

Installation Instructions



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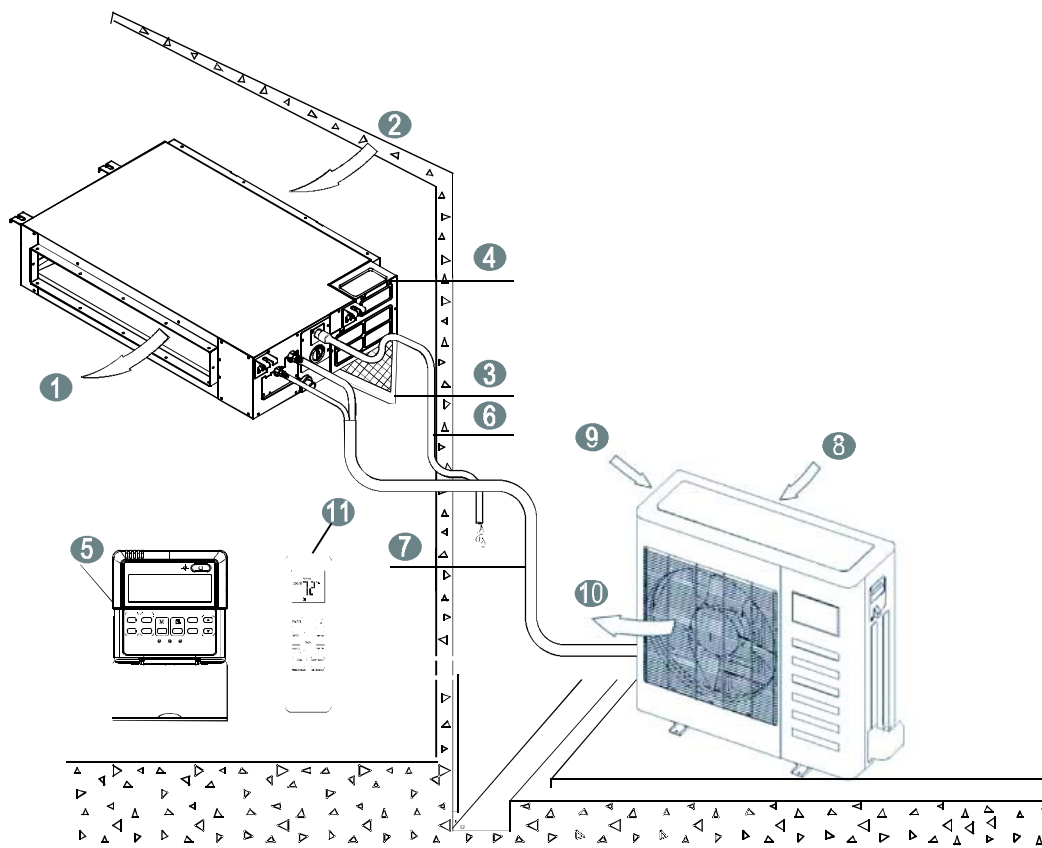


NOTE: Read the entire instruction manual before starting the installation.

PARTS LIST

INDOOR UNIT

OUTDOOR UNIT



INDOOR UNIT

- ① Air outlet
- ② Air inlet
- ③ Air filter
- ④ Electric control cabinet
- ⑤ Wired controller
- ⑥ Drain pipe

OUTDOOR UNIT

- ⑦ Connecting pipe
- ⑧ Air inlet
- ⑨ Air inlet(side and rear)
- ⑩ Air outlet
- ⑪ Wireless Remote Controller

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Note:

- If the outdoor unit is higher than the indoor unit, prevent rain from flowing into the indoor unit along the connection pipe by creating a downward arc in the connection pipe before it enters the wall to the indoor unit. This will ensure that rain drips from the connection pipe before it enters the wall.
- Piping and the interconnecting wiring are field supplied.
- The illustration above is only a sketch. Different models may be slightly different.

SAFETY CONSIDERATIONS

Installing, starting up, and servicing air-conditioning equipment can be hazardous due to system pressures, electrical components, and equipment location (roofs, elevated structures, etc.).

Only trained, qualified installers and service mechanics should install, start-up, and service this equipment.

Untrained personnel can perform basic maintenance functions such as cleaning coils. All other operations should be performed by trained service personnel.

When working on the equipment, observe precautions in the literature and on tags, stickers, and labels attached to the equipment.

Follow all safety codes. Wear safety glasses and work gloves. Keep quenching cloth and fire extinguisher nearby when brazing. Use care in handling, rigging, and setting bulky equipment.

Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit. Consult local building codes and National Electrical Code (NEC) for special requirements. Recognize safety information. This is the safety-alert symbol . When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury. Understand these signal words: DANGER, WARNING, and CAUTION. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices which **may** result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.



WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury or death.

Before installing, modifying, or servicing system, main electrical disconnect switch must be in the OFF position. There may be more than 1 disconnect switch. Lock out and tag switch with a suitable warning label.



WARNING



EXPLOSION HAZARD

Failure to follow this warning could result in death, serious personal injury, and/or property damage.

Never use air or gases containing oxygen for leak testing or operating refrigerant compressors. Pressurized mixtures of air or gases containing oxygen can lead to an explosion.



CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

Do not bury more than 36 in. (914 mm) of refrigerant pipe in the ground. If any section of pipe is buried, there must be a 6 in. (152 mm) vertical rise to the valve connections on the outdoor units. If more than the recommended length is buried, refrigerant may migrate to the cooler buried section during extended periods of system shutdown. This causes refrigerant slugging and could possibly damage the compressor at start-up.

SYSTEM REQUIREMENTS

Allow sufficient space for airflow and servicing unit. See Fig. 3 through 5 for minimum required distances between the unit and the walls or ceilings.

Piping

IMPORTANT: Both refrigerant lines must be insulated separately.

- Minimum refrigerant line length between the indoor and outdoor units is 10 ft. (3 m).
- Table 1 lists the maximum lengths.

Table 1—Piping Lengths

SYSTEM SIZE			9K	12K	18K	24K	36K	48K
Piping	Min. Piping Length	ft(m)	10 (3)	10 (3)	10 (3)	10 (3)	10 (3)	10 (3)
	Standard Piping Length	ft(m)	25 (7.5)	25 (7.5)	25 (7.5)	25 (7.5)	25 (7.5)	25 (7.5)
	Max. outdoor–indoor height difference (OU higher than IU)	ft(m)	32 (10)	32 (10)	65 (20)	65 (20)	98 (30)	98 (30)
	Max. outdoor–indoor height difference (IU higher than OU)	ft(m)	32(10)	32(10)	65(20)	65(20)	98(30)	98(30)
	Max. Piping length with no additional refrigerant charge	ft(m)	26 (8)	26 (8)	26 (8)	26 (8)	26 (8)	26 (8)
	Max. Piping Length	ft(m)	82 (25)	82 (25)	98 (30)	98 (30)	213 (65)	213 (65)
	Additional refrigerant charge (between standard–Max piping length)	Oz/ft(g/m)	0.27 (25)	0.27 (25)	0.43 (40)	0.43 (40)	0.43 (40)	0.43 (40)
	Gas Pipe (size–connection type)	in(mm)	3/8 (9.52)	1/2 (12.7)	1/2 (12.7)	5/8 (16)	5/8 (16)	5/8 (16)
	Liquid Pipe (size–connection type)	in(mm)	1/4 (6.35)	1/4 (6.35)	1/4 (6.35)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)
Refrigerant	Refrigerant Type		R410A	R410A	R410A	R410A	R410A	R410A
	Charge Amount	Lbs(kg)	2.76 (1.25)	2.76 (1.25)	4.19 (1.90)	5.18 (2.35)	7.5 (3.4)	9.48 (4.3)

NOTE: The refrigerant charge included is adequate for piping runs up to 25 ft. (7.6 m).

- For piping runs greater than 25 ft. (7.6 m), add refrigerant up to the allowable length as specified in Table 1.

The outdoor unit has an electronic expansion valve to manage the refrigerant flow of the fan coil connected.

All wires must be sized per NEC (National Electrical Code) or CEC (Canadian Electrical Code) and local codes. Use the Electrical Data table MCA (minimum circuit amps) and MOC (maximum over current protection) to correctly size the wires and the disconnect fuse or breakers respectively.

Per the caution note, only stranded copper conductors with a 600 volt rating and double insulated copper wire must be used. The use of BX cable is not recommended.

Recommended Connection Method for Power and Communication Wiring - Power and Communication Wiring:

The main power is supplied to the outdoor unit. The field supplied 14/3 power/communication wiring from the outdoor unit to the indoor unit consists of four (4) wires and provides the power for the indoor unit. Two wires are high voltage AC power, one is communication wiring and the other is a ground wire.

Recommended Connection Method for Power and Communication Wiring (To minimize communication wiring interference) Power Wiring:

The main power is supplied to the outdoor unit. The field supplied power wiring from the outdoor unit to the indoor unit consists of three (3) wires and provides the power for the indoor unit. Two wires are high voltage AC power and one is a ground wire.

To minimize voltage drop, the factory recommended wire size is 14/2 stranded with a ground.

Communication Wiring:

A separate shielded stranded copper conductor only, with a 600 volt rating and double insulated copper wire, must be used as the communication wire from the outdoor unit to the indoor unit. Please use a separate shielded 16GA stranded control wire.


CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

- Wires should be sized based on NEC and local codes.
- Use copper conductors only with a 600 volt rating and double insulated copper wire.

