

3 CONNECTING THE PIPING

WARNING

- Do not use the existing piping and flare nuts.
- If the existing materials are used, the pressure inside the refrigerant cycle will rise and cause leakage, injury, etc. (Use the special R410A materials.)

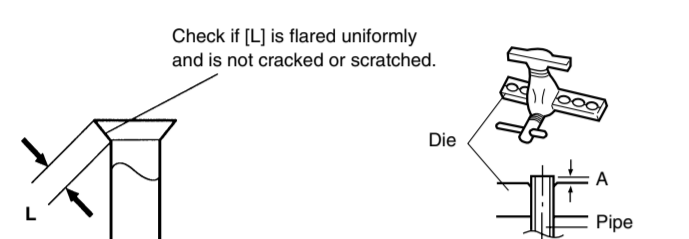
CAUTION

- Do not use mineral oil on flared part. Prevent mineral oil from getting into the system as this would reduce the lifetime of the units.
- While welding the pipes, be sure to blow dry nitrogen gas through them.
- The maximum lengths of this product are shown in table 2. If the units are further apart than this, correct operation can not be guaranteed.

1. FLARING

- Cut the connection pipe to the necessary length with a pipe cutter.
- Hold the pipe downward so that cuttings will not enter the pipe and remove the burrs.
- Insert the flare nut (always use the flare nut attached to the indoor and outdoor units respectively) onto the pipe and perform the flare processing with a flare tool. Use the special R410A flare tool, or the conventional flare tool. When using the conventional flare tool, always use an allowance adjustment gauge and secure the A dimension shown in table 4.

Fig. 28



Pipe outside diameter	A (mm)
9.52 mm (3/8 in.)	0 to 0.5
15.88 mm (5/8 in.)	0 to 0.5

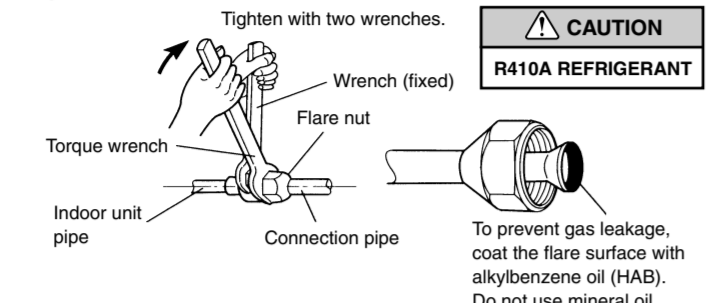
2. BENDING PIPES

- When bending the pipe, be careful not to crush it.
- To prevent crushing of the pipe, do not bend the pipe at a radius curvature of 100 mm or over.
- If the copper pipe is bent the pipe or pulled to often, it will become stiff. Do not bend the pipes more than three times at one place.

3. CONNECTION

- Install the outdoor unit wall cap (supplied with the optional installation set or procured at the site) to the wall hole pipe.
- Connect the outdoor unit and indoor unit piping.
- After matching the center of the flare surface and tightening the nut hand tight, tighten the nut to the specified tightening torque with a torque wrench.

Fig. 29



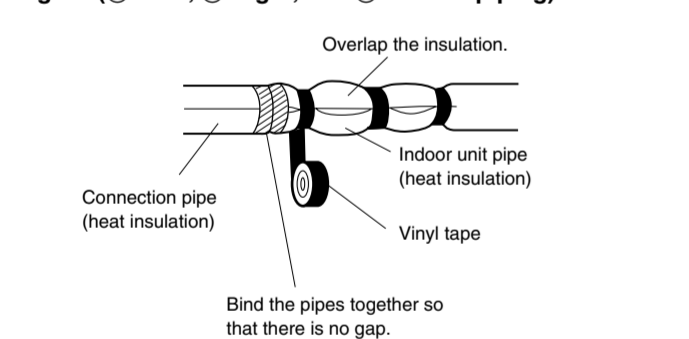
Flare nut	Tightening torque
9.52 mm (3/8 in.) dia.	33 to 42 N·m (330 to 420 kgf·cm)
15.88 mm (5/8 in.) dia.	63 to 77 N·m (630 to 770 kgf·cm)

6 FINISHING

1. CONNECTION PIPE, CORD AND DRAIN HOSE

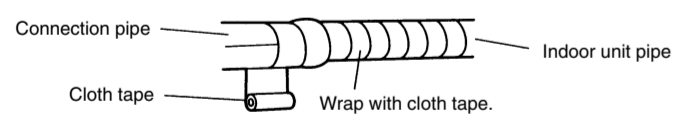
- Insulate between pipes.
 - For Rear, Right, and Bottom piping, overlap the connection pipe heat insulation and indoor unit pipe heat insulation and bind them with vinyl tape so that there is no gap (Fig. 40).
 - For Left rear and Left piping, butt the connection pipe heat insulation and indoor unit pipe heat insulation together and bind them with vinyl tape so that there is no gap (Fig. 41).

Fig. 40 (Rear, Right, and Bottom piping)



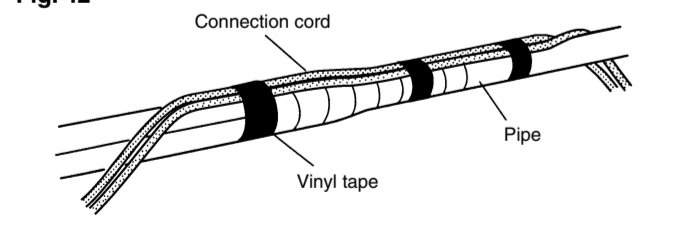
- For Left rear piping, Left piping and Center piping, wrap the area which accommodates the rear piping housing section with cloth tape.

