38GJQ
MULTI–ZONE DUCTLESS SYSTEM MATCHED WITH 40GRQ / 40GJB / 40GJC / 40GJD / 40GJF Indoor Units
Sizes 18, 24, 30, 36, 42, 48 and 56

Carrier
turn to the experts

Installation Instructions

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

NOTE: Images are for illustration purposes only. Actual models may differ slightly.

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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 coil cleaning. All other operations should only be performed by trained service personnel.

When working on the equipment, observe the 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 a 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 the literature and attached to the unit. Consult local building codes and current editions of the National Electrical Code (NEC) NFPA 70. In Canada, refer to the current editions of the Canadian electrical code CSA 22.1.

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, the 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.

⚠ 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 the 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.

GENERAL

These instructions cover the installation, start−up and servicing of the multi−zone outdoor unit connected to up to nine indoor fan coil units. For approved combinations, please refer to the Product Data.

PART LISTS

Table 1—Part List

Outdoor Units		
Size	**Name**	**Qty**
18	No parts included	
24	Conversion Joint 3/8 to 1/2	2
30,36	Conversion Joint 3/8 to 5/8	2
	Conversion Joint 3/8 to 1/2	4
	Conversion Joint 1/4 to 3/8	2
	Screw M4X12	1
42	Conversion Joint 3/8 to 5/8	3
	Conversion Joint 3/8 to 1/2	4
	Conversion Joint 1/4 to 3/8	2
	Screw M4X12	1
48,56	bellows φ16	1

Table 2—Part List

Indoor High Wall (40GRQ)		
Size	**Name**	**Qty**
9,12	Mounting Plate	1
	Remote Control	1
	Remote Control Holder	1
	Battery (1.5V)	2
	Conversion Joint 1/2 to 3/8	1
18	Mounting Plate	1
	Remote Control	1
	Remote Control Holder	1
	Battery (1.5V)	2
	Conversion Joint 5/8 to 1/2	1

Table 3—Part List

Indoor High Wall (40GJB)		
Size	**Name**	**Qty**
9,12	Mounting Plate	1
	Remote Control	1
	Remote Control Holder	1
	Battery (1.5V)	2
	Conversion Joint 1/2 to 3/8	1

Table 4—Part List

Indoor High Wall (40GJB)		
Size	**Name**	**Qty**
18,24	Mounting Plate	1
	Remote Control	1
	Remote Control Holder	1
	Battery (1.5V)	2
	Conversion Joint 5/8 to 1/2	1

Table 5—Part List

Indoor Cassette		
Size	**Name**	**Qty**
12,18	Remote control	1
	Battery (1.5V)	2
	GasketM6Xφ18X1.4	4
	GasketM10Xφ30X2.5	10
	Screw ST4.8X13 HC	4
	Screw M6X25	4
	Nut of Connector Pipe(B) Package	1
	Pipe Connection Nut (”I” shape)	1
	Connection wire of wired control	1
	Wired controller	1
24	Remote control	1
	Battery (1.5V)	2
	Gasket location board	1
	GasketM10Xφ30X2.5	10
	Screw ST4.8X13 HC	4
	bellows φ16	1
	Nut of Connector Pipe(B) Package	1
	Connection wire of wired control	1
	Wired controller	1

PARTS LIST (CONT)

Table 6—Part List

Indoor Ducted		
Size	**Name**	**Qty**
9,12,18	Remote control	1
	Battery (1.5V)	2
	Screw M10X8	4
	Screw M10	4
	Gasket 10GB93	4
	Pipe Connection Nut (”I” shape)	1
	Nut of Connector Pipe(B) Package	1
	Wired control	1
	Connection wire of wired control	1
21,24	Remote control	1
	Battery (1.5V)	2
	Screw M10X8	4
	Screw M10	4
	Gasket 10GB93	4
	Nut of Connector Pipe(B)	1
	Wired controller	1
	Connection wire of wired control	1
	bellows φ16	1

Table 7—Part List

Indoor Floor Console		
Size	**Name**	**Qty**
9,12,18	Installation Panel	1
	Remote Control	1
	Remote Control Holder	1
	Battery (1.5V)	2

Table 8—Part List

Branch Box KSAUI0201AAA		
Name	**Name**	**Qty**
Multi 2 Port Branch Box	Installation instruction	1
	Branch pipe outdoor 3/4 to 5/8	1
	Branch pipe indoor 4.3 in.(110mm) 5/8 to 5/8,1/2,3/8	1
	Branch pipe indoor 6 in.(150mm) 5/8 to 5/8,1/2,3/8	1
	Branch pipe indoor 1/4 to 3/8	2
	Drain Hose	1

Table 9—Part List

Branch Box KSAUI0401AAA		
Name	**Name**	**Qty**
Multi 3 Port Branch Box	Installation instruction	1
	Branch pipe outdoor 3/4 to 5/8	1
	Branch pipe indoor 4.3 in.(110mm) 5/8 to 5/8,1/2,3/8	1
	Branch pipe indoor 6 in.(150mm) 5/8 to 5/8,1/2,3/8	1
	Branch pipe indoor 1/4 to 3/8	3
	Branch pipe indoor 2.75 in. (70mm) 5/8 to 5/8,1/2,3/8	1
	Drain Hose	1

PARTS LIST (CONT)

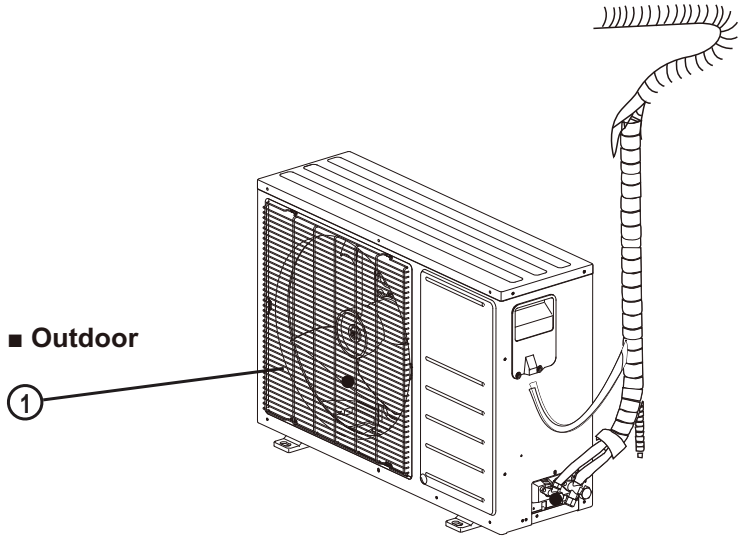

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Fig. 1 – Parts List

NOTE:

- If the outdoor unit is higher than the indoor unit, prevent rain from flowing into the indoor unit along the connection pipe by making a downward arc in the connection pipe before it enters the wall to the indoor unit. This ensures that rain drips from the connection pipe before it enters the wall.
- Piping and the interconnecting wiring are field supplied.
- Fig. 1 is only a sketch. Different models may be differ slightly.

The following units are addressed in this manual.

Table 10—Unit Sizes

SYSTEM TONS	kBTUh	VOLTAGE – PHASE	OUTDOOR MODEL
1.50	18	208/230–1	38GJQC18–––3
2.00	24		38GJQD24–––3
2.50	30		38GJQF30–––3
3.00	36		38GJQG36–––3
3.50	42		38GJQG42–––3
4.00	48		38GJQK48–––3
4.67	56		38GJQL56–––3

SYSTEM REQUIREMENTS

Allow sufficient space for airflow and unit servicing. See Fig. 22 through 26 for the minimum required clearances.

Piping

IMPORTANT: **Both refrigerant lines must be insulated separately.**

The minimum refrigerant line length between the indoor and outdoor units is 10 ft. (3m). See Table 11 for the maximum lengths.

Table 11—Maximum Piping Lengths

Outdoor Unit									
System Size			18	24	30	36	42	48	56
Piping	Min. Piping Length	ft	10	10	10	10	10	10	10
	Standard Piping Length	ft	32	98	131.2	131.2	131.2	98.42	98.42
	Max. outdoor-indoor height difference	ft	33	33	49.2	49.2	49.2	98.42	98.42
	Max. height distance between indoor and indoor	ft	33	33	24.6	24.6	24.6	49.21	49.21
	Max. height distance between indoor and outdoor and indoor	ft	32	32	49.2	49.2	49.2	98.42	98.42
	Max. height distance between indoor and outdoor and outdoor up	ft	33	33	49.2	49.2	49.2	98.42	98.42
	Max. equivalent piping outdoor to last indoor	ft	33	65	82	82	82	229	229
	Max. Piping Length with no additional refrigerant charge	ft	32	98	131.2	131.2	131.2	98.42	98.42
	Max. Piping Length	ft	65	196	229.7	246	246	442.9	475.7
	Gas Pipe (size - connection type)	in	3/8	3/8	3/8	3/8	3/8	5/8	5/8
	Liquid Pipe (size - connection type)	in	1/4	1/4	1/4	1/4	1/4	3/8	3/8
Refrigerant	Refrigerant Type		R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A
	Heat Pump Models Charge Amount	Lbs	3.53	4.85	6.17	8.05	8.05	10.91	10.91

NOTE: Tables 12 through 16 display the piping size specifications.

Table 12—Indoor Unit Piping Connection High Wall

Indoor High Wall (40GRQ)	SIZE		9	12	18
	Pipe Connection Size – Liquid	in	1/4”	1/4”	1/4”
	Pipe Connection Size – Suction	in	1/2”	1/2”	5/8”

Table 13—Indoor Piping Connection High Wall

Indoor High Wall (40GJB)	SIZE		9	12	18	24
	Pipe Connection Size – Liquid	in	1/4”	1/4”	1/4”	1/4”
	Pipe Connection Size – Suction	in	1/2”	1/2”	5/8”	5/8”

Table 14—Indoor Piping Connection Cassette

Indoor Cassette	SIZE		12	18	24
	Pipe Connection Size – Liquid	in	1/4”	1/4”	3/8”
	Pipe Connection Size – Suction	in	3/8”	1/2”	5/8”

Table 15—Indoor Piping Connection Ducted

Indoor Ducted	SIZE		9	12	18	21	24
	Pipe Connection Size – Liquid	in	1/4”	1/4”	1/4”	3/8”	3/8”
	Pipe Connection Size – Suction	in	3/8”	3/8”	1/2”	5/8”	5/8”

Table 16—Indoor Piping Connection Floor Console

Indoor Floor Console	SIZE		9	12	18
	Pipe Connection Size – Liquid	in	1/4”	1/4”	1/4”
	Pipe Connection Size – Suction	in	3/8”	3/8”	1/2”

Table 17—Additional Refrigerant Charge

	TOTAL LINE LENGTH ft.		ADDITIONAL CHARGE, 1/4” LIQUID LINE / 3/8” LIQUID LINE, oz/ft. ft. (m)								
Unit Size	Min	Max	10–32 (3–10)	>32–66 (10–20)	>66–98 (20–30)	>98–131.2 (30–40)	>131.2–196 (40–60)	>196–230 (60–70)	>230–246 (70–75)	>246–443 (75–135)	>443–476 (135–145)
18	10	66	None	0.20 / 0.20							
24	10	196		None	None	0.20 / 0.20	0.20 / 0.20				
30	10	230		None	None	None	0.24 / 0.58	0.24 / 0.58			
36	10	246		None	None	None	0.24 / 0.58	0.24 / 0.58	0.24 / 0.58		
42	10	246		None	None	None	0.24 / 0.58	0.24 / 0.58	0.24 / 0.58		
48	10	443		None	None	0.24 / 0.58	0.24 / 0.58	0.24 / 0.58	0.24 / 0.58	0.24 / 0.58	
56	10	476		None	None	0.24 / 0.58	0.24 / 0.58	0.24 / 0.58	0.24 / 0.58	0.24 / 0.58	0.24 / 0.58

Additional Refrigerant Calculation Sizes 30K, 36K and 42K:

Sum Total Liquid Pipe 1/4” (ft.) x 0.24 + Sum Total Liquid Pipe 3/8” (ft.) x 0.58 – 31 oz

Additional Refrigerant Calculation Sizes 48K and 56K:

Sum Total Liquid Pipe 1/4” (ft.) x 0.24 + Sum Total Liquid Pipe 3/8” (ft.) x 0.58 – 51.7 oz

NOTE: If the calculation results in a negative number no additional refrigerant is required.

NOTES:

EXV = Electronic Expansion Device

Electronic expansion valves in the outdoor unit are used as metering devices.

CONVERSION JOINTS

Some outdoor and indoor units include a package of conversion joints to facilitate the installation line sets as listed on the Parts List. These conversion joints are to be connected to the outdoor unit or the indoor unit side as needed to match the line set size listed in Tables 18 and 19 on the refrigerant piping section.

REFRIGERANT PIPING

Line sets should be sized based on Tables 18 and 19. Use the Conversion Joints on the outdoor side or the indoor side as listed.

Table 18—Suction Line

				Outdoor Model Number																			
				38GJQC18---3			38GJQD24---3			38GJQF30---3			38GJQG36---3			38GJQG42---3			38GJQK48---3			38GJQL56---3		
			Suction Line Connection Outdoor	3/8			3/8			3/8			3/8			3/8			5/8			5/8		
Indoor Unit	Nominal Unit Btuh	Indoor Model Number	Suction Line Connection Indoor	CJ Indoor Side	Line Set	CJ Outdoor Side	CJ Indoor Side	Line Set	CJ Outdoor Side	CJ Indoor Side	Line Set	CJ Outdoor Side	CJ Indoor Side	Line Set	CJ Outdoor Side	CJ Indoor Side	Line Set	CJ Outdoor Side	BP Indoor Side	Line Set	BP Outdoor Side	BP Indoor Side	Line Set	BP Outdoor Side
High Wall	9,000	40GRQB09B--3	1/2	1/2 to 3/8	3/8	N/A	NA	1/2	3/8 to 1/2	NA	1/2	3/8 to 1/2	NA	1/2	3/8 to 1/2	NA	1/2	3/8 to 1/2	1/2 to 5/8	1/2	N/A	1/2 to 5/8	1/2	N/A
	12,000	40GRQB12B--3	1/2	1/2 to 3/8	3/8	N/A	NA	1/2	3/8 to 1/2	NA	1/2	3/8 to 1/2	NA	1/2	3/8 to 1/2	NA	1/2	3/8 to 1/2	1/2 to 5/8	1/2	N/A	1/2 to 5/8	1/2	N/A
	18,000	40GRQB18B--3	5/8				5/8 to 1/2	1/2	3/8 to 1/2	5/8 to 1/2	1/2	3/8 to 1/2	5/8 to 1/2	1/2	3/8 to 1/2	5/8 to 1/2	1/2	3/8 to 1/2	N/A	5/8	N/A	N/A	5/8	N/A
	9,000	40GRQB09H--3	1/2	1/2 to 3/8	3/8	N/A	NA	1/2	3/8 to 1/2	NA	1/2	3/8 to 1/2	NA	1/2	3/8 to 1/2	NA	1/2	3/8 to 1/2	1/2 to 5/8	1/2	N/A	1/2 to 5/8	1/2	N/A
	12,000	40GRQB12H--3	1/2	1/2 to 3/8	3/8	N/A	NA	1/2	3/8 to 1/2	NA	1/2	3/8 to 1/2	NA	1/2	3/8 to 1/2	NA	1/2	3/8 to 1/2	1/2 to 5/8	1/2	N/A	1/2 to 5/8	1/2	N/A
	18,000	40GRQB18H--3	5/8				5/8 to 1/2	1/2	3/8 to 1/2	5/8 to 1/2	1/2	3/8 to 1/2	5/8 to 1/2	1/2	3/8 to 1/2	5/8 to 1/2	1/2	3/8 to 1/2	N/A	5/8	N/A	N/A	5/8	N/A
	9,000	40GJQB09B--3	1/2	1/2 to 3/8	3/8	NA	N/A	1/2	3/8 to 1/2	N/A	1/2	3/8 to 1/2	N/A	1/2	3/8 to 1/2	N/A	1/2	3/8 to 1/2	1/2 to 5/8	1/2	N/A	1/2 to 5/8	1/2	N/A
	12,000	40GJQB12B--3	1/2	1/2 to 3/8	3/8	NA	N/A	1/2	3/8 to 1/2	N/A	1/2	3/8 to 1/2	N/A	1/2	3/8 to 1/2	N/A	1/2	3/8 to 1/2	1/2 to 5/8	1/2	N/A	1/2 to 5/8	1/2	N/A
	18,000	40GJQB18B--3	5/8				5/8 to 1/2	1/2	3/8 to 1/2	5/8 to 1/2	1/2	3/8 to 1/2	5/8 to 1/2	1/2	3/8 to 1/2	5/8 to 1/2	1/2	3/8 to 1/2	N/A	5/8	N/A	N/A	5/8	N/A
	24,000	40GJQB24B--3	5/8							5/8 to 1/2	1/2	3/8 to 1/2	5/8 to 1/2	1/2	3/8 to 1/2	5/8 to 1/2	1/2	3/8 to 1/2	N/A	5/8	N/A	N/A	5/8	N/A
Cassette	12,000	40GJQB12C--3	5/8	N/A	3/8	N/A	N/A	3/8	N/A	N/A	3/8	N/A	N/A	3/8	N/A	N/A	3/8	N/A	3/8 to 5/8	3/8	N/A	3/8 to 5/8	3/8	N/A
	18,000	40GJQB18C--3	1/2				N/A	1/2	3/8 to 1/2	N/A	1/2	3/8 to 1/2	N/A	1/2	3/8 to 1/2	N/A	1/2	3/8 to 1/2	1/2 to 5/8	1/2	N/A	1/2 to 5/8	1/2	N/A
	24,000	40GJQB24C--3	5/8							N/A	5/8	3/8 to 5/8	N/A	5/8	3/8 to 5/8	N/A	5/8	3/8 to 5/8	N/A	5/8	N/A	N/A	5/8	N/A
Ducted	9,000	40GJQB09D--3	3/8	N/A	3/8	N/A	N/A	3/8	N/A	N/A	3/8	N/A	N/A	3/8	N/A	N/A	3/8	N/A	3/8 to 5/8	3/8	N/A	3/8 to 5/8	3/8	N/A
	12,000	40GJQB12D--3	3/8	N/A	3/8	N/A	N/A	3/8	N/A	N/A	3/8	N/A	N/A	3/8	N/A	N/A	3/8	N/A	3/8 to 5/8	3/8	N/A	3/8 to 5/8	3/8	N/A
	18,000	40GJQB18D--3	1/2				N/A	1/2	3/8 to 1/2	N/A	1/2	3/8 to 1/2	N/A	1/2	3/8 to 1/2	N/A	1/2	3/8 to 1/2	/2 to 5/8	1/2	N/A	1/2 to 5/8	1/2	N/A
	21,000	40GJQB21D--3	5/8							N/A	5/8	3/8 to 5/8	N/A	5/8	3/8 to 5/8	N/A	5/8	3/8 to 5/8	N/A	5/8	N/A	N/A	5/8	N/A
	24,000	40GJQB24D--3	5/8							N/A	5/8	3/8 to 5/8	N/A	5/8	3/8 to 5/8	N/A	5/8	3/8 to 5/8	N/A	5/8	N/A	N/A	5/8	N/A
Floor Console	9,000	40GJQB09F--3	3/8	N/A	3/8	N/A	N/A	3/8	N/A	N/A	3/8	N/A	N/A	3/8	N/A	N/A	3/8	N/A	3/8 to 5/8	3/8	N/A	3/8 to 5/8	3/8	N/A
	12,000	40GJQB12F--3	3/8	N/A	3/8	N/A	N/A	3/8	N/A	N/A	3/8	N/A	N/A	3/8	N/A	N/A	3/8	N/A	3/8 to 5/8	3/8	N/A	3/8 to 5/8	3/8	N/A
	18,000	40GJQB18F--3	1/2				N/A	1/2	3/8 to 1/2	N/A	1/2	3/8 to 1/2	N/A	1/2	3/8 to 1/2	N/A	1/2	3/8 to 1/2	/2 to 5/8	1/2	N/A	/2 to 5/8	1/2	N/A

NOTE:

CJ – Conversion Joint
BP – Branch Pipe
N/A – Not Applicable
Branch Boxes Required on Outdoor sizes 48 and 56 (Line Set from Outdoor unit to Branch Box = 5/8 in)

REFRIGERANT PIPING (CONT.)

Table 19—Liquid Line

				Outdoor Model Number																			
				38GJQC18---3			38GJQD24---3			38GJQF30---3			38GJQG36---3			38GJQG42---3			38GJQK48---3			38GJQL56---3		
			Liquid Line Connection Outdoor	1/4			1/4			1/4			1/4			1/4			3/8			3/8		
Indoor Unit	Nominal Unit Btuh	Indoor Model Number	Liquid Line Connection Indoor	CJ Indoor Side	Line Set	CJ Outdoor Side	CJ Indoor Side	Line Set	CJ Outdoor Side	CJ Indoor Side	Line Set	CJ Outdoor Side	CJ Indoor Side	Line Set	CJ Outdoor Side	CJ Indoor Side	Line Set	CJ Outdoor Side	BP Indoor Side	Line Set	BP Outdoor Side	BP Indoor Side	Line Set	BP Outdoor Side
High Wall	9,000	40GRQB09B--3	1/4	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A
	12,000	40GRQB12B--3	1/4	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A
	18,000	40GRQB18B--3	1/4				N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A
	9,000	40GRQB09H--3	1/4	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A
	12,000	40GRQB12H--3	1/4	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A
	18,000	40GRQB18H--3	1/4				N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A
	9,000	40GJQB09B--3	1/4	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A
	12,000	40GJQB12B--3	1/4	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A
	18,000	40GJQB18B--3	1/4				N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A
	24,000	40GJQB24B--3	1/4							N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A
Cassette	12,000	40GJQB12C--3	1/4	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A
	18,000	40GJQB18C--3	1/4				N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A
	24,000	40GJQB24C--3	3/8							3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A	N/A	3/8	N/A	N/A	3/8	N/A
Ducted	9,000	40GJQB09D--3	1/4	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A
	12,000	40GJQB12D--3	1/4	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A
	18,000	40GJQB18D--3	1/4				N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A
	21,000	40GJQB21D--3	3/8							3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A	N/A	3/8	N/A	N/A	3/8	N/A
	24,000	40GJQB24D--3	3/8							3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A	N/A	3/8	N/A	N/A	3/8	N/A
Floor Console	9,000	40GJQB09F--3	1/4	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A
	12,000	40GJQB12F--3	1/4	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A
	18,000	40GJQB18F--3	1/4				N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	N/A	1/4	N/A	3/8 to 1/4	1/4	N/A	3/8 to 1/4	1/4	N/A

NOTE:
CJ – Conversion Joint
BP – Branch Pipe
N/A – Not Applicable
Branch Boxes Required on Outdoor sizes 48 and 56 (Line Set from Outdoor unit to Branch Box = 3/8 in)

ELECTRICAL DATA

Table 20—(40GRQ) High Wall

UNIT SIZE	SYSTEM VOLTAGE	OPERATING VOLTAGE	INDOOR FAN		
	VOLT / PHASE / HZ	MAX / MIN*	FLA	HP	W
9	208−230/1/60	253 / 187	0.1	0.0268	20
12			0.1	0.0268	20
18			0.1	0.0268	20

Table 21—(40GJB) High Wall

UNIT SIZE	SYSTEM VOLTAGE	OPERATING VOLTAGE	INDOOR FAN		
	VOLT / PHASE / HZ	MAX / MIN*	FLA	HP	W
9	208−230/1/60	253 / 187	0.17	1/72	10
12			0.17	1/72	10
18			0.3	1/29	25
24			0.38	1/10	70

Table 22—Cassette

UNIT SIZE	SYSTEM VOLTAGE	OPERATING VOLTAGE	INDOOR FAN		
	VOLT / PHASE / HZ	MAX / MIN*	FLA	HP	W
12	208−230/1/60	253 / 187	0.18	1/72	46
18			0.18	1/72	46
24			0.43	1/20	46

Table 23—Ducted

UNIT SIZE	SYSTEM VOLTAGE	OPERATING VOLTAGE	INDOOR FAN		
	VOLT / PHASE / HZ	MAX / MIN*	FLA	HP	W
9	208−230/1/60	253 / 187	0.28	1/24	80
12			0.31	1/18	80
18			0.41	1/12	100
21			0.5	1/36’	124
24			0.5	1/36’	124

Table 24—Floor Console

UNIT SIZE	SYSTEM VOLTAGE	OPERATING VOLTAGE	INDOOR FAN		
	VOLT / PHASE / HZ	MAX / MIN*	FLA	HP	W
9	208−230/1/60	253 / 187	0.14	1/24	30
12			0.14	1/24	30
18			0.14	1/24	30

Table 25—Multi Zone Outdoor Unit

UNIT SIZE	SYSTEM VOLTAGE	OPERATING VOLTAGE	COMPRESSOR	OUTDOOR FAN			MCA	MAX FUSE/CB AMP
	VOLT / PHASE / HZ	MAX / MIN*	RLA	FLA	HP	W		
18	208−230/1/60	253 / 187	7.2	0.62	1/12	60	15	25
24			11.5	0.59	1/8	90	21	35
30			13.9	0.68	1/6	150	19	30
36			15.6	0.82	2/9	240	21	35
42			17.8	0.82	2/9	240	24	40
48			23	1	1/6	150	30	50
56			23	1	1/6	150	30	50

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

LEGEND

FLA — Full Load Amps
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
RLA — Rated Load Amps

WIRING

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 MOCP (maximum over current protection) to correctly size the wires and the disconnect fuse or breakers respectively.

