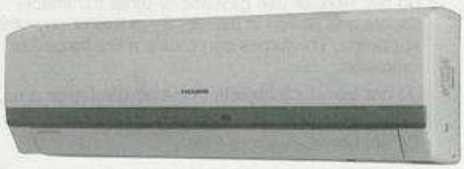
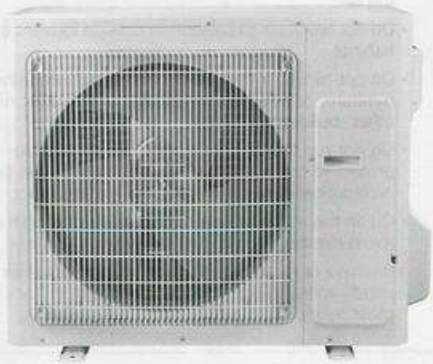
FEDDERS Ductless Split Heat Pump

Installation & Operation Manual





For additional questions please call
1-866-829-2440
or e-mail: customerservice@fedders.com

⚠ CAUTION ⚠

This unit should only be installed by a qualified HVAC technician in accordance with the National Electrical Code and local codes and ordinances.

Failure to follow these precautions could result in electrical shock, fire or personal injury.

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⚠ WARNING ⚠

Electrical Shock Hazard

- This unit should only be installed and serviced by a qualified HVAC technician in accordance with the National Electrical Code and local codes and ordinances
- Failure to follow these precautions could result in electrical shock, fire, death or serious personal injury
- Use copper conductors of correct wire gauge and protector size only

Important Grounding Requirements

- Do not operate this air conditioner without proper time delay circuit protection (circuit breaker or fuse). Refer to serial plate for proper power supply requirements.
- This air conditioner requires a separate power supply on a separate fused circuit
- To avoid possible electrical shock, air conditioner must be properly grounded

⚠ WARNING ⚠ This symbol indicates the possibility of death or serious personal injury

⚠ CAUTION ⚠ This symbol indicates the possibility of personal injury or property damage

⚠ WARNING ⚠

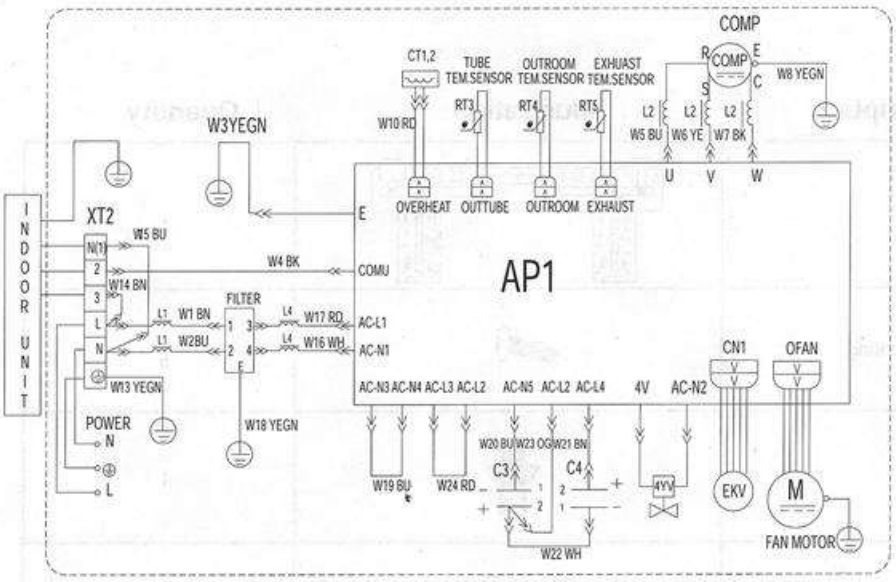
Additional Safety Precautions

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance. The fumes can create a fire hazard or explosion.
- Do not introduce objects in the air discharge area. This could cause permanent damage to your unit.
- Do not operate without filter
- Do not obstruct the air intake area of your air conditioner, as this could cause overheating, thus activating the unit's security switch and shutting off the unit
- Do not block air circulation to outside louvers of cabinet
- Do not block air flow inside with blinds, curtains, or furniture, or outside with shrubs, enclosures, or other buildings
- Do not run the air conditioner with an outside protective cover in place. This could result in fire or mechanical damage within the air conditioner.
- Clean the air conditioner filter once per month to avoid overheating caused by air obstruction
- Use two or more people to move and install air conditioner. Failure to do so can result in back or other injury.

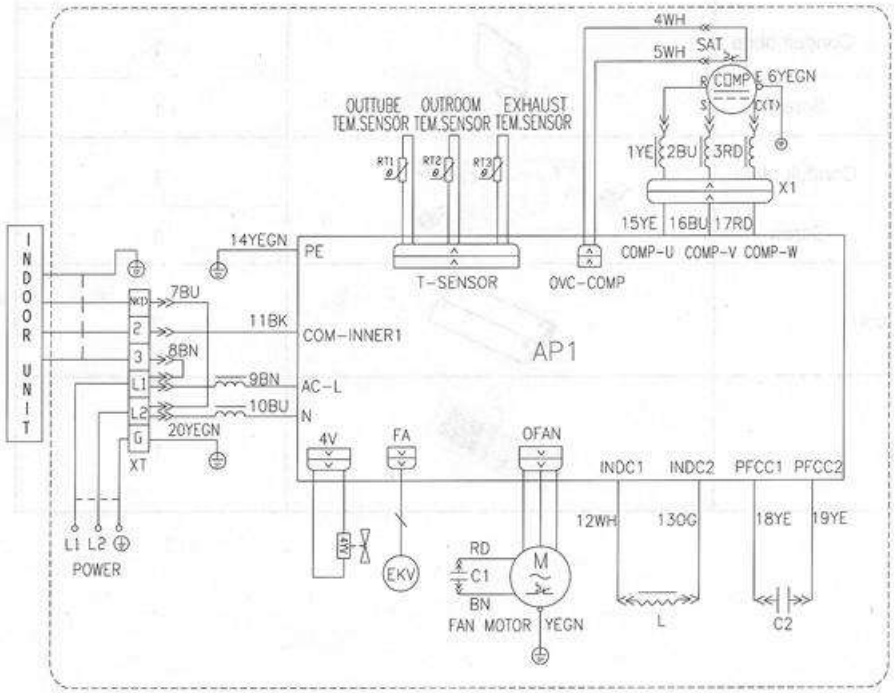
Wiring diagrams

Below are wiring diagrams to connect indoor and outdoor units.

