MITSUBISHI ELECTRIC

MITSUBISHI ELECTRIC AIR CONDITIONERS

INSTALLATION MANUAL

	Model	Service ref.
Cooling only	**PRC- 8MYA**	**PRC- 8MYA(-03)**
	PRC-10MYA	**PRC-10MYA(-03)**
	PRC-12MYA	**PRC-12MYA(-03)**
	PRC-15MYA	**PRC-15MYA(-03)**
	PRC-20MYA	**PRC-20MYA(-03)**
	PRC-24MYA	**PRC-24MYA(-03)**
	PRC-32MYA	**PRC-32MYA(-03)**

CONTENTS

Note

1. Please read this manual to have the correct, safe use before installation.
2. Please keep this manual in the place where it is always seen to use this manual with "Operation manual" after reading.
3. The customer must not install and not transfer the unit by themselves. (Safety and the function cannot be secured.)

1. Safety precautions.

Danger and the extent caused when wrong handling is done are divided by displaying ⚠ warning and ⚠ attention and are explained.

Before operating the unit ,make sure you read all the "Safety precautions".
"Safety precautions" lists important points about safety. Please be sure to follow them.

The display and its meaning are given below.	
⚠ Warning	Erroneous handling gives a high possibility to induce serious results such as death or heavy injury.
⚠ Caution	Erroneous handling may induce serious injury depending on the situation.

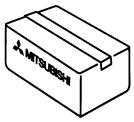
The symbols used here represent that as follows.	
⃠	Never do this.
	Never touch without wearing glove on your hands.
⏚	Make sure to connect earth line.

⚠ Warning.

Carefully read the labels affixed to the main unit.

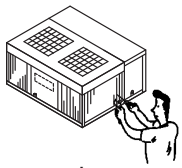
1.1 Before installation.

The Installation Manual details the suggested installation method.
Any structural alteration necessary for installation must comply with local building code requirements.
After you have read this manual, keep it and the Operation Manual in a safe place for easy reference whenever a question arises.
If the unit is going to be operated by another person, make sure that this manual is given to him or her.
The unit should not be installed by the user.
(Safety and the function cannot be secured)



⚠ Warning.

- Ask your dealer or specialized subcontractor for installation.
  Conducting installation work by yourself improperly may cause a fire, electric shock or water leakage.
- Use only optional parts authorized by Mitsubishi Electric.
  If the accessories are installed improperly, water leakage, electric shock or fire may result.
  Ask your dealer or an authorized company to install them.
- For installation, conduct the work correctly by following the Installation Manual.
  Improper installation may cause a fire, electric shock or water leakage.
- Use only the specified refrigerant (R-22) to charge the refrigerant circuit.
  Do not mix it with any other refrigerant and do not allow air to remain in the circuit.
  Air enclosed in the circuit can cause high pressure resulting in a rupture and other hazards.
- Arrange the configuration of wiring not to bring up the panel and terminal cover, and fasten the panel and terminal cover securely.
  The poor mounting of the panel or terminal cover may cause the heat generation of the terminal connection, a fire or electric shock.
- Install the unit on a spot sufficiently durable against the unit weight.
  Insufficient durability can cause an injury by the falling down of unit.
- Use only the specified cables for wiring. The connections must be made secured without tension the terminals.
  Improper connection or fastening can cause a fire or electric shock.
- The unit should be installed according to the instructions in order to minimize the risk of damage from earthquakes, typhoons or strong winds.
  Improper installation work can cause an injury by the falling down of the unit.
- Ventilate the room if refrigerant leaks during Installation.
  The refrigerant heated generates poisonous gas by decomposition which can cause poisoning.
- All electrical work must be performed by licensed technician, according to local regulations and the instructions given in this manual.
  Power lines with insufficient capacity or improper electric work may result in electrical shock or fire.
- Never repair the unit, remodel or transfer it to another site by yourself.
  If they are performed improperly, water leakage, electric shock or fire may result.
  If you need to have the unit repaired or moved, consult your dealer.



- After completing installation work, make sure that refrigerant gas has not leaked.
  If refrigerant gas has leaked and exposed to fan heater, stove, oven and so on, it may generate noxious gases.
  Please do the gas leakage inspection before starting.
- Take a proper measure to suppress the critical concentration of refrigerant, if leaked when installing the unit in a small room.
  The limit density is made not to be exceeded even if the refrigerant leaks by any chance.
  You are necessary to measure the ventilation in order to prevent the accident.
  If the refrigerant leaks, hypoxia accident may caused.
  For the countermeasure to be taken, consult your dealer.
- The unit must be installed on stable, level surface in a place where there is no accumulation of snow, leaves or rubbish.
  The unit should be installed in a location where air and noise emitted by the unit will not disturb the neighbors.
  If the unit is loosely mounted, it may fall, and cause injury.
- The terminal block cover of unit must be firmly attached to prevent entry of dust and moisture.
  Improper mounting of the cover cause electric shock or fire.

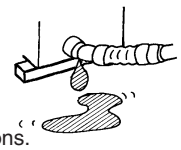
⚠ Caution.

1) Before doing electrical work.

- When installing at a watery place, provide an electric leak breaker.
  Failure to mount the electric leak breaker may cause electric shock.
- When installing the power lines, do not apply tension to the cables.
  The tighten or loosen the connections may cause generate heat and cause fire.
- For the power lines, use standard cables of sufficient current capacity.
  Otherwise, current leakage, overheating or fire may occur.
- Use breaker or fuse with proper capacity.
  Make sure that each appliance has a main power switch.
  Using a wire or copper wire instead of proper capacity can cause fire or trouble.
  Other appliances connected to the same line could cause an overload.
- The unit must be properly earth connected.
  Do not connect the earth wire to gas pipe, city water pipe, lightning rod or telephone earth wire.
  Improper earth connection may cause electric shock.

