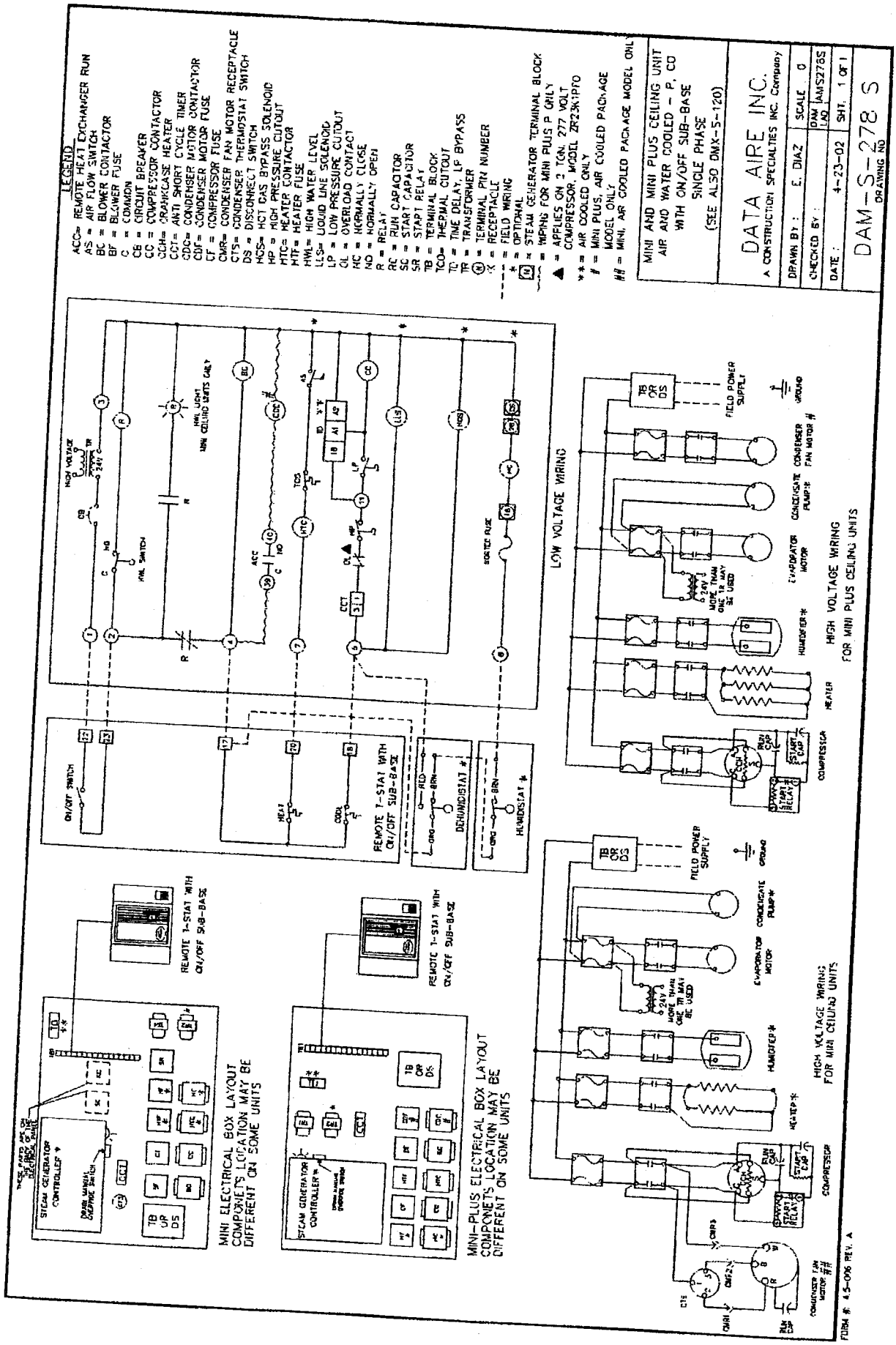
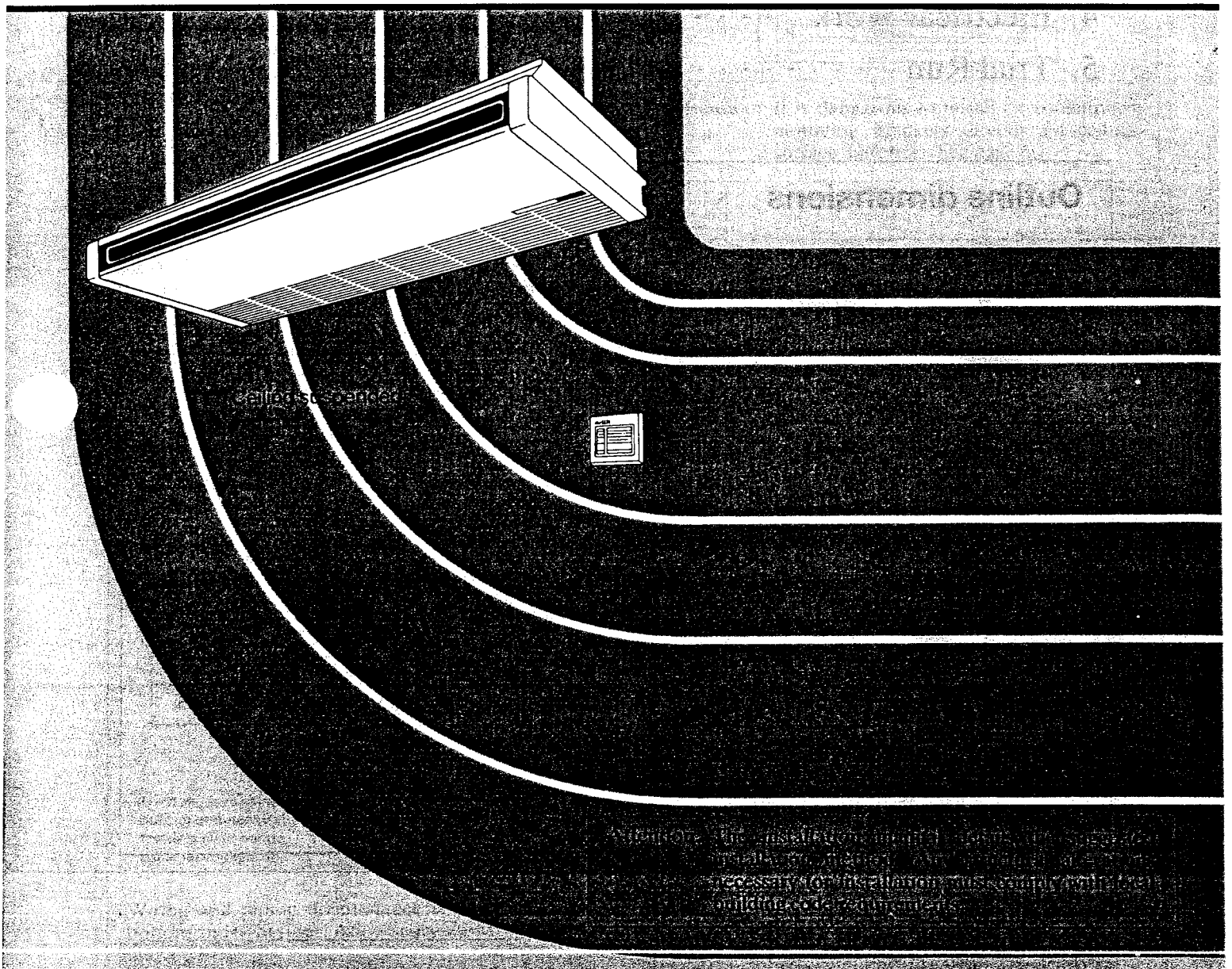

LEGEND
ACC= REMOTE HEAT EXCHANGER RUN
AS = AIR FLOW SWITCH
BC = BLOWER CONTACTOR
BF = BLOWER FUSE
C = COMMON
CB = CIRCUIT BREAKER
CC = COMPRESSOR CONTACTOR
CCH= CRANKCASE HEATER
CCT= ANTI SHORT CYCLE TIMER
CDC= CONDENSER MOTOR CONTACTOR
CDF= CONDENSER MOTOR FUSE
CF = COMPRESSOR FUSE
CMR= CONDENSER FAN MOTOR RECEPTACLE
CTS= CONDENSER THERMOSTAT SWITCH
DS = DISCONNECT SWITCH
HCS= HOT GAS BYPASS SOLENOID
HP = HIGH PRESSURE CUTOUT
HTC= HEATER CONTACTOR
HTF= HEATER FUSE
HWL= HIGH WATER LEVEL
LLS= LIQUID LINE SOLENOID
LP = LOW PRESSURE CUTOUT
OL = OVERLOAD CONTACT
NC = NORMALLY CLOSE
NO = NORMALLY OPEN
R = RELAY
RC = RUN CAPACITOR
SC = START CAPACITOR
SR = START RELAY
TB = TERMINAL BLOCK
TCO= THERMAL CUTOUT
TD = TIME DELAY, LP BYPASS
TR = TRANSFORMER
(H) = TERMINAL PIN NUMBER
XX = RECEPTACLE
---- = FIELD WIRING
* = OPTIONAL
= STEAM GENERATOR TERMINAL BLOCK
= WIRING FOR MINI PLUS P ONLY
▲ = APPLIES ON 2 TON, 277 VOLT COMPRESSOR, MODEL ZR23K1PFO
** = AIR COOLED ONLY
# = MINI PLUS, AIR COOLED PACKAGE MODEL ONLY
= MINI, AIR COOLED PACKAGE MODEL ONLY
MINI AND MINI PLUS CEILING UNIT
AIR AND WATER COOLED - P, CD
WITH ON/OFF SUB-BASE
SINGLE PHASE
(SEE ALSO DMX-5-120)
DATA AIRE INC.
A CONSTRUCTION SPECIALTIES INC. Company
DRAWN BY : E. DIAZ
SCALE 0
CHECKED BY :
DAW NO. AMS278S
DATE : 4-23-02
SHT. 1 OF 1
DAM-S-278 S
DRAWING NO
LOW VOLTAGE WIRING
HIGH VOLTAGE WIRING
FOR MINI PLUS CEILING UNITS
MINI ELECTRICAL BOX LAYOUT
COMPONETS LOCATION MAY BE
DIFFERENT ON SOME UNITS
MINI-PLUS ELECTRICAL BOX LAYOUT
COMPONETS LOCATION MAY BE
DIFFERENT ON SOME UNITS
REMOTE T-STAT WITH
ON/OFF SUB-BASE
FORM # 4.5-ONS REV. A

MITSUBISHI ELECTRIC
Air-Conditioners

Mr.SLIM

Models: PC24, 30, 36, 42EK

Installation Manual



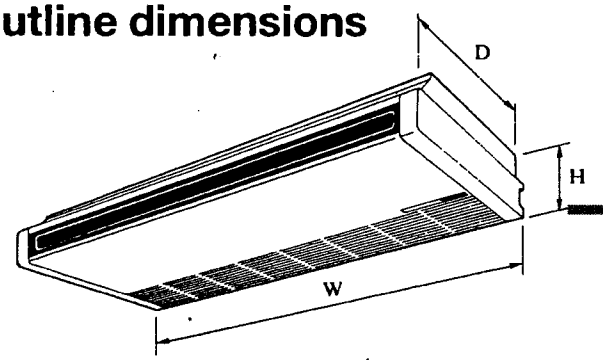
These air conditioners incorporate the latest technological advances of Mitsubishi Electric and are produced under strict quality control.

MITSUBISHI ELECTRIC

Contents

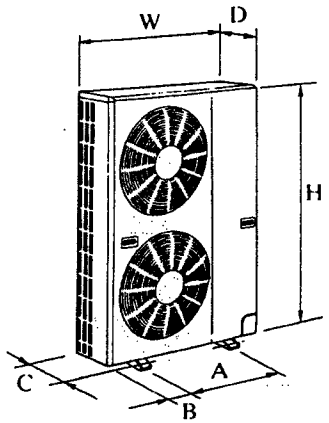
1. Selecting the Installation Location 2
2. Installing the Unit 5
3. Refrigerant and Drainage Piping 8
4. Electrical Work 13
5. Trial Run 17
6. Remote Controller Installation Manual 20

Outline dimensions



Indoor unit (inch)

Models	W	D	H
PC24, 30EK	50-7/16	26-13/16	10-1/8
PC36, 42EK	62-1/4	26-13/16	10-1/8



Outdoor unit **(PUG24BKB)** (inch)

Models	W	D	H	A	B	C
PU24, 30EK	34-1/4	11-5/8	49-1/2	19-11/16	5-5/16	13
PU36,42EK(2)	38-3/16	13-9/16	49-1/2	23-5/8	5-5/16	15

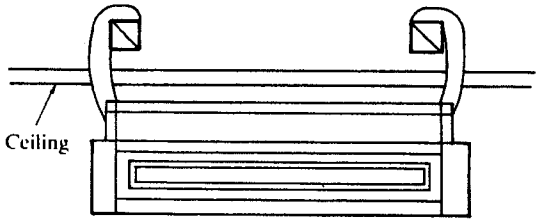
Units should be installed by licensed contractor according to local code requirements.

1. Selecting the Installation Location

< Indoor Unit >

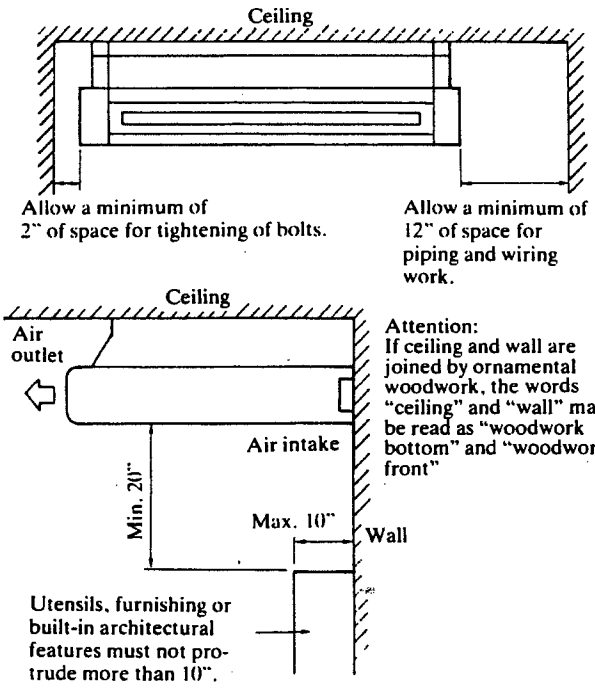
- Before installing, determine route for carrying in unit.
- Select location not exposed to outside air.
- Select location free of obstructions to airflow in and out of unit.
- Select location with easy access to outside for refrigerant piping.
- Select location from which air will be blown into all corners of the room.
- Avoid locations subject to splashing or steam.
- Avoid locations in which combustible gas may be generated, settle or leak.
- Aviod installation near machines emitting high-frequency waves. (High frequency welders etc.)

Suspend unit only from ceilings strong enough to bear unit weight.



Attention: It is dangerous to install air conditioner mounting brackets directly on ceiling surface material. (See page 6.)

Installation: Ensuring service space



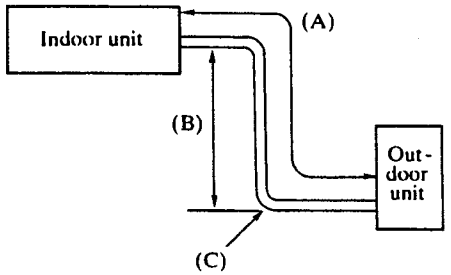
Attention: If ceiling and wall are joined by ornamental woodwork, the words "ceiling" and "wall" may be read as "woodwork bottom" and "woodwork front"

- Wiring and piping maintenance requires access to bottom and right sides. Allow space shown in drawing above.

Check that difference between heights of indoor and outdoor units, length of refrigerant piping and number of bends in piping are within limits shown below.

Models	(A) Piping length (one way)	(B) Height difference	(C) Number of bends (one way)
PC24, 30, 36, 42EK	Max. 164ft	*Max. 130ft	Max. of 15

* Height difference limitations are binding regardless of which unit, indoor or outdoor, is positioned higher.



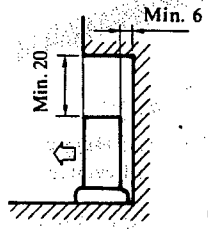
< Outdoor Unit >

- Install in location unexposed to direct sunlight or other radiated heat.
  If direct sunlight cannot be avoided, always install a sunshade to protect the outdoor unit from the sun.
- Select location from which noise emitted by unit will not inconvenience neighbors.
- Select location permitting easy wiring and piping to power source and indoor unit.
- Avoid locations in which combustible gas may be generated, settle or leak.
- Bear in mind that during operations drain water may flow from the unit.

Free Space Required Around Outdoor Unit

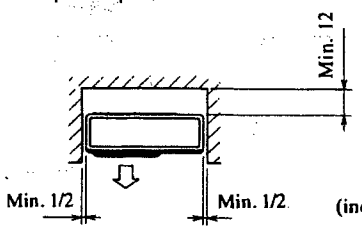
1. When Outdoor Unit Installed Singly

1. Top side obstacles
If there are obstacles at the rear side only, other obstacles may be permitted as shown in the diagram of top side.



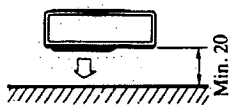
(inch)

2. Front side (blowing side) open
If only the space shown in diagram can be reserved, obstacles can be allowed in the other 3 directions (but top side open).



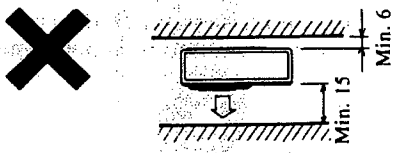
(inch)

3. Obstacles on front side (blowing side) only
If there are obstacles on the front side, keep the back, left/right, & top sides open.



(inch)

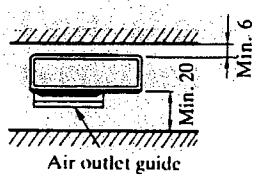
4. Obstacles on front & rear sides
Unusable in case of the dimensions shown in following diagram. See item 5.



(inch)

5. Obstacles on front & rear sides only
Becomes usable by fitting the outdoor air outlet guide which comes as an option (left/right & top sides open). But if natural wind, like that flowing between buildings, cannot be expected, keep the height or width of obstacles within the following range. Otherwise, there is the risk of short cycle occuring. (If the front or rear side satisfies the requirements, there is no special restriction on the remaining side).

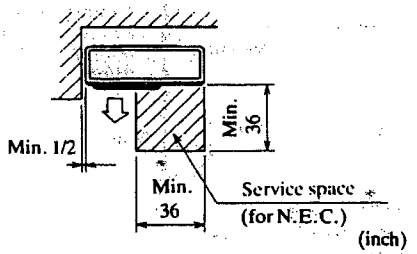
Obstruction width: 1.5 times width of outdoor unit or smaller
Obstruction height: Unit height or lower



(inch)

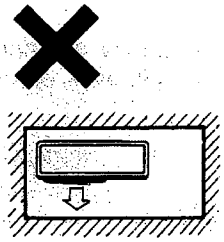
SERVICE SPACE

Allow the service space shown in the following diagram to remain open, for maintenance etc. in front of the unit.



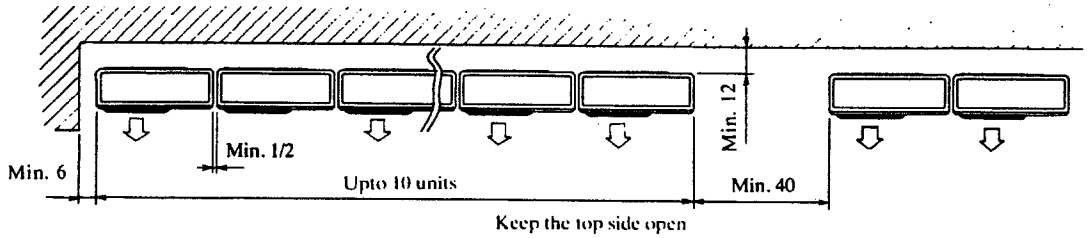
(inch)

6. Obstacles on 4 surrounding sides
Unusable if there are obstacles on all 4 surrounding sides, even if there is more than the prescribed amount of space around the outdoor unit and even if the top side is open.

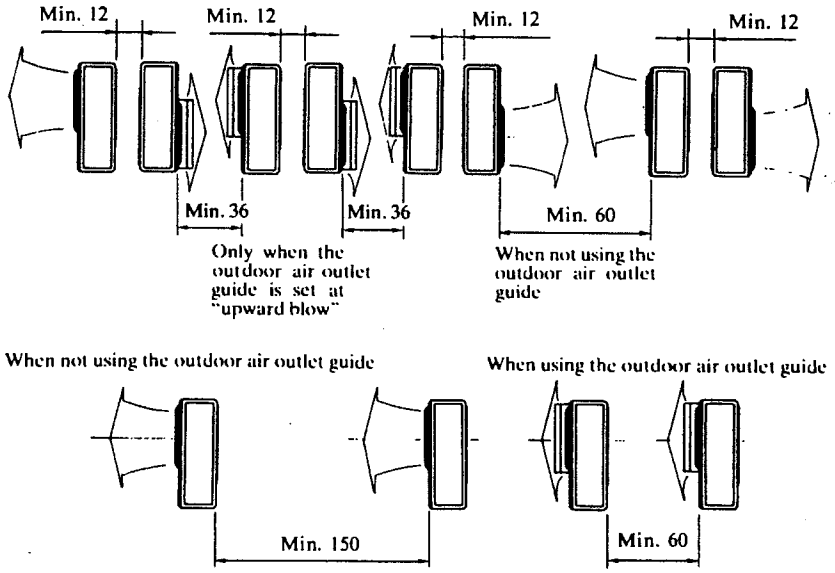


2. Relative Positioning of Unit Installed Together

(1) When installed consecutively sideways ●Remove the side screw of pipe cover



(2) When arranged longitudinally

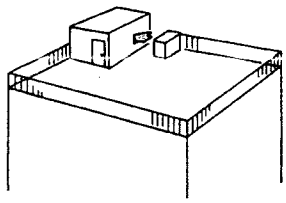


(inch)

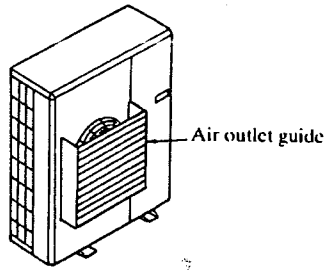
●When installing unit on rooftop or other locations unprotected from wind, situate unit air outlet in direction not directly exposed to strong wind. Strong wind entering air outlet may impede normal airflow and cause malfunctions.

Examples

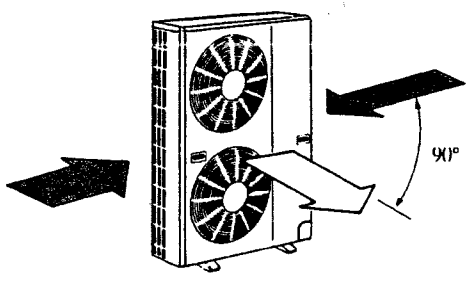
●Face outlet toward any available wall, 20 inch away from wall.



●Install optional air outlet guide, if the unit is installed at a place where the powerful blast of typhoon, etc. comes directly on the air outlet.



●Position unit so that air outlet blows in direction perpendicular to seasonal wind direction, if known.



2. Installing the Unit

< Indoor Unit >

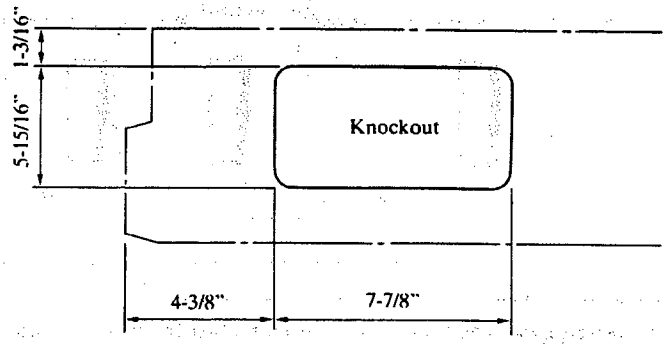
Check for Indoor Unit Accessories and Parts

Check that indoor unit is provided with the following parts and accessories.

	Accessory name	Q'ty	Location in packaging
1	Paper installation pattern	1	Inside of packing material
2	Remote controller Part No. PC/PK MITSUBISHI ELECTRIC	1	Inside intake grille (See instructions enclosed in bags or boxes with accessories for details concerning their use.)
3	Refrigerant/Drain piping parts	1 set	Inside intake grille (See page 10, 11 and 12.)

Position of Hole for Taking in Fresh Outside Air

Remove rear-panel knockout to create hole for taking in fresh air.

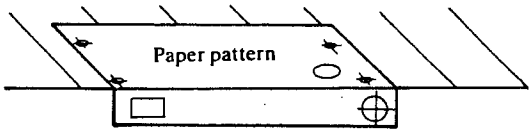


Viewed from front

Mounting Suspension Bolts (Procure 3/8" DIA bolts locally.)

Locationing Suspension Bolts, Piping Holes and Air Intake Hole

Use paper installation pattern to determine the locations of suspension bolts, piping holes and air intake hole.



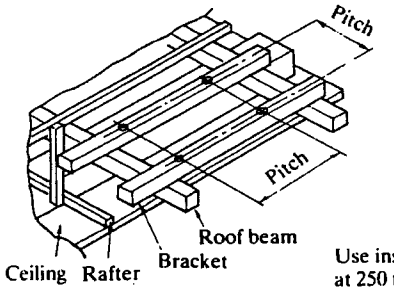
*Remove paper pattern before installation.

Details are printed on pattern.
Attention: Surrounding temperature and humidity conditions may cause paper pattern to shrink or expand. Measure dimensions before drilling holes.

Suspension Structure

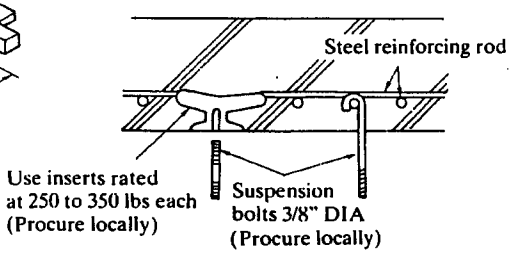
•Wood frame structures

Select tie beam (one-story houses) or second-floor girder (two story houses) as reinforcement member.
Wooden hangers for suspending air conditioners must be strong at least 2" × 4".
The size of the suspension bolts should be 3/8" DIA.
(The bolts do not come with the unit.)



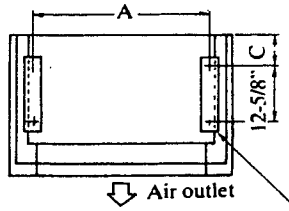
•Ferroconcrete Structures

Secure suspension bolts as shown below or use angle-stock bracework to install suspension bolts.

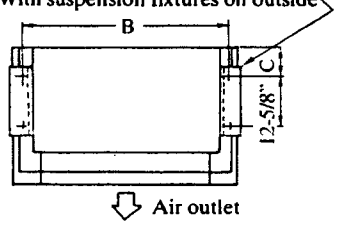


Suspension Bolt Pitch

With suspension fixtures on inside



With suspension fixtures on outside



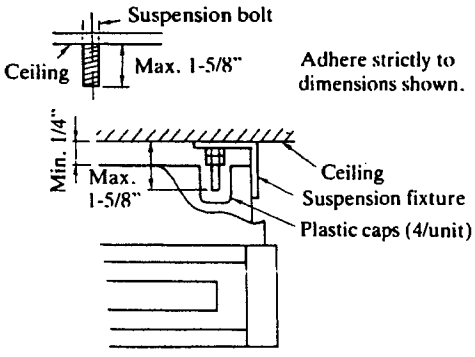
Suspension fixture

Suspension Bolt Pitch (inch)

Item / Models	A	B	C
PC24, 30EK	45-13/16	51-5/8	7-1/2
PC36, 42EK	57-1/2	63-3/16	7-1/2

With suspension fixtures on inside

•Suspension bolts fit into plastic caps on inside unit top panel.
Attention: Never remove plastic caps.

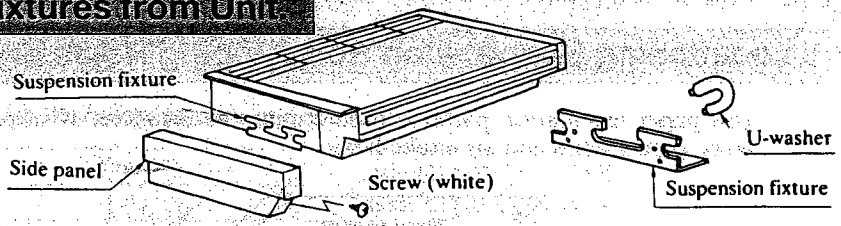


"With suspension fixtures outside" refers to installation method in which ceiling contact surfaces of fixtures extend out from unit. Unit itself is suspended by the same one-touch method used by installation with suspension fixtures inside.