Cooling and Heating Models of 115V for 09K / 12K Btu/h

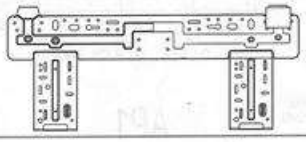
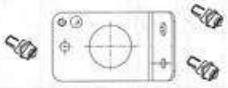
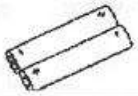


Cooling and Heating Models of 208~230V for 18K / 24K Btu/h



Parts list

A number of installation parts have been packed with the unit.
Please check the contents in the box with the list below.

Description		Illustration	Quantity
Wall bracket			1
Screws for mounting wall bracket			5
Drain adapter.			1
Gasket (18K & 24K Only)			3
9/12K Conduit Plate Kit	Conduit plate		1
	Screw		1
18/24K Conduit Plate Kit	Conduit plate		1
	Screw		3
AAA batteries (for remote control)			2
Remote Control			1

SELECTING A LOCATION

Before beginning installation, consider the placement of both the indoor and outdoor units. It is important to correctly measure the distance the tubing will need to travel between the two units.

Select a location for the outdoor unit

- Make sure you do not block the discharge area of the outdoor unit with plants or debris
- Do not install either unit near any source of heat, steam or flammable gas
- Locate the unit in a location where it can be easily maintained

Select a location for the indoor unit

- Locate the indoor unit in a place where it will provide cool air throughout the room
- Locate the indoor unit in a place where the unit's airflow will not be obstructed
- The wall that the indoor unit is mounted to must be structurally sound and able to support the weight of the unit
- It is preferable to locate the indoor unit on an outside wall where there will be access to adequate drainage or a drain source
- Place the unit so that the air filter can be removed easily and maintenance work can be performed without interference
- Maintain minimum distances from walls, ceiling, and floor illustrated in figure 3 on page 5 of this manual.

⚠ CAUTION ⚠

Tubing line length and refrigerant charge

Each indoor unit comes with a refrigerant charge that is sufficient for use with tubing up to 25 feet.

If the required length of connecting tubing exceeds 25 feet, add 0.21 oz/ft for 9/12/18K and 0.32 oz/ft for 24K of refrigerant for each additional foot.

The maximum allowable tubing length between indoor unit and outdoor unit is 65 feet for 9/12K and 98 feet for 18/24K

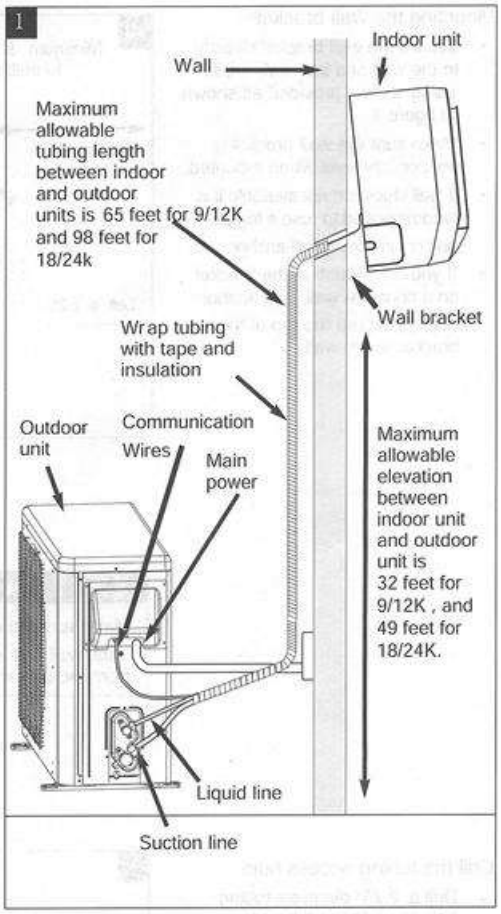
⚠ CAUTION ⚠

Unit Elevation

If the outdoor unit is placed higher than the indoor unit, an oil trap should be installed every 12 feet in the suction line.

The maximum allowable elevation between indoor and outdoor is 32 feet for 9/12K, and 18/24K is 49 feet.

1



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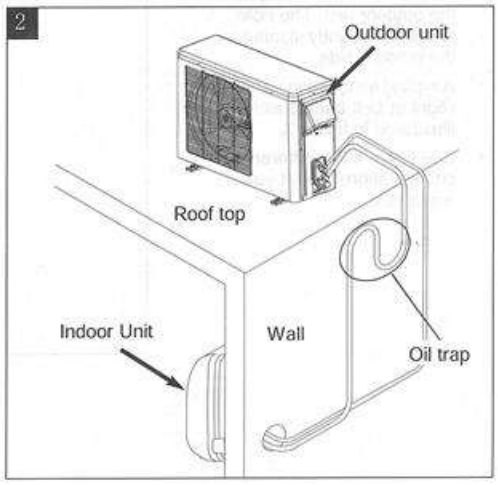
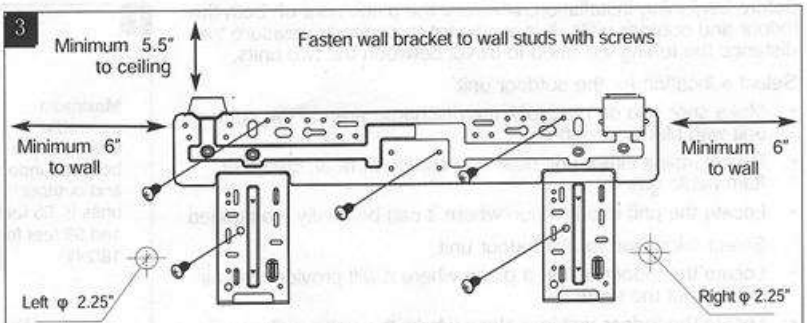


INDOOR UNIT INSTALLATION

Mounting the wall bracket

- Secure the wall bracket directly to the wall and into wall studs using screws provided as shown in figure 3.
- Make sure the wall bracket is horizontally level when mounted.
- If wall studs are not available it is recommended to use a toggle bolt or similar drywall anchor.
- If you are mounting the bracket on a concrete wall, use anchor bolts to secure the top of the bracket to the wall.