Per the caution note, only copper conductors with a 600 volt insulation rating wire must be used.

Sizes 18−42

Recommended Connection Method for Power and Communication Wiring:

The main power is supplied to the outdoor unit. The field supplied 14/3 stranded wire with ground with a 600 volt insulation rating, power/communication wiring from the outdoor unit to indoor unit consists of four (4) wires and provides the power for the indoor unit. Two wires are line voltage AC power, one is communication wiring (S) and the other is a ground wire.

Wiring between the indoor and outdoor unit is polarity sensitive.

The use of BX wire is NOT recommended.

If installed in a high Electromagnetic field (EMF) area and communication issues exist, a 14/2 stranded shielded wire can be used to replace L2 and (S) between the outdoor and indoor unit landing the shield onto the ground in the outdoor unit only.

Sizes 48−56

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

Power Wiring OUTDOOR UNIT& BRANCH BOXES:

Separate power supplies are required for the **OUTDOOR UNIT** and the **BRANCH BOXES**. The indoor units are powered by the Branch Boxes. The field supplied 14/3 stranded wire (with ground) with a 600 volt insulation rating, power/communication wiring from the **BRANCH BOXES** to **INDOOR UNITS** consists of four (4) wires and provides the indoor unit's power. Two wires are line voltage AC power; one is communication wiring (S) and the other is a ground wire.

Wiring between the indoor unit and the branch box is polarity sensitive.

The use of BX wire is NOT recommended.

Up to three (3) Branch Boxes can be powered from the same 15 amp breaker.

Communication Wiring:

A separate shielded copper conductor only, must be used as the communication wire from the **OUTDOOR UNIT** to the **BRANCH BOX**.

Please use a separate shielded 16GA stranded control wire.

See the wiring diagram in the wiring diagram section for sizes 48−56.

⚠ 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 insulation rating wire.

⚠ CAUTION

EQUIPMENT DAMAGE HAZARD

- Be sure to comply with local codes while running wire from the indoor unit to the outdoor unit.
- Every wire must be connected firmly. Loose wiring may cause the terminal to overheat or result in unit malfunction. A fire hazard may also exist. Ensure all wiring is tightly connected.
- No wire should touch the 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 must be routed through the hole in the conduit panel.

DIMENSIONS − INDOOR

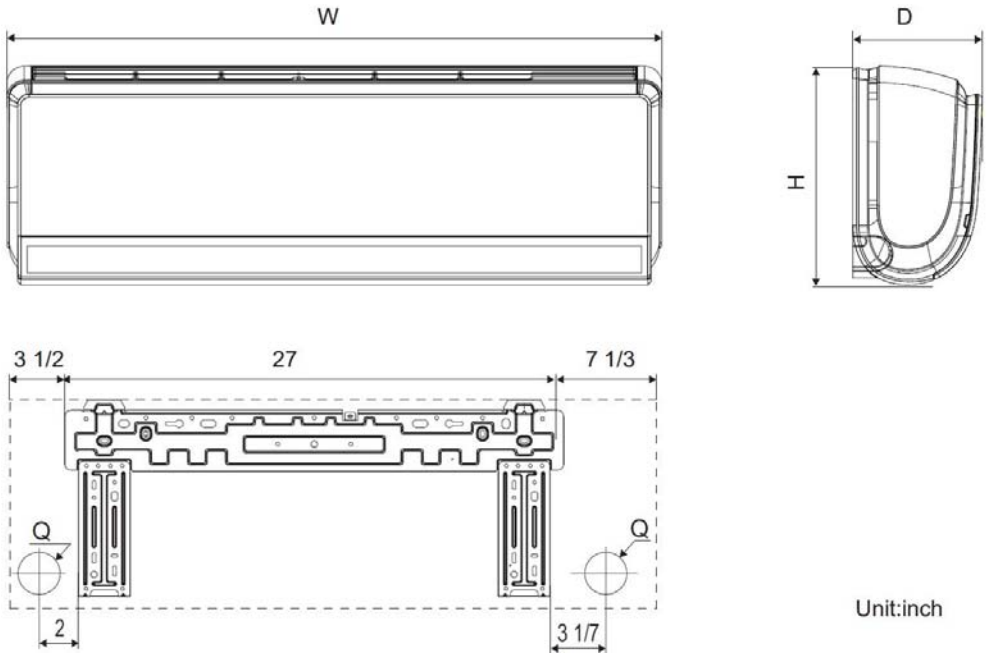


Fig. 2 – 40GRQ High Wall Dimensions

Table 26—40GRQ High Wall Dimensions

UNIT SIZE	W In. (mm)	D In. (mm)	H In. (mm)	Q In. (mm)	OPERATING WEIGHT Lbs. (kg)
9k	37.8 (960)	8.07 (205)	12.6 (320)	2.16 (55)	33.07 (15)
12k	37.8 (960)	8.07 (205)	12.6 (320)	2.16 (55)	33.07 (15)
18k	37.8 (960)	8.07 (205)	12.6 (320)	2.75 (70)	33.07 (15)

DIMENSIONS − INDOOR (CONT)

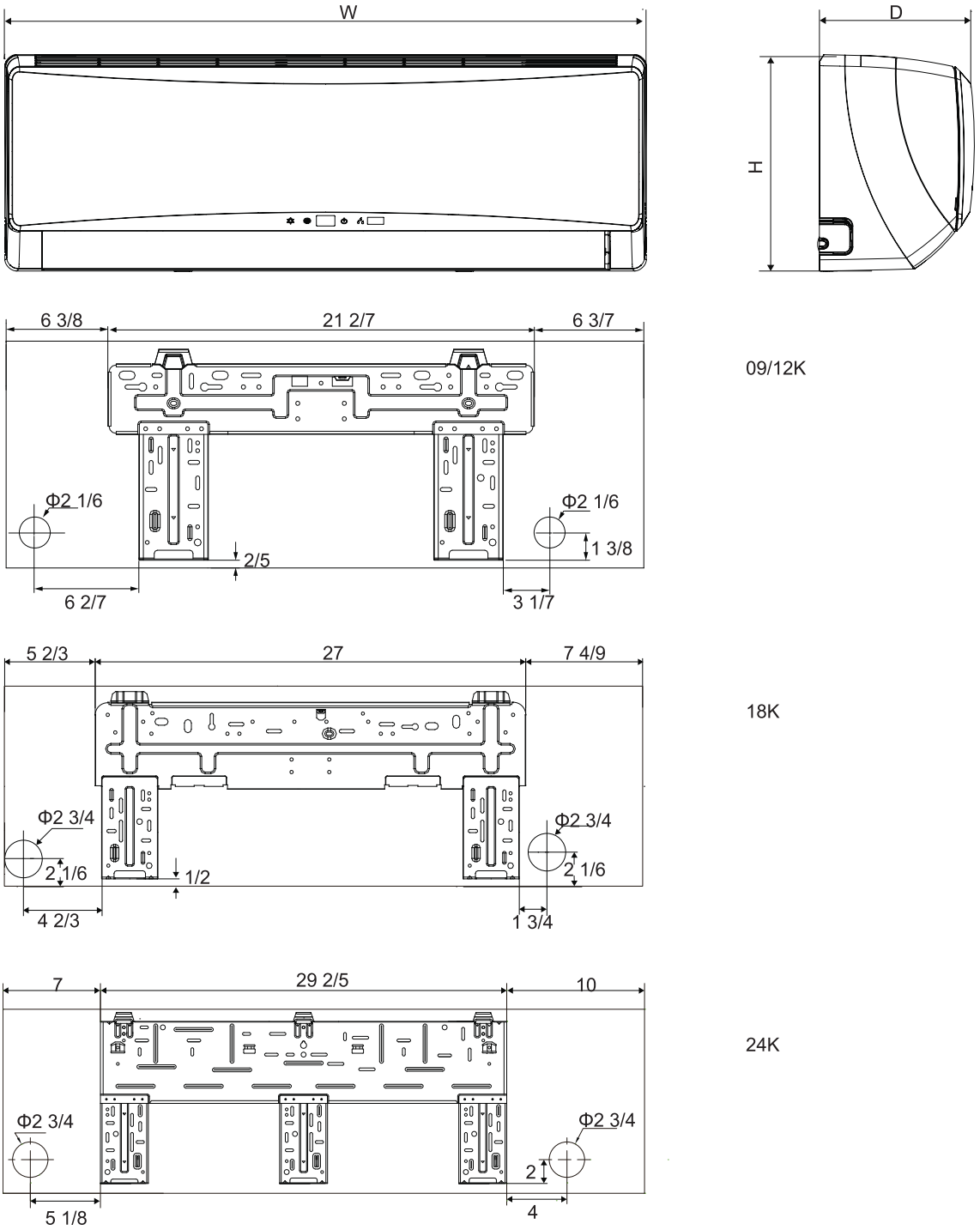


Fig. 3 – 40GJB High Wall Dimensions

Table 27—40GJB High Wall

UNIT SIZE	W In. (mm)	D In (mm)	H In. (mm)	OPERATING WEIGHT
9k	34.09	8.23	11.5	24.3
12k	34.09	8.23	11.5	24.3
18k	40.079	9.055	12.6	30.9
24k	46.378	10.394	12.8	38.6

DIMENSIONS − INDOOR (CONT)

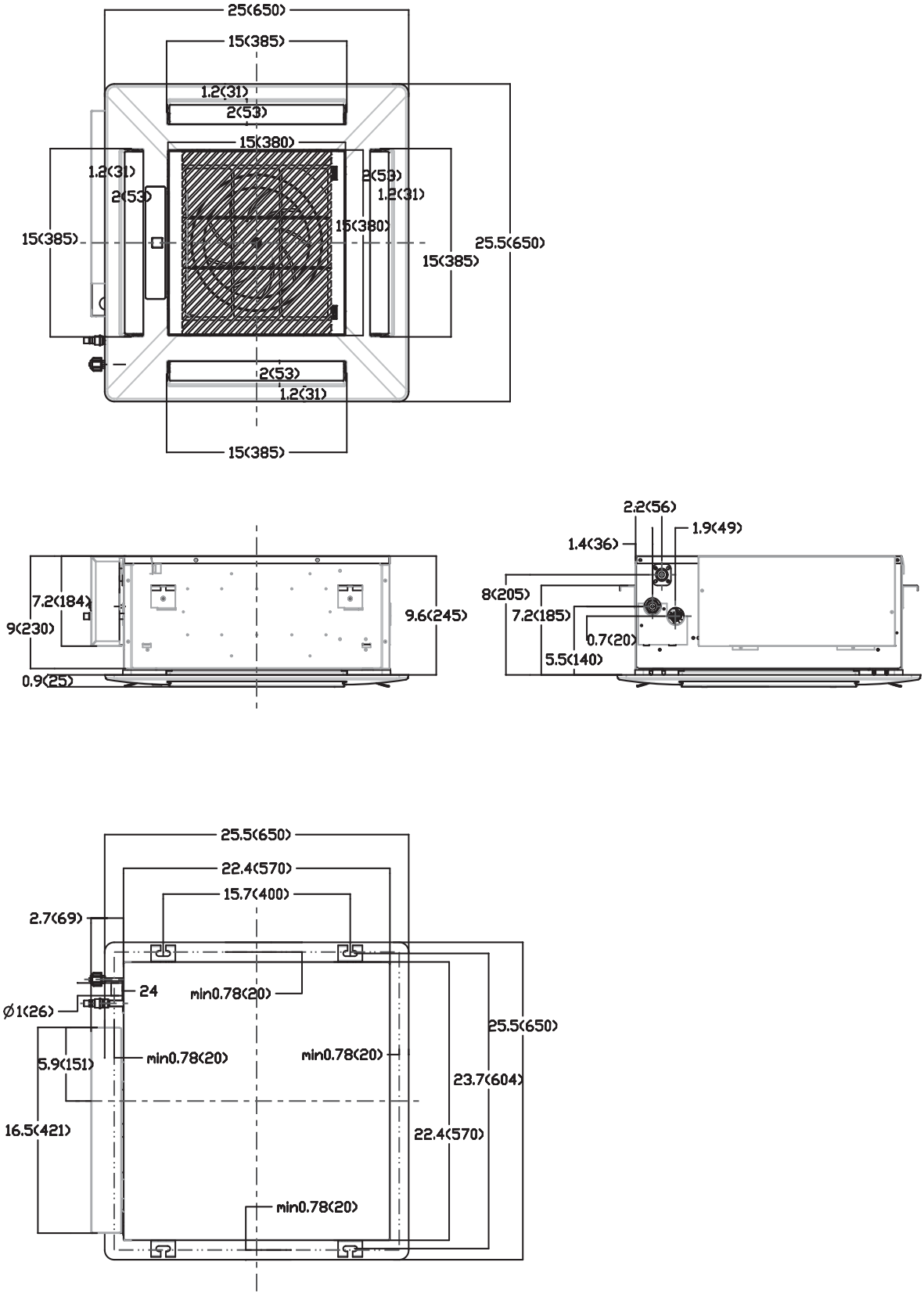
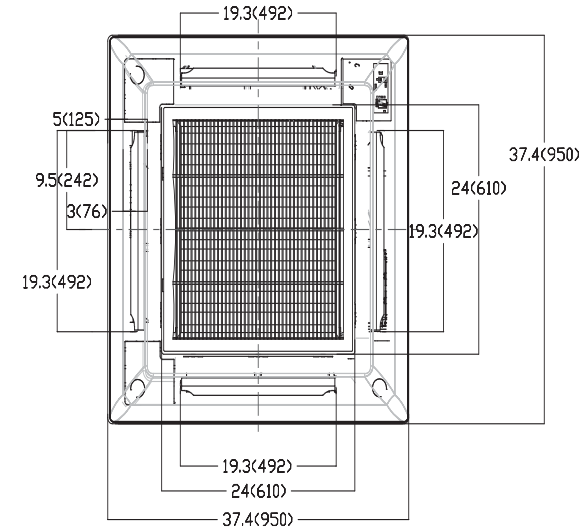


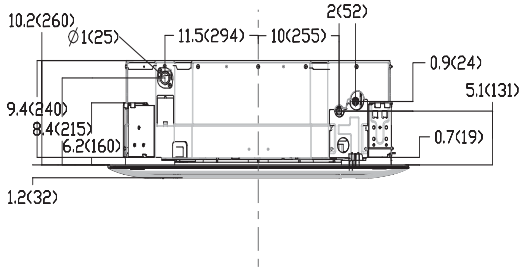
Fig. 4 – Size 12 and 18 Cassette Dimensions

Table 28—Size 12 and 18 Cassette Dimensions

SYSTEM SIZE		12	18
Height (H)	in (cm)	9.1 (23.1)	9.1 (23.1)
Width (W)	in (cm)	22.4 (56.9)	22.4 (56.9)
Depth (D)	in (cm)	22.4 (56.9)	22.4 (56.9)
Weight−Net	lbs(kgs)	39.7 (18)	39.7 (18)

DIMENSIONS − INDOOR (CONT)





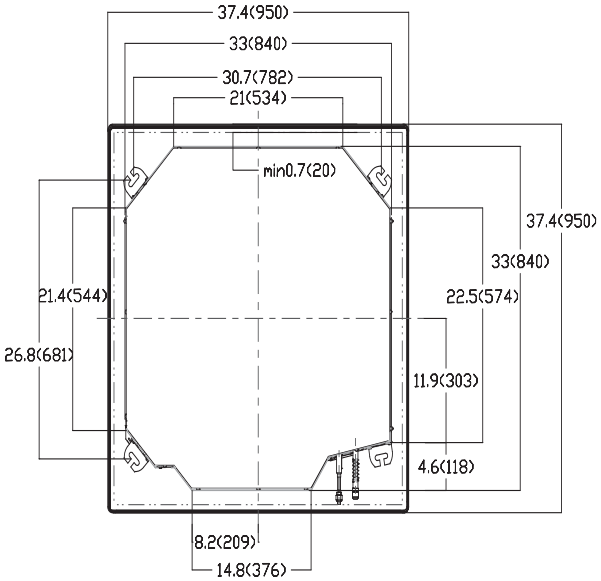


Fig. 5 – Size 24 Cassette Dimensions

Table 29—Size 24 Cassette Dimensions

SYSTEM SIZE		24
Height (H)	In (CM)	9.4 (23.9)
Width (W)	In (CM)	33.1 (84.1)
Depth (D)	In (CM)	33.1 (84.1)
Weight−Net	Lbs (Kgs)	61.7 (28)

DIMENSIONS − INDOOR (CONT)

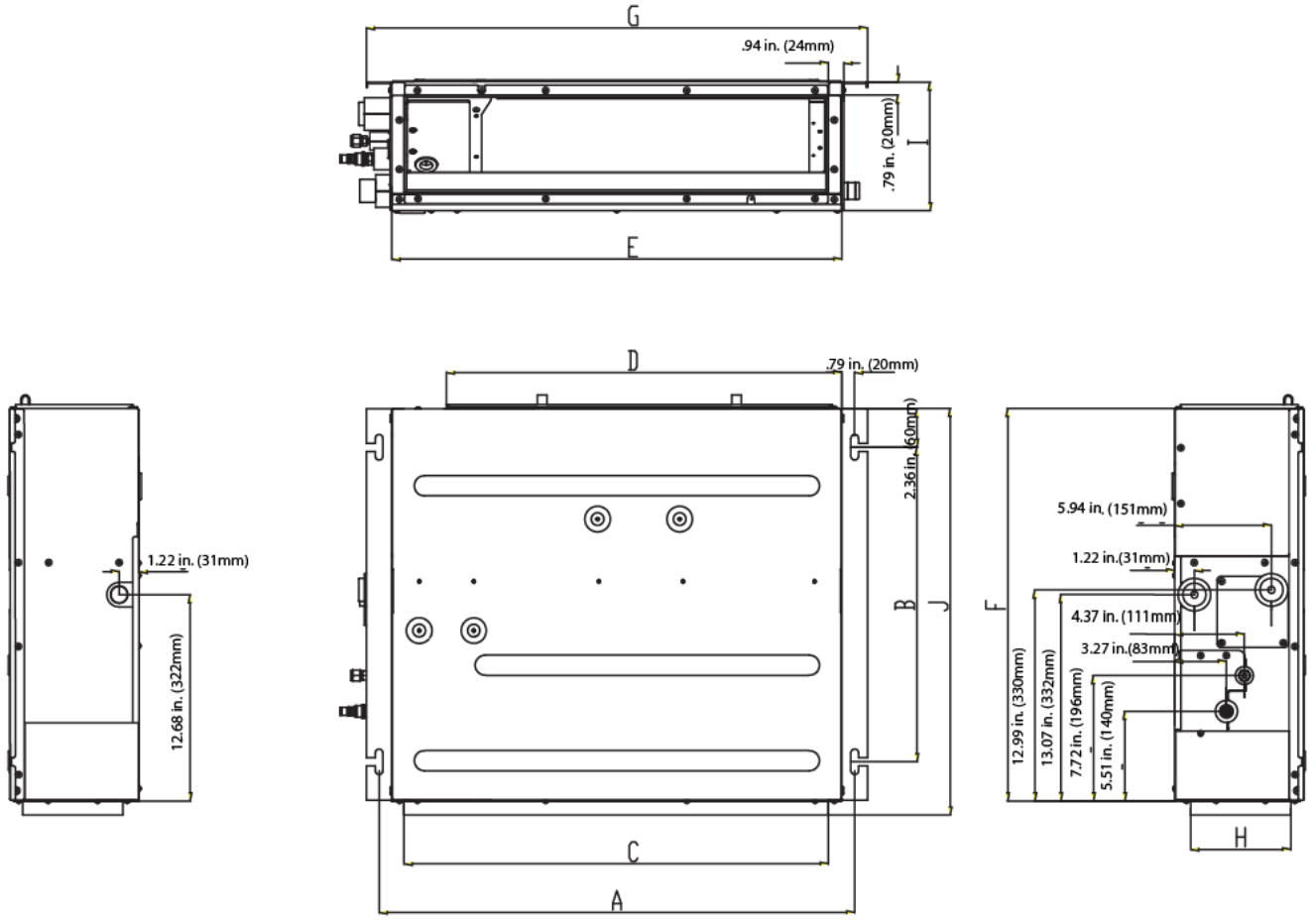


Fig. 6 – Ducted Dimensions

Table 30—Ducted Dimensions

ITEM / MODEL	A	B	C	D	E	F	G	H	I	J
40GJQB09D−−3	29 1/5 in (742 mm)	19 1/3 in (491 mm)	26 in (662 mm)	24 2/5 in (620 mm)	27 5/9 in (700 mm)	24 1/5 in (615 mm)	30 4/5 in (782 mm)	6 1/7 in (156 mm)	7 7/8 in (200 mm)	25 in (635 mm)
40GJQB12D−−3										
40GJQB18D−−3	37 in (942 mm)	19 1/3 in (491 mm)	34 in (862 mm)	32 2/7 in (820 mm)	35 3/7 in (900 mm)	24 1/5 in (615 mm)	38 2/3 in (982 mm)	6 1/7 in (156 mm)	7 7/8 in (200 mm)	25 in (635 mm)
40GJQB21D−−3	45 in (1142 mm)	19 1/3 in (491 mm)	41 4/5 in (1062 mm)	40 1/6 in (1020 mm)	43 1/3 in (1100 mm)	24 1/5 in (615 mm)	46 1/2 in (1182 mm)	6 1/7 in (156 mm)	7 7/8 in (200 mm)	25 in (635 mm)
40GJQB24D−−3										

DIMENSIONS − INDOOR (CONT)