2) Before constructing the installation or transfer.

- Install drain piping (hose) according to this Installation Manual to ensure proper drainage.



  Improper drain piping (hose) may cause water leakage and damage to furniture or other possessions.
- Do not leave the mounting base being damaged.

  The damaged base may cause the falling down of the unit which may give injury.
- Do not touch the metal edges inside the unit without wearing glove on your hands.

  Touching directly it may injure your hands.
- Be very careful about unit transportation.

  When carrying in unit, be sure to support it at four points.
  Carrying in and lifting with 3-point support may make unit unstable, resulting in a fall of it.
  The unit should not be carried by only one person if it is more than 20 kg.
  It occasionally causes the damage of the unit and health to be impaired.
  Some units use PP bands for packing. Do not use any PP band for delivery purpose. It may cause the injury.
  Do not touch the heat exchanger fins with your bare hands.
  Doing so may cut your hands.
- Do not wash the unit with water.

  If washed with water, electric shock may be caused.
- Do not place objects under the units to avoid damage of condensation.

  When the room is high humidity or when the drain pipe is clogged, water may drip from the unit.
- Never install on the place where a combustible gas might leak.

  The gas may ignite or explode when the gas leaks and collects in surroundings of the unit.
- Do not use the unit under a special atmosphere.

  Installing the unit at the following places may cause a trouble, a place where is much machine oil, salt , humidity or dust, spa district, a place full of sulfur gas, volatile gas, or corrosive gas, a place near high frequency processing machine.
- For special use as for foods, animals/plants, precision equipment or art objects, the applicability should be confirmed earlier.

  As the use for the applications other than that designed originally may result in the deterioration of the quality.
  Consult your dealer in this regard.

- When the unit is installed at telecommunication centers or hospitals, take a proper provision against noise.

  The erroneous operation of air conditioner may be induced by inverter equipment, independent power device, medical equipment or communication equipment.
- Process the packing material surely.

  Be sure to safety dispose the packing materials.
  Packing materials, such as catches and other metal or wooden parts, may cause stabs or other injuries.
  Tear off and discard plastic packing bags so that children will not play any of them.
  If children play with a plastic bags which was not torn off, it may cause a risk of suffocation.
- Remote controller is not allowed to install for the place where direct sunshine strikes.

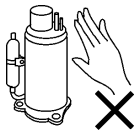
3) Before starting.

- The base and attachments of the unit should be periodically checked for looseness, cracks or other damage.

  If such defects are left uncorrected, the unit may fall and cause personal injury or property damage.
- Do not remove the panel or the fan guard from the unit when it is running.

  You could be injured if you touch rotating, hot or high-voltage parts .
- Do not operate the air conditioner without the air filter set place.

  Dust may accumulate, and cause a failure.
- Do not touch the compressor or refrigerant piping without wearing glove on your hands.



  Touching directly such the parts can cause a burn or frostbite as it becomes high or low temperature according to the refrigerant state.
- The unit should be securely installed level surface.

  When the unit inclines, it causes the water leak and the breakdown.
  Please confirm the horizontal with the spirit level.
- Do not handle the switch with wet hands.

  Otherwise electric shock can be resulted.
- At emergency (if you smell something burning), stop operation and turn the power source switch off.

  Continuing the operation without eliminating the emergency state may cause a machine trouble, fire, or electric shock.
- Remote controller should be pushed with finger.

  It occasionally causes the electric shock and the breakdown.
- Do not operate the air conditioner without the eliminator set place.

  Drain may drop into down flow supply duct.

2. Selection of installed place.

Select space for installing unit, which will meet the following conditions.

- Place where no direct thermal radiation from other heat sources.
- Place where no possibility of short cycle operations caused by exhaust heat from unit.
- Place where no possibility of annoying neighbors by noise from unit.
- Place where no exposition to strong wind.
- Place where no possibility of snow wind.
- Place where with strength which bears weight unit.
  Because of the possibility of fire, do not install unit to the space where generation, inflow, stagnation, and leak of combustible gas is expected.
- Avoid unit installation in a place where acidic spray (sulfur) are often used.
- Place without dispersion of oil and steam.

Please pay attention to the refrigerant (Freon gas).

- A non flammable, non-toxic, odourless refrigerant is used for this air conditioner.
- The refrigerant is collected on the floor side in the room because the specific gravity are larger than air. And, it causes the hypoxia accident.
- When the refrigerant gas leaks by any chance, the user must ventilates air enough by stopping the drive of the unit and opening the door.

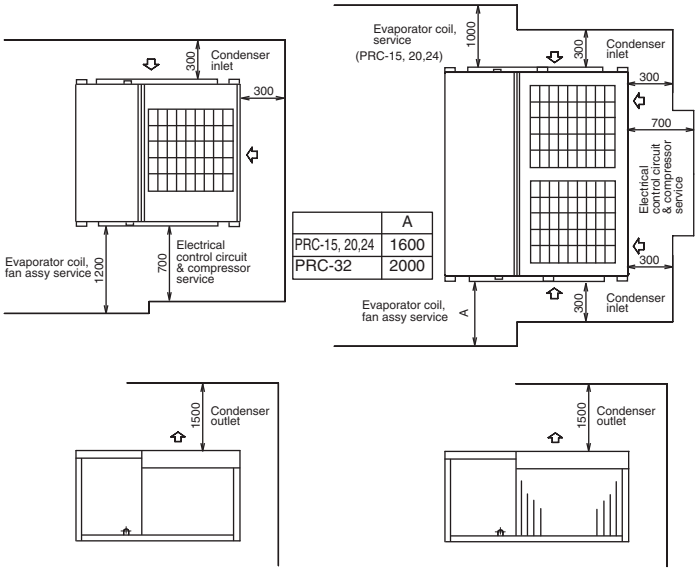
Please do not use the unit in the following places.