Unit Suspension Procedures

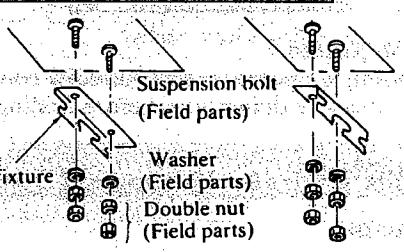
1. Remove Suspension Fixtures from Unit

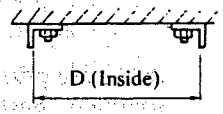
- Remove side panel to expose suspension fixtures mounted on side of unit.
- Remove fixtures.



2. Secure Suspension Fixtures to Suspension Bolts

- Secure fixtures to bolts so that distance (D) between insides of fixtures matches lengths in table are left.
- Right and left suspension fixtures are interchangeable.





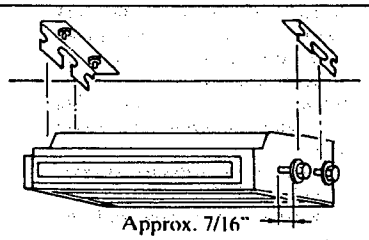
(inch)

Models	D
PC24, 30EK	48-5/8
PC36, 42EK	60-5/16

3. Suspending Unit from Suspension Fixtures

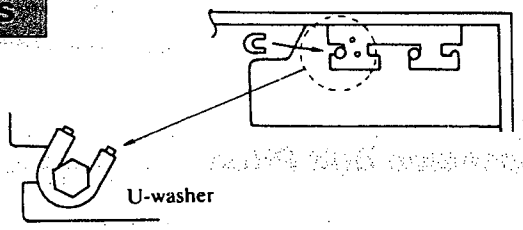
Hoist unit so that bolts (4) on sides of unit fit into holes in fixtures.

- Check that unit is suspended level right and left, front to back.



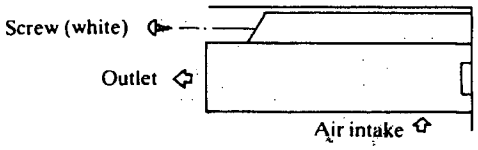
4. Securing Unit to Suspension Fixtures

Fit U-washer between forward bolt heads and outside surfaces of fixtures as shown. Tighten bolts securely.



5. Attaching Side Panel

Attach side panel after all suspension work is finished.



3. Refrigerant and Drainage Piping

- **Refrigerant pipes are sold separately.** Read instructions carefully before starting work.
- **Insulate both refrigerant piping (liquid and gas) and drainage piping so as to completely prevent condensation.**
  When using commercially available copper piping, insulate both liquid and gas piping in commercially available heat insulation (heat-resistant insulation at least 1/2" thick).
  Insulate lengths of drainage piping passing through indoor areas with polyethylene foam insulation (least 3/8" thick).

Refrigerant and Drainage Piping Sizes

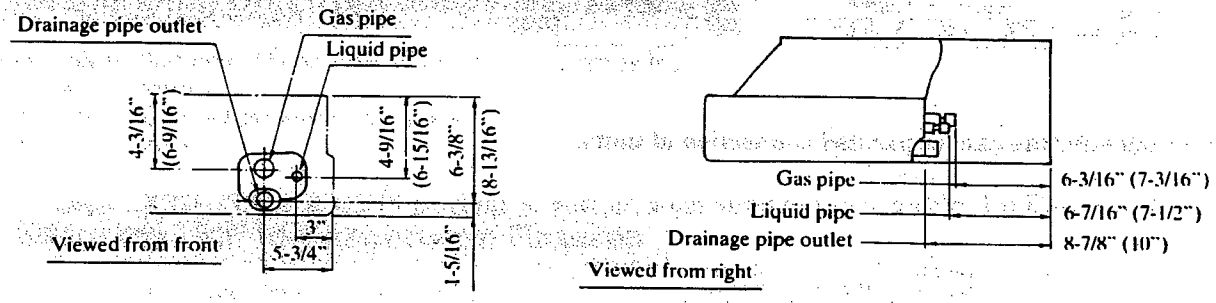
Models		PC24EK	PC30, 36, 42EK
Refrigerant piping	Liquid	3/8" O. D.	1/2" O. D.
	Gas	5/8" O. D.	3/4" O. D.
Drainage piping		PVC pipe: 1" O. D.	

Ordering numbers for separately sold refrigerant pipes

Models	PC24EK	PC30, 36, 42EK
16ft	PACSK05FS	PACSK05FF
23ft	PACSK07FS	PACSK07FF
33ft	PACSK10FS	PACSK10FF
49ft	PACSK15FS	PACSK15FF

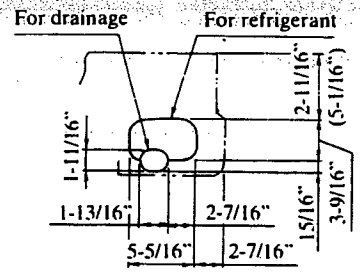
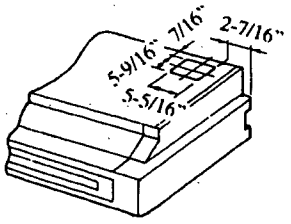
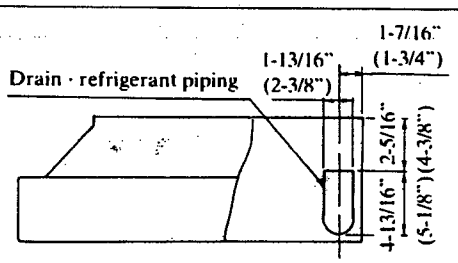
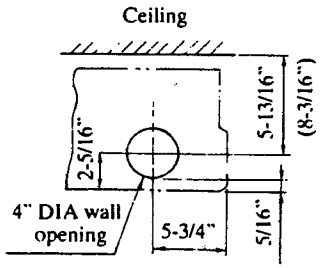
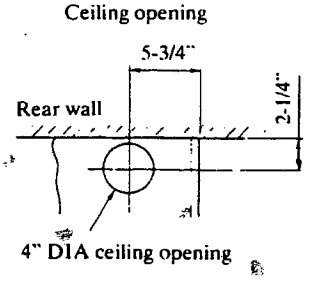
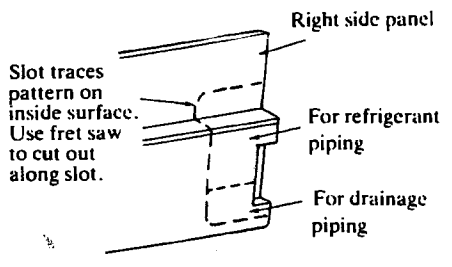
Refrigerant and Drainage Piping Locations

Parentheses ( ) indicate dimensions for models PC36, 42EK



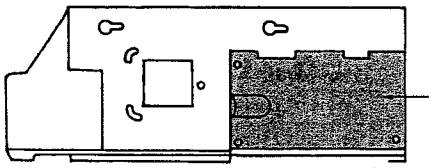
Openings for Refrigerant and Drainage Piping

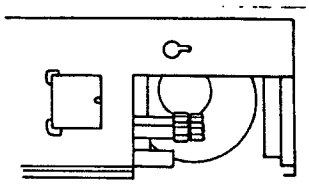
Parentheses ( ) indicate dimensions for models PC36, 42EK

	Rear piping	Upper piping	Right piping
Main unit openings (Knock-outs)			
Wall and ceiling openings			

Making Piping Connections

Remove right side panel, as shown in the figure below, to gain access to piping ends. piping can also be connected from bottom of unit. Replace right side panel after piping connections are completed.





Refrigerant Piping Connection Work

This package contains the following parts. Check each item before use.

Refrigerant piping		
Part No.	Name	Q'ty
①	Refrigerant oil	1
②	Pipe cover (Small diameter)	1
	Pipe cover (Large diameter)	1
③	Band for temporary tightening	4

- This unit has flared connections on both indoor and outdoor sides.
- **The refrigerant pipes and the indoor unit contain a nitrogen holding charge which must be removed by evacuation.**

1. When using optionally purchased refrigerant piping:

a) Piping connection procedures

See that stop valve on outdoor unit is fully shut (unit is shipped with valve shut). Remove caps from piping and unit and make flare connection promptly. Repeat for each connection, one at a time.

After all piping connections between indoor and outdoor unit have been completed, vacuum-purge air from system through the service port for the stop valve on the outdoor unit.

b) Precautions concerning flexible tubing

- Use flexible tubing for indoor piping connections only.
- Avoid bending at angles more acute than 90°. Avoid repeated bending of same tube more that three times.
- Locate bends as near as possible to center of piping lengths and make bend with as large of a bending radius as possible.

2. When using commercially available copper piping:

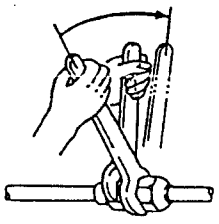
See that stop valve on outdoor unit is fully shut (unit is shipped with valve shut).

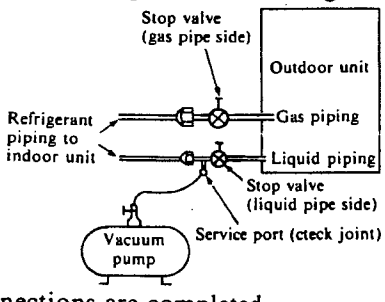
After all piping connections between indoor and outdoor unit have been completed, vacuum-purge air from system through the service port for the stop valve on the outdoor unit.

3. After completing procedures 1 or 2 above, open outdoor unit stop valves stem fully. This completes connection of refrigerant circuit between indoor and outdoor units. Stop valve instructions are marked on outdoor unit.

- Apply thin layer of refrigerant oil provided with unit to pipe and joint seating surface before tightening flare nut.
- Use two wrenches to tighten piping connections.

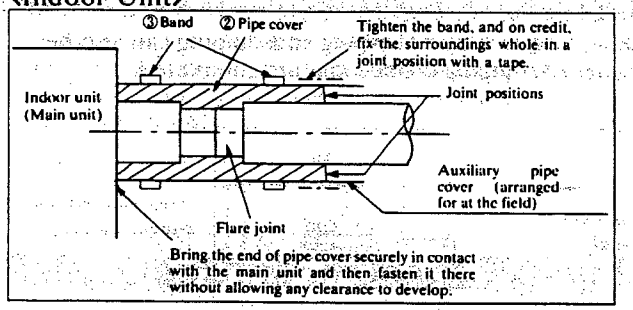
Pipe diameter		Tightening torque (ft · lbs)
mm	inch	
9.52	3/8	25 to 30
12.7	1/2	36 to 42
15.88	5/8	54 to 58
19.05	3/4	72 to 101





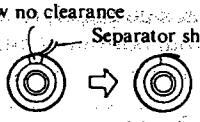
- Use leak detector or soapy water to check for gas leaks after connections are completed.
- **Use refrigerant piping insulation provided to insulate indoor unit connections. Insulate carefully following instructions enclosed. Insulate both liquid and gas lines.**

<Indoor Unit>

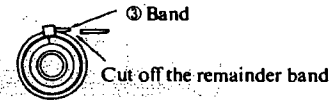


(1) Peel off the separator sheet of accompanying pipe cover, and wrap it around the refrigerant pipe, making sure that the slit side comes upward.

Allow no clearance



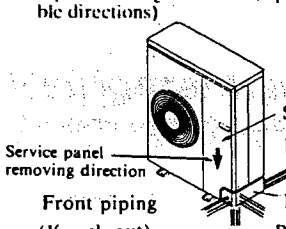
(2) Be sure to fix both ends of the pipe cover with a band of attachment (ensuring that the band joint comes upward).



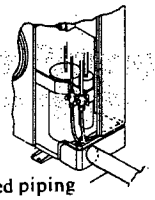
(3) Stick vinyl tape (Joint positions).

<Outdoor Unit >

1. Pipe extracting directions (4 possible directions)

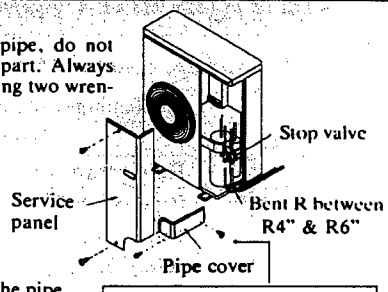


2. Remove the service panel and pipe cover (by taking off 2 screws each).



In case of racking the piping, do the piping below the pipe cover, so as to enable mounting & dismounting of service panel.

3. When connecting the pipe, do not further bend the bent part. Always tighten the flare nut using two wrenches.



Remove this serew in case of concentrated installation.

Amount of Refrigerant

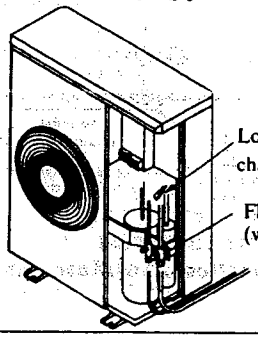
- Outdoor unit has been charged with refrigerant of amount sufficient for 100 feet of piping. When the actual length of the pipe exceeds 100 feet, charge an additional amount of refrigerant (R-22).

Models	Additional charge/piping length exceeds 100 ft.
PC24EK	0.7 oz/5 ft
PC30EK	1.6 oz/5 ft
PC36EK	
PC42EK	

Example

Models	Refrigerant piping length (one way) [R-22(oz)]						Factory charged
	≦100 ft	115 ft	130 ft	145 ft	160 ft	164 ft	
PC24EK	0	2	4	6	8	9	9 lbs 15 oz
PC30EK	0	5	10	14	19	20	10 lbs 2 oz
PC36EK	0	5	10	14	19	20	10 lbs 9 oz
PC42EK	0	5	10	14	19	20	12 lbs 9 oz

- Refrigerant charging position



Refrigerant charge:

- The refrigerant should be charged using the low pressure charge plug in the service panel as shown in the figure left.

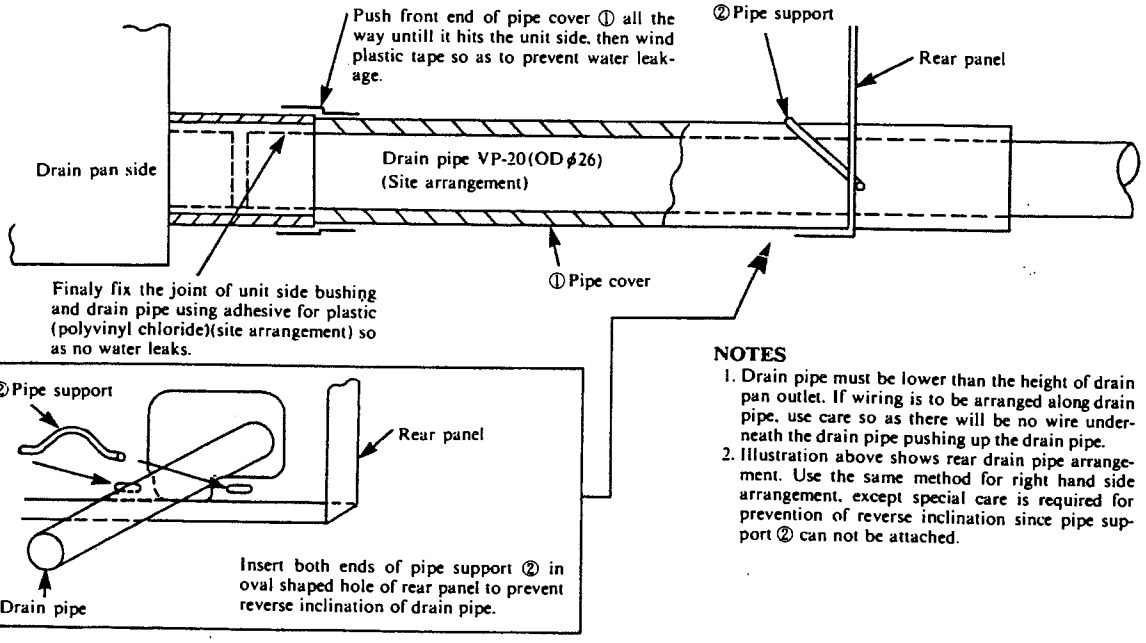
Note: When charging refrigerant, always measure refrigerant.

Drainage Piping Work

This package contains the following parts. Check each item before use.

Drain piping		
Part No.	Name	Q'ty
①	Pipe cover (1-3/8" o.d × 1" i.d × ℓ 11-3/4")	1
②	Pipe support (Steel wire)	1

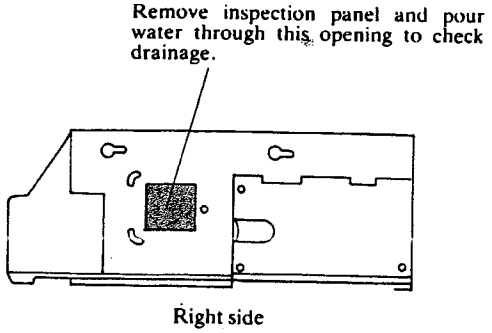
- Drain pipe must be firmly installed as shown below using care for prevention of dew drippage and reversed slope inclination.



NOTES

1. Drain pipe must be lower than the height of drain pan outlet. If wiring is to be arranged along drain pipe, use care so as there will be no wire underneath the drain pipe pushing up the drain pipe.
2. Illustration above shows rear drain pipe arrangement. Use the same method for right hand side arrangement, except special care is required for prevention of reverse inclination since pipe support ② can not be attached.

- See that drainage piping runs downward at a gradient of at least 1/100.
- Use parts provided and follow instruction enclosed when installing and insulating piping in unit.
- Avoid running drainage pipe into sewers from which sulfuric gases may be emitted.
- After connecting piping, check for leaks at joints and that drainage is properly performed.



Outdoor unit drainage pipe connection

- When drain piping is necessary, use the optional drain socket set and refer to attached instruction manual.

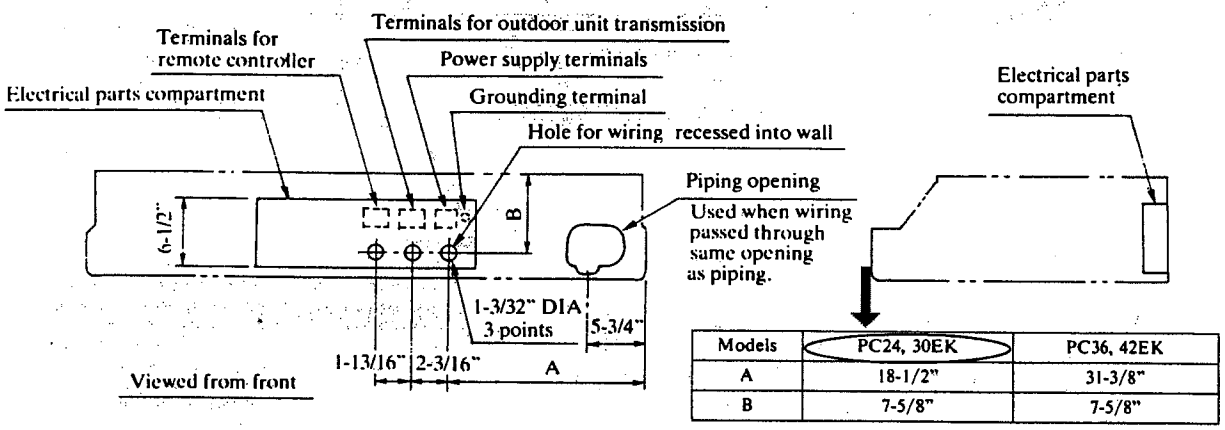
4. Electrical Work

- Supply power from independently branched circuit.
- Wiring work should conform to local code requirements.
- The control circuit, wires of remote controller and power supply wires should be laid so that they should not touch each other.
- Never connect power supply directly to control wiring terminals.
- Be sure to wire together control wiring terminals of indoor and outdoor units. (Wire properly according to terminal numbers to avoid problems with polarity.)
- Wiring connections should be made following the diagram. Screws should be tightened so they won't loosen.

"USE COPPER CONDUCTORS ONLY".

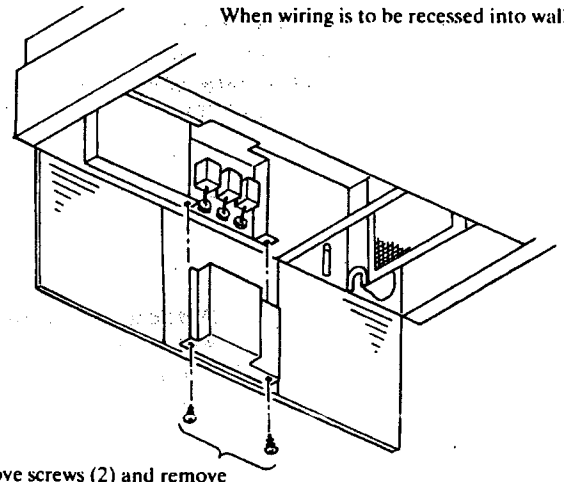
< Indoor Unit >

Positions of Electrical Wiring Openings



Models	PC24, 30EK	PC36, 42EK
A	18-1/2"	31-3/8"
B	7-5/8"	7-5/8"

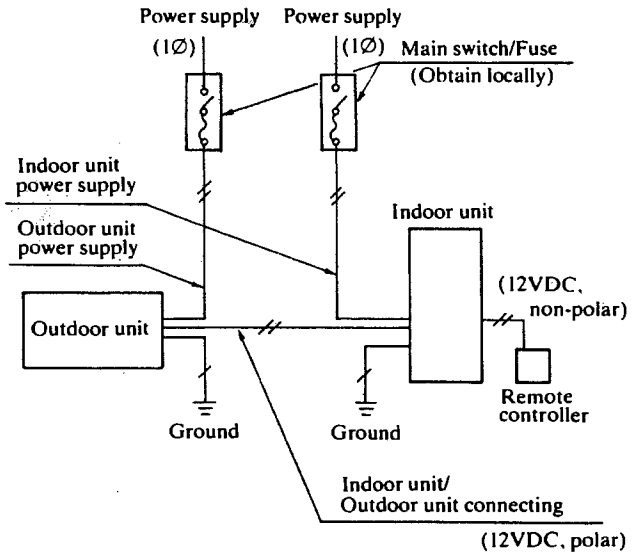
Electrical Wiring Connections (Tighten terminal screws securely.)



Remove screws (2) and remove electrical parts cover.

Field Electrical Wiring (Example)

Wiring differs according to models. Refer to circuit diagrams for details when performing electrical work.

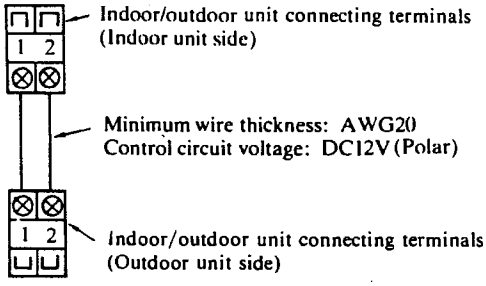


Make sure that air conditioners are grounded.

Electrical Specifications

Indoor unit					
Models		**PC24EK**	**PC30EK**	**PC36EK**	**PC42EK**
Power supply	(V, phase, Hz)	115, 1, 60	115, 1, 60	115, 1, 60	115, 1, 60
Max. Fuse size (time delay)	(A)	15	15	15	15
Min. Ampacity	(A)	3.0	3.0	3.0	3.0
Fan motor	(F. L. A.)	1.8	1.8	2.4	2.4
Outdoor unit					
Models		**PU24EK**	**PU30EK**	**PU36EK**	**PU42EK2**
Power supply	(V, phase, Hz)	208/230, 1, 60	208/230, 1, 60	208/230, 1, 60	208/230, 1, 60
Max. Fuse size (time delay)	(A)	20	30	30	40
Min. Ampacity	(A)	16	20	22	27
Fan motor	(F. L. A.)	0.65 + 0.65	0.65 + 0.65	0.75 + 0.75	0.8 + 0.8
Compressor	(R. L. A.)	11.5	14.0	17.5	20.0
	(L. R. A.)	54	73	87	105
Crankcase heater	(A)	0.16/0.17	0.16/0.17	0.16/0.17	0.16/0.17
Control circuit rating	Remote controller -Indoor unit	DC12V, 2 wires (Non-polar)			
	Indoor unit -Outdoor unit	DC12V, 2 wires (Polar)			

Indoor and Outdoor Control Wiring



Attention: Connect indoor and outdoor unit control wiring properly according to terminal numbers to avoid problems with polarity.

Connecting Remote Controller (Accessory)

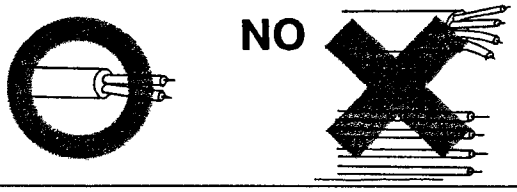
To connect the remote controller, follow the instructions enclosed with it. (See page 19)

Securely fasten the remote controller to the indoor units terminal board using the 16 feet of cable supplied with the remote controller. The cable can be extended to a maximum length of 550 yards.

If more than 16 feet is required, use double insulated two wire cable equivalent to that provided in thickness of not less than AWG 22 – 300 volts. e.g. BELDEN 9407 cable.

Caution : Wiring should run from indoor unit to remote controller direct, NO SPLICES.

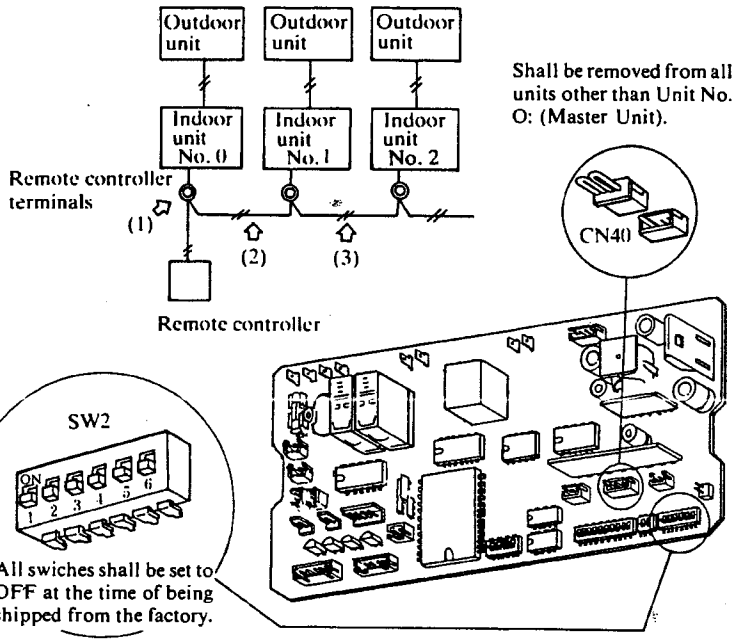
Caution : When running more than one set of remote controller wires together, the double insulated two wire cable listed above is mandatory or use shielded two wire cable.



System Control: One remote controller can be used to operate multiple units

This function of group control allows you to operate multiple units (maximum upto 50 units) as one group with one remote controller.

General Wiring Diagram



■ Distribute wiring based on the following procedure.

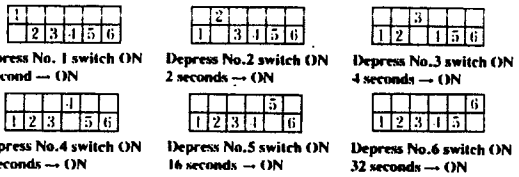
(1) Connect the remote controller to the terminal of the group master indoor unit (Unit No. O)

(2) Connect the terminals of the master unit to the terminals of a subordinate unit with two wires. Then, connect the terminals of that subordinate unit to the terminals of the next unit and so on till all units are connected. (The total cord length of the remote controller and the connection among units should be not exceed 550 yards.)

(3) Remove all of the CN 40 connectors from the indoor controller boards, of the subordinate units.

(4) Now, all that remains to be done is to set the unit addresses of each unit. (Those addresses are also serving as a part of the sequential starting timer).

Setting unit address with SW2 switch.



• According to the combination of switch settings, upto 50 units can be started sequentially at one second intervals between 1 through 50 seconds.

5. Trial Run

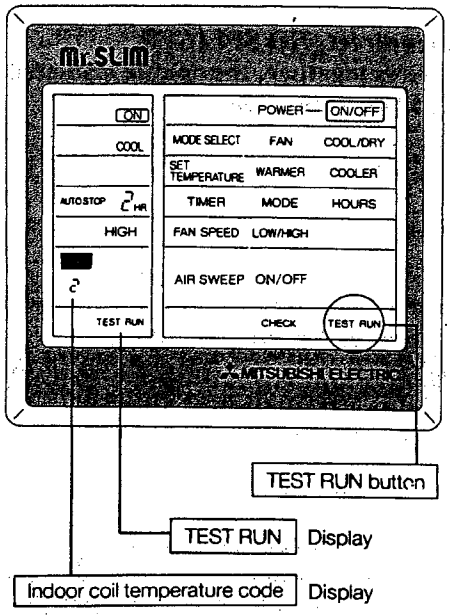
Before Trial Run

- After installation, wiring and piping of indoor and outdoor units is complete, check, for refrigerant leakage, looseness in power supply or control wiring and mistaken polarity.
- Use a 500-volt megger to check that resistance between power supply terminals and ground is at least 1.0MΩ.
  Do not megger test the control wiring (low voltage circuit) terminals.