3



Drill a 2.25" diameter tubing hole at either the right or the left. The hole should be slightly slanted to the outdoor side. Your application may vary. See figure 4 for different tubing outlet location options.

⚠ CAUTION ⚠

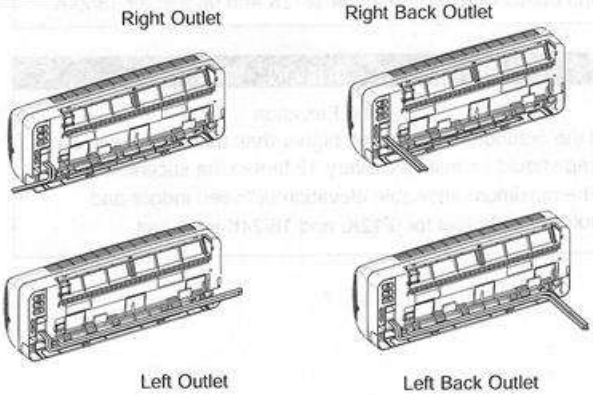
Make sure the wall bracket is level.

If the wall unit is not mounted level, condensate water will leak from the unit and can damage walls and/or carpet underneath.

Drill the tubing access hole

- Drill a 2.25" diameter tubing hole to route the tubing to the outdoor unit. The hole should be slightly slanted to the outdoor side.
- A typical installation will use a Right or Left back outlet as illustrated in figure 3.
- See figure 4 for different configurations to suit your application.

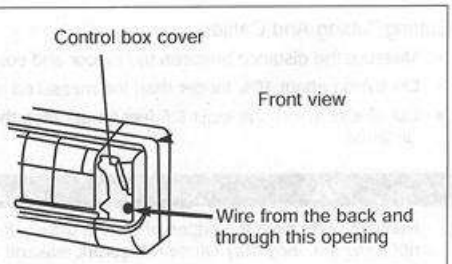
4



Wiring the indoor unit

- Connect the power wires to the indoor unit by opening the decorative front grille and following these steps:
- Remove the screw that secures the control box cover (Figure 5).
- Connect the wiring as shown in Figure 13 (a wiring diagram can also be found on the unit).
- Ensure all terminals are securely tightened.

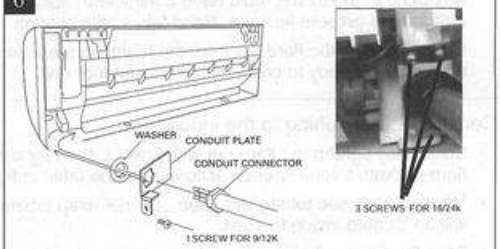
5



Install the inter-unit wire harness

- Take out the conduit holder and screws from accessory.
- Thread wire harness through the hole in the conduit holder.
- Use the screws to install the conduit.
- Remove the screws, then remove the wire clamp.
- Connect inter-unit wire harness to the terminal. Refer to the wiring diagram.
- Use the screws to install the wire clamp.

6



Connect the drain line

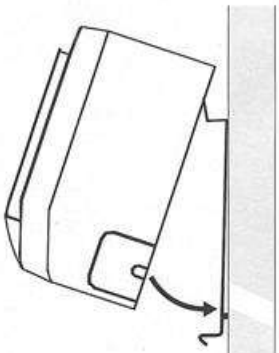
- Drain line can be attached for left or right side drainage.
- Be sure to plug unused drain opening.
- Make sure that drain line is not bent or kinked.

Attaching the indoor unit to the wall bracket

- Wiring connections to the indoor unit must be completed before attaching it to the wall bracket.
- Hook the unit onto the hangers on top of the wall bracket (Figure7).
- Ensure that the unit is level.
- Ensure that the drain hose, tubing, and connecting wires are aligned and in the proper position.
- Lower the position so that botton of unit is tight to the hall.

7

Hook the unit to the hangers on top of the wall bracket



Cutting Tubing And Cables

- Measure the distance between the indoor and outdoor units
- Cut tubing about 10% longer than the measured distance
- Cut electrical wires at least 6.5 feet longer than the measured distance.

⚠ CAUTION ⚠

Remove burrs from the edges of the cut tubing. If burrs are not removed, they may cause refrigerant leakage when in operation.

⚠ CAUTION ⚠

Any bend in the tubing must have a minimum radius of 4" (100mm) to prevent leakage. Bend tubes with caution.

Do not remove the flare nut from the tubing in the indoor unit until you are ready to connect it to the outdoor unit.

Connecting the tubing to the indoor unit

- Sufficiently tighten the flare nut with fingers, then tighten the flare nut with torque wrench according to the table in figure 9
- Wrap all exposed tubing with tape. Do not wrap tubing that will be located inside the unit.
- Pass the tubing, drain hose and connecting wire through the wall with the drain hose on the bottom
- Make sure all tubing, drain hose, and connecting wire angle downwards as they pass through and exit the wall

8

Tube Diameter	Torque 1b. Ft. (N.m)
1/4" (6.35 mm)	9.36-14.23 (12.7 - 19.3)
3/8" (9.52 mm)	26.25 - 32.75 (35.6 - 44.4)
1/2" (12.70 mm)	36.06 - 45.00 (48.9 - 61.0)
5/8" (15.86 mm)	44.25 -47.94 (60.0-65.0)