Fig. 41 (Left rear piping, Left piping and Center piping)



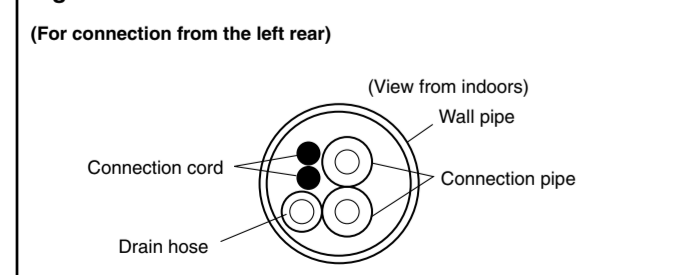
- For Left rear piping, Left piping and Center piping bind the connection cord to the top of the pipe with vinyl tape.

Fig. 42



- Check that:
- When connected from the left rear, the drain hose is at the bottom left of the wall pipe.

Fig. 43 (For connection from the left rear)



2. INSTALLING FINAL PARTS

- Temporarily fasten the connection cord along the connection pipe with vinyl tape. (Wrap to about 1/3 the width of the tape from the bottom of the pipe so that water does not enter.)
- Fasten the connection pipe to the outside wall with a saddle, etc.
- Fill the gap between the outside wall pipe hole and the pipe with sealant so that rain water and wind cannot blow in.

Fig. 44

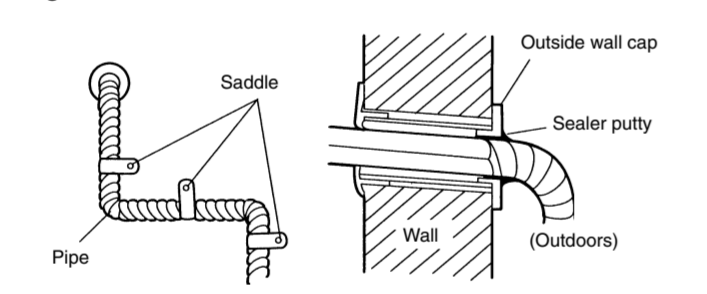
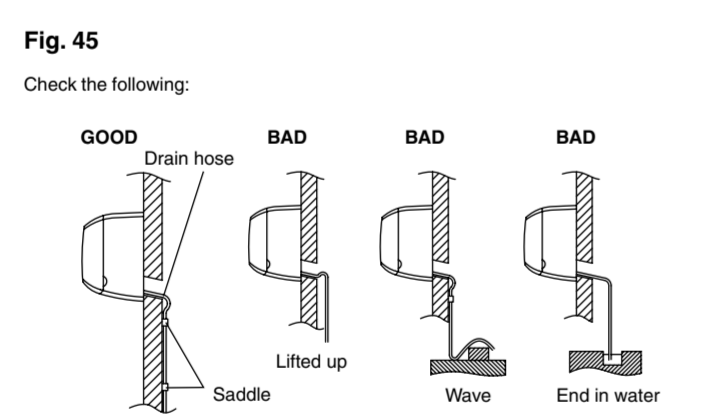


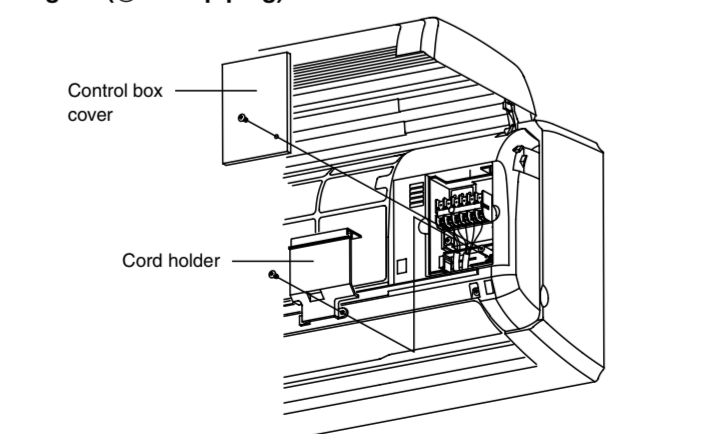
Fig. 45



2. INSTALLING FINAL PARTS

- Secure the cord holder with tapping screw (Fig. 46).
- Secure the control box cover and tapping screw (Fig. 46).
- Close the intake grille (Fig. 47).