DIMENSIONS - INDOOR

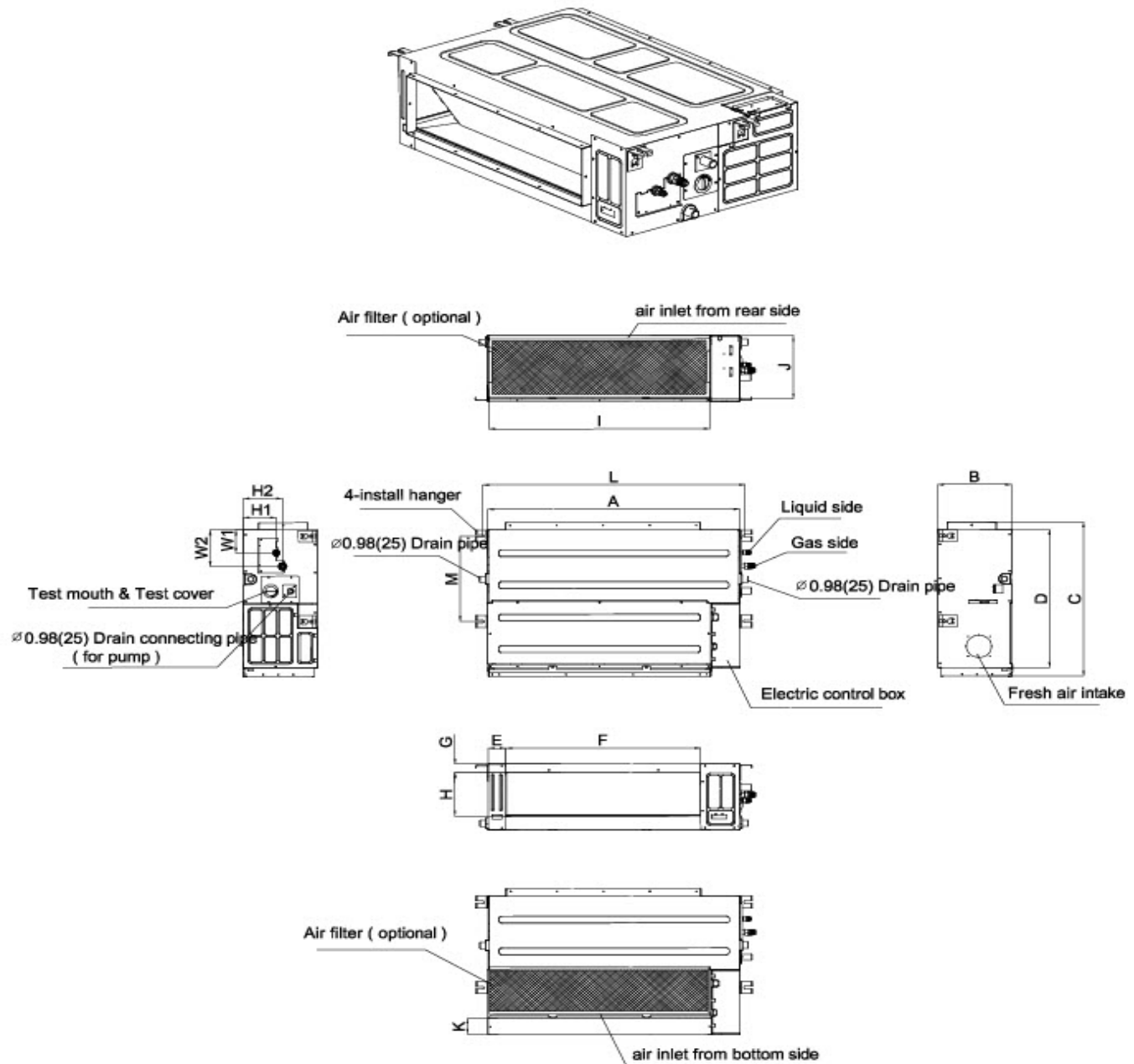


Fig. 1 – Indoor Unit

Table 2—Indoor Unit

	OUTLINE DIMENSIONS				AIR OUTLET OPENING SIZE				AIR RETURN OPENING SIZE			HANGER BRACKETS		REFRIGERANT PIPE LOCATIONS				OPERATING WEIGHT lb (kg)
Size	A	B	C	D	E	F	G	H	I	J	K	L	M	H1	H2	W1	W2	
9	27.6 (700)	8.2 (210)	25 (635)	22.4 (570)	2.5 (65)	19.4 (493)	1.3 (35)	4.6 (119)	23.4 (595)	7.8 (200)	3.1 (80)	29.1 (740)	13.8 (350)	4.7 (120)	5.6 (143)	3.7 (95)	5.9 (150)	39.9 (18.1)
12	27.6 (700)	8.2 (210)	25 (635)	22.4 (570)	2.5 (65)	19.4 (493)	1.3 (35)	4.6 (119)	23.4 (595)	7.8 (200)	3.1 (80)	29.1 (740)	13.8 (350)	4.7 (120)	5.6 (143)	3.7 (95)	5.9 (150)	39.9 (18.1)
18	36.2 (920)	8.2 (210)	25 (635)	22.4 (570)	2.5 (65)	19.4 (493)	1.3 (35)	4.6 (119)	32.0 (815)	7.8 (200)	3.1 (80)	37.8 (960)	13.8 (350)	4.7 (120)	5.6 (143)	3.7 (95)	5.9 (150)	50.7 (23)
24	36.2 (920)	10.6 (270)	25 (635)	22.4 (570)	2.5 (65)	19.4 (493)	1.3 (35)	7.0 (179)	32.0 (815)	10.2 (260)	0.7 (20)	37.8 (960)	13.8 (350)	4.7 (120)	5.6 (143)	3.7 (95)	5.9 (150)	57.3 (26)
36	44.8 (1140)	10.6 (270)	30.5 (775)	27.9 (710)	2.5 (65)	36.7 (933)	1.3 (35)	7.0 (179)	40.7 (1035)	10.2 (260)	1.7 (45)	48.8 (1240)	19.7 (500)	4.7 (120)	5.6 (143)	3.7 (95)	5.9 (150)	77.1 (35)
48	47.2 (1200)	11.8 (300)	34.1 (865)	31.4 (800)	3.1 (80)	38.1 (968)	1.5 (40)	8.0 (204)	43.0 (1094)	11.3 (288)	1.7 (45)	48.8 (1240)	19.7 (500)	6.9 (175)	7.8 (198)	6.1 (155)	8.3 (210)	99.2 (45)

DIMENSIONS - OUTDOOR

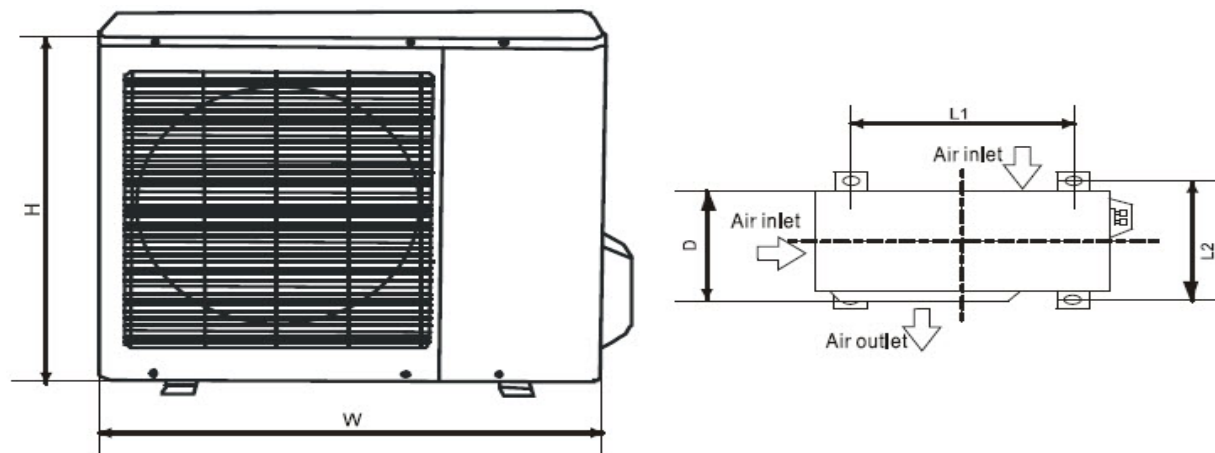


Fig. 2 – Outdoor unit

Table 3—Outdoor unit

UNIT SIZE	W in (mm)	D in (mm)	H in (mm)	L1 in (mm)	L2 in (mm)	OPERATING WEIGHT lb (kg)
9K	31.8(810)	12.2(310)	21.9(558)	21.6(549)	12.8(325)	82.4(37.4)
12K	31.8(810)	12.2(310)	21.9(558)	21.6(549)	12.8(325)	82.4(37.4)
18K	33.2(845)	12.6(320)	27.5(700)	22.0(560)	13.1(405)	102.5(46.5)
24K	37.2(945)	15.5(395)	31.8(810)	25.2(640)	15.9(405)	137.5(62.4)
36K	37.2(945)	15.5(395)	31.8(810)	25.2(640)	15.9(405)	137.5(62.4)
48K	36.93(938)	15.4(392)	53.9(1369)	24.9(634)	15.9(404)	220(100)

CLEARANCES - INDOOR

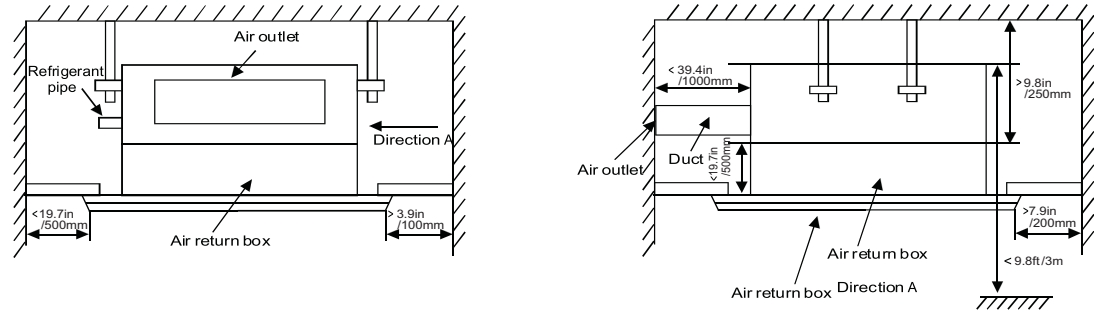


Fig. 3 – Ducted Clearance

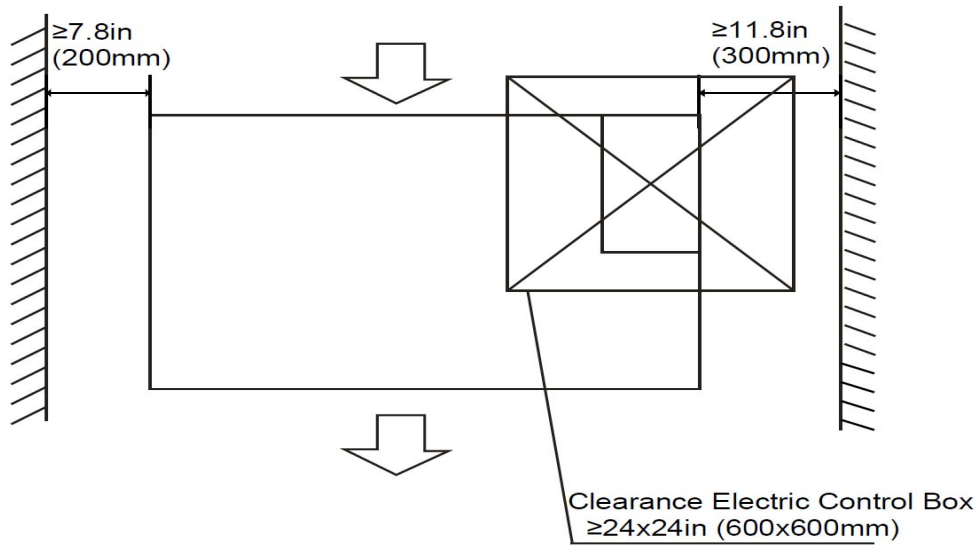


Fig. 4 – Ducted Clearance

CLEARANCES - OUTDOOR

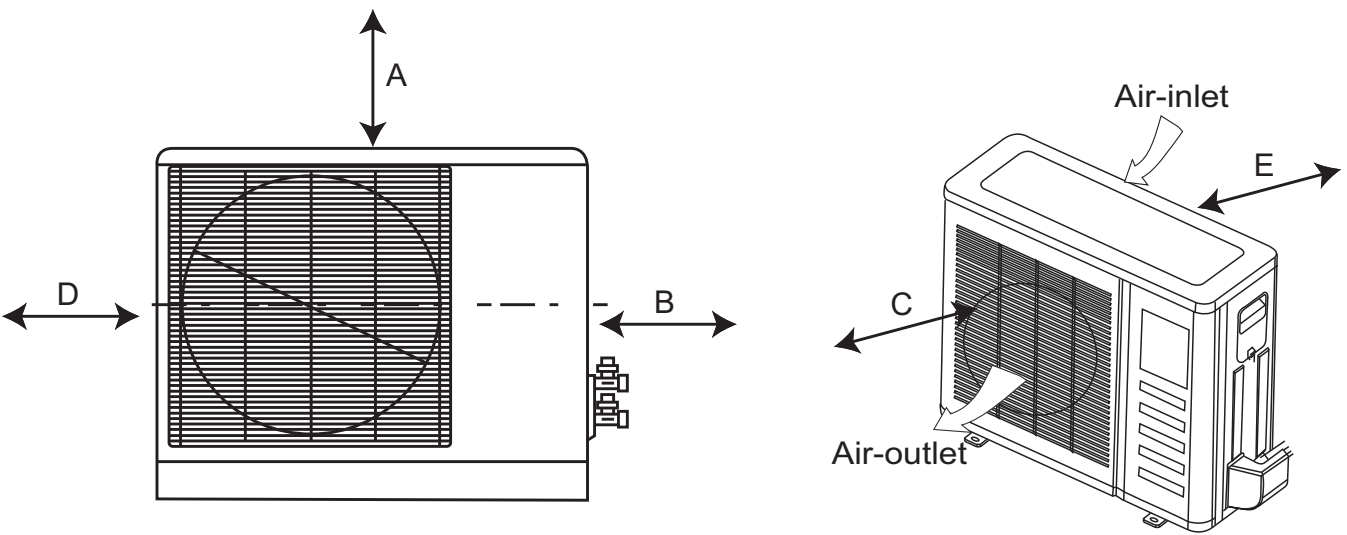


Fig. 5 – Outdoor Unit Clearance
Table 4—Outdoor Unit Clearance Dimensions

UNIT	MINIMUM VALUE in. (mm)
A	24 (610)
B	24 (610)
C	24 (610)
D	4 (101)
E	4 (101)

