

SERVICE INSTRUCTIONS

**CASSETTE TYPE
ROOM AIR CONDITIONER**

**3 PHASE MODEL
25000/36000/45000 BTU/H**

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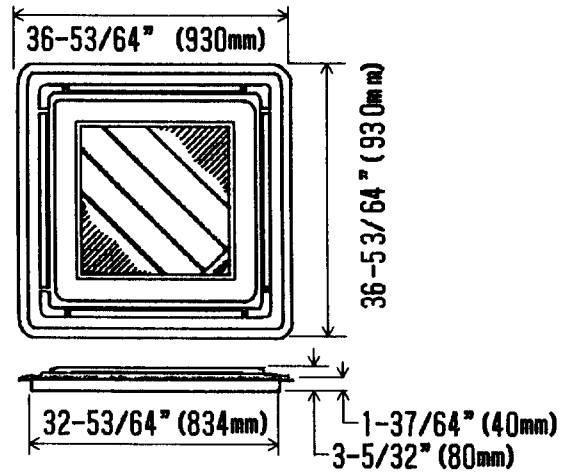
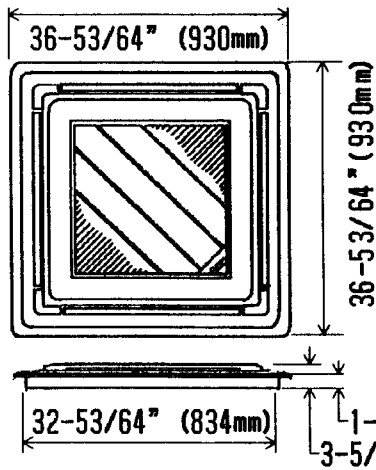
DIMENSIONS

Unit: Inch (mm)

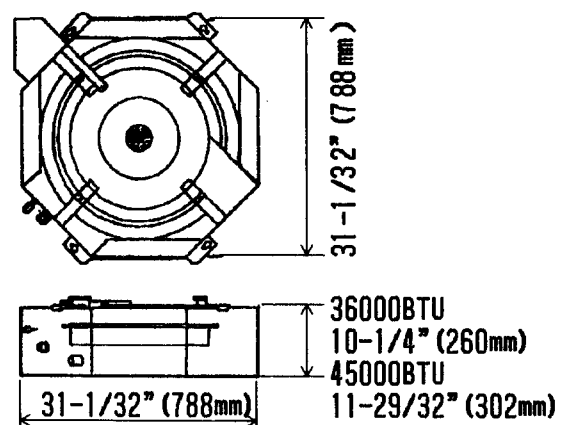
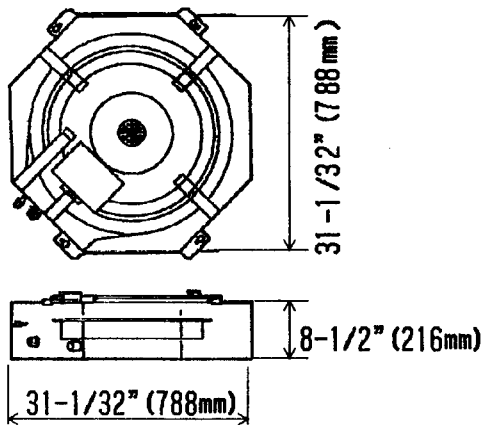
25000BTU UNIT

36000/45000BTU UNITS

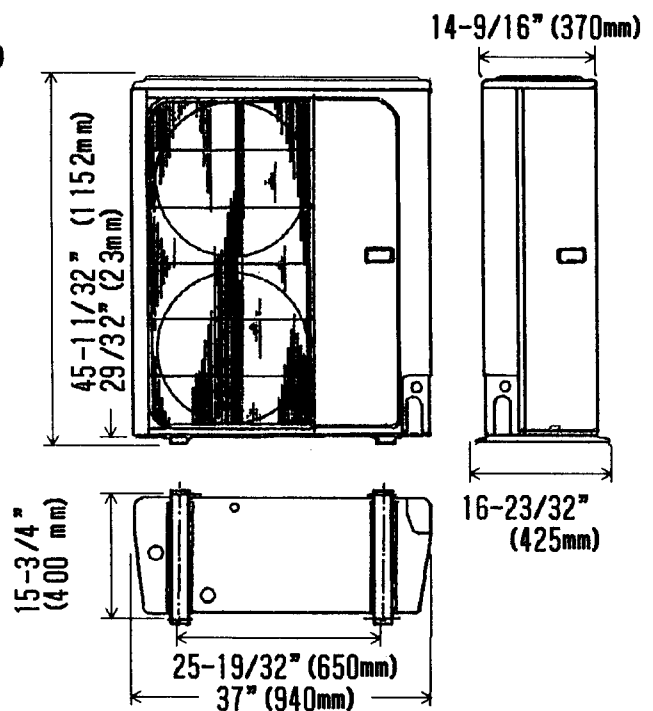
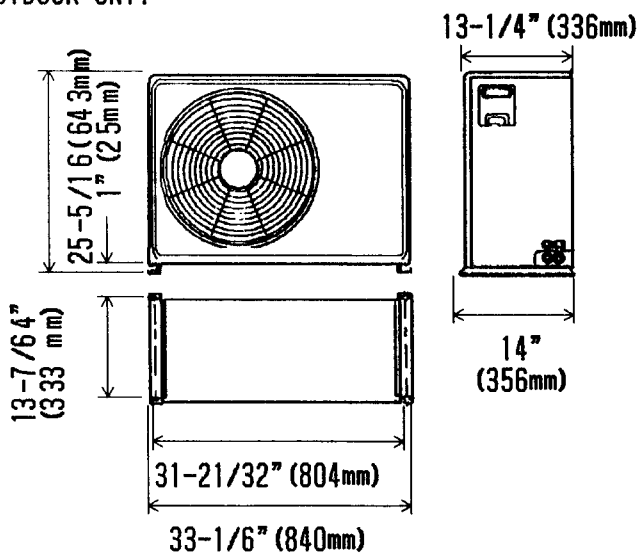
GRILL ASSY



INDOOR UNIT



OUTDOOR UNIT



DESCRIPTION OF FUNCTIONS

1. THREE MINUTES DELAY FUNCTION

- 1) The outdoor unit is not operated for three minutes after the power plug is inserted into the socket. (Compressor protection, breaker off prevention, etc.)
- 2) When test operation was performed at heating, it takes some time until an air necessary to operate "Three minutes delay" and "Cold air prevention" continuously starts to blow out.

2. TEST RUN

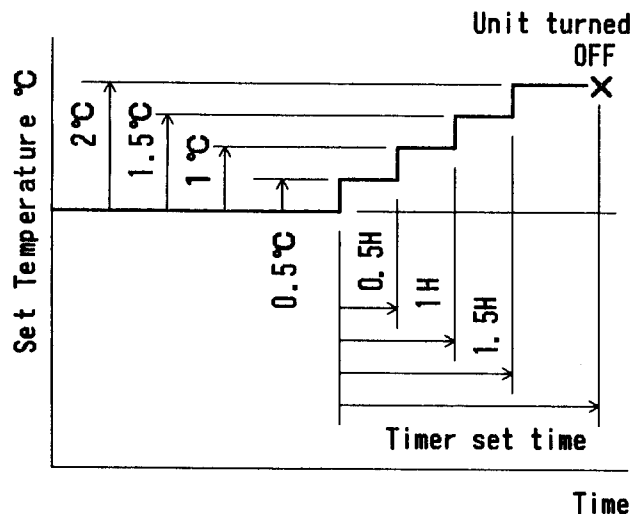
- 1) Operates continuously without the thermostat operating.
- 2) If the air conditioner is used in the "TEST" state, the compressor, heat exchanger, etc. will be damaged because temperature control cannot be performed.
- 3) If the microcomputer or other electronic circuit is faulty, the air conditioner can not be operated even by test run.

3. TIMER

3-A. COOLING MODEL

- 1) NON STOP
When "cooling" and "fan" are performed continuously, set the timer knob to "NON STOP".
- 2) OFF TIMER
When the timer knob is set to "OFF TIMER", operation automatically stops when the set time has elapsed.
- 3) ON TIMER
When the timer knob is set to "ON TIMER", operation automatically starts when the set time has elapsed.
- 4) SLEEP
When desiring to stop operation automatically after you go to bed, if the timer knob is set to the "SLEEP" position, operation stops while the "set temperature" is changed automatically.
 - * Cooling
When set to the "SLEEP", the set temperature is raised 0.5°C, then raised 0.5°C/30 minutes thereafter.

When the temperature has been raised a total of 2°C, that temperature is held until the set time has elapsed, then operation automatically stops.



3-B. REVERSE MODEL

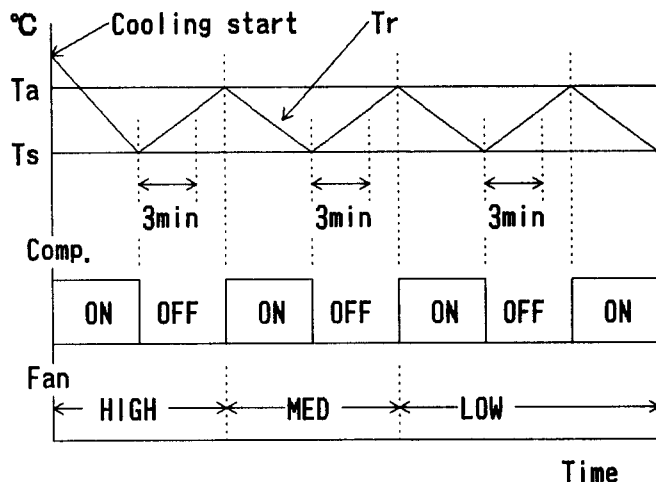
- 1) NON STOP
When "cooling", "heating" and "fan" are performed continuously, set the timer mode to "NON STOP".
- 2) OFF TIMER
When the timer mode is set to "OFF TIMER", operation automatically stops when the set time has elapsed.
- 3) ON TIMER
When the timer mode is set to "ON TIMER", operation automatically starts when the set time has elapsed.
- 4) PROGRAM TIMER
Use for OFF→ON operation etc., to stop the air conditioner when going to bed and adjust the room temperature to the optimum temperature upon arising.
 - * The program timer allows the OFF timer and ON timer to be used in combination one time (OFF→ON or OFF←ON).
 - * Operation will start from the timer setting (either OFF timer or ON timer) whichever is closest to the clock's current time setting.
- 5) REPEAT TIMER
Repeat timer allows operation of OFF timer and ON timer repeatedly.

4. FAN CONTROL "AUTO" position

With the unit on "COOL" or "HEAT" and the fan control set to "AUTO", a microcomputer judges conditions such as the temperature of the room and variably adjusts the fan level to suit those conditions.

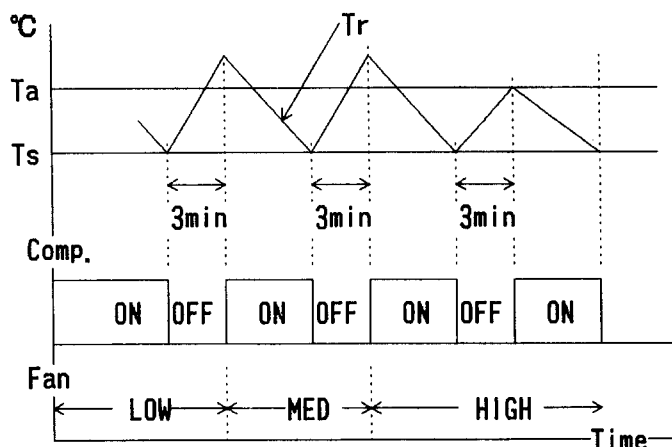
4-A. COOLING OPERATION

- 1) At the start of operation, the air conditioner is operated at "HIGH" up to the thermostat set temperature.
- 2) While the compressor is stopped, the air flow is the same as that before the compressor was stopped.
- 3) When the time operation is restarted after the compressor is stopped exceeds 3 minutes, operation is switched "HIGH" → "MED" or "MED" → "LOW".

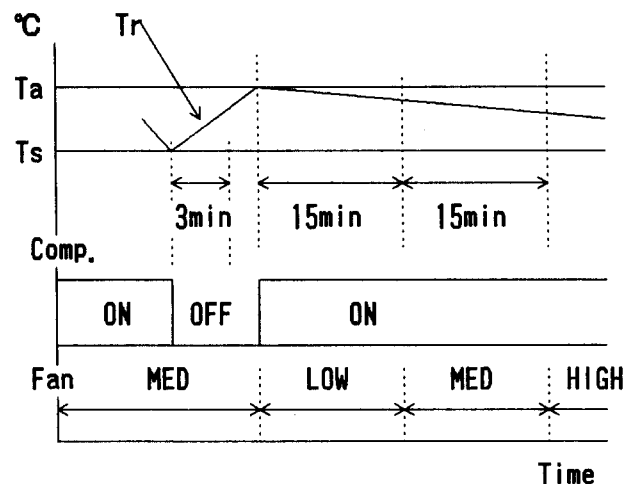


T_s : Set temp. set by thermostat control
 T_a : $T_s + 1$ (°C)
 T_r : Room temp. detected by thermistor

- 4) When the compressor stop time is 3 min., operation is switched "LOW" → "MED" or "MED" → "HIGH".



