the fixing screw of rear panel support bar, and then, remove the two support bars. (Refer to photo-4) (3) Remove 2 fixing screws of electrical box. (Refer to photo-4) (4) Pull out the electrical box, and then hang it from the indoor unit with wire. (Refer to photo-5) (5) Remove the two set screws to take out the cover panels of electrical box. (Refer to photo 5) (6) This enables to check the inside of electrical box. ● indoor controller board(I.B) ● Run capacitor(C1) ● Surge absorber(AR) ● Contactor for Heater(88H) ● Fuse(5A,2A,1A) Photo-6  Indoor controller board Surge absorber Run capacitor Contactor Fuse(1A) Fuse(2A) Fuse(5A)	Photo-3  Lower panel Air intake grille Air filter Photo-4  Set screw (for rear panel support bar) Electrical box Fan motor Rear panel Rear panel support bar (left) Rear panel support bar (right) Photo-5  Fixing screw (for electrical box) Set screw (for electrical box cover)

OPERATING PROCEDURE

3. Removing the swing louver and louver motor.

Note: Perform the following with the indoor unit lowered down to the floor.

- (1) Remove the side panels (right and left).
(Refer to item 1-(1),(2))
- (2) Pull out connectors.(white, red) (Refer to photo-8)
- (3) Remove the air intake grille.
(Refer to photo-1)
- (4) Remove the air outlet grille. (Refer to photo-7)
(Pull out the front air outlet grille in the direction of arrow.)
- (5) Remove the Lower panel.(Refer to photo-9)
●set screw×8
- (6) Remove the swing louver shaft set screw.
(Refer to photo-10)
- (7) Remove swing louver from support metal at the center of swing louver.
- (8) Remove the whole swing louver by slightly pulling to the left side. (on the other side of set screw)
- (9) Remove 2 fixing screws of louver motor, then remove the louver motor.

PHOTOS

Photo-7

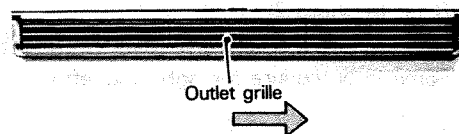


Photo-8

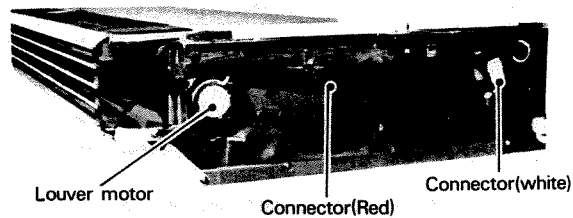


Photo-9

Note: Lower indoor unit from the ceiling and perform work on a stand.

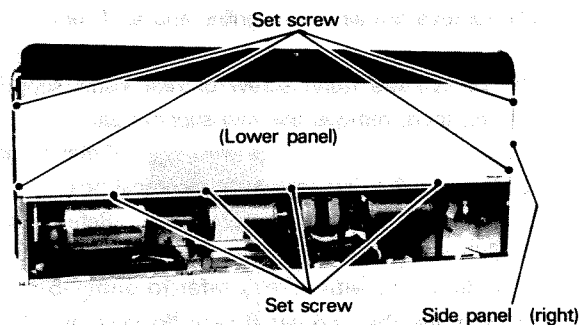
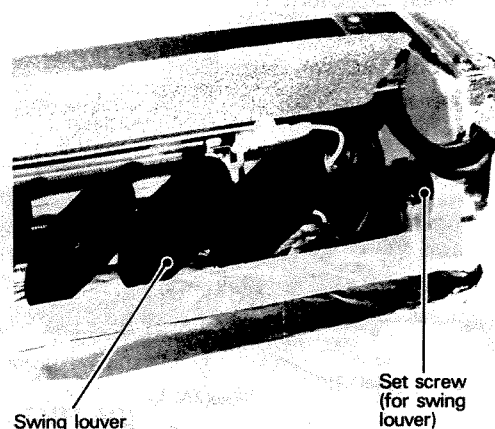


Photo-10



OPERATING PROCEDURE
4. Removing the Heater assembly.

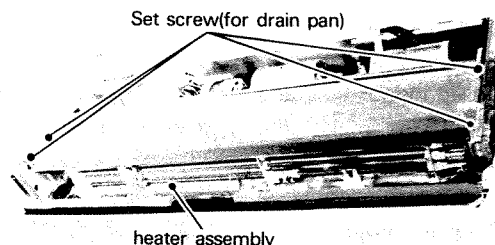
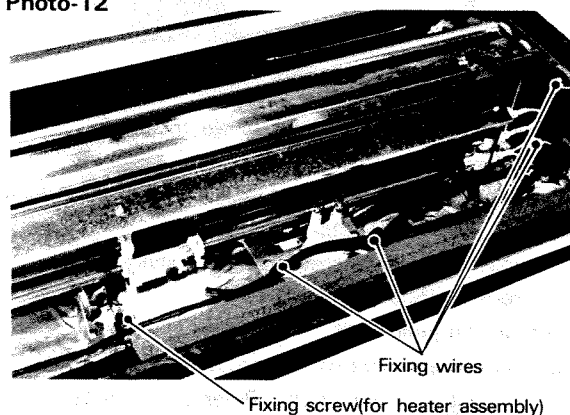
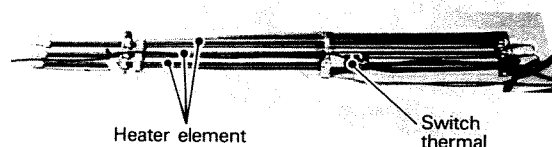
Note: Perform the following steps by removing the indoor unit installed and placed on a workbench.