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INSTALLATION LOCATION REQUIREMENTS

Indoor Unit

- Confirm that the ceiling is able to support the weight of the unit.
- There should be enough room within the false ceiling for installation and maintenance.
- The false ceiling should be horizontal and leveled.
- Install the unit in a location within the room that allows uniform air flow in all directions.
- Do not install the indoor units near a direct source of heat such as direct sunlight or a heating appliance.
- A location which provides appropriate clearances (see Fig. 3).
- Ensure the hanger is strong enough to withstand the unit's weight.

Outdoor Unit

- A location which is convenient to installation and not exposed to strong wind.
- A location which can bear the weight of outdoor unit and where the outdoor unit can be mounted in a level position.
- A location which provides appropriate clearances (see Fig. 5).

Indoor and Outdoor Units (General)

- Ensure space is left for access for maintenance.
- Location should be far away from where there is a heat source, leakage of any inflammable, explosive substances, or smog.
- All wiring and refrigerant lines must be at least 3 ft. (1m) away from sources of electromagnetic interference (such as televisions, radios, etc.). Interference is still possible even if this distance is maintained.
- Do not install the indoor or outdoor units in a location with special environmental conditions. For those applications, contact your Ductless Split representative.

INDOOR UNIT INSTALLATION

INDOOR DUCTED UNIT INSTALLATION



CAUTION

Be sure that the ceiling grid is supported separately from the unit.

The ceiling grid must not be supported by any part of the unit or any associated wiring or piping work.

MOUNTING THE UNIT

1. **INSTALLING HANGER BOLTS** — Install the hanger bolts at the locations (see Fig. 6, top view). Use $\varnothing 10$ / $\varnothing 0.394$ in all-threaded rod.

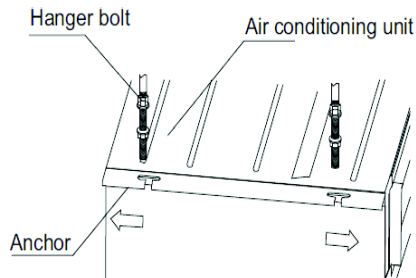


Fig. 6 – Install the Hanger Bolts

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2. The unit can now be lifted on to the hanging rods for mounting.
3. Use rods and fasteners to suspend the unit at the factory provided mounting holes.

4. Adjust the unit's height until the bottom is level with the false ceiling, with adequate space to provide enough pitch for the drain.
5. Secure the unit in position with locknuts and washers on both sides of the mounting bracket. Ensure the threaded rod does not extend more than 2 in. below the mounting brackets (see Fig. 7).

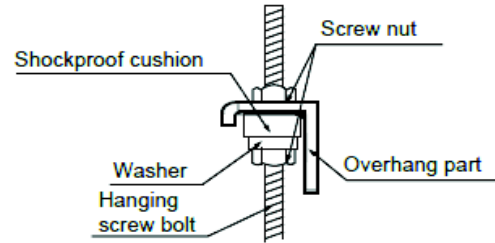


Fig. 7 – Secure the Unit

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RETURN AIR ARRANGEMENT

Based on the return air arrangement requirement in the field, the unit can be modified from the rear return to the bottom return.

1. Remove the return air duct collar/filter rack and plenum bottom panel.

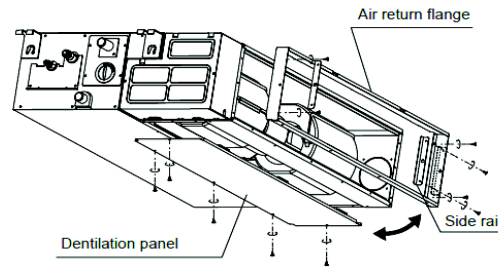


Fig. 8 – Remove the Return Air Duct Collar

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2. Install the Seal Sponge on the bottom inlet.

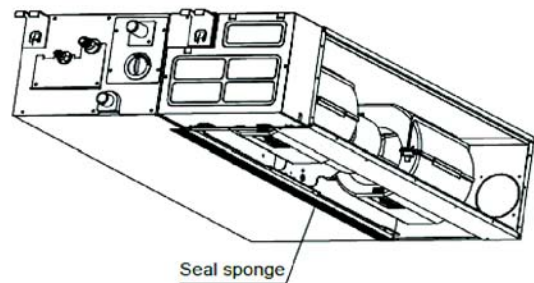


Fig. 9 – Install the Seal Sponge

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3. Swap the position to change the rear return to bottom return arrangement installing the Air Return flange and the filters.

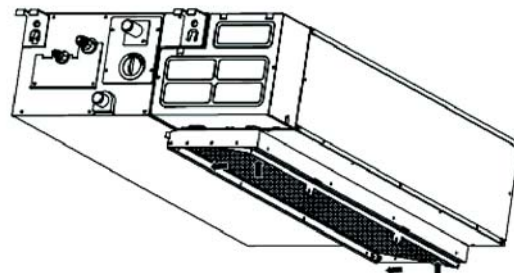


Fig. 10 – Change the Rear Return

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4. Install the filter brackets to lock the filter in place.

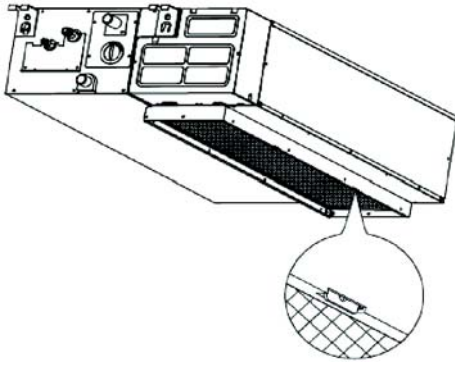


Fig. 11 – Install the Filter Brackets

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INSTALLING DUCT

Connect the return and supply ducts to the duct collars provided on the unit. Adequate distance between the return and supply diffusers should be maintained to avoid short circulation of air within the space.

The filter is located on the return side of the unit, on the rear or bottom depending on the return air inlet arrangement.

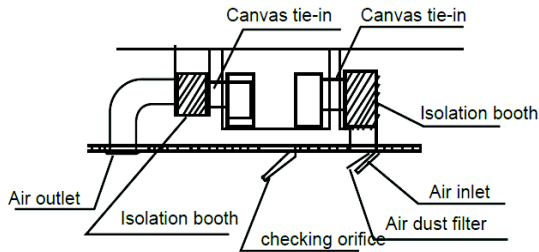


Fig. 12 – Installing Duct

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CONDENSATE PIPE INSTALLATION

The unit is supplied with a 1 1/4-in. OD drain connection to connect copper or PVC drain piping. When installing condensate piping, follow these recommendations:

- Maximum pump lift is 29 1/2 inches.
- The highest point in the condensate piping should be as close to the unit as possible. See Fig. 13.
- Condensate piping should slope downward in the direction of condensate flow, with a minimum gradient of 1/50.
- When multiple units are connected to a common condensate drain, ensure that the drain is large enough to accommodate the volume of condensate from all units. It is also recommended to have an air vent in the condensate piping to prevent air lock.
- Condensate piping must not be installed where it may be exposed to freezing temperatures.

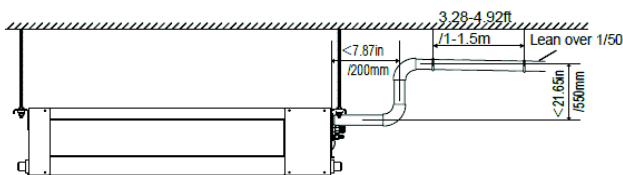


Fig. 13 – Condensate piping with a pump

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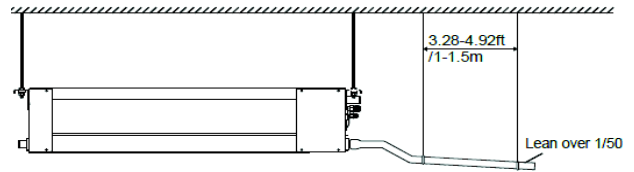


Fig. 14 – Condensate piping without a pump

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DRAIN PUMP AND DRAINAGE TEST

Follow these steps to perform the test:

1. Remove the test cover by rotating it counter-clockwise as shown in Fig. 15.
2. Using a piece of tubing or pipe, fill the drain pump reservoir with 70 oz. of water (see Fig. 16).
3. Turn the unit ON in cooling mode. The pump comes on. Watch the end of the drain pipe for any water. It may take some time for the water to travel, depending on the length of the drain pipe.
4. During this test, check all bends or joints for leakage.

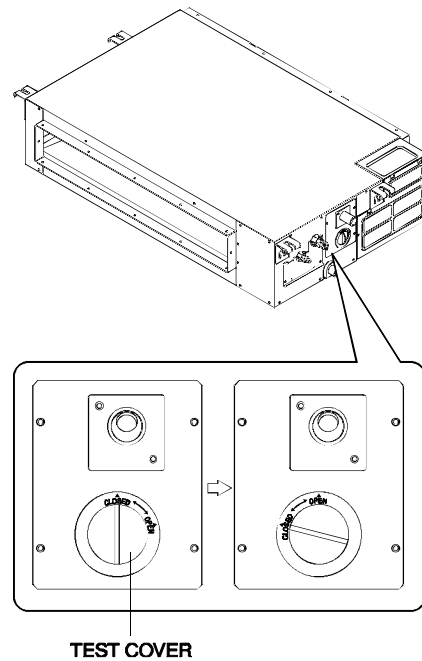


Fig. 15 – Check the Bends and Joints for Leakage

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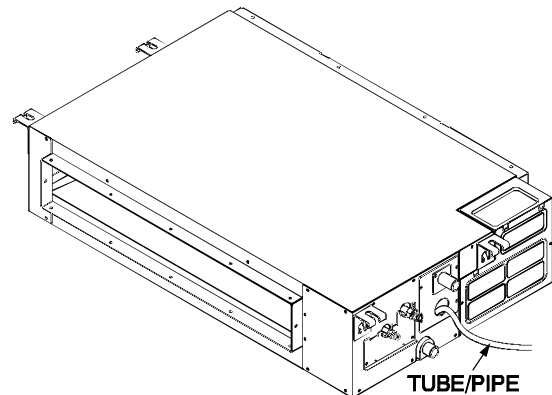


Fig. 16 – Tube/Pipe Insert

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FAN PERFORMANCES AT VARYING STATIC PRESSURES (DUCTED UNITS)

The static pressure of the indoor unit has been set in the factory according to the table below.