- 5) When the compressor operating time in the "LOW" or "MED" fan mode has continued for 15 minutes or longer, operation is switched "LOW" → "MED" or "MED" → "HIGH".
- 6) When "FAN CONTROL" is switched to "AUTO" while the unit is operated at the "FAN CONTROL" position of "HIGH", "MED" or "LOW", the unit operation is performed in "MED" fan mode. If the compressor operating time at the time of switching continues for 15 minutes or longer, fan mode is switched to "HIGH".



- 7) While operating at "AUTO" except "COOL", when the "MASTER CONTROL" is switched to "COOL", operation is performed with "MED" fan mode.
- 8) When the compressor does not start due to "3 MINUTES DELAY FUNCTION" or temperature condition of "ROOM TEMPERATURE < SET TEMPERATURE" at the starting of operation, operation is performed in "MED" fan mode.

After that,

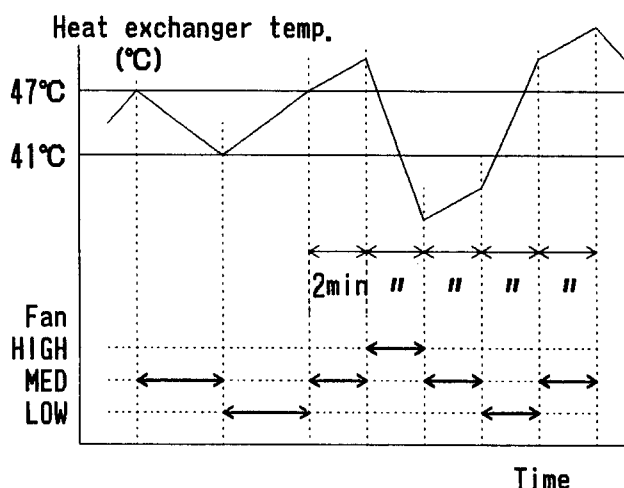
- ① Fan mode switches to "HIGH" when the compressor starts at "3 MINUTES DELAY FUNCTION" release.
- ② Fan mode switches to "LOW" when the compressor starts after releasing "3 MINUTES DELAY FUNCTION".

4-B. FAN OPERATION

When only the "FAN" mode is being used, setting to "AUTO" is equivalent to set it at "MED".

4-C. HEATING OPERATION (REVERSE MODEL)

- 1) When the indoor heat exchanger temperature becomes 47°C or more, fan mode switches to higher position for one step. ("LOW" → "MED", "MED" → "HIGH")
- 2) When the indoor heat exchanger temperature lowers less than 41°C while the compressor operates, fan mode switches to lower position for one step. ("HIGH" → "MED", "MED" → "LOW")
- 3) After switching the fan mode, it does not switch within 2 minutes.



- 4) When "FAN CONTROL" is switched to "AUTO" while the unit is operated at the "FAN CONTROL" position of "HIGH", "MED" or "LOW", the unit operation is performed in "MED" fan mode.

5. DRAIN PUMP OPERATION

- 1) When a Compressor starts, the Drain Pump starts simultaneously.
- 2) The Drain Pump operates continuously for 3 minutes after the compressor is turned off.
- 3) When the water level in the drain pan rises up and then the float switch functions;
 - ① Microcomputer stops compressor and indoor and outdoor fan motor operation.
 - ② Drain Pump operates continuously for 3 minutes after the float switch turns off. (almost condensing water may be drained.)

6. 3-MIN. CONTINUOUS OPERATION TIMER

For 3-min. after the compressor is started, operation continues without halting.

7. COLD AIR DISCHARGE PREVENTION (REVERSE MODEL)

When heating operation is started, the indoor fan rotates at the lowest speed until the temperature of the indoor heat exchanger rises up to 27°C (approximately 3 to 10 min.) even if the compressor is turned on.

8. HEATING OVERLOAD PROTECTION (REVERSE MODEL)

During the heating operation, the compressor is operated, but the outdoor fan may be stopped.

A function which suppresses the absorption of heat and protects the machine by stopping the outdoor fan when the indoor heat exchanger temperature has risen abnormally when the outdoor temperature is high is provided.

- 1) When the indoor heat exchanger temperature reaches 56°C, the "outdoor fan motor" stops. When the heat exchanger temperature has recovered to 48°C, the outdoor fan motor re-starts.
- 2) When the indoor heat exchanger temperature rises to 60°C even when the outdoor fan motor is stopped, the compressor stops.
(This function has a priority to the function of 3-MIN. CONTINUOUS OPERATION TIMER)

9. DEFROSTING OPERATION (REVERSE MODEL) (See operation flow chart on page 6)

- 1) The defrosting operation is performed when frost is produced on the outdoor heat exchanger and also may occurs it is not warm indoors.
- 2) The defrosting operation time differs with ambient conditions (temperature, humidity, etc., about 4 to 15 minutes).
- 3) During the defrosting operation, the indoor fan is operated at lowest speed and outdoor fan is stopped and the defrost indication on the remote controller will be appeared.
- 4) "Bushhhh", "go, go, go", and other sounds will be heard during the defrosting operation. These sounds are normal.

(Four-way valve switching sound,
refrigerant sound)

10. FILTER CHECK (REVERSE MODEL)

- 1) When air conditioner operating time is integrated for 120 hours or more, the filter signal lights.
- 2) When the integrated time reaches 150 hours or more, the filter signal flickers 0.5 sec. ON and 0.5 sec. OFF.
- 3) "FILTER SIGNAL" goes out by pressing "Filter reset button", and the integrated operating time is reset.

11. 4-WAY VALVE DELAY SWITCHING FUNCTION (REVERSE MODEL)

When heat operation is stopped, 4-way valve is stopped 3 minutes later.

12. AUTO RE-START (REVERSE MODEL)

When the air conditioner power supply was temporally turned off by a power failure, etc., it restarts automatically after the power recovers.

13. INDOOR HEAT EXCHANGER DE-ICING FUNCTION

- 1) When the temperature of the heat exchanger at the indoor side becomes less than 2°C during cooling operation, FAN CONTROL is switched to HIGH flow automatically.
- 2) After that, when the temperature of the indoor heat exchanger becomes 6°C or more, fan control returns to the air flow specified.
- 3) When the temperature of the indoor heat exchanger is kept less than 2°C for 3 minutes at HIGH flow, operation of the compressor stops.
- 4) The above item 1) and 3) do not operate while 10 minutes after the compressor starts.

14. ABNORMAL OPERATION STOP (36000 BTU COOLING MODEL)

When the refrigerant pressure at the high pressure side reaches more than 30kg/cm²G or the discharge temperature is over 130°C, abnormal operation stop device activates and operation stops.

1) High pressure switch : 30 kg/cm²G OFF
24 kg/cm²G ON

2) Thermistor for discharge pipe
OFF : 130 °C
ON : 100 °C

15. OUTDOOR FAN CONTROL (36000 & 45000 BTU MODELS)

Outdoor fan operation is controlled with a outdoor thermostat.

Thermostat set temperature : 26°C OFF
24°C ON

When the temperature is lowered less than 24°C, both the outdoor fan speed are changed as follows.

* 36000BTU COOLING MODEL

Upper fan : Hi speed → Stop
Lower fan : Hi speed → Low speed

* 36000BTU REVERSE MODEL

Upper fan : Hi speed → Low speed
Lower fan : Hi speed → Low speed

* 45000BTU COOLING & REVERSE MODEL

Upper fan : Hi speed → Stop
Lower fan : Hi speed → Hi speed

16. CENTRALIZED CONTROL (REVERSE MODEL)

- 1) One remote controller can control up to 16 air conditioners.
- 2) All the air conditioners can be operated with the same setting.
- 3) When the plural air conditioners are turned on simultaneously, the compressor for each air conditioner are turned on at a interval of one second in order.

17. ZONE CONTROL (REVERSE MODEL)

When the ZONE CONTROL button on the remote controller is pressed while multiple air conditioners are being centralized controlled only the present air conditioner stop.

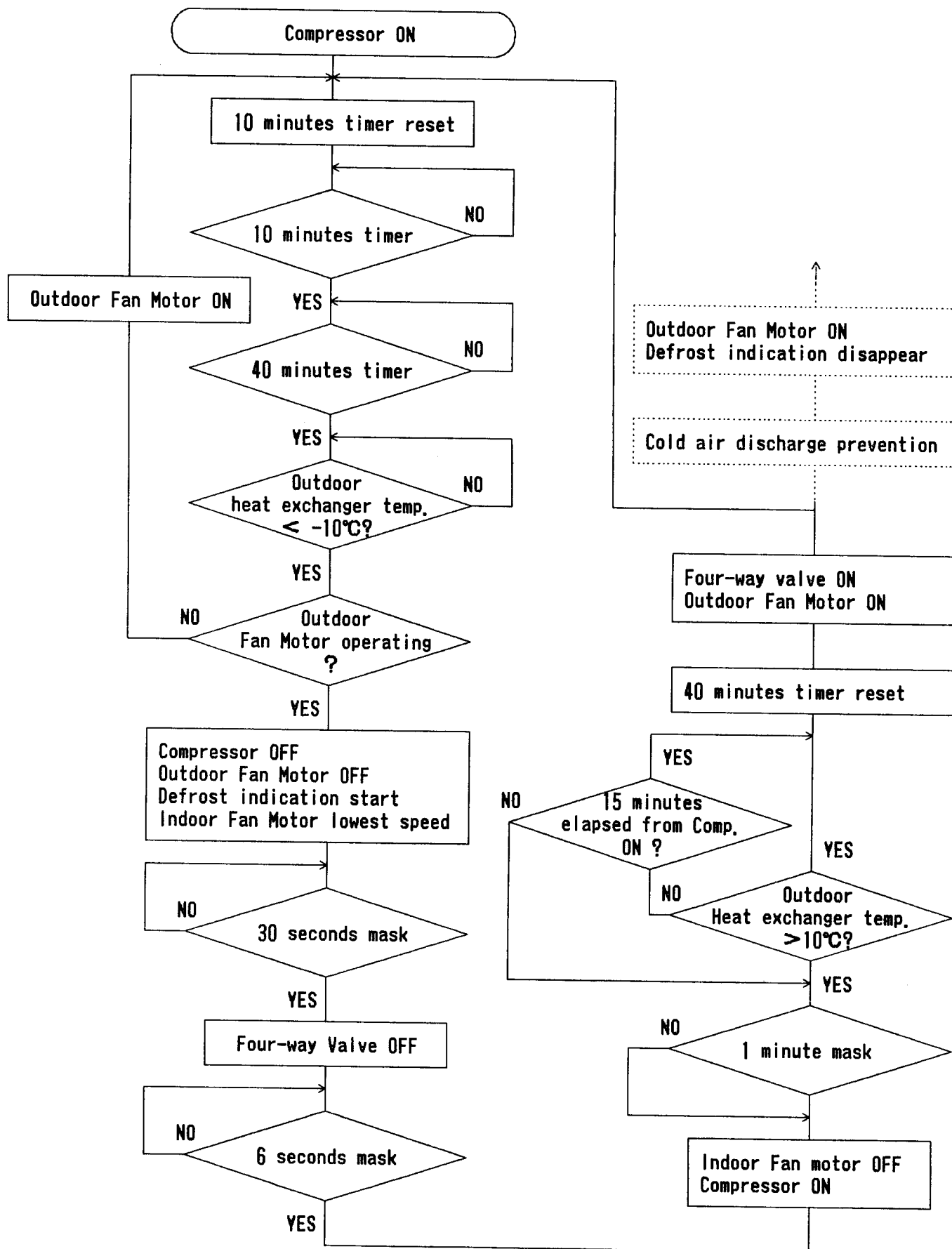
18. SPARE REMOTE CONTROLLER (REVERSE MODEL)

Two remote controllers can be connected to one air conditioner.

The air conditioner operation contents are the remote controller setting contents set later. (Both remote controllers show the same display.)

DEFROSTING OPERATION FLOW CHART

DEFROSTING (Only at "HEATING" flow chart)



TROUBLESHOOTING

I. COOLING MODEL

1. SYMPTOMS AND CHECK ITEMS

Symptom	Cause	Check item	Check point
No operation	Power supply section	Check 1	Microcomputer input signals DC output voltage Power transformer
Erroneous operation	Reset section	Check 2	Reset circuit
Display faulty	LED display board LED display control section Remote control LED display	Check 3 Check 4 Check 5	Display LED Microcomputer output signal LED control IC Remote control
Temperature control faulty	Room temperature thermistor A/D converter Indoor pipe temperature thermistor	Check 6	Room temperature thermistor A/D converter
Remote control input faulty	Input/output section	Check 5 Check 7	Remote control Microcomputer input/output section
Fan motor control faulty	Fan motor control output section	Check 6 Check 8	Fan motor Indoor pipe temperature thermistor Fan motor control circuit
Indoor unit to outdoor unit control faulty	Output to outdoor unit	Check 9	Output circuit to outdoor unit
There is no problem in the power supply, but operation stops automatically.	Abnormal stop device operated	Check 10	High pressure switch Thermistor (Discharge gas)

CHECK 1

Symptom..... No operation.
(Machine does not run when the power cord is plugged into an AC outlet and the switch is turned on.)