- (1) Remove the side panel.(right and left)
[Refer to item 1-(1) (2)]
- (2) Remove the connector (Red)
[Refer to item 3-(2)]
- (3) Remove the intake grilles.
[Refer to item 3-(3)]
- (4) Remove the outlet grille. [Refer to item3-(4)]
- (5) Remove the lower panel.[Refer to item 3-(5)]
- (6) Remove the swing louver shaft set screw.
[Refer to item 3-(6)]
- (7) Remove the swing louver from the support plate at the center of swing louver. [Refer to item3-(7)]
- (8) Remove the whole swing louver by slightly pulling to the left side.(on the other side of set screw)
[Refer to item 3-(8)]
- (9) Remove the drain pan.(Set screw × 4)
[Refer to photo-10]
- (10) Remove 3 fixing screws of heater assembly.
[Refer to photo-12]
- (11) Loosen 7 fixing wires of lead wires for heater assembly. [Refer to photo-12]
- (12) Remove the heater assembly.

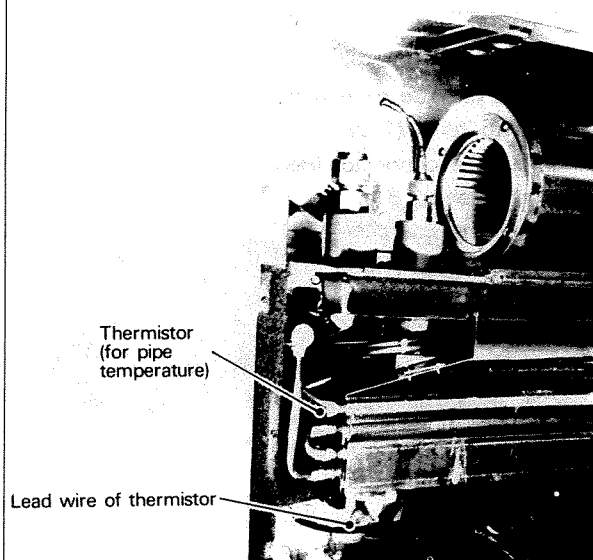
5. Removing the Thermistor(for pipe temperature)

Note: Perform the following steps by removing the installed indoor unit, and placing it on a working stand.

- (1) Remove the side panels.(right and left)
[Refer to item 1-(1)(2)]
- (2) Remove the air intake grilles.[Refer to item 3-(3)]
- (3) Remove the outlet grille.[Refer to item 3-(4)]
- (4) Remove the Lower panel.[Refer to item 3-(5)]
- (5) Remove the drain pan (Set screw × 4)
[Refer to photo-11]
- (6) Remove thermistor fixed to heat exchanger pipe section. [Refer to photo-14]
- (7) Remove electrical box fixing screws.
[Refer to item 2-(3)]
- (8) Pull out the electrical box. [Refer to item 2-(4)]
- (9) Remove the cover panels of electrical box.
[Refer to item 2-(5)]
- (10) Remove the connector of thermistor.

PHOTOS
Photo-11

Photo-12

Photo-13 (Heater assembly)

Photo-14

(heat exchanger)



OPERATING PROCEDURE

6. Removing the fan motor.

Note: Perform the following steps by removing the installed indoor unit, and placing it on a workstand.

- (1) Remove the intake grilles. [Refer to item3-(3)]
- (2) Remove the rear panel support bars (right and left).
There are 1 each of set screw.
[Refer to photo-4]
- (3) Loosen the fan lead wire fixing wires.

- (4) Pull out the electrical box. [Refer to item2-(4)]
- (5) Remove the cover panels of electrical box.
[Refer to item 2-(5)]
- (6) Disconnect casing fan connector inside the electrical box. [Refer to photo-15]
- (7) Loosen two set screws of joint shaft with hexagon wrench. [Refer to photo-15]
- (8) Slide the joint shaft.
- (9) Loosen set screws of casing fan (A), then pull the fan out from fan shaft. [Refer to photo-16]
- (10) Remove two motor fixing bands. (2each of set screws)
- (11) Pull out the motor.

PHOTOS

Photo-15

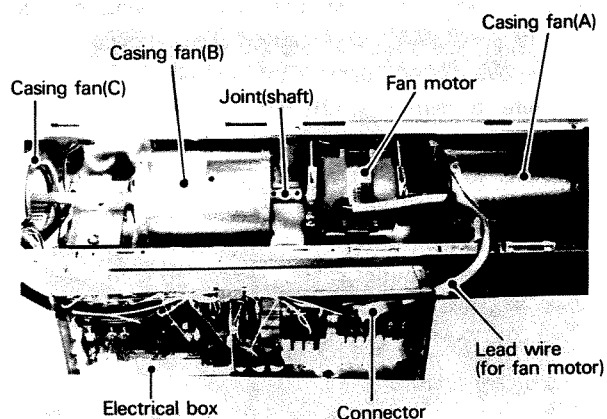
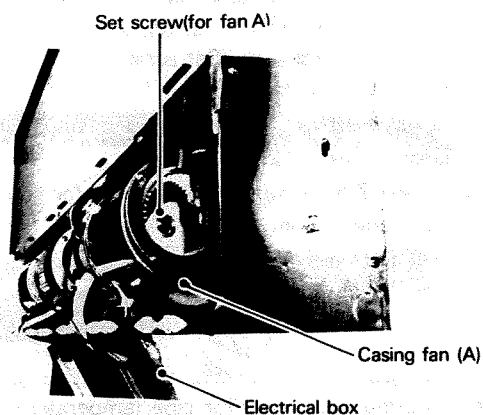