- Place where a lot of oil (The machine oil is contained), moistures, and dust exist.
- Place where a lot of salinity such as beach districts exists.
- Place where sulfur gas, volatile gas, and corroded gas are filled.
- Place where acid solution is frequently used.
- Place where special spray is frequently used.
- Hot spring zone.
- Near machine (high cycle welding machine etc.) generating high cycle.
- Place where ventilation entrance of unit is closed by snowfall.
- The main body might corrode when the unit is used in such a place, the refrigerant leak, the performance of the unit decrease remarkably, and it cause the damage of parts of the unit.

3. Space required around units. (unit ; mm)

※ All space value ; minimum clearance

PRC-8,10,12 PRC-15, 20,24,32



	A
PRC-15, 20,24	1600
PRC-32	2000

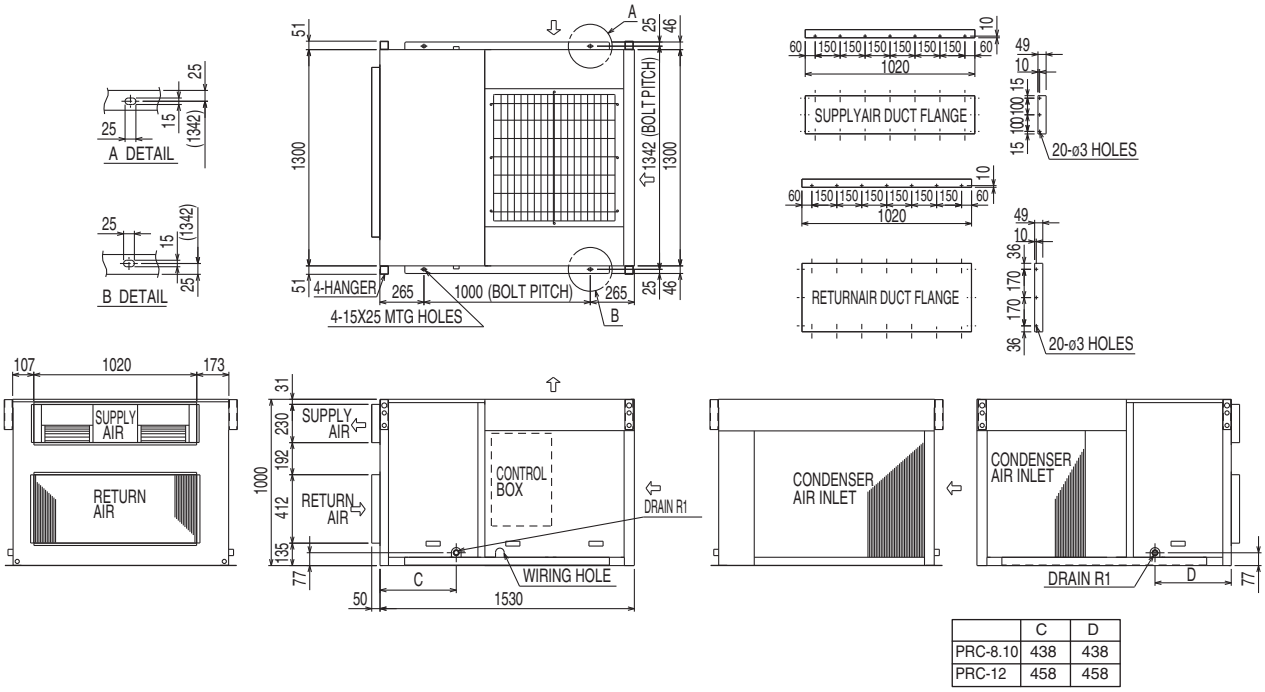
1. Care must be taken to prevent recirculation of the condenser air. To stabilize compressor, condensing pressures it is recommended that wherever possible the condenser air inlet side be faced away from prevailing winds.
2. For rooftop installation, the type of mounting base depends on the roof construction.
   A built-up roof may not support the weight of the unit and so it may be necessary to support the unit by adding structural members below it.
3. The units are equipped with hoisting plates for rigging and hoisting of the unit.
   The hoisting plates are located on the top of the unit.
   When hoisting the unit with a crane, spreader bars must be used to prevent damage to side panels by the supporting cables.

4. Preparation before installation. (unit ; mm)

※ Except : Drain size. (unit ; inch)