Attention :
Do not use the air conditioner if it is less than 1.0MΩ.

Trial Run Procedures (Read instruction manual before starting)

Remote controller



*The above figure shows the state of TEST RUN at cooling operation.

1	Turn on main switch, 12 hours before proceeding to step 2 to allow for crankcase heater operation.
2	Push the TEST RUN button twice and indication of TEST RUN will be shown on the liquid crystal display.
3	Push the mode select button FAN or COOL/DRY to confirm that air or cool air is blown out.
4	Push the fan speed button LOW/HIGH to check that the fan speed changes properly.
5	Push the air sweep ON/OFF button to check the operation of the swing louvers.
6	Check the operation of outdoor unit fans. This unit controls the rotation speed and performance capacity of fans. In some cases, it may rotate at low speed as the condition of outside air requires and the speed will be kept unless the performance has become deficient. Therefore, when the condition of outside air demands, there may be such cases as the fan stops or rotates reversely. Please note that these symptoms are not mulfunction.
7	After the check is finished leave the test run mode, push the power ON/OFF button. It can also be stopped by pushing the timer MODE button.

- When a TEST RUN is started, the timer shall be set to 2 hours. The unit will automatically turn off after 2 hours.
- The indoor Coil Temperature Display shows the indoor coil temperature codes during a TEST RUN.
  Note : The temperature code are indicated in numbers 1 through 15 which represent −40 to 194 °F.
  Check the compressor operation by confirming that code number decreases for cooling.

Code	1	2	3	4	5	6	7	8
Indoor coil temperature	−40 ~ 34°F	~ 50°F	~ 59°F	~ 68°F	~ 77°F	~ 86°F	~ 95°F	~ 104°F
Code	9	10	11	12	13	14	15	
Indoor coil temperature	~ 113°F	~122°F	~131°F	~140°F	~158°F	~194°F	Sensor mulfunction	

- If the previously mentioned operations do not work properly, the problem may be due to one of the following causes. (The test run mode is assumed.)

Cause	Malfunction symptoms	
	One to one system	Group control
1. Indoor - Outdoor connecting line is improperly installed or power for outdoor units is connected in opposite phase.	• Indoor coil temperature code changes for neither cooling nor heating. • Remote controller display "–CENTRALLY CONTROLLED–" appears for an instant and then disappears. (The same for a short circuit in the remote controller wiring.)	• Improper wiring of the master unit (the unit to which the remote controller is connected) will result in symptoms similar to those listed at left. • If a subordinate unit is wired improperly, either the fan will not operate or after a lapse of 9 to 10 minutes "P8" ⟷ followed by the number of the improperly wired subordinate unit number is displayed.
2. Error in remote control or indoor address.	• Display indicates "– CENTRALLY CONTROL –" and the switches do not function. (Before the unit leaves the factory, the remote controller and indoor addresses are set to 0. If the setting is mistakenly changed, a malfunction will arise.)	• An error in master unit or remote controller setting will result in symptoms similar to those listed at left. • If two or more subordinate units have been given the same address, "P?" ⟷ followed by the duplicated address number is displayed.
3. The remote controller is improperly connected or there is short circuit in the remote controller wiring	• There is no display on the remote controller.	• Similar symptoms to those listed as at left.
4. In the control mode using two remote controllers, subordinate remote controller setting has not been made (DIP SW17 No. 7 in remote controller is not turned on).	• Results in a display of P?, or no display.	• Similar symptoms to those listed as at left.
5. The CN 40 connector on one or more of the indoor controller boards of the subordinate units (unit No. 1 and above) has not been removed.	———	• There is no display whatsoever on the remote controller.

- The above mainly concerns problems due to improper installation. However, if a malfunction occurs in the unit itself, a check will result in a display of "E0" or "P1-P8". In such a case, refer to the list of causes and remedies in the technical & service manual.
- If the centrally control system remote controller or the program timer etc., which are optional parts, are used, refer to also the instructions in the accompanying those optional parts.
- Conduct TEST RUN as above mentioned, and confirm no dew drops from refrigerant or drain pipes.
- Be sure to check if there are air leaks neither from the opening between units and grills nor the space between grills and ceiling. Such air leaks may cause dew drops.

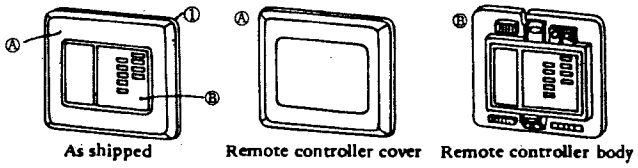
After trial operation is complete, use the "Instructions for Use" to explain operation procedures to customer.

REMOTE CONTROLLER INSTALLATION MANUAL

1. This package contains the following parts in addition to this manual. Be sure to check each parts before use.

No.	Name of parts	Parts code	Q'ty
①	Remote controller	PC/PK	1
②	Remote control cord (2-core, 16')	BB78K214G06	1
③	Wood screw (4.1×16)	Z003Z091H40	5
④	Remote control cord clamp	BB25T441H01	3

NOTE: Remote controller ① consists 2 section as shown below.



2. Selection of installation position

Do not install the remote controller in any of the following.

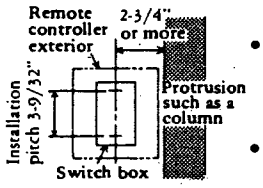
- In a location exposed to direct sunlight.
- In a location susceptible to humidity and moisture.
- In a location near a source of heat.
- In a location near machines emitting high-frequency waves. (High frequency welders etc.)

3. Installation . . . . . This remote controller is designed for either embedded wiring or exposed wiring. Select either one for installation.

Embedded wiring system

1. Parts to be arranged at installation site

1.1 Use a switch box



NOTES

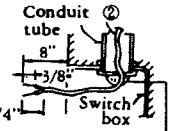
- Installation of switch box to a column right next to a protrusion may not be possible. Providing space shown at left makes installation possible.
- Be sure to install switch box as shown at left. (vertically).

1.2 Use conduit tube of 5/8 inch i.d or more.

1.3 Use locknut and bushing matching with conduit tube.

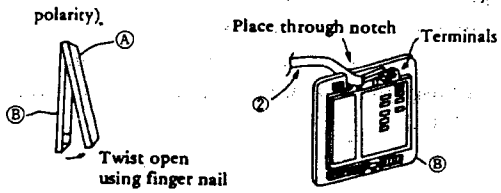
2. Installation

2.1 Place remote control cord ② through a conduit tube.
Pull the remote control cord out about 8 inch from the wall surface and peel off the insulation from its tip.

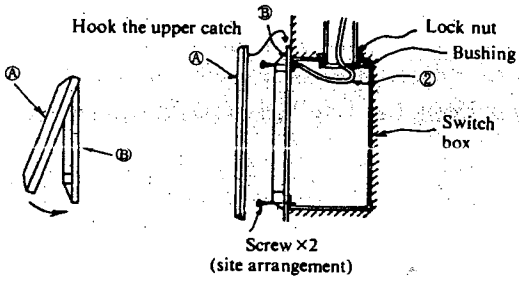


Seal with putty. Entry of atmospheric air through the conduit tube may cause condensation on the remote controller printed circuit board.

2.2 Remove remote controller cover then connect remote control cord to the terminal (terminals do not have any polarity).



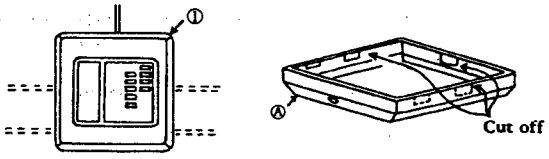
2.3 Install the remote controller body Ⓑ and insert the remote controller cover Ⓐ as indicated below.



Exposed wiring system

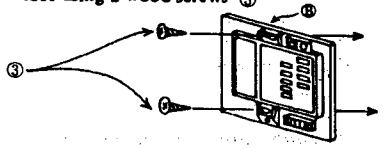
1. Preparation

Since the remote control cord wiring can be arranged in 5 directions as shown below, first decide the direction of wiring. Remove remote controller cover Ⓐ, then cut off the thin wall rib at the position to draw out wire using a knife or the like.

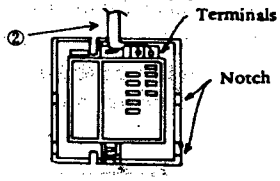


2. Installation

2.1 Firmly attach remote controller body Ⓑ on a wall surface using 2 wood screws ③

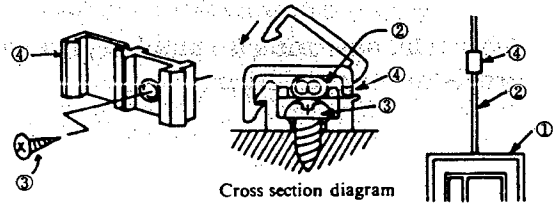


2.2 Connect remote control cord ② to terminals (terminals do not have any polarity). Arrange remote control cord, as shown below, down to the draw out position along the remote controller body, then draw out from the cut off notch section.



2.3 Attach remote controller cover Ⓐ to remote controller body Ⓑ. At this stage use care so as remote control cord will not get caught with the remote controller cover.

2.4 Attach remote control cord clamp ④ to the wall using wood screw ③, then set the remote control cord in position as shown below.



- When remote control cord becomes dirty clean with alcohol.

MEMO

MEMO

MITSUBISHI ELECTRIC CORPORATION
HEAD OFFICE MITSUBISHI DENKI BLDG MARUNOUCHI TOKYO 100 TELEX J24532 CABLE MELCO TOKYO

BA79A973H03

Printed in Japan

ADVANCED AND EVER ADVANCING MITSUBISHI ELECTRIC

MITSUBISHI ELECTRIC

SPLIT-TYPE, AIR CONDITIONERS

No. OC256
REVISED EDITION-B

TECHNICAL & SERVICE MANUAL

Series PK Wall Mounted

[Models] PK18FL, PK12FK1
PK24FL, PK18FK1
PK30FL, PK24FK1
PK36FL, PK30FK1
PK36FK1

Series PC Ceiling Suspended

[Models] PC24EK1
PC30EK1
PC36EK1
PC42EK1

Series PL Ceiling Cassettes

[Models] PL12AK, PL12FK1
PL18AK, PL18FK21
PL24AK, PL24FK21
PL30AK, PL30FK21
PL36AK, PL36FK31
PL42AK, PL42FK21

CONTENTS

1. PK•FL Series ·····OC185-1
2. PK•FK1 Series ·····OC196-1
3. PC Series ·····OC192-1
4. PL•AK Series ·····OC246-1
5. PL•FK1 Series·····OC194-1

Revision:
•PC24EK, PC30EK, PC36EK, PC42EK are deleted.
•PK12FK1, PK18FK1, PK24FK1, PK30FK1, PK36FK1, are added.
•PC24EK1, PC30EK1, PC36EK1, PC42EK1, are added.
•PL12FK1, PL18FK21, PL24FK21, PL30FK21, PL36FK31, PL42FK21 are added.

Mr.SLIM™

PC24EK1
PC30EK1
PC36EK1
PC42EK1

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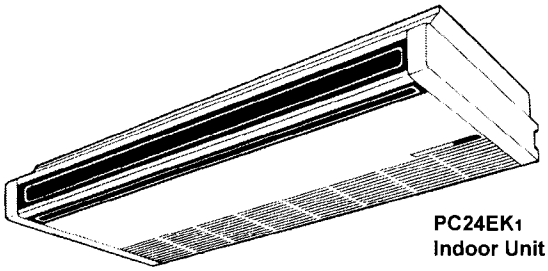
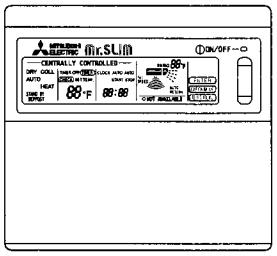
2 FEATURES



PC24EK1
Indoor Unit



Microprocessor
Remote controller

Models	Cooling capacity	SEER
→ PC24EK1	24,000 Btu/h	10.3
PC30EK1	31,000 Btu/h	10.4
PC36EK1	36,500 Btu/h	10.2
PC42EK1	42,500 Btu/h	10.0

1. ADVANCED MICROPROCESSOR CONTROL

(1) Easy to use Microprocessor (remote controller)

1) Ultra-Thin Remote Controller

The streamlined, square controller is designed to blend with any kind of interior and the adoption of a sophisticated microprocessor allows you to carry out a wide range of operations easily.

2) Attractive Liquid Crystal Display (LCD)

Units operation mode, set temperature, room temperature, timer setting, fan speed, louver operation, and air flow direction are displayed on the remote controller with the easily understood visual Liquid Crystal Display (LCD).

3) Convenient 24-Hour ON-OFF Timer

The timer allows Mr.SLIM to be switched on and off automatically at the time you set. Once the timer is set, the remaining time is shown on the LCD.

4) Self-Diagnostic Feature Indicates Faults Instantly

In the rare case when a problem occurs, the unit stops operating and the set temperature indicator changes to the self-diagnostic indicator, indicating the location of the fault.

If the check switch is pressed twice, the unit stops operating and the check mode is initiated. The cause of the most recent problem stored in the memory is displayed on the LCD. This is extremely useful for maintenance purposes.

5) Useful Memory Feature for Storing Instructions

The previous set value is memorized so that constant temperature control can be obtained. This is convenient when, for example, a power failure occurs.

(2) Non-polar Two-Wire Remote Controller Cables

The non-polar, two-wire type remote controller cable is slim, installation is simple and trouble-free. Remote controller wire can be extended up to 550 yards.

2. INNOVATIVE SYSTEM CONTROL BY MICROPROCESSORS

The most significant feature of the series PC-EK is the advanced microprocessor system control. Behind the development of this system is the recent world-wide trend in the air conditioning of larger buildings, away from centralized duct systems in favor of a large number of individual split type units. There are a number of reasons for this: first, costly, troublesome duct installation is eliminated; second, the overall air conditioning balance is excellent; and third, operation cost is low since flexible control of each unit is possible. This system control was developed exclusively by Mitsubishi in the light of this demand. Microprocessor control makes possible individual control, group control, control using two remote controllers, remote on/off control and individual control without troublesome modifications to the equipment.

(1) Individual Control by Gathering Remote Controllers

A Series PC-EK unit is installed in each room, and the remote controller are gathered together in separate location, where each unit is controlled individually.

Each remote controller is connected to its indoor unit by non-polar 2-wire cable to eliminate the possibility of mis-wiring. Separation can e as much as 550 yards, making this type of control extremely easy to implement. Thermistors in the indoor unit maintain each room at its own individually set temperature.

(2) Group Control by a Single Remote Controller

In an application requiring a number of air conditioner units in a large area on a single floor, up to 50 units can be centrally controlled using a single remote controller. The remote controller controls Power ON-OFF, set temperature, fan speed, swing louver ON-OFF timer, and auto vane position of all units of the group. Obviously, if all the units started simultaneously, the surge current would be unacceptably high. Therefore the microprocessor board of each indoor unit has a 8-toggle DIP switch that can be programmed to give sequential starting with up to 50 seconds delay. When the switch of the remote controller is pressed, master unit comes on immediately, followed by the other units in the programmed order. Thereafter the thermistor in each indoor unit controls compressor operation to keep the room at the set temperature.

The remote controller is connected to the indoor units by non-polar 2-wire cable. Total cable length can be as much as 550 yards. This system can be applied to the air conditioning of large offices or conference rooms, supermarkets, etc.

(3) Control Using Two Remote Controllers

Two remote controllers can be used to control either one unit or several units in group control. This makes it possible to control units with ease either from a distance or at close range. Units operate according to the latest commands from either remote controller.

(4) 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 or heat the premises before workers arrive, operated as necessary by individual remote controllers during the day, and stopped together at the end of business.

3. REDI-CHARGED REFRIGERANT SYSTEM

When refrigerant tubing is 100ft or less, it is unnecessary to charge additional refrigerant. This can contribute to enhance installation quality and reduce installation time.

4. MAXIMUM COMFORT AIR CONDITIONING

(1) Indoor Unit Chargeable Air Outlet

PC-EK series have changeable air outlet.

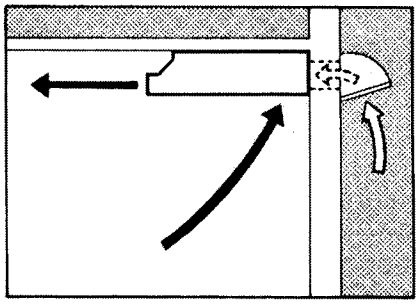
Downward air flow can be obtained at an angle up to 30-. Upward air flow at angle of 10- is able to stretch cool air in a room. This function enables comfortable air distribution.

(2) Swing Flow Louvers

The swing Flow Louvers automatically change the air flow direction for desirable air distribution.

(3) Fresh-Air Intake

The PC-EK series also has fresh air intake, providing more comfortable, healthful air conditioning through better ventilation. The rear panel has a knock-out for the intake of fresh air.



5. STABLE COOLING EVEN AT OUTDOOR TEMPERATURES AS LOW AS 23-F MAKES YEAR-ROUND AIR-CONDITIONING POSSIBLE

The microprocessor automatically adjusts fan speed in accordance with outdoor temperature to maintain the coolant at an even condensing temperature. The result is smooth, efficient cooling even when temperatures outdoors drop as low as 23-F.

This makes the unit ideal for a wide range of specialized cooling needs, such as rooms with many office machines or computers and areas subject to strong sunlight.

6. DRAIN PUMP FOR EASY PIPE CONNECTION (Option)

This mechanism, with its capacity to raise drain water 20" above the ceiling line, is convenient for removing water and avoiding piping contact with beams, etc.

Note : This can not be mounted in the unit.

7. SLIM, COMPACT AND SPACE SAVING

(1) Space Saving Design

Because the PC-EK series indoor units are designed to be suspended from the ceiling, valuable floor space and wall surfaces are not used. The unit is only 7-11/16" high and 50-7/16" wide (PC24EK).

The outdoor units are also slim line, with a depth dimension of only 11-5/8" (PU24EK).

(2) Flush-To-The-Wall Installation

Since the units in the PC-EK series are installed flush against the back wall, connection pipes are hidden. This gives the room a touch of sleek sophistication.

8. EASY INSTALLATION

Installation is simple, thanks to the easy-connection refrigerant lines. As all outdoor units are charged for 100' of line set and tested at the factory, there's no need for special on-site work.

The indoor unit is easy to mount and requires only a minimum of wiring, saving your time, labor, and money.

9. HIGH RELIABILITY AND EASY SERVICING

In addition to the self-diagnostic function, units are also equipped with a 3-minute time delay mechanism, an auto restart function, an emergency operation function, a test run switch, etc., to assure high reliability and easy servicing.

10. ECONOMICAL AND EFFICIENT OPERATION

- Mitsubishi exclusive LCD indicators show the temperature selected and the current room temperature. This system ensures full protection against excessive cooling.
- The Mitsubishi Electric split-type air-to-air PC models feature highly precise compressors with large-capacity heat exchangers for efficient operation.

11. NITROGEN GAS IS CHARGED TO INDOOR UNIT

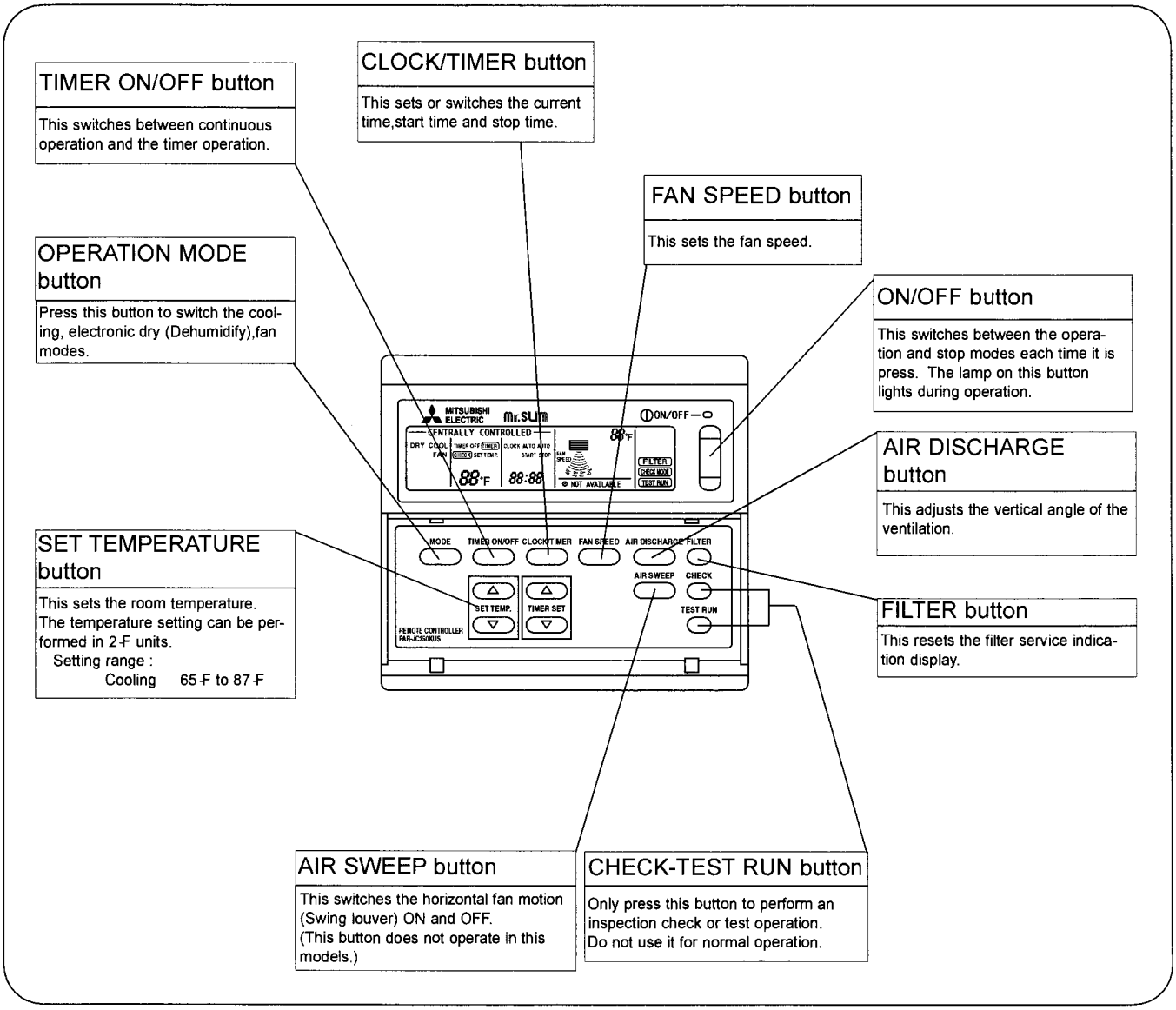
Indoor units of this series are changed with nitrogen gas (N_2) instead of (R22) before shipment from the factory.

3 PART NAMES AND FUNCTIONS

Remote controller

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

Remote controller operation buttons



Remote controller display

CENTRALLY CONTROLLED display

This indicates when the unit is controlled by optional features such as central control type remote controller.

CLOCK display

The current time , start time and stop time can be displayed in ten second intervals by pressing the time switch button. The start time or stop time is always displayed during the timer operation.

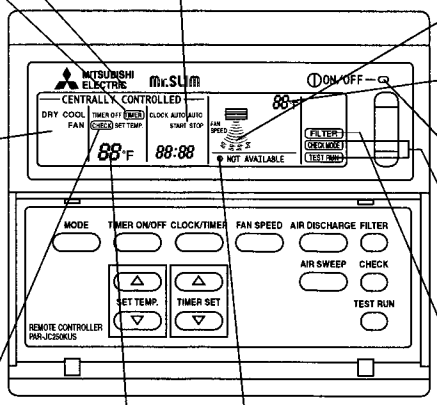
In this display example on the bottom left, a condition where all display lamps light is shown for explanation purposes although this differs from actual operation.

(TIMER) display

This indicates when the continuous operation and time operation modes are set.
It also display the time for the timer operation at the same time as when it is set.

FAN SPEED display

The selected fan speed is displayed.



88°F display

The temperature of the return air is displayed during operation. The display range is 47°F to 97°F. The display flashes 47°F when the actual temperature is less than 47°F and flashes 97°F when the actual temperature is greater than 97°F.

OPERATION MODE display

This indicates the operation mode.

Operation lamp

This lamp lights during operation, goes off when the unit stops and flashes when a malfunction occurs.

(CHECK MODE) (TEST RUN) display

This display lights in the check mode or when a test operation is performed.

(CHECK) display

This indicates when a malfunction has occurred in the unit which should be checked.

88°F display

This displays the selected setting temperature.

⊙display

This lamp lights when electricity is supplied to the unit.

(FILTER) display

This lamp lights when the filter needs to be cleaned.

Caution

Only the ⊙display lights when the unit is stopped and power supplied to the unit.
When power is turned ON for the first time the (CENTRAL CTRL) display appears to go off momentarily but this is not a malfunction.
When the central control remote control unit, which is sold separately, is used the ON-OFF button,OPERATION MODE button and SET TEMP. button do not operate.
"NOT AVAILABLE" is displayed when the AIR DISCHARGE button are pressed.
(AIR DISCHARGE function is not provided for PC series.)

4 SPECIFICATIONS

MODELS : PC24/30/36/42EK1

Item \ Model			PC24EK1	PC30EK1	PC36EK1	PC42EK1
Capacity	※1	Btu/h	24,000	31,000	36,500	42,500
Power consumption	※1	kW	2.43	3.10	3.80	4.40
EER	※1		9.9	10.0	9.6	9.7
SEER			10.3	10.4	10.2	10.0
INDOOR UNIT MODEL			PC24EK1	PC30EK1	PC36EK1	PC42EK1
External finish			Munsell 2.5Y 8/0.3 & N2			
Power supply		V, Phase, Hz	115, 1, 60			
Max. fuse size (time delay)		A	15	15	15	15
Min ampacity		A	3.0	3.0	3.0	3.0
Fan motor		F.L.A.	1.8	1.8	2.1	2.4
Airflow Hi-Lo	Dry	CFM	1,050-850	1,050-850	1,270-990	1,270-990
	Wet	CFM	900-730	900-730	1,100-860	1,100-860
Moisture removal		Pints/h	7.2	9.6	11.1	12.6
Sound level Hi-Lo		dB	50-43	50-43	52-44	52-44
Unit drain pipe OD.		in.	1	1	1	1
Dimensions	W	in.	50-7/16		62-1/4	
	D	in.	26-13/16		26-13/16	
	H	in.	10-1/8		10-1/8	
Weight		lb	93		115	
OUTDOOR UNIT MODEL			PU24EK1	PU30EK1	PU36EK1	PU42EK2
External finish			Munsell 5Y7/1			
Power supply		V, Phase, Hz	208/230, 1, 60			
Max. fuse size (time delay)		A	20	30	30	40
Min. ampacity		A	16	20	22	27
Fan motor		F.L.A	0.65+0.65	0.65+0.65	0.75+0.75	0.8+0.8
Compressor	Model		NH33NBD	NH41NAD	NH47NAD	NH569NXA
		R.L.A	11.5	14.0	17.5	20
		L.R.A	54	73	87	105
Crankcase heater		A(W)	016/0.17 (33/39)	0.16/0.17 (33/39)	0.16/0.17 (33/39)	0.16/0.17 (33/39)
Refrigerant control			Capillary tube			
Sound level		dB	55	55	55	56
Dimensions	W	in.	33-1/4		38-3/16	
	D	in.	11-5/8		13-9/16	
	H	in.	49-9/16		49-9/16	
Weight		lb.	207	208	220	260
REMOTE CONTROLLER			With indoor unit			
Control voltage (by built-in transformer)			Indoor unit - remote controller : DC12V, Indoor unit - outdoor unit : DC12V			
REFRIGERANT PIPING			Not supplied (optional parts)			
Pipe size	Liquid	in.	3/8	1/2		
	Gas	in.	5/8	3/4		
Connection method	Indoors		Flared			
	Outdoors		Flared			
Between the indoor & outdoor units	Height	ft	164			
	Piping length	fr	164			

NOTES : ※ 1.Rating conditions —indoor : 80˚FDB, 67˚FWB outdoor : 95˚FDB,75˚FWB.

Operating range

		Indoor intake air temperature	Outdoor intake air temperature
Cooling	Maximum	95˚FDB, 71˚FWB	115˚FDB
	Minimum	67˚FDB, 57˚FWB	0˚FDB *

* In case of the wind baffle is installed.
(In case of the wind baffle is not installed, the minimum temperature will be 23˚FDB.)