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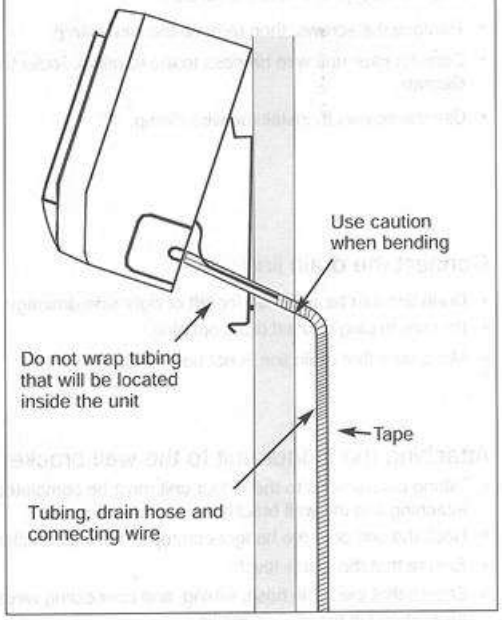

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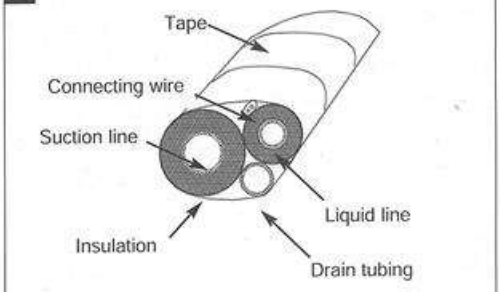


Liquid line and suction line should both be insulated. Drain tubing outside the unit should also be insulated.

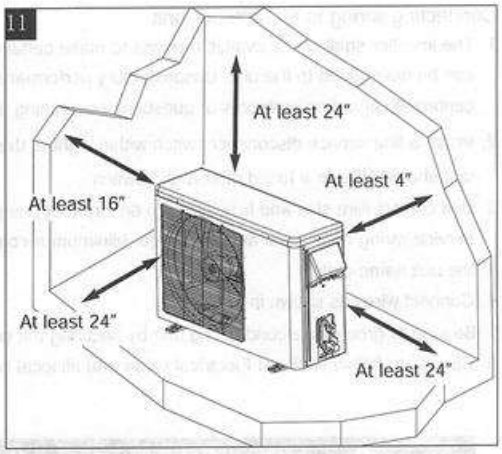
Locating the outdoor unit

- Locate the outdoor unit where the air flow around it will not be obstructed
- Check that the base is level and does not exceed the maximum slope of five degrees
- Secure the unit to a base with anchor bolts to reduce vibrations and noise
- Allow adequate space to access the unit for service and maintenance
- Maintain a minimum distance around the unit as shown in figure 11.
- Do not install the unit near a heat source, steam source or flammable gas
- Heatpump units should be mounted above the snow line, if possible

Installing the outdoor unit

- Attach the drain gasket and drain adapter to the base pan of the unit before you secure the unit (applicable to heat pump models only) as shown in figure 12.
- Fasten the unit onto the base

11



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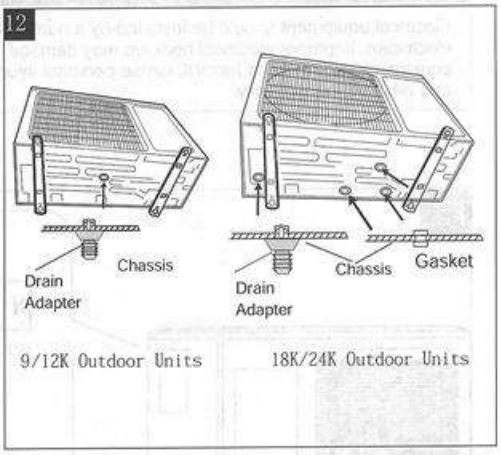


OUTDOOR UNIT INSTALLATION

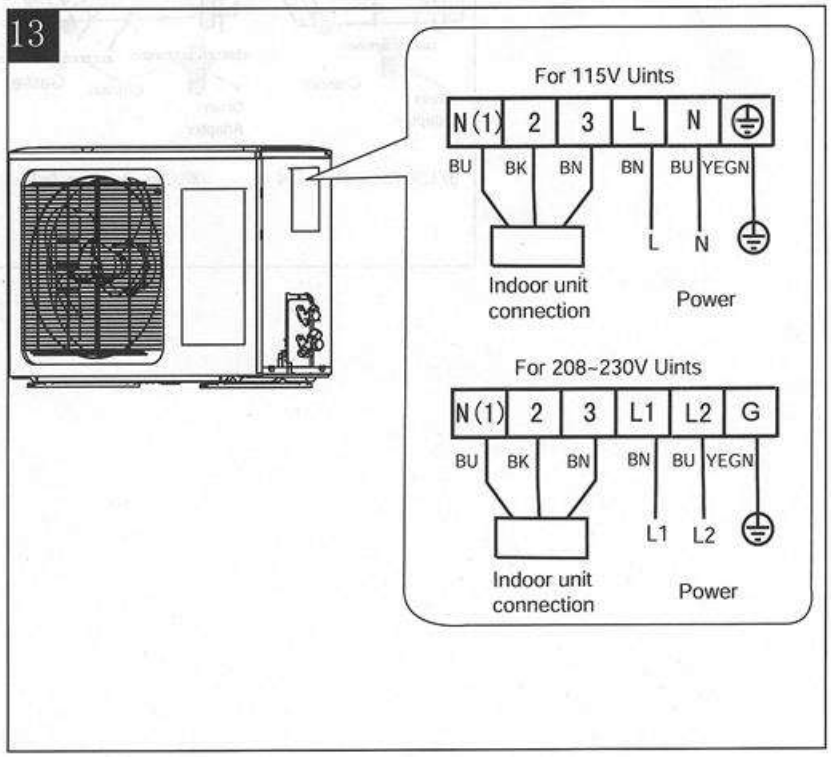
Connecting wiring to the outdoor unit

1. The installer shall check available power to make certain it matches the unit (Name Plate Rating) and that constant voltage can be maintained to the unit. Unsatisfactory performance would otherwise result. The local power company should be contacted regarding problems or questions concerning power supply.
2. Install a line service disconnect switch within sight of the condensing unit. The line voltage service wiring for the condensing unit should include a fused disconnect switch
3. Use correct wire size and fuse size. To ensure that adequate voltage will be available at the condensing unit, the line voltage service wiring must be of adequate size. Minimum recommended wire ampacities and maximum fuse sizes are listed on the unit name plate.
4. Connect wires as shown in Figure 13.
5. Be sure to ground the condensing unit by securing the ground wire to the grounding lug inside the control box
6. Be sure to follow National Electrical Code and all local codes

⚠ WARNING ⚠

Electrical equipment should be installed by a qualified, licensed electrician. Improper electrical hook-up may damage equipment, can create a hazard, cause personal injury or death, and will void the warranty.