PRC-8,10,12

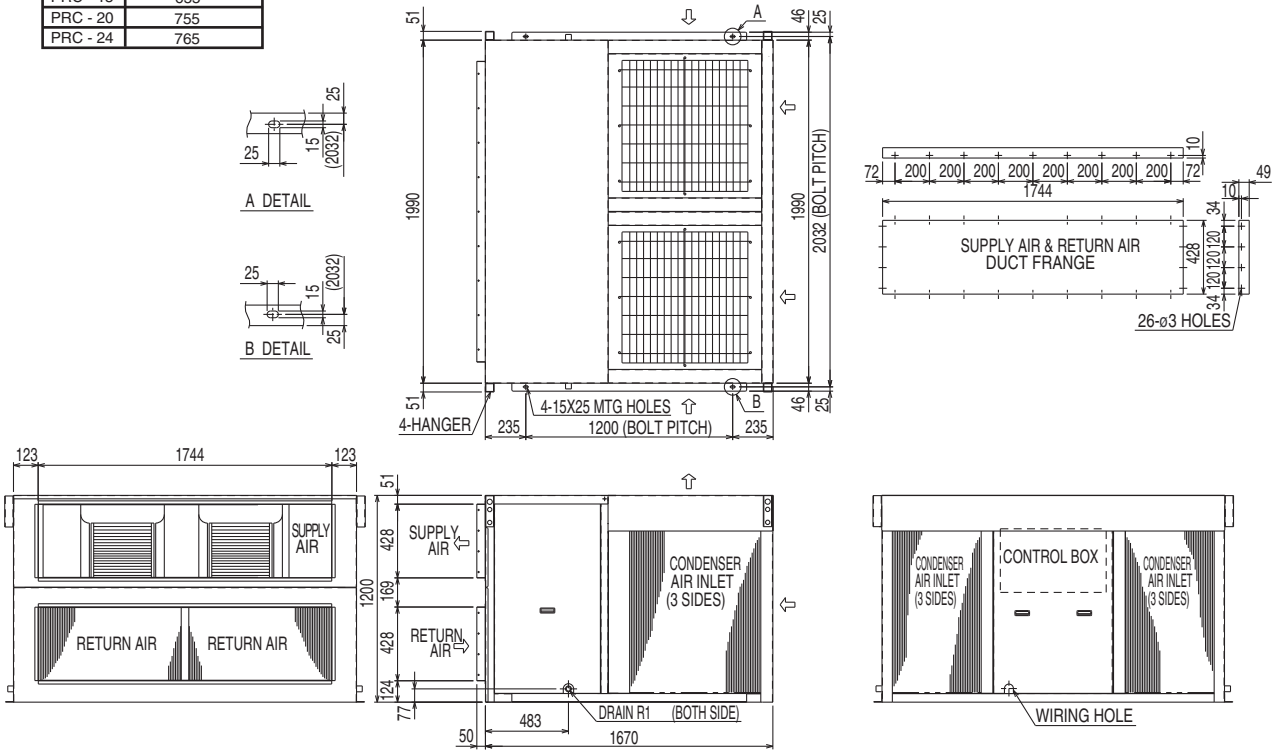
	Weight of unit (kg)
PRC - 8	360
PRC - 10	390
PRC - 12	395