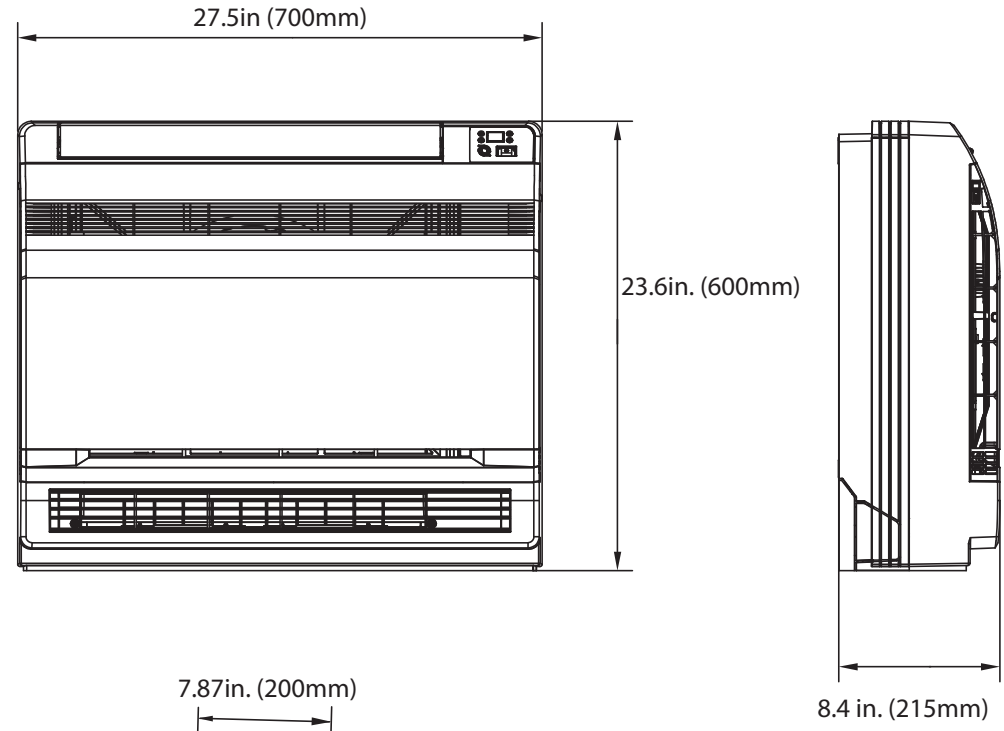


Fig. 7 – Floor Console Dimensions

DIMENSIONS − OUTDOOR

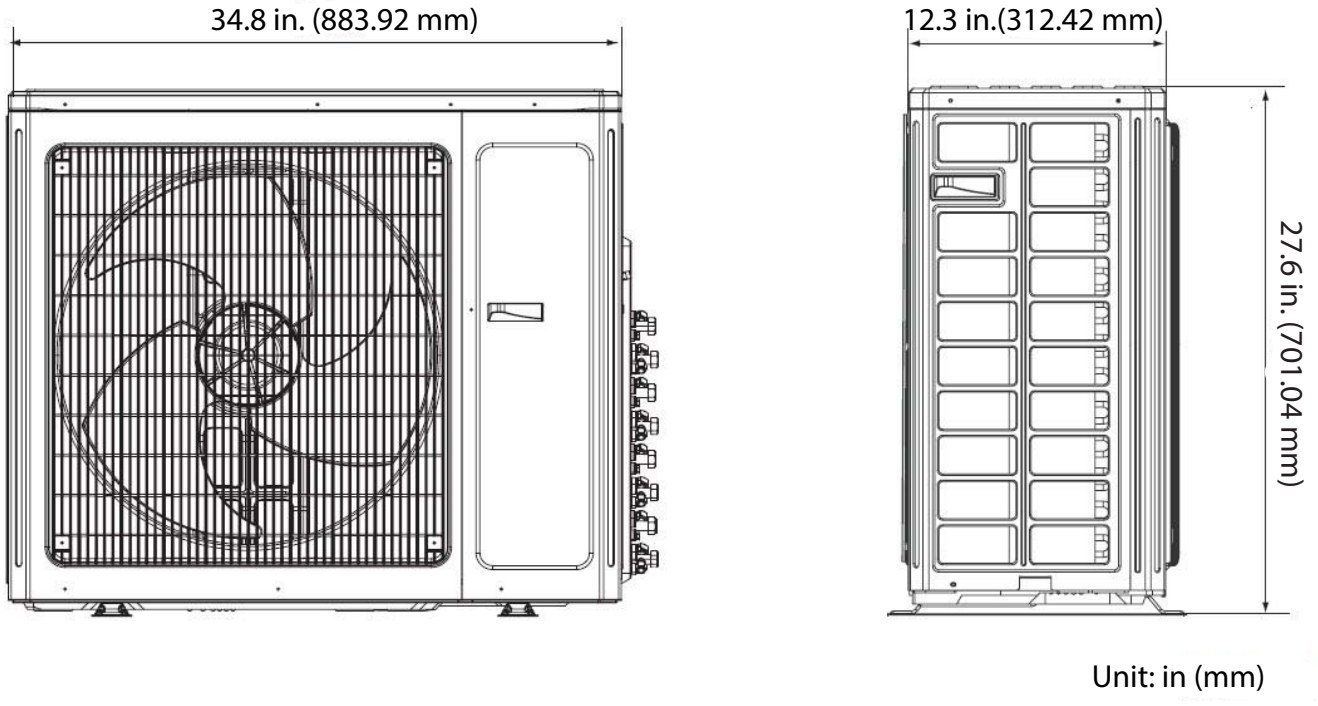


Fig. 8 – Outdoor Dimensions Size 18

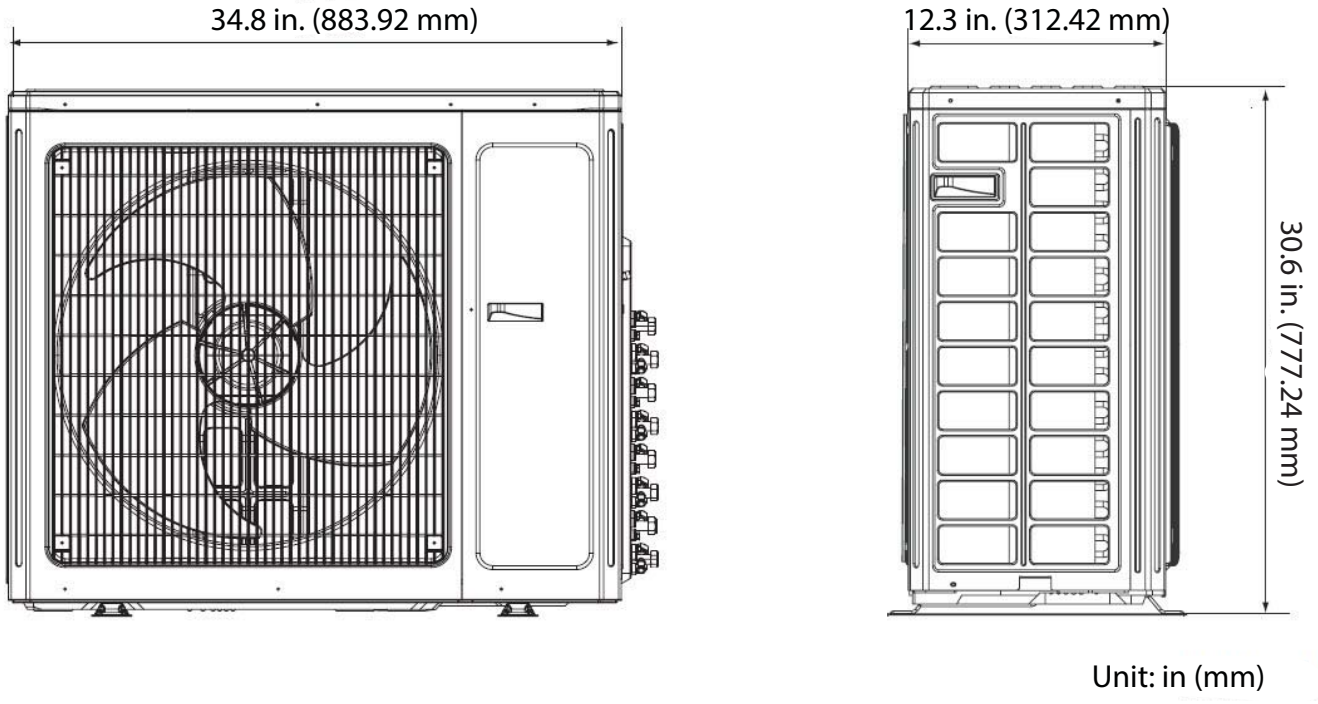


Fig. 9 – Outdoor Dimensions Size 24

DIMENSIONS − OUTDOOR (CONT)

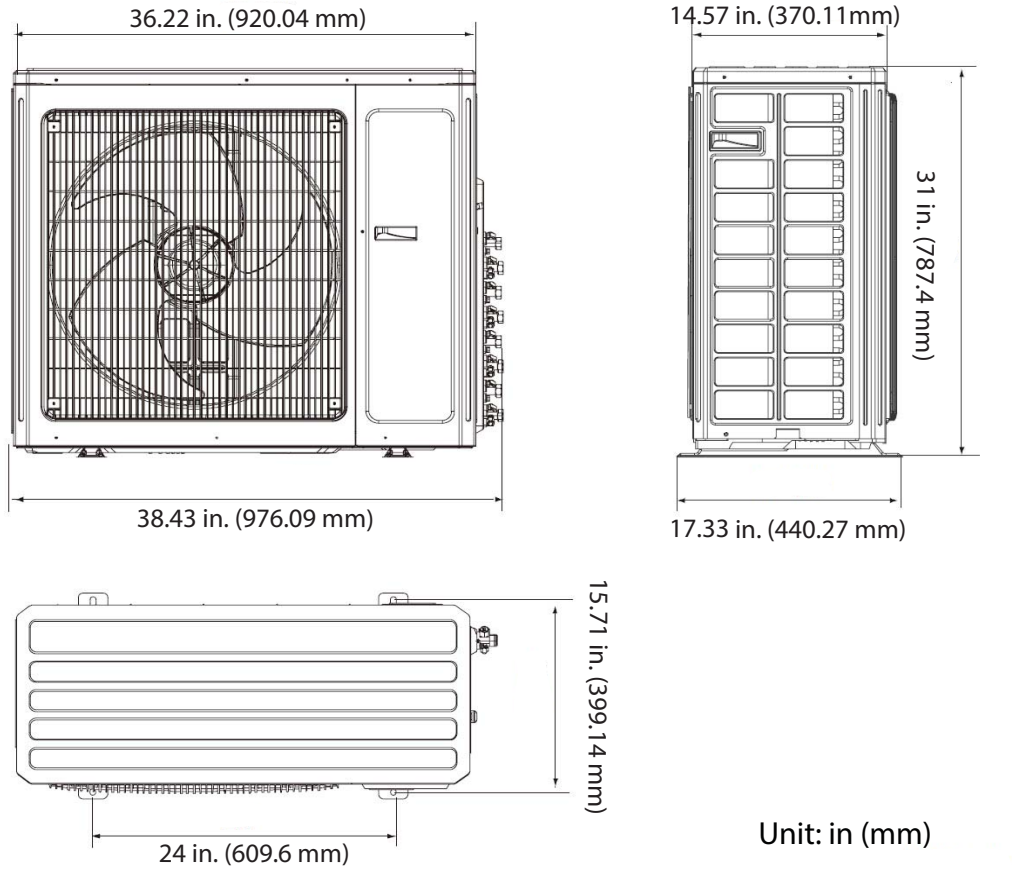


Fig. 10 – Outdoor Dimensions Size 30

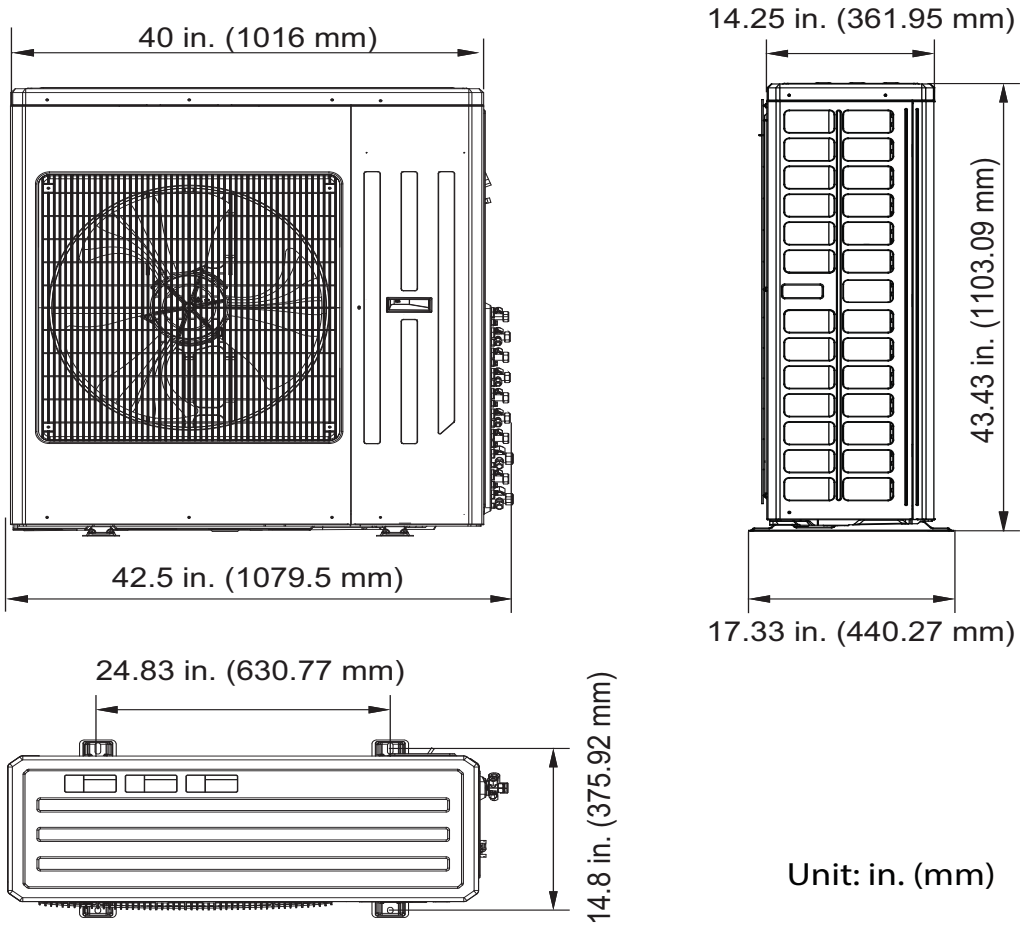
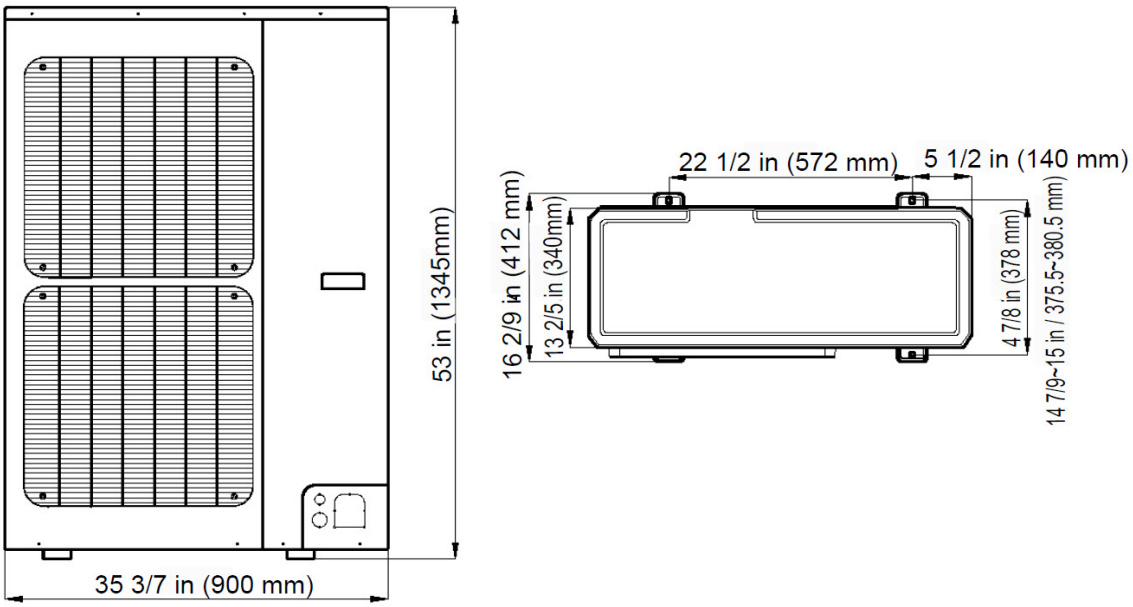


Fig. 11 – Outdoor Dimensions Size 36−42

DIMENSIONS − OUTDOOR (CONT)



(unit: in/mm)

Fig. 12 – Outdoor Dimensions Size 48−56

DIMENSIONS − BRANCH BOXES (REQUIRED ON SIZES 48 AND 56)

Outline Dimension and Servicing Space of KSAUI0201AAA

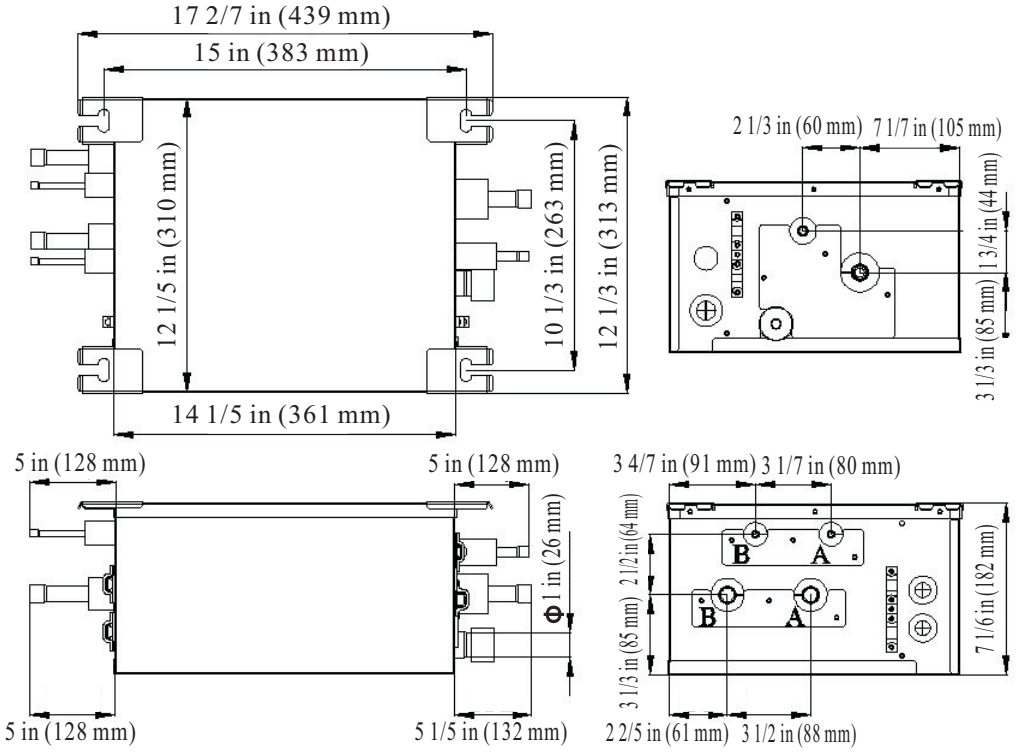


Fig. 13 – Outline Dimensions

Table 31—Outline Dimensions

Sorts	Indoor Unit Side (inch/mm)		Outdoor Unit Side (inch/mm)
	Port A	Port B	
Liquid Pipe	Φ 1/4 (6.5)	Φ 1/4 (6.5)	Φ 38/ (9.7)
Gas Pipe	Φ 5/8 (16.3)	Φ 5/8 (16.3)	Φ 5/8 (16.3)

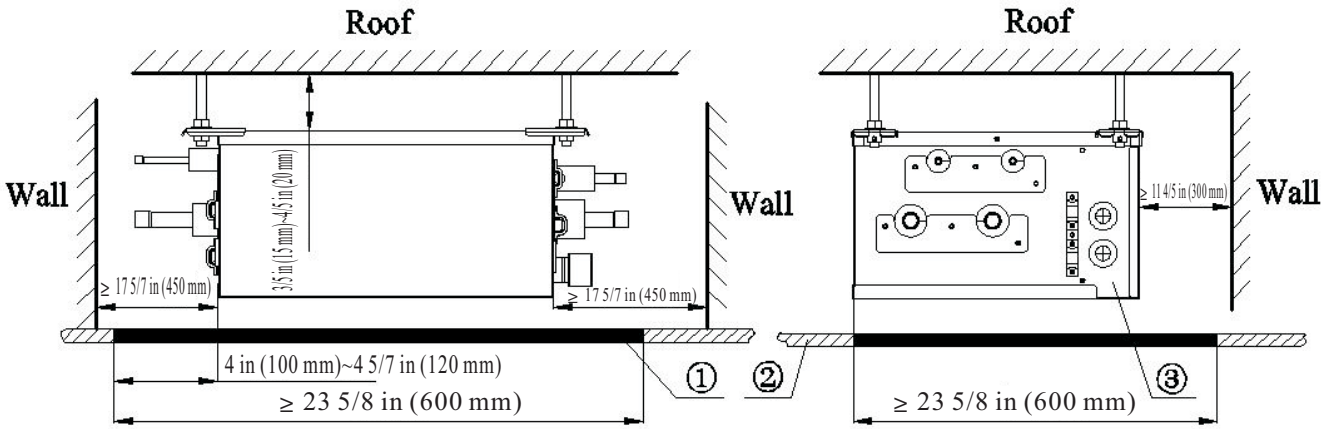


Fig. 14 – Installation and Service Space

Table 32—Installation and Service Space

No.	1	2	3
Name	Service space	Ceiling	Electrical box side

Outline Dimension and Servicing Space (KSAUI0401AAA)

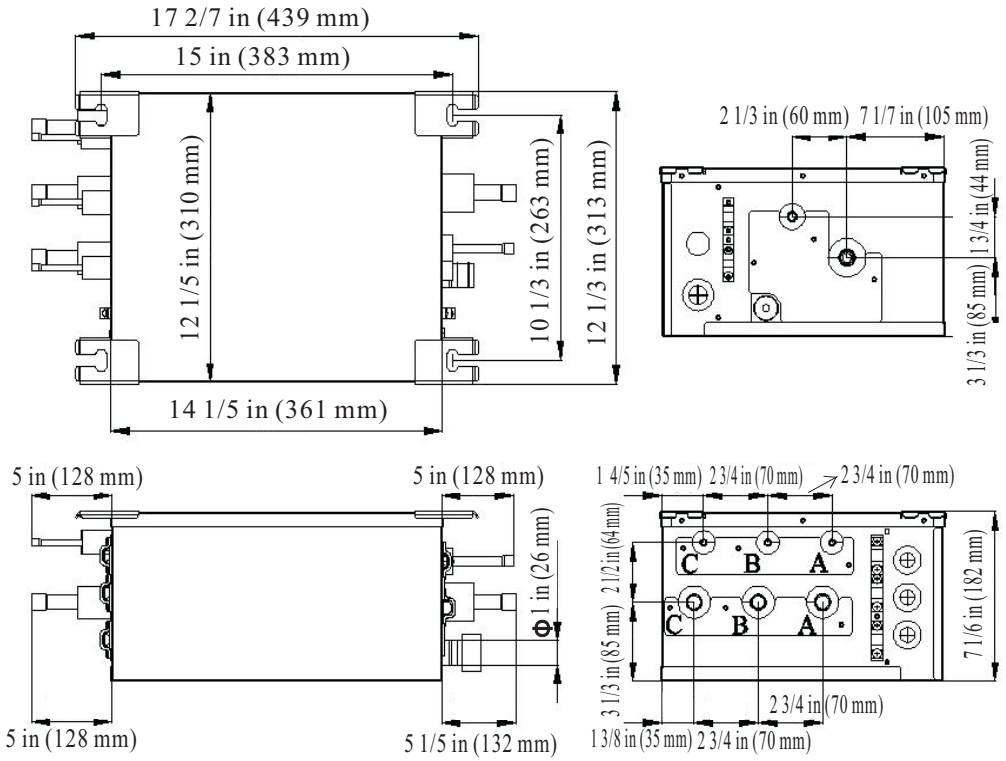


Fig. 15 – Outline Dimensions

Table 33—Outline Dimensions

Sorts	Indoor Unit Side (inch/mm)			Outdoor Unit Side (inch/mm)
	PORT A	PORT B	PORT C	
Liquid pipe	Φ1/4 (6.5)	Φ1/4 (6.5)	Φ1/4 (6.5)	Φ3/8 (9.7)
Gas liquid	Φ5/8 (16.3)	Φ5/8 (16.3)	Φ5/8 (16.3)	Φ5/8 (16.3)