13



Connecting tubing to the outdoor unit

- Align the center of the tubing and sufficiently tighten the flare nut with fingers
- Tighten the flare nut with wrench.

⚠ CAUTION ⚠

Do not overtighten the flare nut. This can damage the threads and cause leakage.

Checking for refrigerant leakage

⚠ WARNING ⚠

Only licensed HVAC professionals are permitted by law to perform the operations below.

- Connect a manifold gauge to the outdoor unit gas line port
- Use dry nitrogen with trace refrigerant when checking for leakage
- Open the low pressure valve of the manifold gauge until the meter reads steady at about 150-200 psig (10.32-13.8 bar)
- Test for refrigerant leakage especially around the tubing connections with a refrigerant-leak detector
- If leakage was found, retighten the connector with a torque wrench and repeat the test
- Upon completion of the leak test, purge nitrogen

Evacuate air from the tubing and indoor unit

Connect vacuum pump to unit through manifold gauges. It is necessary to remove all air from the refrigeration cycle, as this air contains moisture, which may cause a malfunction or reduce efficiency of the compressor.

Opening the service valves for operation

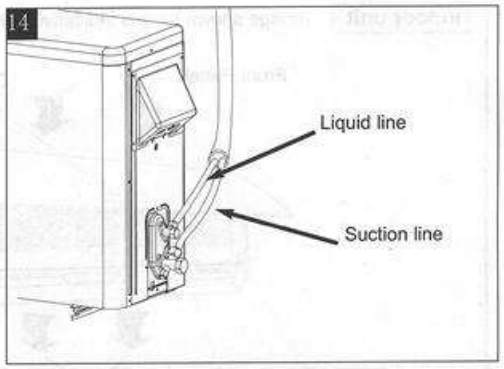
- Unscrew the caps on the 2-way and 3-way valves
- After all lines are installed and leak tested, set both the liquid and gas line valves to fully open position with the Allen Key for the unit operation, as shown in figure 15
- Reinstall the cap and torque to the specified value as shown below

Flare nut size	Torque (N.m.)
1/4"	12.7 - 19.3
3/8"	35.6 - 44.4
1/2" & 5/8"	48.9 - 61.0

Restraining tubing

- Wrap the tubing connection to the unit with insulation and seal it with tape
- You may connect additional drain hose. The end of the drain outlet should not touch the ground
- Wrap the connecting tubing, drain hose and wires with tape from bottom to the top, and secure them to the wall as shown in figure 16

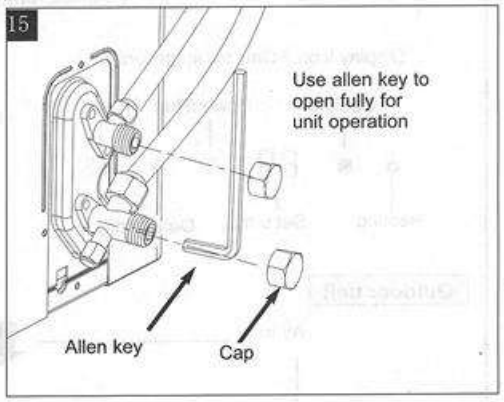
14



⚠ CAUTION ⚠

Ensure that all the tubing and wiring are connected properly and securely, before turning the power On.

15



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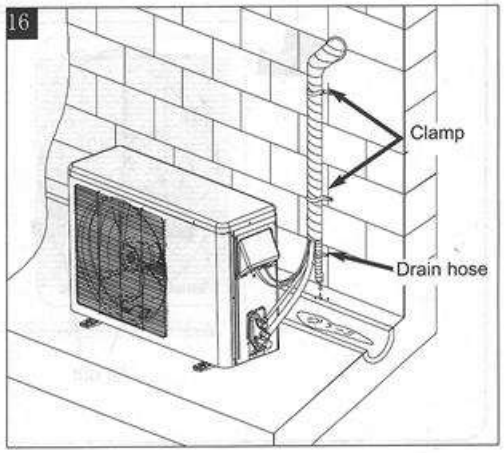
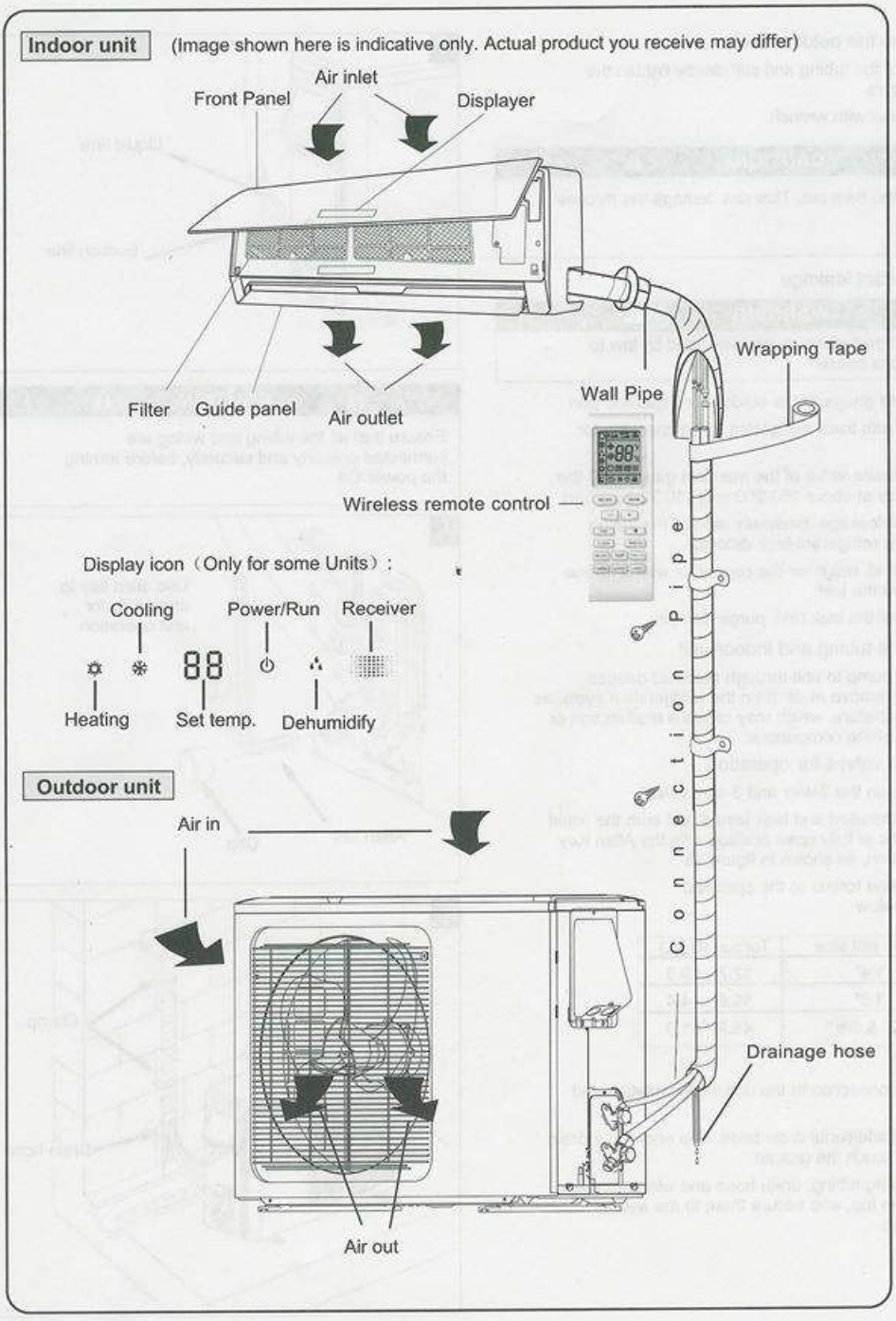


