DAIKIN

EDUS281201

R-410A

Engineering Data

SkyAir

Air Handling Unit
Heat Pump 60Hz

FTQ-PB + RZQ-P9

INVERTER

DAIKIN AC (AMERICAS), INC.

SkyAir Engineering Data

1. External appearance

1.1 Indoor unit

FTQ18PBVJU
FTQ24PBVJU
FTQ30PBVJU
FTQ36PBVJU
FTQ42PBVJU

1.2 Outdoor unit

RZQ18PVJU9
RZQ24PVJU9

RZQ30PVJU9
RZQ36PVJU9
RZQ42PVJU9

2. Model name, power supply and nomenclature

2.1 Model name and power supply

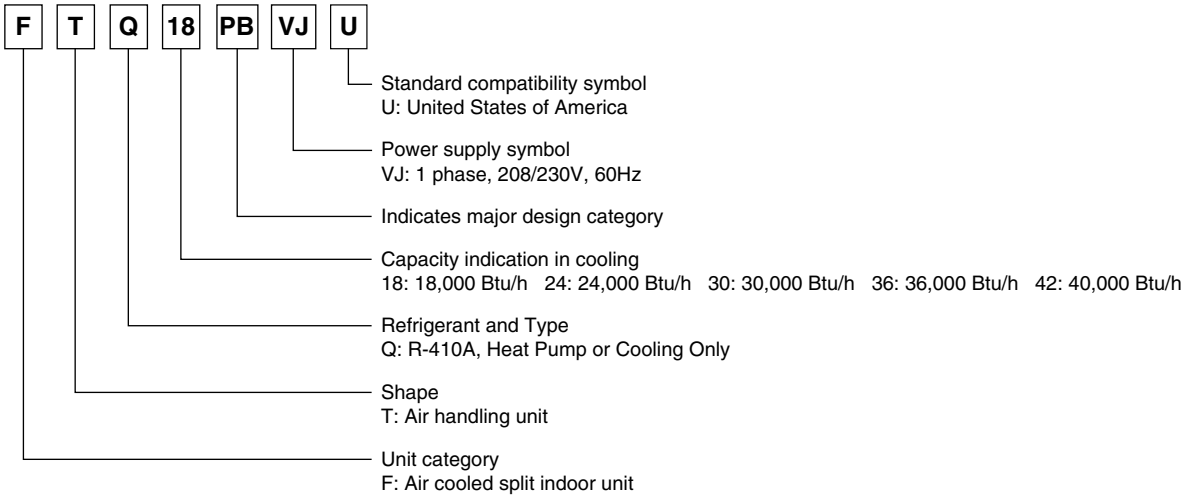
Indoor unit		Outdoor unit	Power supply intake
Air handling unit	FTQ18PBVJU*	RZQ18PVJU9	1 phase, 208/230V, 60Hz
	FTQ24PBVJU*	RZQ24PVJU9	
	FTQ30PBVJU*	RZQ30PVJU9*	
	FTQ36PBVJU*	RZQ36PVJU9	
	FTQ42PBVJU*	RZQ42PVJU9	

Note:

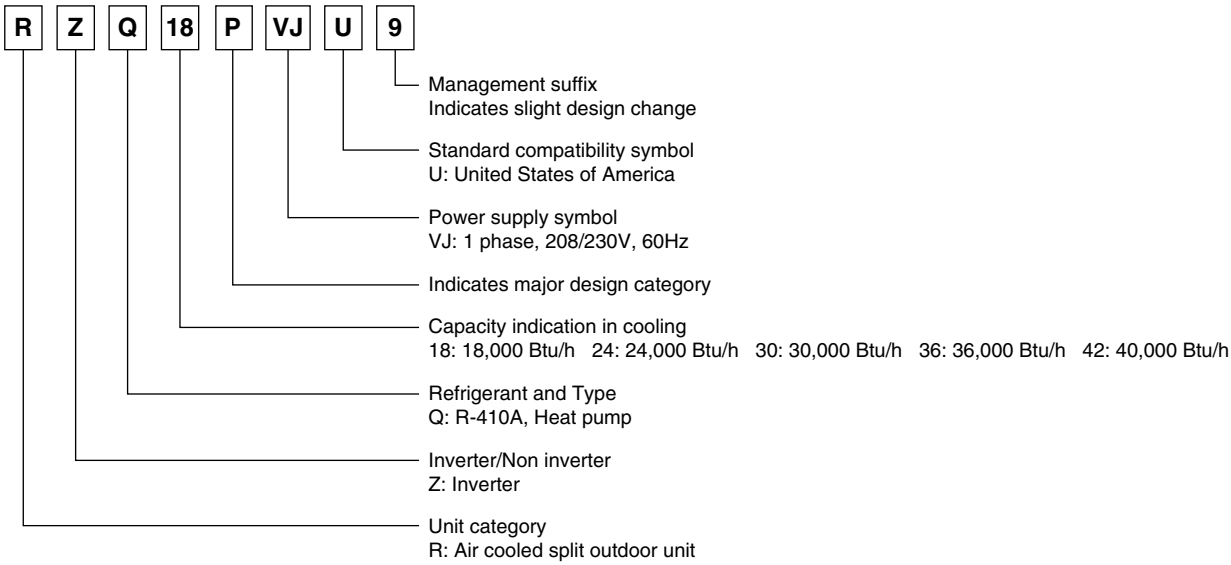
1. * : New model or changed model

2.2 Nomenclature

Indoor unit



Outdoor unit (Heat pump)



3. Specifications

3.1 FTQ / Air Handling Unit

Model	Indoor unit			FTQ18PBVJU	FTQ24PBVJU
	Outdoor unit			RZQ18PVJU9	RZQ24PVJU9
Power Supply				1 phase, 208V/230V, 60Hz	
★1 ★3 Cooling capacity Rated (min ~ max)			Btu/h	18,000	24,000
				9,000 ~ 18,000	9,000 ~ 24,000
★2 ★3 Heating capacity Rated (min ~ max)			Btu/h	20,000	27,000
				9,000 ~ 20,000	9,000 ~ 27,000
Low Heating Capacity (17°F)			Btu/h	13,000	17,500
EER	Cooling		Btu/h-W	14.5	13.5
	Heating		W/W	4.0	3.8
SEER (Rated)				20.0	19.0
HSPF (Rated)				12.0	11.5
Indoor unit				**FTQ18PBVJU**	**FTQ24PBVJU**
Color				Ivory white (5Y7.5/1)	
Dimensions	H×W×D		in (mm)	48-1/8 × 22 × 26 (1222 x 559 x 660)	
Coil	Type			Cross fin coil	
	Row×Stages×FPI			3 × 18 × 12	
	Face area		ft² (m²)	4.26 (1.3)	
Fan	Model			D13/4G2DK1	
	Type			Sirocco fan	
	Motor output		W	350	
	Airflow rate (H/M/L)		cfm (m^3/min)	600/510/420	800/680/560
	External static pressure		"Wg	Up to 0.5 in. W.C.	
Temperature control				Microprocessor thermostat for cooling and heating	
Air filter				—★4	
Weight			Lbs (kg)	161 (73)	
Piping Connections	Liquid		in (mm)	ϕ3/8 (9.5) (Flare connection)	
	Gas		in (mm)	ϕ5/8 (15.8) (Flare connection)	