Photo-16



7. Removing the alarm lamp.

- (1) Remove the side panel(right).
[Refer to item1-(1)(2)]
- (2) Remove the connector (Red).
[Refer to photo-8]
- (3) Remove the side panel (left).
[Refer to item1-(1)(2)]
- (4) Remove the intake grilles.
[Refer to item3-(2)]
- (5) Remove the lower panel.
[Refer to item 3-(5)]
- (6) Remove the alarm lamp.

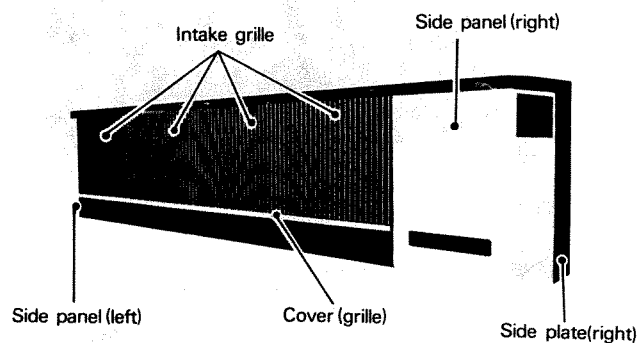
2. INDOOR UNIT PKH-18~30AG.US

OPERATING PROCEDURE

1. Removing the side panel(right).

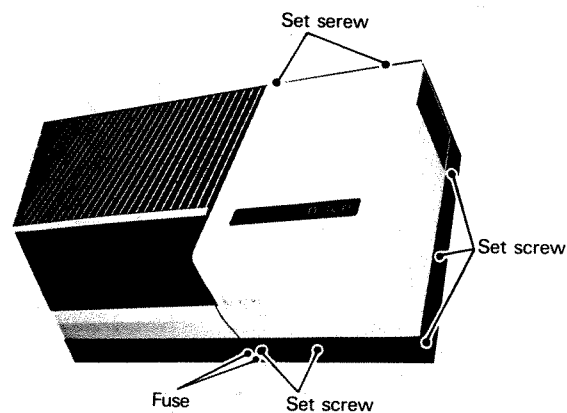
- (1) Unscrew seven set screws to remove the panel.
(See photo 2.)

Photo 1.



PHOTOS

Photo 2.



2. Removing the side panel(left).

- (1) Pull out the panel downward after remove two set screws. (See photo 3.)

Photo 3.

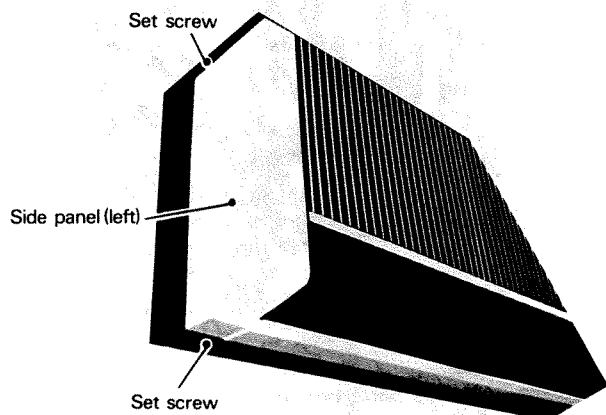
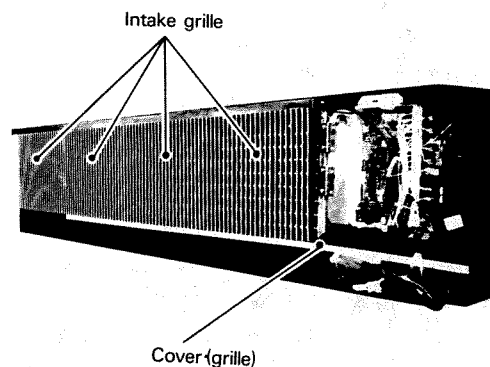


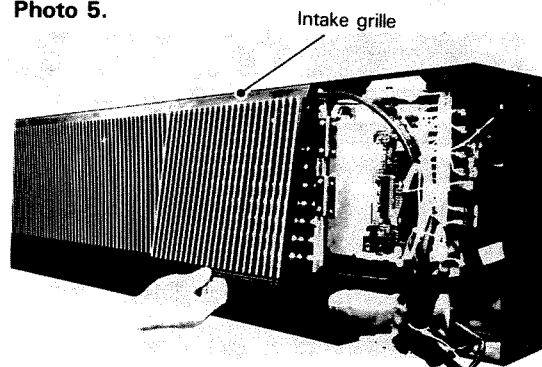
Photo 4.



3. Removing the intake grilles.

- (1) Remove the three(four) air filters.
- (2) Remove the side panels (right and left).
(Refer to items 1 and 2.)
- (3) Pull out the cover (grille) to either side of right or left.
(See photo 4.)
- (4) Put your finger tips into underside centre of the intake grille and unfasten the insertings at lower right and left, then pull out the grille toward your side lowering it a little. Same in procedure for all three (four) grilles. (See photo 5.)