Table 5—Static Pressure Switch

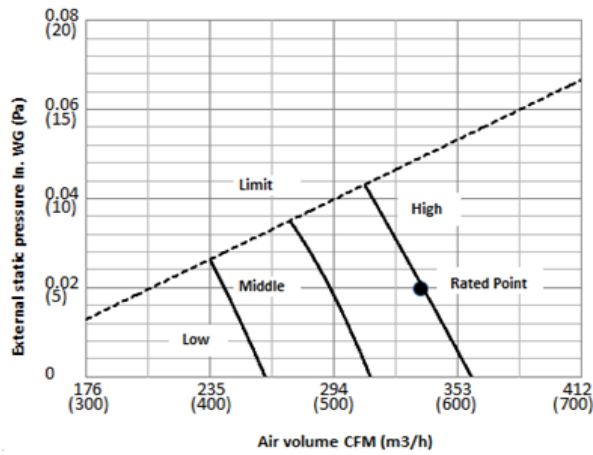
						Static Pressure Range In. WG (Pa)
Size	0	1	2	3	4	
9 & 12	0.02 (5)	0.04 (10)	0.08 (20)	0.12 (30)	0.16 (40)	0–0.18 (0–45)
18	0.04 (10)	0.10 (25)	0.14 (35)	0.18 (45)	0.22 (55)	0–0.28 (0–70)
24	0.04 (10)	0.10 (25)	0.16 (40)	0.22 (55)	0.28 (70)	0–0.40 (0–100)
36 & 48	0.08 (20)	0.14 (35)	0.20 (50)	0.26 (65)	0.32 (80)	0–0.40 (0–100)
Factory Setting	✓					

Table 6—Airflow at Different Speeds

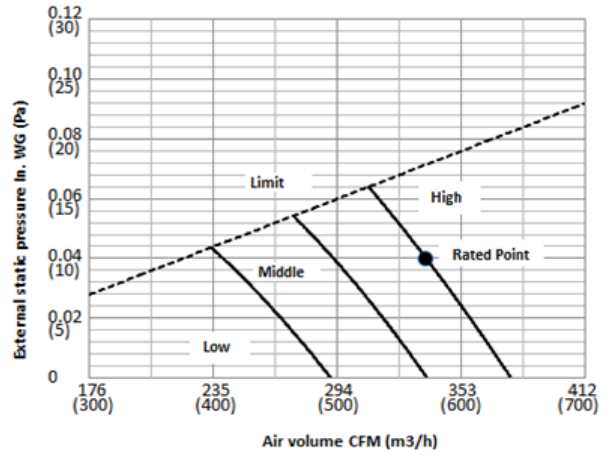
SYSTEM SIZE		9K	12K	18K	24K	36K	48K
High	CFM	335	370	520	820	1120	1470
	CMH	570	629	884	1394	1904	2499
Medium	CFM	290	320	430	620	940	1180
	CMH	493	544	731	1054	1598	2006
Low	CFM	240	260	360	520	680	940
	CMH	408	442	612	884	1156	1598

Static Pressure Curves Size 9

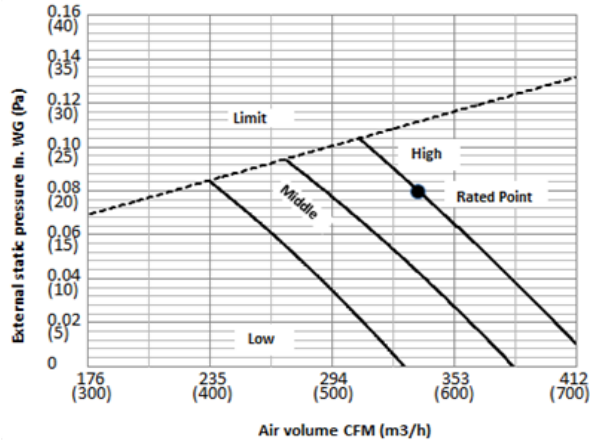
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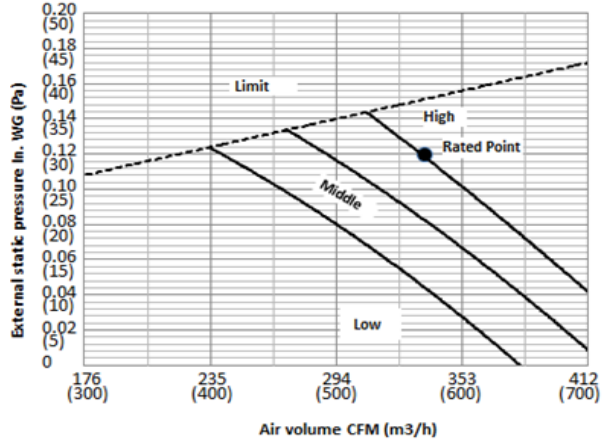
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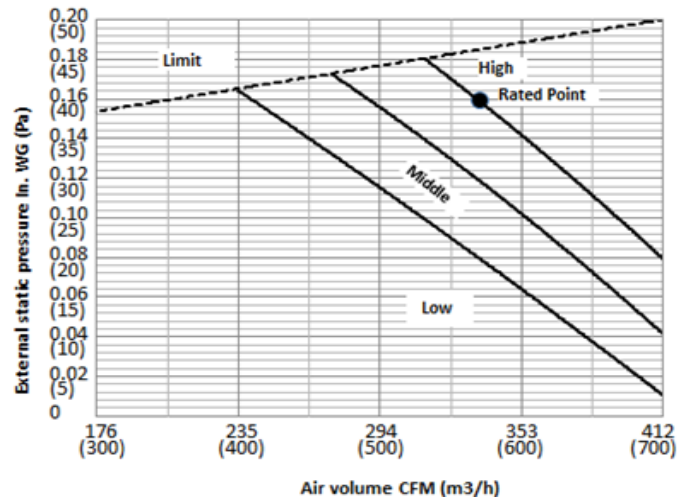
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Code 3

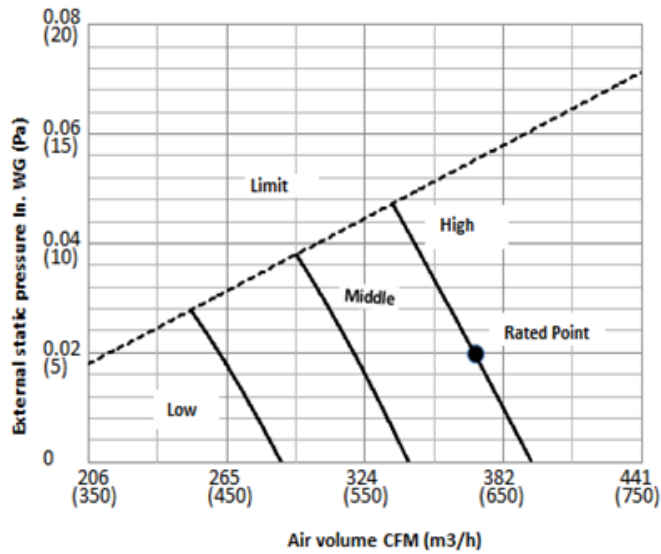


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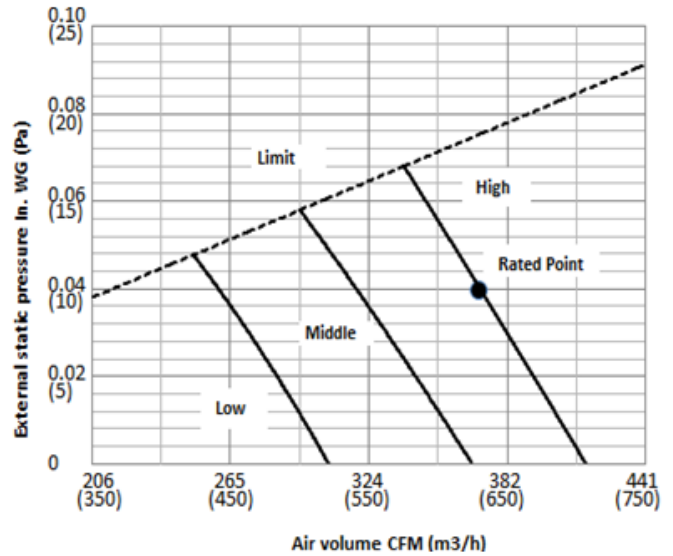


Static Pressure Curves Size 12

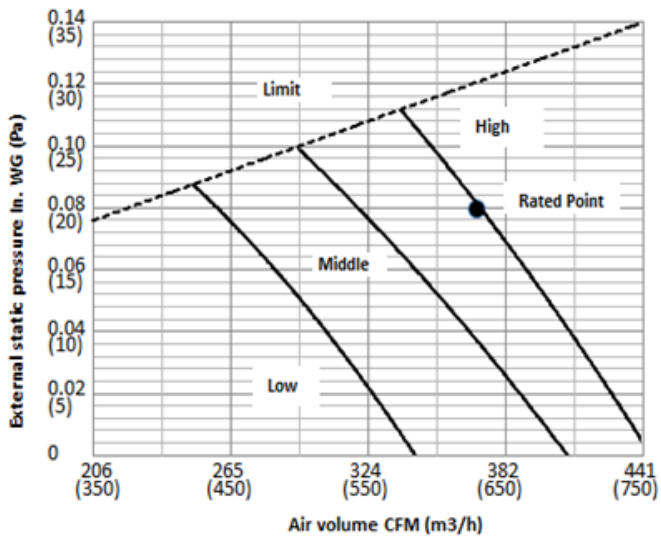
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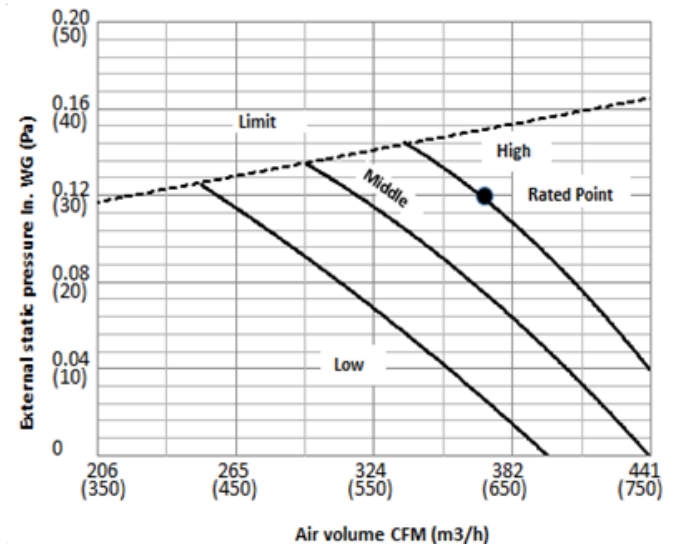
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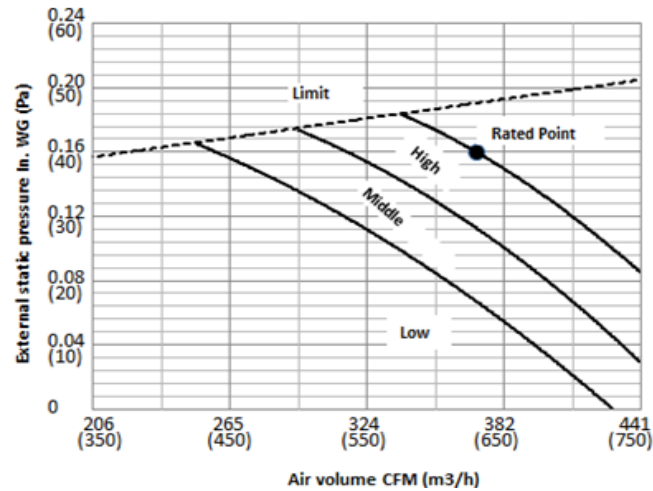
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Code 3