5 DATA

MODELS : PC24/30/36/42EK1

1. PERFORMANCE DATA

1) COOLING CAPACITY

Models	Indoor air		Outdoor intake air DB temperature(°F)														
	Airflow (CFM) / B.F	IWB (°F)	75			85			95			105			115		
			TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC
PC24EK1	900 / 0.14	71	27.8	15.6	2.10	20.7	15.4	2.30	25.8	15.1	2.49	24.8	14.9	2.70	23.6	14.6	2.90
		67	26.2	18.3	2.05	25.2	17.9	2.24	24.0	17.5	2.43	23.2	17.2	2.62	22.2	16.8	2.82
		63	24.5	20.4	2.00	23.6	19.9	2.19	22.8	19.5	2.37	21.8	19.0	2.56	20.8	18.5	2.75
PC30EK1	900 / 0.15	71	35.9	17.7	2.67	34.5	17.3	2.90	33.1	16.9	3.18	31.7	16.6	3.45	30.2	16.1	3.73
		67	33.3	21.1	2.60	32.3	20.6	2.82	31.0	20.1	3.10	29.6	19.5	3.35	28.2	19.0	3.62
		63	31.2	23.8	2.55	30.2	23.2	2.78	29.0	22.6	3.02	27.6	21.8	3.28	26.2	21.1	3.55
PC36EK1	1,100 / 0.12	71	42.3	21.6	3.23	40.9	21.2	3.53	39.3	20.7	3.88	37.5	20.3	4.25	35.7	19.8	4.62
		67	39.3	25.5	3.18	37.9	24.9	3.46	36.5	24.3	3.80	34.9	23.7	4.13	33.3	23.1	4.49
		63	36.7	28.6	3.12	35.5	28.0	3.38	33.9	27.1	3.70	32.5	26.4	4.03	31.0	25.5	4.38
PC42EK1	1,100 / 0.12	71	50.2	23.8	4.00	48.2	23.2	4.25	45.8	22.6	4.55	43.5	21.9	4.85	41.1	21.2	5.25
		67	46.4	28.5	3.90	44.6	27.7	4.15	42.5	26.8	4.40	40.3	25.9	4.70	38.1	25.0	5.00
		63	43.3	32.2	3.80	41.5	31.2	4.00	39.5	30.1	4.25	37.3	28.9	4.50	35.1	27.6	4.75

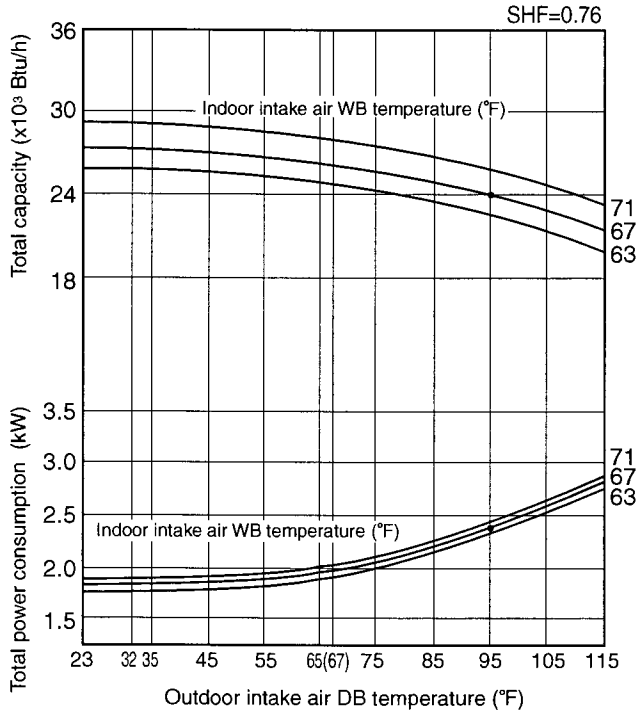
Notes 1. B.F. : Bypass Factor, IWB : Intake air wet-bulb temperature
TC : Total Capacity (x10³ Btu/h), SHC : Sensible Heat Capacity (x10³ Btu/h)
TPC : Total Power Consumption (kW)
2. SHC is based on 80°FDB of indoor intake air temperature.

MODEL	Refrigerant piping length (one way)									
	25ft (std)	40ft	55ft	70ft	85ft	100ft	115ft	130ft	150ft	164ft
PC24EK1	1.0	0.981	0.968	0.952	0.940	0.925	0.913	0.900	0.886	0.874
PC30EK1	1.0	0.981	0.986	0.952	0.940	0.925	0.913	0.900	0.886	0.874
PC36EK1	1.0	0.981	0.968	0.952	0.940	0.925	0.913	0.900	0.886	0.874
PC42EK1	1.0	0.975	0.955	0.935	0.918	0.900	0.884	0.869	0.855	0.840

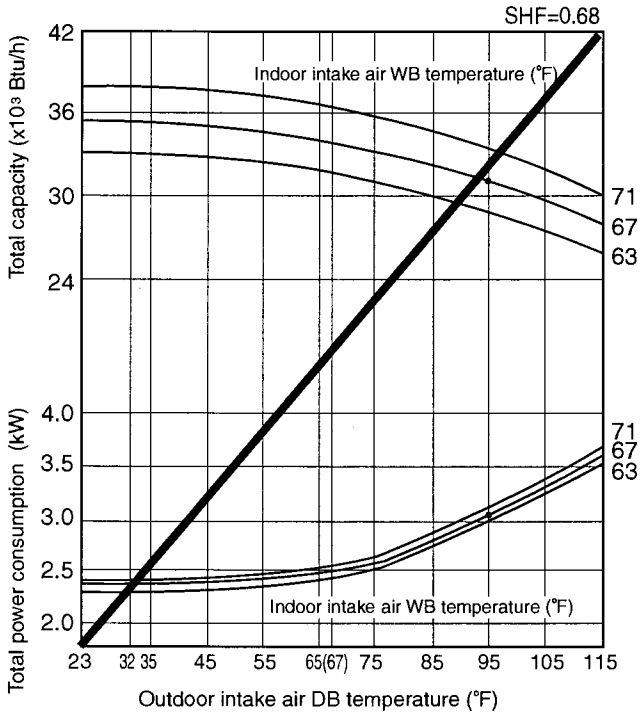
2. PERFORMANCE CURVE

NOTES : A point on the curve shows the reference point.

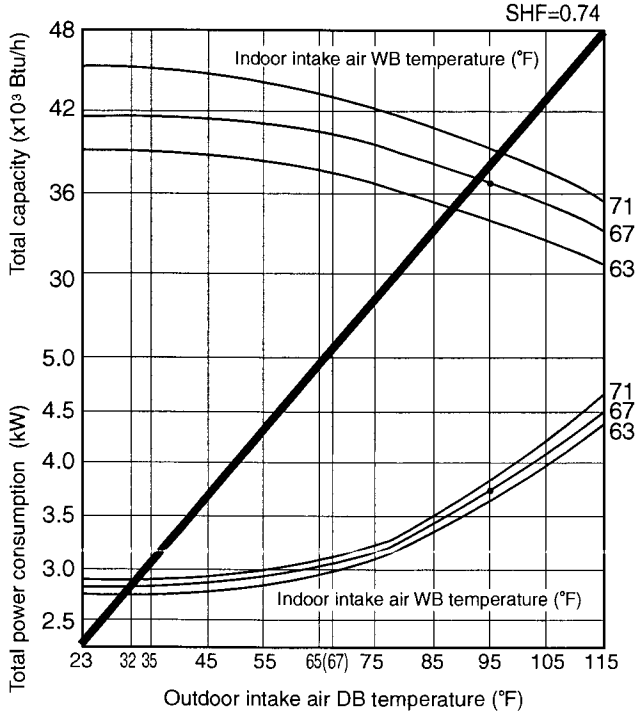
PC24EK1 COOLING CAPACITY



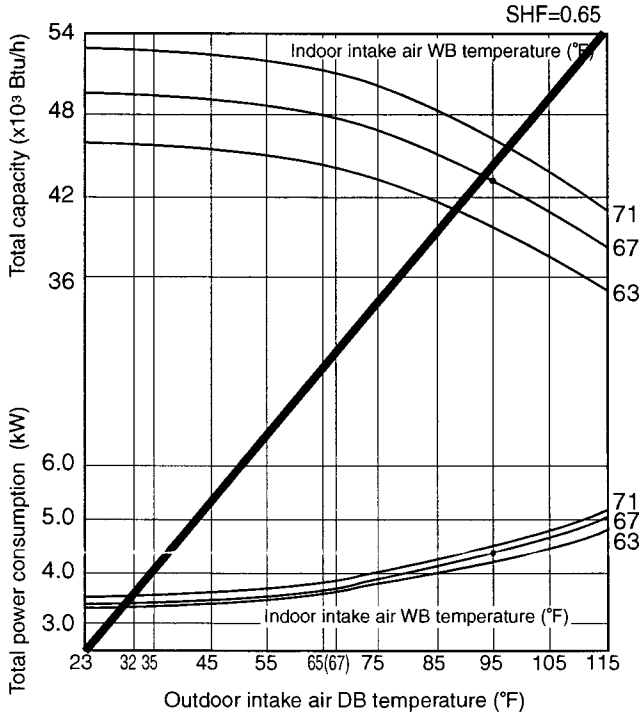
PC30EK1 COOLING CAPACITY



PC36EK1 COOLING CAPACITY



PC42EK1 COOLING CAPACITY

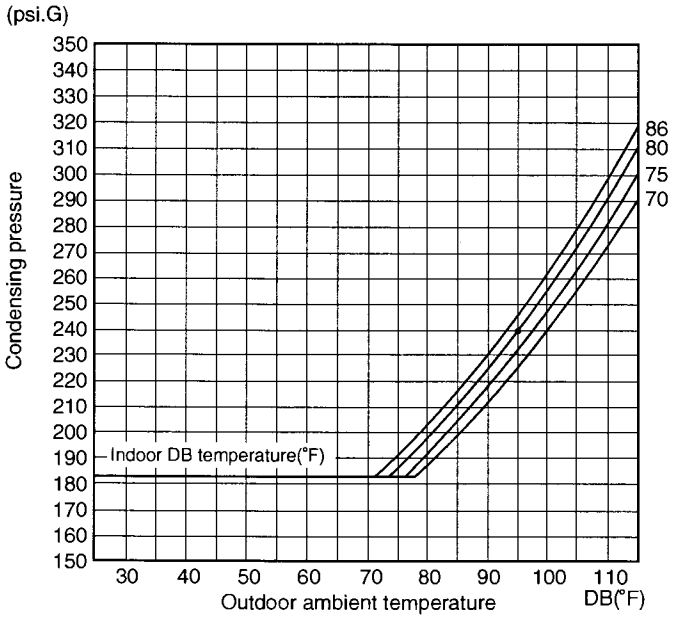


3. CONDENSING PRESSURE AND SUCTION PRESSURE

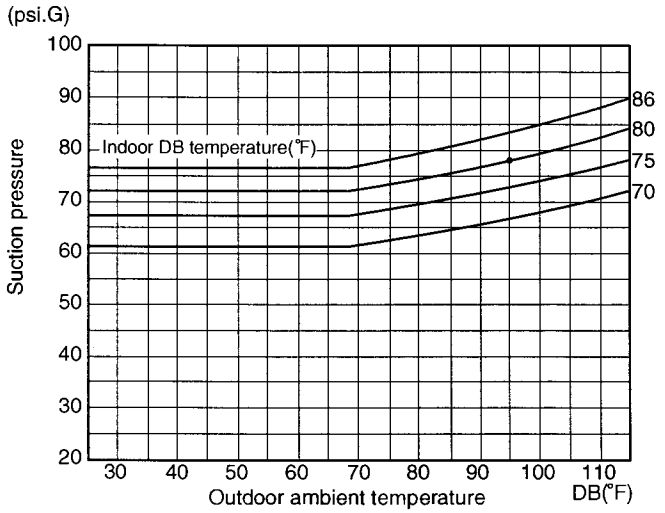
Data is based on the condition of indoor humidity 50%.
Air flow should be set at HI.
A point on the curve shows the reference point.

< Cooling mode>

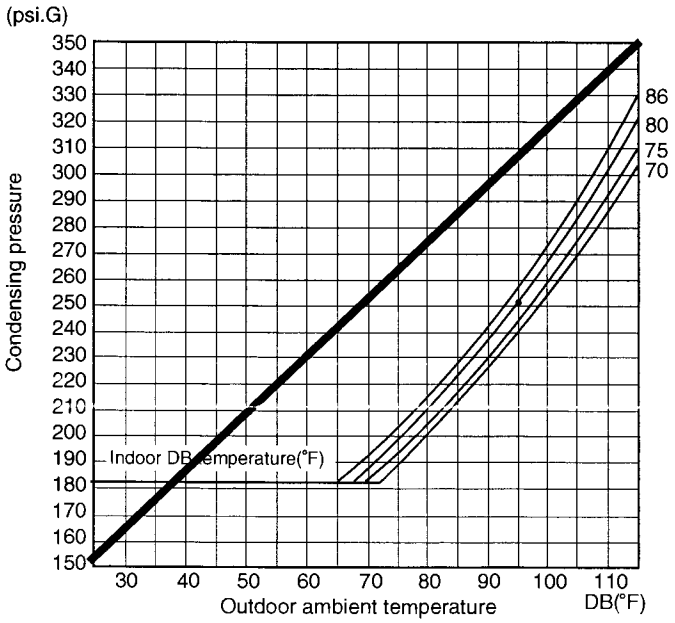
➡PC24EK1



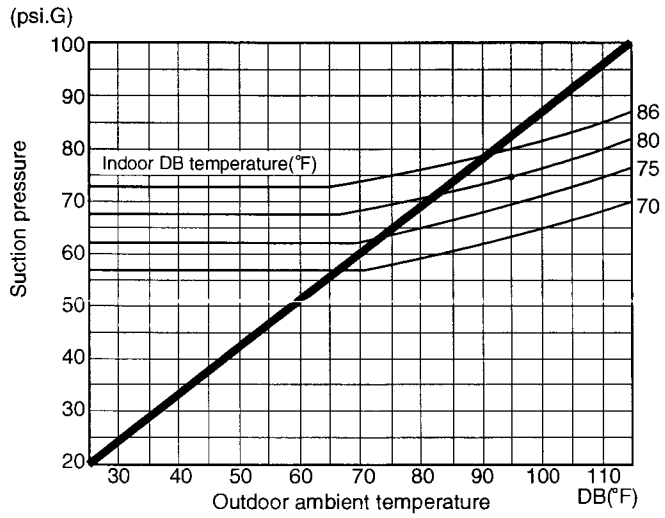
➡PC24EK1



PC30EK1



PC30EK1



4. STANDARD OPERATION DATA

Model				PC24EK1	PC30EK1	PC36EK1	PC42EK1
Item			Unit	Cooling	Cooling	Cooling	Cooling
Total	Capacity		Btu / h	24,000	31,000	36,500	42,500
	SHF		—	0.76	0.68	0.74	0.65
	Input		kW	2.43	3.1	3.8	4.4
Electrical circuit	INDOOR UNIT MODEL			PC24EK1	PC30EK1	PC36EK1	PC42EK1
	Power supply (V, phase, Hz)			115, 1, 60	115, 1, 60	115, 1, 60	115, 1, 60
	Input		kW	0.2	0.2	0.22	0.26
	Fan current		A	1.8	1.8	2.1	2.4
	OUTDOOR UNIT MODEL			PU24EK1	PU30EK1	PU36EK1	PU42EK2
	Power supply (V, phase, Hz)			208/230, 1, 60	208/230, 1, 60	208/230, 1, 60	208/230, 1, 60
	Input		kW	2.23	2.9	3.58	4.14
	Comp. current		A	11.5	14.0	17.5	20.0
	Fan current		A	0.65+0.65	0.65+0.65	0.75+0.75	0.8+0.8
Refrigerant circuit	Condensing pressure		psi-G	237	236	250	237
	Suction pressure		psi-G	78	75	81	71
	Discharge temp.		°F	158	167	165	168
	Condensing temp.		°F	113	113	117	113
	Suction temp.		°F	49	46	50	46
	Ref. pipe length		ft	25	25	25	25
	Refrigerant charge		—	9 lbs 15 oz	10 lbs 2 oz	10 lbs 9oz	12 lbs 9oz
Indoor side	Intake air temperature	DB	°F	80	80	80	80
		WB	°F	67	67	67	67
	Discharge air temperature	DB	°F	60	57	59	56
		WB	°F	58	55	57	55
	Fan speed (High)		rpm	1,410	1,410	1,490	1,490
	Airflow (High)		CFM	900	900	1,100	1,100
Outdoor side	Intake air temperature	DB	°F	95	95	95	95
		WB	°F	—	—	—	—
	Fan speed upper / lower		rpm	750 / 750	750 / 750	760 / 760	840 / 840
	Airflow		CFM	3,170	3,170	3,350	3,350

OPERATING RANGE

1) POWER SUPPLY

	Rating	Allowable voltage
Indoor unit	115V 1 phase 60Hz	Min. 103V — Max. 127V
Outdoor unit	208/230V 1 phase 60Hz	Min. 198V — Max. 253V

2) OPERATION

Function	Intake air temperature / Condition	Indoor		Outdoor	
		DB (°F)	WB (°F)	DB (°F)	WB (°F)
Cooling	Standard temperature	80	67	95	75
	Maximum temperature	95	71	115	75
	Minimum temperature	67	57	23	—
	Maximum humidity	80	75	80	75

6. OUTLET AIR SPEED AND COVERAGE RANGE

			PC24EK1	PC30EK1	PC36EK1	PC42EK1
Standard height (8.2ft)	Airflow	(CFM)	1,050		1,270	
	Air speed	(ft / sec.)	17.0		16.5	
	Coverage range	(ft)	43		48	

1The air coverage range is the value up to the position where the air speed is 0.8ft/sec. when air is blown out horizontally from the unit at the High fan setting.
The coverage range should be used only as a general guideline since it varies according to the size of the room and furniture installed inside the room.

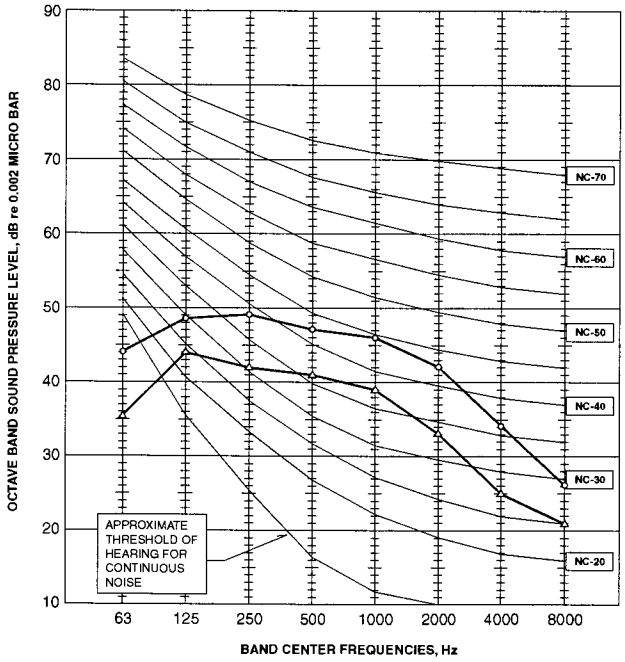
7. ADDITIONAL REFRIGERANT CHARGE (R22 (OZ))

Model	Outdoor unit precharged (up to 100ft)	Refrigerant piping length (over way)									
		25ft	40ft	55ft	70ft	85ft	100ft	115ft	130ft	150ft	164ft
PC24EK1	9 lbs 15 oz	0	0	0	0	0	0	2	4	7	9
PC30EK1	10 lbs 2 oz	0	0	0	0	0	0	5	10	16	20
PC36EK1	10 lbs 9 oz	0	0	0	0	0	0	5	10	16	20
PC42EK1	12 lbs 9 oz	0	0	0	0	0	0	5	10	16	20

8. NOISE CRITERION CURVES

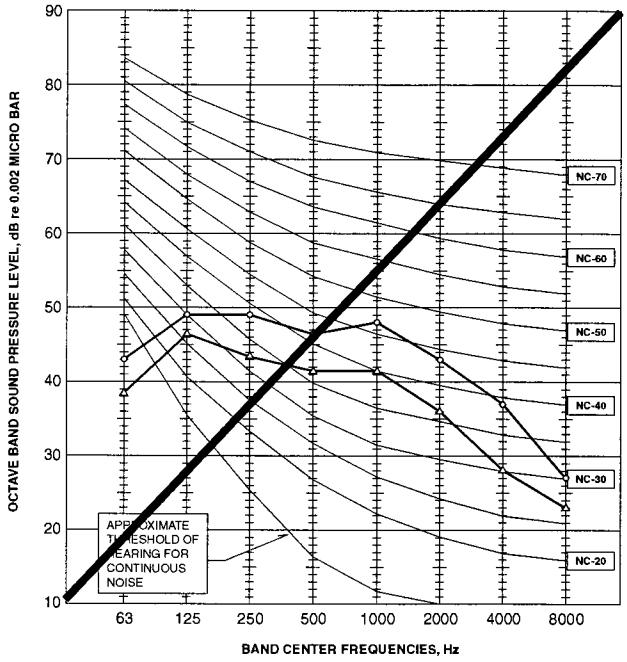
PC24EK1

NOTCH	SPL(db(A))	LINE
Hi	50	○—○
Lo	43	△—△



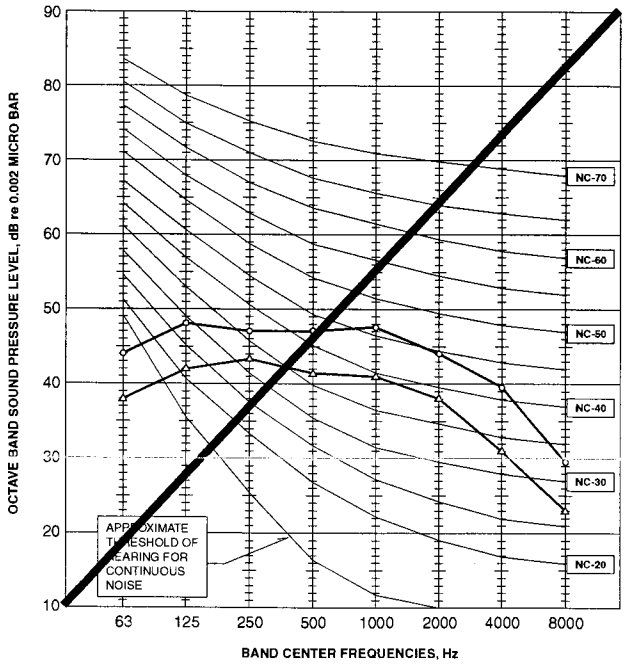
PC36EK1

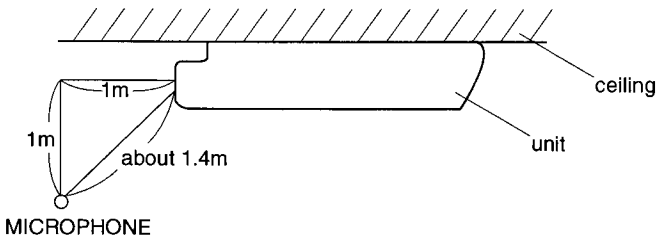
NOTCH	SPL(db(A))	LINE
Hi	51	○—○
Lo	45	△—△