Photo 5.



OPERATING PROCEDURE

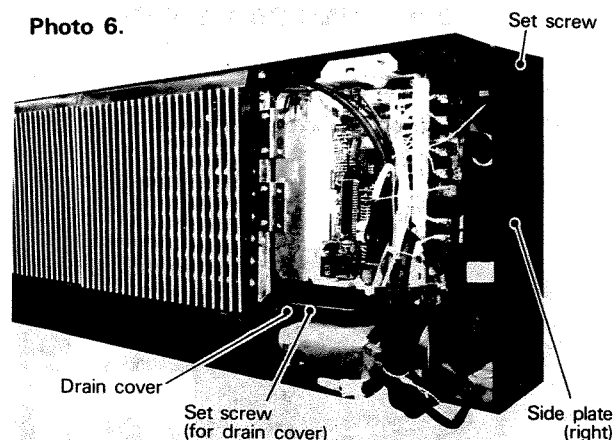
4. Removing the side plate(right).

- (1) Remove the side panel(right). (Refer to item 1.)
- (2) Remove two set screws and pull out the plate downward. (See photo 6.)

5. Removing drain cover.

- (1) Remove the side panel(right). (Refer to item 1.)
- (2) Take off the drain cover with the set screw loosening. (See photo 6.)

Photo 6.



6. Removing the electrical parts.

- (1) Remove the side plate(right). (Refer to item 4.)
- (2) Disconnect the leads and remove the connector for the fan motor with the louver motor. (See photo 7.)
- (3) Electrical parts. (See photo 7.)
 - Contactor fan motor (52F)
 - Indoor board
 - TB. (Terminal bed)
- (4) Electrical parts. (See photo 8)

Remove electrical parts box set screws and set electrical parts box upright. (See photo 8.)

 - Transformer
 - Run capacitor
 - Surge absorber
 - Thermistor
- (5) Electrical parts. (See photo 9.)

Remove cover(grille), then remove intake grille(right). (Refer to item 3-(3) (4))

 - Thermistor (for intake air)
 - Alarm lamp

Photo 7.

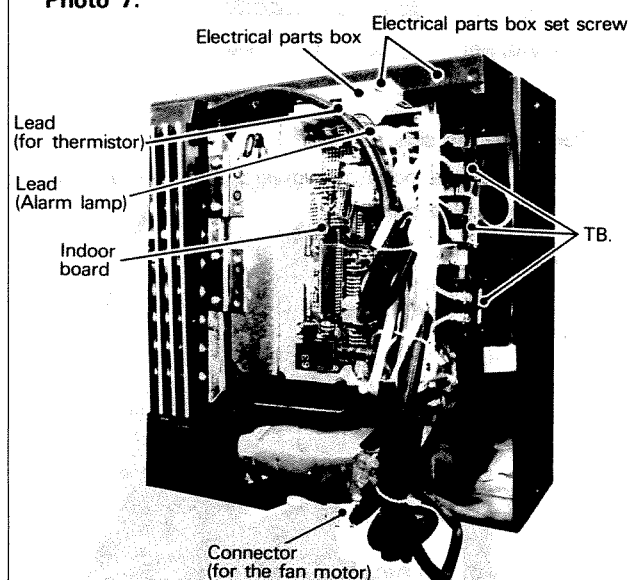


Photo 9.

Thermistor(for intake air temperature) Alarm lamp

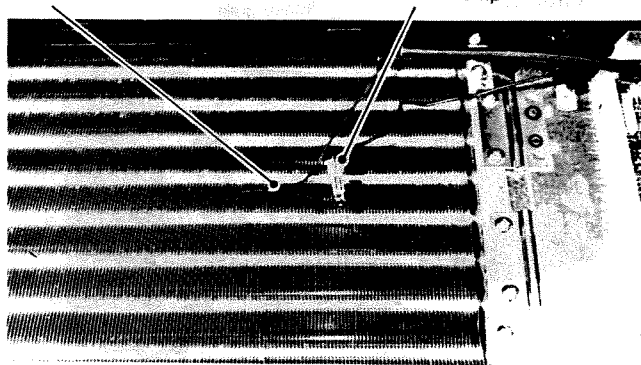
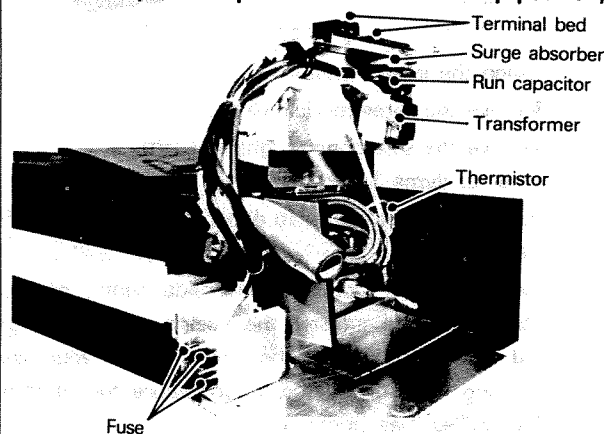


Photo 8. (Electical parts box in set in set up position)