1) Power transformer check

Primary side.... 220/240V impressed ?
(Primary side 3A fuse blown ?)
Secondary side.. Output voltage about 15 to 20V ?

2) DC output voltage check

① 12V output ?

0V..... D6 faulty, Q1 faulty
D10 shorted, C2 shorted,
R1 open (Other parts may be shorted also.)

② 5V output ?

0V..... D7 open, IC6 faulty
(Other parts may be shorted also.)

5V or more, IC6 faulty

3) Interrupt signal faulty (INT input)

Q3 faulty, R44, R45, R47 open,
R46, C24 shorted

4) Microcomputer faulty

No output from each output port.

5) Remote control input/output faulty

IC3 faulty, IC10 faulty, R31 to R34 open,
D13 to D16 open, R100, R101 shorted, C14 to C17 shorted

6) Microcomputer input (oscillator) faulty

CL1, CL2, X1, X2 input signal faulty

7) Remote control faulty (CHECK 5)

CHECK 2

Symptom..... Erroneous operation.
(Operating state changes when the plug is reinserted into the outlet)

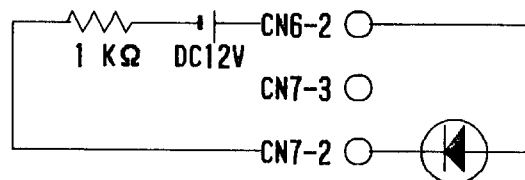
1) Reset circuit faulty

Q2 faulty, C7 shorted, R4 shorted
R2, R3, R5, C6 open, D11 open

CHECK 3

Symptom..... Display faulty.

1) Check lighting of the LEDs by using a 12V DC power source and 1k Ω resistor as shown above.



Operation

CHECK 4

LED display control section check

1) IC5 check

0V between pin connected to LED to be displayed and ground (pin 8) ?
If the voltage between the pins is not in 0 to 1.6V range, IC5 is faulty.

2) Microcomputer output port connected to LED to be displayed "H" (5V) level ?

If not "H" level, the microcomputer is faulty. For the IC5 and microcomputer pin numbers refer to the circuit diagram.

CHECK 5

Remote control check (check with remote control unit alone)

1) Remote control LED check

Connect the (-) side of a tester to pin 4 of the 13P remote control connector and the (+) side to pin 3 (operation lamp) and pin 2 (timer lamp) and check the conduction. (LED forward side conduction)

Check that the connector does not conduct in the reverse direction.

2) Remote switch conduction check

① Operate/Stop button

Conduction when the (-) side of a tester is connected to pin 13 of the 13P remote control connector, the (+) side is connected to pin 6, and the the operate/stop button is pressed.

② Air flow switching

Connect the (-) side of a tester to pin 13 and the (+) side to pin 7 and pin 8 and check if the switch conducts at each setting. (For the pin numbers that conduct, refer to the circuit diagram.)

③ Other switches

Connect the (-) side of a tester to pin 9, 10, 11 or 12 and the (+) side to pin 5, 6, 7 or 8 and check if the switch conducts at each setting. (For the pin numbers that conduct, refer to the circuit diagram.)

Symptom..... Temperature control
faulty

①Room temperature sensor

*Cooling→ Compressor not turned off.
J3, R14 open, IC2 faulty.

*Cooling→ Compressor not turned on.
R14, C8 shorted, R17, R20 open,
IC2 faulty.

*Indoor pipe temperature thermistor check.
Connect a multimeter between pins 3-4 of the 4P connector of the indoor pipe temperature thermistor.
The resistance must be $49.7\text{K}\Omega \pm 3\%$ at 25°C . ($14.05\text{K}\Omega \pm 3\%$ at 55°C)

*Cooling→ Frosting prevention shall be performed.
R15, C9 shorted, R18, R21 open,
IC2 faulty
Between connectors 8-3 and 8-4 opened.

*Cooling→ Frosting prevention is not performed.
R15 open, IC2 faulty,
Between connectors 8-3 and 8-4
shorted.

Symptom..... Remote control setting
faulty

1) Operate/Stop cannot be performed.
IC3, IC10 faulty, Microcomputer faulty,
R100, R101, C15 shorted,
R33, D15 open.

2) Air flow cannot be switched.
IC3, IC10 faulty, Microcomputer faulty,
R100, R101, C16, C17 shorted,
R31, R32, D13, D14 open.

3) Test operation cannot be performed.
IC3, IC10 faulty, Microcomputer faulty,
R100, R101, C14 shorted,
R34 open.

4) Timer switching cannot be performed.
IC3, IC10 faulty, Microcomputer faulty,
R100, R101, C16, C17 shorted,
D13, D14, R31, R32 open.

5) Temperature cannot be set.
IC3, IC10 faulty, Microcomputer faulty,
R100, R101 shorted, R31 to R34 open
C14 to C17 shorted. D13 to D16 open

6) Timer cannot be set.
IC3, IC10 faulty, Microcomputer faulty,
R100, R101 shorted, R31 to R34 open,
D13 to D16 open

7) Operation cannot be switched.
IC3, IC10 faulty, Microcomputer faulty,
R100, R101, C16, C17 shorted,
R31, R32, D13, D16 open.

Symptom..... Indoor fan motor control
faulty

1) Fan rotates while machine is stopped.
SSR1 faulty, IC4 faulty,
Microcomputer faulty (P40 remains "H")

2) Fan motor does not rotate.
SSR1 faulty, IC4 faulty,
Microcomputer faulty (P40 remains "L")

3) Only LOW operation is possible.
Microcomputer faulty (P41, P42 output
faulty),
IC4 faulty, K1 and K3 faulty

4) MED operation and LOW operation cannot be performed.
Microcomputer faulty (P4) output faulty
IC4 faulty, K1 faulty

Symptom..... Control to outdoor unit
faulty

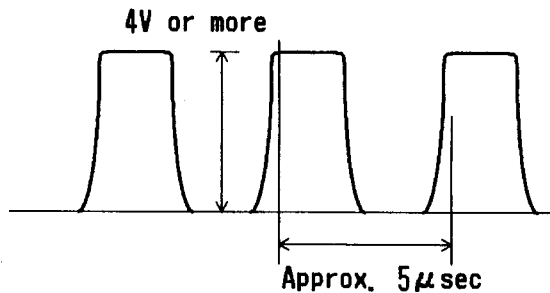
1) Compressor and outdoor fan not operated.
Microcomputer faulty (P51 output faulty)
IC4 faulty, Main relay faulty

2) Compressor and outdoor fan not stopped.
Microcomputer faulty (P51 output faulty)
IC4 faulty, Main relay faulty

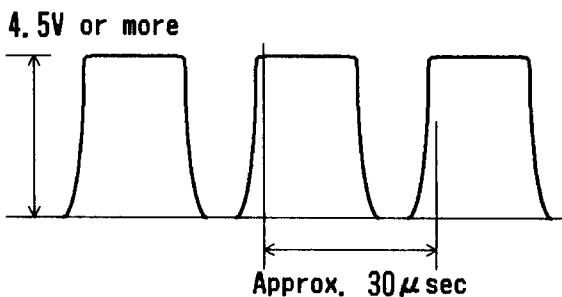
WAVEFORMS CHECK

The waveform at each pin of the micro-computer is shown below.

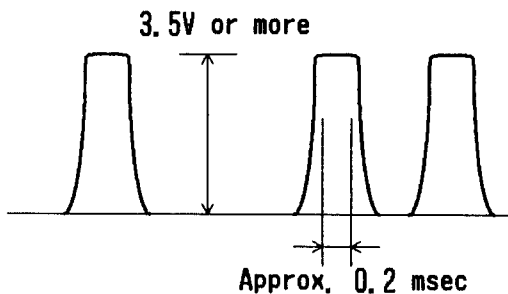
- 1) Waveform 1 (CL2 pin 21)
System clock waveform
(frequency 150 to 240KHz)
Designed value : 200KHz



- 2) Waveform 2 (x2 pin 1)
Count clock waveform
(frequency 32.7KHz)



- 3) Waveform 3 (P10 to P13 pins 6 to 9)
Microcomputer input waveform (Changes with the setting)



CHECK 10

Symptom..... There is no problem in the power supply, but operation stops automatically.

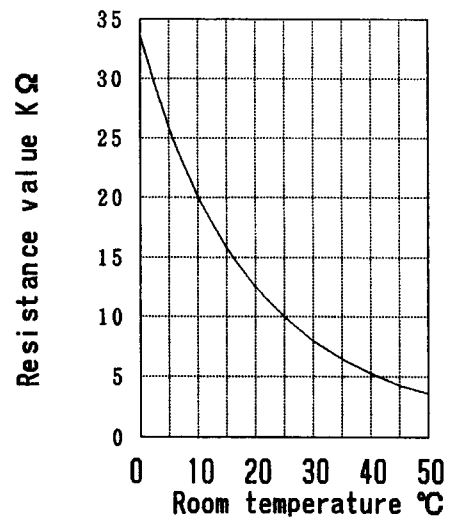
For the high pressure switch and the thermistor (Discharge gas) operation, refer to the "DESCRIPTION OF FUNCTIONS" item 14.

- 1) Check the refrigerant pressure with the charging valve (valve-B side) during operation if the refrigerant is charged excessively or too little.

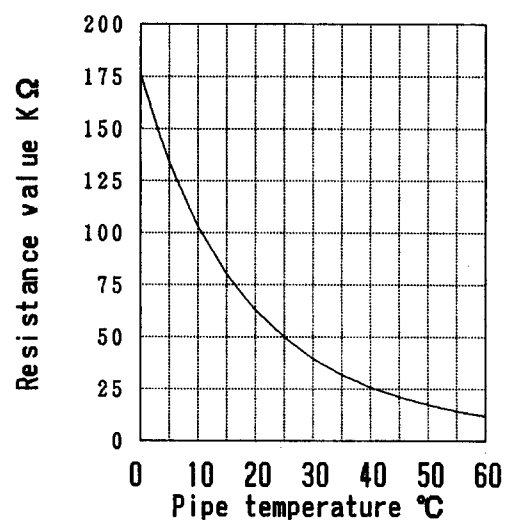
- 2) Check if the air inlet and outlet of the outdoor unit are blocked with any obstacles.

2. Thermistor resistance values.

- 1) Room temperature thermistor



- 2) Indoor pipe temperature thermistor



II. REVERSE MODEL

EZ-013HSE TROUBLESHOOTING (INDOOR UNIT SIDE)

Symptom	Cause	Check points
An error message is displayed on the remote controller indicator	Communication error Thermistor faulty Float switch faulty	(1)Self diagnosis check
The system does not work at all	Power supply circuit failure Reset circuit failure Power interrupt circuit failure Ceramic resonator failure Remote controller input/output circuit failure	(2)Primary circuit of the power supply (3)Secondary circuit of the power supply (4)Reset circuit (5)Power interrupt circuit (6)Ceramic resonator (7)Remote controller input/output circuit
The indoor fan motor does not work	Fan motor capacitor failure Output circuit for fan motor faulty	(8)Fan motor capacitor and harness
The air flow of the indoor fan motor does not vary		(9)Output circuit for indoor fan motor
The drain pump does not work	Float switch failure Drain pump output circuit failure	(10)Drain pump output circuit

EZ-010HUE TROUBLESHOOTING (OUTDOOR UNIT SIDE)

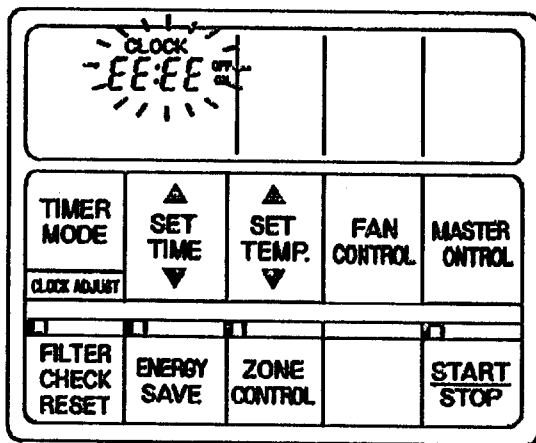
Symptom	Cause	Check points
An error message is displayed on the remote controller indicator	Communication error Thermistor faulty	(1)Self diagnosis check
The system does not work at all	Power supply circuit failure Reset circuit failure Power interrupt circuit failure Ceramic resonator failure	(2)Primary circuit of the power supply (3)Secondary circuit of the power supply (4)Reset circuit (5)Power interrupt circuit (6)Ceramic resonator
The compressor does not work	Power relay output circuit failure	(7)Power relay output circuit
The outdoor fan motor does not work	Fan motor output circuit failure	(8)Fan motor output circuit
The heating does not work	Four-way valve circuit failure	(9)Four-way valve circuit
The defrost does not work	Outdoor unit heat exchanger thermistor circuit failure	(10)Outdoor unit heat exchanger thermistor circuit

(1) Remote controller self diagnosis

If EE : EE blinks on the time indicating LED of the remote controller, perform the self diagnosis. The LED indicates which air conditioner is faulty.

If the operation indication lamp is lit, first press the START/STOP button to turn it to OFF. Then, execute the following procedure to display the error description.

Self diagnosis starts when the ZONE CONTROL and ENERGY SAVE switches are pressed at the same time for three seconds or more while EE:EE is blinking on the remote controller. Then, a description of the error is displayed.