	C	D
PRC-8.10	438	438
PRC-12	458	458

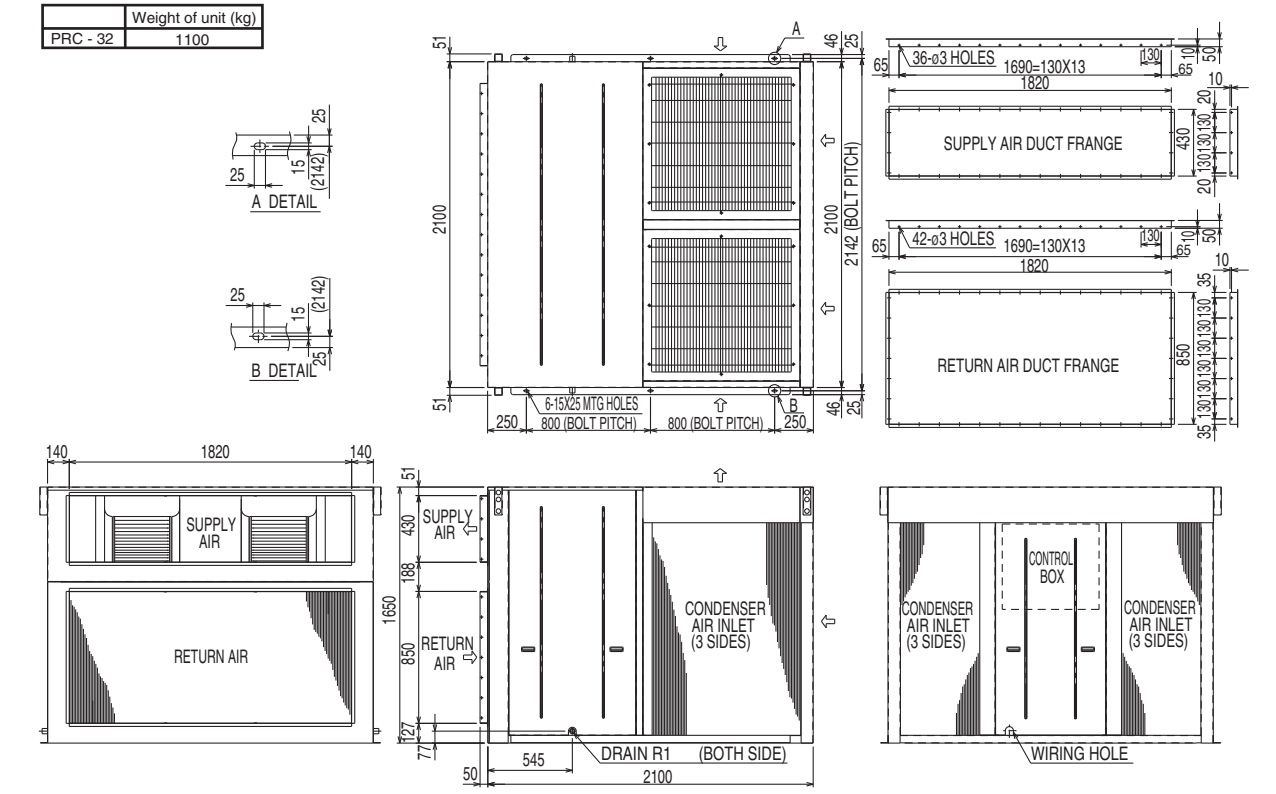
PRC-15,20,24

	Weight of unit (kg)
PRC - 15	655
PRC - 20	755
PRC - 24	765

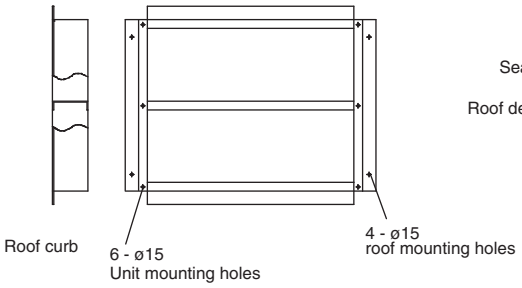


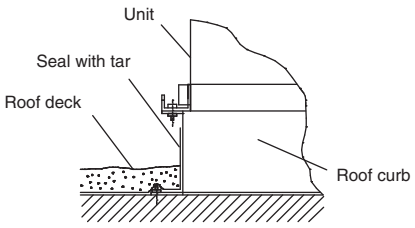
PRC-32

	Weight of unit (kg)
PRC - 32	1100



5. Installation of the unit

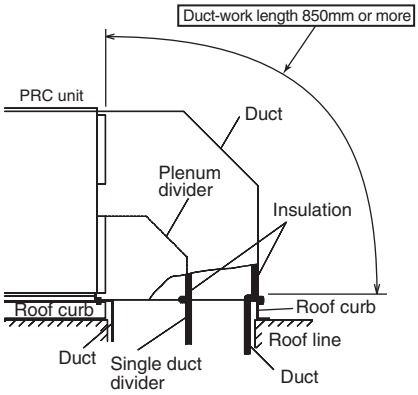




1. The figure shows the use of the roof curb available for mounting these units.
2. The curb should be sealed and fixed to the roof by weather stripping.
   Installation example is shown left.

5.1 Duct construction.

1. Series PRC units are equipped with horizontal supply and return air openings. Duct connection to the unit should be made with duct flanges and secured directly to the air openings with flexible duct connectors to avoid normal noise transmission.
2. For vertical air supply, a field supply plenum should be used. The figure below shows the recommended method for duct connection.
3. To prevent air leakage, all duct seams should be taped. Ducts run in air spaces that are not air-conditioned must be insulated and provided with a vapor barrier. Ducts exposed to the outside must be weather proofed. For quiet operation, we recommend that the insulation on the supply duct be placed inside, lining the duct.
4. Where ducts from the outside enter a building, the duct openings in the building should be sealed with weather stripping to prevent rain, duct, sand, etc. from entering the building.
5. Fans will not accept any external resistance to airflow and what provision is available if ductwork is to be fitted to the external fans.
6. Correctly sized filters must be fitted and there is no provision within the unit, however the filters may be installed in the return air.

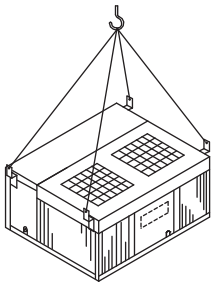


Duct connection with a vertical air plenum

5.2 Lifting method.

When the unit is to be lifted and moved, attach ropes to the suspension plates (4 p.c.s) provided on the top of the unit.
When the unit is lifted, it is center of gravity tends to shift the unit one side and so balance, such as that in the figure below, should be attained.
The angles at which the ropes suspend the unit should be at least 60° at the compressor end and at least 45° at the condenser end.
Care should be taken to avoid contact with the main unit while carrying.
It is necessary to protect the unit with the blanket so that the ropes should not injure the unit.

Hook (as directly aligned over the center of gravity as possible.



5.3 Refrigerant charge

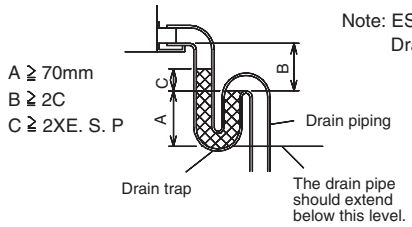
An additional charge is unnecessary.
The table below shows the amount of the charge when the factory is shipped.

	PRC-8	PRC-10	PRC-12	PRC-15	PRC-20	PRC-24	PRC-32
Refrigerant charge per circuit (kg)	4.0	5.9	5.7	2X4.5	2X5.9	2X5.7	3X6.3

6. Drain piping.

1. The condensate drain fitting (R1) is provided. The drain pipe can be connected at the right or left side. Under standard specifications, it is connected at the right side and the left side is covered.
2. The drain pipe must be provided with a trap on the outside of the unit and also installed at an incline for proper drainage, as shown below.
3. To prevent condensate formation and leakage, provide the drain pipe with insulation to safeguard against sweating.
4. Upon completion of the piping work, check that there is no leakage and that the water drains off properly.

The drain piping should have a drain trap.



Note: ESP = External Static Pressure
Drain trap for condensate

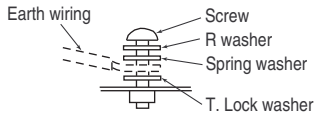
7. Electric wiring.

Construct the earth connection.
All electrical work must be carried out by a suitable qualified electrical trades-person and in accordance with local supply authority requirements and associated regulators. The range of working voltage is within ±10% voltage of power supply.
The unit is to be wired directly from an electrical distribution board either by a circuit breaker (preferred) or HRC fuse.

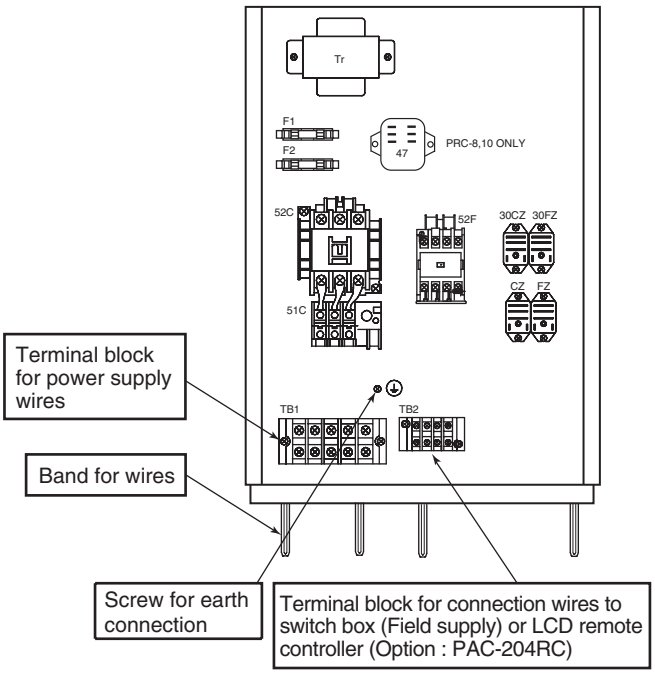
Fix power source wiring to control box by using buffer bushing for sensible force (PG connection or the like). Connect control wiring to control terminal block through the knockout hole of control box using ordinary bushing.