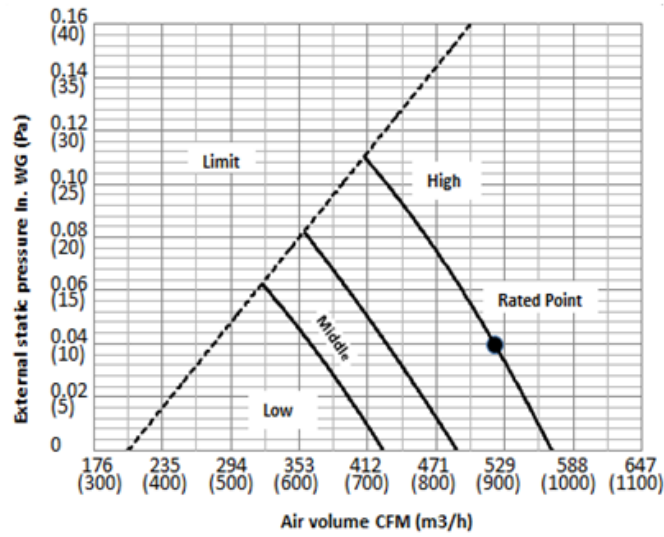


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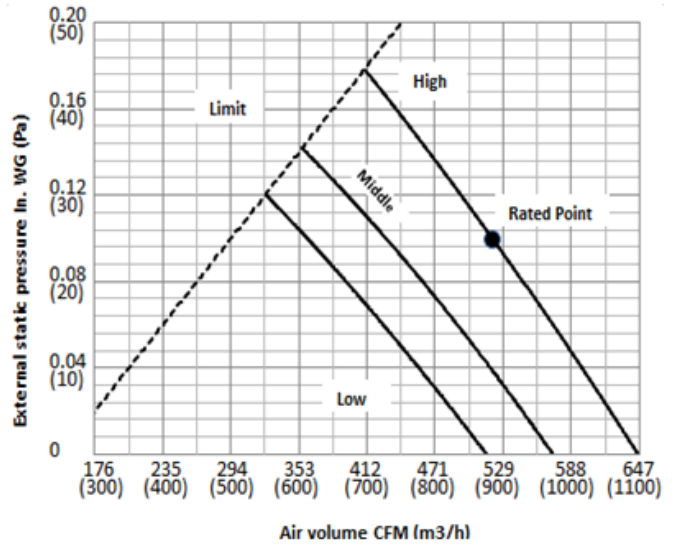


Static Pressure Curves Size 18

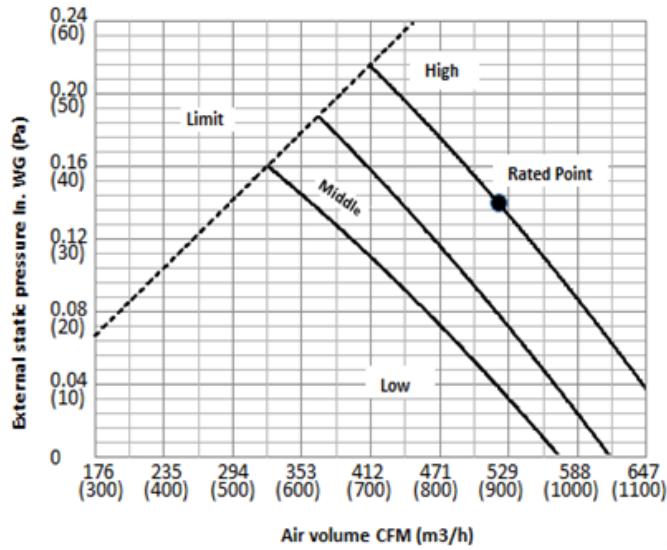
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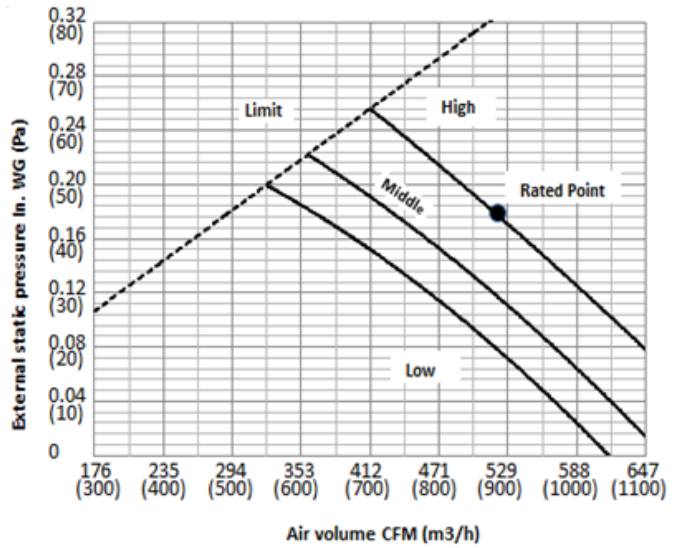
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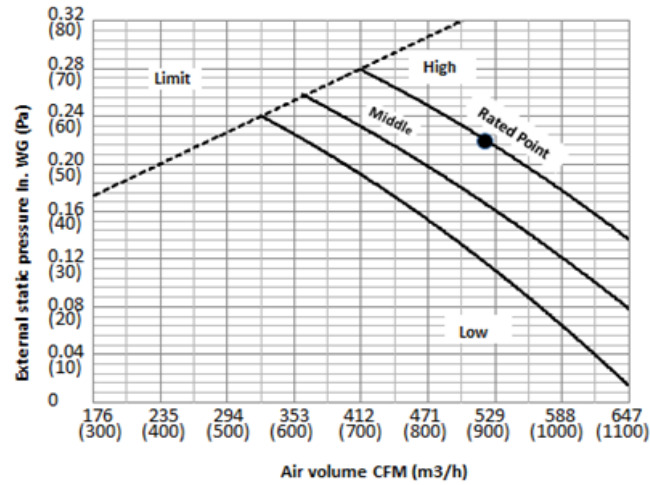
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Code 3