Fig. 46 (Rear piping)



4 VACUUM PROCESS

CAUTION

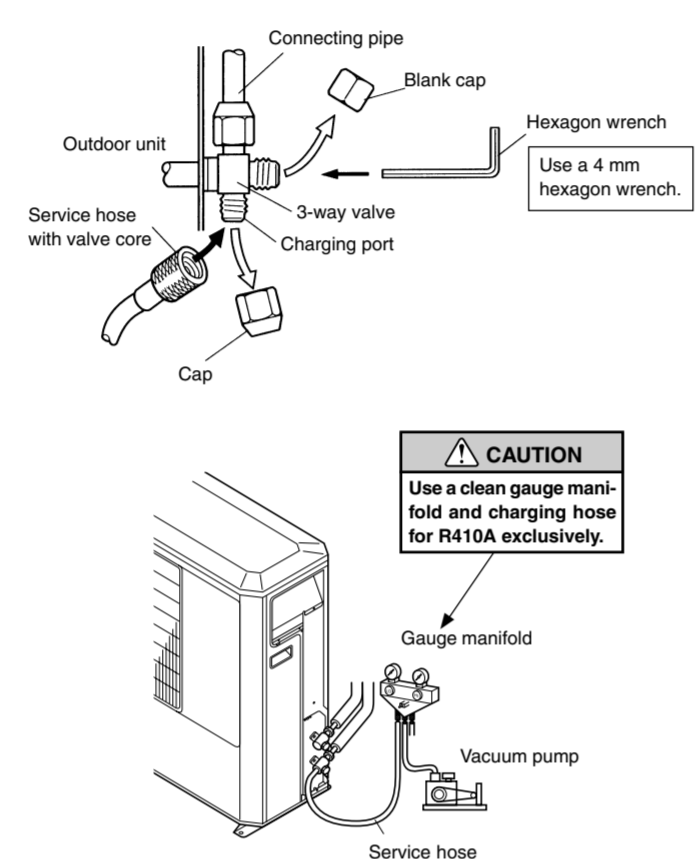
- Do not purge the air with refrigerants but use a vacuum pump to vacuum the installation! There is no extra refrigerant in the outdoor unit for air purging!
- Use a vacuum pump for R410A exclusively. Using the same vacuum pump for different refrigerants may damage the vacuum pump or the unit.

1. VACUUM

- Remove the cap, and connect the gauge manifold and the vacuum pump to the charging valve by the service hoses.
- Vacuum the indoor unit and the connecting pipes until the pressure gauge indicates -0.1 MPa (-76 cmHg).
- When -0.1 MPa (-76 cmHg) is reached, operate the vacuum pump for at least 15 minutes.
- Disconnect the service hoses and fit the cap to the charging valve to the specified torque.
- Remove the blank caps, and fully open the spindles of the 2-way and 3-way valves with a hexagon wrench (Torque: 6 to 7 N·m (60 to 70 kgf·cm)).
- Tighten the blank caps of the 2-way valve and 3-way valve to the specified torque.

Blank cap (2-way valve)	Tightening torque
Blank cap (2-way valve)	20 to 25 N·m (200 to 250 kgf·cm)
Blank cap (3-way valve)	30 to 35 N·m (300 to 350 kgf·cm)
Charging port cap	10 to 12 N·m (100 to 120 kgf·cm)

Fig. 30



2. ADDITIONAL CHARGE

Refrigerant suitable for a piping length of 10 m is charged in the outdoor unit at the factory. When the piping is longer than 10 m, additional charging is necessary. For the additional amount, see the table below.

Pipe length	10 m (33 ft)	15 m (49 ft)	20 m (66 ft)	25 m (82 ft)	
Additional refrigerant	None	250 g (8.8 oz)	500 g (17.6 oz)	750 g (26.5 oz)	50 g / 1 m (1.76 oz / 3.3 ft)

Between 10 m and 25 m, when using a connection pipe other than that in the table, charge additional refrigerant with 50 g (1.76 oz) / 1 m (3.3 ft) as the criteria.

CAUTION

- When moving and installing the air conditioner, do not mix gas other than the specified refrigerant (R410A) inside the refrigerant cycle.
- When charging the refrigerant R410A, always use an electronic balance for refrigerant charging (to measure the refrigerant by weight).
- When charging the refrigerant, take into account the slight change in the composition of the gas and liquid phases, and always charge from the liquid phase side whose composition is stable.
- Add refrigerant from the charging valve after the completion of the work.
- If the units are further apart than the maximum pipe length, correct operation can not be guaranteed.

3. GAS LEAKAGE INSPECTION

CAUTION

After connecting the piping, check the joints for gas leakage with gas leak detector.

5 ELECTRICAL WIRING

WARNING

- Before starting work, check that power is not being supplied to indoor unit and the outdoor unit.
- Match the terminal block numbers and connection cord colors of the indoor unit and the outdoor unit. Erroneous wiring may cause burning of the electric parts.
- Connect the connection cords firmly to the terminal block. Imperfect installation may cause a fire.
- Always fasten the outside covering of the connection cord with the cord clamp. (If the insulator is chafed, electric leakage may occur.)
- Always connect the ground wire.

HOW TO CONNECT WIRING TO THE TERMINALS

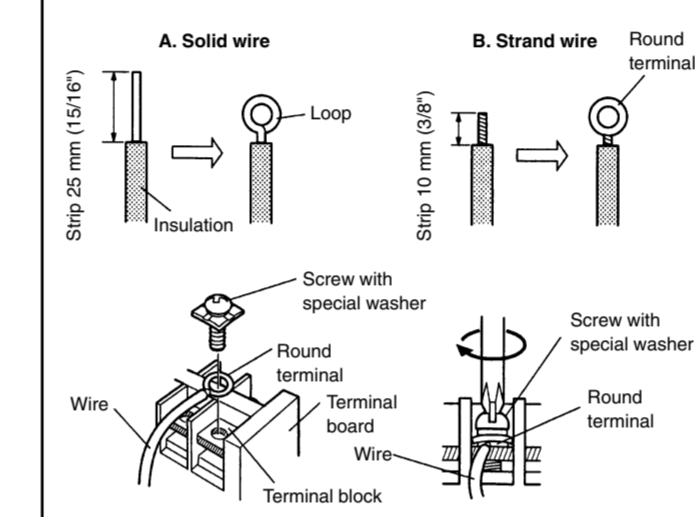
A. For solid core wiring (or F-cable)

- Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 25 mm (1 5/16") to expose the solid wire.
- Using a screwdriver, remove the terminal screw(s) on the terminal board.
- Using pliers, bend the solid wire to form a loop suitable for the terminal screw.
- Shape the loop wire properly, place it on the terminal board and tighten securely with the terminal screw using a screwdriver.