Example : E2:03

Faulty unit number
Error code

The room temperature sensor of Unit 3 is faulty (in a situation where 2 to 16 units are under simultaneous control). ("E2:00" is displayed in a 1-to-1 situation.)

For details about errors, see below table.

① E0:XX	Transmission and reception errors (Indoor unit ↔ remote controller)
② E1:XX	Transmission and reception errors (indoor unit ↔ outdoor unit)
③ E2:XX	Room temperature sensor opened or disconnected
④ E3:XX	Room temperature sensor short-circuit
⑤ E4:XX	Disconnection of the indoor heat exchanger temperature sensor

⑥ E5:XX	Short-circuit of the indoor heat exchanger temperature sensor
⑦ E6:XX	Disconnection of the outdoor heat exchanger temperature sensor
⑧ E7:XX	Short-circuit of the outdoor heat exchanger temperature sensor
⑨ E9:XX	Float switch remains ON

XX : Faulty unit number

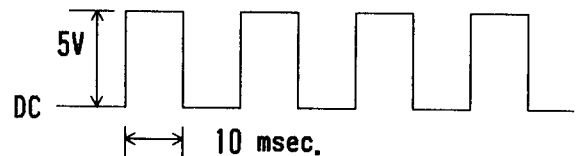
(INDOOR UNIT SIDE)

① Error code E0

Transmission and reception errors between the indoor unit and remote controller. Use the oscilloscope to check the output waveform of pin 26 of the microcomputer.

If the waveform does not match that shown in the below figure, it may be due to failure of the following parts :

R4, R5, R6, R7, R8, R46, Q2, Q3, IC5, C11, D2, D3 or LC2.



Use the oscilloscope to check the output waveform of pin 2 of the CN15.

If the waveform does not match that shown in the above figure, it may be due to failure of the following parts :

IC3, RJ47, D2, D3, R8 or LC2.

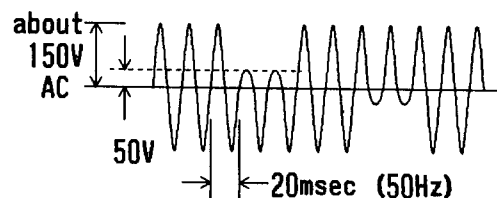
② Error code E1

Transmission and receiving errors between indoor unit and outdoor unit.

* Forward transmission error

Use the oscilloscope to check the output waveform between terminal 1 and 3 of the terminal board.

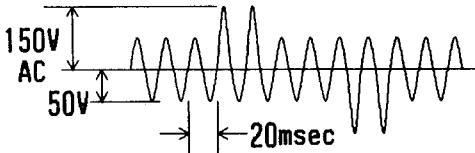
If a serial signal is not output as shown in the below figure, IC8, IC7 or the indoor unit microcomputer may be faulty.



* Reverse transmission error

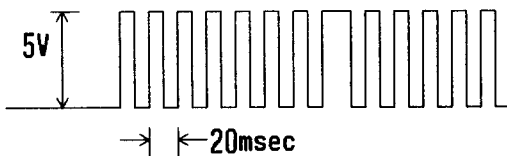
Use the oscilloscope to check the output waveform between terminals 1 and 3 of the terminal board.

If a serial signal is not output as shown in the below figure, the outdoor unit may be faulty.



Use the oscilloscope to check the output waveform of pin 2 of IC8.

If the waveform matches as shown in the below figure, IC8 is faulty or C30 may be short-circuited.



③ Error code E2

Room temperature sensor disconnection.

- (a) Check whether the room temperature sensor is disconnected.
→ Attach the connector CN4 securely.
- (b) Check whether the room temperature sensor lead wire is disconnected.
→ Replace the room temp. thermistor.
- (c) Check whether there is 5V between pin 1 of CN4 and ground.
→ Check the power supply circuit.
- (d) Check whether R18 is disconnected or the microcomputer is faulty.

④ Error code E3

Room temperature sensor short-circuit.

- (a) Check whether the room temperature sensor is short-circuited by measuring the resistance value.
→ Replace the room temp. thermistor.

⑤ Error code E4

Disconnection of the indoor heat exchanger temperature sensor.

- (a) Check whether the indoor heat exchanger temperature sensor is removed.
→ Attach the connector CN5 securely.

- (b) Check whether the indoor heat exchanger temperature sensor is disconnected.
→ Replace the indoor pipe temp. thermistor, if necessary.

- (c) Check whether there is 5V between pin 1 of CN5 and ground.
→ Check the power supply circuit.

- (d) Check whether R20 is disconnected or the microcomputer is faulty.

⑥ Error code E5

Short-circuit of the indoor heat exchanger temperature sensor.

- (a) Check whether the indoor heat exchanger temperature sensor is short-circuited.
→ Replace the indoor pipe temp. thermistor, if necessary.

⑦ Error code E6

Disconnection of the outdoor heat exchanger temperature sensor.

- (a) Check the outdoor pipe temp. thermistor.

⑧ Error code E7

Short-circuit of the outdoor heat exchanger temperature sensor.

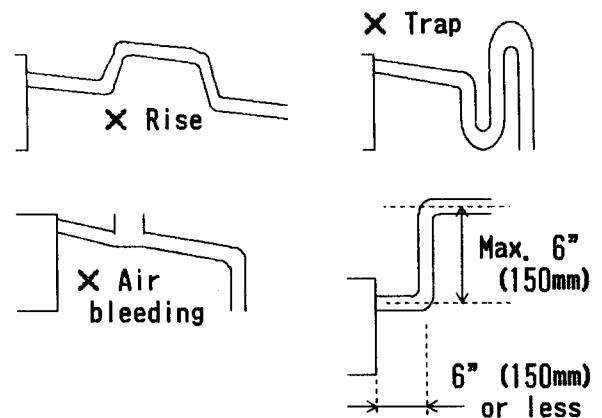
- (a) Check the outdoor pipe temp. thermistor.

⑨ Error code E9

The float switch remains ON.

- (a) Check whether the drain pan is filled with water.
→ Disconnect the drain pan plug to drain out the water.

- (b) Check the drain pipe installation.



- (c) In addition, R21 may be disconnected or C20 may be short-circuited.

(2) Primary circuit of the power supply

Is there 220/240V between terminals 2 and 3 on the terminal board ?
↓
Yes → The power is not supplied to the unit.
↓
Is there 220/240V between terminals 4 and 2 of CN14 ?
↓
Yes → The CN14 harness is faulty.
↓
Is 220/240V applied to both ends of the varistor (VA1) ?
↓
Yes → The fuse has blown.
↓
*Remove the connector from the power transformer to measure the resistance across the primary side of the transformer.
↓
Is the resistance value infinite(∞) ?
↓
Yes → The power primary circuit is working normally.
↓
The voltage selector socket has been removed or the thermal fuse has blown.

(3) Secondary circuit of the power supply (a) Logical power supply circuit

Is there about 20V between terminals 1 and 2 of CN2 ?
↓
Yes → The power transformer is faulty.
↓
Is there about 20V across C1 ?
↓
Yes → D4 is faulty or C1 is shorted.
↓
Is the output voltage of IC2 (7812) 12V ?
↓
Yes → IC2 may be faulty or D7, C2 or C3 may be shorted.
↓
Is the output voltage of IC3 (7805) 5V ?
↓
No → Yes → The logical power supply circuit is working normally.
↓
Is the input voltage of IC3 (7805) 11V ?
↓
No → Yes → IC3 may be faulty or C4 may be short-circuited.
↓
D1 is disconnected.

(b) Relay driver power circuit

Is there about 20V between terminal 3 and 4 of CN2 ?
↓
Yes → The power transformer is faulty.
↓
Is about 20V applied across C5 ?
↓
Yes → D5 (S1VB10) is faulty.
↓
Is about 14V applied across C7 ?
↓
No → Yes → The power circuit of the relay driver is working normally.
↓
Is about 15V applied across D6 ?
↓
No → Yes → Q1 is faulty.
↓
Is 2 to 5V applied across R2 ?
↓
No → Yes → D6 is faulty.
↓
R2 is disconnected.

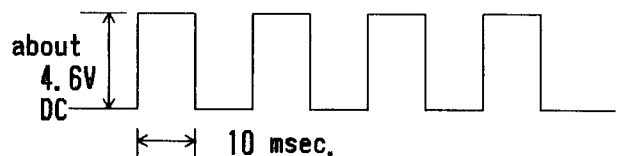
(4) Reset circuit

Check the output voltage of pin 28 (Reset) of the microcomputer. If it is 5V, the reset circuit is working normally. If it is not 5V, it may be due to one of the following failures :

C41 or C42 short-circuit, R3 disconnected, IC4 failure, or Microcomputer faulty.

(5) Power interrupt circuit

Use an oscilloscope to check the output waveform of pin 20 (TNT2) of the microcomputer. If the waveform has the shape shown in the below figure, the power interrupt circuit is working normally.



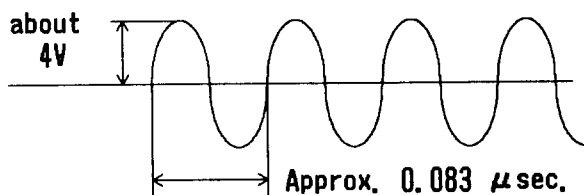
If not, check the output waveform of pin 4 of IC8. If the waveform does not match that shown in the above figure, IC8 is faulty. If the waveform matches the above figure, the power interrupt circuit problem is due to one of the following :

C44 or C29 short-circuit, R41 disconnection, or IC6 failure.

(6) Ceramic resonator

Use an oscilloscope to check the output waveform between pins 30 and 31 of the microcomputer.

If the waveform matches that shown in the below figure, the ceramic resonator (X2) is working normally.



(7) Remote controller input-output circuit

The remote controller signal circuit is working normally if there is about 12V between pins 1 and 3 of CN15 and about 11V between pins 2 and 3 of CN15.

(8) Fan motor capacitor and harness

(a) Fan motor capacitor

Check whether C10 is disconnected.
Check whether the fan motor capacitor lead wire is disconnected.

(b) Fan output circuit

Is the output voltage of pin 7 of the microcomputer 5V when the fan output is ON ?

Yes — No → Microcomputer failure.

Is there about 14V between pins 16 and 8 of the IC9 ?

Yes — No → IC9 failure.

Is SSR1 alternating current ON ?

Yes — No → SSR1 failure.

K3, K4, K5 failure, or fan motor failure.

(9) Output circuit for indoor fan motor

The failure may be due to one of the following : K3, K4, K5 or IC9, microcomputer faulty.

(10) Drain pump output circuit

The failure may be due to one of the following : The drain pump does not work, K2 or IC9 failure, Microcomputer failure, Float switch failure, R21 disconnection, or C20 short-circuit

(OUTDOOR UNIT SIDE)

(1) An error message is displayed on the remote controller indicator. (Self diagnosis)

There are three error codes about the outdoor unit to be displayed on the remote controller indicator as follows.

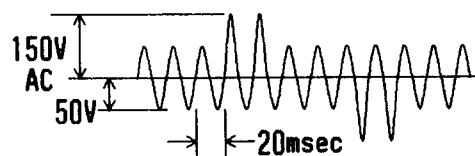
①-1 Error code E1

Transmission and receiving error between indoor unit and outdoor unit.

* Reverse transmission error

(a) Use an oscilloscope to check the output waveform between terminals 1 and 3 on the terminal board.

If the waveform matches that shown in the below fig., the system working normally.



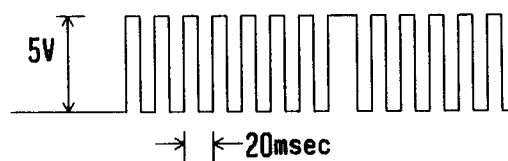
If it does not match, check the waveform as follows.

(b) Use the oscilloscope to check the output waveform between pins 10 and 13 of IC4.

If the waveform does not match that shown in the above figure, IC4 is faulty.

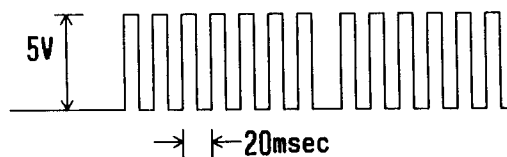
(c) Use an oscilloscope to check the output waveform of pin 12 of the microcomputer.

If the waveform does not match that shown in the below figure, the microcomputer may be faulty or R5 may be disconnected.



(d) Use an oscilloscope to check the output waveform of pin 4 of IC4 (GK30271).

If the waveform does not match that shown in the below figure, IC7 is faulty.

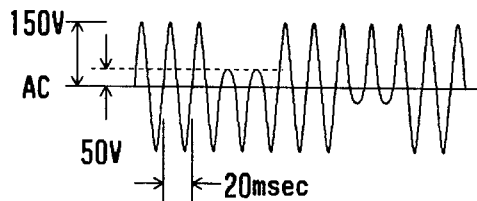


①-2 Error code E1

* Forward transmission error

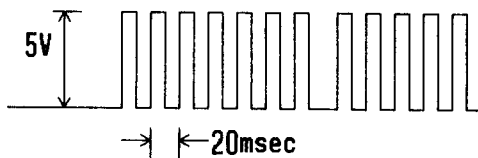
Use an oscilloscope to check the output waveform between pins 1 and 3 of the terminal board.