	Drain		in (mm)	Drain pipe connection: VP20 (O.D.: ϕ1 (25.4), I.D.: ϕ25/32(19.8) Drain hose (Accessory): VP25 (Unit body I.D.: ϕ1 (25.4), Field O.D.: ϕ1-1/4 (31.8)) ★5	
Remote controller (Option)		Wired		BRC1E71	
		Wireless		—	
Outdoor unit				**RZQ18PVJU9**	**RZQ24PVJU9**
Color				Ivory white	
Dimensions	H×W×D		in (mm)	30-5/16 × 35-7/16 × 12-5/8 (770 x 900 x 321)	
Coil	Type			Cross fin coil	
	Row×Stages×FPI			2 × 34 × 18	
	Face area		ft² (m²)	7.1 (2.2)	
Comp.	Model			2YC63HXD#ED	
	Type			Hermetically sealed swing type	
	Motor output		kW	1.7	
Fan	Model			P47N11F	
	Type			Propeller fan	
	Motor output		W	70	
	Airflow rate		cfm (m^3/min)	1,835 (559)	
Weight			Lbs	150 (68)	
Piping Connections	Liquid		in (mm)	ϕ3/8 (9.5) (Flare connection)	
	Gas		in (mm)	ϕ5/8 (15.8) (Flare connection)	
	Drain		in (mm)	ϕ1 (25.4)(Hole)	
Safety devices				Fuse. High pressure switch. Outdoor fan driver overload protector. Inverter overload protector. Fusible plugs. Indoor fan driver overload protector.	
Capacity step			%	35-100	30-100
Refrigerant control				Electronic expansion valve	
Ref. piping	Standard length		ft (m)	25 (7.5)	
	Max. length		ft (m)	98 (30)	
	Max. height difference		ft (m)	98 (30)	
Refrigerant	Model			R-410A	
	Charge		Lbs (kg)	5.1 (2.3)	
Ref. oil	Model			Refer to the name plate of compressor.	
	Charge		L (oz)	0.75 (25.4)	
Drawing No.				C: 4D075484	