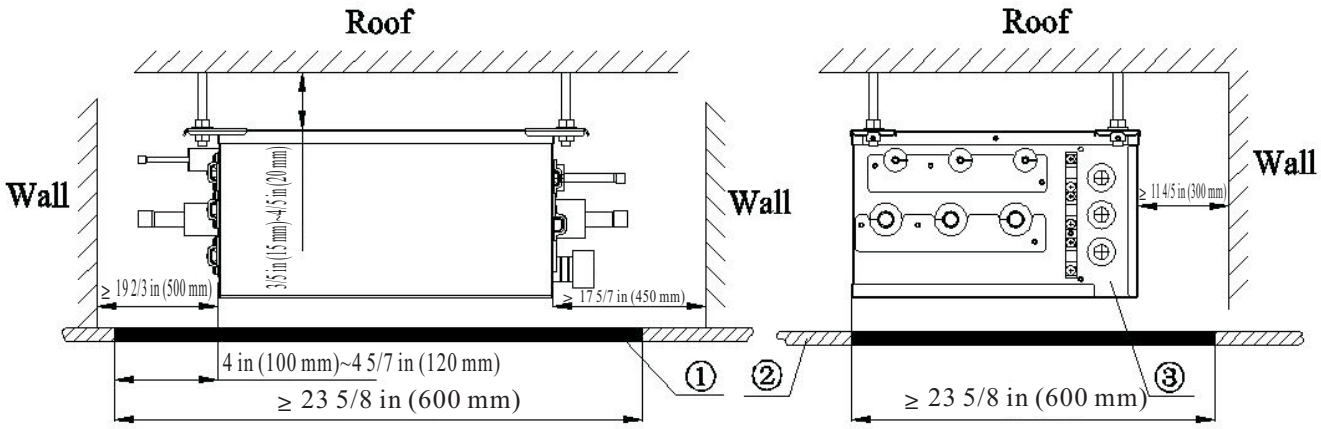


Fig. 16 – Installation and Service Space

Table 34—Installation and Service Space

No.	1	2	3
Name	Servicing Space	Ceiling	Electrical box side

DIMENSIONS − PIPING ADAPTERS (INCLUDED WITH BRANCH BOXES)

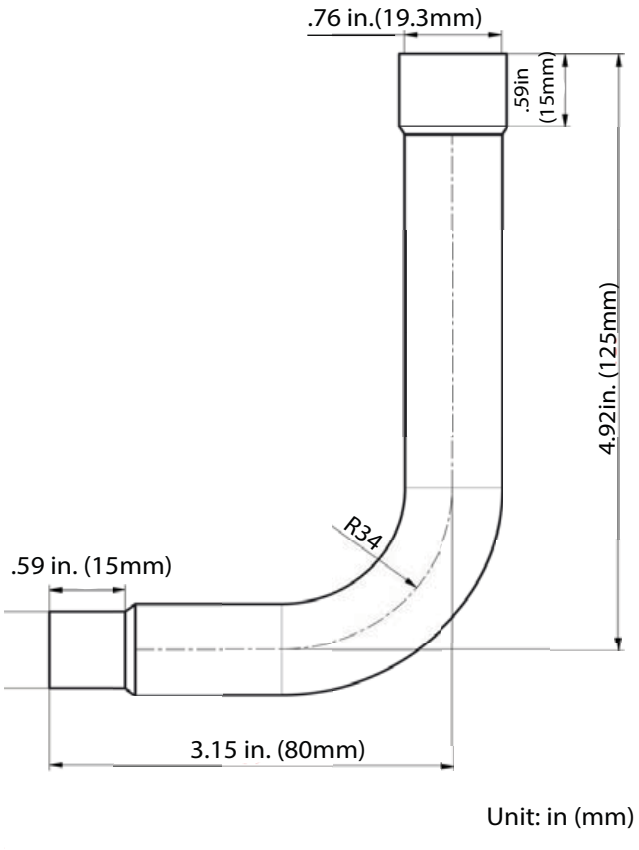


Fig. 17 – Piping Adapter Outdoor

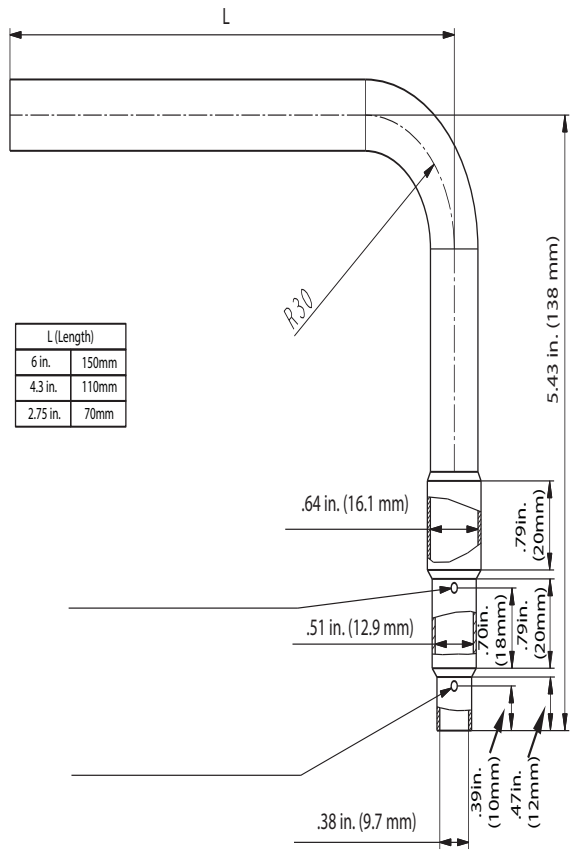


Fig. 18 – Piping Adapter Indoor Side

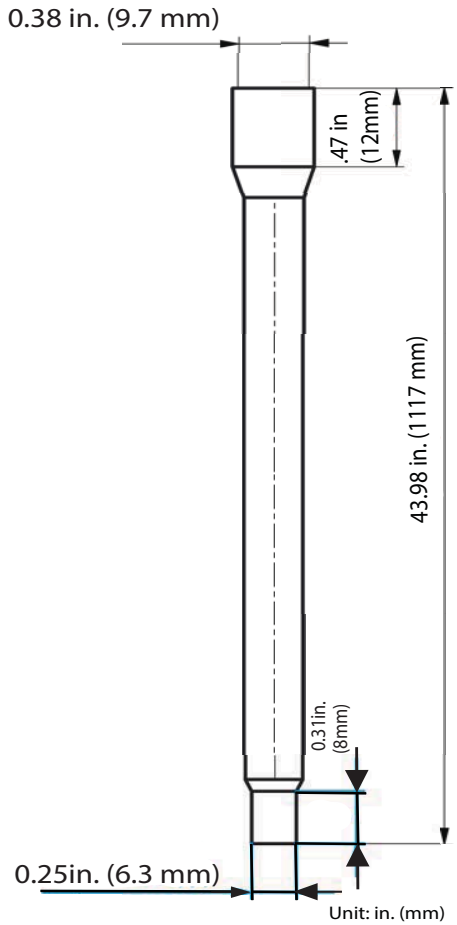


Fig. 19 – Piping Adapter Indoor Side (Liquid)

DIMENSIONS − Y − TYPE BRANCH TUBE KIT KSAUI0501AAA (LIQUID AND GAS TUBES INCLUDED WITH THE KIT)

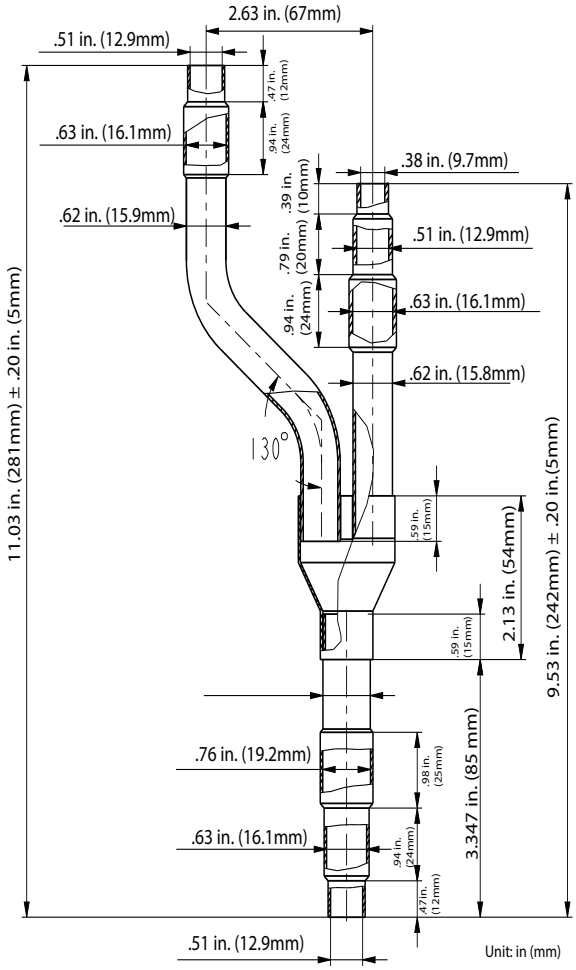


Fig. 20 – Branch Pipe − Gas Pipe

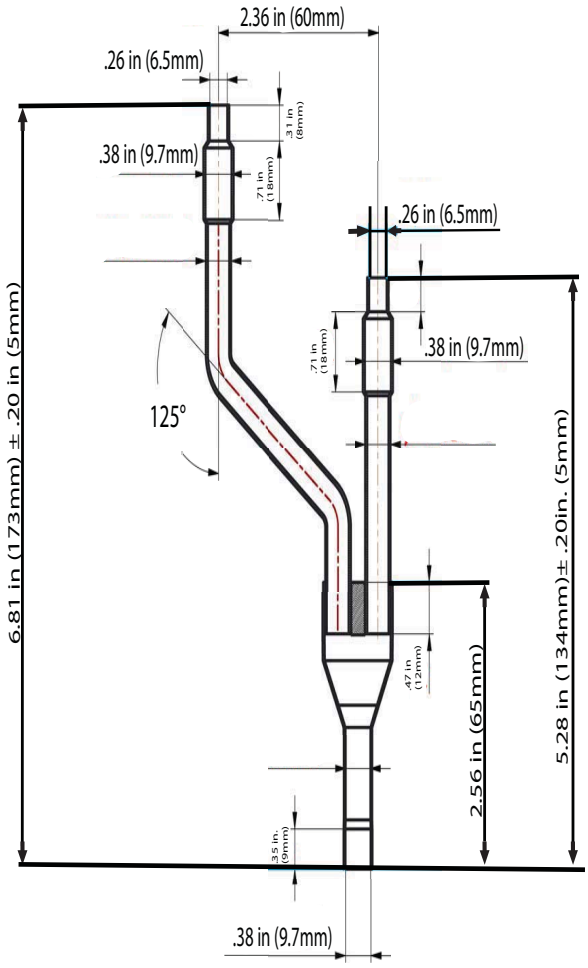


Fig. 21 – Branch Pipe − Liquid Pipe

CLEARANCES − INDOOR

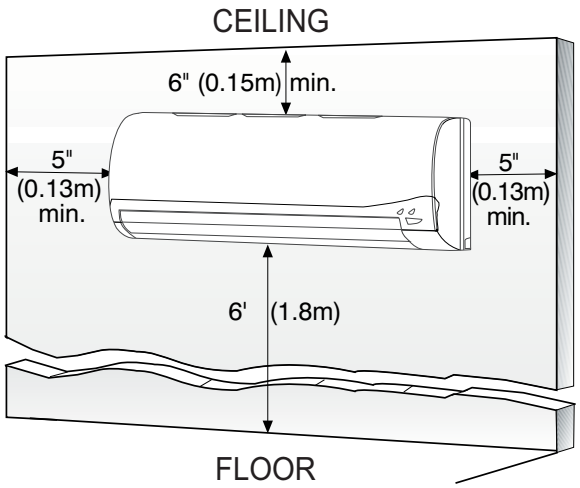


Fig. 22 – High Wall Clearance

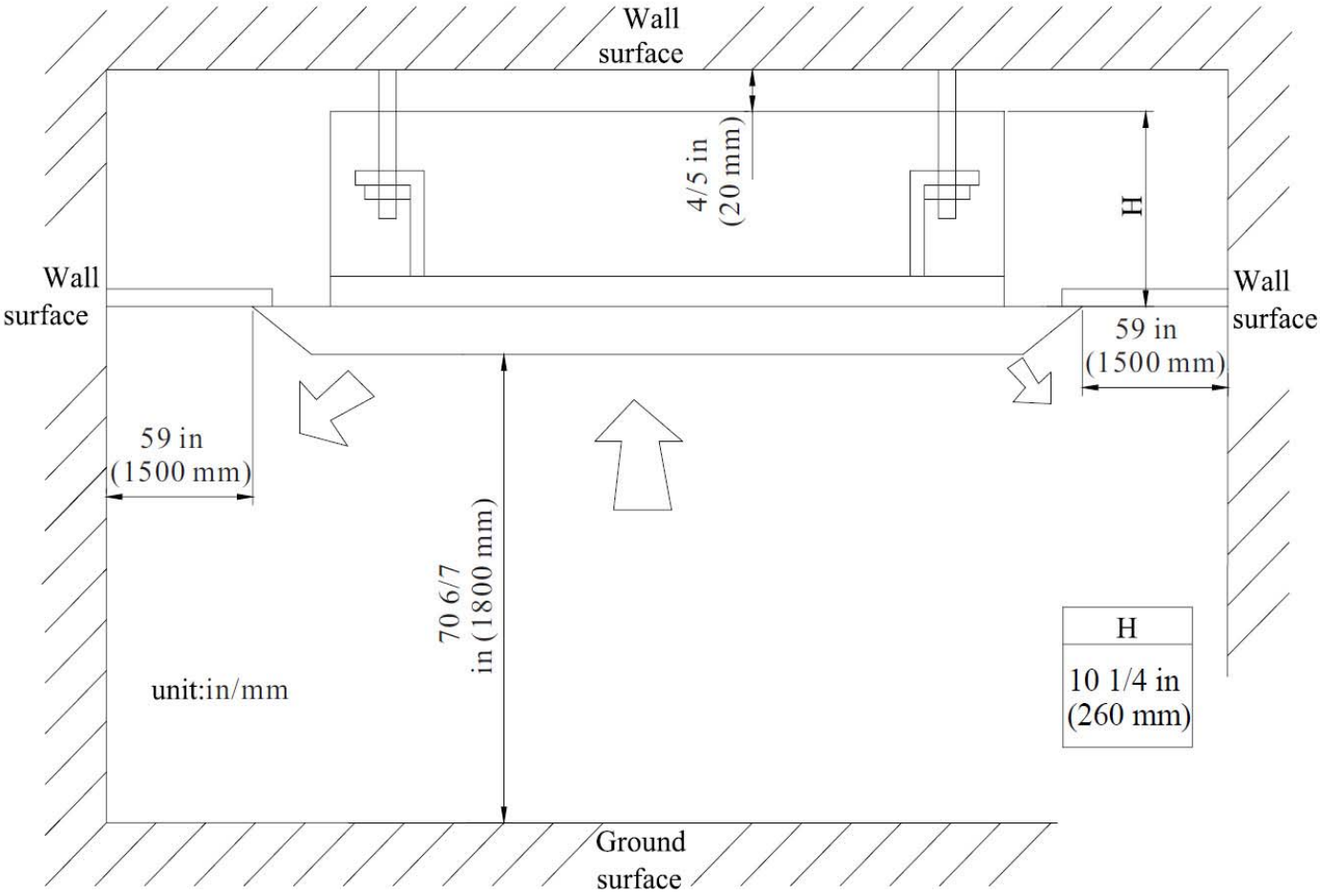


Fig. 23 – Cassette Clearance

CLEARANCES − INDOOR (CONT)

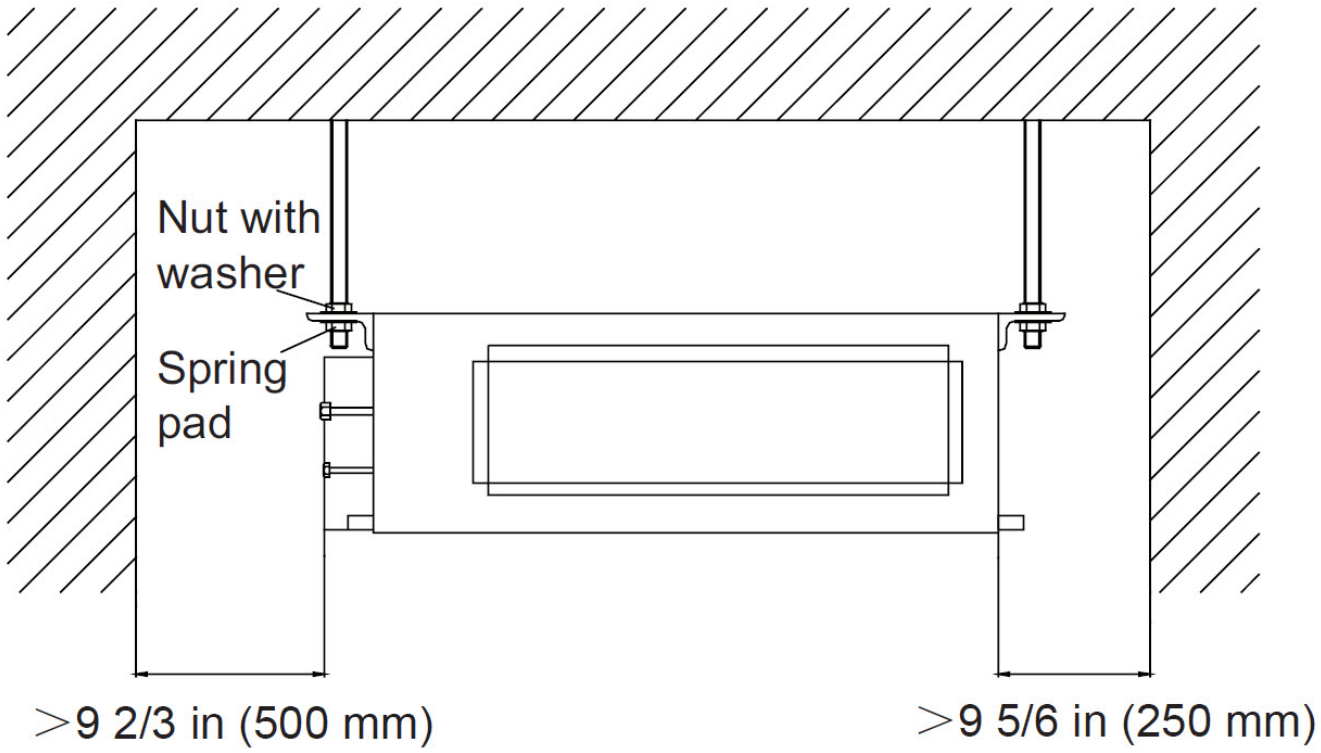


Fig. 24 – Ducted Clearance

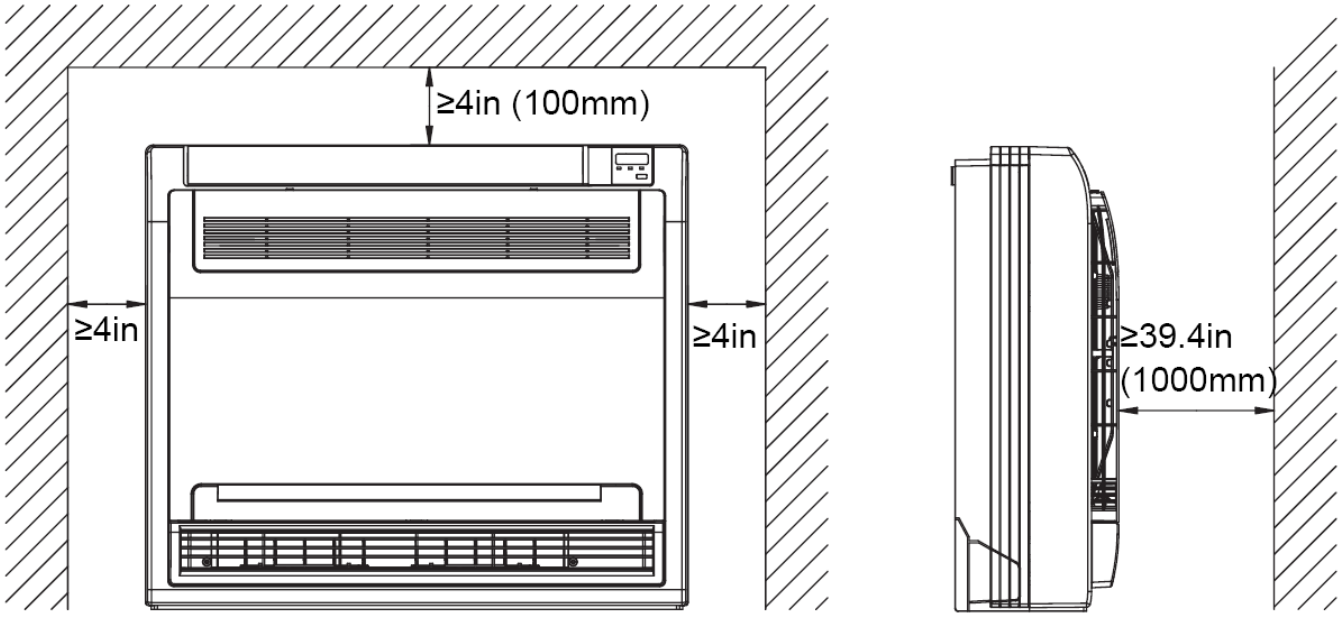


Fig. 25 – Floor Console Clearance

CLEARANCES − OUTDOOR (CONT)

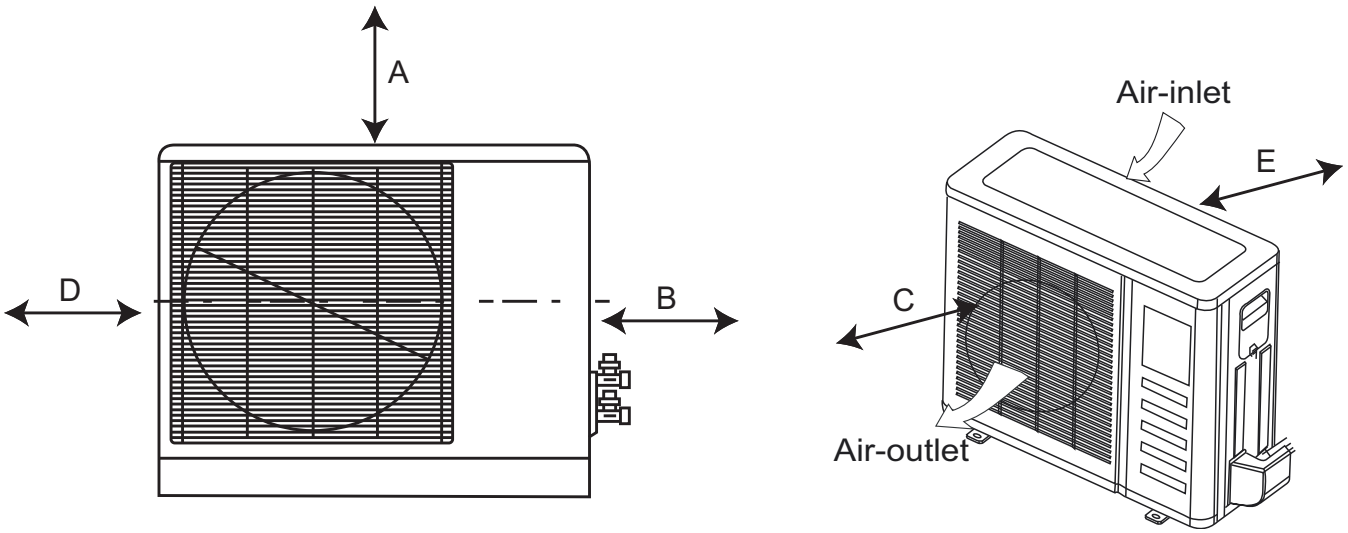


Fig. 26 – Clearances Outdoor 18 − 42

Table 35—Clearances Outdoor

UNIT	MINIMUM VALUE in. (mm)
A	24 (609)
B	24 (609)
C	24 (609)
D	4 (101)
E	4 (101)

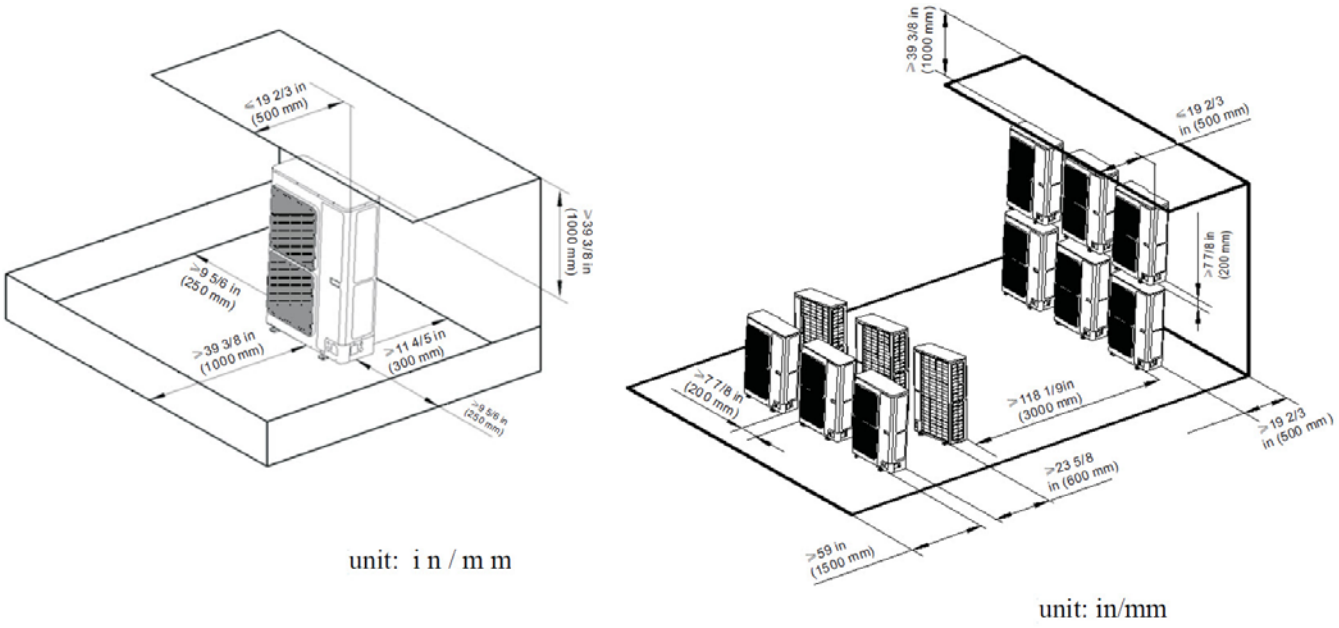


Fig. 27 – Clearances Outdoor 48−56

NOTE: Outdoor unit must be mounted at least 2in. (50mm) above the maximum anticipated snow depth.