OPERATING PROCEDURE

7. Remove the fan assembly.

- (1) Remove the side panels (right and left).
(Refer to items 1 and 2.)
- (2) Remove the three(four) intake grilles.
(Refer to items 3-(3), and (5).)
- (3) Remove the side plate(right). (Refer to item 4-(2).)
- (4) Take off the drain cover. (Refer to item 5-(2).)
- (5) Remove fuse box set screw on the back plate.
(See photo 10.)
- (6) Remove one set screw on the back plate and remove the back plate. (See photo 11.)
- (7) Unscrew four set screws to remove the lower panel (rear). (See photo 11.)
- (8) Unscrew four set screws to remove the lower panel (front). (See photo 12.)
- (9) Disconnect the leads and remove the connector for the fan motor with the louver motor. (See photo 12.)
- (10) Remove the set screw of the support. (See photo 13.)
(See photo 13.)
- (11) Remove two right and two left set screws of the fan assembly. (See photos 14 and 15.)
- (12) Remove set screws on the line flow fan, then remove stopper plate. (See photo 16.)
- (13) Remove motor shaft set screw, then remove the fan. (See photo 16.)
- (14) Remove set screw on the motor fixing plate(left and right), then remove the motor. (See photo 16.)

Photo 14.

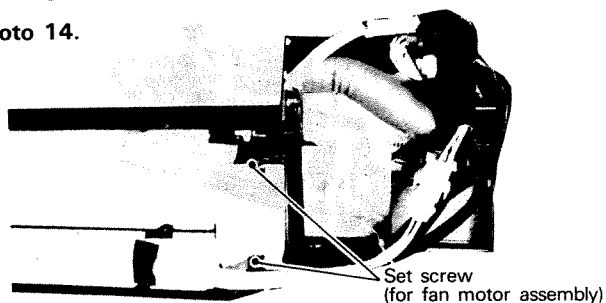
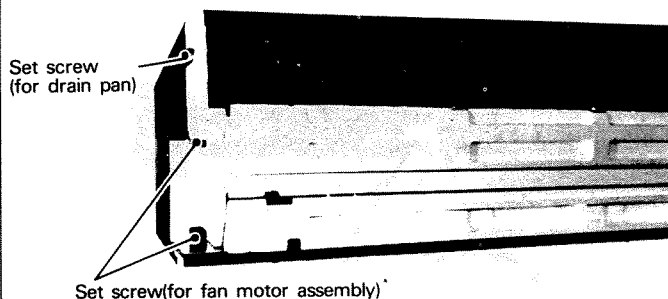


Photo 15.



PHOTOS

Photo 10.

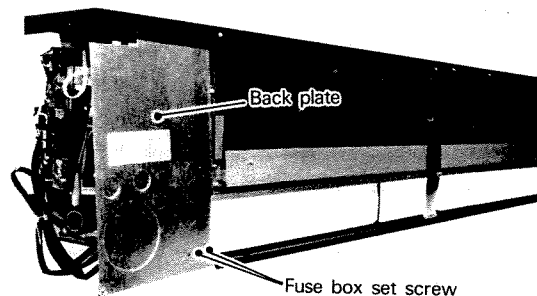


Photo 11.

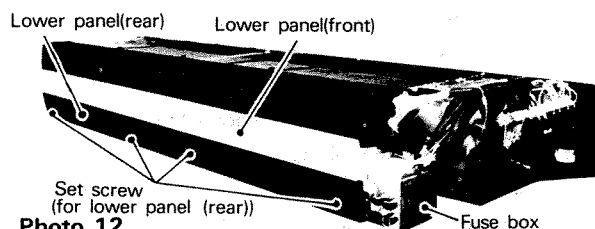


Photo 12.

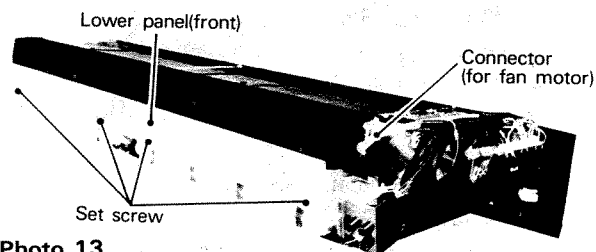


Photo 13.

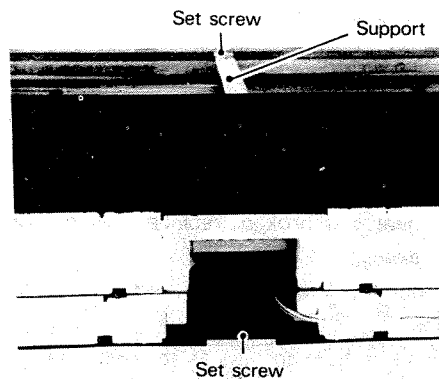
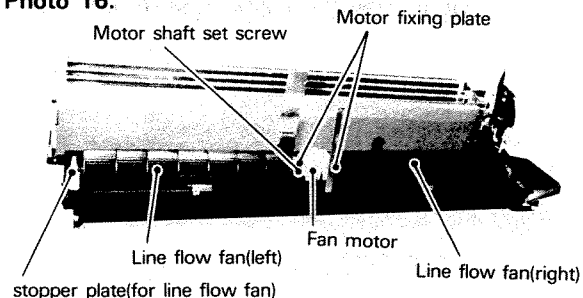


Photo 16.