Notes:

★1. Nominal cooling capacities are based on the following conditions: Return air temperature : 80°FDB, 67°FWB (27°CDB)/(19.4°CWB), Outdoor temperature : 95°FDB (35°CDB), Equivalent ref. piping : 25 ft (7.5 m), (Horizontal)

★2. Nominal heating capacities are based on the following conditions: Return air temperature : 70°FDB (21°CDB) Outdoor temperature : 47°FDB, 43°FWB (8.3°CDB / 6°CWB), Equivalent ref. piping : 25 ft (7.5 m), (Horizontal)

(★1 and ★2 are the performance for vertical installation. For horizontal installation, capacity could decrease for about 10%.)

★3. Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.

★4. Air filter is not standard accessory (field supply parts), but please mount it in the duct system of the suction side.

★5. The second drain pan (sub drain pan) must be needed as field supply parts.

Model	Indoor unit			FTQ30PBVJU	FTQ36PBVJU	FTQ42PBVJU
	Outdoor unit			RZQ30PVJU9	RZQ36PVJU9	RZQ42PVJU9
Power Supply				1 phase, 208V/230V, 60Hz		
★1 ★3 Cooling capacity Rated (min ~ max)			Btu/h	30,000	36,000	40,000
				12,000 ~ 30,000	12,000 ~ 36,000	12,000 ~ 42,000
★2 ★3 Heating capacity Rated (min ~ max)			Btu/h	34,000	40,000	47,000
				12,000 ~ 34,000	12,000 ~ 40,000	12,000 ~ 47,000
Low Heating Capacity (17°F)			Btu/h	21,500	26,000	29,000
EER	Cooling		Btu/h-W	13.5	12.5	12.0
	Heating		W/W	3.7	3.6	3.2
SEER (Rated)				19.5	18.0	17.0
HSPF (Rated)				10.0	9.5	9.0
Indoor unit				**FTQ30PBVJU**	**FTQ36PBVJU**	**FTQ42PBVJU**
Color				Ivory white (5Y7.5/1)		
Dimensions	H×W×D		in (mm)	58-1/4 × 22 × 26 (1480 x 559 x 660)		
Coil	Type			Cross fin coil		
	Row×Stages×FPI			3 × 30 × 12		
	Face area		ft² (m²)	7.10 (2.2)		
Fan	Model			D13/4G2DK1		D13/4G2DM1
	Type			Sirocco fan		
	Motor output		W	350		400
	Airflow rate (H/M/L)		cfm (m^3/min)	1,000/850/700	1,200/1,020/840	1,400/1,190/980
	External static pressure		"Wg	Up to 0.5 in. W.C.		
Temperature control				Microprocessor thermostat for cooling and heating		
Air filter				—★4		
Weight			Lbs (kg)	192 (87)		203 (92)
Piping Connections	Liquid		in (mm)	ϕ3/8 (9.5) (Flare connection)		
	Gas		in (mm)	ϕ5/8 15.8) (Flare connection)		
	Drain		in (mm)	Drain pipe connection: VP20 (O.D.: ϕ1 (25.4), I.D.: ϕ25/32 (19.8) Drain hose (Accessory): VP25 (Unit body I.D.: ϕ1 (25.4), Field O.D.: ϕ1-1/4 (31.8) ★5		
Remote controller (Option)		Wired		BRC1E71		
		Wireless		—		
Outdoor unit				**RZQ30PVJU9**	**RZQ36PVJU9**	**RZQ42PVJU9**
Color				Ivory white		
Dimensions	H×W×D		in (mm)	52-15/16 × 35-7/16 × 12-5/8 (1345 x 900 x 321)		
Coil	Type			Cross fin coil		
	Row×Stages×FPI			2 × 60 × 13		
	Face area		ft² (m²)	12.2		
Comp.	Model			JT100G-VDLW@T		
	Type			Hermetically sealed scroll type		
	Motor output		kW	2.0	2.5	3.0
Fan	Model			—		
	Type			Propeller fan		
	Motor output		W	70 × 2		
	Airflow rate		cfm (m^3/min)	3,740 (1140)		
Weight			Lbs	283 (128)		
Piping Connections	Liquid		in (mm)	ϕ3/8 (9.5) (Flare connection)		
	Gas		in (mm)	ϕ5/8 15.8) (Flare connection)		
	Drain		in (mm)	ϕ1 (25.4) (Hole)		
Safety devices				Fuse. High pressure switch. Outdoor fan driver overload protector. Inverter overload protector. Fusible plugs. Indoor fan driver overload protector.		
Capacity step			%	25-100		
Refrigerant control				Electronic expansion valve		
Ref. piping	Standard length		ft (m)	25 (7.5)		
	Max. length		ft (m)	230 (70)		
	Max. height difference		ft (m)	164 (50)		
Refrigerant	Model			R-410A		
	Charge		Lbs (kg)	8.8 (4)		
Ref. oil	Model			Refer to the name plate of compressor.		
	Charge		L (oz)	1.7 (57.5)		
Drawing No.				C: 4D071672A		

Notes:

★1. Nominal cooling capacities are based on the following conditions: Return air temperature : 80°FDB, 67°FWB (27°CDB)/(19.4°CWB), Outdoor temperature : 95°FDB (35°CDB), Equivalent ref. piping : 25 ft (7.5 m), (Horizontal)

★2. Nominal heating capacities are based on the following conditions: Return air temperature : 70°FDB (21°CDB) Outdoor temperature : 47°FDB, 43°FWB (8.3°CDB / 6°CWB), Equivalent ref. piping : 25 ft (7.5 m), (Horizontal)

(★1 and ★2 are the performance for vertical installation.
For horizontal installation, capacity could decrease for about 10%.)

★3. Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.

★4. Air filter is not standard accessory (field supply parts), but please mount it in the duct system of the suction side.