PC42EK1

NOTCH	SPL(db(A))	LINE
Hi	51	○—○
Lo	45	△—△





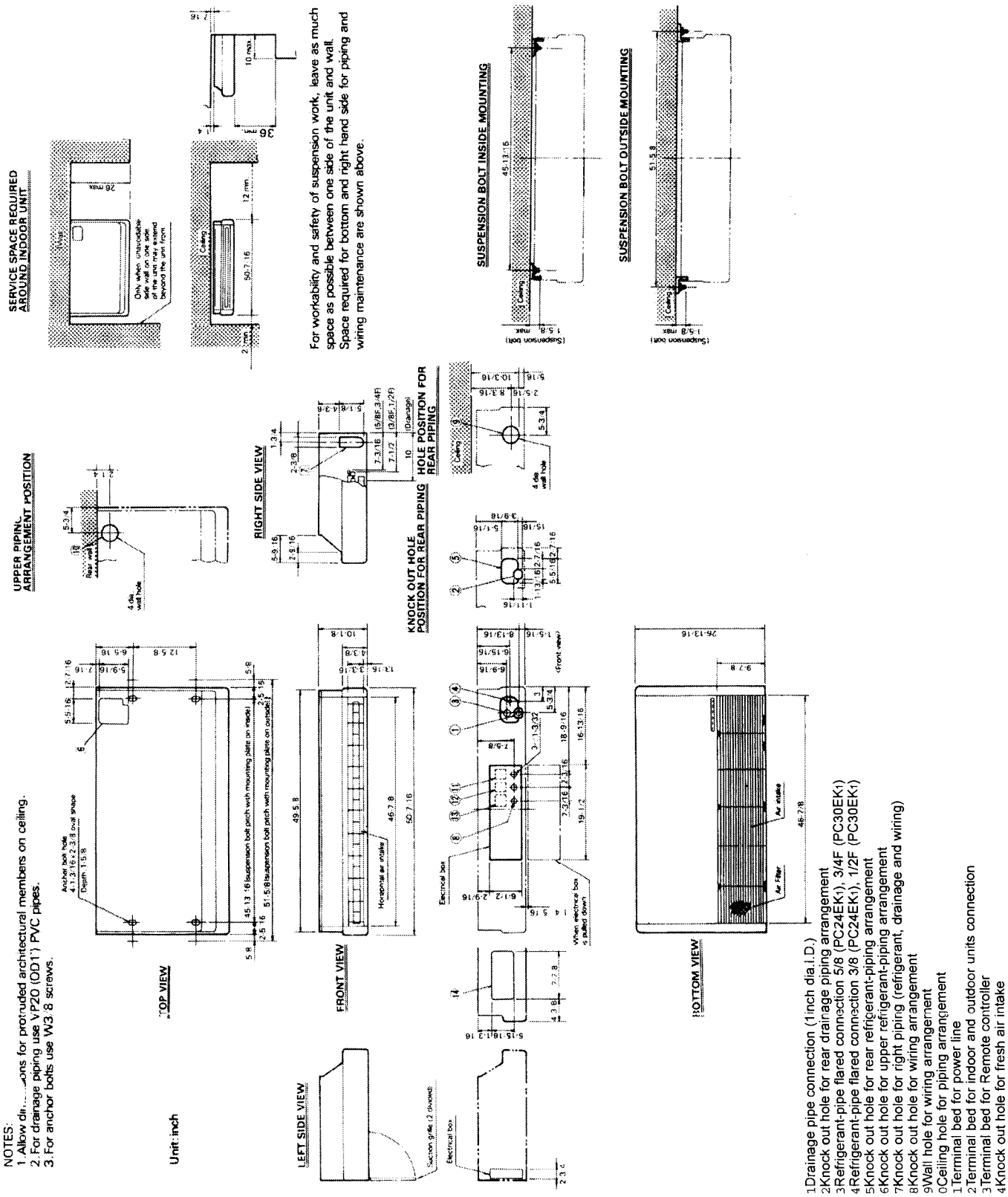
Ambient temperature 80°F

Test conditions are based on JIS Z8731

6 OUTLINES AND DIMENSIONS

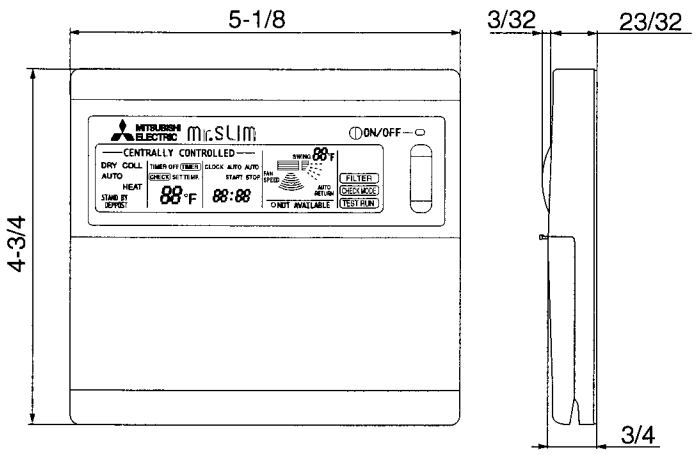
ıdoor Unit
PC24EK1

Unit : inch



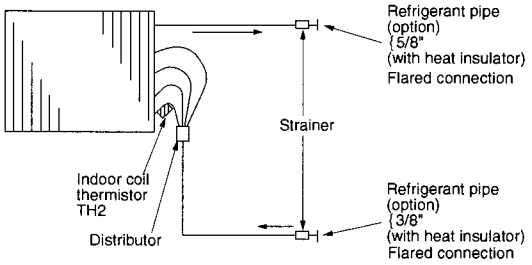
Remote controller

Unit : inch



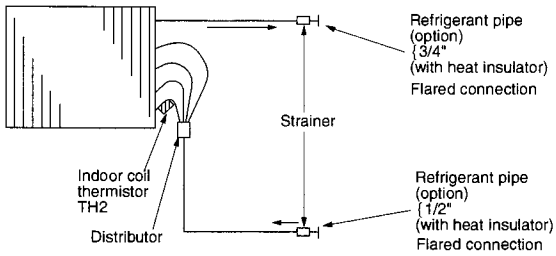
7 REFRIGERANT SYSTEM DIAGRAM

PC24EK1



COOLING

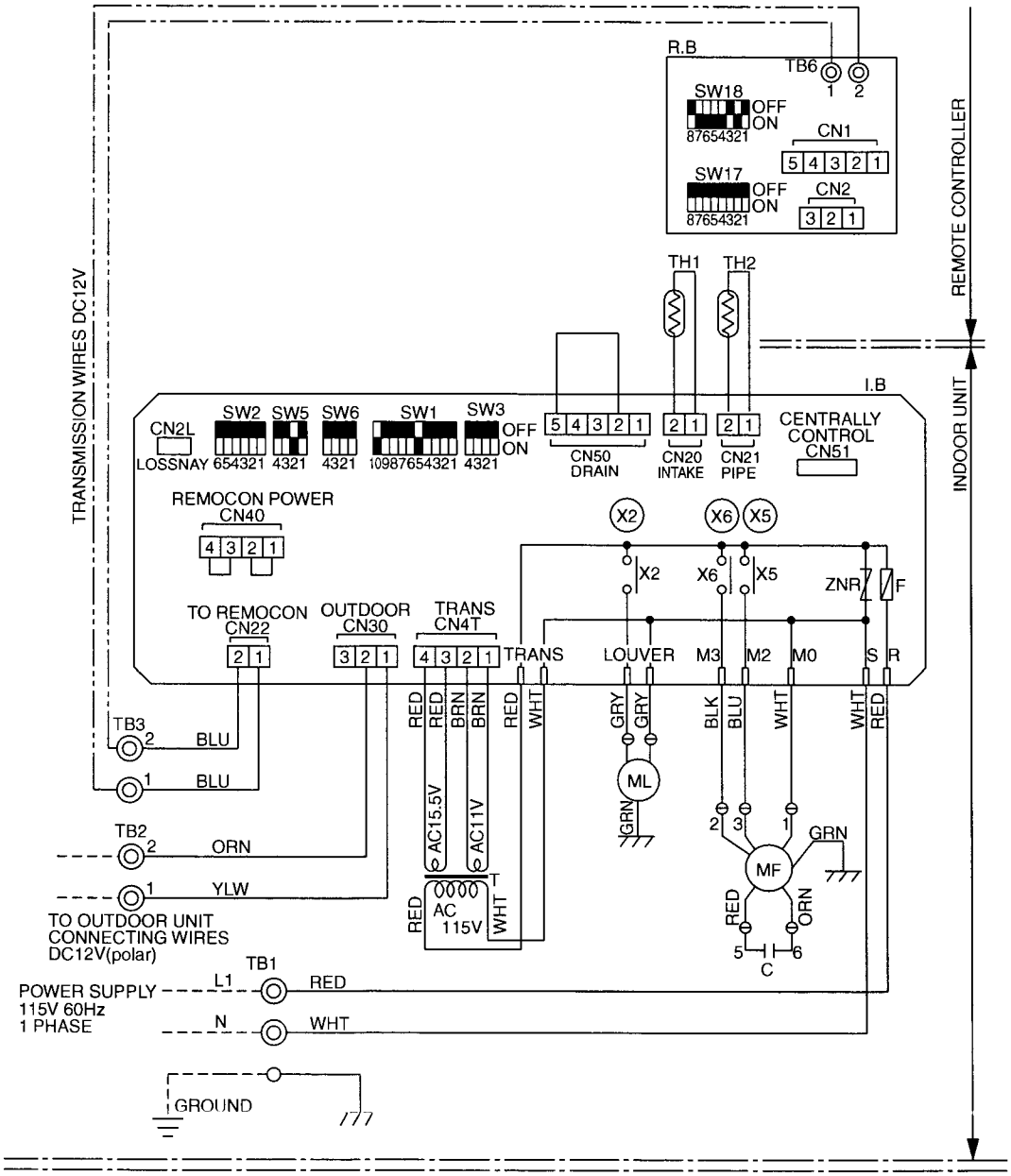
PC30/36/42EK1



8 WIRING DIAGRAM

MODELS PC24EK1 PC30EK1 PC36EK1 PC42EK1 WIRING DIAGRAM

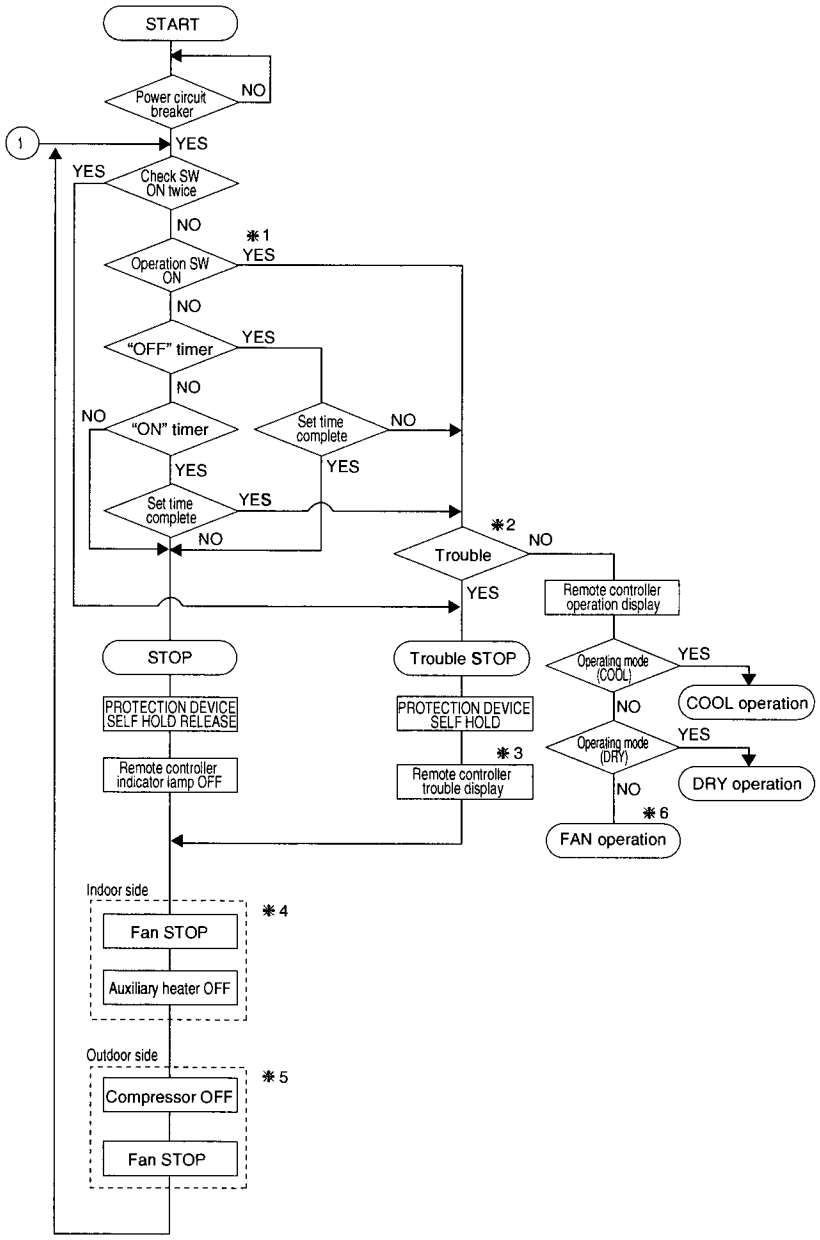
SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
C	FAN MOTOR CAPACITOR	R.B	REMOTE CONTROLLER BOARD	TB1~6	TERMINAL BLOCK
CN1<R.B>	PROGRAM TIMER CONNECTOR	SW1<I.B>	MODE SELECTOR SWITCH	TH1	ROOM TEMPERATURE
CN2<R.B>	REMOTE SWITCH CONNECTOR	SW2<I.B>	ADDRESS SELECTOR SWITCH		THERMISTOR(32°F/15k", 77°F/5.4k")
CN51<I.B>	CENTRALLY CONTROL CONNECTOR	SW3<I.B>	EMERGENCY OPERATION SWITCH	TH2	PIPE TEMPERATURE
CN2L<I.B>	LOSSNAY CONNECTOR	SW5<I.B>	MODEL SELECTOR SWITCH		THERMISTOR(32°F/15k", 77°F/5.4k")
F<I.B>	FUSE (6A)	SW6<I.B>	MODEL SELECTOR SWITCH	X2<I.B>	LOUVER MOTOR RELAY
I.B	INDOOR CONTROLLER BOARD	SW17<R.B>	ADDRESS SELECTOR SWITCH	X5<I.B>	FAN MOTOR RELAY
MF	FAN MOTOR (INNER THERMOSTAT)	SW18<R.B>	FUNCTION SELECTOR SWITCH	X6<I.B>	FAN MOTOR RELAY
ML	LOUVER MOTOR	T	TRANSFORMER	ZNR	VARISTOR



NOTES:
1.Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.
2.Indoor and outdoor connecting wires are made with polarities,make wiring matching terminals.
3.Symbols used in wiring diagram above are, ◎:Terminal block, ⏀, ⊏⊏⊏:connector, □:PC board insertion tab.
4.Emergency operation
If a trouble occurs with either the remote controller or the indoor microcomputer and no other trouble exists,emergency operation for cooling can be performed by changing the setting of dip switch (SW3(I.B)) on the indoor controller board (emergency dry operation is not possible).

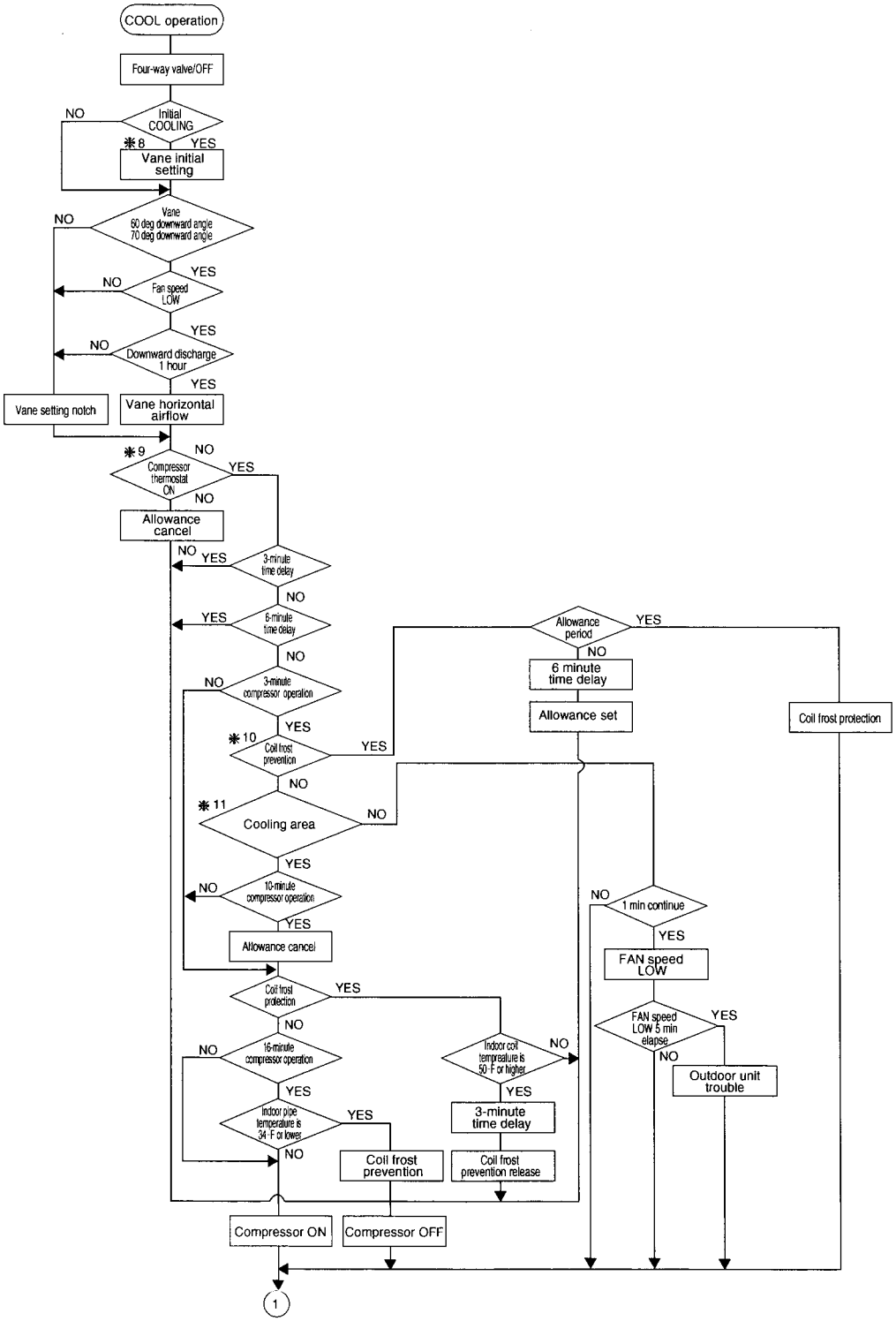
9 OPERATION FLOW-CHART

MAIN OPERATION



1 In addition, the centralized and remote control can be operated.
2 The modes which indicate the sources of trouble are listed below.
E0=Signal transmitting/receiving error
P1=Room temperature thermistor malfunction
P2=Indoor coil thermistor malfunction
P4=Drain sensor malfunction
P5=Drain over flow
P6=Coil frost/overheat protection
P7=System error
P8=Outdoor unit trouble
3 The CHECK switch will show if an error has occurred in the past.
4 Fan runs on low speed for 1 minute in order to remove overheat air.
5 The 3-minute (6 minutes ··· heating mode) time-delay functions after compressor stops.
6 FAN or AUTO mode is selected by the indoor dip switch setting.
7 In FAN mode, fan speed and vane operation depend on the remote controller setting. (Compressor is OFF.)

COOLING OPERATION



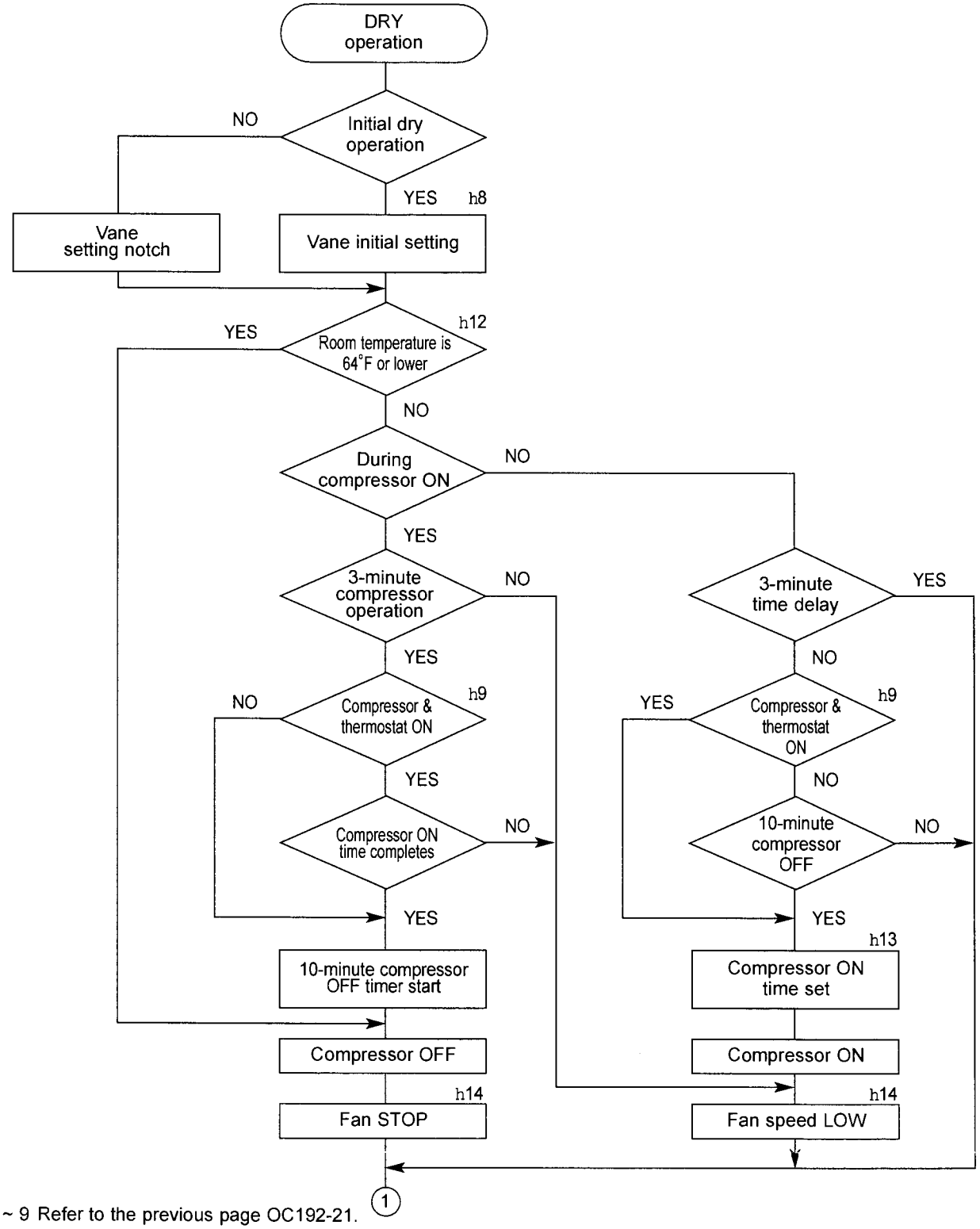
8 When operation stops or changes to cooling or dry mode, the auto vane turns to a horizontal angle. If operation changes during auto vane SWING, the auto vane will continue to swing.

9 When operating TEST RUN, the thermostat will be continuously ON.

10After 3 minute compressor operation, if the indoor coil thermistor reads -5°F or below for 3 minutes, the compressor will stop for 6 minutes.

11Cooling area : Indoor coil temperature is more than 5 degrees above the room temperature.
Heating area : Indoor coil temperature is more than 5 degrees below the room temperature.
FAN area : Indoor coil temperature is within 5 degrees either way of the room temperature.

DRY OPERATION



8 ~ 9 Refer to the previous page OC192-21.

12 When room temperature is 64°F or below, the compressor cannot operate.
When room temperature rises over 64°F, the compressor starts after a 3-minute time delay.

13 Compressor ON time is decided by room temperature. Refer to page OC192-27

14 In dry operation, compressor ON makes the fan speed LOW and compressor OFF stops the fan.
It is not possible to set the fan speed with the remote controller

10 MICROPROCESSOR CONTROL

1.OUTLINE OF MICROPROCESSOR CONTROL

INPUT to remote controller

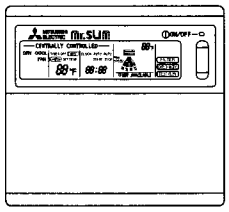
OFF-ON switching.
COOL/DRY-FAN selector switching.
Thermostat setting.
TIMER mode selector-switching and Timer setting.
HIGH-LOW fan speed switching.
Swing louver (AIR SWEEP) switching.
TEST RUN switching.
CHECK mode switching.
(Self diagnostic trouble shooting)

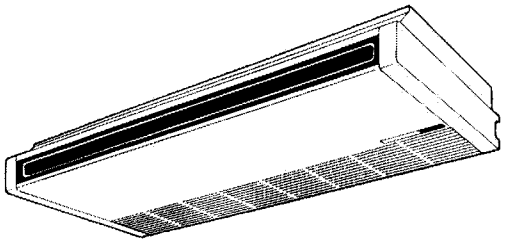
Remote controller board

Processes and transmits orders.

OUTPUT to remote controller

Remote controller
LCD indicator





12VDC

Non-polar, two-wire cable
maximum length 550 yards

Signal

INPUT from indoor unit

Room temperature thermistor (TH1)
Pipe temperature thermistor (TH2)

Indoor controller board

Receives orders from remote controller and temperature data from indoor unit.
Processes orders and data.
Controls indoor and outdoor operation.
Self diagnostic function.
System control operation.
Emergency operation.
Set by dip switch on indoor controller board.
Transmits the power to remote controller.

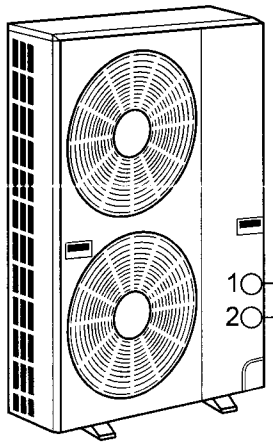
OUTPUT to indoor unit

Swing louver control ON-OFF.
Emergency stop.

1 2

Polar two-wire cable

Outdoor unit



12VDC

1
2

OUTPUT to outdoor unit

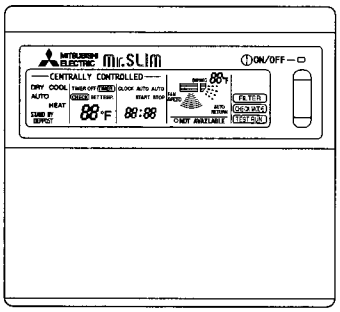
Compressor and outdoor fan : ON-OFF

Independent Control of Outdoor Unit

Compressor protection device working
Fan speed control.
Crankcase heater control ON-OFF.
Self diagnostic function

2. INDOOR UNIT CONTROL

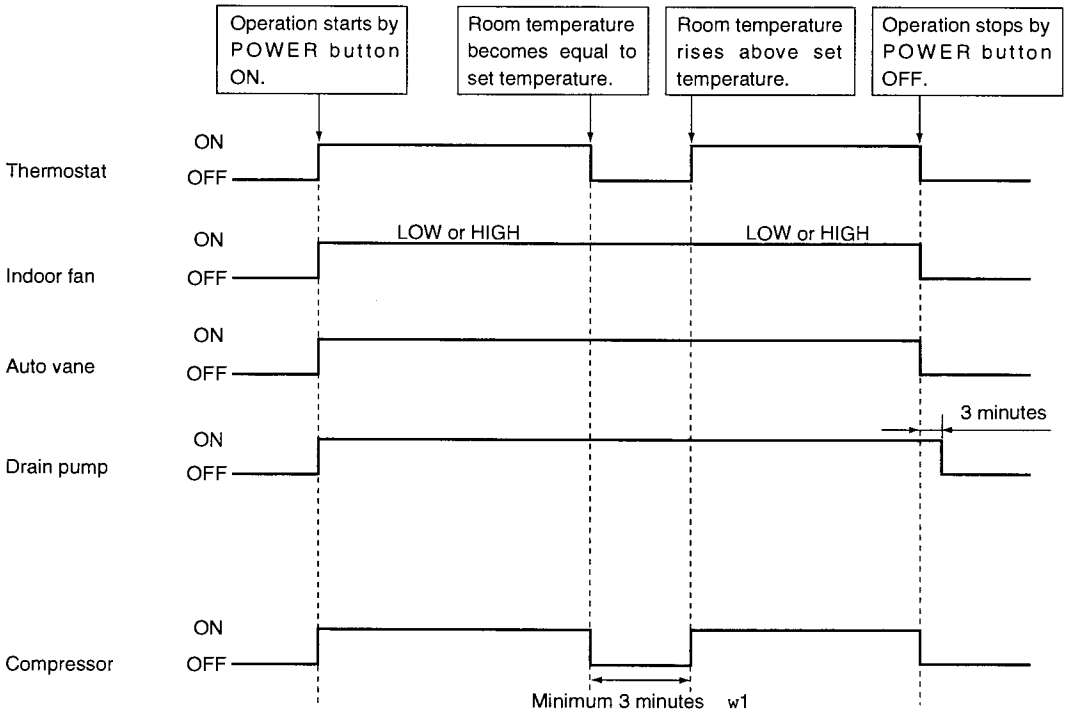
2-1 COOL operation



<How to operate>

1 Press POWER ON/OFF button.
2 Press the MODE button to display COOL.
3 Press the SET TEMP. button to set the desired temperature.
NOTE: Set temperature changes 2°F when the SET TEMP. button is pressed one time.
Cooling 65 to 87°F.

<COOL operation time chart>



w1 Even if the room temperature rise above the set temperature during this period, the compressor will not start until this period has ended.

(1) Compressor control

1 3-minute time delay
To prevent overload, the compressor will not start within 3 minutes after stop.
2 The compressor runs when room temperature is higher than set temperature.
The compressor stops when room temperature is equal to or lower than the set temperature.
The compressor maintains the previous state when the room temperature minus the set temperature is 0 degrees or more, or lower than 2 degrees.
3 The compressor stops in check mode or during protective functions.
4 Coil frost prevention
To prevent indoor coil frost, the compressor will stop when the indoor coil thermistor (TH2) reads 34°F or below after the compressor has been continuously operated for at least 16 minutes or more. When the indoor coil temperature rises to 50°F or above, the compressor will start in a 3-minute(w2) time delay.
w2 When the indoor coil temperature is 30°F or less, the compressor starts in 6 minutes.

NOTE : By turning OFF the dip switch SW1-3 on indoor controller board, the start temperature of coil frost prevention changes from 34°F to 36°F.

5 Coil frost protection

When indoor coil temperature becomes 5°F or below,coil frost protection will proceed as follows.

<Start condition>

After the compressor has been continuously operated for 3 minutes or more,and the indoor coil temperature has been 5°F or below for 3 minutes,the coil frost protection will start.

<Coil frost protection>

Compressor stops for 6 minutes,and then restarts.

If the start condition is satisfied again during the first 10 minutes of compressor operation,both the indoor and outdoor units stop,displaying a check code of "P6" on the remote controller.

<Termination conditions>

Coil frost protection is released when the start condition is not satisfied again during the allowance, or when the COOL mode stops or changes to another mode.

(2) Indoor fan control

Indoor fan speed LOW/HIGH depends on the remote controller setting.

However, if an outdoor unit abnormality is detected, the indoor fan speed will be LOW, regardless of the remote controller setting.

(i) Fan speed LOW/HIGH depends on the remote controller setting regardless of the thermostat ON/OFF.

(ii) Fan speed will remain on LOW if an abnormality in outdoor unit is detected. (5 minutes)

NOTE : Fan stops immediately if the unit stops or the check mode is started.

(3) Auto vane control

(1) Frequency judgement

When the unit operates for the first time after the circuit breaker turned to ON, the frequency, 50Hz or 60Hz, is judged by the horizontality sensing switch. If the frequency cannot be judged immediately for some reason, the sensing operation continues for 10 minutes with the vane motor at ON.

If the frequency cannot be judged yet after 10-minute sensing, the vane motor turns to OFF. But the AIR DISCHARGE DIRECTION display continues to be indicated.

(2) During cooling operation

When the cooling operation starts, the horizontal discharge is automatically set. However, the desired discharge among four modes below-listed can be selected with the AIR DISCHARGE UP/DOWN button on the remote controller.

1 100%-horizontal discharge
2 60%-downward and 40%-horizontal discharge
3 80%-downward and 20%-horizontal discharge
4 100%-downward discharge

NOTE: Discharge 2 is available only when the fan speed is HIGH.

<AUTO RETURN>

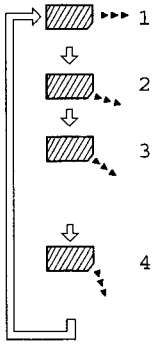
When discharge "3" or "4" continues for 1 hour with the fan speed at LOW, the discharge direction turns to the horizontal discharge automatically.

NOTE1: After that, the discharge "3" or "4" is available by setting with the remote controller, and it continues for 1 hour.

NOTE2: If the discharge direction changes from "3" or "4", the direction returns to the horizontal discharge when 1 hour has passed since the discharge "3" started.

NOTE3: If the discharge direction changes from "3" (or "4") to the horizontal discharge, the 1-hour timer to return the horizontal discharge is canceled at that time.

<Remote controller display>



Changes by pushing the AIR DISCHARGE UP/DOWN button:

(3) During the operation OFF, the auto vane is in the horizontal position.

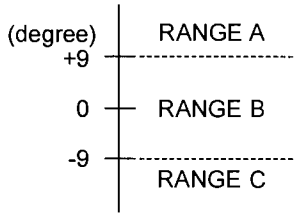
(4) When the vane motor is out of order or the connector is badly connected, the air discharge display of the remote controller continues.

(4) Detecting abnormalities in the outdoor unit

After the compressor has been continuously operated for 3 minutes, if the difference between the indoor coil temperature and room temperature is out of RANGE C for 1 minute, the indoor fan speed will turn to LOW. Five minutes later, if the difference is still out of RANGE C,the outdoor unit is functioning abnormally. Thus, the compressor stops and check code "P8" appears on remote controller.