Indoor unit (Image shown here is indicative only. Actual product you receive may differ)



Cleaning the air filters

Dirty air filters will cause a reduction of airflow, which in turn causes the unit to overload, reducing cooling or heating performance while consuming more electricity.

Clean the filters once per month.

1. Turn the unit off.
2. Remove the air filters by raising the front grille and pulling the filters out of the unit.
3. Wash the filters in hot soapy water, rinse and shake dry.
4. Replace the filters, with the front of the filter toward you.

NOTE: To dry the filter thoroughly, run your unit for a few minutes. Remember, only a clean filter works properly and delivers top efficiency at every setting.

NOTE: Failure to keep air filter clean will result in poor air circulation.

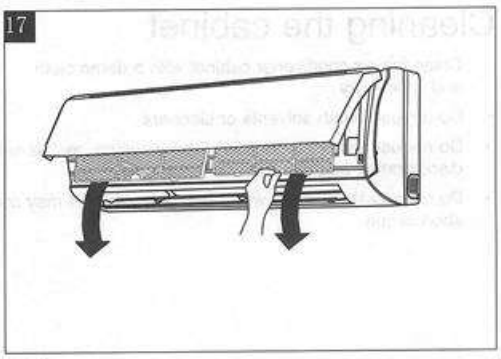
NOTE: Proper use and care of your air conditioner will help ensure longer life of the unit.

It is recommended to have an authorized servicer annually inspect and clean the coils and blow out condensate water passages with compressed air. A clogged drain hose can leak condensate water and damage property. Expense of annual inspection is the consumer's responsibility.

⚠ CAUTION ⚠

Do NOT operate without filter.
This can render the unit inoperative.

17



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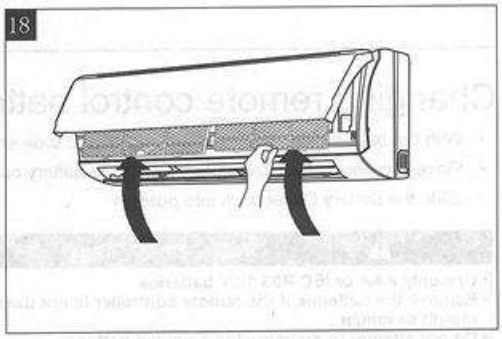
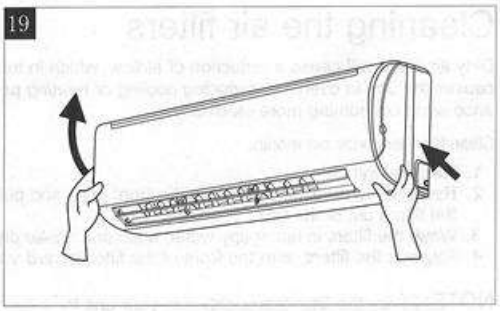


Cleaning the cabinet

- Clean the air conditioner cabinet with a damp cloth and wipe it dry
- Do not use harsh solvents or cleaners
- Do not use water above 104° F for cleaning, as this will cause discoloration and deformation
- Do not splash or spray water onto the unit, this may cause a short circuit

19



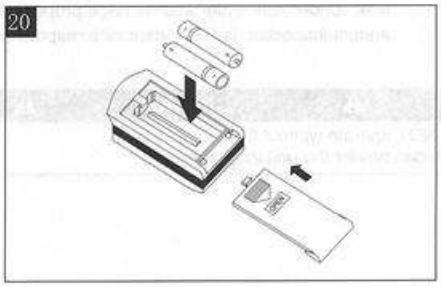
Changing remote control batteries

- With the back of the remote control facing you, slide and lift out the battery cover
- Place two new "AAA" size batteries onto the battery compartment
- Slide the Battery Cover back into position

⚠ CAUTION ⚠

- **Use only AAA or IEC R03 1.5V batteries**
- **Remove the batteries if the remote controller is not used for a month or longer**
- **Do not attempt to recharge the supplied batteries**
- **Both batteries should be replaced at the same time**
- **Do not dispose of the batteries in a fire as they may explode.**
- **Do not mix old and new batteries**
- **Do not mix alkaline, standard (carbon - zinc), or rechargeable (nickel-cadmium) batteries**
- **Do not install the batteries with the polarity (+/–) reversed**
- **Keep batteries and other things that could be swallowed away from young children. Contact a doctor immediately if an object is swallowed.**