If the waveform matches that shown in the below figure, the indoor unit is working normally.



Use an oscilloscope to check the output waveform between pins 1 and 3 of the IC4.

If the waveform does not match that shown in the below figure, IC4 is faulty or R3 is disconnected.



If the output waveform of pin 11 of the microcomputer does not match that shown in the above figure, it may be due to R4 disconnection, C6 short-circuited or microcomputer failure.

② Error code E6

The outdoor heat exchanger sensor is disconnected.

(a) Check whether the outdoor unit pipe temperature thermistor is removed.
→ Attach the connector securely.

(b) Check whether the lead wire for the outdoor unit pipe temperature thermistor is disconnected.
→ If it is disconnected, replace the thermistor.

(c) IC5 or microcomputer may be faulty.

③ Error code E7

The outdoor heat exchanger sensor is short-circuited.

(a) Check whether the outdoor unit pipe temperature thermistor is short-circuited.
→ Replace the thermistor if necessary.

(b) IC5 or microcomputer may be faulty.

② Primary circuit of the power supply

Is there 220/240V between terminals 2 and 3 on the terminal board ?

Yes
No → The power is not supplied to the unit or wiring is wrong.

Is 220/240V applied to both ends of the varistor (VA1) ?

Yes
No → The fuse has blown.

* Remove the connector from the power transformer to measure the resistance across the primary side of the transformer.

Is the resistance value infinite(∞) ?

Yes
No → The power primary circuit is working normally.

The voltage selector socket has been removed or the thermal fuse has blown.

③ Secondary circuit of the power supply

Is there about 13 to 15V between the pins 1 and 2 of CN2 ?

Yes
No → The power transformer is faulty.

Is there 12 to 14V at the both ends of C1 ?

Yes
No → D1 (S1VB10) faulty.

Is there about 11.5 to 13.5 at the both ends of C2 ?

Yes
No → D2 is disconnected.

Is the 5V output from IC2 ?

Yes
No → IC2 may be faulty

The voltage at the secondary circuit of the power supply is normal.

(14) Reset circuit

Measure the output voltage of pin2 of the microcomputer.

If it is 5V, the reset circuit is working normally.

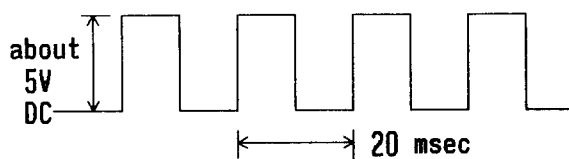
If it is not 5V, reinsert the power plug to measure the output voltage again.

If the voltmeter does not read 5V, C10 or C11 may be short-circuited, or R12 may be disconnected.

(15) Power interrupt circuit failuer

Use an oscilloscope to check the output waveform of pin 2 of IC4

If the waveform does not match that shown in the below figure, IC4 may be faulty, R1 disconnected, or C23 short-circuited.

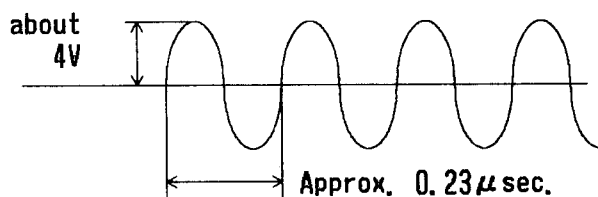


If the output waveform of pin 24 of the microcomputer does not match that shown in the above figure, IC8 may be faulty, R2 may be disconnected, or C5 may be short-circuited.

(16) Ceramic resonator

Use an oscilloscope to check the output waveform between pins 26 and 27 of the microcomputer.

If the waveform does not match that shown in the below figure, the ceramic resonator (X1) is faulty.



(17) Power relay output circuit

(The compressor does not operate)

Is 5V output from pin 20 of the microcomputer when the compressor on condition ?

Yes | No → The microcomputer is faulty.

↓
Is there about 12V between pin13 and 8 of IC7?

Yes | No → IC7 is faulty.

↓
Check the power relay, electromagnetic switch and the compressor OCR.

(18) Fan motor output circuit.

(The outdoor unit fan does not rotate)

Is 5V output from pin 22 of the microcomputer when the fan motor on condition ?

Yes | No → The microcomputer is faulty.

↓
Is there about 12V between pin15 and 8 of IC7?

Yes | No → IC7 is faulty.

↓
Check K2, outdoor temperature thermistor, fan motor capacitor, and relay.

(19) Four-way valve circuit

(The heating does not work)

Is 5V output from pin 21 of the microcomputer when the four-way valve on condition?

Yes | No → The microcomputer is faulty.

↓
Is there about 12V between pin14 and 8 of IC7?

Yes | No → IC7 is faulty.

↓
Check K2, and solenoid coil for the four-way valve.

(20) The de-frost does not work

If the outdoor heat exchanger temperature thermistor is working normally, IC5 or microcomputer may be faulty, or C16 may be short-circuited.

PRECAUTIONS ON INSTALLATION

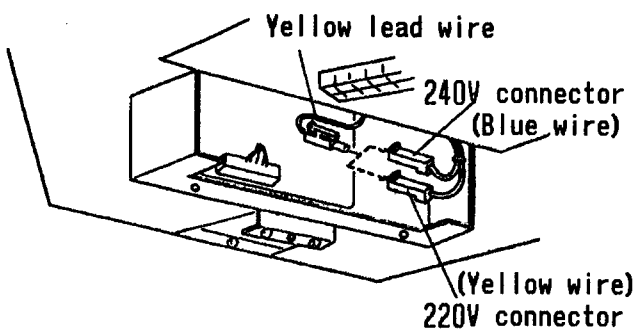
1. VOLTAGE SWITCHING OVER

Indoor unit needs socket switching over depending on power supply voltage.

The primary side of the power transformer is wired for use with a 240 V power supply.

The wiring has to be changed to use a 220 V power supply.

Refer to the wiring diagram for details.



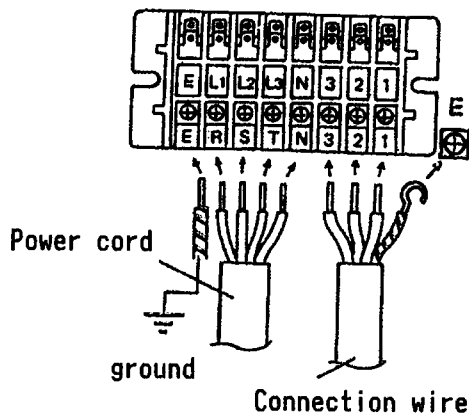
2. POWER SUPPLY

- (1) The three-phase power supply is supplied to the outdoor unit.

While, to the indoor unit, power is supplied with single-phase from the outdoor unit.

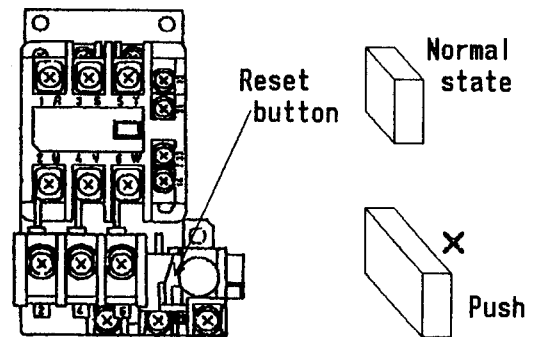
- * The N-line of the power supply must not be connected incorrectly.

If connected incorrectly, the fuse for the outdoor unit and fuse/varistor for the indoor unit are damaged.



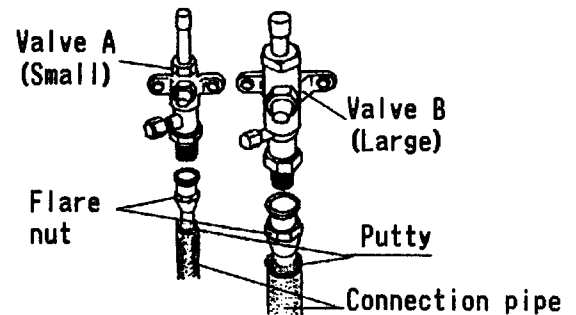
- (2) Thermal relay reset button of the outdoor unit

Check whether the reset button is not pushed out when installing.
(It is in a state of keeping pressed during operation.)



3. SEAL FOR THE CONNECTION PIPES

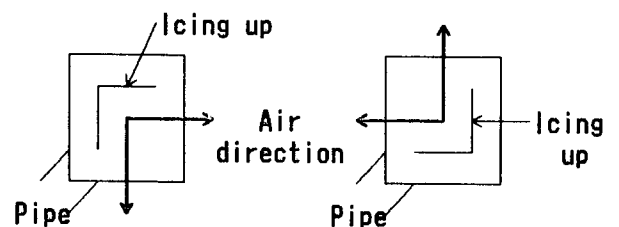
Seal with the accessory black putty so that water does not enter at the top of the pipe insulation installed to the connection pipe.



4. RESTRICTION OF AIR DISCHARGE DIRECTION

The air discharge direction of the indoor unit can be selected for 4, 3, and 2 way direction by fitting the blower cover insulation attached in the Grille Assy.

- * 2-way discharge directions mentioned in below figure should not set, because it results in performance drop and evaporator icing up.

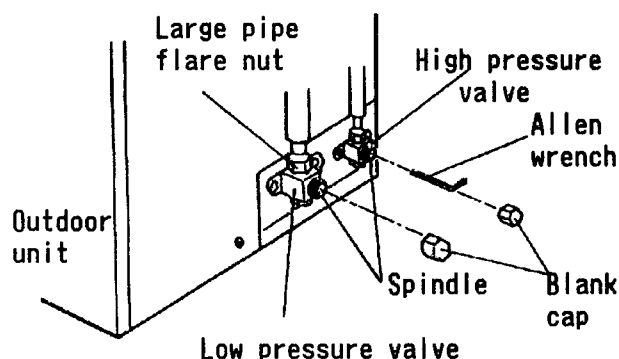


5. AIR PURGE

Purge the air from the indoor unit and pipe as follows.

* 25000BTU reverse model

- (1) Tighten the flare nut to the specified torque except large pipe flare nut for outdoor unit. (See below table)
(Large pipe flare nut for outdoor unit should be tightened by hand.)
- (2) Remove the blank cap of the two valves attached to the outdoor unit.
- (3) Loosen the spindle of the high pressure valve 1/4 to 1/2 turn with an allen wrench and blow out the air inside the piping and indoor unit.
- (4) After about 10 seconds, tighten the large pipe flare nut to the specified torque.

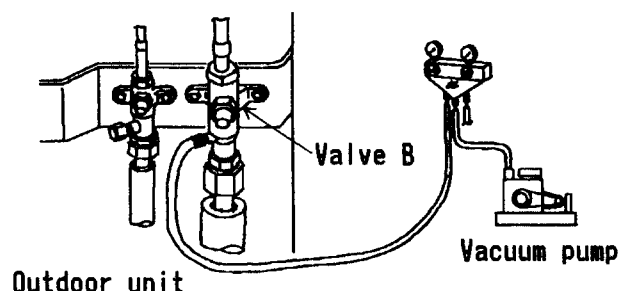


- (5) Open the spindle of the high pressure valve and low pressure valve at the specified torque. (See below table)
- (6) Tighten the cap of the two valves at the specified torque. (See below table)

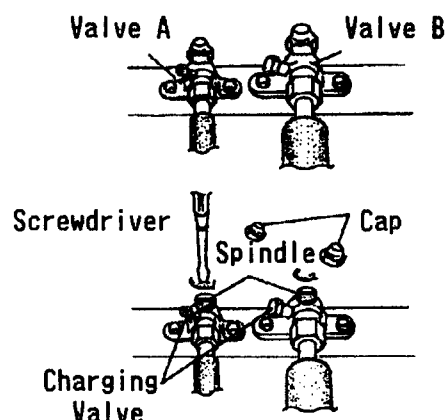
		Tightening torque
Spindle	Large	100 ~ 120 kgf-cm
	Small	70 ~ 90 kgf-cm
Blank cap	Large	280 ~ 320 kgf-cm
	Small	200 ~ 250 kgf-cm
Flare nut	Large	310 ~ 350 kgf-cm
	Small	750 ~ 800 kgf-cm

* 36000BTU cooling model

- (1) Purge the air inside the indoor unit and the piping to a pressure of 1.5mmHg abs or less from the charging valve with a vacuume pump.

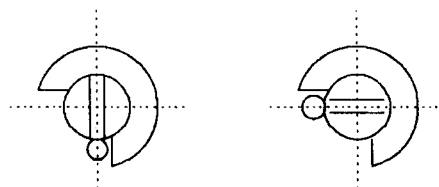


- (2) After purging the air inside the indoor unit and the piping, remove the cap of the two valves.



- (3) Open the spindle of the two valves from the closed state.