NOTE: Earth wiring must be connected.

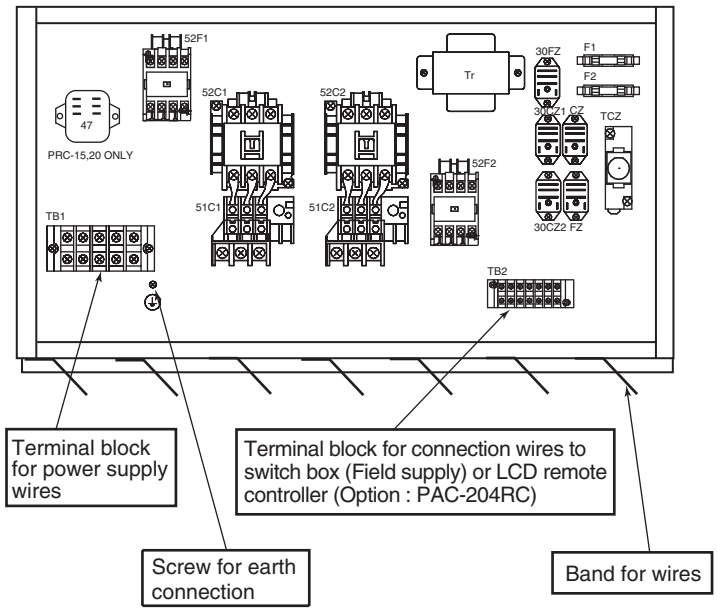
Connect the earth wiring at earth screw as below.



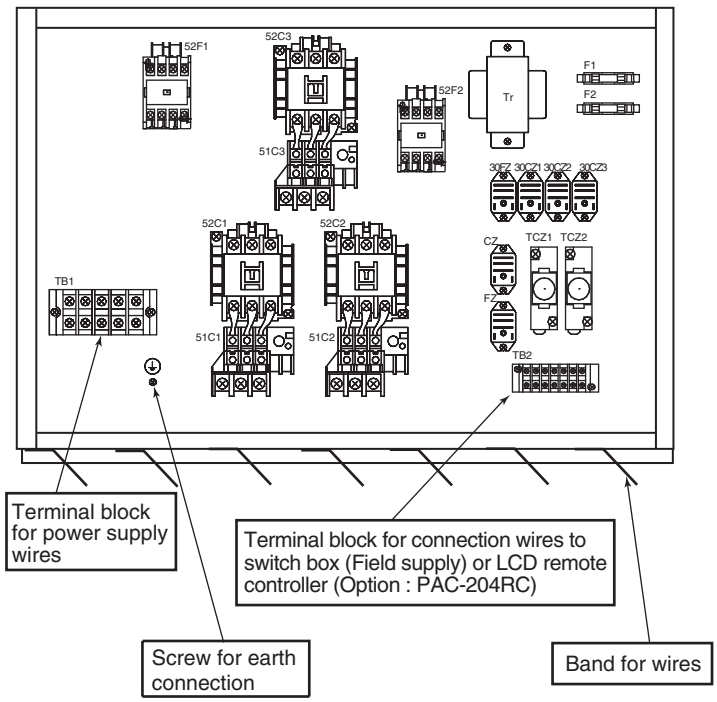
Control module of unit (PRC-8,10,12)



Control module of unit (PRC-15,20,24)



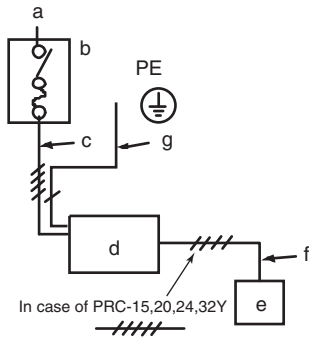
Control module of unit (PRC-32)



Method for connecting electric wire

Please do the wiring after consulting the electric power company of jurisdiction beforehand in the instruction.

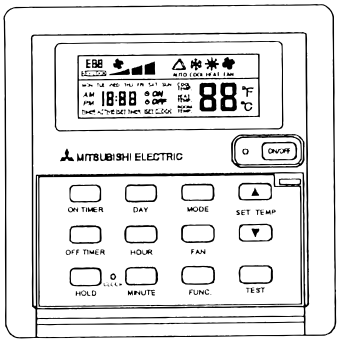
(1) The entire wiring diagram of unit.



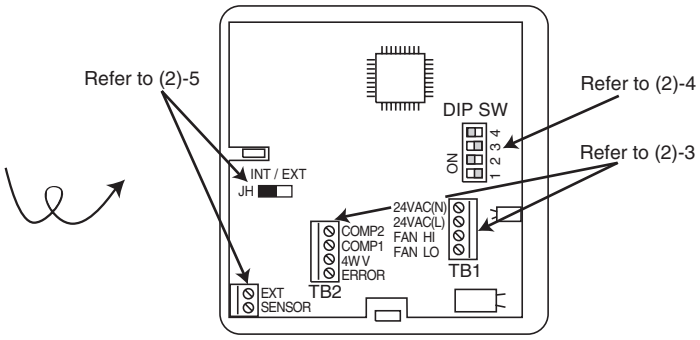
a.	Power supply
b.	Main switch/fuse (field supply)
c.	Power supply wiring for unit
d.	unit
e.	Remote controller (Option: PAC-204RC)
f.	Connection wiring for unit / remote controller
g.	Earth