20

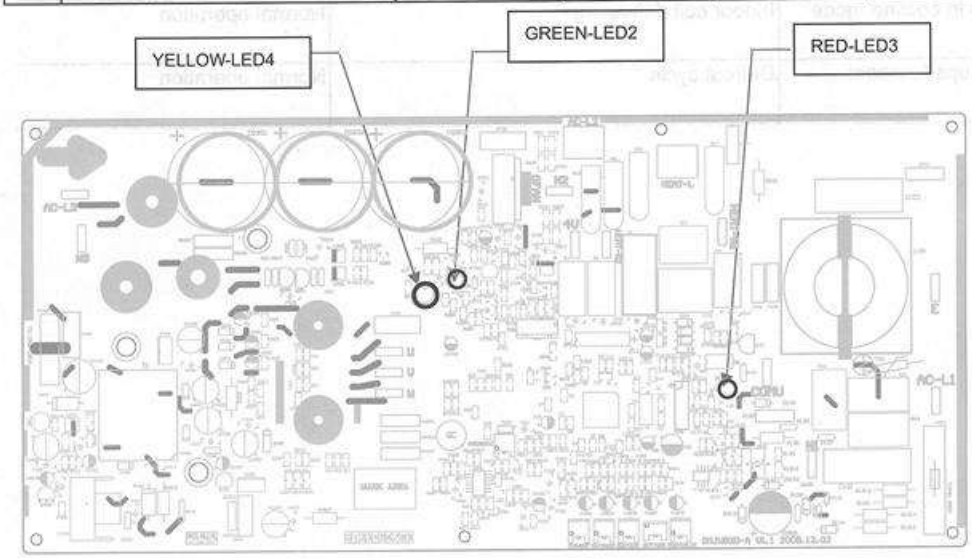


Troubleshooting

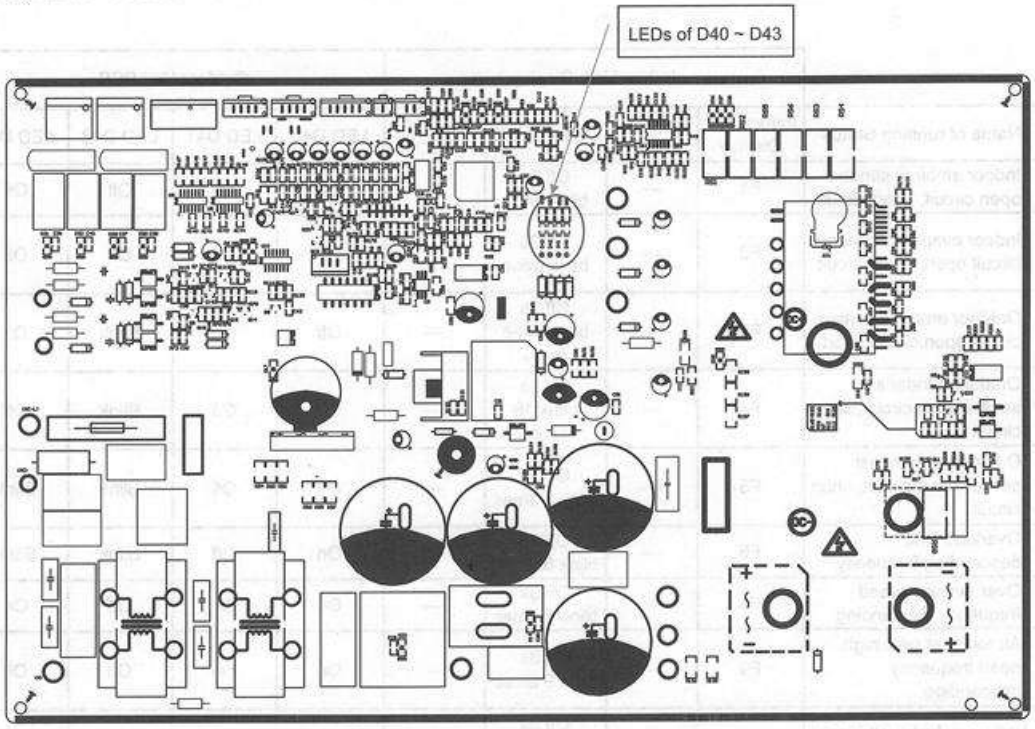
Occurance	Possible Cause	Solution
Air Conditioner will not operate	House fuse blown or circuit breaker tripped	Reset breaker or replace fuse
	Remote control batteries discharged	Replace batteries
	Remote control out of range or obstructed	Move remote control
	Control circuit malfunction	Contact installer
	Unit in 3 minute time delay	Normal operation
	Timer set for delay	Reset timer
	Defrost cycle	Normal operation
Unusual odor	Dirty air filter	Clean filters
	Dirty coils or drain pan	Contact installer
Noise when running	Air movement sound	Lower fan speed
	Refrigerant gurgling	Normal operation
	Creaking noise from sweep	Normal operation
	Vibration	Contact installer
	Defrost cycle	Normal operation
Water dripping inside	Improper installation or clogged drain tube	Contact installer
	Condensation on air outlet in high humidity	Normal operation
Water draining outside	Unit removing moisture from humid room	Normal operation
	Defrost cycle	Normal operation
Not cooling / heating sufficiently	Dirty air filters	Clean filters
	Temperature set too high	Adjust setting
	Fan speed too low	Adjust setting
	Inlet or outlet vents obstructed	Remove obstruction
Fan speeds up in cooling mode	Indoor coil defrosting	Normal operation
Outdoor unit stops functioning	Defrost cycle	Normal operation