INSTALLATION GUIDE

Up to nine fan coil units can be connected to one outdoor unit. Refer to the Product Data for approved combinations.

Ideal installation locations include:

Each Indoor Unit

- A location where there are no obstacles near the inlet and outlet areas.
- A location which can bear the weight of the indoor unit.
- Do not install indoor units near a direct source of heat such as direct sunlight or a heating appliance.
- A location with the appropriate clearances (see Fig. 22).

Outdoor Unit

- A convenient location that is not exposed to strong winds. If the unit is exposed to strong winds, it is recommended that a field−fabricated wind baffle be used (see Fig. 78).
- A location which can bear the weight of the outdoor unit and where the outdoor unit can be mounted in a level position.
- A location which provides appropriate clearances (see Fig. 25 and Fig. 26).
- Do not install the indoor or outdoor units in a location with special environmental conditions. For those applications, contact your sales representative.

HIGH WALL INDOOR UNIT INSTALLATION

Install Mounting Plate

For each fan coil:

1 Carefully remove the mounting plate, which is attached to the back of the indoor unit.

2 The mounting plate should be located horizontally and level on the wall.

3 If the wall is block, brick, concrete or similar material, drill .2" (5mm) diameter holes and insert anchors for the appropriate mounting screws.

4 Attach the mounting plate to the wall (see Fig. 3).

For Each Fan Coil, Drill Hole in Wall for Interconnecting Piping, Drain and Wiring

Refrigerant Line Routing

The refrigerant lines may be routed in any of the four directions shown in Fig. 28 (a) and (b).

For maximum serviceability, it is recommended to have the refrigerant line flare connections and the drain connection on the outside of the wall that the fan coil is mounted on.

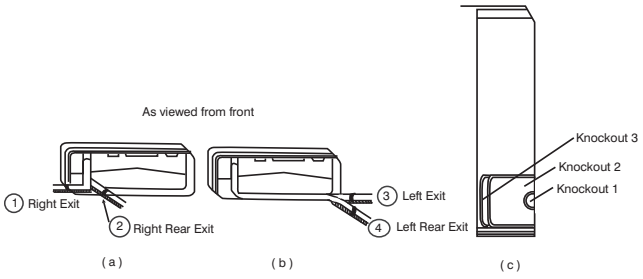


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Fig. 28 – Refrigerant Line Routing

If piping is going through the back:

- Determine the pipe hole position using the mounting plate as a template. Drill a pipe hole diameter per the Table 36. The outside pipe hole is 1/2−in. (13 mm) min. lower than inside pipe hole, so it slants slightly downward (see Fig. 29).
- If piping is going to exit from the left rear, it is recommended to field−fabricate the piping extensions to get the flare connections to the outside of the wall.

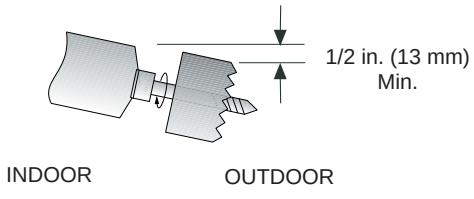

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Fig. 29 – Drill Holes

Table 36—Hole Diameter

UNIT SIZE	HOLE DIAMETER in. (mm)
9k, 12k, 18k and 24k	3.75 (95)

If piping is going through the right or left side:

1 Use a small saw blade to carefully remove the corresponding plastic covering on the side panel and drill the appropriate size hole where the pipe is going through the wall (see Fig. 28 (c)).

2 Remove knockout 1 if you are running **ONLY** the wiring. Remove knockout 1 and 2 or knockout 1, 2 and 3 if you are running both the piping and wiring through the unit's side.

⚠ CAUTION

40GRQ Rear left condensate drain connection on unit

When piping out of the rear right, a field supplied joint connection will need to be made behind the unit. Please ensure that the connection is made properly to avoid leaks.

Wireless Remote Controller Installation

Mounting Bracket (if installed on the wall)

1 Use the two screws supplied with the control to attach the Mounting Bracket to the wall in a location selected by the customer and within operating range.

2 Install batteries in the Remote Controller.

3 Place the Remote Controller in the Mounting Bracket.

NOTE: For information regarding the remote controller's operation, refer to the unit's owner's manual.

Wired Remote Controller Installation

(Optional on 40GJ High Wall only, not available on 40GR)

For setup instructions, refer to the Wired controller installation manual. Connect the 4−core wire shipped with the wired controller to the wire with a molex connector shipped with the unit and already connected to the PCB Board to COM−INNER1.

CASSETTE INDOOR UNIT INSTALLATION

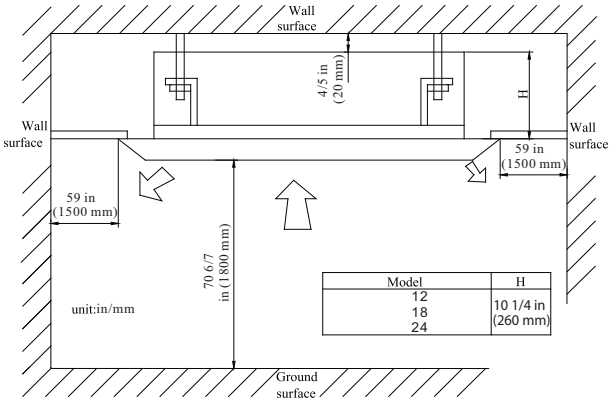


Fig. 30 – Schematic diagram of installation spaces

Select install location of the indoor unit

1 Obstructions should be removed from the indoor unit's intake or outlet vents so the air can flow throughout the room.

2 Ensure the installation is in accordance with the requirements of the required clearances on the schematic diagram.

3 Select a location that can withstand 4 times the weight of the indoor unit and would not increase the operating noise.

4 Ensure the unit is level.

5 Select a location where condensated coagulated water can drain easily from the outdoor unit.

6 Ensure there is enough space for care and maintenance. Ensure the weight between the indoor unit and ground is above 70 6/7 in. (1800 mm).

7 When installing the threaded bolt, check if the install place can withstand a weight 4 times of the unit's. If not, reinforce before installation. Refer to the install cardboard and find where the location should be reinforced.

NOTE: An abundance of dust will stick to the fan, heat exchanger and condensate pump in the dining room and kitchen, which would reduce the capacity of the heat exchanger, lead to water leakage and abnormal operation of the condensate pump. The following steps should be applied in this case:

(1.) Ensure the smoke trap, above the cooker, has enough capacity to remove dust so it will not enter the air conditioner.

(2.) Keep the air conditioner far from the kitchen so dust does not enter the air conditioner.

IMPORTANT: To guarantee good performance, the unit must be installed by professional personnel in compliance with this manual.

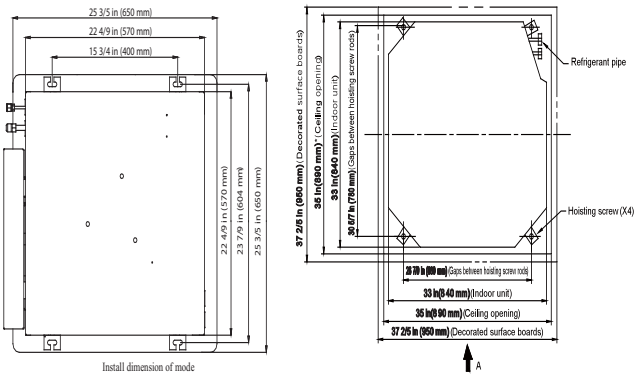


Fig. 31 – Dimension of ceiling opening and location of the hoisting screw (M10)

IMPORTANT: The drilling of holes in the ceiling must be done by professional personnel.

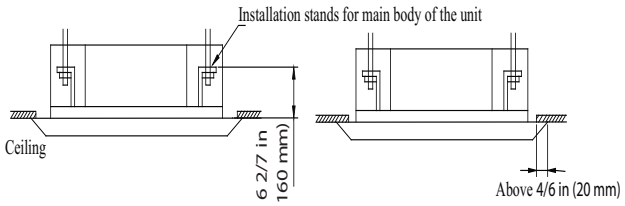


Fig. 32 – Drilling holes

NOTE: The dimension for the ceiling openings with ***** marks can be as large as 35 5/6 in. (910 mm). But the overlapping sections of the ceiling and the decorated surface boards should be maintained at no less than 4/6 in. (20 mm).

Hoisting the main body of the air conditioner

The primary step for installing the indoor unit.

- When attaching the hoisting stand on the hoisting screw, use nut and gasket individually at the upper and lower section of the hoisting stand to secure it. The use of a gasket anchor board can prevent gasket break off.

Use the install cardboard.

- Refer to the install cardboard regarding the ceiling opening dimension.
- The central mark of the ceiling opening is marked on the install cardboard.

1 Install the install cardboard on the unit by bolt (3 pieces) and secure the drainage pipe angle at the outlet vent by the bolt.

2 Adjust the unit to the suitable install place (see Fig. 32).

3 Check if the unit is horizontal.

4 The inner drainage pump and bobber switch are included in the indoor unit, check if the 4 angle of every unit are horizontal by the water lever. If the unit is slanted toward the opposite of the coagulate water flow, there may be a malfunction of the bobber switch and lead water drop.

5 Back out the gasket anchor board used to prevent gasket break off and tighten the nut on it.

6 Back out the install cardboard.

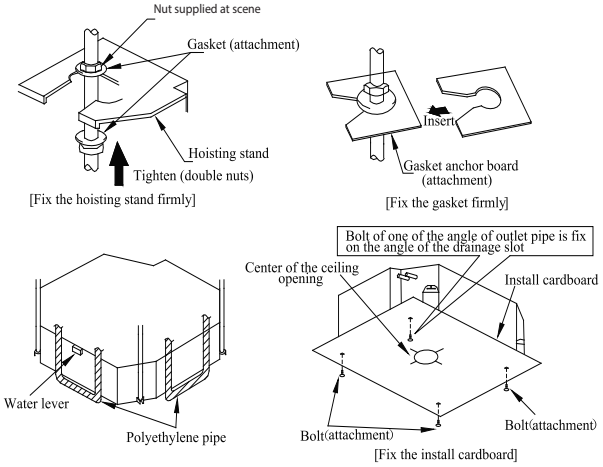


Fig. 33 – Hoisting the main body

NOTE: Tighten the nuts and bolts to prevent the air conditioner from breaking off.

Refrigerant Pipe Connection

Connection of the Refrigerant Pipe

When connecting the pipe to the unit, use both a spanner and a torque wrench.

When connecting, smear freeze motor oil on both the inside and outside of the flare nut, screw it by hand and then tighten with a spanner.

Refer to form 1 to check if the wrench had been tightened (too tight would mangle the nut and lead to leakage).

Examine the connection pipe to see if it had a gas leak, then take the treatment of heat insulation. Only use a median sponge to entwine the wiring interface of the gas pipe and heat preservation sheath of the gas collection tube.

Drainage Hose

1 Install the drain hose.

- The diameter of the drain hose should be equal or larger than the connection pipe's. (The diameter of the polythene pipe: Outer diameter 1 in. (25 mm) Surface thickness ≥ 0.06 in. (1.5 mm).
- The drain hose should be short and the drooping gradient should be less than 1/100 to prevent the formation of an air bubble. If the drain hose does not has enough of a drooping gradient, a drain raising pipe should be added.
- To prevent a bend in the drain hose, ensure the distance between the hoisting stand is 3.28 to 4.92 ft. (1 to 1.5 m) (see Fig. 34).

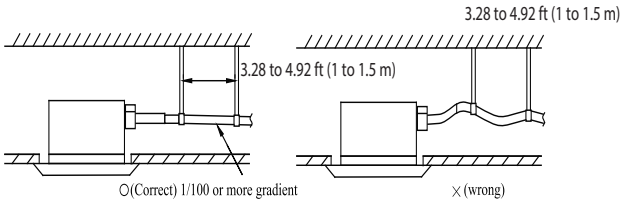


Fig. 34 – Drain Hose

- Use the drain hose and clamp attached. Insert the drain hose into the drain vent, and then tighten the clamp.
- Entwine the big sponge on the clamp of drain hose to insulate heat.
- Apply heat insulation to the indoor drain hose.

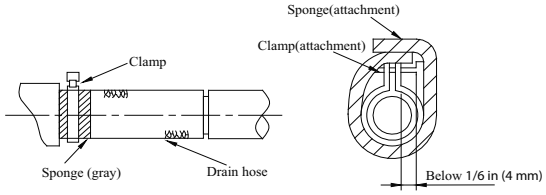


Fig. 35 – Drain Hose

NOTE: Drain Setup pipe

- The install height of the drain raising pipe should less than 11 in. (280 mm).
- The drain raising pipe should form a right angle with the unit, and distance to unit should not exceed 11.81 in. (300mm).

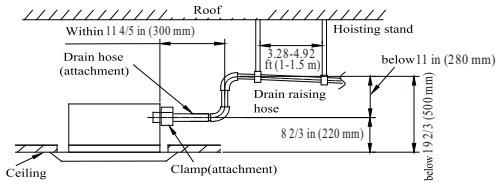


Fig. 36 – Drain Pipe Setup

Instruction

The slant gradient of the attached drain hose should be within 3 in. (75 mm) so that the drain hole does not have to endure unnecessary outside force.

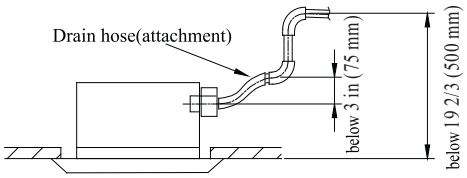


Fig. 37 – Slant gradient

1 Install the drain hose according to the following process if several drain hoses join together.

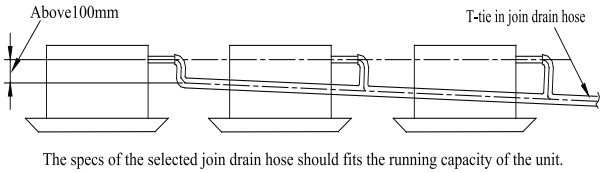


Fig. 38 – Slant gradient

2 Check the smoothness of the drain after the installation.

3 Check the drain state by emitting 36 3/5 in. (600 cc) water slowly from the outlet vent or test hole.

4 Check the drain in the state of refrigerating after installing the electric circuit.

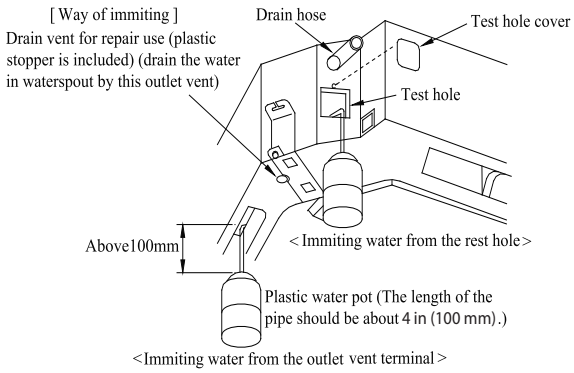


Fig. 39 – Drain

Electrical wiring

NOTE: The power of the entire indoor unit must be connected in the outdoor unit.

- About the electrical wiring, see the circuit diagram attached to the unit.
- All electrical wiring installation must be done by professional personnel.
- Remove the earthing treatment.

Wiring method of connection unit and controller

Connection wiring (communication)

1 Open the electric box cover, drag the wiring (communication) from the rubber plug A, and impact them well individually with an impact fastener.

2 Wire according to the indoor side circuit diagram:

(1.) Fix the impact fastener after the connection.

(2.) Entwine the small sponge on the electric wire (entwine to prevent condensation).

(3.) Impact tightly with an impact fastener after connecting. Then put on the electric box.

(4.) Connect the 3 cord rubber wire to the counter terminal of the 3 way terminal board.

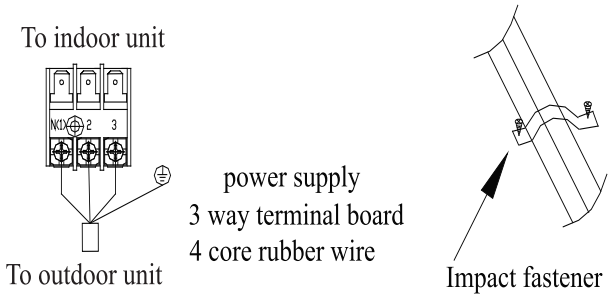


Fig. 40 – Power cord

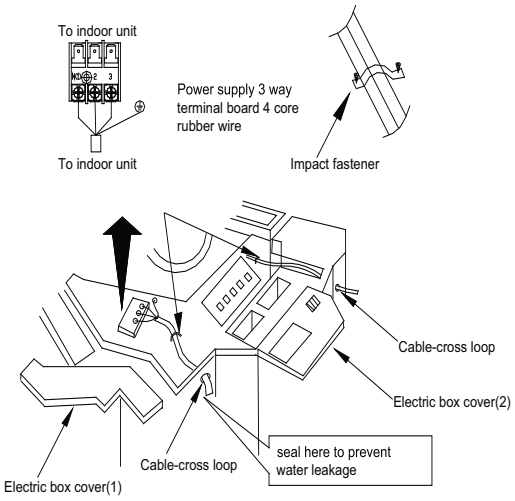


Fig. 41 – Power Supply

Install the panel

1 Set the panel to the indoor unit body by matching the position of the panel's swing flap motor to the panel's piping position to the indoor unit's piping position (see Fig. 42).

2 Install the panel.

(1.) Install the panel on the indoor unit temporarily. When installing, hang the latch on the hook located on the opposite side of the swing flap on the panel of the indoor unit (two positions).

(2.) Hang the remaining 2 latches to the hooks on the sides of the indoor unit. Be careful not to let the swing motor lead wire get caught in the sealing material.

(3.) Screw the 4 hexagon head screws under the latches in about 3/5 in. (15 mm) and the panel should rise.

(4.) Adjust the panel by turning it toward the direction pointed by the arrow (see Fig. 42) so the adjust board connects well to the ceiling.

(5.) Tighten the screws until the thickness of the sealing material between the panel and the indoor unit is reduced to 5−8mm.

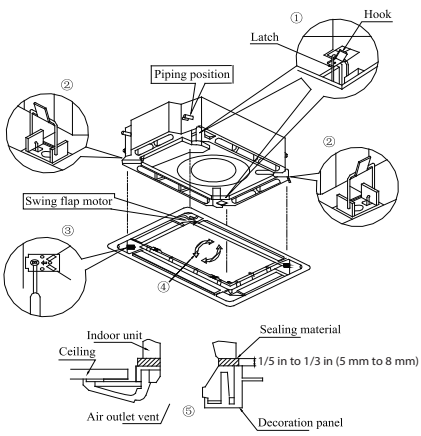


Fig. 42 – Panel Installation

NOTE:

(1.) Improper screwing of the screws may cause issues (see Fig. 43).

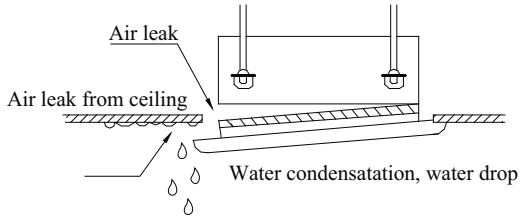


Fig. 43 – Example of Improper Screwing Issue

(2.) If a gap still exists between the ceiling and decoration panel after tightening the screws, re−adjust the height of the indoor unit (see Fig. 44).

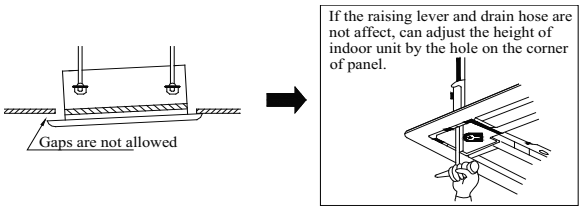


Fig. 44 – Improper Screwing

IMPORTANT: After securing, ensure there is no gap between the ceiling and the panel.

(3.) Wiring of the decoration panel (Fig. 45). Connect the joints for the swing flap motor lead wire (at 2 places) onto the panel.

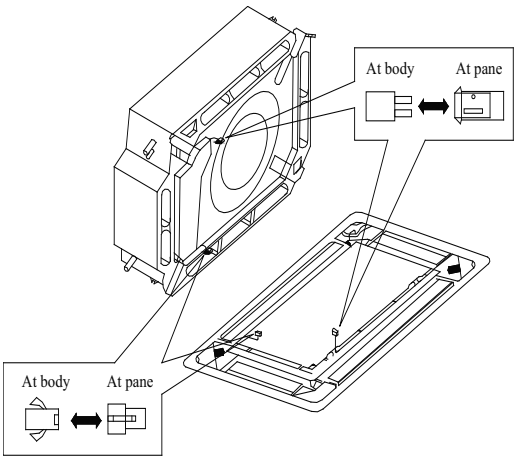


Fig. 45 – Connect Joints

Wireless Remote Control Installation

Mounting Bracket (if installed on the wall)

1 Use the two screws supplied with remote controller to attach the Mounting Bracket to the wall in a location selected by customer and within operating range.

2 Install batteries in the Remote Controller.

3 Place the Remote Controller in the remote control Mounting Bracket.

NOTE: For remote control operation, refer to the unit Owner's Manual. The wireless remote should pointed to the wired controller to receive the signal.

Wired Remote Controller (shipped with the unit)

For setup instructions, refer to the wired controller installation manual. Connect the 4−core wire shipped with the unit to CN9 on the indoor board and CN1 on the wired controller board.