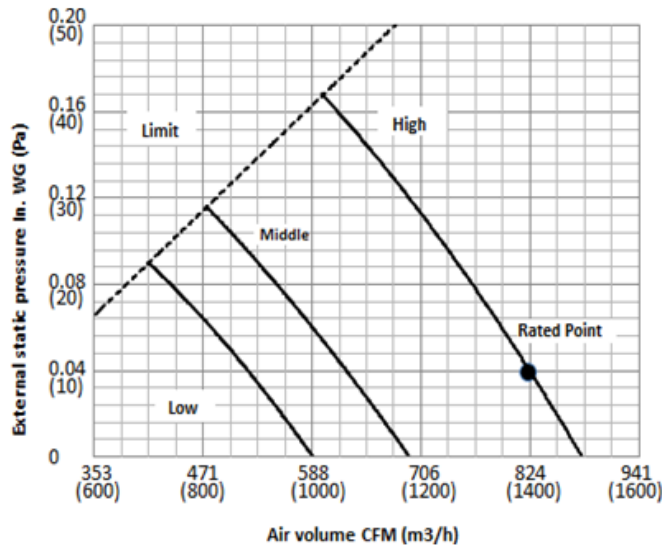


Code 4

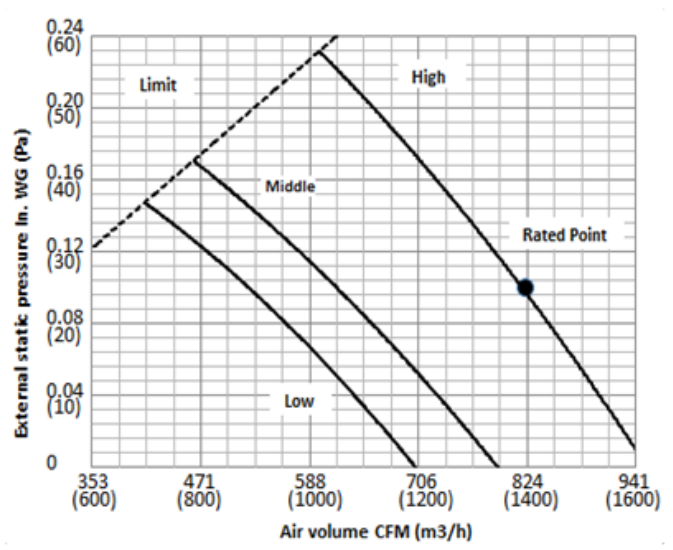


Static Pressure Curves Size 24

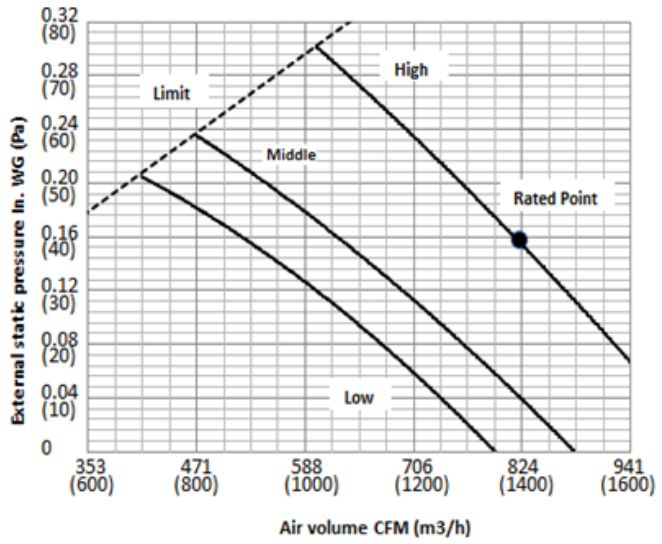
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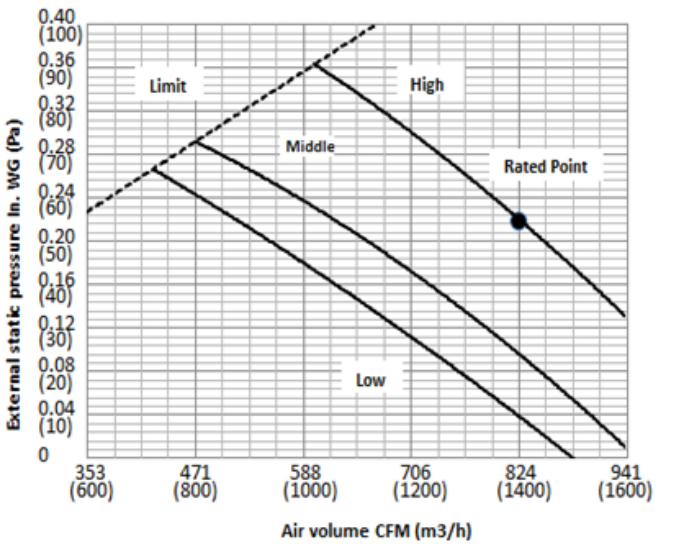
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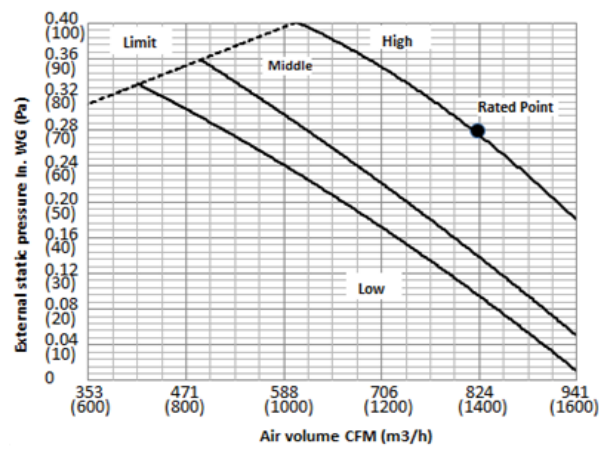
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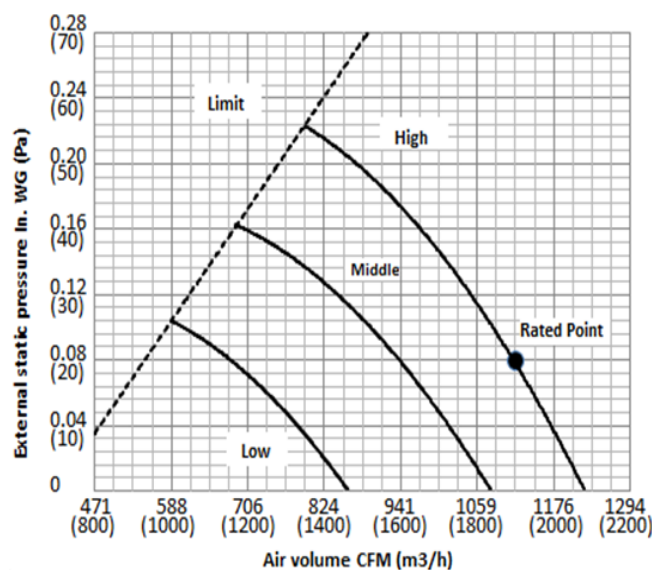
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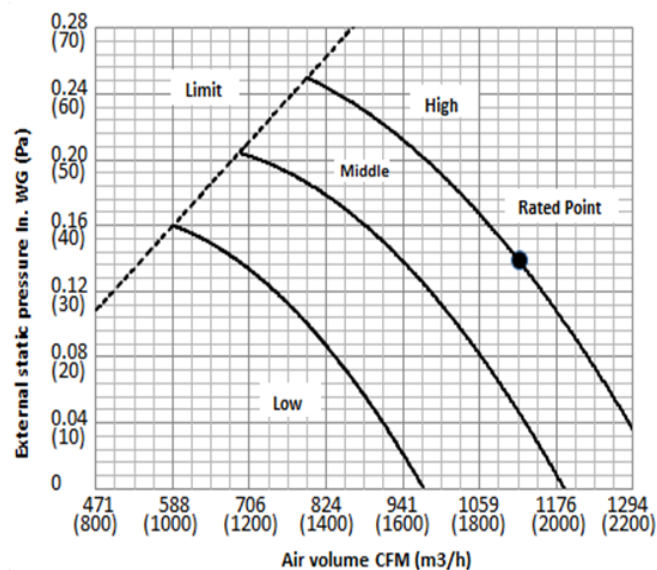
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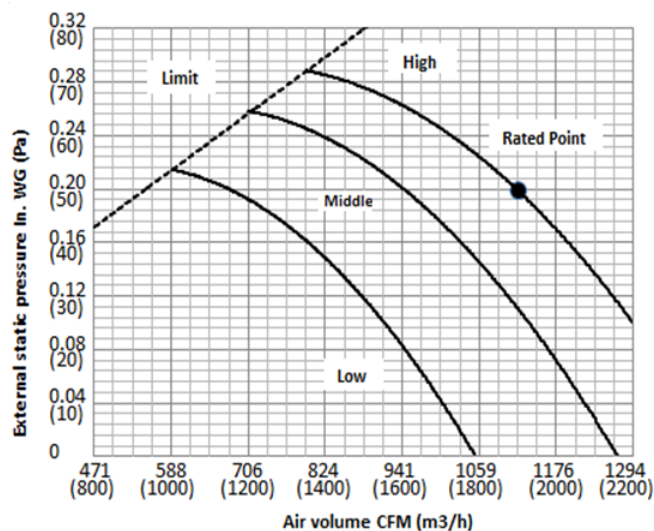
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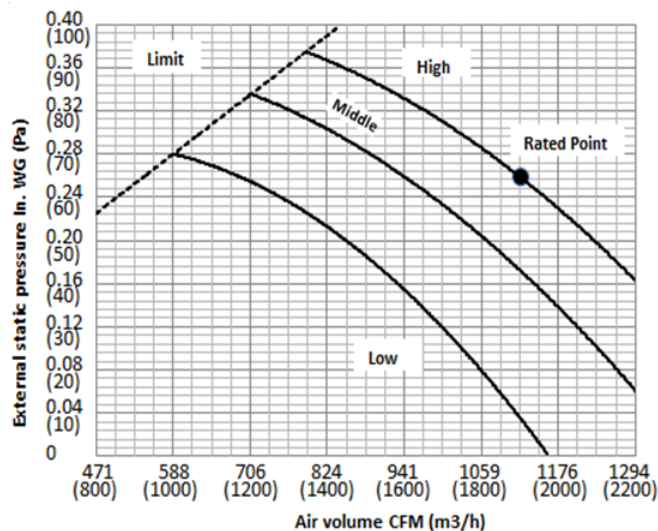
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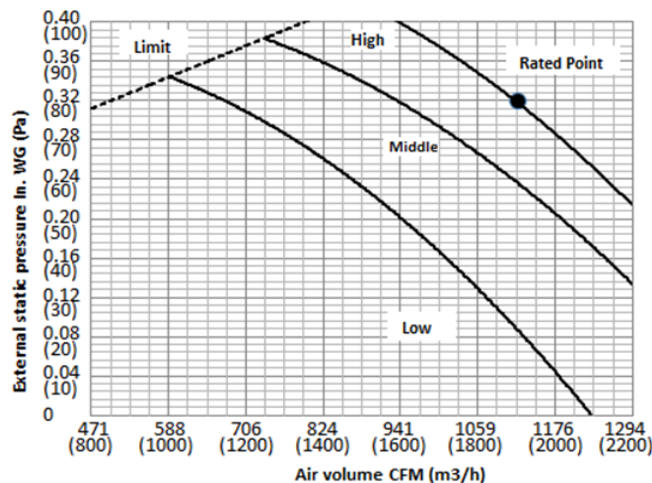
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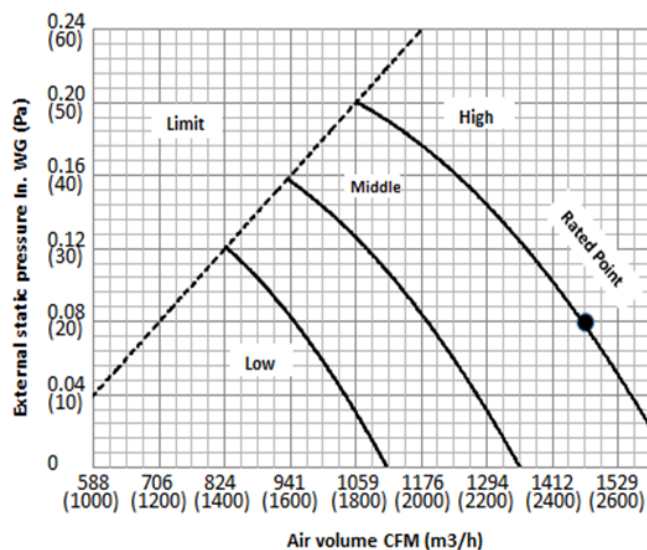
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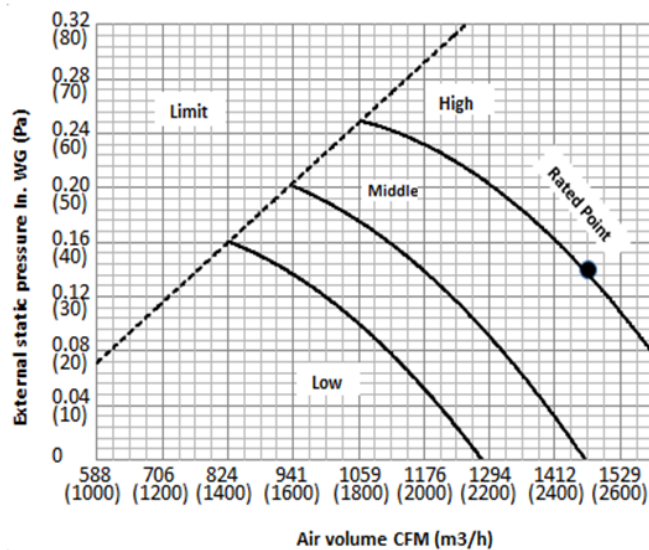
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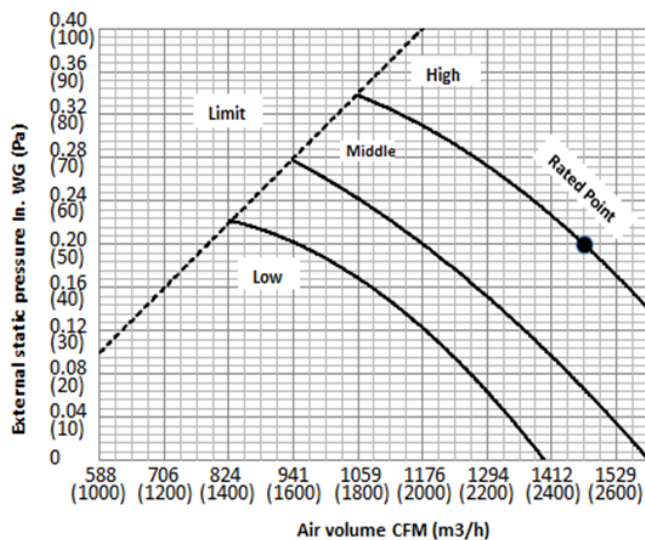
Code 0



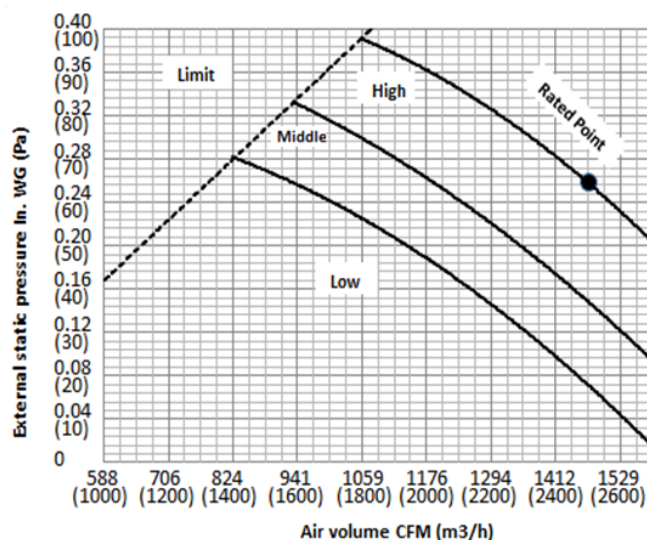
Code 1



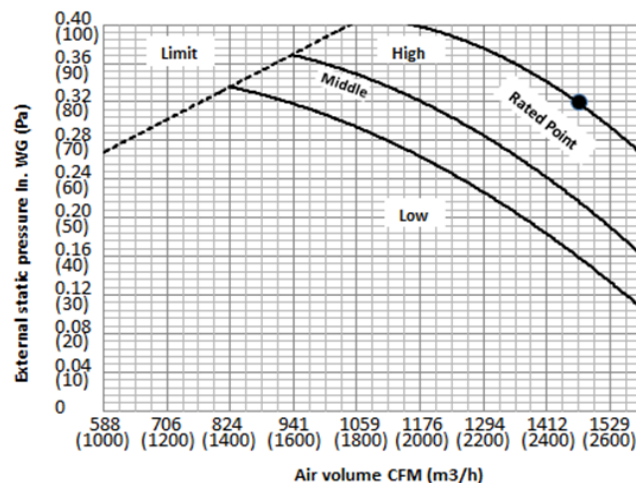
Code 2



Code 3



Code 4



OUTDOOR UNIT INSTALLATION

1. Use a rigid base to support unit in a level position.
2. Locate outdoor unit and connect piping and wiring.



CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

In regions with snowfall and cold temperatures, avoid installing the outdoor unit in areas where it can be covered by snow. If the outdoor unit is installed in areas where heavy snow is expected, a field supplied ice or snow stand and/or field supplied wind baffle should be installed to protect the unit from snow accumulation and/or blocked air intake. Blocking the air intake may result in reduced airflow, significantly reduced performance, and damage to the equipment.