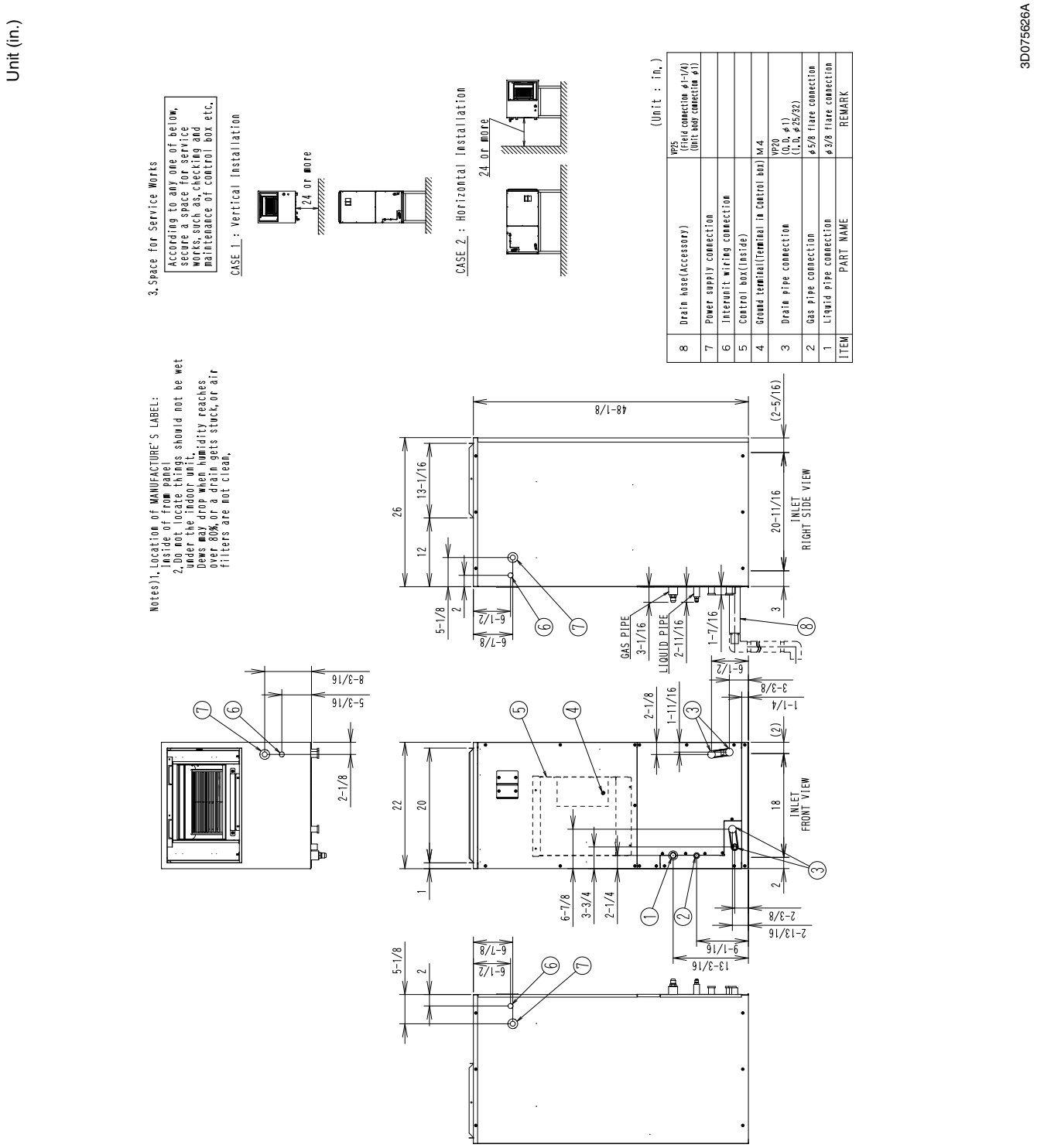
★5. The second drain pan (sub drain pan) must be needed as field supply parts.