B. For strand wiring

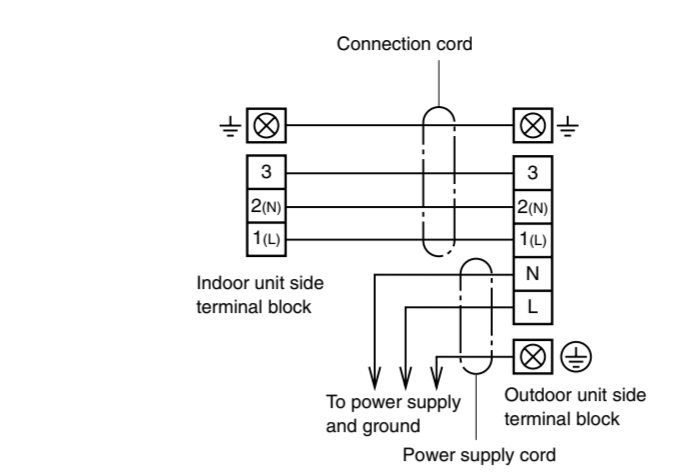
- Cut the wire end with a wire cutter or wire-cutting pliers, then strip the insulation to about 10 mm (3/8") to expose the strand wiring.
- Using a screwdriver, remove the terminal screw(s) on the terminal board.
- Using a round terminal fastener or pliers, securely clamp a round terminal to each stripped wire end.
- Position the round terminal wire, and replace and tighten the terminal screw using a screwdriver.

Fig. 31



1. CONNECTION DIAGRAM

Fig. 32



2. INDOOR UNIT SIDE

- Open the intake grille. Remove the tapping screw for the control box cover and remove the control box cover (Fig. 33).
- Remove the tapping screw and while rinding the cord holder hook, remove the cord holder (Fig. 34).
- Connect the end of the connection cord fully into the terminal block (Fig. 35).

Fig. 33

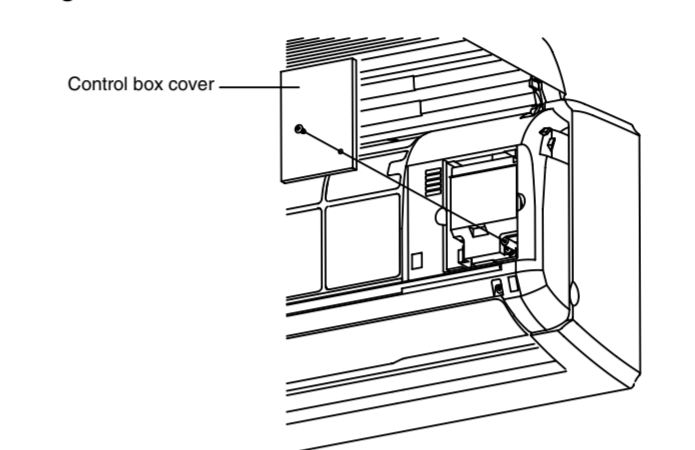


Fig. 34

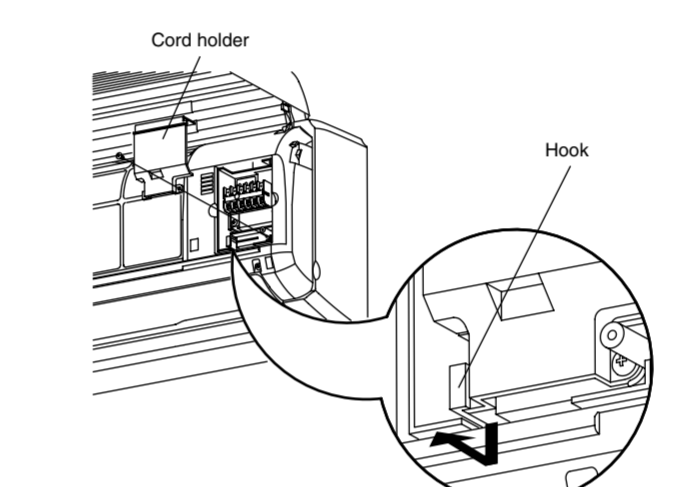
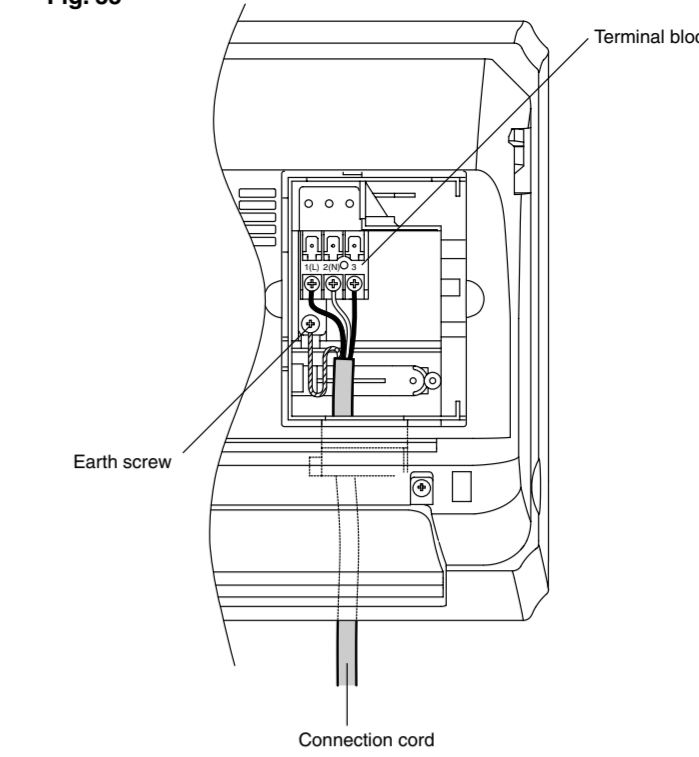