RANGE A : Indoor coil temperature is more than 9 degrees above room temperature.
RANGE B : Indoor coil temperature is within 9 degrees either way of room temperature.
RANGE C : Indoor coil temperature is more than 9 degrees below room temperature.

Indoor coil temperature
minus room temperature



(5) Drain pump control

The drain pump works in COOL or DRY operation. The drain pump does not work in check mode.

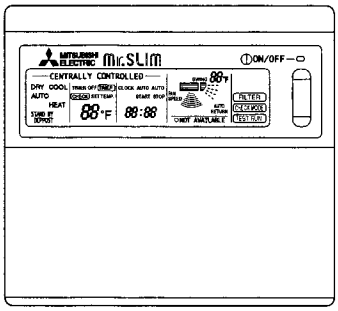
<Drain sensor>

When both the drain pump and unit are operating, the drain sensor detects the temperature. This temperature tells whether the drain water level is above or under the drain sensor. If the drain water level rises above the drain sensor due to a drain pump malfunction, the unit will stop operating in order to prevent drain from overflowing. The check code "P5" on the remote controller will display this occurrence.

(6) Dew prevention heater

To prevent dew from accumulating on the grille, the dew prevention heater is continuously ON during COOL operation. It is independent of the thermostat ON/OFF.

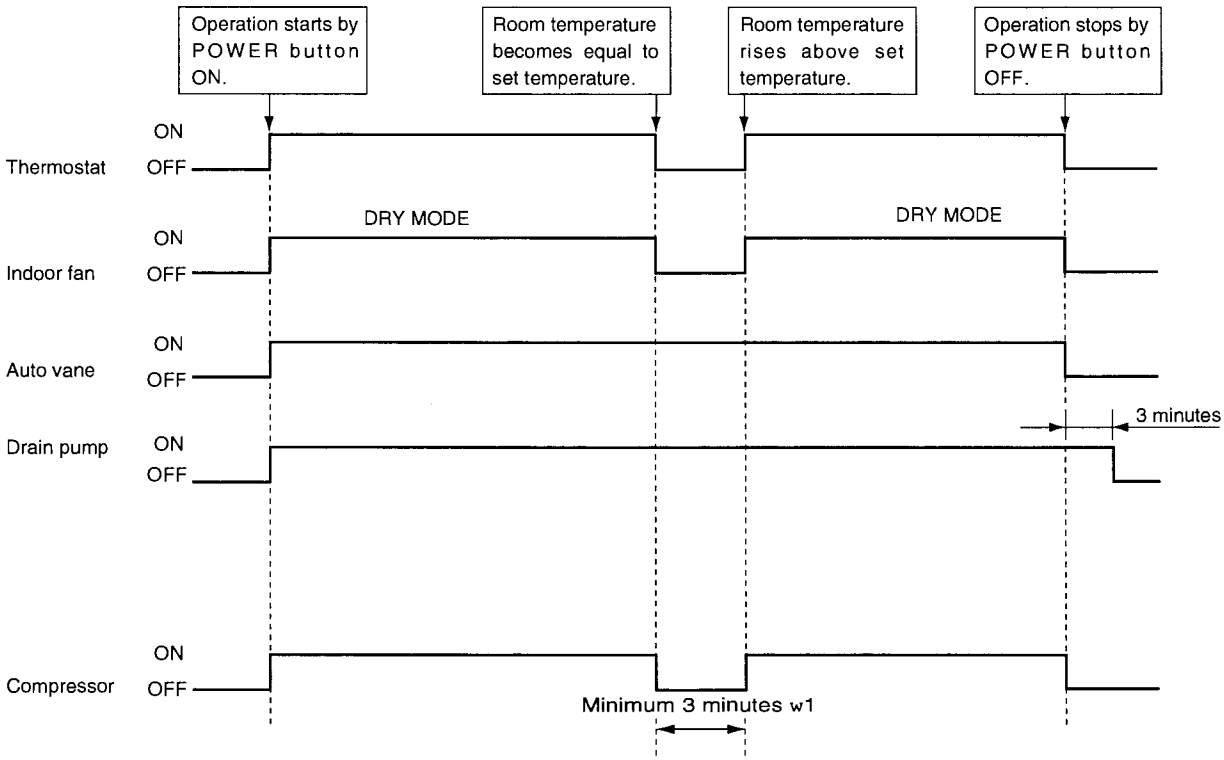
2-2 DRY operation



<How to operate>

1 Press POWER ON/OFF button.
2 Press the MODE button to display "DRY"
3 Press the SET TEMP. button to set the desired temperature.
NOTE: The set temperature changes 2°F when the SET TEMP. button is pressed one time.
Dry 64 to 86°F

<DRY operation time chart>



w1 Even if the room temperature rises above the set temperature during this period, the compressor will not start until this period has ended.

(1) Compressor control

1 3-minute time delay
To prevent overload, the compressor will not start within 3 minutes after stop.
2 The compressor runs when room temperature is higher than set temperature.
The compressor stops when room temperature is equal to or lower than the set temperature.
The compressor maintains the previous state when the room temperature minus the set temperature is 0°F or more, or lower than 2°F.
3 The compressor stops in check mode or during protective functions.

4 The compressor will not start when the room temperature is 64°F or below.
The compressor starts intermittent operation when the power is turned ON with room temperature above 64°F. The compressor ON/OFF time depends on the thermostat ON/OFF and the following room temperatures.After 3-minute compressor operation,
If the room temperature thermistor reads above 85°F with thermostat ON, the compressor will operate for 6 more minutes and then stop for 3 minutes.
If the room temperature thermistor reads 79°F~82°F with thermostat ON, the compressor will operate for 4 more minutes and then stop for 3 minutes.
If the room temperature thermistor reads 75°F~79°F with thermostat ON, the compressor will operate for 2 more minutes and then stop for 3 minutes.
If the room temperature thermistor reads below 75°F with thermostat ON, the compressor will stop for 3 minutes.
If the thermostat is OFF regardless of room temperature, the compressor will stop for 10 minutes.

5 Coil frost protection
Coil frost protection in DRY operation is the same as in COOL operation.

6 Coil frost prevention
Coil frost prevention does not operate in DRY operation.

(2) Indoor fan control

The indoor fan runs on LOW speed during compressor operation. The fan speed cannot be changed with the remote controller. Also, the indoor fan does not run during compressor OFF.

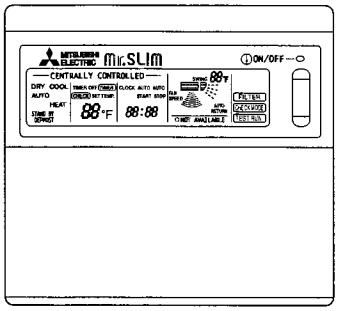
(3) Auto vane & drain pump controls

Same as in COOL operation

(4) Detecting abnormalities in the outdoor unit

An abnormality in the outdoor unit can not be detected in DRY operation.

2-3 Auto vane control



<How to operate>
To change the air flow direction, press AIR DISCHARGE button.

1	2	3	4
100% horizontal	60% downward and 40% horizontal	80% downward and 20% horizontal	100% downward

(1) Frequency judgement

When the unit operates for the first time after the circuit breaker turned to ON, the frequency, 50Hz or 60Hz, is judged by the horizontality sensing switch. If the frequency cannot be judged immediately for some reason, the sensing operation continues for 10 minutes with the vane motor at ON.

If the frequency cannot be judged yet after 10-minute sensing, the vane motor turns to OFF. But the AIR DISCHARGE DIRECTION display continues to be indicated.

(2) During cooling operation

When the cooling operation starts, the horizontal discharge is automatically set. However, the desired discharge among four modes below-listed can be selected with the AIR DISCHARGE UP/DOWN button on the remote controller.

1 100%-horizontal discharge
2 60%-downward and 40%-horizontal discharge
3 80%-downward and 20%-horizontal discharge
4 100%-downward discharge

NOTE: Discharge 2 is available only when the fan speed is HIGH.

<AUTO RETURN>

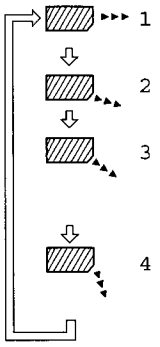
When discharge "3" or "4" continues for 1 hour with the fan speed at LOW, the discharge direction turns to the horizontal discharge automatically.

NOTE1: After that, the discharge "3" or "4" is available by setting with the remote controller, and it continues for 1 hour.

NOTE2: If the discharge direction changes from "3" or "4", the direction returns to the horizontal discharge when 1 hour has passed since the discharge "3" started.

NOTE3: If the discharge direction changes from "3" (or "4") to the horizontal discharge, the 1-hour timer to return the horizontal discharge is canceled at that time.

<Remote controller display>

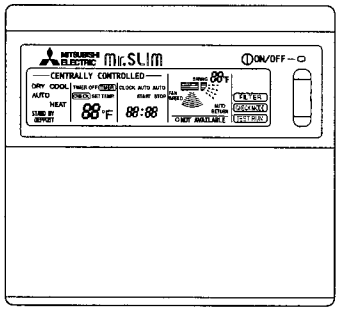


Changes by pushing the AIR DISCHARGE UP/DOWN button:

(3) During the operation OFF, the auto vane is in the horizontal position.

(4) When the vane motor is out of order or the connector is badly connected, the air discharge display of the remote controller continues.

2-4 TIMER operation
WIRED REMOTE CONTROLLER



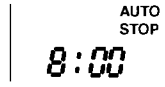
<Timer function>

AUTO STOP ·····The air conditioner stops after the set time lapses.
AUTO START ·····The air conditioner starts after the set time lapses.
AUTO OFF ·····Timer is not active.

<How to operate>

1. Press POWER ON/OFF button.
2. Press "TIMER ON/OFF" button to select AUTO STOP or AUTO START.
3. Press "CLOCK/TIMER" button to set desired time.
   Time setting is in 1 hour units for up to 24 hours.
   Each time TIMER SET button is pressed, set time increases by 1 hour. When TIMER SET button is pressed and held, the set time increases by 1 hour every 0.5 seconds.
4. To cancel the timer operation, press POWER ON/OFF button.

<Timer setting example>



This setting will stop the operation in 8hours.
With the lapse of time, time display changes in 1hour units, showing remaining time.

2-5 Test run

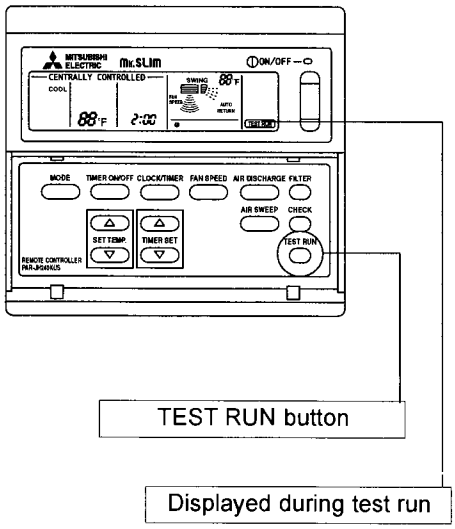
<Before test run>

After installing, wiring, and piping the indoor and outdoor units, check for refrigerant leakage, looseness in power supply or control wiring, and mistaken polarity.

Use a 500-volt measure to check the resistance between the power supply terminal block and ground to make sure that it is at least 1.0MΩ.

Attention:

Do not use the air conditioner if resistance is less than 1.0MΩ.



<How to operate>

1. Turn ON main breaker.
2. Press TEST RUN button twice. "TEST RUN" is displayed on remote controller.
3. Select "COOL" with MODE button to check that cool air is beginning discharged.
   Select "HEAT" with MODE button to check that warm air is beginning discharged.(after a while)
4. Select LOW/HIGH with FAN SPEED button to check that the fan speed changes properly.
5. Press AIR DISCHARGE button to check auto vane operation.
6. Check outdoor fan operation.
7. Check compressor operation referring to the indoor coil temperature code displayed on the remote controller.
8. After checking, press the ON/OFF button.

·The test run works for 2 hours and stops automatically.
To cancel the test run, press ON / OFF button or TIMER ON / OFF button.

(1) Indoor coil temperature code

During the test run, the indoor coil temperature code from 1 to 15 is displayed on the remote controller instead of room temperature. The code should fall with the lapse of time in normal COOL operation, and should rise in normal HEAT operation.

Code	1	2	3	4	5	6	7	8
Indoor coil temperature	-40~34°F	~50°F	~59°F	~68°F	~77°F	~86°F	~95°F	~104°F
Code	9	10	11	12	13	14	15	
Indoor coil temperature	~113°F	~122°F	~131°F	~140°F	~158°F	~194°F	Thermistor abnormality	

(2) Trouble during test run

- If the unit malfunctions during the test run, refer to section 10 in this manual entitled "TROUBLESHOOTING."
- When the optional program timer is connected to the conditioner, refer to its operating instructions.

2-6 Emergency operation

When the remote controller or microprocessor malfunctions but all other parts are normal, emergency operation is started by setting the dip switch SW3 on the indoor controller board.

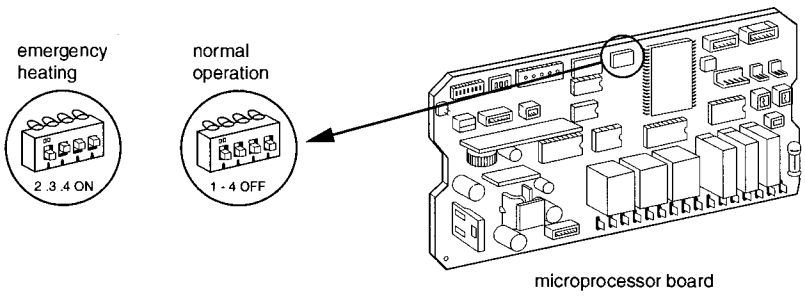
<Before emergency operation>

1. Make sure the compressor and the indoor fan are operating normally.
2. Locate the defect with the self-diagnostic function. When the self-diagnostic function indicates "protective function is working", release the protective function before starting the emergency operation.
   CAUTION: When the self-diagnostic function indicates a check code of "P5" (drain pump malfunction), DO NOT start the emergency operation because the drain may overflow.

<How to operate>

1. For emergency cooling, set the dip switch SW3-1 to ON and SW3-2 to OFF.

SW3 setting



2. Turn ON the outdoor unit breaker and then ON the indoor unit breaker.
   Emergency operation will now start.
3. During emergency operation, the indoor fan operates on high speed, the auto vanes do not operate.
4. To stop emergency operation, turn OFF the indoor unit breaker.
5. Movements of the vanes do not work in emergency operation, therefore you have to slowly set them manually to the appropriate position.

NOTE: The remote controller POWER ON/OFF button can not start/stop emergency operations.

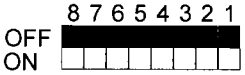
CAUTION: Do not use emergency cooling for more than 10 hours, as the indoor coil may freeze.

3 DIP SWITCH FUNCTIONS

Each figure shows the initial setting by factory.

3-1 On remote controller board

(1) SW17(Address selector)

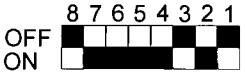


SW17-1 ~ 6) Switch for address setting

SW17-7) When two remote controllers are used, this switch sets the controller function.
- OFF : The remote controller is set as a main controller.
- ON : The remote controller is set as a sub controller.

SW17-8) Switch for system back-up
This switch is not available for series PC.

(2) SW18 (Model selector)



SW18-1) Switch for timer mode setting
- OFF : Single day
- ON : Timer every day

SW18-2) Switch for filter sign display
- OFF : Filter sign absent
- ON : Filter sign present

SW18-3) Switch for filter sign time setting
- OFF : 100Hr
- ON : 2500Hr

SW18-4) Switch for temperature unit
- OFF : ℃ (Celsius)
- ON : ℉ (Fahrenheit)

SW18-5) Switch for HEAT display
This switch is not available PC

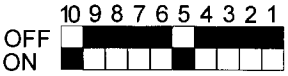
SW18-6) Switch for auto vane display
- OFF : Auto vane display present
- ON : Auto vane display absent

SW18-7) Switch for swing display
- OFF : Swing display present
- ON : Swing display absent

SW18-8) Switch for louver display
- OFF : Louver display present
- ON : Louver display absent

3-2 On indoor controller board

(1) SW1 (Mode selector)



SW1-1) Switch to change over between FAN mode and AUTOMATIC COOLING-HEATING CHANGE OVER mode
- OFF : Fan mode for cooling-only models including series PC.
- ON : AUTOMATIC COOLING-HEATING CHANGE OVER mode for heat pump models.

SW1-2) Switch to change over louver display
- OFF : Swing
- ON : Rotary

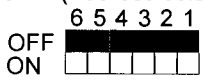
SW1-3) Switch for auto vane
- OFF : Unit without auto vane
- ON : Unit with auto vane

SW1-4) Switch for drain pump(Drain lift-up mechanism)
- OFF : The drain pump works in only cooling mode.
- ON : The drain pump works in both cooling and heating mode. (For heat pump models)

SW1-5) Switch to change the temperature to start coil frost prevention
- OFF : 36_F (For previous special models)
- ON : 34_F (For For all current models)

SW1-6) Switch for set temperature adjustment in heating mode
This is not available for series PC.
SW1-7) Switch for fan speed during thermostat OFF in heating mode
This is not available for series PC.
SW1-8) Switch for fan motor operation in heating mode
This is not available for series PC.
SW1-9) Switch for outdoor unit abnormality detection
OFF : When abnormality occurs, it is detected.
ON : Even if abnormality occurs, it is not detected.
SW1-10) Switch for AUTO RESTART FUNCTION
OFF : This function does not work.
ON : This function works.

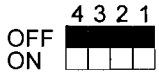
(2) SW2 (Address selector)



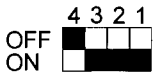
Use SW2 to set unit-address for group control.

(3) SW3 (Emergency operation switch)

Normal operation(initial setting)



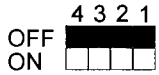
For emergency cooling



(4) SW5 (Model selector)

SW5-1) OFF : For models without automatic swing mechanism
ON : For models with automatic swing mechanism
SW5-2) OFF : For models with heating mode and cooling mode
ON : For models with only cooling mode including PC
SW5-3) Not yet used
SW5-4) OFF : LOSSNAY on air intake
ON : LOSSNAY air intake

(5) SW6 (Model selector)



SW6 is set on site for twin/triple control. This switch is not available for series PC

4 INDOOR FAN CONTROL

Indoor fan relay output.
(a) During fan ON
The indoor fan relay turns ON. One second later, the phase control will start.
(b) During fan OFF
The phase control turns OFF. One second later, the indoor fan relay will turn OFF.

11 TROUBLE SHOOTING

1. REMOTE CONTROLLER DISPLAY ABNORMALITY

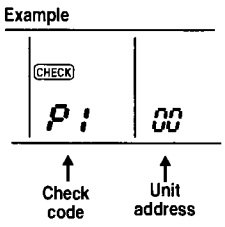
<table>
<tr><th>Display abnormality</th><th>Cause</th><th>Check points</th></tr>
<tr><td>The display "centrally controlled" on remote controller does not disappear.</td><td>1) Wrong address setting of remote controller/indoor controller board.
2) Timer adapter is connected to the remote controller.
3) Signal transmission error between indoor unit and remote controller.</td><td>1) Check the address setting of remote controller and indoor controller.
2) Check if the timer adapter is used correctly.
3) 1 Turn another remote controller's DIP SW17-7 ON to make it sub controller.
2 Connect the sub controller to the unit, and turn circuit breaker ON.
If the display "centrally controlled" disappears, replace the original remote controller.
If the display remains the same, replace the indoor controller board.</td></tr>
<tr><td>When remote controller POWER switch is turned to ON, the check code "E0"appears.</td><td>1) Signal transmission error between indoor unit and remote controller</td><td>1) 1 Connect a sub remote controller.
2 Turn circuit breaker ON.
If the display "centrally controlled" remains, replace the indoor controller board.
3 If the display disappears, turn the remote controller POWER switch ON and check as follows.
<table>
<tr><th></th><th>Remote controller</th><th>Sub remote controller</th><th>Malfunction</th></tr>
<tr><td>1</td><td>Operating Display</td><td>E0 Display</td><td>Malfunction of Indoor Unit</td></tr>
<tr><td>2</td><td>Operating Display</td><td>Operating Display</td><td>Malfunction of Remote controller</td></tr>
<tr><td>3</td><td>No Display</td><td>E0 Display</td><td>Malfunction of Indoor Unit and Remote Controller</td></tr>
<tr><td>4</td><td>No Display</td><td>Operating Display</td><td>Malfunction of Remote controller</td></tr>
</table></td></tr>
<tr><td>When remote controller POWER switch is turned to ON, operating display appears, but disappears soon.</td><td>1) Short circuit of indoor/outdoor connecting wire
2) Short circuit of transmission wire.
3) Wrong operation of remote controller due to noise wave emitted by other appliances.</td><td>1), 2) Check the wire
3) Turn the circuit breaker OFF, and then turn ON.
If the remote controller remains abnormal, despite the above measures, replace the indoor controller board.</td></tr>
<tr><td>Despite turning POWER switch ON, the remote controller display does not appear.</td><td>1) Damaged remote controller.
2) Short circuit of transmission wire.
3) Bad contact of indoor CN40.
4) CN40 is attached to a sub unit.
5) Damaged transformer.
6) Bad contact of CN4T.
7) Broken fuse.
8) Circuit breaker OFF.</td><td>1) Measure the voltage between terminals of remote controller. If no voltage, remove the terminals and measure the voltage between wires. If the voltage is between 6VDC and 12V, replace the remote controller.
2) ~ 8) Check each point.
If normal, replace the indoor controller board.</td></tr>
</table>

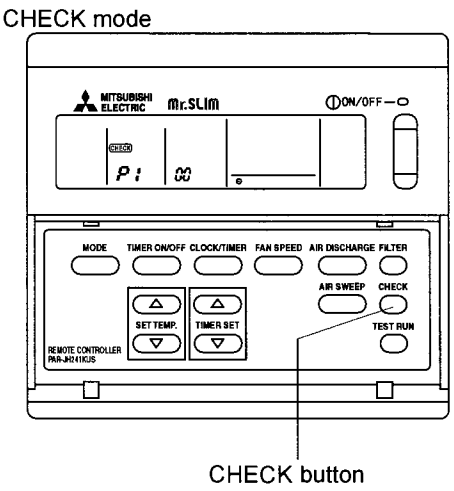
2. SELF DIAGNOSTIC FUNCTION WITH REMOTE CONTROLLER

2-1 When malfunction occurs during operation

When a malfunction occurs, the indoor and outdoor units stop and the malfunction is displayed on the LCD of the remote controller.

(1) ON the set temperature display part, "CHECK" appears, and the unit address and the check code are displayed at one-second intervals. (Check mode)





(2) When one remote controller controls several units in the group control, the LCD shows the unit address and check code of the first malfunctioning unit.

(3) To cancel the check mode, press the power ON/OFF button.

NOTE: The latest check code is memorized, even if the check mode is cancelled by the way mentioned above. It takes 60 seconds maximum to display the memorized check code.

2-2 How to use the self diagnostic function for service

A. For normal control with one unit and one remote controller

(1) Pressing the CHECK button on the remote controller twice starts the self diagnostic function.

(2) During the self diagnostic function, "CHECK" appears at two positions on the remote controller display. Then, at least 10 seconds later, the unit address and the check code is displayed at one-second intervals.

(3) Check and repair the unit according to the check code. (Refer to the next page.)

2-3 For group control using one remote controller

(1) Press the SET TEMP. button on the remote controller to advance or go back to the unit address. Each time SET TEMP. (△) button is pressed, the unit address advances by one. Each time SET TEMP. (▽) button is pressed, the unit address goes back by one.
The check code and the unit address, appear will be displayed.

(2) The check code "U8" means no malfunction has occurred since installation.
The check code "EO" means the following conditions:
lThe unit address displayed on the remote controller does not apply to any unit.
lpower is not supplied to the unit.
lSignal transmitting / receiving circuit is abnormal.

(3) Check and repair the unit according to the check code. (Refer to the next page.)

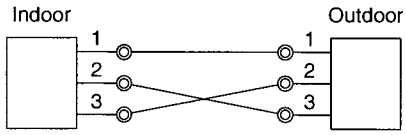
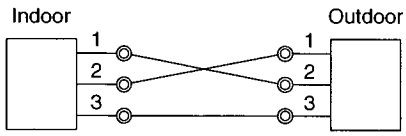
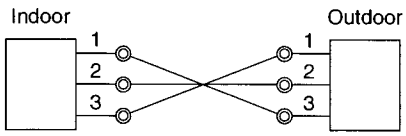
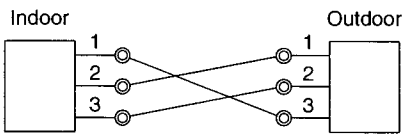
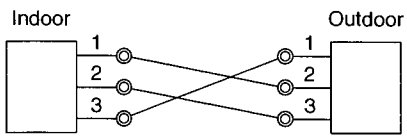
Check code	Diagnosis of malfunction	Cause	Check points
E0	Signal transmitting/receiving error Indoor controller does not respond to remote controller signal.	During individual unit control 1) Bad contact of transmission wire 2) Signal transmitting/receiving circuit is abnormal.	1) Check the transmission wire. 2) Check with another remote controller. If "E0" is still indicated, replace the indoor controller board. If other check code appears. replace the former remote controller.
P1	Abnormality of room temperature thermistor (TH1 or RT1)	1) Bad contact of thermistor 2) Damaged thermistor	1) Check the thermistor. 2) Measure the resistance of the thermistor. If normal, it should be as follows. 32-F····15k′ 86-F ····4.3k′ 50-F····9.6k′ 104-F ····3.0k′ 68-F····6.3k′ If is normal, replace the indoor controller board.
P2	Abnormality of pipe temperature thermistor (TH2 or RT2)		
P3	Signal transmission error (Remote controller does not respond to indoor controller signal.)	1) Bad contact of transmission wire 2) Signal transmitting/receiving circuit is abnormal. 3) Wrong operation of remote controller due to infrared signal from other appliances	1) Check the transmission wire. 2) Check with another remote controller. If "P3" is still indicated, replace the indoor board. If other check code appears, replace the original remote controller. 3) Short-circuit between 1 and 2 of CN40 and attach CN40 to the following units. 1Second unit in twin control 1Second and third units in triple control 1Sub units in group control
P4	Abnormality of drain sensor	1) Bad contact of transmission wire 2) Damaged thermistor	1) Check the connector. 2) Measure the resistance of the thermistor 4 - 5. As for the normal resistance, refer to the case P1. If normal, replace the indoor controller board.
P5	Malfunction of drain pump	1) Malfunction of drain pump 2) Damaged drain sensor	1) Check the drain pump. 2) 1Check the drain sensor. 1Check the drain sensor heater. If normal, its resistance should be 82′. If normal, replace the indoor controller board.
P6	Coil frost protection has worked.	1) Short cycle of air cycle 2) Dirty air filter 3) Damaged fan 4) Abnormal refrigerant	1) Clear the obstructions from the air cycle. 2) Clean the air filter 3) Check the fan. 4) Check the refrigerant temperature.
P7	System error	1) Wrong address-setting 2) Signal transmitting/receiving circuit of remote controller is abnormal. 3) Wrong SW6-setting	1) Check the address-setting. 2) Check with another remote controller. If check code other than "P7" appears, replace the original remote controller. 3) Check SW6 setting.
	Signal transmission error In twin/triple control, the first unit has not received signal from the second unit or the third unit for 5 minutes.	1) Bad contact of transmission wire 2) Wrong operation due to infrared signal from other appliances	1) Check the transmission wire. 2) Short-circuit between 1 and 2 of CN40 and attach CN40 to the following unit. 1Second unit in twin control 1Second and third units in triple control 1Sub units in group control
P8	Abnormality in outdoor unit	1) Wrong wiring of indoor/outdoor connecting wire 2) Reversed phase 3) Protection device has worked 4) Damaged outdoor coil thermistor	1) Check the indoor/outdoor connecting wire. 2) Change the connection of electric wiring. 3) Check the detail of the protection device. 4) Measure the resistance of the pipe temperature thermistor. If normal, replace the outdoor controller board.

3. WRONG WIRING ON SITE

3-1 Between remote controller and indoor unit

If the wire is disconnected between the remote controller and the indoor unit, nothing is displayed on the remote controller when the POWER button is pressed. The beep sound will also not be heard.

3-2 Phenomenon due to wrong wiring between indoor and outdoor units

Wrong wiring	Thermostat	Phenomenon
	OFF	Operation stops.
	ON	4-Way valve is turned to ON. 9 minutes later, the check code "P8" appears on the remote controller display.
	OFF	The outdoor unit stops.
	ON	Operation stops. 9 minutes later, the check code "P8" appears on the remote controller display.
	OFF	The outdoor unit stops.
	ON	Operation stops. 9 minutes later, the check code "P8" appears on the remote controller display.
	OFF	The outdoor unit stops.
	ON	Operation stops. 9 minutes later, the check code "P8" appears on the remote controller display.
	OFF	The outdoor unit stops.
	ON	Operation stops. 9 minutes later, the check code "P8" appears on the remote controller display.
Disconnection between 1 and 1 or 2 and 2.	OFF	Operation stops.
	ON	9 minutes later, the check code "P8" appears on the remote controller display.
Disconnection between 3 and 3.	OFF	Normal operation.
	ON	

4. OTHER TROUBLES AND CAUSES

vanes do not work.