Open valve state Closed valve state



- (4) Tighten the cap of the two valves to the specified torque. (See below table)

	Tightening torque	
	Large valve	Small valve
Spindle	25 kgf-cm (2.45 N-m) or less	
Cap	150~200kgf-cm (14.7~19.6 N-m)	

6. REFRIGERANT COLLECTION AND CHARGING

6-(a) COLLECTION

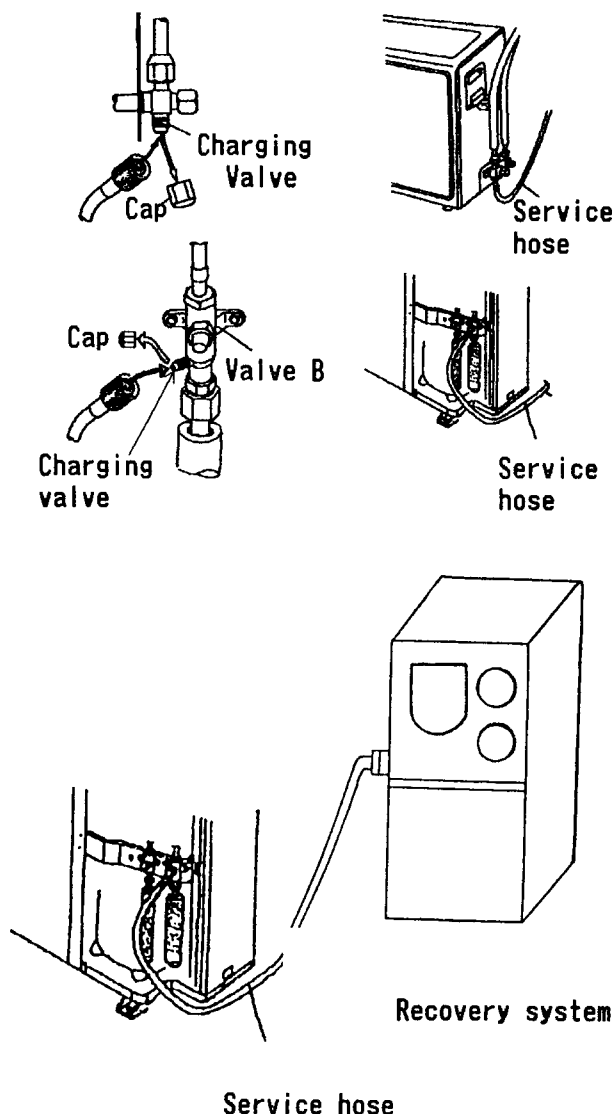
When the pipe must be unbrazed to repair the refrigeration cycle, carefully collect the refrigerant as follows.

Note : Since there is the danger of frostbite if the refrigerant is touched directly, perform this work carefully.

- (1) Remove the cap of the charging valve, and connect the refrigerant collecting device to the charging valve.
- (2) Collect the refrigerant in the unit into the collecting device or a special tank. (The collected refrigerant cannot be used unless it is refined.)

【 CAUTION 】

When collecting the refrigerant, observe the environment protection regulations and laws in each district.



6-(b) CHARGING

To charge the refrigerant, proceed as described below.

- (1) Check that the refrigeration cycle is connected perfectly.
- (2) Evacuate the cycle to a vacuum from the charging valves connection to the outdoor unit.
- (3) After evacuation, charge the refrigerant from the large pipe charging valve.

The charging amount is shown in the following tables. (Including the amount of additional charge.)

* 25000BTU cooling model

16 ft (5 m)	33 ft (10 m)	66 ft (20 m)	99 ft (30 m)	115 ft (35 m)
2030g 71.6oz	2090g 73.7oz	2210g 78.0oz	2330g 82.2oz	2390g 84.3oz

$$R = 2030g (71.6oz) + (L-5) \times 12g (0.42oz)$$

R : Charging amount of refrigerant
L : Pipe length (m)

The maximum length of the piping is 115ft (35m). Limit the height difference between indoor and outdoor units within 99ft (30m).

* 25000BTU reverse model

16 ft (5 m)	33 ft (10 m)	66 ft (20 m)	99 ft (30 m)	115 ft (35 m)
2070g 73.1oz	2240g 79.0oz	2580g 91.0oz	2920g 103.0oz	3090g 109.0oz

$$R = 2070g (73.1oz) + (L-5) \times 34g (1.20oz)$$

R : Charging amount of refrigerant
L : Pipe length (m)

The maximum length of the piping is 115ft (35m). Limit the height difference between indoor and outdoor units within 99ft (30m).

* 36000BTU cooling model ("GENERAL" BRAND)

33 ft (10 m)	66 ft (20 m)	99 ft (30 m)	132 ft (40 m)	165 ft (50 m)
2135g 75.3oz	2405g 84.8oz	2675g 94.4oz	2945g 103.9oz	3215g 113.4oz

$$R = 2000g(70.6oz) + (L-5) \times 27g(0.95oz)$$

R : Charging amount of refrigerant

L : Pipe length (m)

The maximum length of the piping is 165ft (50m). Limit the height difference between indoor and outdoor units within 99ft(30m).

*** 36000BTU cooling model ("FUJITSU" BRAND)**

33 ft (10 m)	66 ft (20 m)	99 ft (30 m)	132 ft (40 m)	165 ft (50 m)
2285g 80.6oz	2555g 90.1oz	2825g 99.7oz	3095g 109.2oz	3365g 118.7oz

$$R = 2150g(75.9oz) + (L-5) \times 27g(0.95oz)$$

R : Charging amount of refrigerant

L : Pipe length (m)

The maximum length of the piping is 165ft (50m). Limit the height difference between indoor and outdoor units within 99ft(30m).

*** 36000BTU Reverse model**

*** 45000BTU Cooling model**

*** 45000BTU Reverse model
("GENERAL" & "FUJITSU" BRAND)**

33 ft (10 m)	66 ft (20 m)	99 ft (30 m)	132 ft (40 m)	165 ft (50 m)
3400g 119.9oz	3400g 119.9oz	3800g 134.0oz	4200g 148.2oz	4600g 162.3oz

$$R = 3400g(119.9oz) + (L-20) \times 40g(1.41oz)$$

R : Charging amount of refrigerant

L : Pipe length (m)

The maximum length of the piping is 165ft (50m). Limit the height difference between indoor and outdoor units within 99ft(30m).

6-(c) REFRIGERANT ADDITIONAL CHARGE

Refrigerant suitable for a piping length of 5m is charged in the outdoor unit at the factory.

When the piping is longer than 5m, additional refrigerant charging is necessary. For the additional amount, see the table below.

*** 25000BTU cooling model**

16 ft (5 m)	33 ft (10 m)	66 ft (20 m)	99 ft (30 m)	115 ft (35 m)
None	60g 2.1oz	180g 6.3oz	300g 10.6oz	360g 12.7oz

That is, between 6m and 35m, when using a connection pipe other than that in the above table, charge additional refrigerant with 12g (0.42 oz) /3.3ft (1m).

*** 25000BTU reverse model**

16 ft (5 m)	33 ft (10 m)	66 ft (20 m)	99 ft (30 m)	115 ft (35 m)
None	170g 6.0oz	510g 18.0oz	850g 30.0oz	1020g 36.0oz

That is, between 6m and 35m, when using a connection pipe other than that in the above table, charge additional refrigerant with 34g (1.20 oz) /3.3ft (1m).

*** 36000BTU Cooling model**

33 ft (10 m)	66 ft (20 m)	99 ft (30 m)	132 ft (40 m)	165 ft (50 m)
135g 4.8oz	405g 14.3oz	765g 23.8oz	945g 33.3oz	1215g 42.9oz

That is, between 6m and 50m, when using a connection pipe other than that in the above table, charge additional refrigerant with 27g (0.95 oz) /3.3ft (1m).

*** 36000BTU Reverse model**

*** 45000BTU Cooling model**

*** 45000BTU Reverse model**

33 ft (10 m)	66 ft (20 m)	99 ft (30 m)	132 ft (40 m)	165 ft (50 m)
None	None	400g 14.1oz	800g 28.2oz	1200g 42.3oz

That is, between 21m and 50m, when using a connection pipe other than that in the above table, charge additional refrigerant with 40g (1.41 oz) /3.3ft (1m).

*** Caution :-**

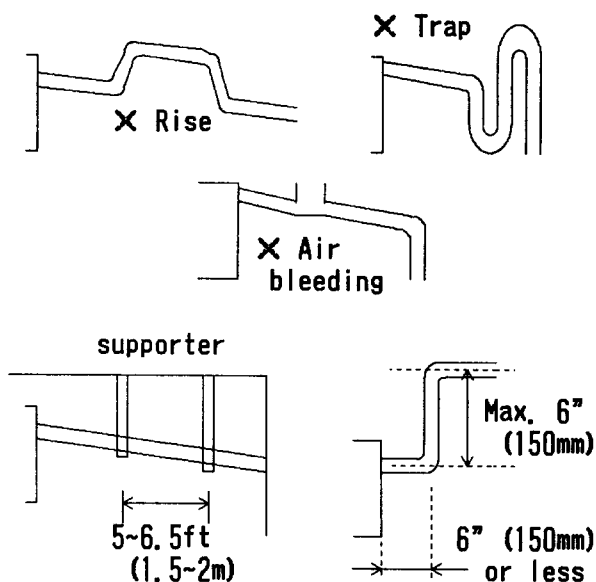
① When charging the refrigerant, always use a measuring cylinder.

② Add refrigerant from the charging valve after the completion of the work.

- ③ Do not operate the compressor at the first of the charging. However, the compressor can be operated if no more refrigerant will enter the cycle.

7. DRAIN PIPE INSTALLATION

- (1) Install the drain pipe with downward gradient (1/50~1/100) and so there are no rise or traps in the pipe.
- (2) Use general hard polyvinyl chloride pipe [outside diameter 1-1/4" (32mm)] and connect it with adhesive so that there are no water leakage.
- (3) When the pipe is long, install supporters.
- (4) Do not perform air bleeding.
- (5) Always heat insulate the indoor side of the drain pipe.
- (6) When desiring a high drain pipe height raise it up to 6" (150mm) within a range of 6" (150mm) from the body. A rise dimension over this range will cause water leakage.



8. PUMP DOWN

When the connection pipe must be disconnected or to move the air conditioning unit to different place, the refrigerant in the indoor unit and pipes should be drained into the outdoor unit. This procedure is called "pump down".

- (1) Fully close the valve spindle of the small pipe valve for the outdoor unit.
- (2) Connect the charging valve of the large pipe valve for the outdoor unit to the

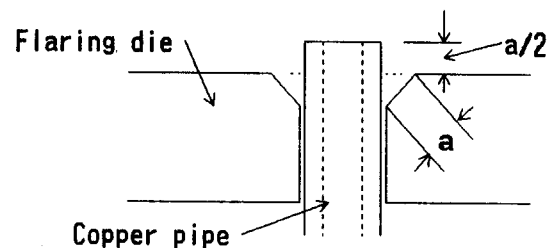
gauge manifold with a charge hose.

- (3) Slightly open the low pressure valve of the gauge manifold to discharge the air from the charge hose, and close the valve.
- (4) While running the air conditioner, close the large pipe valve when the low pressure gauge reads 0.5kg/cm², and stop the air conditioner immediately.
- (5) After disconnecting the pipes, attach the screw caps and tighten securely the flare nut.

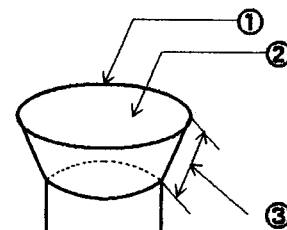
9. CONNECTING THE PIPING

- (1) Flaring of pipe
 - (a) Cut the connecting pipe to the necessary length with a pipe cutter.
 - (b) Hold the pipe downward so that cuttings will not enter the pipe, and remove the burrs.
 - (c) Insert the flare nut onto the pipe and flare the pipe with a flaring tool.

* The below figure shows the optimum pipe position to make flare.



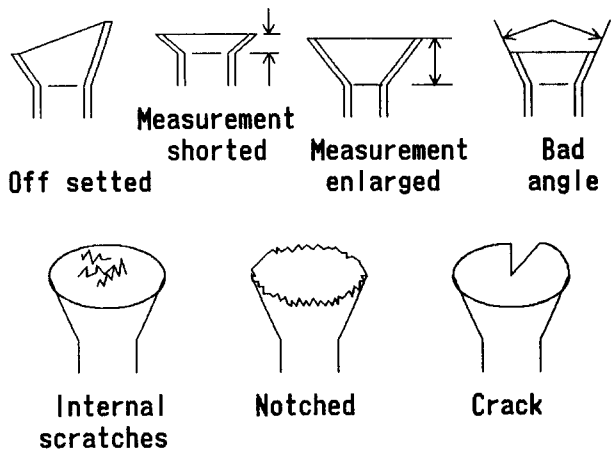
* The flare part shall be as shown below.



- ① Notch must not exist on top edge.
- ② Even luster inside the flare pipe can be observed and there shall not be scratches.
- ③ Circumference shall be in even length.

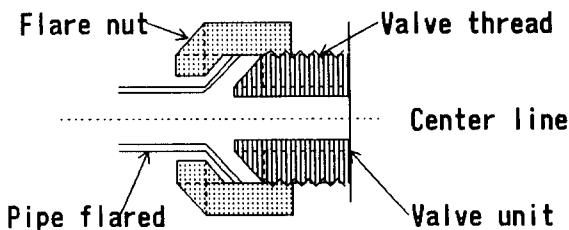
* Poor flaring

The figure shown below bring gas leakage.