Diagnostic Codes - 9K & 12K Models

	Name of running status	Yellow light	Red light	Green light	Indoor unit display
1	Compressor start	Blink once			
2	Defrosting B	link twice			H1
3	Anti-freezing protection	Blink three times			E2
4	IPM protection	Blink four times			H5
5	Overcurrent protection	Blink five times			E5
6	Overload protection	Blink six times			H4
7	Air exhaust protection	Blink seven times			E4
8	Overload protection	Blink eight times			H3
9	Limited frequency (current)		Blink once		
10	Limited frequency (Air exhaust)		Blink twice		
11	Limited frequency (overload)		Blink three times		
12	Limited frequency (anti-freezing)		Blink four times		
13	Outdoor unit ambient sensor malfunction		Blink five times		F3
14	Outdoor unit tube temp. sensor malfunction		Blink six times		F4
15	Outdoor air exhaust sensor malfunction		Blink seven times		F5
16	Achieve the temperature of unitstartsup		Blink eight times		
17	Communication is normal			Blink continuously	
18	Communication malfunction			OFF	E6
19	Overload sensor malfunction		Blink nine times		H3
20	Low voltage protection	Blink twelve times			PL
21	High voltage protection	Blink thirteen times			PH
22	Indoor ambient sensor malfunction				F1
23	Indoor tube temperature sensormalfunction				F2
24	Normal cooling or norminal heating				P1
25	Max. cooling or max. heating				P2
26	Interim cooling or interim heating				P3
27	Min. cooling or Min. heating				P0



Diagnostic Codes - 18K & 24K Models



		Indoor Unit Display				Outdoor Unit PCB			
	Name of running Status	Indoor Unit Display	Running LED	Cooling LED	Heating LED	LED D40	LED D41	LED D42	LED D43
1	System high Pressure	E1	Off 3s blink one time	---	---	Off	Blink	Blink	Blink
2	Anti-Freezing protection	E2	Off 3s blink 2 times	---	---	On	Off	On	Off
3	Compressor air exhause high temperature protection	E4	Off 3s blink 4 times	---	---	On	Off	On	Off
4	AC Overload Protection	E5	Off 3s blink 5 times	---	---	Off	On	Blink	Off
5	Indoor and outdoor units communication malfunction	E6	Off 3s blink 9 times	---	---	Off	Off	Off	Blink
6	Anti-high temp. protection	E8	Off 3s blink 8 times	---	---	On	Off	On	On
7	Indoor unit motor no feedback	H6	Off 3s blink 11 times	---	---	Off	Off	Off	Off
8	Jump wire cap malfunction protection	C5	Off 3s blink 15 times	---	---	Off	Off	Off	Off

Diagnostic Codes - 18K & 24K Models

		Indoor Unit Display				Outdoor Unit PCB			
#	Name of running Status	Indoor Unit Display	Running LED	Cooling LED	Heating LED	LED D40	LED D41	LED D42	LED D43
9	Indoor ambient sensor open circuit, short circuit	F1	---	Off 3s blink once	---	Off	Off	Off	Off
10	Indoor evaporator sensor circuit open, short circuit	F2	---	Off 3s blink twice	---	Off	Off	Off	Off
11	Outdoor ambient sensor circuit open,circuit short	F3	---	Off 3s blink three times	---	Off	Off	Blink	On
12	Outdoor condensor sensor open circuit, short circuit	F4	---	Off 3s blink 18 times	---	Off	Off	Blink	Off
13	Outdoor air exhaust sensor open circuit, short circuit	F5	---	Off 3s blink 5 times	---	Off	Off	Blink	Blink
14	Overload limit descending frequency	F6	---	Off 3s blink 6 times	---	On	Off	Blink	Blink
15	Over current neeed frequency descending	F8	---	Off 3s blink 8 times	---	On	On	Off	On
16	Air exhaust over high need frequency descending	F9	---	Off 3s blink 9 times	---	On	On	Off	Off
17	DC generatrix voltage is too high	PH	---	Off 3s blink 11 times	---	Off	On	Off	Blink
18	Whole unit's currenttrsing malfunction	U5	---	Off 3s blink 13 times	---	Off	On	Blink	On
19	Compressor current overcurrent protection	P5	---	Off 3s blink 15 times	---	Off	Blink	Off	Off
20	Defrosting	H1	---	---	Off 3s blink once	Off	Off	Off	Off
21	Electro static dedust protection	H2	---	---	Off 3s blink twice	Off	Off	Off	Off
22	Compressor overload protection	H3	---	---	Off 3s blink 3 times	Off	Blink	Blink	Off
23	System is ab-normal	H4	---	---	Off 3s blink 4 times	On	Off	On	On
24	IPM protection	H5	---	---	Off 3s blink 5 times	Off	Blink	Off	On
25	PFC protection	HC	---	---	Off 3s blink 6 times	Off	On	Blink	Blink
26	Heating anti-high temp. Declines	H0	---	---	Off 3s blink 10 times	On	Off	Blink	Blink

Diagnostic Codes - 18K & 24K Models

		Indoor Unit Display				Outdoor Unit PCB			
#	Name of running Status	Indoor Unit Display	Running LED	Cooling LED	Heating LED	LED D40	LED D41	LED D42	LED D43
27	Starts up fail	Lc	---	---	Off 3s Blink 11 times	Off	Blink	Off	Blink
28	Compressor current testing malfunction	U1	---	---	Off 3s blink 13 tims	Off	Blink	On	Off
29	EEPROM malfunction	EE	---	---	Off 3s blink 15 times	Off	Off	Off	On
30	Capacitor charge malfunction	PU	---	---	Off 3s blink 17 times	Off	On	Off	On
31	Module sensor circule	P7	---	---	Off 3s blink 18 times	Off	Off	On	Blink
32	Module Temp. Over high protection	P8	---	---	Off 3s blink 19 times	On	Off	Blink	On
33	DC Bus Voltage Dips	U3	---	---	Off 3s blink 20 times	Off	On	On	On
34	Low DC Bus Voltage Protection	PL	---	---	Off 3s blink 21 times	Off	On	On	Off
35	IPM Temp. is high /Decrease Frequency	EU	---	---	---	On	On	On	Blink
36	Four-Way Valve abnormal	U7	---	---	---	On	Off	Blink	Off
37	Outdoor Unit Zero-cross detecting error	U9	---	---	---	On	On	Blink	Off
38	Anti-Freezing Limit / Decrease Frequency	FH	---	---	---	On	On	On	Off