- Vane motor does not work.
  - Vane motor has broken.
  - Vane motor relay has broken.
- Limit switch does not work.
  - Limit switch has broken.
  - Size of cam is not proper.
- Connector is badly connected.
- Vane motor is badly assembled.
- Indoor controller board is damaged.

Unit stops after 5 to 20 seconds operation

- Protection function has broken
  - Refer to check code on remote controller display. See page OC192-36.

Air discharge display is OFF and air discharge UP/DOWN button is not available.

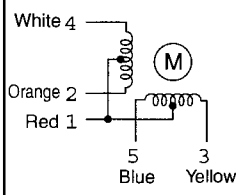
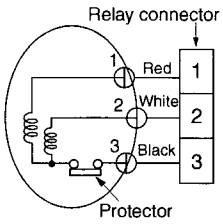
In this case, remote controller is normal.

- Indoor unit is regarded as without auto vane.
  - Indoor controller has broken.
  - Dip switch setting is wrong.
- Horizontal angle has not been detected.
  - Indoor controller has broken.
    - Vane motor limit switch has broken.
    - Vane motor is broken.
  - Vane motor has broken.
  - Vane motor limit switch is badly connected.
    - Badly connect
    - Disconnected
  - Auto vane is wired after power is turned to ON.

Power ON/OFF switch is not available.

- Beep sound is heard, but display is turned to OFF.
  - Indoor/outdoor connecting wire is wrong connected.
  - Indoor/outdoor connecting wire shorts.
  - Compressor protector has broken.
  - Deicer has broken.
- Beep sound is not heard, and display remains OFF.
  - Remote controller has broken.
    - Transmission wire has broken.
    - Connector is badly connected.
    - Indoor terminal block is badly connected.
    - Remote controller terminal block is badly connected.
  - Transmission wire is badly connected.
- "Centrally controlled" is displayed.

5. How to check the parts

Parts name	Check points
Room temperature thermistor (TH1) Liquid pipe thermistor (TH2)	Disconnect the connector then measure the resistance using a tester. (Surrounding temperature 50-F~86-F) Normal: 4.3k"~9.6k" / Abnormal: Open or short (Refer to the thermistor)
Vane motor  	Measure the resistance between the terminals using a tester. (Surrounding temperature 68-F~86-F) Red — Yellow / Red — Blue / Red — Orange / Red — White: 24EK1 186~214", 30EK1 140~160", 36,42EK1 140~160" — Abnormal: Open or short
Fan motor  	Measure the resistance between the terminals using a tester. Motor terminal or Relay connector — Normal (PC): 24EK1 / 30EK1 / 36,42EK1 — Abnormal Red-Black: 45.0" / 45.0" / 20.4" White-Black: 44.8" / 44.8" / 20.7" Abnormal: Open or short

<Thermistor Characteristic graph>

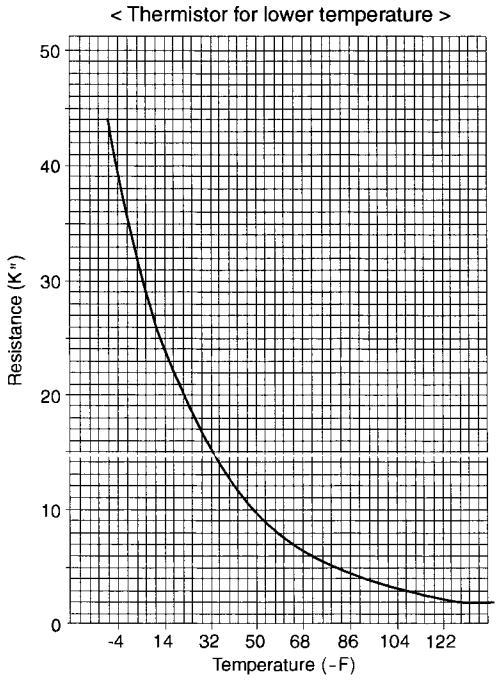
Thermistor for lower temperature

Room temperature thermistor(TH1)
Liquid pipe thermistor(TH2)

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

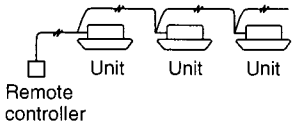
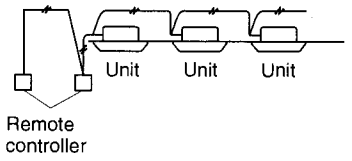
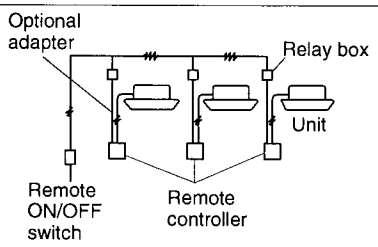
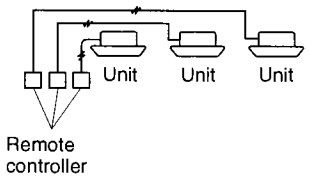
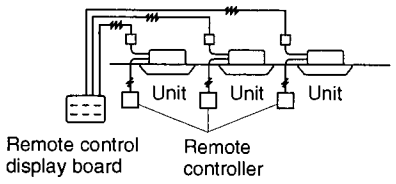
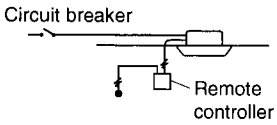
$$Rt=15\exp\{3480(\frac{1}{273+\{(t-32)/1.8\}}-\frac{1}{273})\}$$

32°F	15k'
50°F	9.6k'
68°F	6.3k'
77°F	5.2k'
86°F	4.3k'
104°F	3.0k'



12 SYSTEM CONTROL

1. VARIETY OF SYSTEM CONTROL FUNCTIONS

1 Group control by a single remote controller (See page OC192-41.)		A number of units, installed at different locations can be started and controlled with a single remote controller. The remote controller can be mounted in a different location using a non-polar two-wire cable, which can be extended up to 550 yards. A maximum of 50 units are controllable by a single remote controller. All units operate in the same mode.
2 Control using two remote controllers (See page OC192-42.)		Two remote controllers can be used to control either one unit or several units in group control. This enables to control units with ease either from a distance or close rang. Units operate according to the latest command from either remote controller.
3 Both remote ON/OFF and individual controls (See page OC192-42.)		All units can be turned on or off simultaneously using the remote ON-OFF switch. Besides each unit can be controlled individually by each remote controller. During remote ON-OFF control, a message of "CENTRALLY CONTROLLED" is displayed on the LCD of the remote controller. This method is available for both one unit control and several units control.
4 Individual control by grouping remote controllers (See pageOC192-43.)		By grouping the controllers to one place, several units installed at different locations can be controlled individually, and operation conditions of all units are visible without a special control board. Control method is the same as that of the single unit with a single remote controller.
5 Multiple remote control display (See page OC192-44.)		Several units can be controlled by remote control display board. Operation conditions of all the units are visible with the remote control display board. Individual control by each remote controller is also available.
6 AUTO RESTART FUNCTION (See page OC192-44.)		Units can be started or stopped by circuit breaker on or off. Remote controller is also available. By this function, when the power is restored after power failure, the unit restarts automatically.

2. GROUP CONTROL BY A SINGLE REMOTE CONTROLLER

A maximum of 50 units can be started in order according to the dip switch settings

2-1 How to wire

(1) Connect the remote controller to the double terminal block on the indoor controller board of the master unit, that is, No.0 unit. (See Figure 1.)
(2) Connect the double terminal block of the master unit to the double terminal block of No.1 unit.
(3) Connect the double terminal block of No.1 unit to the double terminal block of No.2 unit.
(4) Continue the process until all the units are connected with two-wire cables. (See Figure 2.)
(5) Remove the connector CN40 from the indoor controller board of each unit except the master unit. (See Figure 3.)
(6) Set the unit-address of each unit with SW2 on the indoor controller board following the instructions below.

Figure 1

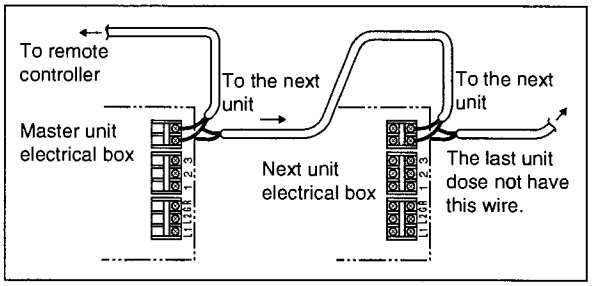
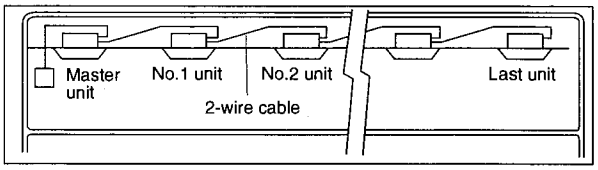


Figure 2



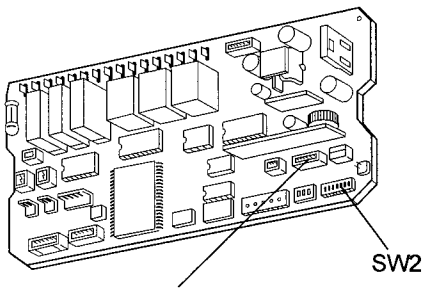
2-2 How to set unit-address

The unit-address also serves as a successive-start timer which starts each unit at intervals of 1 second. If two or more units have the same unit-address in a group control, operation stops due to system error. Be sure to set SW2 correctly following the instructions below.

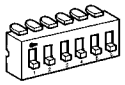
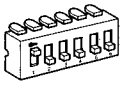
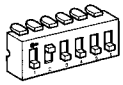
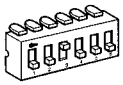
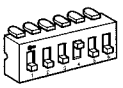
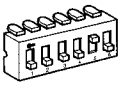
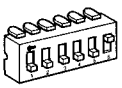
(1) Each lever of SW2 shows the number as follows.
SW2-1 : 1 SW2-4 : 8
SW2-2 : 2 SW2-5 : 16
SW2-3 : 4 SW2-6 : 32
(2) Total number of levers turned to ON shows the address of the unit.
If you turn ON SW2-1 and SW2-2, the unit-address is set as No.3.
(3) In this way, set from the. master unit to the last unit.
Do not forget to set the master (No. 0) unit.

Figure 3

Indoor controller board t



Setting examples

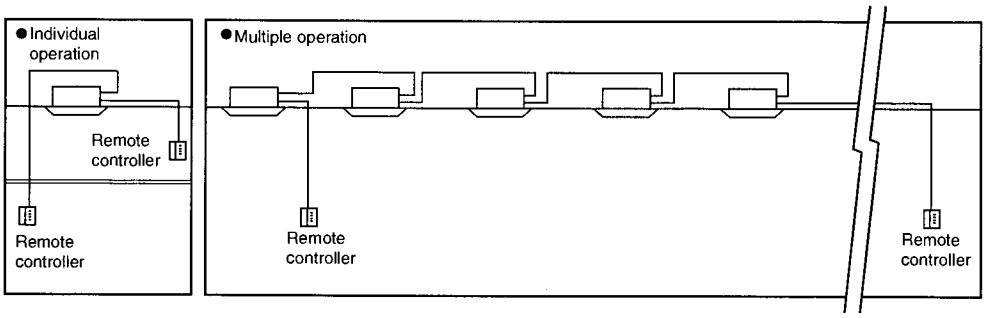
	Master (No. 0) unit	No. 1 unit	No. 2 unit	No. 4 unit	No. 8 unit	No. 16 unit	No. 32 unit
SW2	ALL OFF 	1 ON 	2 ON 	3 ON 	4 ON 	5 ON 	6 ON 
Unit address & start delay in seconds.	0	1	2	4	8	16	32

2-3 Unit control

The remote controller can control all units ON/OFF, temperature,air flow, and swing louver. However, the thermostat in each unit turns to ON or OFF individually to adjust the room temperature.

3. CONTROL USING TWO REMOTE CONTROLLERS

Two remote controllers are available for control of either one unit or a group of units. Units operate according to the latest command from either of the two remote controllers.
However, before operation, be sure to set one remote controller for "main controller" and the other for "sub controller", using dip switch SW17-7 of the remote controller.



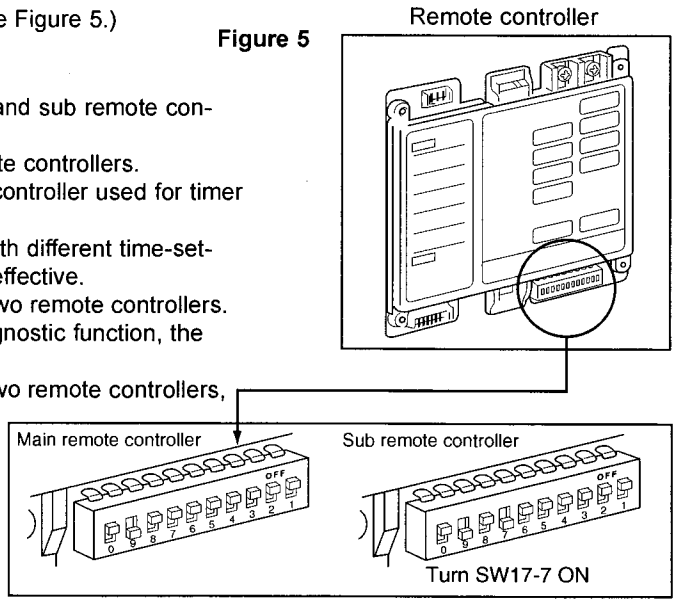
3-1 How to set SW17-7

(1) For the main remote controller, turn SW17-7 OFF. (See Figure 5.)
(2) For the sub remote controller, turn SW17-7 ON.

3-2 Remote controller LCD indication

(1) The same indication always appear on both the main and sub remote controllers, excepting the timer operations.
(2) Timer operation can be set with either of the two remote controllers. However, LCD indication appears only on the remote controller used for timer settings.
(3) If both remote controllers are set for timer operation with different time-settings, the timer operation of shorter remaining-time is effective.
(4) Self-diagnostic function is available with either of the two remote controllers. If one of the remote controllers is used for the self-diagnostic function, the other remote controllers displays the check mode.
If the self-diagnostic function is reset by either of the two remote controllers, both remote controllers are reset.

Figure 5



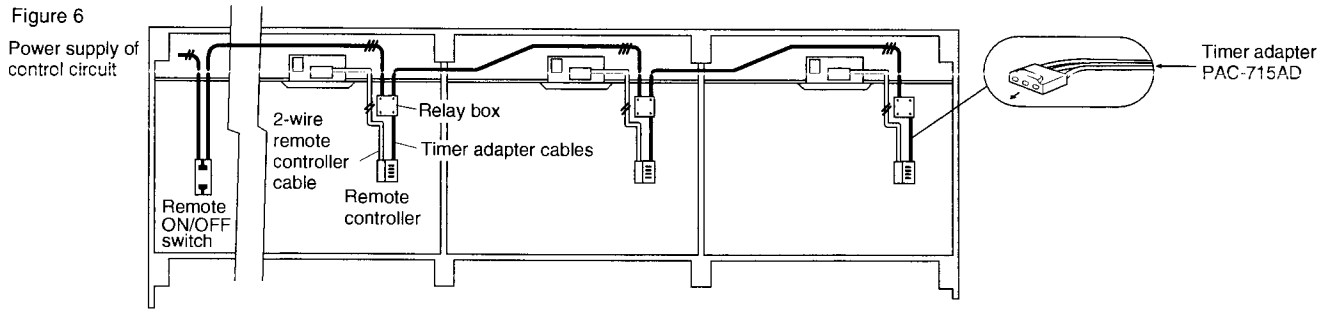
4. REMOTE ON-OFF AND INDIVIDUAL REMOTE CONTROLS

This method is available to control one unit or any number of units.
The following operations are available by connecting a relay, a timer adapter(PAC-715AD), and remote ON/OFF switch to the system. Timer adapter, (PAC-715AD), is an optional part. Other parts are on the market.
(A) To start all units in order by remote ON-OFF switch
(B) To stop all units simultaneously by remote ON-OFF switch
(C) To switch from the remote ON-OFF control to the individual remote control

4-1 System

Figure 6 shows the case of three units as an example. The same is the case with any number of units.

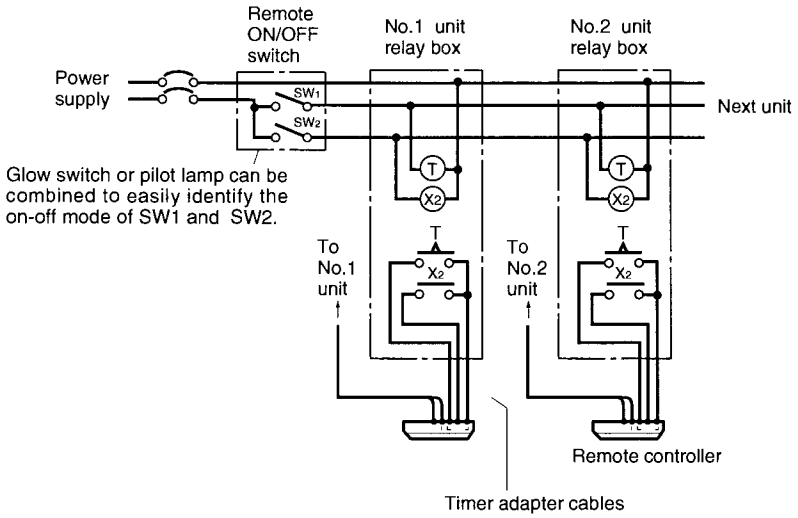
Figure 6



NOTE1 : Install the relay box where you can be serviced easily.
NOTE2 : For control circuit wiring, use a wire of No. 14 AWG or a control cable according to the power supply of control circuit.
NOTE3 : When the power supply of the control circuit is 115/230V AC,
Do not connect the control circuit wire to the remote controller cable directly.
Do not place the control circuit wire and the remote controller cable into the same conduit tube.

4-2 Basic wiring

Caution : Before starting all units simultaneously by the remote ON-OFF switch, be sure to connect a sequence-start timer into the remote ON-OFF circuit. Otherwise, rush of starting current exert a bad influence upon the power supply.



4-3 Switch function of remote ON-OFF switch

		SW2 (Switches between remote ON-OFF and individual control)	
		ON (Remote ON-OFF control)	OFF (Individual control)
SW1 (Switches between remote ON and OFF.)	ON (Start)	All units start together. w1 Individual control is not available.	Each unit can be controlled by each remote controller. Remote ON-OFF switch is not available.
	OFF (Stop)	All units stop together. w2 Individual control is not available.	

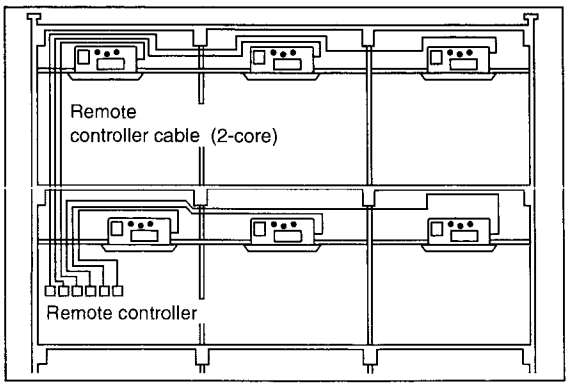
1 After all units start together, if SW2 is turned OFF, each unit can be individually stopped by each remote controller.
2 After all units stop together, if SW2 is turned OFF, each unit can be individually started by each remote controller.

5. INDIVIDUAL CONTROL BY GROUPING THE REMOTE CONTROLLERS

Grouping the remote controllers allows individual control and centralized monitoring of units installed in different places without a special control board.

Remote control cables can be extended up to 550 yards. When the cable length exceeds 39 ft, use the double-insulated two-core cable such as Belden 9407, and the cable thickness must be No. 22 AWG or above.

When gathering the power ON/OFF switches of air conditioners near the remote controllers, you should also install the power ON/OFF switch near each unit to prevent electric trouble in servicing.



6. MULTIPLE REMOTE CONTROL DISPLAY

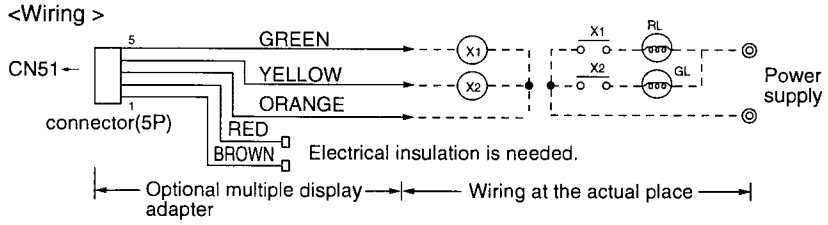
You can control several units by a multiple remote control display, if you wire an optional multiple display adapter (PAC-725AD) with relays and lamps on the market.

6-1 How to wire

(1) Connect the multiple display adapter to the connector CN51 on the indoor controller board.

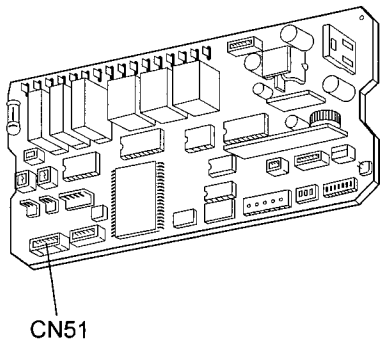
(2) Wire three of the five wires from the multiple display adapter as shown in the below figure.

<Wiring >



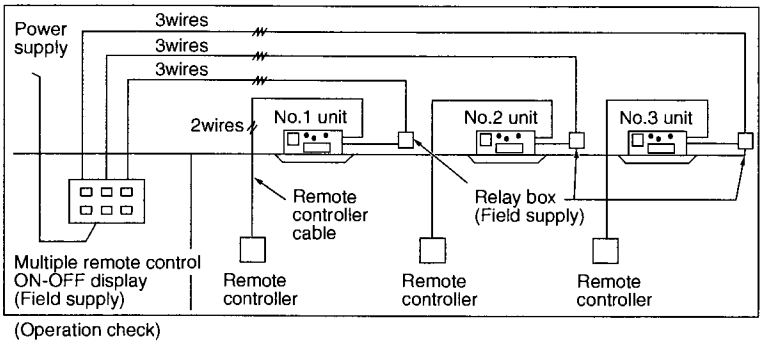
The maximum distance between indoor board and relay is 33 feet.

Indoor controller board



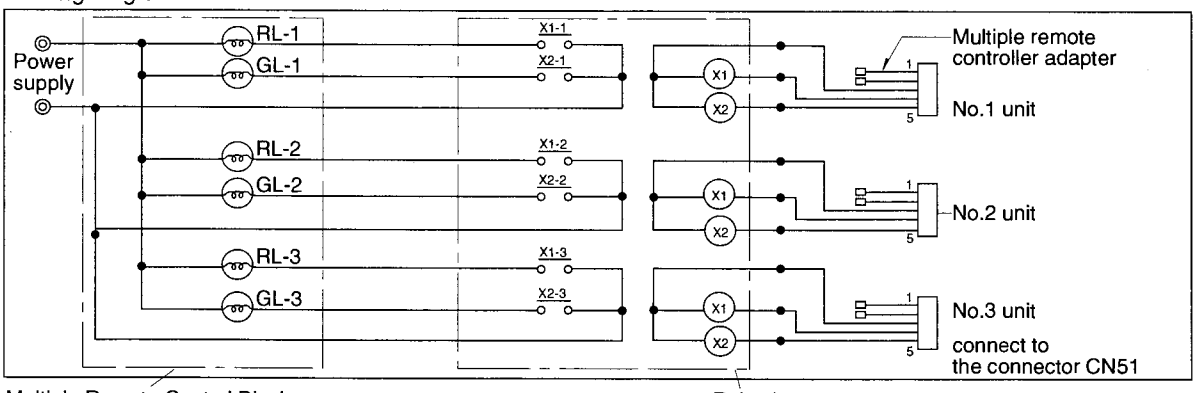
[Notes on Signs]
X1:Relay (for check lamp)
X2:Relay (for operation lamp)
RL:Check Lamp
GL:Operation Lamp
[Field supplied parts]
Relays:DC 12V with rated coil power consumption below 0.9W.
Lamps:Matching to power supply voltage.

<System>



(Operation check)

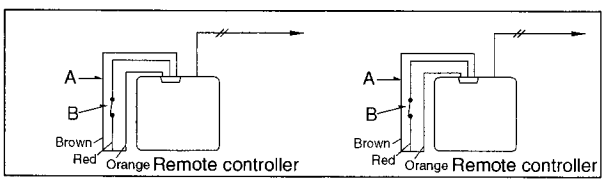
<Wiring diagram>



7. AUTO RESTART FUNCTION

Unit can be started or stopped by power supply ON or OFF.
Therefore, after power failure, when the power is restored, the unit restarts automatically.
To enable this function, turn ON the dip switch SW1-10 on the indoor controller board.
For remote control, connect the optional timer adapter (PAC-715AD).