Fig. 35



3. OUTDOOR UNIT SIDE

- Process the end of the connection cords to the dimensions shown in Fig. 36.
- Connect the end of the connection cord fully into the terminal block and fasten with the screws.
- Fasten the sheath with a cord clamp (Fig. 36).
- Fasten the power supply cord and connection cord with a cable clip. (Fig. 38).
- Install the valve cover (Fig. 39).

Fig. 36

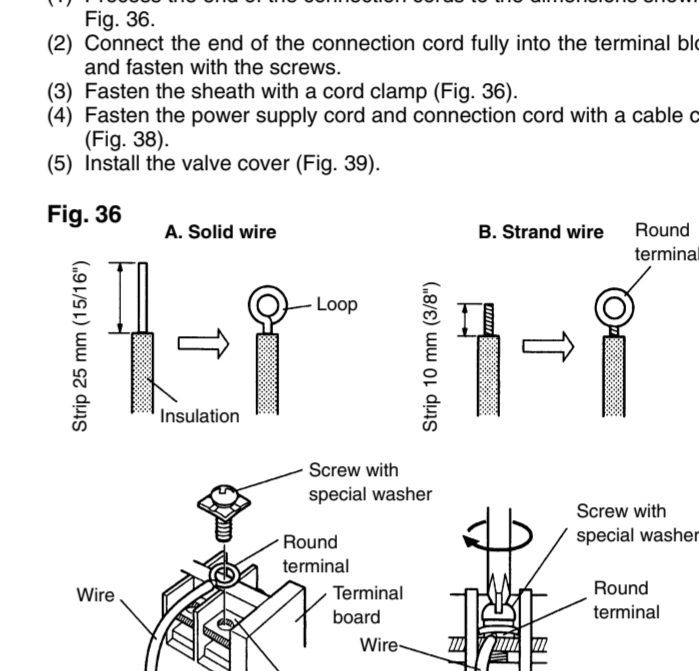


Fig. 37

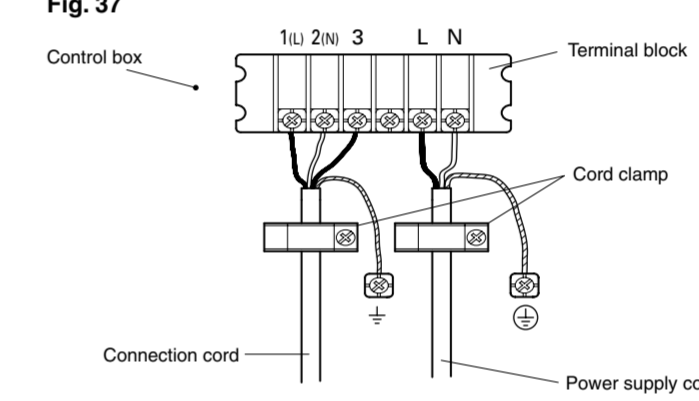
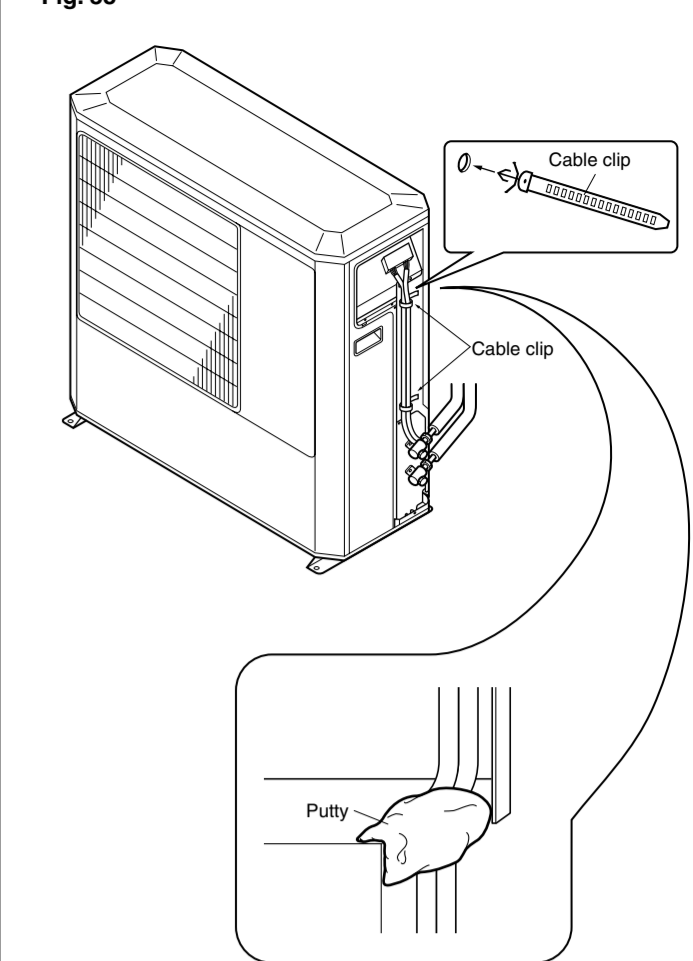
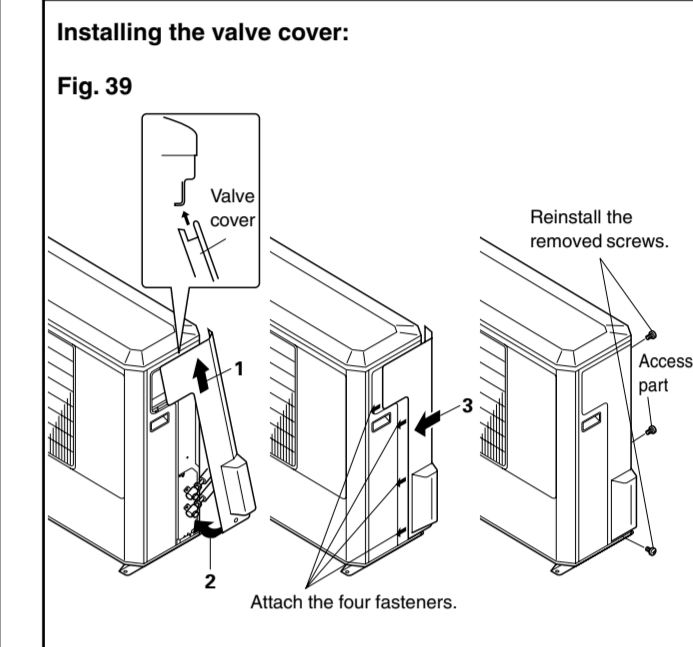


Fig. 38



Installing the valve cover:

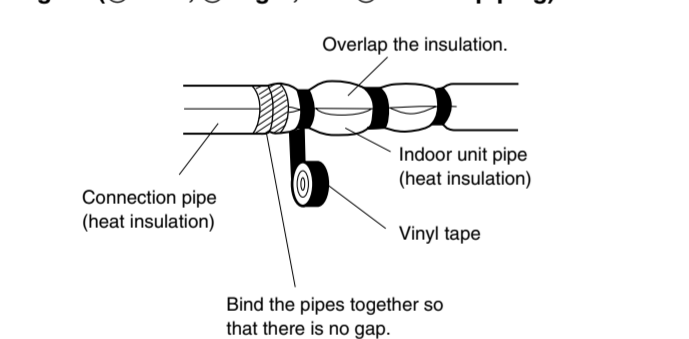


6 FINISHING