(2) LCD remote controller. (OPTION:PAC-204RC)

(2)-1. Outline and inside drawing



Outline (Key cover open)



Controller board

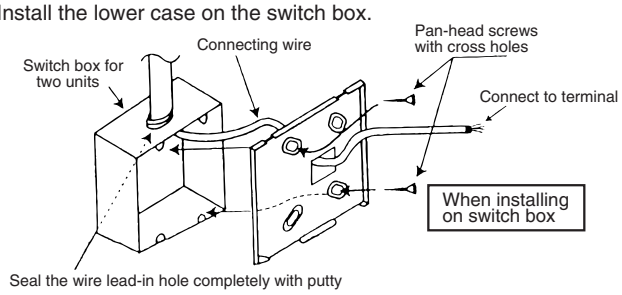
(2)-2. Installation

(1) Decide where you want to install the LCD remote controller (switch box)
In deciding, please observe the following precautions:

Do not install the LCD remote controller in locations, which are:
- Exposed to direct sunlight.
- Susceptible to humidity and moisture.
- Near a source of heat.
- Near machines emitting high-frequency waves. (High-frequency welders, etc.)

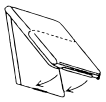
1) Procure the following parts locally :
Switch box for two units
Connecting wire (Length : below 20m size : 0.75mm²)
Lock nut, bushing

(2) Install the lower case on the switch box.



Caution : • Over-tightening the screws can cause deformation and / or cracks on the lower case.
• Install the LCD remote controller on a wall with flat surface. Installation on an uneven surface can cause cracks on the LCD and other failure.

Snap the upper case into place.
Hook the two upper claws into their slots, and shut the lower part as shown in the right diagram.



Caution : • Press the case until it snaps shut.
• To use, remove the protective sheet on the operation section.

To remove the upper case, insert a screwdriver(-) into one of the slots and slide it in the direction of the arrow shown in the diagram on the right.

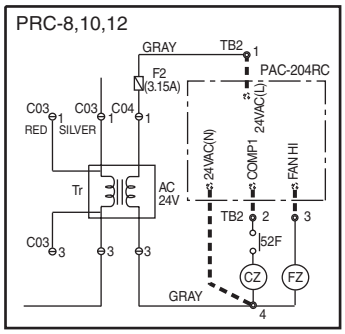
Caution : • Do not turn the screwdriver while it is inserted into the slot. Doing so can result in damage to the slot.

(2)-3. Wiring

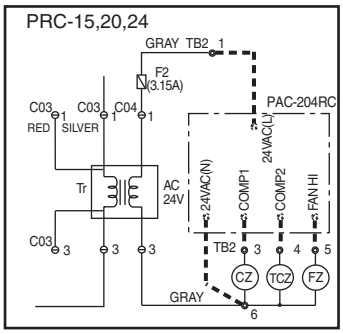
(1) Connect the wires on the basis of the following wiring diagram.
(2) Connecting work is different each models.
(3) LCD remote controller cables must be installed away from the power cables so that they are not influenced by electrical noise from the power cables. (Do not place the LCD remote controller cables and power cables in the same conduit.)
(4) The connector connection of the transformer is different depending on the power-supply voltage used.Refer to the wiring diagram at the control box cover.

Caution : This controller is damaged if mistook the connection.

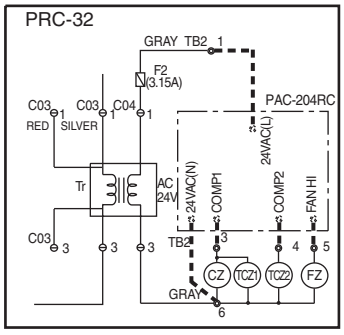
PRC-8,10,12



PRC-15,20,24



PRC-32



(2)-4. Setting DIP switch

Set the DIP switches on the basis of the below table.

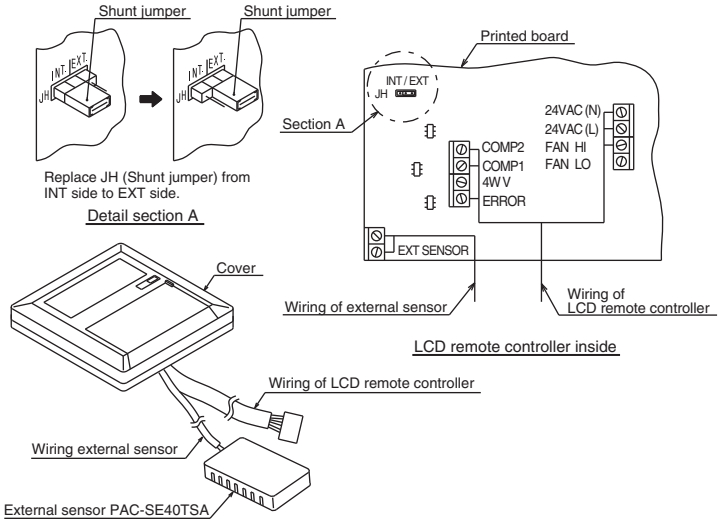
		DIP Switch 1		DIP Switch 2		DIP Switch 3		DIP Switch 4	
		ON	OFF	ON	OFF	ON	OFF	ON	OFF
	Factory pre setting		○	○			○	○	
	PRC setting		○ (Not change)	○ (Not change)			○ (Not change)	○ (*3)	
FUNCTION	Mode select	Heat pump	Cooling only						
FUNCTION	Fan speed Hi / Lo (*1)			Do not change DIP switch 2.					
FUNCTION	Auto change over function (*2)					Available	Not Available		
FUNCTION	Auto start at Power failure (*3)							Not Available	Automatically

Note. *1: This function can not use at above models, because the fan speed of these models is constant.
*2: If need this function, please consult your local MITSUBISHI ELECTRIC SALES office for application advice on this function.
*3: This function can change by customer self.
If this function use, The unit will auto start at power supply come back after power failure.