OPERATING PROCEDURE

8. Remove the heater.

- (1) Remove the side panels (right and left).
(Refer to items 1 and 2.)
- (2) Remove the three (four) intake grilles.
(Refer to items 3-(3), and (5).)
- (3) Remove the side plate (right). (Refer to item 4-(2).)
- (4) Take off the drain cover. (Refer to item 5-(2).)
- (5) Remove fuse box set screw on the back plate.
(Refer to item 7-(5).)
- (6) Remove one set screw on the back plate and remove the back plate. (Refer to item 7-(6).)
- (7) Unscrew four set screws to remove the lower panel (rear). (Refer to item 7-(7))
- (8) Unscrew four set screws to remove the lower panel (front). (Refer to item 7-(8))
- (9) Disconnect the leads and remove the connector for the fan motor with the louver motor.
(Refer to item 7-(9))
- (10) Remove the set screw of the support.
(Refer to item 7-(10).)
- (11) Remove the fan assembly. (Refer to photo 16.)
- (12) Disconnect the heater lead connector.
(Refer to photo 18.)
- (13) Remove 2 heater assembly set screws.
(Refer to photo 17.)
- (14) Remove the heater assembly.
Note: Disconnect the heater assembly from the main body catch, then remove the entire heater assembly.
- (15) Replace heater or thermal fuse heater thermostat.
When heater is broken, replace only the broken heater element.
 - ① Pull out the leads or both ends of the broken heater.
 - ② Remove tightening nuts from both ends of the heater.
 - ③ Pull out the heater element and replace.

PHOTOS

Photo 17

(Photo below shows the indoor removed, placed on a workbench and the fan assembly removed.)

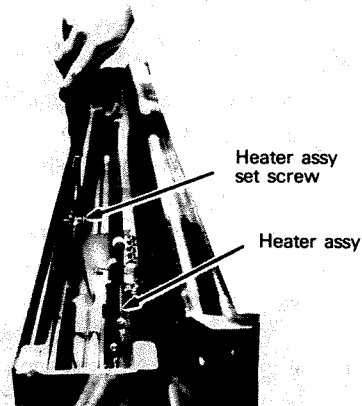


Photo 18

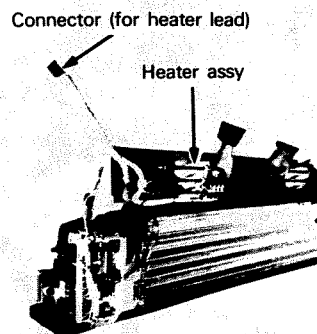
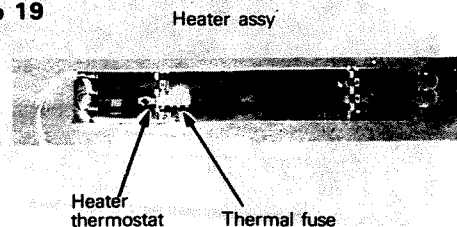
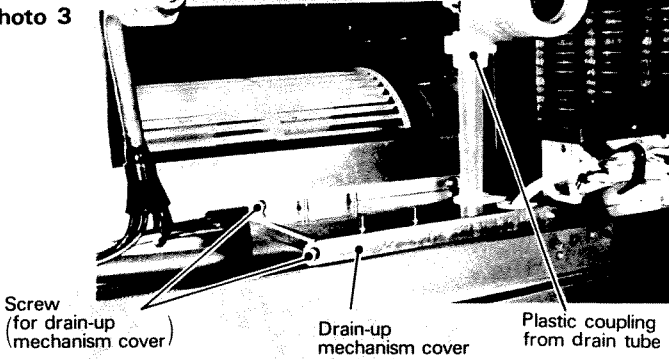
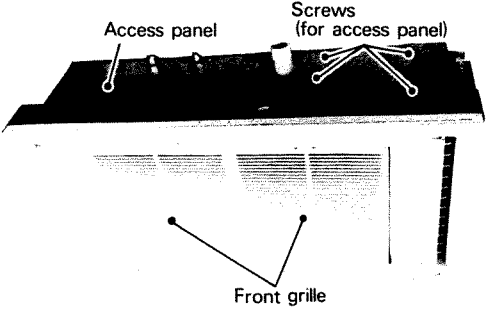
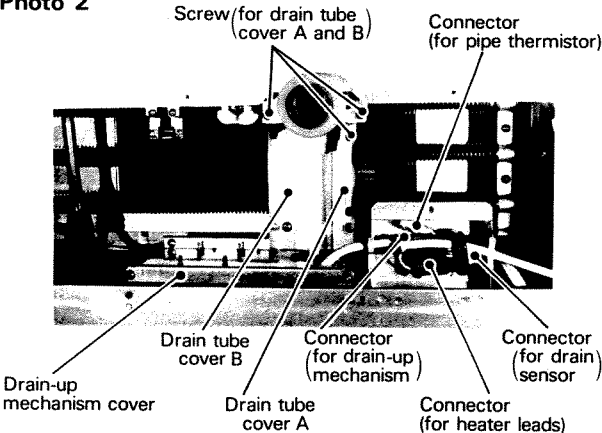
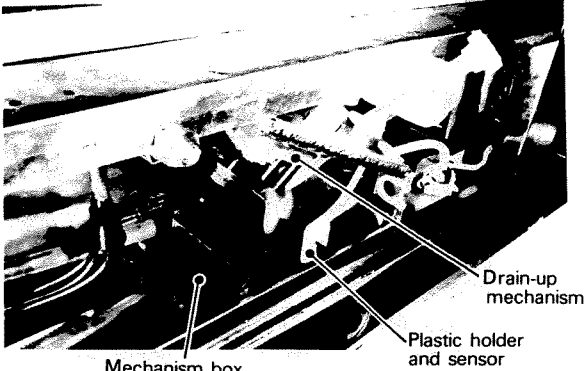
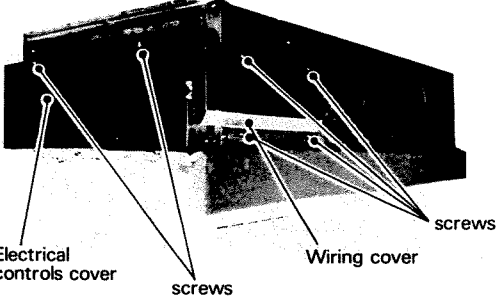
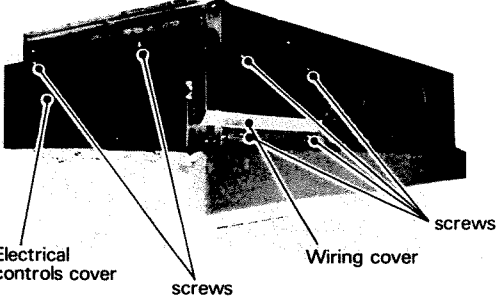