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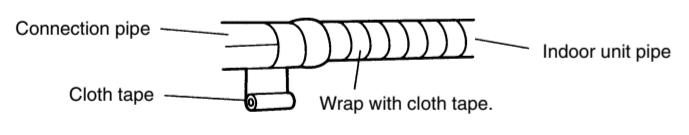
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Fig. 40 (Rear, Right, and Bottom piping)



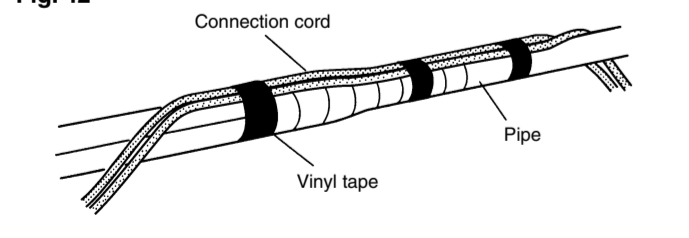
- For Left rear piping, Left piping and Center piping, wrap the area which accommodates the rear piping housing section with cloth tape.

Fig. 41 (Left rear piping, Left piping and Center piping)



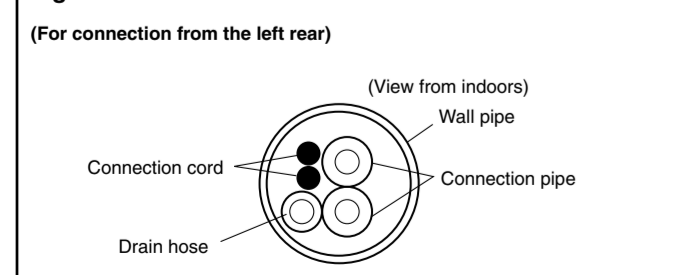
- For Left rear piping, Left piping and Center piping bind the connection cord to the top of the pipe with vinyl tape.

Fig. 42



- Check that:
- When connected from the left rear, the drain hose is at the bottom left of the wall pipe.