(2) Flare nut tightening

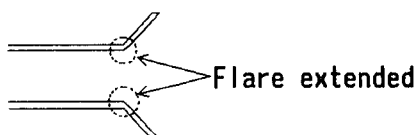
- ① As shown in the below figure, adjust the pipe so that the center line of the pipe set to that of the valve and then tighten the flare nut by hands. (Tightening the nut with a spanner initially causes the thread to damage and gas leakage.)



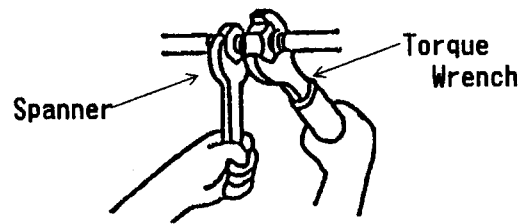
- ② Tighten the flare nut to the following specified torque by using 'Torque Wrench' to prevent the pipe damage and gas leak.

		Tightening torque
25000BTU MODEL	Small pipe	310 ~350 kgf-cm
	Large pipe	750 ~800 kgf-cm
36000BTU & 45000BTU MODEL	Small pipe	310 ~350 kgf-cm
	Large pipe	800 ~1000kgf-cm

- ③ The flare part is extended and gas leak may be occurred, if excessive force is applied to tighten the nut as shown in the below figure.



- ④ Tighten the flare nut on the indoor unit side should be done with 2 spanners as shown in the below figure.



(3) Gas leakage check

After tightening the flare nut, be sure to check the gas leakage with a gas leak detector.

- (4) When installing, take care of the following points.

① DRYING

- Never allow water and air to enter the unit.
- * Do not install piping on a rainy day.
- * To store copper pipe, cap the pipe.
- * Always perform air purge.

② CLEANING

- Never allow dust or dirt to enter the unit.
- * When removing burrs from the flare nut, point the pipe opening downward.
- * When passing the copper pipe through a through-hole, cover the opening with cap or vinyl tape.

③ AIR TIGHTNESS

- The coolant should not leak.
- * Connect the flare pipe so that it is tight.
- * Use two spanners to tighten the flare nuts.
- * Securely cover with caps.
- * Carefully check for air tightness with soapy water.

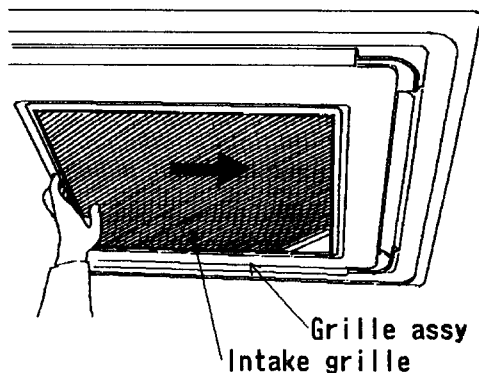
PARTS REMOVAL INSTRUCTIONS

(For 36000BTU/h cooling model)

INDOOR UNIT

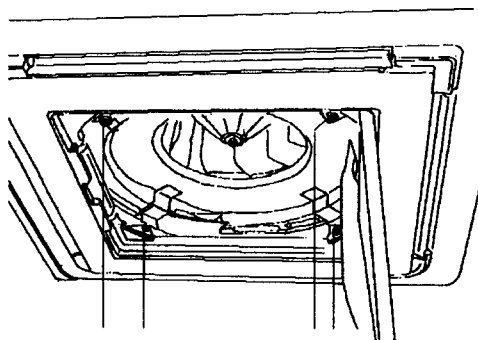
1. Intake Grille opening

- (1) Insert your hand at the grille handle section and slide the Intake Grille open.

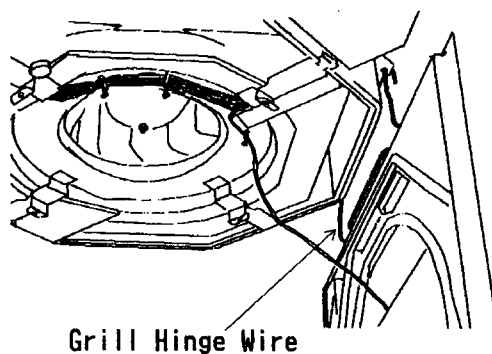


2. Grille Assy removal

- (1) Open the Intake Grille.
- (2) Remove the four mounting bolts holding the Grille Assy.

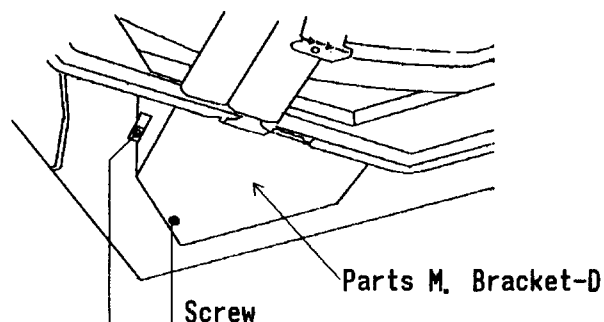


- (3) Release the grille hook temporary holding the Grille Assy.
- (4) Disconnect the Grille Hinge Wire suspending the grille from the indoor unit.

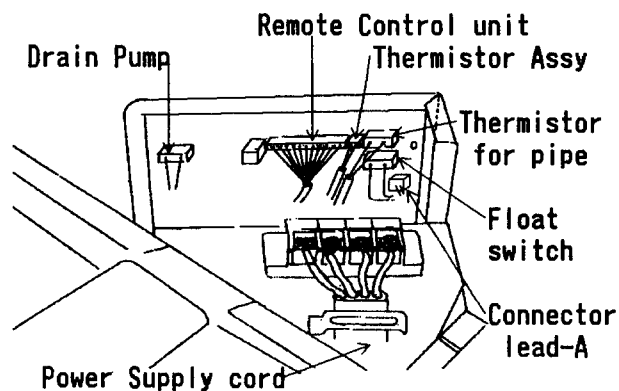


3. Parts M. bracket removal

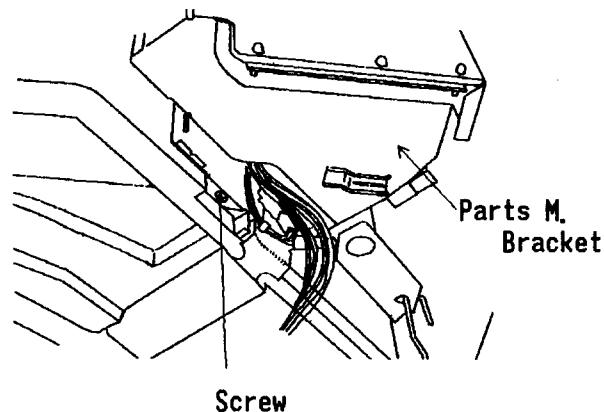
- (1) Remove the Parts M. Bracket-D (2 screws).



- (2) Remove the cord holder-C (1 screw) and Clamp No. 1763.
- (3) Remove the Remote control unit cord, Power supply cord (to outdoor unit), Thermistor assy, Thermistor for pipe cord, connector lead-A assy, Drain pump connecting cord, Float switch connecting cord, and Fan motor connecting cord from the Controller PCB Assy.

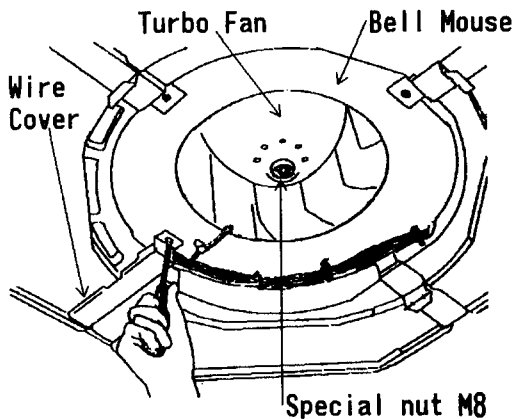


- (4) Remove the Parts M. Bracket (1 screw) by pulling it downward.



4. Turbo Fan removal

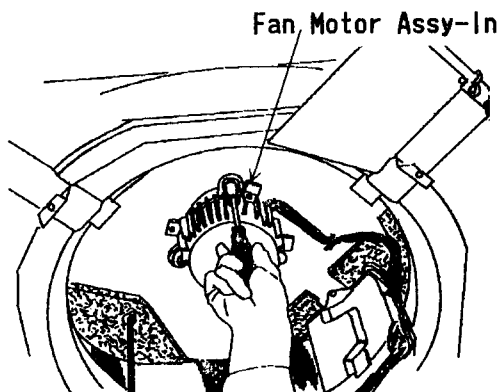
- (1) Remove the Wire Cover (1 screw).
- (2) Remove the Connector lead-A assy from the Clamp No. 1763 (1 place).
- (3) Remove the Bell Mouth (4 screws).
- (4) Remove the Special nut M8 by turning it clockwise, and remove the Turbo Fan by pulling it downward.



- * Remove the Turbo Fan by moving right and left. The drain pan support-A stops the Turbo Fan dropping suddenly.
- * When removing the Turbo Fan, be careful not to be injured by the Fan Motor shaft and Evaporator fins.

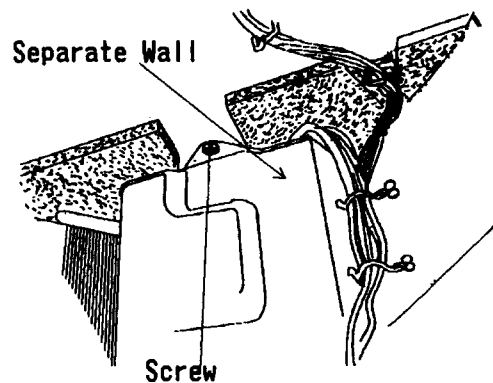
5. Fan Motor Assy-In removal

- (1) Remove the 2 lead clamps, and Ground lead-B (1 screw).
- (2) Remove the Hexagonal nut spring washer (3) holding the Fan Motor Assy-In.
- (3) Remove the Fan Motor Assy-In by pulling it downward.

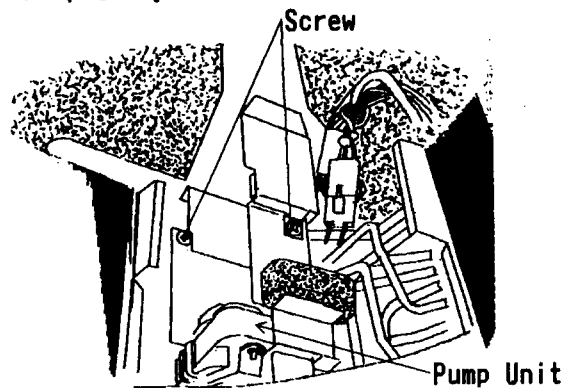


6. Pump unit removal

- (1) Remove the fan motor wires and Shield Tube Assy from the Clamp No. 1219.
- (2) Remove the Separate Wall (1 screw).

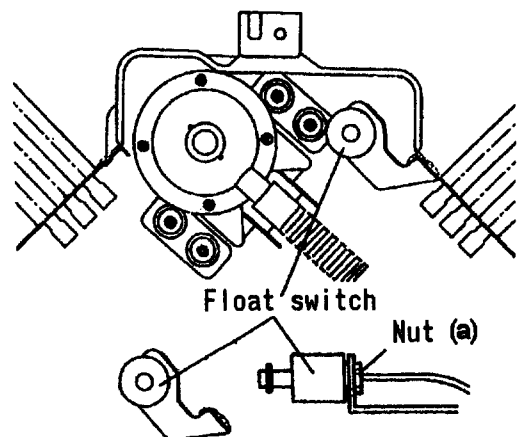


- (3) Remove the Shield Tube Assy from the wire clamp metal.
- (4) Remove the Pump Unit (2 screws) and cut the clamp-M holding the drain hose and pull out the drain hose from the Pump Unit.



7. Float switch removal

- (1) Remove the nut (a) holding the Float switch, and disconnect the Float switch connecting coad.



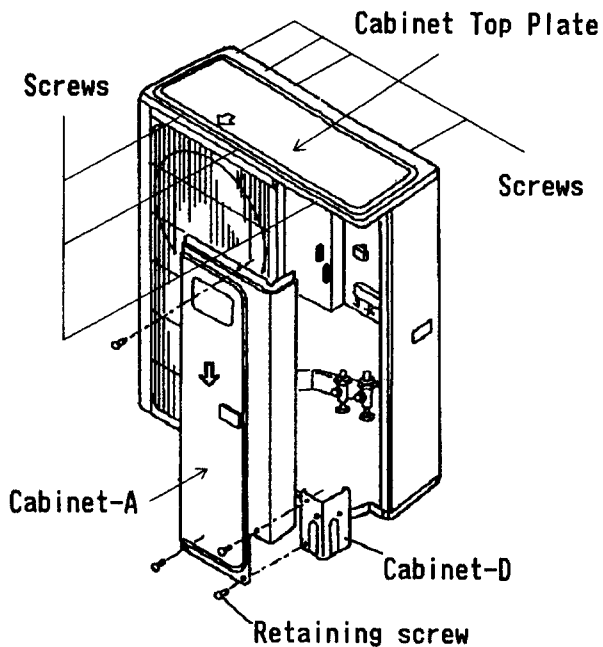
OUTDOOR UNIT

1. Cabinet-A and Cabinet-D removal

Remove the 4 retaining screws and remove the Cabinet-A by pulling it downward.