Photo 19



3. INDOOR UNIT (PJH-24AG.US)

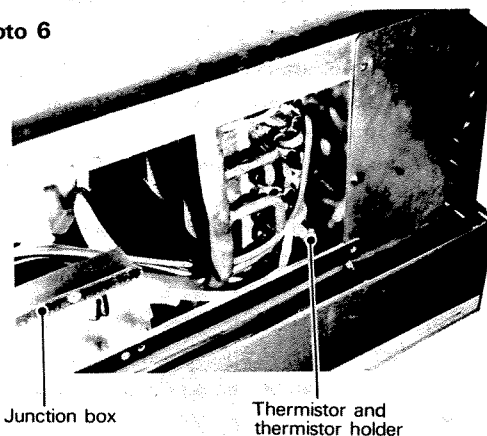
OPERATING PROCEDURE	PHOTOS
1. Service drain-up mechanism (1) Remove side access panel. (10 screws) (Refer to photo 1) (2) Remove drain tube covers A and B (6 screws) (Refer to photo 2) (3) Disconnect two power plugs in Junction box one for mechanism motor and one to the drain sensor. (Refer to photo 2) (4) Unscrew plastic coupling for drain tube. ※ After this coupling has been removed more than three times it will be necessary to reseal with a bonding sealant. (5) Remove 4 screws from drain-up mechanism cover and remove sensor lead wires from grommet and remove mechanism. (Refer to photo 3) (6) Four screws hold drain-up mechanism to cover. Photo 3 	Photo 1  Photo 2 
2. Removing the drain sensor (1) Remove side access panel. [Refer to item 1-(1)] (2) Disconnect two power plugs. [Refer to item 1-(2)] (3) Unscrew plastic coupling from drain tube. [Refer to item 1-(3)] (4) Remove 4 screws from drain-up mechanism cover and remove sensor lead wires. [Refer to item 1-(4)] (5) Remove plastic holder and sensor from side of mechanism box. (Refer to photo 4) (6) Open plastic holder and remove sensor. Photo 4 	Photo 5 
3. Removing the intake thermistor (TH5) (1) Remove the front grille. [Refer to item 5-(1)] (2) Remove the wiring cover. (Refer to photo 5) (3) Remove the electrical controls cover. (Refer to photo 5) (4) Thermistor is located in return air area at end close to electrical controls and is inserted in a plastic holder. (Refer to photo 9)	Photo 5 

OPERATING PROCEDURE

4. Removing indoor piping thermistor (TH2)

- (1) Remove side access panel. (10 screws)
[Refer to item 1-(1)]
- (2) Disconnect black wire harness to free thermistor wires. Disconnect connector and remove from junction box. (Refer to photo 3)
- (3) Pull up on thermistor to remove from thermistor holder. (Refer to photo 6)
- (4) When replacing thermistor it is necessary to push the thermistor all the way down into the holder for the best temperature transfer. Also make sure that all wires in junction box are returned underneath the black wiring harness. (Refer to photo 6)

Photo 6

**5. Removing the fan motor**

- (1) Remove front grille by turning screws in correct direction one quarter turn. (Refer to photo 7)
- (2) Remove wiring harness clamp and strap on plastic bag covering wiring connectors. Remove bag.
- (3) Disconnect white fan motor wiring connector. (Refer to photo 8)
- (4) Remove 6 mounting screws, two at each end of motor-fan bracket. (Refer to photo 9)
- (5) Shift whole bracket with fan and motor attached toward side containing wiring connections and remove.