(2)-5. How to connect the external sensor (PAC-SE40TSA) to LCD remote controller.

This controller is set for using internal sensor.
If you need the external sensor, please consult your dealer and purchase option external sensor. (PAC-SE40TSA)
And please change below method.

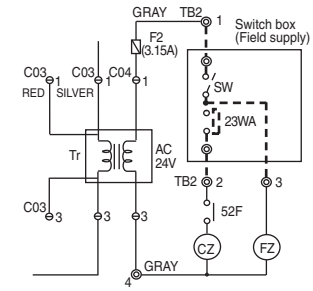
1. Remove the cover of LCD remote controller.
2. Connect the wire of external sensor to terminal as below.
3. Replace the shunt jumper from "INT" side to "EXT" side as below.
4. Check above connection. (Refer to PAC-SE40TSA Installation manual.)
5. Attach the cover of LCD remote controller.



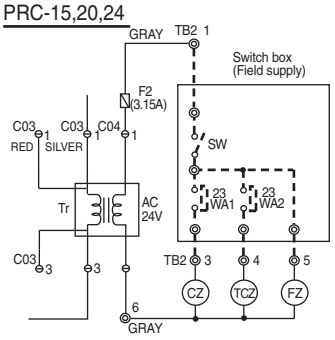
(3) Switch box (Field supply)

In case of using switch box (field supply), please wires as shown in the below.
Remove the panel on the right side (PRC-8,10,12) or the rear side (PRC-15,20,24,32) of the unit and connect the units power supply wiring to the proper terminals in the control box.
Connect the wires on the basis of the following wiring diagram.
If mistook the connection, the controller is damaged.

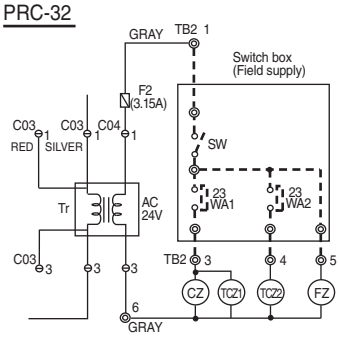
PRC-8,10,12



PRC-15,20,24



PRC-32



Symbol	name
SW	Switch(on)
23WA	Thermostar(room temp.)
23WA1	Thermostar(Low room temp.)
23WA2	Thermostar(High room temp.)

(4) Wiring example (For metal piping)

	Power cable	Breaker capacity	Over current protection switch	Earth cable
PRC-8	14mm^2	50A	50A	14mm^{2}over
PRC-10	14mm^2	50A	50A	14mm^{2}over
PRC-12	14mm^2	75A	75A	14mm^{2}over
PRC-15	38mm^2	100A	100A	22mm^{2}over
PRC-20	38mm^2	100A	100A	22mm^{2}over
PRC-24	38mm^2	100A	100A	22mm^{2}over
PRC-32	60mm^2	175A	175A	30mm^{2}over

Table above is an example.
The selection of other capacities should be determined in accordance with the relevant standards.

(5) Selecting earth leakage breaker (NV)

To select NF or NV instead of a combination of Class B fuse switch use the following.
In the case of Class B fuse rated 15A.

	Fuse (class B)	Earth leakage breaker (with over-load protection)		
PRC-8	50A	NV50-CP	50A	30mA 0.1s or less
PRC-10	50A	NV50-CP	50A	30mA 0.1s or less
PRC-12	75A	NV100-CP	75A	100mA 0.1s or less
PRC-15	100A	NV100-CP	100A	100mA 0.1s or less
PRC-20	100A	NV100-CP	100A	100mA 0.1s or less
PRC-24	100A	NV100-CP	100A	100mA 0.1s or less
PRC-32	175A	NV225-CP	175A	100mA 0.1s or less

NV is a product of MITSUBISHI ELECTRIC.
Table above is an example. The selection of other capacities should be determined in accordance with the relevant standards.

- Power supply cords of appliances shall not be ligther than design 245 IEC or 227 IEC.
- A switch with at least 3 mm contact separation in each pole shall be provided by the Air conditioner installstion.

Note.
All electrical wiring must be comply with local electrical authority regulations.

8. Before starting the trial run.

Phase protector is installed in PRC-8,10,15,20 due to scroll compressor. But not installed in PRC-12,24,32,because reciprocating compressor are installed.

After having installed the unit, check that:

1. The unit is fixed securely.
2. The unit is installed properly.
3. The drain pipe is provided with a drain trap.
4. The electrical wiring has been connected correctly and the terminal screws have been properly tightened.
5. The duct work has been performed correctly.
6. Before turning the unit on, measure the resistance between the terminals of the electrical parts and ground with a 500V megger and check that the value is at least 1.0M ohm.
   If the measured value is below 1.0M ohm, do not operate the unit.
7. The unit is used phase protector (47).(In case of PRC-8,1015,20)
   If wiring phase of power supply is mistaken, the unit does not run.
   Please reconfirm and modify wiring phase.
8. Turn universal power supply at least 6 hours before getting test run in order to current to crank heater.(In case of PRC-12,24,32)
   If current-carrying hours are too short,it may result in a malfunction of compressor.
9. Check that the fans are rotating in the proper direction.
10. Check to see whether there are refrigerant leakage, and slack power or transmission cable.
11. Check the operation of high-pressure switch.
    If the two lead wires of the outdoor unit fan motor are disconnected from the contactor and cooling is performed, the high-pressure switch should operate and stop the unit after 5 to 10 minutes.

Perform trial operation after completion above items.

Please be sure to put the contact address/telephone number on the operation manual before handing it to the customer.

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE MITSUBISHI DENKI BLDG MARUNOUCHI TOKYO 100-0005 TELEX J24532 CABLE MELCO TOKYO

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