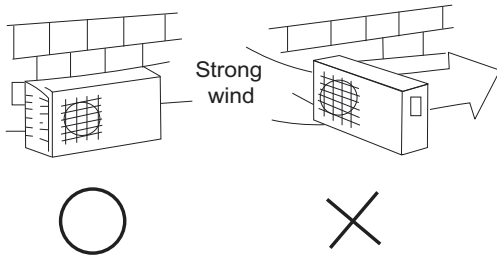


Fig. 17 – High Wind Installation

MAKE REFRIGERANT PIPING CONNECTIONS (OUTDOOR UNIT)

IMPORTANT: Use refrigeration grade tubing **ONLY**. No other type of tubing may be used. Use of other types of tubing will void manufacturer's warranty.

Do not open service valves or remove protective caps from tubing ends until all the connections are made.

Bend tubing with bending tools to avoid kinks and flat spots.

Keep the tubing free of dirt, sand, moisture, and other contaminants to avoid damaging the refrigerant system.

Avoid sags in the suction line to prevent the formation of oil traps. Insulate each tube with minimum 3/8-in. (10 mm) wall thermal pipe insulation. Inserting the tubing into the insulation before making the connections saves time and improves installation quality.

1. Remove service valve cover if provided with unit.
2. Cut tubing with tubing cutter. Remove service connection if provided with unit.
3. Install correct size flare nut onto tubing and make flare connection.
4. Apply a small amount of refrigerant oil to the flare connection on the tubing.
5. Properly align tubing in with service valve.
6. Tighten the flare nut to proper torque value (see Table 7) using a torque wrench and backup wrench (see Fig. 18).

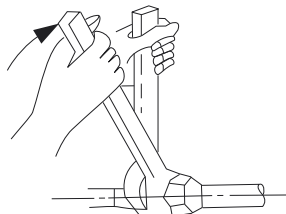


Fig. 18 – Tighten Flare Nut

Table 7— Tightening Torque

Pipe Diameter Inch (mm)	Tightening Torque	
	Ft-lb	N-m
Ø1/4" (6.35)	10 to 13	13.6 to 17.6
Ø3/8" (9.52)	23 to 31	32.5 to 42.0
Ø1/2" (12.7)	37 to 46	50.1 to 62.3
Ø5/8" (15.88)	60 to 60	67.7 to 81.3



CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

Excessive torque can break flare nut depending on installation conditions.

INSTALL ALL POWER AND INTERCONNECTING WIRING TO OUTDOOR UNIT

1. Mount outdoor power disconnect.
2. Run power wiring from main box to disconnect per NEC and local codes.
3. Remove field wiring cover from unit by loosening screws.
4. Remove caps on conduit panel.
5. Connect conduit to conduit panel (see Fig. 19).
6. Properly connect both power supply and control lines to terminal block per the connection diagram for the appropriate unit capacity and voltage.
7. Ground unit in accordance with NEC and local electrical codes.
8. Use lock nuts to secure conduit.
9. Reinstall field wiring cover.



CAUTION

EQUIPMENT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

- Be sure to comply with local codes while running wire from indoor unit to outdoor unit.
- Every wire must be connected firmly. Loose wiring may cause terminal to overheat or result in unit malfunction. A fire hazard may also exist. Therefore, be sure all wiring is tightly connected.
- No wire should be allowed to touch refrigerant tubing, compressor or any moving parts.
- Disconnecting means must be provided and shall be located within sight and readily accessible from the air conditioner.
- Connecting cable with conduit shall be routed through hole in the conduit panel.

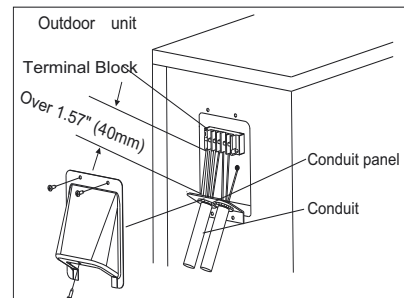


Fig. 19 – Field Wiring

ELECTRICAL DATA

Table 8—Electrical Data

UNIT SIZE	OPER. VOLTAGE MAX / MIN*	COMPRESSOR		OUTDOOR FAN				INDOOR FAN				MCA	MAX FUSE CB AMP
		V-PH-HZ	RLA	V-PH-HZ	FLA	HP	W	V-PH-HZ	FLA	HP	W		
9	253 / 187	208-230/1/60	5.3	208-230/1/60	3	0.053	40	208-230/1/60	1.03	0.07	55	15	15
12			5.7		3	0.053	40		1.03	0.07	55	15	15
18			7.3		3	0.067	50		0.83	0.12	90	15	20
24			8.8		3	0.16	120		0.83	0.12	90	15	25
36			13.5		3	0.16	120		1.263	0.2	150	30	50
48			13.4		3	0.11	85		2.23	0.32	240	35	55

*Permissible limits of the voltage range at which the unit will operate satisfactorily.

LEGEND

FLA – Full Load Amps
MCA – Minimum Circuit Amps
RLA – Rated Load Amps

CONNECTION DIAGRAMS

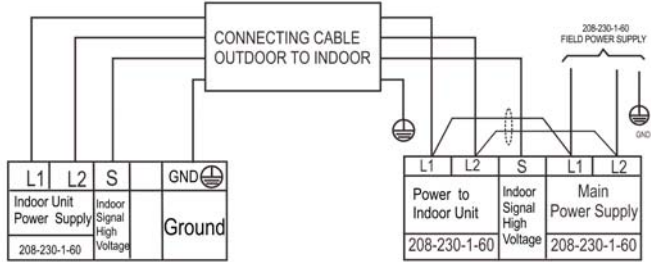


Fig. 20 – Connection Diagrams 9, 12, 18 and 24

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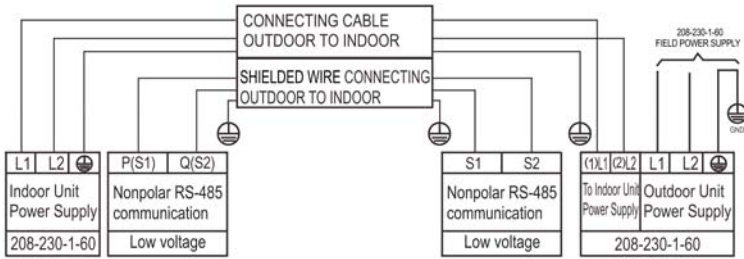


Fig. 21 – Connection Diagrams 36 and 48

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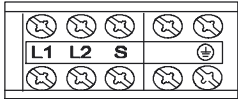


Fig. 22 – Control and Power Wiring on Indoor Unit

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Notes:

1. Do not use thermostat wire for any connection between indoor and outdoor units.
2. All connections between indoor and outdoor units must be as shown. **The connections are sensitive to polarity and will result in a fault code.**

INSTALL ALL POWER, INTERCONNECTING WIRING, AND PIPING TO INDOOR UNIT

1. Run interconnecting piping and wiring from the outdoor unit to the indoor unit.
2. Connect wiring from outdoor unit per connection diagram (see Fig. 20 and Fig. 22).
3. Replace field wiring cover and close front cover of indoor unit.
4. Connect refrigerant piping and drain line outside of indoor unit. Refer to Fig. 18 for proper installation of the flare connections. Complete pipe insulation at flare connection then fasten piping and wiring to the wall as required. Completely seal the hole in the wall.
5. Connect the drain line. The drain line must not have a trap anywhere in its length, must pitch downwards, and must be insulated up to the outside wall.

NOTE: For applications where gravity cannot be used for drainage, a condensate pump accessory is available. Consult the condensate pump Installation Instructions for more information.

WIRELESS REMOTE CONTROL INSTALLATION

Mounting Bracket (if installed on the wall)

1. Use the two screws supplied with control to attach the Mounting Bracket to the wall in a location selected by customer and within operating range.
2. Install batteries in Remote Control.
3. Place the remote control into the remote control mounting bracket.
4. For remote control operation, refer to the unit owner's manual.

NOTE: If a Wireless Remote controller is used, relocate the IR Receiver within line of sight of remote location using the 6 ft. cable included. The factory location of the IR receiver is inside the control box (see Fig. 23).

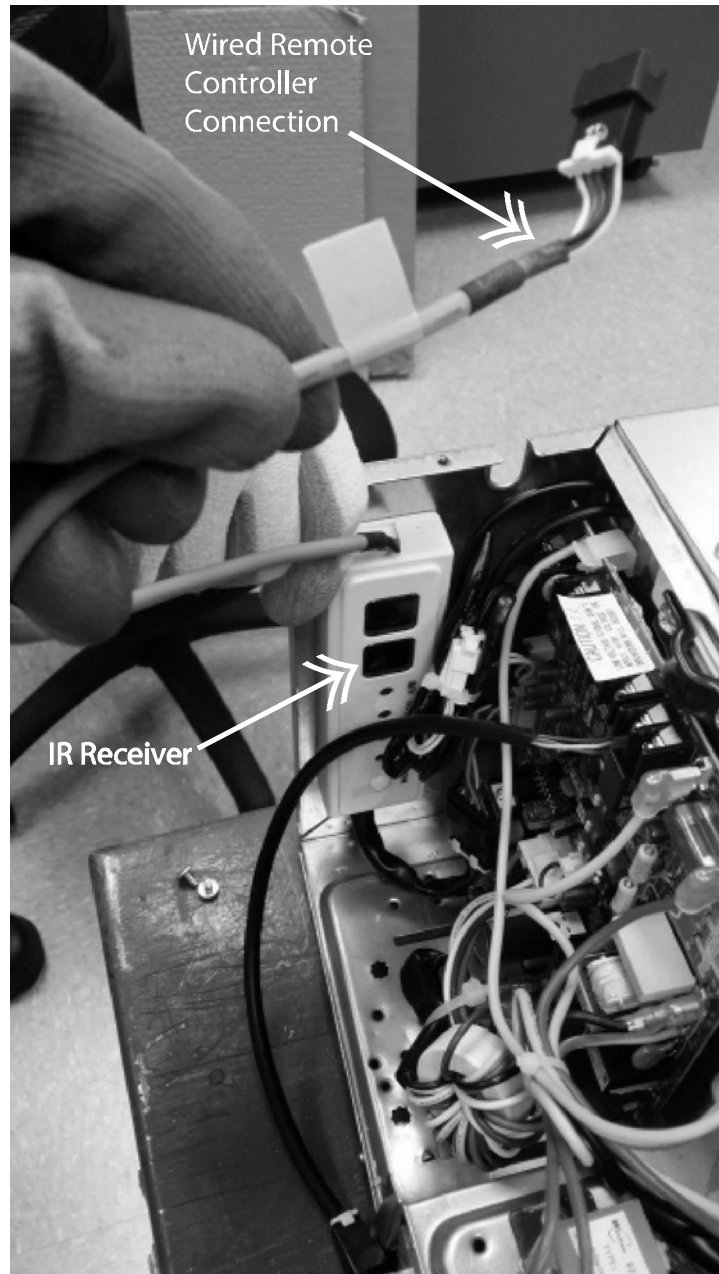


Fig. 23 – Control Box

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WIRED REMOTE CONTROLLER

To connect the wired remote controller (thermostat) to the indoor unit, use 5-core shielded cable and 5-pin connector from IR Receiver located in the control box (see Fig 23).