Fig. 43 (For connection from the left rear)



7 POWER

WARNING

- The rated voltage of this product is 220-240 V A.C. 50 Hz.
- Before turning on the verify that the voltage is within the 198 V to 264 V range.
- Always use a special branch circuit and install a special breaker to supply power to the room air conditioner.
- Use a circuit breaker matched to the capacity of the room air conditioner. (Install in accordance with standard)
- The circuit breaker is installed in the permanent wiring. Always use a circuit that can trip all the poles of the wiring and has an isolation distance of at least 3 mm between the contacts of each pole.
- Perform wiring work in accordance with standards so that the room air conditioner can be operated safely and positively.
- Install a leakage circuit breaker in accordance with the related laws and regulations and electric company standards.

CAUTION

- The power source capacity must be the sum of the room air conditioner current and the current of other electrical appliances. When the current contracted capacity is insufficient, change the contracted capacity.
- When the voltage is low and the air conditioner is difficult to start, contact the power company the voltage raised.

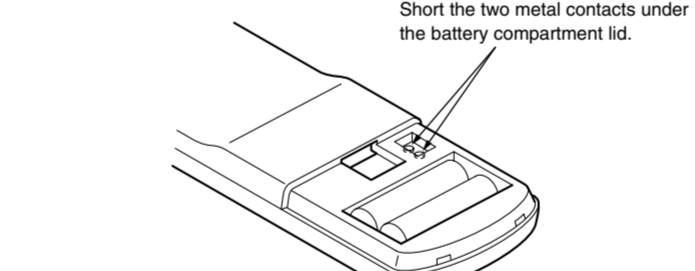
8 TEST RUNNING

CAUTION

Always turn on the power 4 hours prior to the start of the operation in order to ensure compressor protection.

- Perform test operation and check items 1 and 2 below.
- For the operation method, refer to the operating manual.
- The outdoor unit may not run, depending on the room temperature. In this case, the 'TEST RUN' signal is received during air conditioner operation (use a metallic object to short the two metal contacts under the battery compartment lid and send the 'TEST RUN' signal from the remote control unit).

Fig. 49



Operation can be checked by lighting and flashing of the display section OPERATION and TIMER lamps. Perform judgement in accordance with the following.

- Test running
 - When the air conditioner is run by pressing the remote control unit TEST RUN button, the OPERATION and TIMER lamps flash slowly at the same time.
 - If the breaker is tripped during the test operation due to insufficient current capacity, change the DIP switches on the circuit board to the settings shown in Table 8 below.

DIP-SW			CURRENT (MAX.)
1	2	3	
OFF	OFF	OFF	16.5 A
ON	OFF	OFF	14.0 A
OFF	ON	OFF	12.0 A
ON	ON	OFF	9.5 A

CAUTION

- Never set the 24,000 BTU model to the maximum current of 16.5 A. The protection devices will be activated and the unit will not operate properly.
- If the maximum current is reduced, cooling or heating performance will be reduced.

Fig. 50

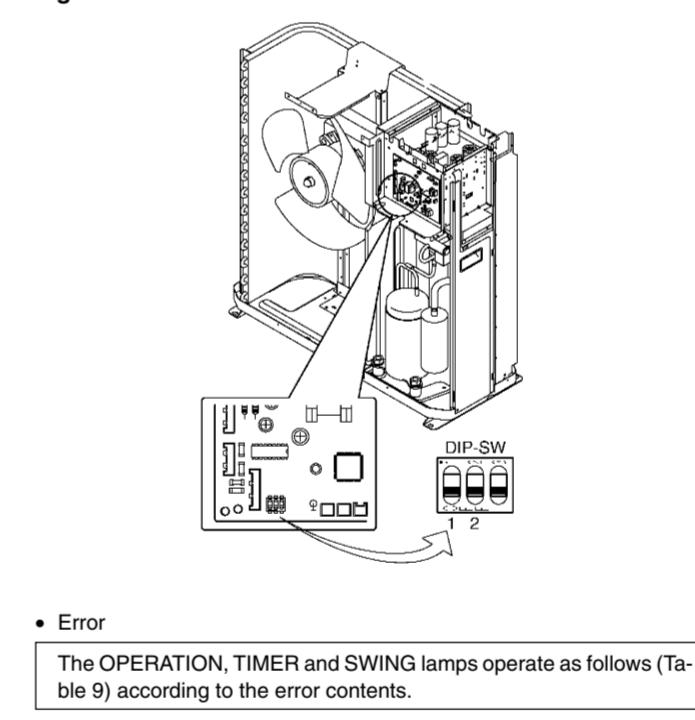


Table 9

Error contents	Error display		
	OPERATION (RED)	TIMER (GREEN)	SWING (ORANGE)
Indoor unit circuit board error	○	○	—
Indoor unit room temperature sensor wire opened	2 times ●	○	—
Indoor unit room temperature sensor wire short circuited	2 times ●	○	○
Indoor unit piping sensor wire opened	3 times ●	○	○
Indoor unit piping sensor short circuited	3 times ●	○	○
Indoor unit fan error	6 times ●	○	○
Outdoor unit circuit board error or miswiring between outdoor unit and indoor unit	5 times ●	○	○
Outdoor unit discharge temperature sensor error	○	5 times ●	—
Outdoor unit piping sensor	○	3 times ●	—
Outdoor unit outdoor temperature sensor error	○	4 times ●	—

○ : Fast flashing ● : Slow flashing — : Off

CHECK ITEMS

- INDOOR UNIT
 - Is operation of each button on the remote control unit normal?
 - Does each lamp light normally?
 - Do not air flow direction louvers operate normally?
 - Is the drain normal?
 - Is there any abnormal noise and vibration during operation?