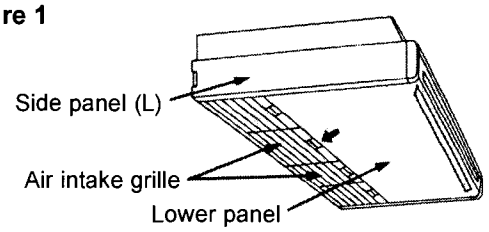
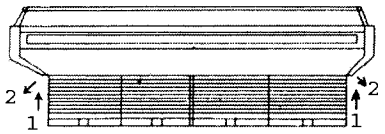
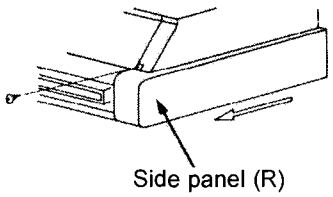
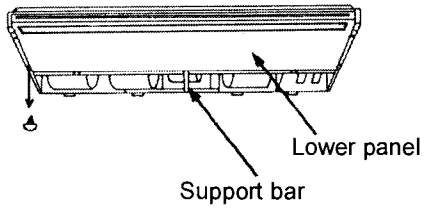
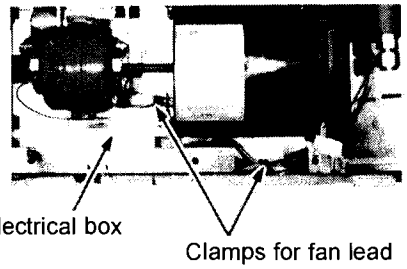
<Wiring>

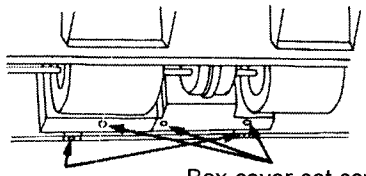
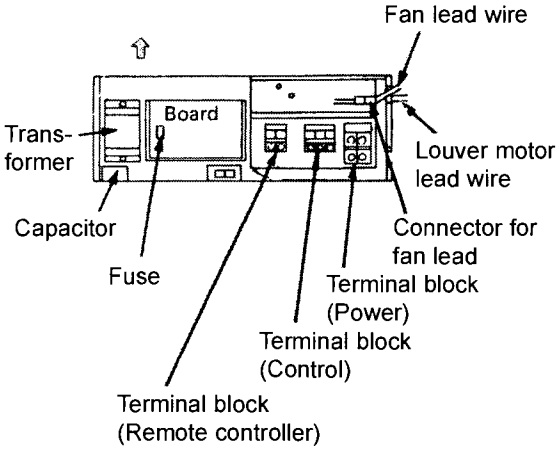


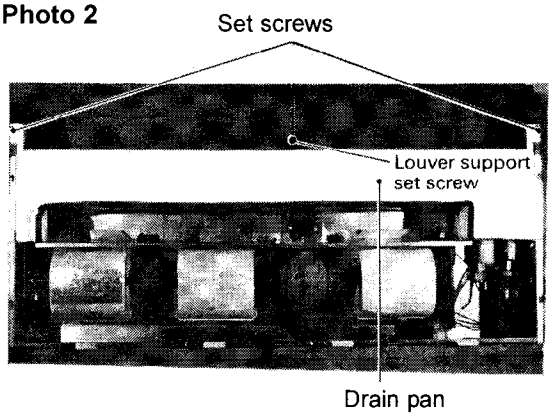
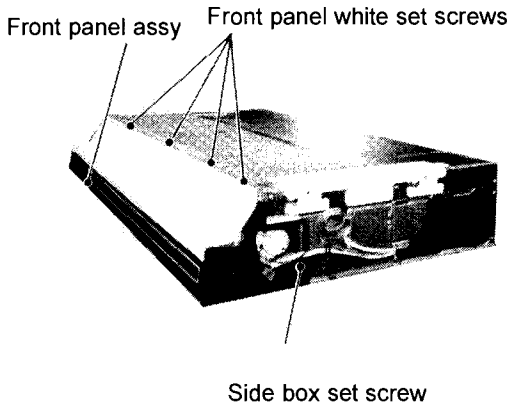
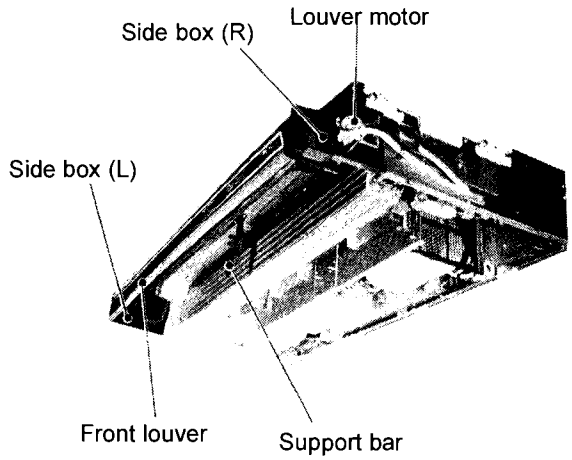
A : an optional timer adapter
B : a single-throw switch

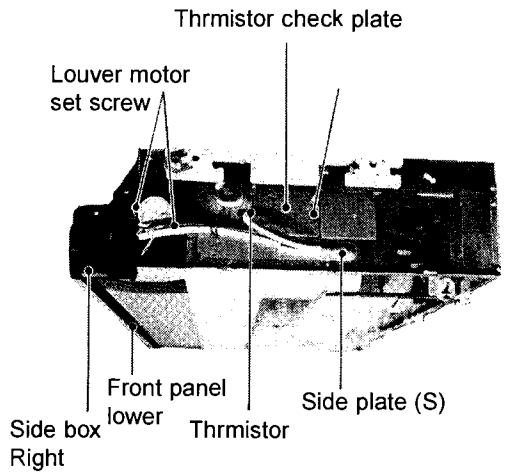
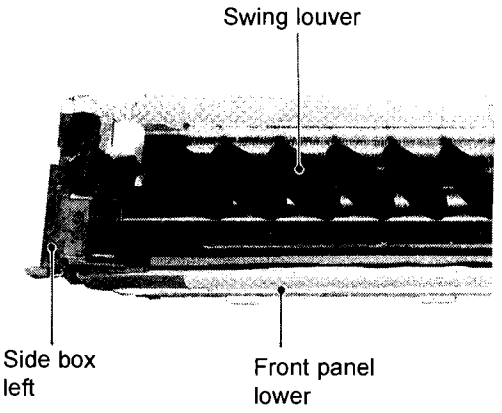
13 DISASSEMBLY PROCEDURE

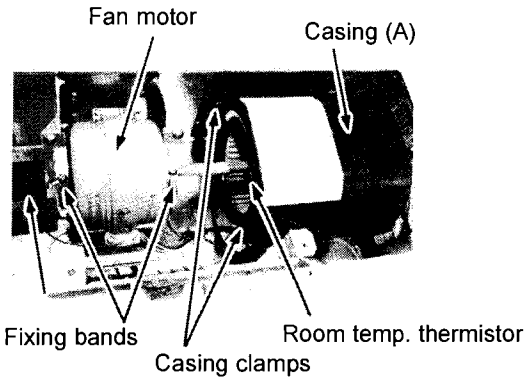
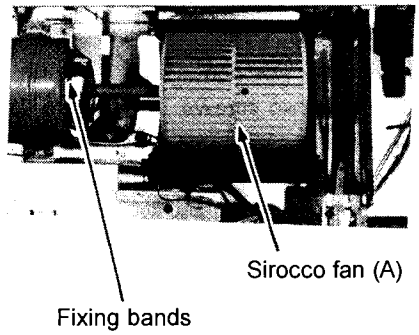
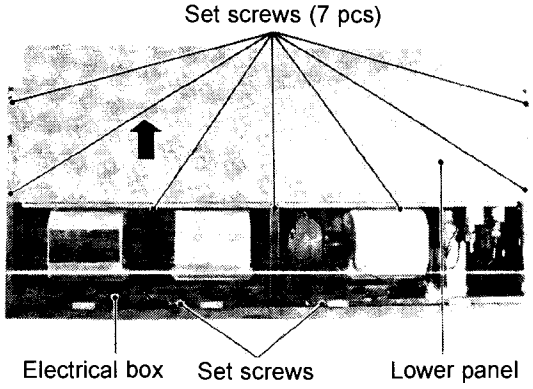
Indoor unit (PC24EK1)

OPERATING PROCEDURE	PHOTOS&ILLUSTRATION
1. Removing the air intake grille (1) Unhook the clasps at the edge of the grille and open the grill. (2) Lift up the grill in direction of arrow 1 in Fig.2. (3) Pull the grill toward you to remove. (In direction of arrow 2)	**Figure 1**  **Figure 2** 
2. Removing the side panel (1) Remove a white screw of the side panel (RIGHT). (2) Pull out the panel toward you to remove. (3) Remove a white screw of the side panel (LEFT). (4) Pull out the panel toward you to remove.	**Figure 3** 
3. Removing the lower panel (1) Remove the lower panel set screws, 2 pcs on each side and 3 pcs at the rear. (total 7 pcs) PC24EK has 4 pcs at the rear and 2 pcs on each side. (total 8 pcs)	**Figure 4** 
4. Removing the electrical box (1) Remove the air intake grille. (Refer to 1.) (2) Remove the support bar set screw and remove the bar. (See fig. 4) (3) Loose the lead clamps (2 pcs) for the sirocco fan and the louver motor. (See photo 1)	**Photo 1** 

OPERATING PROCEDURE	PHOTOS&ILLUSTRATION
(4) Remove the electrical box set screws. (2 pcs) Pull down the electrical box and hang it from the rear panel using the S hooks located on the both sides of the box. (5) The electrical box has two covers. (R and L) Remove the 2 screws on the cover (R), and remove the screw on the cover (L). Then remove the box covers. (6) Now you can check the inside of the electrical box. (See fig. 6)	**Figure 5**  Electrical box Set screws (2 pcs) Box cover set screws (3 pcs) **Figure 6**  Fan lead wire Board Trans-former Louver motor lead wire Capacitor Connector for fan lead Fuse Terminal block (Power) Terminal block (Control) Terminal block (Remote controller)

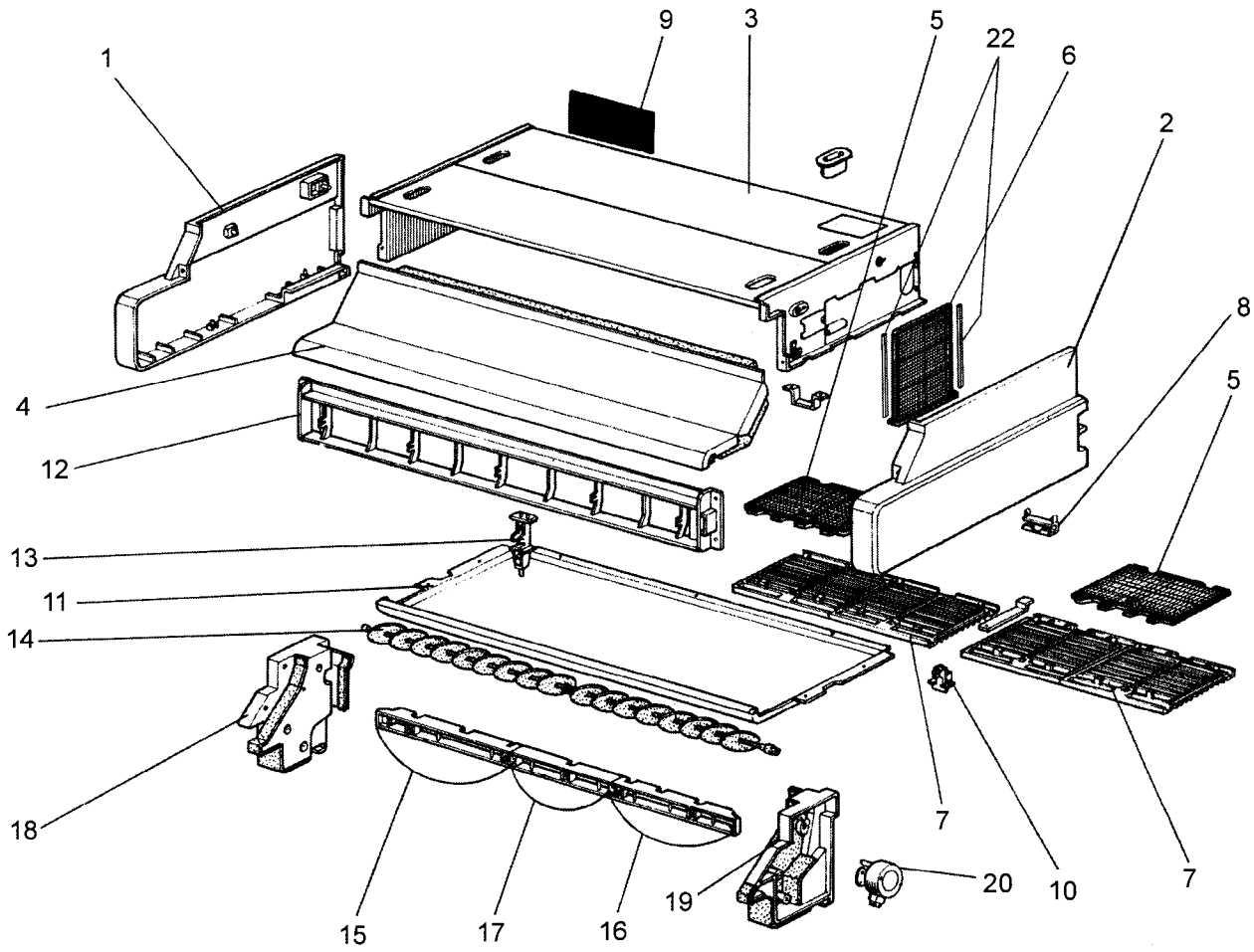
OPERATING PROCEDURE	PHOTOS
5. Removing the drain pan After removing the lower panel: (1) Remove the drain pan support set screws (2 pcs) (2) Remove the louver support set screw. (See photo 2) (3) Remove the drain pan.	**Photo 2** 
6. Removing the front panel assembly After removing the drain pan: (1) Pull the lower louver toward you and unhook the clasps. (2 points at the center) (2) Remove the front panel white set screws. (4 pcs) (3) Remove the side box set screws on the both sides. (4 screws on the side and front, 1 screw at the bottom, on each side.) (4) The panel assembly will be removed. (See photo 3)	**Photo 3** 
7. Removing the louver motor Remove only the right side panel to remove this motors. (1) Remove setting screws of motor. (2 pcs) (See photo 5) **8. Removing of the swing louver** (1) Remove the swing louver from the joint on the right side. (2) Slide the louver out to the left side.	**Photo 4** 

OPERATING PROCEDURE	PHOTOS
9. Removing the front louver (1) Pull and unhook the louver toward you. (Clasps are 5 pcs)	**Photo 5**  **Photo 6** 

OPERATING PROCEDURE	PHOTOS
10. Removing the fan motor After remove the electrical box covers: (1) Disconnect the lead connector for fan. (2) Pull out the room temp. thermistor from the casing (A). (See photo 7) (3) Loose the shaft joint set screws (2 pcs) with a hexagonal wrench. (size 3mm). (4) Unhook the casing (A) by pushing. (2 points for each side) (5) Open about half of the casing (A) and take it out. (6) Loose the fixing band set screws. (1 pcs on the both sides of the fan motor.) (7) Remove the fixing bands. (8) Take out the fan motor.	**Photo 7**  **Photo 8** 
11. Removing the room temperature thermistor After removed the electrical box covers: (1) Pull out the room temperature thermistor from the casing (A). (2) Disconnect the connector (CN-20) from the controller board in the electrical box. (3) Take out the thermistor. **12. Removing the indoor coil thermistor** After removed the electrical box covers: (1) Remove the right side panel. (2) Remove the set screw of the thermistor check plate and the set screws of the side plate. (3 pcs) (See photo 5) (3) Remove the indoor coil thermistor from the heat exchanger. (4) Disconnect the connector (CN-21) from the controller board in the electrical box. (5) Take out the thermistor.	**Photo 9** 

14 PARTS LIST

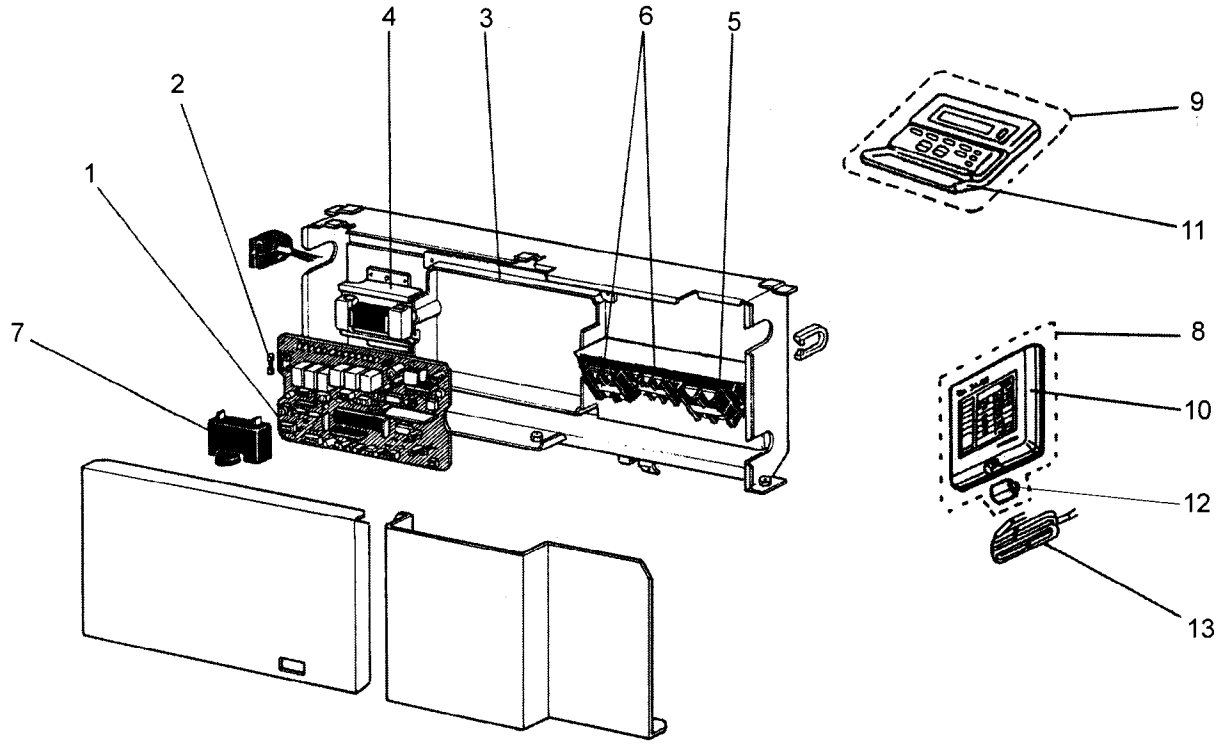
PC24EK PC30EK STRUCTURAL PARTS
PC24EK1 PC30EK1



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

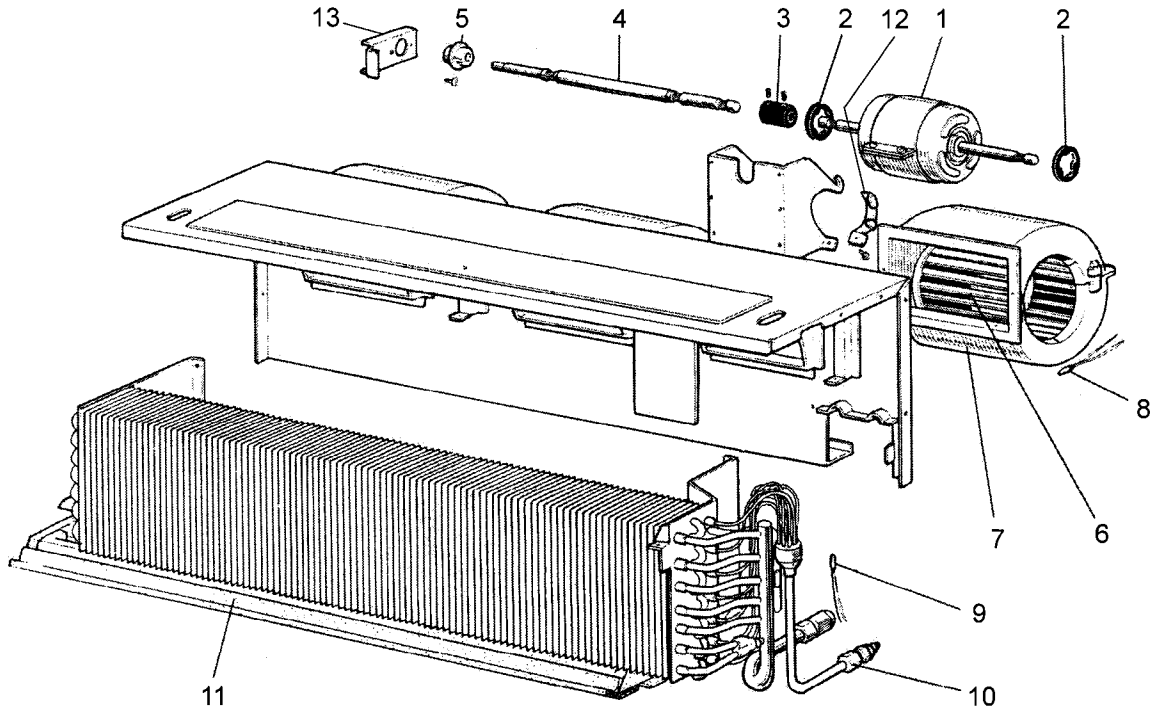
No.	Parts No.	Parts Name	Specifications Drawing No.	Q'ty/set PC 24 EK	Q'ty/set PC 24 EK1	Q'ty/set PC 30 EK	Q'ty/set PC 30 EK1	Remarks	Circuit Diagram Symbol	Recommended Q'ty	Price Unit	Price Amount
1	R01 055 662	SIDE PANEL (LEFT)		1	1	1	1					
2	R01 055 661	SIDE PANEL (RIGHT)		1	1	1	1					
3	T7W 052 676	REAR & TOP PLATE		1	1	1	1					
4	R01 051 651	FRONT PANEL		1	1	1	1					
5	R01 A25 500	AIR FILTER		4	4	4	4					
6	R01 055 501	AIR FILTER (SUB)		1	1	1	1					
7	R01 029 691	INTAKE GRILL		2	2	2	2					
8	R01 029 061	HINGE		4	4	4	4					
9	T7W 051 501	AIR FILTER		1	1	1	1					
10	R01 029 054	CATCH		4	4	4	4					
11	R01 146 669	LOWER PANEL		1	1	1	1					
12	T7W 052 001	FRONT GRILL		1	1	1	1					
13	R01 045 048	LOUVER SUPPORT		1	1	1	1					
14	R01 045 003	SWING LOUVER		1	1	1	1					
15	R01 029 086	FRONT LOUVER (LEFT)		1	1	1	1					
16	R01 029 085	FRONT LOUVER (RIGHT)		1	1	1	1					
17	R01 045 087	FRONT LOUVER (CENTER)		1	1	1	1					
18	T7W 056 068	SIDE BOX (LEFT)		1	1	1	1					
19	T7W 056 067	SIDE BOX (RIGHT)		1	1	1	1					
20	T7W 146 222	LOUVER MOTOR		1	1	1	1		ML			
(21)	R01 045 808	LEG		2	2	2	2					
22	R01 82E 656	FILTER GUIDE		1	1	1	1					

PC24EK PC30EK PC36EK PC42EK ELECTRICAL PARTS
PC24EK1 PC30EK1 PC36EK1 PC42EK1



No.	Parts No.	Parts Name	Specifications Drawing No.	Q'ty/set PC 24 EK	24 EK1	30 EK	30 EK1	36 EK	36 EK1	42 EK	42 EK1	Remarks	Circuit Diagram Symbol	Recommended Q'ty	Price Unit	Price Amount
1	R01 K01 310	INDOOR CONTROLLER BOARD		1		1		1		1			I.B			
	T7W E06 310	INDOOR CONTROLLER BOARD			1		1		1		1		I.B			
2	T7W 410 239	FUSE	250V 6A	1	1	1	1	1	1	1	1		F			
3	T7W 829 070	CONTROLLER CASE		1	1	1	1	1	1	1	1					
4	T7W 046 260	TRANSFORMER	RED:15.5VAC, 0.3A BRN:11.0VAC, 0.6A	1	1	1	1	1	1	1	1		T			
5	T7W 410 716	TERMINAL BLOCK	2P (L1,L2)	1	1	1	1	1	1	1	1		TB1			
6	R01 556 246	TERMINAL BLOCK	2P (1,2)	2		2		2		2			TB2,3			
	T7W E02 716	TERMINAL BLOCK	2P (1,2)		2		2		2		2		TB2,3			
7	T7W 046 255	FAN MOTOR CAPACITOR	12= 220V	1	1	1	1	1	1	1	1		C			
8	T7W 450 200	REMOTE CONTROLLER BOARD		1		1		1		1			R.B			
9	T7W E01 713	REMOTE CONTROLLER BOARD			1		1		1		1	PAR-JC250KUS	R.B			
10	T7W 351 077	REMOTE CONTROLLER COVER		1		1		1		1						
11	T7W E03 049	REMOTE CONTROLLER COVER			1		1		1		1					
12	R01 L72 095	SCREW CAP		1		1		1		1						
13	T7W 556 305	REMOTE CONTROLLER CABLE	39ft	1		1		1		1						
	T7W A00 305	REMOTE CONTROLLER CABLE	33ft		1		1		1		1					

PC24EK PC30EK FAN SECTION PARTS
PC24EK1 PC30EK1



No.	Parts No.	Parts Name	Specifications Drawing No.	Q'ty/set PC 24 EK	Q'ty/set PC 24 EK1	Q'ty/set PC 30 EK	Q'ty/set PC 30 EK1	Remarks	Circuit Diagram Symbol	Recommended Q'ty	Price Unit	Price Amount
1	T7W 052 762	FAN MOTOR	RB09CC	1	1	1	1		MF			
2	R01 811 105	RUBBER MOUNT		2	2	2	2					
3	R01 700 116	JOINT (SHAFT)		1		1						
	R01 29J 116	JOINT (SHAFT)			1		1					
4	R01 G12 100	FAN SHAFT		1	1	1	1					
5	R01 621 103	SLEEVE BEARING		1	1	1	1					
6	R01 G18 114	SIROCCO FAN		3		3						
	T7W E00 114	SIROCCO FAN			3		3					
7	R01 055 110	CASING SET		3		3						
	T7W E02 110	CASING SET			3		3					
8	R01 J21 202	ROOM TEMPERATURE THERMISTOR		1		1			RT1			
	T7W E17 202	ROOM TEMPERATURE THERMISTOR			1		1		TH1			
9	R01 J07 202	PIPE TEMPERATURE THERMISTOR		1	1	1	1		RT2,TH2			
10	T7W 450 480	HEAT EXCHANGER		1	1							
	T7W 451 480	HEAT EXCHANGER				1	1					
11	T7W 048 529	DRAIN PAN		1	1	1	1					
12	R01 83E 126	PIECE (MOTOR)		1	1	1	1					
13	R01 G24 145	BEARING SUPPORT		1	1	1	1					

15 OPTIONAL PARTS

1. TIMER

When using a program timer, a program timer adapter (PAC-825AD) is also needed.
(PAC-825AD is included with PAC-SC32PTA.)

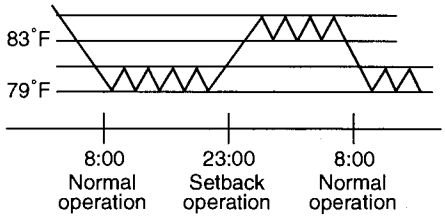
Part No.	PAC-SC32PTA (with set back function)
Model Name	Program timer

1-1 Program timer specifications

Parts name	Program timer
Parts No.	PAC-SC32PTA
Exterior dimensions (inch)	5-4/32x4-23/32x23/32 (130x120x18mm)
Installation	Wall mount
Type of clock	Quartz
Clock accuracy	±50 second / month at 77°F
Display-Time -Week -Timer setting unit	Liquid crystal display Liquid crystal display Liquid crystal display
Program cycle	24 hours
Timer setting unit	30 minutes
No. of set points	48 / day
Power rating	5V DC ±5% (Supplied by Remote Controller)

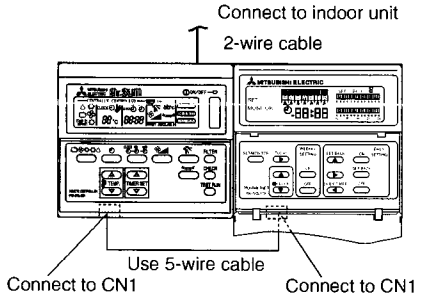
1-2 Feature of program timer

(1) Daily timer function
Daily timer can be set in 30 minutes units for up to 24 hours.
Each unit can be set for unit ON, unit OFF, or setback operation.
(2) Setback operation (PAC-SC32PTA)
Set back operation is useful for reducing running costs
e.g. At a hotel with a 24-hour system
8:00~23:00 Cooling operation with set temperature at 79°F
23:00~8:00 Setback operation with 4 degrees of setback
As shown in the chart on the right, the set temperature rises 4 degrees automatically during the setback operation. When the setback operation ends, normal operation will begin.
(3) Weekly timer function
Daily timer function can apply to each day of the week.



1-3 How to connect program timer

(1) Install the program timer next to the remote controller the same way as the remote controller is installed.
(2) Connect the program timer and the remote controller with a 5-wire cable as shown in the figure below



NOTE:While the program timer is connected to the remote controller, the 24hour ON/OFF timer on the remote controller will not operate.

4 Names and functions

<PAC-SC32PTA>

WEEKLY TIMER SETTING DISPLAY

Sets timer for a week.

CURRENT TIME DISPLAY

During MONITOR status,current time is display.
During Daily timer setting, a time desire for timer setting is displayed.

SET BACK DISPLAY

Indicates the set back range.

DAILY TIMER SETTING DISPLAY

24 hours is divided into 48 blocks and each block express 30 minutes.
The block display consists of 3 pattern.

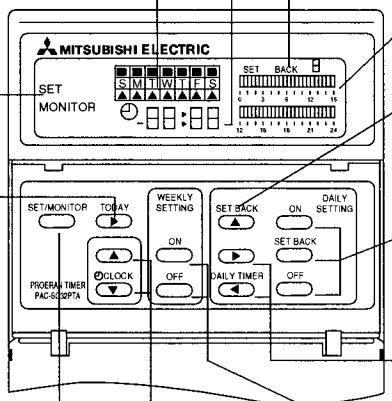
Set back
1=2°F 2=4°F 4=8°F 6=12°F 8=16°F

SET BACK SETTING SW

Used for set back setting.

SET/MONITOR DISPLAY

When SET is displayed, clock adjustment, change of weekly day, daily and weekly timer setting can be performed.
During MONITOR is display, all switches except SET/MONITOR SW are invalidated. This is normal status.



ON/SET BACK/OFF SW

Used to specify the time setting pattern.

WEEK DAY SETTING SW

Used for week day setting.

DAILY TIMER SW

Used for timer setting in 30 minutes unit.

IODE SELECTOR SW

Using this switch select "MONITOR" or "SET" Mode.

"MONITOR" :Indicates the current timer setting. All switch expect MODE SELECTOR SW are invalidated then.This is the normal status.
"SET": Set to "SET" mode for clock adjustment, charge of week day, daily and weekly timer setting.

CLOCK ADJUSTMENT SW

Used for adjustment of the current time.

Push ⊙ SW to advance the time. Each time the button is pushed the time advance by 1 minute, pushing continuously advances by 1 minute at 0.5 second interval, and when the lower digit of minute becomes 0 indication advances in 10 minutes unit.

⊙ SW is used for reversing the time. Each time the button is pushed the time reverses by 1 minute, pushing continuously reverses the time by 1 minute at 0.5 second interval, and when the lower digit of minute becomes 0 indication reverses in 10 minutes unit.

WEEKLY TIMER SW

Used for setting timer in day of week unit.

Pushing ⊙ SW moves the week day light display in order of
S M T W ···
enabling to set the week day.

Mr.SLIM™

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Distributed in Jun. 2001. No.OC256 REVISED EDITION-B 20
Distributed in Mar. 2001. No.OC256 REVISED EDITION-A 20
Distributed in Dec. 2000. No.OC256
Made in Japan

New publication, effective Jun. 2001
Specifications subject to change without notice