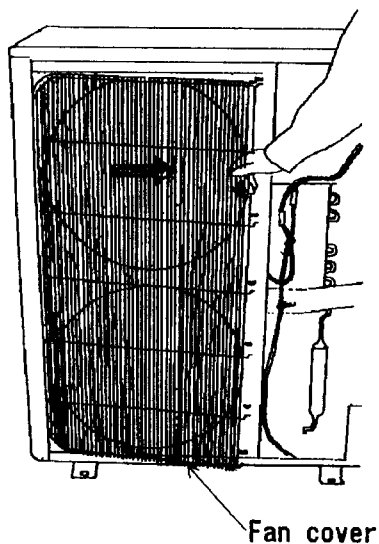
2. Cabinet Top Plate removal

Remove the 7 retaining screws and remove the Cabinet Top Plate.



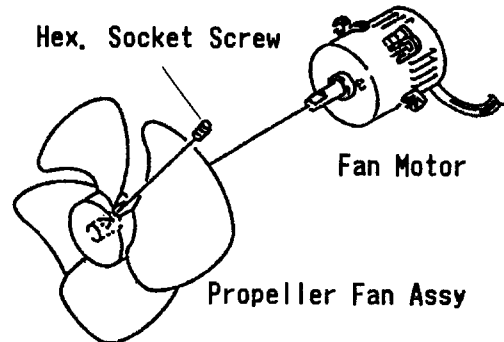
3. Fan Cover removal

- (1) Pull the right end of the Fan Cover forward to unhook the right side hooks.
- (2) Remove the Fan Cover by pulling it rightward as shown in the below figure.

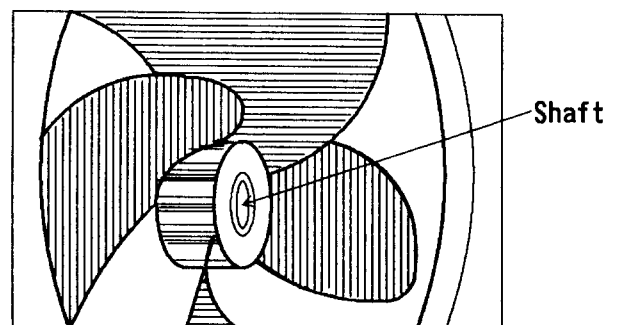
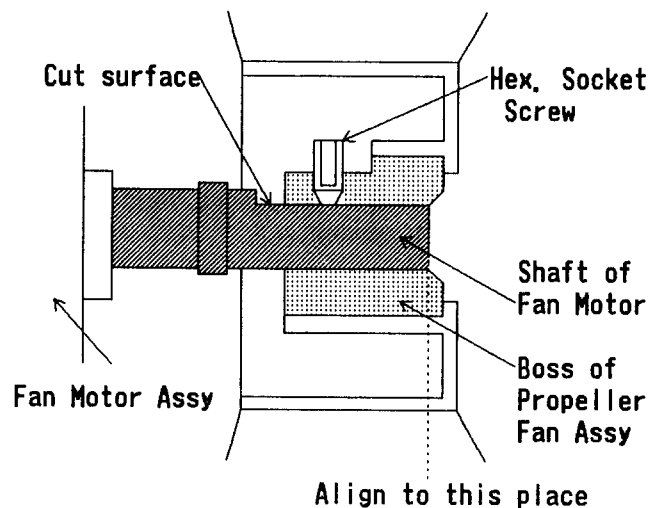


4. Propeller Fan Assy removal

Remove the Hex. Socket Screw and remove the Propeller Fan Assy.

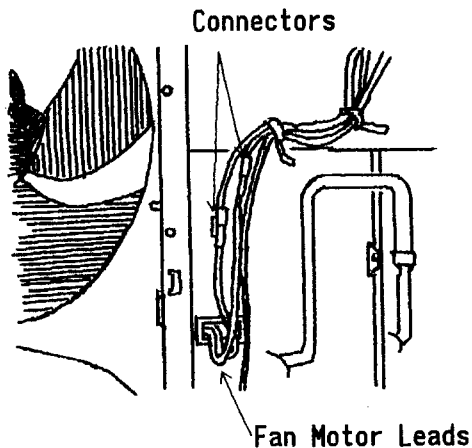


Reinstall the Propeller Fan Assy by inserting it into the motor shaft until the Hex. Socket Screw butts against the cut off part of the shaft, and tighten the Hex. Socket Screw while holding the Propeller Fan Assy near the shaft at the position at which the boss of the Propeller Fan Assy and the face of the motor shaft are on the same place. (If the Hex. Socket Screw is not tight, it will work loose and cause trouble, so be sure to tight it firmly.)

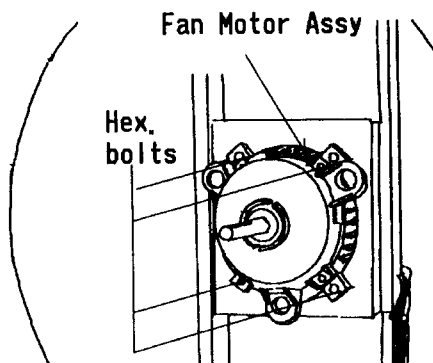


5. Fan Motor Assy removal

- (1) Disconnect the connectors of the Fan Motor Leads.
- (2) Remove the 4 clamps at the side of Motor Fixing Plate, and pull the leads to the fan motor side from the hole in the Separate Wall.

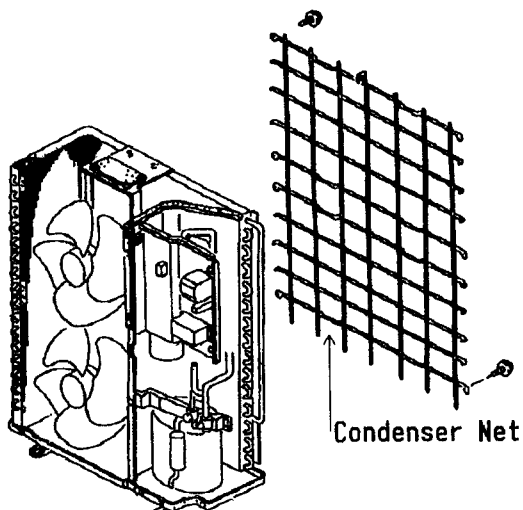


- (3) Remove the 4 hexagonal retaining bolts and remove the Fan Motor.



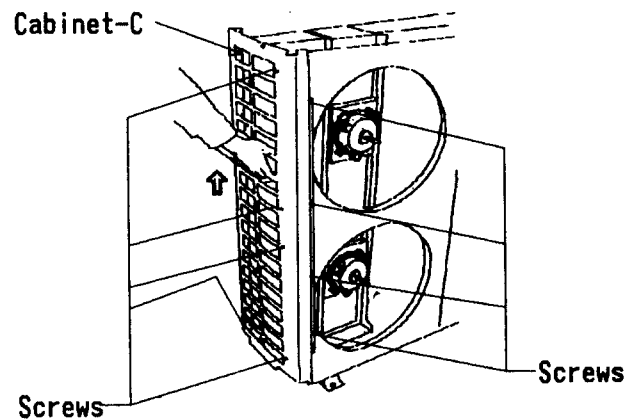
6. Condenser Net removal

Remove the 8 retaining screws and remove the Condenser Net.



7. Cabinet-C removal

- (1) Remove the 9 retaining screws.
- (2) Disengage the claw by lifting the Cabinet-C upward and remove the Cabinet-C

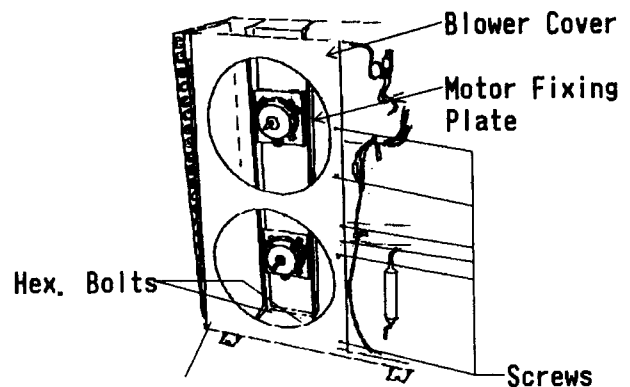


8. Blower Cover removal

Remove the 7 retaining screws and remove the Blower Cover.

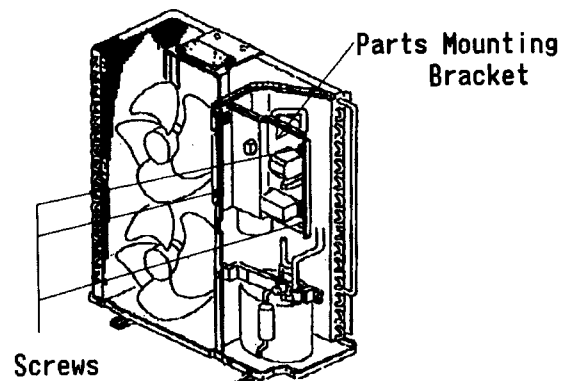
9. Motor Fixing Plate removal

Remove the 2 hexagonal retaining bolts and remove the Motor Fixing Plate.



10. Parts Mounting Bracket removal

- (1) Remove the 3 retaining screws.
- (2) Disengage the claw by lifting the Parts M. Bracket upward, and remove it.

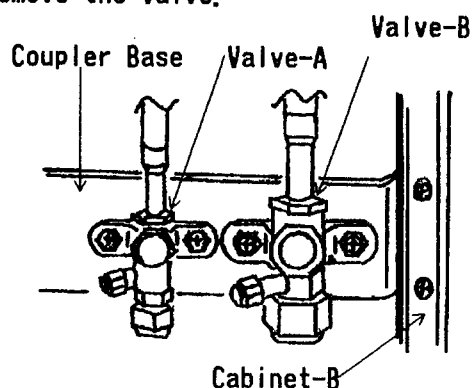


11. Coupler Base removal

Remove the 4 retaining screws and remove the Coupler Base.

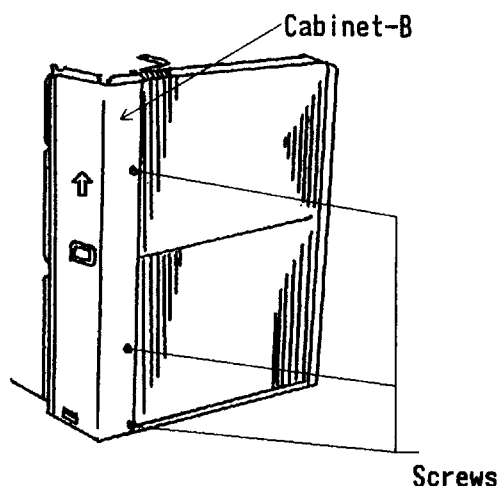
12. Valve removal

Remove the 4 hexagonal bolts and remove the Valve.



13. Cabinet-B removal

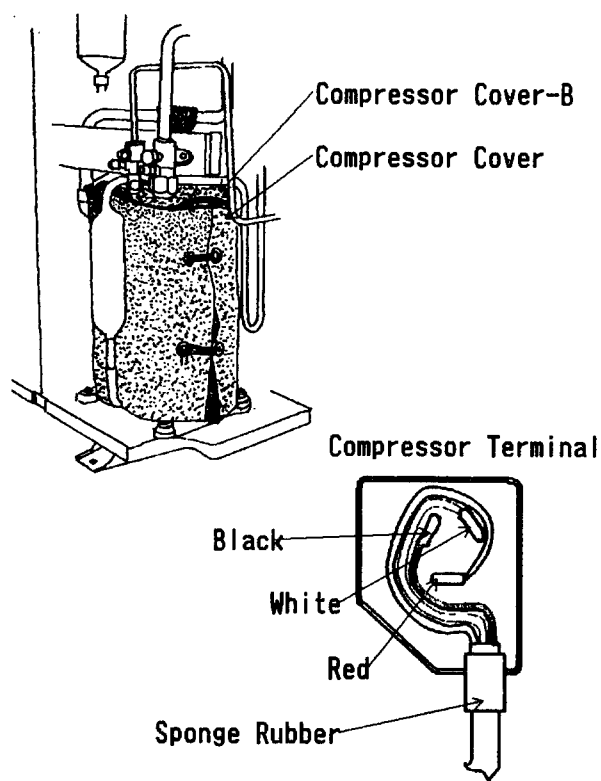
- (1) Remove the 3 retaining screws.
- (2) Disengage the claw by lifting the Cabinet-B upward, and remove the Cabinet-B.



14. Compressor Assy removal

- (1) Remove the Crankcase Heater. (Europe Version only)
- (2) Remove the Compressor Cover.
- (3) Remove the Terminal Cover and disconnect the wiring.
- (4) Remove the welding.
- (5) Remove the 4 hexagonal retaining nuts (with across flats 13mm), and remove the Compressor Assy.

<Compressor Assy removal>



15. Condenser Assy removal

- (1) Remove the welding.
- (2) Remove the 5 retaining screws and remove the Condenser Assy.

16. Separate Wall Assy removal

Remove the 4 retaining screws and remove the Separate Wall Assy.