(2) OUTDOOR UNIT

- Is there any abnormal noise and vibration during operation?
 - Will noise, wind, or drain water from the unit disturb the neighbors?
 - Is there any gas leakage?
- Do not operate the air conditioner in the test running state for a long time.
 - For the operation method, refer to the operating manual and perform operation check.

9 REMOTE CONTROL UNIT INSTALLATION

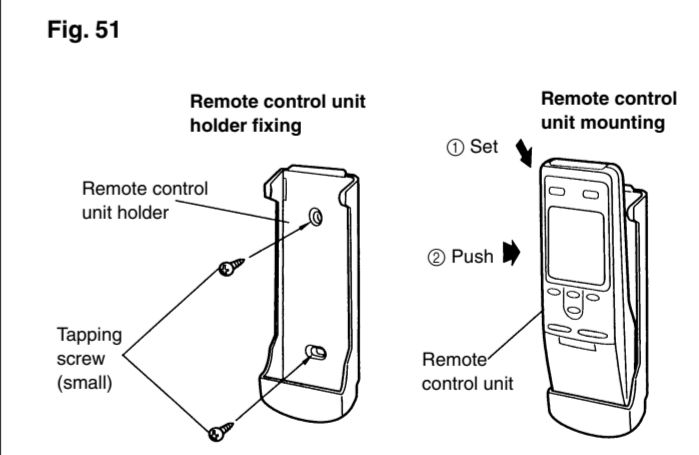
CAUTION

- Check that the indoor unit correctly receives the signal from the remote control unit, then install the remote control unit holder.
- Select the remote control unit holder selection site by paying careful attention to the following: Avoid places in direct sunlight. Select a place that will not be affected by the heat from a stove, etc.

1. REMOTE CONTROL UNIT HOLDER INSTALLATION

- Install the remote control unit with a distance of 7 m between the remote control unit and the photocell as the criteria. However, when installing the remote control unit, check that it operates positively.
- Install the remote control unit holder to a wall, pillar, etc. with the tapping screw (Fig. 51).

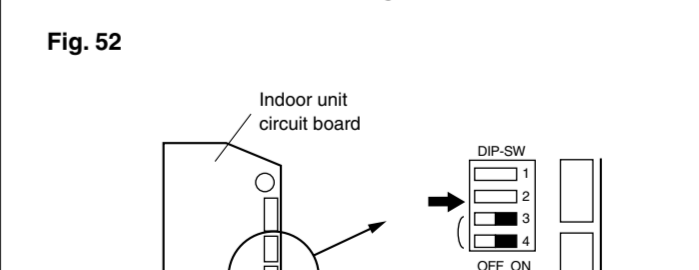
Fig. 51



2. SWITCHING REMOTE CONTROL UNIT SIGNAL CODES

Air conditioner settings

Fig. 52



Remote control unit settings

- Press the START/STOP button and display only the clock.

Fig. 53

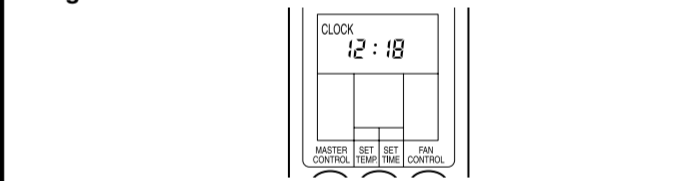


Fig. 54

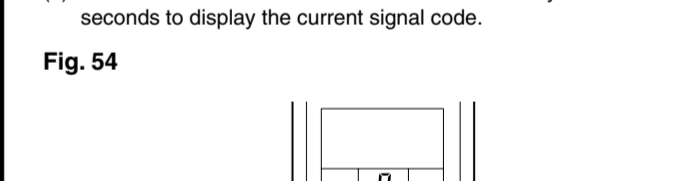
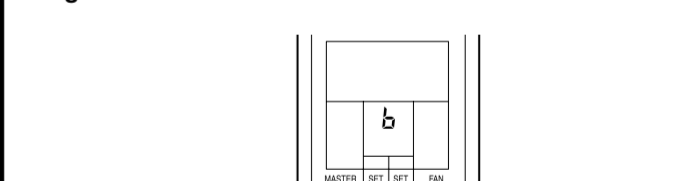


Fig. 55

- Change the signal code with the <C>/<C> button (H-b-c-d).

Fig. 55



- Press the MASTER CONTROL button again to return to the clock display and change the signal code.

- Confirm the setting of the remote control unit signal code and the printed circuit board setting. If these are not confirmed, the remote control unit cannot be used to operate for the air conditioner.

DIP-SW		Remote control unit signal code
DIP-SW3	DIP-SW4	
ON	ON	A (Primary setting)
OFF	ON	B
ON	OFF	C
OFF	OFF	D

10 CUSTOMER GUIDANCE

Explain the following to the customer in accordance with the operating manual:

- Starting and stopping method, operation switching, temperature adjustment, timer, air flow switching, and other remote control unit operations.
- Air filter removal and cleaning, and how to use the air louvers.
- Give the operating manual and installation instruction sheet to the customer.