Photo 8

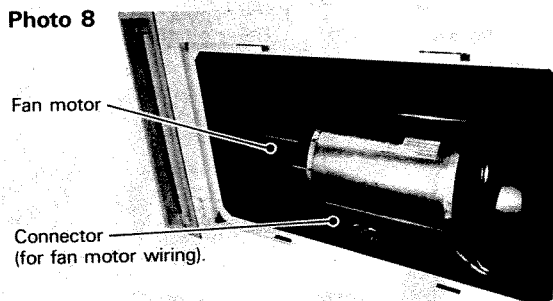


Photo 9

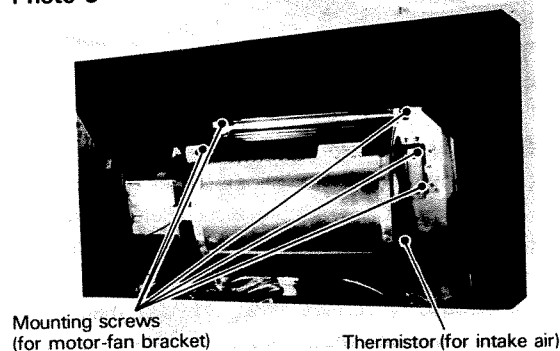
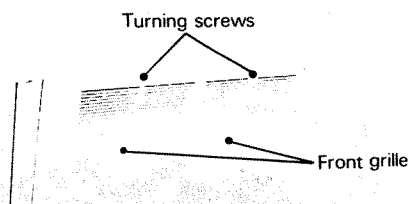


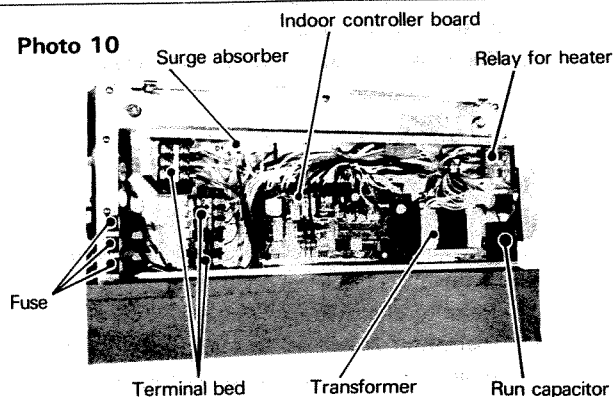
Photo 7

**6. Removal of parts in the electrical box**

- (1) Remove the electrical box cover.
(Set screw $\times$ 2) [Refer to photo 10]

- Indoor controller board
- Transformer
- Run capacitor
- Fuse
- Surge absorber
- Terminal bed
- Relay for heater

Photo 10

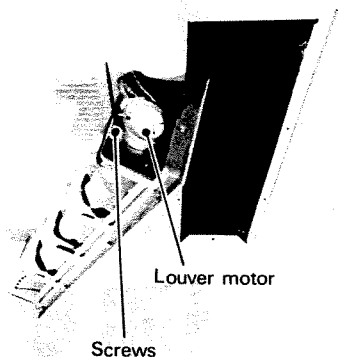


OPERATION PROCEDURE

7. Removing louver motor

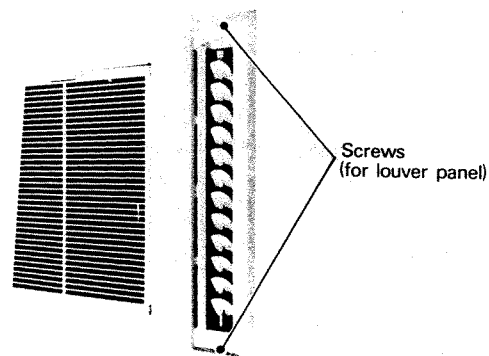
- (1) Remove two screws one each end.
- (2) Squeeze and lift up on louver panel to loosen plastic clips holding louver to case. (Refer to photo 11)
- (3) Lift up on both ends to remove louver and motor.
- (4) Louver motor will be disconnected by removing two screws and connecting wiring. When replacing, always make sure ground wire is attached.

Photo 12



PHOTOS

Photo 11

**8. Removing heater elements**

(NOTE) Do not remove whole heater assembly.

- (1) Remove the side access panel. [Refer to item 1-(1)]
- (2) Remove the drain tube covers A and B. [Refer to item 1-(2)]
- (3) Unscrew the plastic coupling for the drain tube. [Refer to item 1-(4)]
- (4) Remove the lead wires at both ends of heater elements. [Refer to photo 13]
- (5) Remove the heater elements setting plates on both side. (2 screws on each side) [Refer to photo 13]
- (6) Hold down the drain tube to your side and take out the broken heater elements one by one). [Refer to photo 14]

* In order to replace the thermal fuse or the thermal switch, only removing the side access panel is needed. [Refer to photo 15]

Photo 13

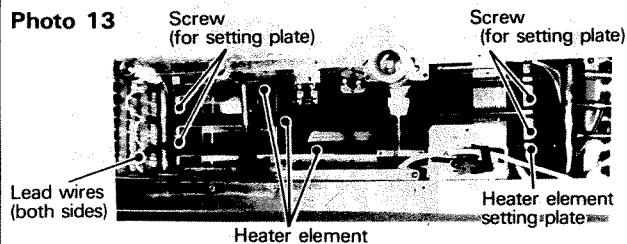


Photo 14

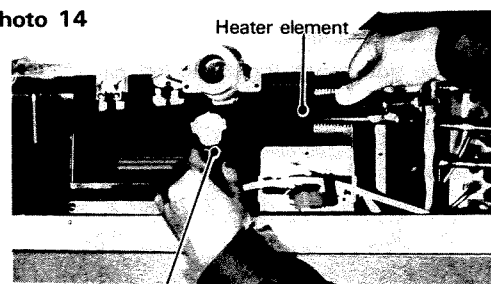


Photo 15