For setup instructions, refer to the controller installation manual.

CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

Never use the system compressor as a vacuum pump.

Refrigerant tubes and indoor coil should be evacuated using the recommended deep vacuum method of 500 microns. The alternate triple evacuation method may be used if the procedure outlined below is followed. Always break a vacuum with dry nitrogen.

SYSTEM VACUUM AND CHARGE

Using Vacuum Pump

1. Completely tighten flare nuts A, B, C, D, connect manifold gage charge hose to a charge port of the low side service valve (see Fig. 24).
2. Connect charge hose to vacuum pump.
3. Fully open the low side of manifold gage (see Fig. 25).
4. Start the vacuum pump.
5. Evacuate using the triple evacuation method.
6. After evacuation is complete, at 500 microns or less, fully close the low side of manifold gage and stop operation of vacuum pump.
7. The factory charge contained in the outdoor unit is good for up to 25 ft. (8 m) of line length. For refrigerant lines longer than 25 ft. (8 m), add refrigerant, up to the allowable length, as specified in the System Requirements section.
8. Disconnect the charge hose from charge connection of the low side service valve.
9. Fully open service valves B and A.
10. Securely tighten caps of service valves.

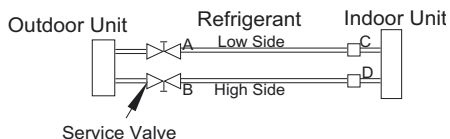


Fig. 24 – Service Valve

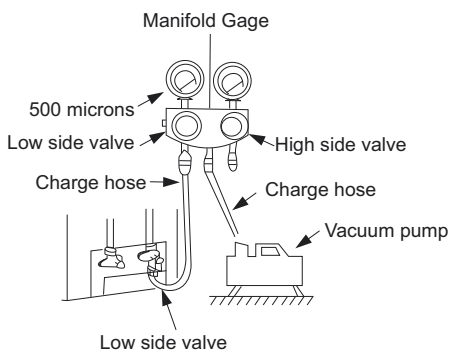


Fig. 25 – Manifold

Deep Vacuum Method

The deep vacuum method requires a vacuum pump capable of pulling a vacuum of 500 microns and a vacuum gage capable of accurately measuring this vacuum depth. The deep vacuum method is the most positive way of assuring a system is free of air and liquid water (see Fig. 26).

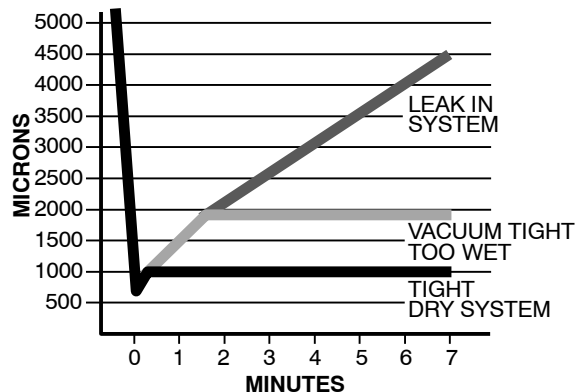


Fig. 26 – Deep Vacuum Graph

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Triple Evacuation Method

The triple evacuation method should only be used when vacuum pump is only capable of pumping down to 500 microns and system does not contain any moisture. Refer to Fig. 27 and proceed as follows:

1. Pump system down to 500 microns and allow pump to continue operating for an additional 15 minutes.
2. Close service valves and shut off vacuum pump.
3. Connect a nitrogen cylinder and regulator to system and open until system pressure is 2 psig.
4. Close service valve and allow system to stand for 1 hr. During this time, dry nitrogen will be able to diffuse throughout the system absorbing moisture.
5. Repeat this procedure as indicated in Fig. 27. The system will be freed of any contaminants and water vapor.

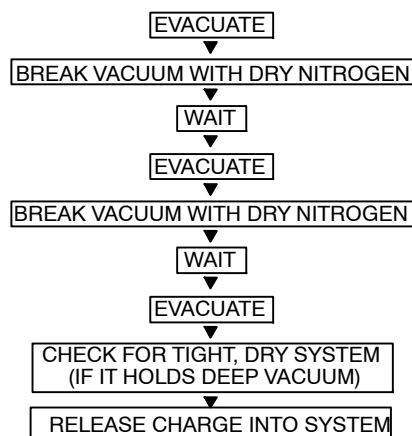


Fig. 27 – Triple Evacuation Method

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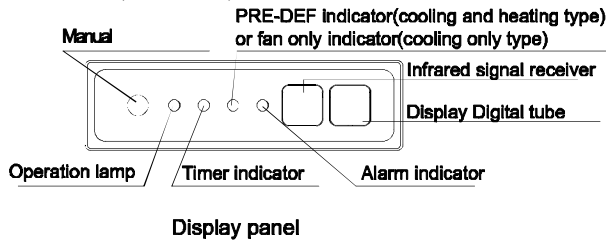
Final Tubing Check

IMPORTANT: Check to be certain factory tubing on both indoor and outdoor unit has not shifted during shipment. Ensure tubes are not rubbing against each other or any sheet metal. Pay close attention to feeder tubes, making sure wire ties on feeder tubes are secure and tight.

START-UP

Test Operation

Perform test operation after completing gas leak and electrical safety check (see Fig. 28).



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Fig. 28 – Test Operation

1. Press the Manual button on the IR Receiver located in the control box to begin testing.

NOTE: A protection feature prevents air conditioner from being activated for approximately 3 to 4 minutes.

2. Push **MODE**, select **COOLING, HEATING, FAN** mode to check if all functions work correctly.
3. To run the test using the manual button in the indoor unit:
 - (1.) Open front panel of the indoor unit;
 - (2.) Push the manual switch once to energize the unit. The set conditions of manual operation are as follows:
 - Preset set point: 76°F (24°C)
 - Fan speed: **AUTO**
 - Discharge air direction: Pre-set position based on operation in “Cool” or “Heat” mode.
4. Be sure to set the manual switch to “OFF” (by pushing it twice again) after finishing the test operation.

SYSTEM CHECKS

1. Conceal the tubing where possible.
2. Make sure that the drain tube slopes downward along its entire length.
3. Ensure all tubing and connections are properly insulated.
4. Fasten tubes to the outside wall, when possible.
5. Seal the hole through which the cables and tubing pass.

INDOOR UNIT

1. Do all Remote Control buttons function properly?
2. Do the display panel lights work properly?
3. Does the air deflection louver function properly?
4. Does the drain work?

OUTDOOR UNIT

1. Are there unusual noises or vibrations during operation?

Explain Following Items To Customer (with the aid of the Owner's Manual):

1. How to turn air conditioner on and off; selecting **COOLING, HEATING** and other operating modes; setting a desired temperature; setting the timer to automatically start and stop air conditioner operation; and all other features of the remote control and display panel.
2. How to remove and clean the air filter.
3. How to set air deflection louver.
4. Explain care and maintenance.
5. Present the owner's manual and installation instructions to customer.

TROUBLESHOOTING

For ease of service, the systems are equipped with diagnostic code display LEDs on both the indoor and outdoor units. The outdoor diagnostic display consists of two LEDs (Red and Green) on the outdoor unit board and is limited to a few errors.

The indoor diagnostic display is a combination of flashing LEDs on the display panel or the front of the unit. If possible, always check the diagnostic codes displayed on the indoor unit first.

The diagnostic codes displayed in the indoor and outdoor units are listed in the tables below.

INDOOR UNIT DIAGNOSTIC GUIDES

Table 9—Indoor Unit Diagnostic Guides

OPERATION LAMP	TIMER LAMP	DISPLAY	LED STATUS
★ 1 time	X	E0	Indoor unit EEPROM parameter error
★ 2 times	X	E1	Indoor / outdoor units communication error
★ 3 times	X	E2	Zero-crossing signal detection error
★ 4 times	X	E3	Indoor fan speed has been out of control
★ 5 times	X	E4	Indoor room temperature sensor T1 open circuit or short circuit
★ 6 times	X	E5	Evaporator coil temperature sensor T2 open circuit or short circuit
★ 7 times	X	EC	Refrigerant leakage detection
★ 2 times	O	F1	Outdoor ambient temperature sensor T4 open circuit or short circuit
★ 3 times	O	F2	Condenser coil temperature sensor T3 open circuit or short circuit
★ 4 times	O	F3	Compressor discharge temperature sensor T5 open circuit or short circuit
★ 5 times	O	F4	Outdoor unit EEPROM parameter error
★ 6 times	O	F5	Outdoor fan speed has been out of control
★ 1 times	★	P0	IPM malfunction or IGBT over—strong current protection
★ 2 times	★	P1	Over voltage or over low voltage protection
★ 3 times	★	P2	High temperature protection of compressor top diagnosis and solution (only for 9k,12k models)
★ 5 times	★	P4	Inverter compressor drive error

O(light) X(off) ★(flash)

OUTDOOR UNIT DIAGNOSTIC GUIDES

Table 10—Outdoor Sizes 09 - 24

LED2 (Green)	LED1 (Red)	INDOOR UNIT DISPLAY	FAILURE MODE
O	X		Standby, normal
X	O		Operation, normal
O	☆	E5	Compressor drive board EEPROM error
☆	X	P0	IPM malfunction or IGBT over—strong current protection
O	O	P1	Over voltage or too low voltage protection
X	☆	P4	Inverter compressor drive error
☆	O	P4	Inverter compressor drive error
☆	☆	P4	Communication malfunction between main control board and driver board

☆ = Flashing, X = Off - For additional diagnostic information, refer to the Service Manual.

Table 11—Outdoor Sizes 36 - 48

E1	Communication malfunction between indoor and outdoor units.
F0	Protection of over-current
F1	Open circuit or short circuit of outdoor ambient temperature sensor T4
F2	Open circuit or short circuit of condenser coil temperature sensor T3
F3	Open circuit or short circuit of Compressor discharge temperature sensor T5
F4	Outdoor unit EEPROM error
F5	Outdoor fan speed has been out of control
P0	IPM malfunction
P1	Over voltage or over low voltage protection
P2	High temperature protection of compressor top
P3	Outdoor low temperature protection
P4	Inverter compressor drive error
J0	High temperature protection of indoor coil in heating
J1	Outdoor temperature protection of outdoor coil in cooling
J2	Discharge temperature protection
J3	Protection of active PFC module
J4	Communication error between control board and IPM board
J5	Hi-pressure switch protection
J6	Low-pressure switch protection
P7	Outdoor IGBT temperature sensor error
J8	AC voltage protection