DUCTED INDOOR UNITS INSTALLATION

Requirements on the Installation Location

1 Ensure the hanger is strong enough to withstand the weight of the unit.

2 The drainage pipe is easy for connection.

3 No obstacle is in the inlet/outlet and the air circulation is in good condition.

4 Ensure the installation space is left for access to maintenance.

5 It should be far away from where there is a heat source, leakage of any inflammable, explosive substances, or smog.

6 It is the ceiling type unit (concealed in the ceiling).

7 The power cords and connection lines of the indoor and outdoor units must be at least 3.28 ft. (1m) away from the TV set or radio to avoid the image interference and noise (even if 3.28 ft. (1m) is maintained, the noise may be produced due to the strong electromagnetic wave).

Installation of the Indoor Ducted Unit

1 Insert the M10 expansion bolt into the hole, and then knock the nail into the bolt. Refer to the Dimension − Indoor drawings (see Fig. 2 − 7) for the distance between the holes (see Fig. 46 for expansion bolt installation).

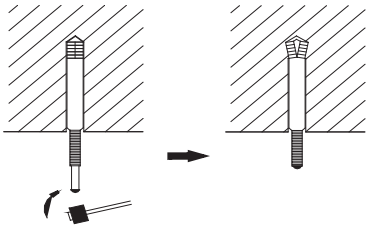


Fig. 46 – Expansion Bolt

2 Install the hanger on the indoor unit (see Fig. 47).

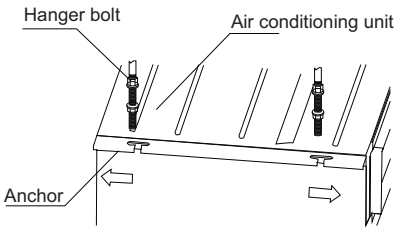


Fig. 47 – Hanger Bolt

3 Install the indoor unit on the ceiling, as shown in Fig. 48.

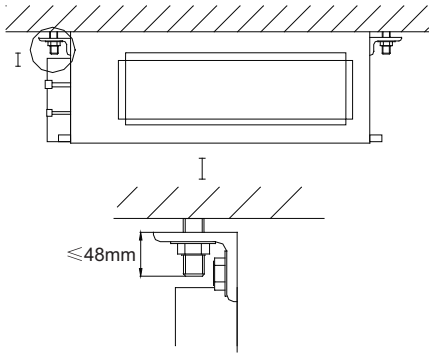


Fig. 48 – Install the indoor unit

⚠ CAUTION

- Prior to the installation, prepare for all piping (refrigerant pipe, drain pipe) and wiring (wires of the wired controller, wires between the indoor and outdoor unit) of the indoor unit to make the installation easier.
- If there is an opening in the ceiling, its better to reinforce it to keep it flat and prevent it from vibrating. Consult the user and builder for more details.
- If the strength of the ceiling is not strong enough, a beam made of angle iron can be used and then secure the unit on it.
- If the indoor unit is not installed in the air conditioning area, please use sponge around the unit to prevent condensing. The thickness of the sponge depends on the actual installation environment.

Indoor Ducted Unit Horizontal Check

After the installation of the indoor unit, check the leveling to ensure the unit keeps a horizontal fore and aft and maintains an inclination of 5° toward the drain pipe right and left (see Fig. 49).

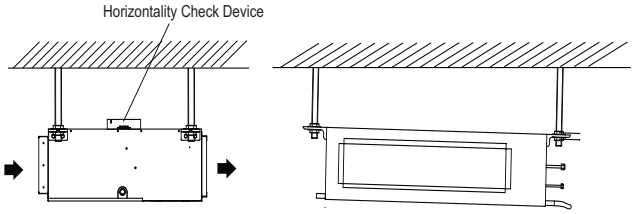


Fig. 49 – Horizontal check device

Air Supply Duct Installation

- Rectangular Air Supply Duct Installation

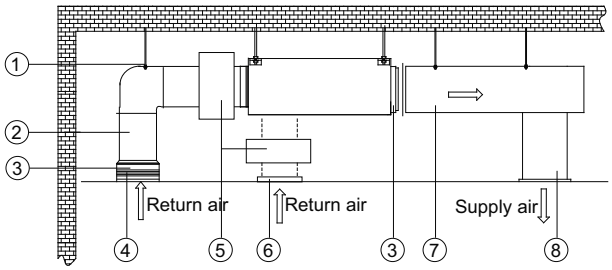


Fig. 50 – Air Duct Supply Installation

Table 37—Air Duct

NO.	NAME	NO.	NAME
1	Hanger	5	Plenum Box
2	Return Air Duct	6	Filter Screen
3	Canvas Duct	7	Main Air Supply Duct
4	Return Air Heat	8	Air Supply Outlet

Install the Round Air Supply Duct

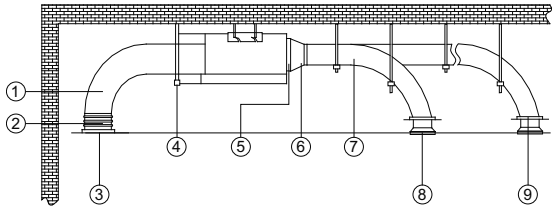


Fig. 51 – Air supply duct

Table 38—Air Duct

NO.	NAME	NO.	NAME
1	Return Air Duct	6	Transition Duct
2	Canvas Duct	7	Air Supply Duct
3	Return Air Louver	8	Diffuser
4	Hanger	9	Diffuser Joint
5	Air Supply Duct		

Round Air Supply Duct Installation

1 Pre−install the round duct outlet on the transition duct and then secure it with the tapping screw.

2 Place the transition duct to the air outlet of the unit and secure it with a rivet.

3 Connect the outlet to the duct and then tighten them with tape.

⚠ CAUTION

The max. length of the duct means the max. length of the air supply duct plus the max. length of the return air duct.

The duct is either rectangular or round and connected with the air inlet/outlet of the indoor unit. Among all air supply outlets, at least one should remain open. As for the round duct, it needs a transition duct of which should match the air supply size of the unit.

After fitting the transition duct, it is best to keep the round duct 32ft. (10m) away from the corresponding diffuser.

Air Supply Outlet and Return Air Inlet Drawings

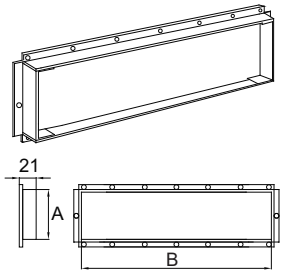


Fig. 52 – Air Supply Outlet

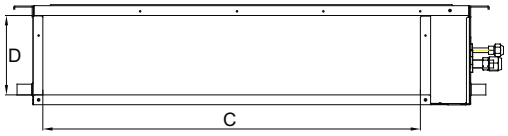


Fig. 53 – Return Air Inlet

Table 39—Dimensions of the Air Supply Outlet and Return Air Inlet (unit: in/mm)

ITEM	AIR SUPPLY OUTLET		RETURN AIR INLET	
Size	A	B	C	D
09	6 1/7 in (156 mm)	26 in (662 mm)	22 5/6 in (580 mm)	22 5/6 in (580 mm)
12				
18	6 1/7 in (156 mm)	34 in (862 mm)	30 5/7 in (780 mm)	6 3/8 in (162 mm)
21	6 1/7 in (156 mm)	41 4/5 in (1062 mm)	38 4/7 in (980 mm)	6 3/8 in (162 mm)
24				

Return Air Duct Installation

1 The default installation location of the rectangular flange is in the back and the return air cover plate is in the bottom (see Fig. 54).

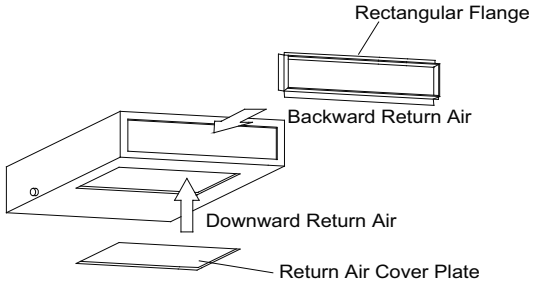


Fig. 54 – Return Air Duct

2 If the downward return air is desired, just change the place of the rectangular flange and the return air cover plate.

3 Connect one end of the return air duct to the return air outlet of the unit by rivets and the other to the return air louver. For the sake of the convenience, to freely adjust the height, a cutting of the canvas duct will be helpful, which can be reinforced and folded by 8# iron wire.

4 More noise is likely to be produced in the downward return air mode than the backward return air mode. We suggest installing a muffler and a plenum box to minimize the noise.

5 The installation method can be chosen after considering the conditions of the building and maintenance etc. (see Fig. 55).

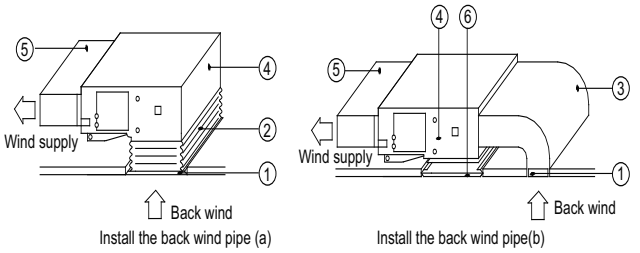


Fig. 55 – Return Air Duct

Table 40—Air Duct

NO.	NAME	NO.	NAME
1	Return Air Louver (with the filter screen)	4	Indoor Unit
2	Canvas Duct	5	Air Supply Duct
3	Return Air Duct	6	Access Grille

Condensate Pipe Installation

1 The condensate pipe should maintain a inclination angle of 5” ~ 10”, to facilitate the drainage of the condensate water. And the condensate pipe joints should be insulated by the insulation material to prevent condensing (see Fig. 56).

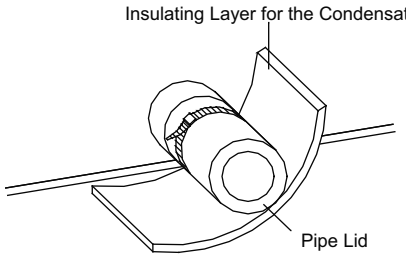


Fig. 56 – Thermal Insulation of the Condensate Pipe

2 There is a condensate outlet on both the left and right sides of the unit. Once one is confirmed for use, the other should be clogged by a rubber plug, bundled by the binding wire and insulated by the insulation material to avoid water leakage.

3 The right outlet is defaulted to be clogged with a plug.

IMPORTANT: No water leakage is allowed on the joint of the condensate pipe.

Drain Pipe Design

1 The drain pipe should always be kept an inclination angle (1/50~1/100) to avoid water from gathering.

2 During the connection of the drain pipe and device, do not impose excessive force on the pipe on one side of the device. Additionally the pipe should be secured closely to the device.

3 The drain pipe can be the ordinary hard PVC pipe which can be purchased locally. During the connection, inset the end of the PVC pipe to the drain outlet, then tighten it with the drain hose and binding wire. Never connect the drain outlet and the drain hose with adhesive.

4 When the drain pipe is used for multiple devices, the public section of the pipe should be 4 in. (100 mm) lower than the drain hole of each device and it is better to use the much thicker pipe for such a purpose.

Drain Pipe Installation

1 The drain pipe diameter should be larger than or equal to that of the refrigerant pipe (PVC pipe, outer diameter: 1 in. (25 mm), wall thickness ≥ 0.06 in. (1.5 mm).

2 The drain pipe should be as short as possible and with at least a 1/100 degree of slope to avoid forming air pockets.

3 If the proper slope degree of the drain pipe is not provided, a lift pipe should be installed.

4 Keep a distance of 3.28 ft ~ 4.92 ft (1m ~ 1.5m) between the hangers to avoid the drain hose from turning.

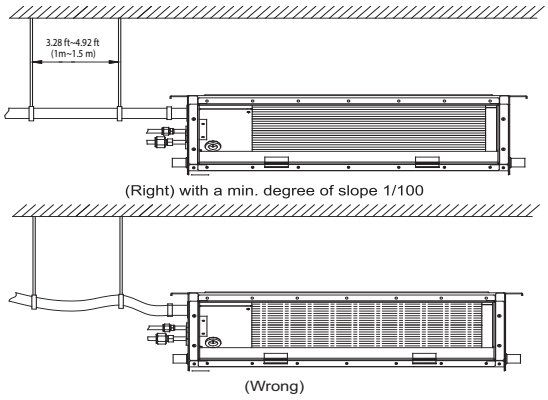


Fig. 57 – Slope Degree

5 Insert the drain hose into the drain hole and tighten it with clamps.

6 Wrap the clamps with a generous amount of sponge for thermal insulation.

7 The drain hose inside the room also should be insulated.

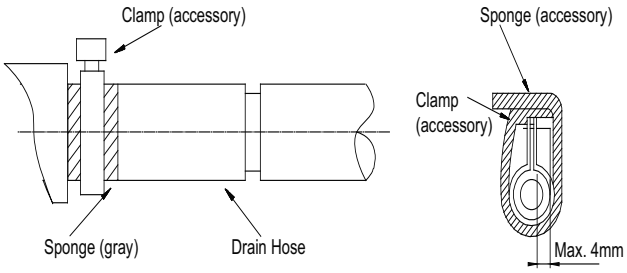


Fig. 58 – Drain Hose Insulation

Lift Pipe Precautions

The lift pipe install height should be less than 33 1/2 in. (850 mm). We recommend setting an inclination angle 1~2° for the lift pipe toward the drainage direction. If the lift pipe and the unit form a right angle, the lift pipe height must be less than 31 1/2 in. (800 mm).

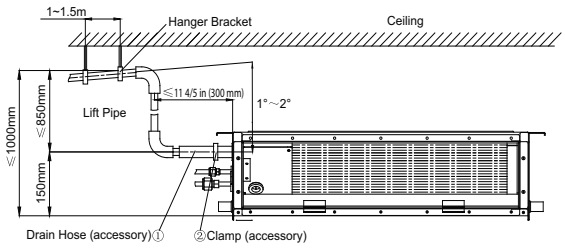


Fig. 59 – Installation Height

NOTE:

1 The drain hose inclination height should be within 3 in. (75 mm) so that the drain hose outlet does not suffer any external force.

2 If multiple drain pipes converge, follow the floor console installation steps in section 42.

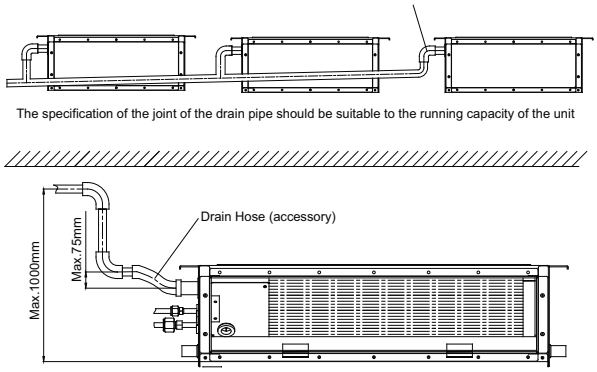


Fig. 60 – Multiple Line Convergence

Wireless Remote Controller Installation

Mounting Bracket (if installed on the wall)

1 Use the two screws supplied with the controller to attach the Mounting Bracket to the wall in a location selected by the customer and within operating range.

2 Install the batteries in the Remote Controller.

3 Place the Remote Controller in the Mounting Bracket.

NOTE: **For remote control operation, refer to the unit owner’s manual. The wireless remote controller should be pointed to the wired controller to receive the signal.**

Wired Remote Controller (shipped with the unit)

For setup instructions, refer to the wired controller installation manual. Connect the 4−core wire shipped with the unit to CN9 on the indoor board and CN1 on the wired controller board.

FLOOR CONSOLE INDOOR UNITS INSTALLATION

Follow these key steps when selecting a location for the unit.

- Select a place where cool air can be distributed throughout the room.
- Select a place where condensation water is easily drained away.
- Select a site that can handle the weight of the indoor unit.
- Select a place which has easy access for maintenance.

Indoor Unit

The indoor unit should be sited in a place where:

1 The restrictions for the installation specified in the indoor unit installation drawings are met.

2 Both the air intake and exhaust have clear paths.

3 The unit is not in the path of direct sunlight.

4 The unit is away from a heat or steam source.

5 There machine oil vapor source (this may shorten indoor unit life).

6 Cool (warm) air is circulated throughout the room.

7 The unit is away from electronic ignition type fluorescent lamps (inverter or rapid start type) as they may shorten the remote controller range.

8 The unit is at least 3.28 ft. (1m) away from any television or radio set (unit may cause interference with the picture or sound).

NOTE: **DO NOT install the air conditioner in the following areas.**

- **Do not install in areas with or near an abundance of oil.**
- **Do not install in areas with an acid base area.**
- **Do not install in areas with an irregular electrical supply.**

Indoor Unit Installation Drawings

The indoor unit may be mounted in any of the three styles shown here.

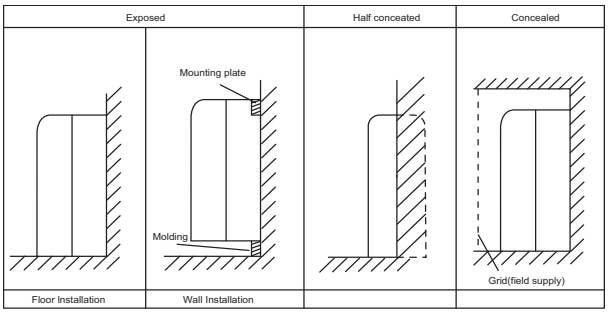
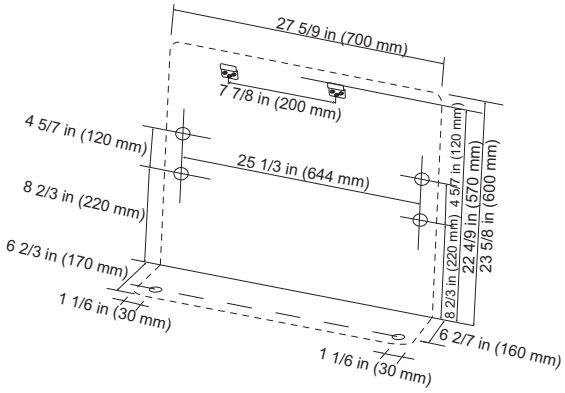


Fig. 61 – Indoor Unit Installation Drawings

Securing the installation panel location



Schematic drawing of hooks:

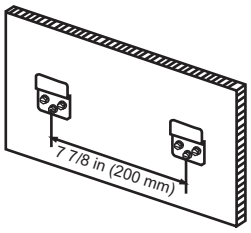


Fig. 62 – Schematic Drawing of Hooks

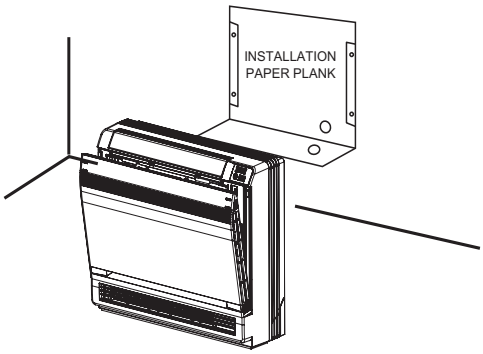


Fig. 63 – Installation Paper Plank

Refrigerant Piping

Use the following steps to connect the refrigerant pipe.

1 Drill a hole (2 1/6 in. (55mm) in diameter) in the spot indicated by the ⊘ symbol in the illustration (see Fig. 64).

2 The location of the hole is different depending on which side of the pipe is taken out.

3 For piping, see *Connecting the refrigerant pipe*, under Indoor Unit Installation (1).

4 Allow space around the pipe for a easier indoor unit pipe connection.

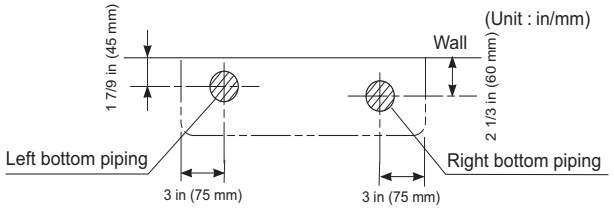


Fig. 64 – Piping

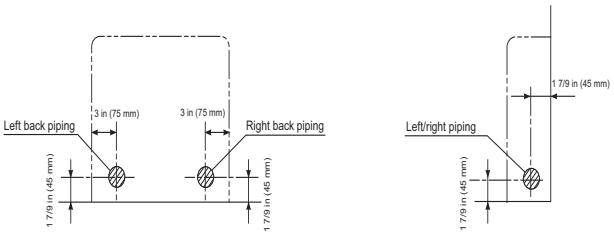


Fig. 65 – Back piping

⚠ CAUTION

The suggested shortest pipe length is 8.2 ft. (2.5m) to avoid noise from the outdoor unit and vibration. (Mechanical noise and vibration may occur depending on how the unit is installed and the environment in which it is used.)

See the installation manual for the outdoor unit for the maximum pipe length.

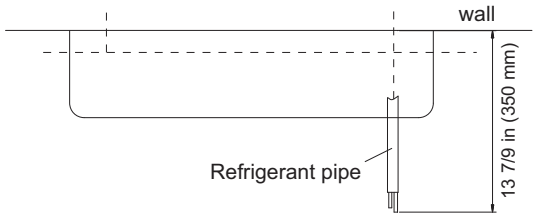


Fig. 66 – Refrigerant Pipe

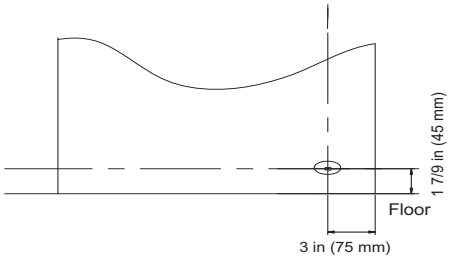


Fig. 67 – Refrigerant Pipe

Boring a Wall Hole and Installing the Wall Embedded Pipe

- For walls containing metal frame or metal board, be sure to use a wall embedded pipe and wall cover in the feed−through hole to prevent water leakage.
- Be sure to caulk the gaps around the pipes with caulking material to prevent water leakage.

1 Bore a feed−through hole of 2 1/6 in. (55mm) in the wall so it has a down slope toward the outside.

2 Insert a wall pipe into the hole.

3 Insert a wall cover into the wall pipe.

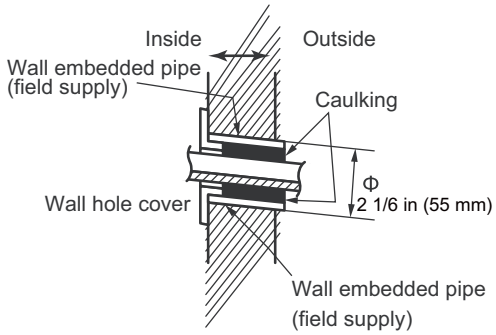


Fig. 68 – Wall Embedded Pipe

4 After completing refrigerant piping, wiring, and drain piping, caulk the pipe hole gap with putty.

Drain Piping

1 Use a commercial rigid polyvinyl chloride pipe general VP 20 pipe, outer diameter 1 in. (26mm), inner diameter 4/5 in. (20 mm) for the drain pipe.

2 The drain hose (outer diameter 5/7in. (18mm) at the connecting end, 8 2/3 in. (220mm) is supplied with the indoor unit. Prepare the drain pipe picture below position.

3 The drain pipe should be inclined downward so that water flows smoothly without any accumulation (should not be a trap).

4 Insert the drain hose to this depth so it will not be pulled out of the drain pipe.

5 Insulate the indoor drain pipe with .39 in. (10mm) or more of insulation material to prevent condensation.

6 Remove the air filters and pour some water into the drain pan to ensure the water flows smoothly.

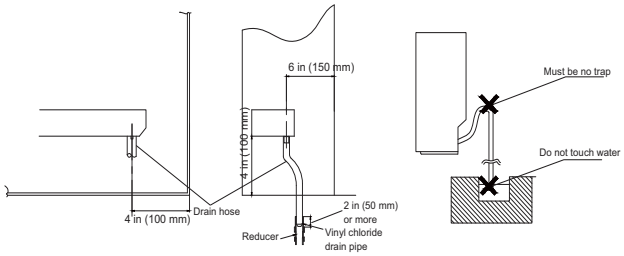


Fig. 69 – Trap

Installing the Indoor Unit

1 Preparation

- Open the front panel, remove the 4 screws and dismount the front grille while pulling it forward.

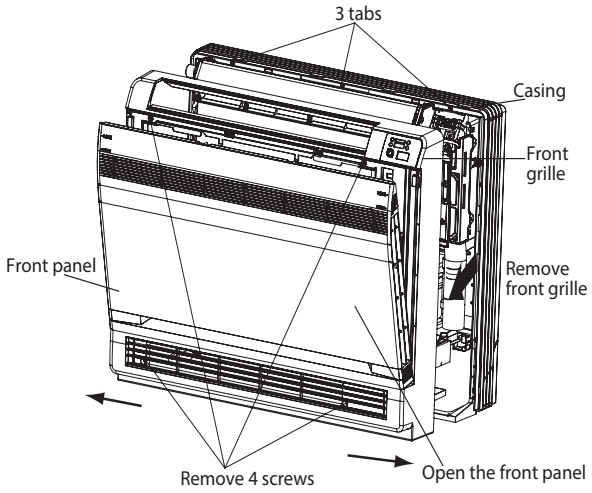


Fig. 70 – Remove the screws

- Follow the arrows to disengage the clasps on the front case to remove it.
- Follow the procedure below when removing the slit portions.

For Moldings

- Remove the pillars. Remove the slit portions on the bottom frame using nippers.

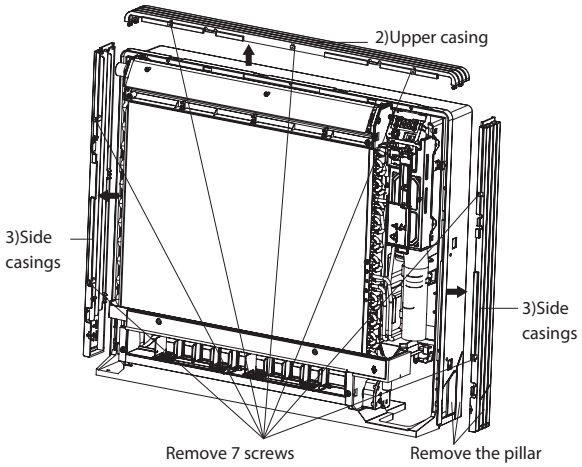


Fig. 71 – Remove the screws

For Side Piping

Remove the pillars:

(1.) Remove the 7 screws
(2.) Remove the upper casing (2 tabs)
(3.) Remove the left and right casings (2 tabs on each side)
(4.) Remove the slit portions on the bottom frame and casings using nippers
(5.) Return by following the steps in reverse order (3>2>1).

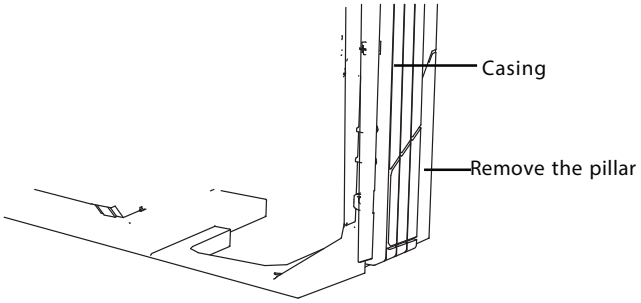


Fig. 72 – Remove the pillar

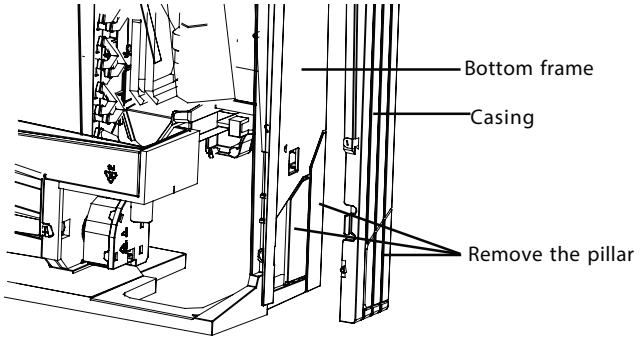


Fig. 73 – Remove the pillar

2 Installation

- Secure using 6 screws for floor installations. Do not forget to secure to the rear wall.
- For wall installations, secure the mounting plate using 5 screws and the indoor unit using 4 screws.

The mounting plate should be installed on a wall which can support the weight of the indoor unit.

(1.) Temporarily secure the mounting plate to the wall, ensure the panel is completely level, and mark the boring points on the wall.

(2.) Secure the mounting plate to the wall with screws.

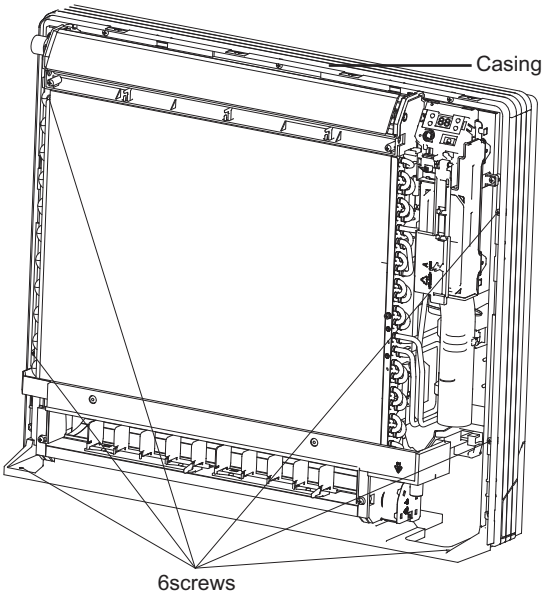


Fig. 74 – Floor Installation

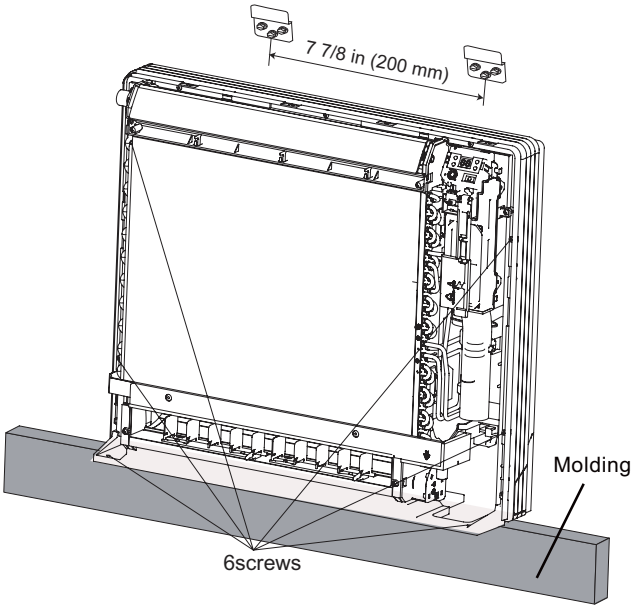


Fig. 75 – Wall Installation

(3.) Once refrigerant piping and drain piping connections are complete, fill in the gap of the through hole with putty. A gap can lead to condensation on the refrigerant pipe, and drain pipe, and the entry of insects into the pipes.

(4.) Attach the front panel and front grille in their original positions once all connections are complete.

Flaring the Pipe End

1 Cut the pipe end with a pipe cutter.

2 Remove burrs with the cut surface facing downward so that the chips do not enter the pipe.

3 Fit the flare nut on the pipe.

4 Flare the pipe.

5 Check that the flaring is properly made.

⚠ WARNING

(1.) **DO NOT** use mineral oil on the flared part.

(2.) Prevent mineral oil from getting into the system as this would reduce the lifetime of the units.

(3.) Never use piping which had been used for previous installations. Only use parts which are delivered with the unit.

(4.) Do never install a drier to this R410A unit to guarantee its lifetime.

(5.) The drying material may dissolve and damage the system.

(6.) Incomplete flaring may cause refrigerant gas leakage.

Wireless Remote Controller Installation

Mounting Bracket (if installed on the wall)

1 Use the two screws supplied with the controller to attach the Mounting Bracket to the wall in a location selected by the customer and within operating range.

2 Install the batteries in the Remote Controller.

3 Place the Remote Controller in the remote control Mounting Bracket.

NOTE: For remote controller operation, refer to the unit Owner's Manual.

Wired Remote Controller (Not Available)

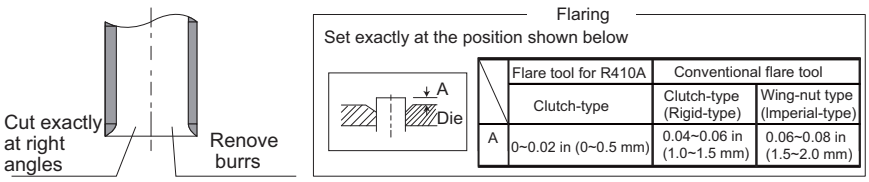


Fig. 76 – Flaring

OUTDOOR UNIT INSTALLATION

1 Use a rigid base to support the unit in a level position.

2 Locate the outdoor unit and connect the piping and wiring.

⚠ CAUTION

EQUIPMENT DAMAGE HAZARD

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

Excessive torque can break the flare nut depending on installation conditions.

Piping Connections to Outdoor Unit

IMPORTANT: Use refrigeration grade tubing ONLY. No other type of tubing may be used. Use of other types of tubing will void the manufacturer's warranty. Ensure there is enough piping to cover the required length between the outdoor and indoor unit. Only use piping suitable for high side pressure for both the high side and low side connections.

Piping Guide:

- Do not open the service valves or remove the protective caps from the tubing ends until all the connections are made.
- Bend the 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 a minimum 3/8−in. (10 mm) wall thermal pipe insulation. Inserting the tubing into the insulation before making the connections will save time and improve the installation quality.

1 The unit is equipped with multiple pairs of service valves (except sizes 48 and 56). Each pair is clearly marked (color and letter) to identify the indoor unit circuits. In the outdoor unit wiring area, each indoor unit interconnecting terminal block is marked (letter) the same as the corresponding pair of service valves. The indoor units must be piped and wired in matched sets (A to A; B to B, etc.).

2 It is not required to use all of the available fan coil connections if the application does not require them at the current time. The system can be expanded at any time.

3 Conversion joints are supplied with the outdoor unit. They are required for certain fan coil combinations. These joints are to be connected to the outdoor unit as needed to match the line set size.

4 Cut tubing with a tubing cutter.

5 Install the correct size flare nut into the tubing and make the flare connection.

6 Apply a small amount of refrigerant oil on the flare connection on the tubing.

7 Properly align the tubing with the service valve (conversion joint).

8 Tighten the flare nut and finish the installation using two wrenches (see Fig. 77).

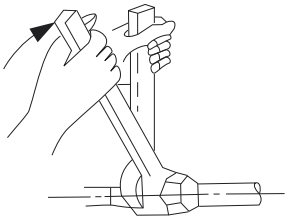


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Fig. 77 – Tighten Flare Nut

Install all Power and Interconnecting Wiring to the Outdoor Unit*

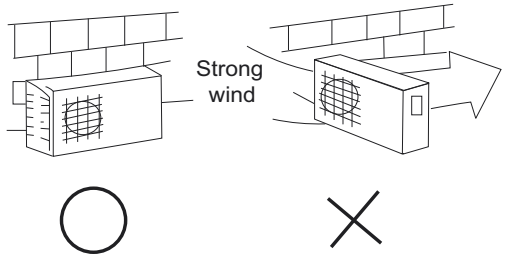

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Fig. 78 – High Wind Installation

Outdoor Unit Wiring Connections

1 Mount the outdoor power disconnect.

2 Run the power wiring from the main box to disconnect per the NEC and local codes.

3 Remove the field wiring cover (if available) from the unit by loosening the screws.

4 Remove the knockouts.

5 Connect the conduit to the conduit panel (see Fig. 82).

6 Properly connect both the power supply and the control lines to the terminal block per the connection diagram.

7 Ground the unit in accordance with the NEC and local electrical codes.

8 Use the lock nuts to secure the conduit.

9 Reinstall the field wiring cover.

⚠ NOTE

*Branch Boxes required on sizes 48 and 56.

A separate power connection is required for the Outdoor unit and the Branch Boxes.

Refer to the Branch Box installation instructions.

⚠ 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 the indoor unit to the outdoor unit.
- Every wire must be connected firmly. Loose wiring may cause the 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 the 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.

Outdoor Unit Installation Sizes 48 and 56

For sizes 48 and 56, one outdoor unit can drive up to three Branch Box (BU) modules and nine different types of indoor units (high wall, cassette, ducted and floor console). At least one Branch Box (KSAUI0201AAA up to 2 indoor units or KSAUI0401AAA up to 3 indoor units) is required on these sizes. If two or more Branch Boxes are installed, the Y−type Branch tube (KSAUI0501AAA) is required.

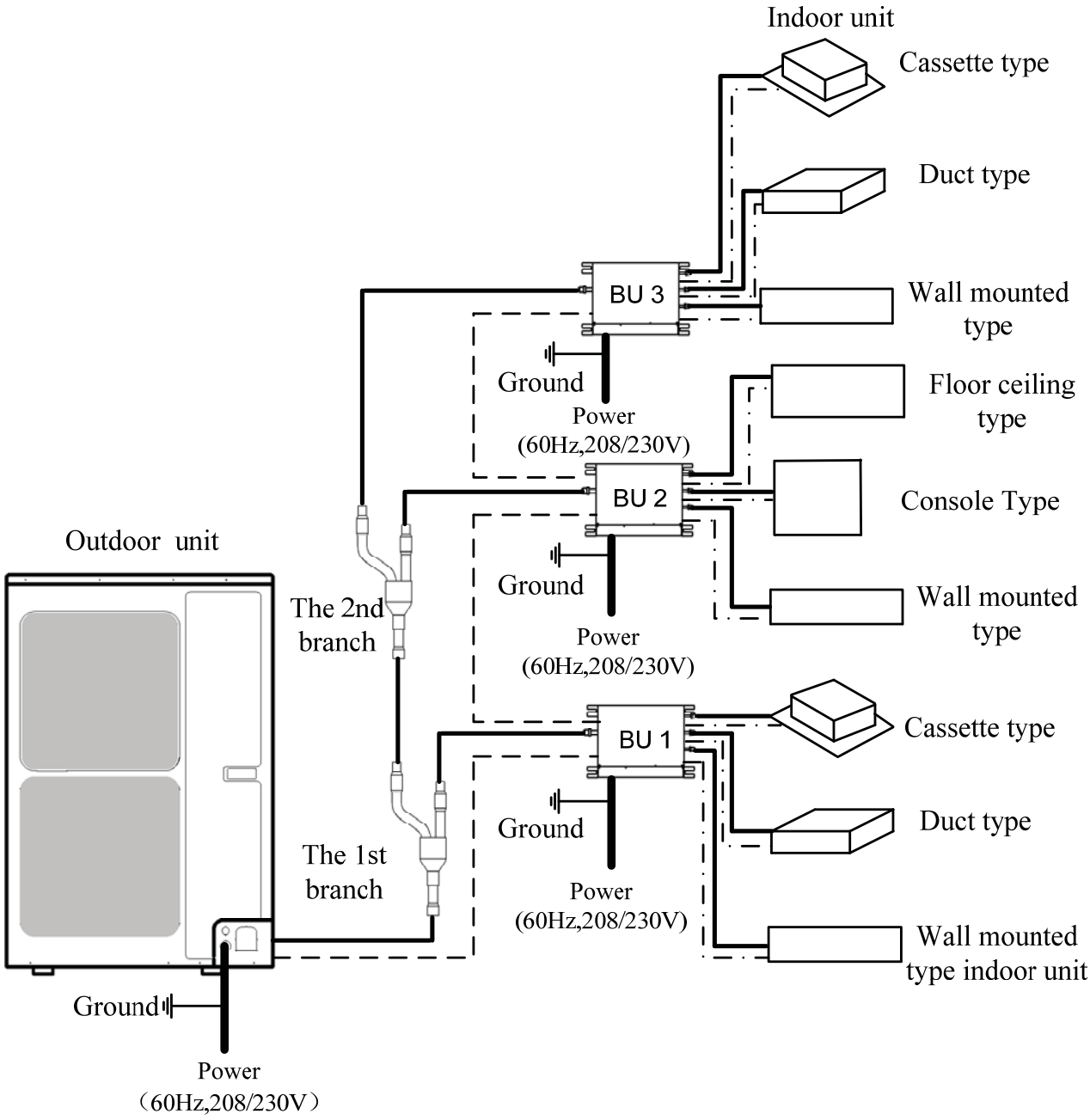

Fig. 79 – Connection Flow

COMMUNICATION SIZES 48−56

Detection of the quantity of installed indoor units and Branch Box (BU) modules: After 3 minutes of energizing, if the outdoor unit does not receive the communication data of a certain indoor unit, the outdoor unit determines the indoor unit is not installed and interacts with the unit accordingly. If the outdoor unit receives the communication data from the same indoor unit later, the outdoor unit interacts with that unit as if it is installed.

NOTE: If the number of indoor units are not detected automatically, push SW5 for addressing.

TESTING BOARD INSTRUCTION SIZES 48−56

Testing Board

The testing board is located in front of the electrical box. The testing board provides the following benefits:

- Detects indoor unit numbers and indoor unit address
- Displays real running functions and error codes automatically.

It is composed of the function section, data section and button section.

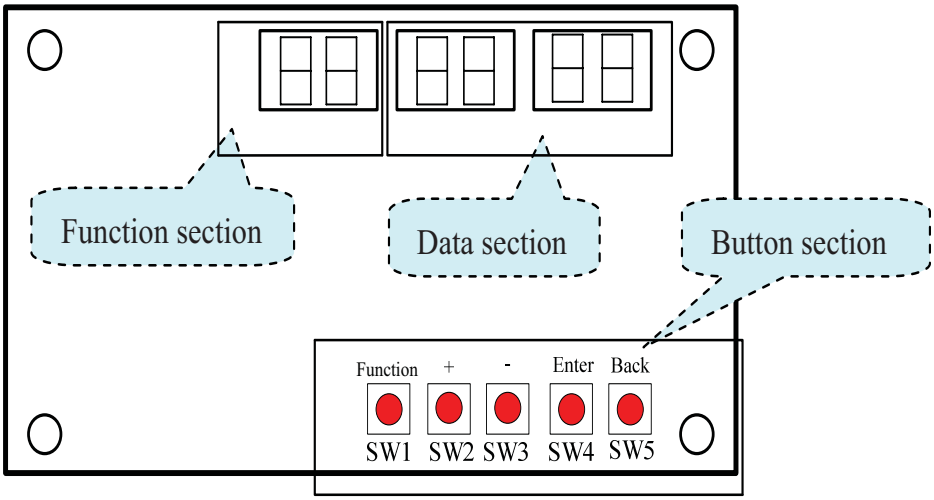

Fig. 80 – Testing Board

Table 41—Function Instruction and Data Section

<table>
<tr><th>Running State</th><th>Function Section Display</th><th>Data Section Display</th></tr>
<tr><td>Stop</td><td>1 The section displays the numbers of the indoor units which have established communication with the outdoor unit. For example, if there are sever established indoor units, the section displays “7”.
2 It displays the address of the indoor units (“1b” represents the indoor unit 1B). (Branch Box module:1/2/3, Indoor unit: A/b/C/d/E)</td><td>1 If the function section displays the indoor units’ numbers, the data section displays the outside temperature. For example, “95” represents 95°F (35°C).
2 If the function section displays the indoor unit’s address, the data section displays the model of the indoor unit (“35” represents the 35 model).</td></tr>
<tr><td>Normal</td><td>The running state code:
<table>
<tr><td>Code</td><td>Running state</td><td>Code</td><td>Running state</td></tr>
<tr><td>UE</td><td>Pressure Equalization</td><td>UH</td><td>Heating</td></tr>
<tr><td>UP</td><td>Pump Down</td><td>F7</td><td>Oil Returning</td></tr>
<tr><td>UC</td><td>Cooling</td><td>H1</td><td>Defrosting</td></tr>
</table></td><td>Displays the target gear of the compressor. If the gear is zero, it displays “0”.
For example, the gear is the 15th, it displays “15”. The gear range is 0 – 60.</td></tr>
<tr><td>Malfunction</td><td>If the malfunction occurs in the system, the section displays the error code. If there are several malfunctions, it displays the error codes at intervals of 2 seconds.</td><td>1 If the malfunction occurs in the outdoor unit, the section displays nothing.
2 If the malfunction occurs in the indoor units, the section displays the indoor unit’s address.</td></tr>
</table>

WIRING DIAGRAM SIZES 48−56

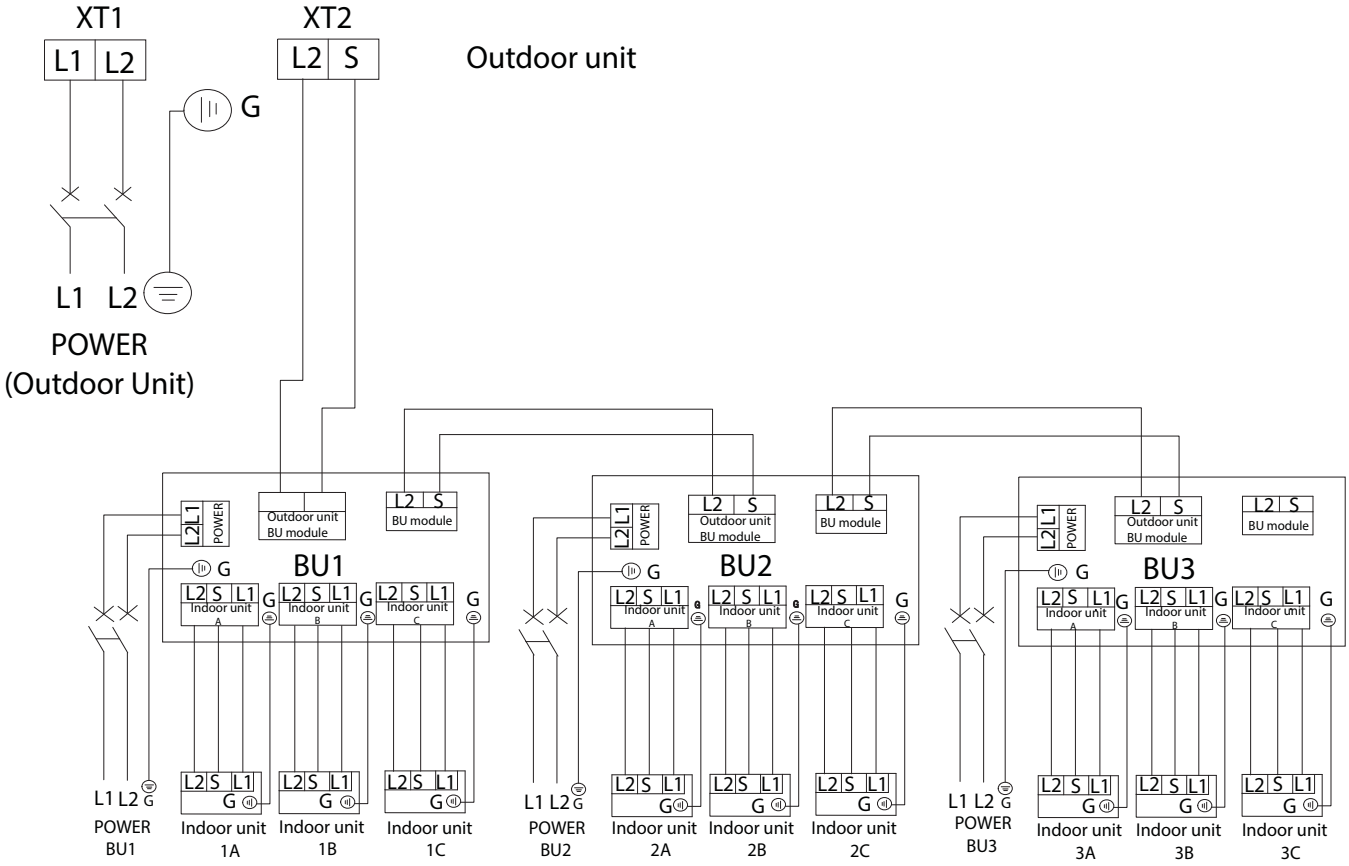

Fig. 81 – Wiring Diagram sizes 48−56

Connection Diagrams

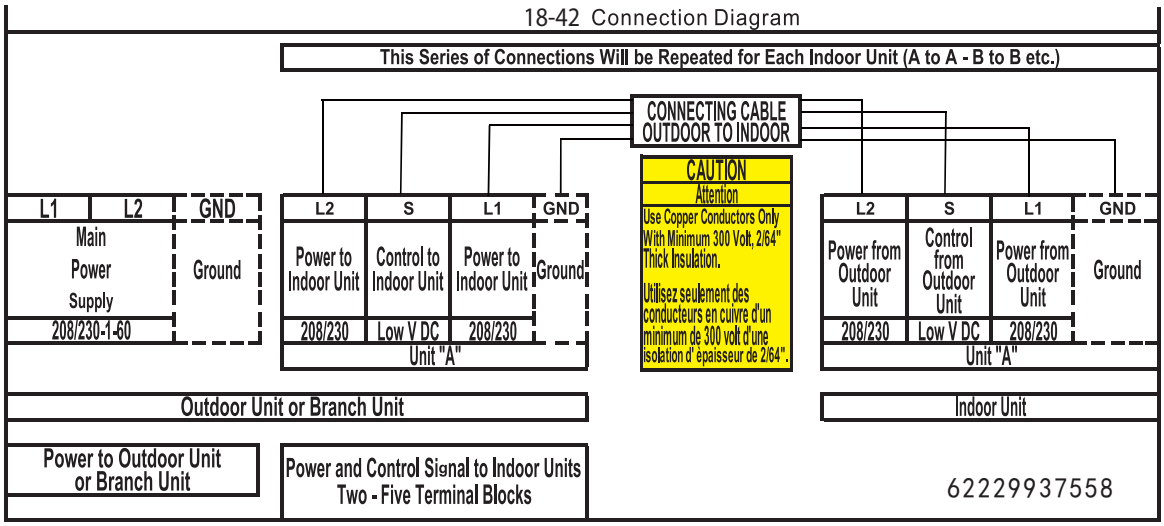

Fig. 82 – Connection Diagram Sizes 18−42

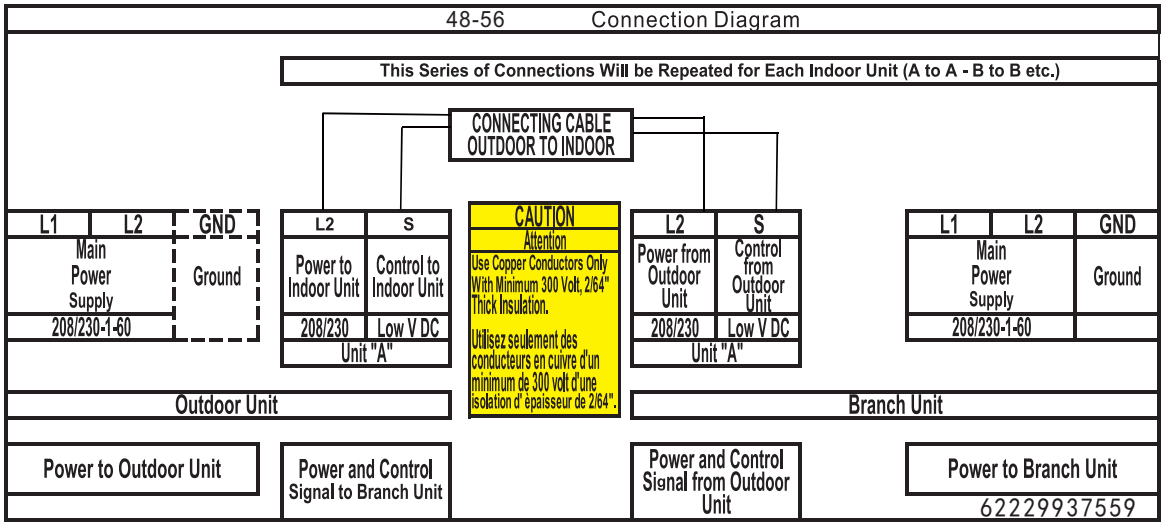

Fig. 83 – Connection Diagram Sizes 48−56

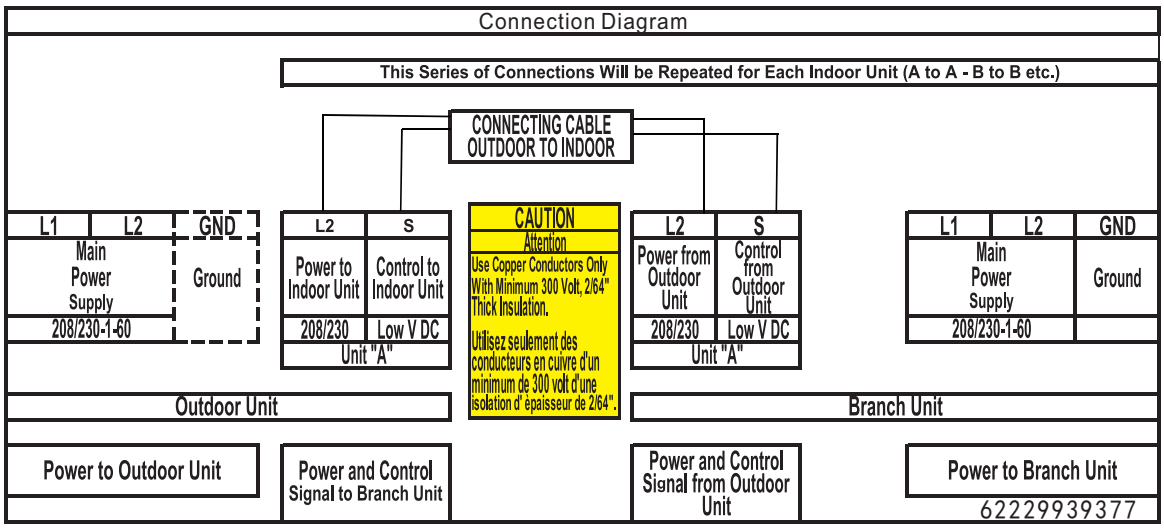

Fig. 84 – Connection Diagram Branch Box

Install all Power, Interconnecting Wiring, and Piping to Indoor Unit.

1 Run the interconnecting piping and wiring from the outdoor unit to each indoor unit (in matched pairs) (except sizes 48 and 56 refer to the Branch Box installation instructions).

2 Pass the interconnecting cable through the hole in wall (outside to inside).

3 Lift the indoor unit into position and route the piping and drain through the hole in wall (inside to outside). Fit the interconnecting wiring into the back side of the indoor unit.

4 Hang the indoor unit on the upper hooks of the wall mounting plate (see Fig. 85).

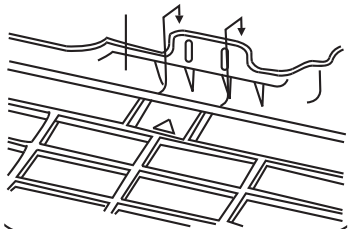

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Fig. 85 – Hanging Indoor Unit

5 Open the indoor unit's front cover and remove the field wiring terminal block cover (see Fig. 86).

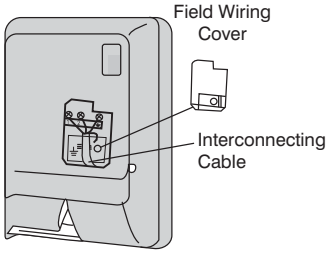

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Fig. 86 – Field Wiring Cover

6 Pull the interconnecting wire up from back of the indoor unit and position in close to the terminal block on the indoor unit.

7 Push the bottom of the indoor unit onto the mounting plate to complete the wall mount.

8 Connect the wiring from the outdoor unit per the connection diagram (see Fig. 82).

NOTE: **Polarity of power wires must match original connection on outdoor unit.**

9 Replace the field wiring cover and close the front cover of the indoor unit.

10 Connect the refrigerant piping and the drain line outside of the indoor unit. Refer to *Piping Connections to Outdoor Unit* section and Fig. 77 for proper installation of the flare connections. Complete the pipe insulation at the flare connection then fasten the piping and wiring to the wall as required. Completely seal the hole in the wall.

11 Repeat steps 1 through 10 for each indoor unit.

System Vacuum and Charge

⚠ 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 the 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.

Using Vacuum Pump

1 Completely tighten the flare nuts A, B, C, D, (for all fan coils). Connect the gage charge hose to one circuit or all circuits (if using a multiple connection manifold) at the low side service valve charge port(s) (see Fig. 87).

2 Connect the charge hose to the vacuum pump.

3 Fully open the low side of the manifold gage (see Fig. 88).

4 Start the vacuum pump.

5 Evacuate using either the deep vacuum or triple evacuation method.

6 After the evacuation is complete, fully close the low side of the manifold gage and stop the vacuum pump operation.

7 If the multiple connection manifold is not used, repeat the procedure (1 through 6) until all indoor units and piping are completely vacuumed.

8 The factory charge contained in the outdoor unit is suitable for maximum pipe length. If an additional charge is required, it should be added to the system as liquid at this time.

9 Disconnect the charge hose from the charge connection of the low side service valve.

10 Fully open all the service valves.

11 Securely tighten the service valves caps.

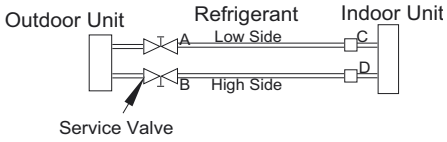

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Fig. 87 – Service Valve

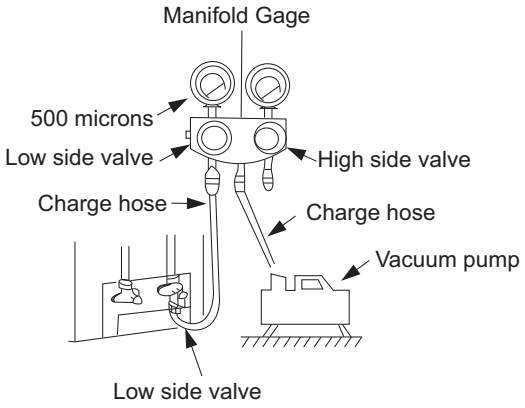

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Fig. 88 – Manifold

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. 89).

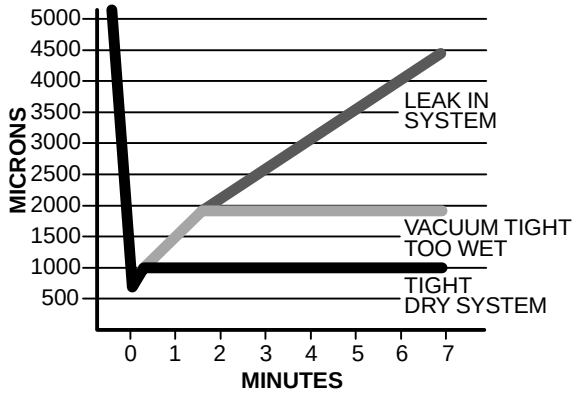

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Fig. 89 – Deep Vacuum Graph

Triple Evacuation Method

The triple evacuation method should only be used when the vacuum pump is only capable of pumping down to 28in. of mercury vacuum and the system does not contain any liquid water.

Refer to Fig. 90 and proceed as follows:

1 Pump the system down to 28in. of mercury and allow the pump to continue operating for an additional 15 minutes.

2 Close the service valves and shut off vacuum pump.

3 Connect a nitrogen cylinder and regulator to the system and open until the system pressure is 2 psig.

4 Close the service valve and allow the 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. 90. The system will then be free of any contaminants and water vapor.

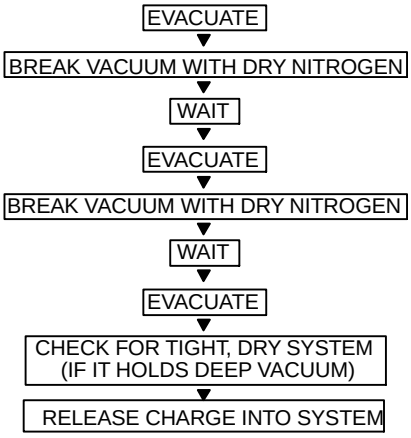

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Fig. 90 – Triple Evacuation Method

Final Tubing Check

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

START−UP

Test Operation

Perform the test operation after completing the gas leak and electrical safety check.

1 Push **ON/OFF** on the remote control to begin testing.

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

2 Push **MODE** , select **COOLING**, **HEATING**, **FAN** mode to check if all functions work correctly.

System Checks

1 Conceal the tubing where possible.

2 Ensure the drain tube slopes downward along its entire length.

3 Ensure all tubing and connections are properly insulated.

4 Fasten the tubes to the outside wall, when possible.

5 Seal the hole through which the cables and tubing pass.

Indoor Unit

1 Do all the 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 the 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 the air deflection louver.

4 Explain care and maintenance.

5 Present the Owner's Manual and installation instructions to customer.

TROUBLESHOOTING

This unit has on−board diagnostics. Error codes are displayed on the wired remote controller and the outdoor unit microprocessor board with colored LED lights. Table 42 explains the error codes on both.

Sizes 18 and 24

Table 42—Malfunction Status Table

MALFUNCTION NAME	MALFUNCTION TYPE	NIXIE TUBE
Zero cross detection circuit malfunction (for indoor unit)	Hardware malfunction	U8
Malfunction protection of jumper cap (for indoor unit)	Hardware malfunction	C5
Feedback of without IDU motor(for indoor unit)	Hardware malfunction	H6
Indoor ambient temperature sensor is open/short circuited	Hardware malfunction	F1
Indoor evaporator temperature sensor is open/short circuited	Hardware malfunction	F2
Liquid valve temperature sensor is open/short circuited	Hardware malfunction	b5
Gas valve temperature sensor is open/short circuited	Hardware malfunction	b7
Modular temperature sensor is open/short circuited	Hardware malfunction	P7
Outdoor ambient temperature sensor is open/short circuited	Hardware malfunction	F3
Outdoor condenser middle pipe temperature sensor is open/short circuited	Hardware malfunction	F4
Outdoor discharge temperature sensor is open/short circuited	Hardware malfunction	F5
Communication malfunction	Hardware malfunction	E6
Malfunction of phase current detection circuit for compressor	Hardware malfunction	U1
Module high temperature protection	Viewing malfunction code through remote controller within 200s; displayed directly on nixie tube after 200s	P8
Refrigerant lacking or blockage protection of system (not available for residential ODU)		F0
Charging malfunction of capacitor	Hardware malfunction	PU
High pressure protection of system	Hardware malfunction	E 1
Low pressure protection of system (reserved)	Hardware malfunction	E3
Compressor overload protection	Viewing malfunction code through remote controller within 200s; displayed directly on nixie tube after 200s	H3
Indoor unit and outdoor unit do not match	Hardware malfunction	LP
Malfunction of memory chip	Hardware malfunction	E E
Wrong connection of communication wire or malfunction of electronic expansion valve	Hardware malfunction	dn
Malfunction protection of outdoor fan 1	Hardware malfunction	L3
Detection status of wrong connection of communication wire or malfunction of electronic expansion valve	Operation status	dd
Mode conflict	Operation status	E7
Refrigerant recycling mode	Operation status	Fo
X−fan	Operation status	AL
Defrosting or oil return in heating mode	Operation status	H 1
Start failure of compressor	Viewing malfunction code through remote controller within 200s; displayed directly on nixie tube after 200s	Lc
High discharge temperature protection of compressor		E4
Overload protection		E8
Whole unit over−current protection		E5
Compressor phase current protection		P5
Compressor de−synchronizing		H7
Compressor phase−lacking/phase−inverse protection		Ld
IPM modular protection		H5
DC bus−bar low voltage protection		PL
DC bus−bar high voltage protection		PH
PFC protection		HC
The four−way valve is abnormal		U7

TROUBLESHOOTING (CONT)

This unit has on−board diagnostics. Error codes are displayed on the wired remote controller and the outdoor unit microprocessor board with colored LED lights. Table 43 explains the error codes on both.

Sizes 30, 36 and 42

Table 43—Malfunction Status Table

MALFUNCTION	THE INDICATOR DISPLAY			INDOOR DISPLAY
	YELLOW LIGHT	RED LIGHT	GREEN LIGHT	
Compressor runs	Flash 1 time			
Defrost	Flash 2 times			H1
Anti−freezing protection	Flash 3 times			E2
IPM protection	Flash 4 times			H5
AC over−current protection	Flash 5 times			E5
Over−burden protection	Flash 6 times			H4
Compressor exhaust high temperature protection	Flash 7 times			E4
Compressor overload protection	Flash 8 times			H3
Power protection	Flash 9 times			L9
EEPROM reads and write protection	Flash 11 times			
Low PN voltage protection	Flash 12 times			PL
Over voltage protection for PN	Flash 13 times			PH
PFC protection	Flash 14 times			HC
PFC module temperature protection	Flash 15 times			oE
Low pressure protection	Flash 17 times			E3
High pressure protection	Flash 18 times			E1
Limit/decline frequency (electric current)		Flash 1 time		
Frequency limit（exhaust)		Flash 2 times		
Frequency limit (over−burden)		Flash 3 times		
Outdoor ambient sensor malfunction		Flash 6 times		F3
Outdoor tube sensor malfunction		Flash 5 times		F4
Exhaust sensor malfunction		Flash 7 times		F5
Attain the temperature of switch on		Flash 8 times		
Frequency limit (power)		Flash 13 times		
Outdoor fan malfunction		Flash 14 times		
Frequency limit (PFC module temperature)		Flash 15 times		
PFC module sensor malfunction		Flash 16 times		oE
Liquid pipe temperature sensor malfunction of A		Flash 17 times		
Gas pipe temperature sensor malfunction of A		Flash 18 times		
Liquid pipe temperature sensor malfunction of B		Flash 19 times		
Gas pipe temperature sensor malfunction of B		Flash 20 times		
Liquid pipe temperature sensor malfunction of C		Flash 21 times		
Gas pipe temperature sensor malfunction of C		Flash 22 times		
Liquid pipe temperature sensor malfunction of D		Flash 23 times		
Gas pipe temperature sensor malfunction of D		Flash 24 times		
Liquid pipe temperature sensor malfunction of E		Flash 25 times		
Gas pipe temperature				
Sensor malfunction of E		Flash 26 times		
Exit of the condenser tube sensor malfunction		Flash 27 times		
Correspondence is normal			Flash 7 Times (n= indoor unit number)	
Communication failure between indoor unit and outdoor unit			Often bright	
Indoor unit all communication failure				
Indoor ambient sensor malfunction				F1
Indoor evaporate sensor malfunction				F2
Mode conflict				E7
Accept fluorine mode				Fo
Jumper cap malfunction protection				C5

TROUBLESHOOTING (CONT)

This unit has on−board diagnostics. Error codes are displayed on the wired remote controller and the outdoor unit microprocessor board with colored LED lights. Table 44 explains the error codes on both.

SIZES 48 − 56

Table 44—Malfunction Status Table

ERRORS OF DEFINITION	MAIN CONTROL DISPLAY FOR OUTDOOR UNIT			INDOOR UNIT CODE	TESTING BOARD CODE
	YELLOW LED	RED LED	GREEN LED		
The compressor is start up	Flash 1 time				
IPM current protection	Flash 3 times			H5	H5
IPM temperature protection	Flash 5 times			P8	P8
PFC current protection	Flash 7 times			HC	HC
PFC temperature protection	Flash 8 times			P8	P8
Low voltage protection	Flash 9 times			PL	PL
High voltage protection	Flash 10 times			PH	PH
Low pressure protection	Flash 11 times			E3	E3
High pressure protection	Flash 12 times			E8	E8
High pressure switch protection	Flash 13 times			E1	E1
Capacitor charging error	Flash 14 times			PU	PU
Current protection	Flash 15 times			E5	E5
Memory card error	Flash 16 times			EE	EE
Compressor demagnetizing protection	Flash 17 times			HE	HE
Compressor de−synchronizing	Flash 18 times			H7	H7
Compressor phase lack	Flash 19 times			U2	U2
Compressor phase circuit detection error	Flash 20 times			U1	U1
Compressor current protection	Flash 21 times			L9	L9
Compressor overload protection	Flash 22 times			H3	H3
Compressor discharge temperature protection	Flash 23 times			E4	E4
Lack of refrigerant or jam protection	Flash 31 times			F0	F0
Normal operation		Flash 1 time			
Frequency limitation for current protection		Flash 2 times			F8
Oil returning mode		Flash 3 times		F7	F7
Defrosting mode		Flash 4 times		H1	H1
Frequency limitation for IPM temperature protection		Flash 5 times		EU	EU
Frequency limitation for PFC temperature protection		Flash 6 times		EU	EU
Frequency limitation for compressor overload protection		Flash 8 times			LU
Frequency limitation for discharge temp. protection		Flash 9 times			F9
Frequency limitation for low pressure protection		Flash 10 times			Pn
Frequency limitation for high pressure protection		Flash 11 times		F6	F6
Discharge temperature sensor error		Flash 12 times		F5	F5
Outside temperature sensor error		Flash 13 times		F3	F3
Suction temperature sensor error		Flash 15 times			dc
Condenser temperature sensor error		Flash 16 times		A7	A7
Sub−cool temperature sensor error		Flash 17 times			bC
Low pressure sensor error		Flash 18 times			dL
High pressure sensor error		Flash 19 times			e1
Fan motor protection		Flash 20 times		H6	H6
Driving board is connected			Flash 1 time		
Testing board is connected			Flash 2 times		
Computer is connected			Flash 4 times		
Indoor unit 1 is connected			Flash 5 times		
Indoor unit 2 is connected			Flash 6 times		

TROUBLESHOOTING (CONT)

This unit has on−board diagnostics. Error codes are displayed on the wired remote controller and the outdoor unit microprocessor board with colored LED lights. Table 45 explains the error codes on both.

Sizes 48 − 56

Table 45—Malfunction Status Table

ERRORS OF DEFINITION	MAIN CONTROL DISPLAY FOR OUTDOOR UNIT			INDOOR UNIT CODE	TESTING BOARD CODE
	YELLOW LED	RED LED	GREEN LED		
Indoor unit 3 is connected			Flash 7 times		
Indoor unit 4 is connected			Flash 8 times		
Indoor unit 5 is connected			Flash 9 times		
Indoor unit 6 is connected			Flash 10 times		
Indoor unit 7 is connected			Flash 11 times		
Indoor unit 8 is connected			Flash 12 times		
Indoor unit 9 is connected			Flash 13 times		
Indoor anti−freeze protection				E2	E2
Inside temperature sensor error				F1	F1
Evaporator midway temp sensor error				F2	F2
Liquid pipe of BU module temperature sensor error				b5	b5
Gas pipe of BU module temperature sensor error				b7	b7
Mode conflicts				E7	E7
Communication error	BU 1	Indoor unit A			
		Indoor unit B			
		Indoor unit C			
	BU 2	Indoor unit A			
		Indoor unit B			
		Indoor unit C			
	BU 3	Indoor unit A			
		Indoor unit B			
		Indoor unit C			
Communication error between the main board and driving board					P6
Communication error between the main board and testing board					CE
Indoor unit gas sensor error					Fn
Indoor unit humidity sensor error					L1
Indoor unit water full protection					E9
Jumper terminal error				C5	C5
Power supply phase lack					dJ
Outdoor unit fan motor error					L3
Refrigerant recovery mode				Fo	Fo

Branch Box

ERRORS	INDICATING LED FLASHING TIMES			INDOOR UNIT ERROR CODE	OUTDOOR UNIT ERROR CODE
	YELLOW LED	GREEN LED	RED LED		
BU 1 is connected	Flash 1 time				
BU 2 is connected	Flash 2 times				
BU 3 is connected	Flash 3 times				
Indoor unit A is connected		Flash 1 time			
Indoor unit B is connected		Flash 2 times			
Indoor unit C is connected		Flash 3 times			
Indoor unit A gas tube temperature sensor error			Flash 1 time	b7	b7+ indoor unit address
Indoor unit A liquid tube temperature sensor error			Flash 2 times	b5	b5+ indoor unit address
Indoor unit B gas tube temperature sensor error			Flash 3 times	b7	b7+ indoor unit address
Indoor unit B liquid tube temperature sensor error			Flash 4 times	b5	b5+ indoor unit address
Indoor unit C gas tube temperature sensor error			Flash 5 times	b7	b7+ indoor unit address
Indoor unit C liquid tube temperature sensor error			Flash 6 times	b5	b5+ indoor unit address

. Edition Date: 06/17

Catalog No:38GJQ−02SI

Replaces: IM−38GJQ−01