4. Dimensions and service space

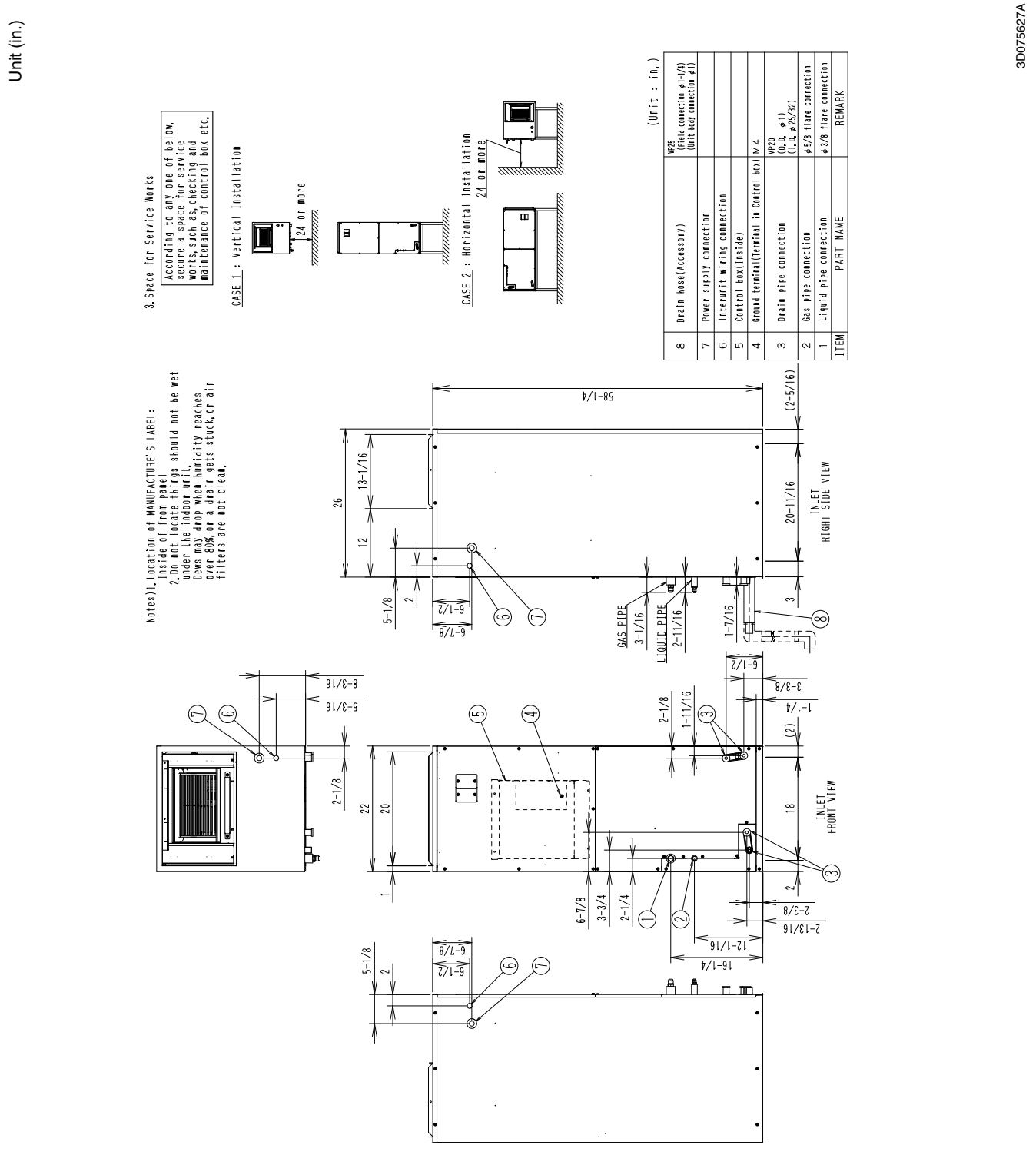
4.1 Indoor unit

4.1.1 FTQ (Air handling unit)

FTQ18PBVJU / FTQ24PBVJU

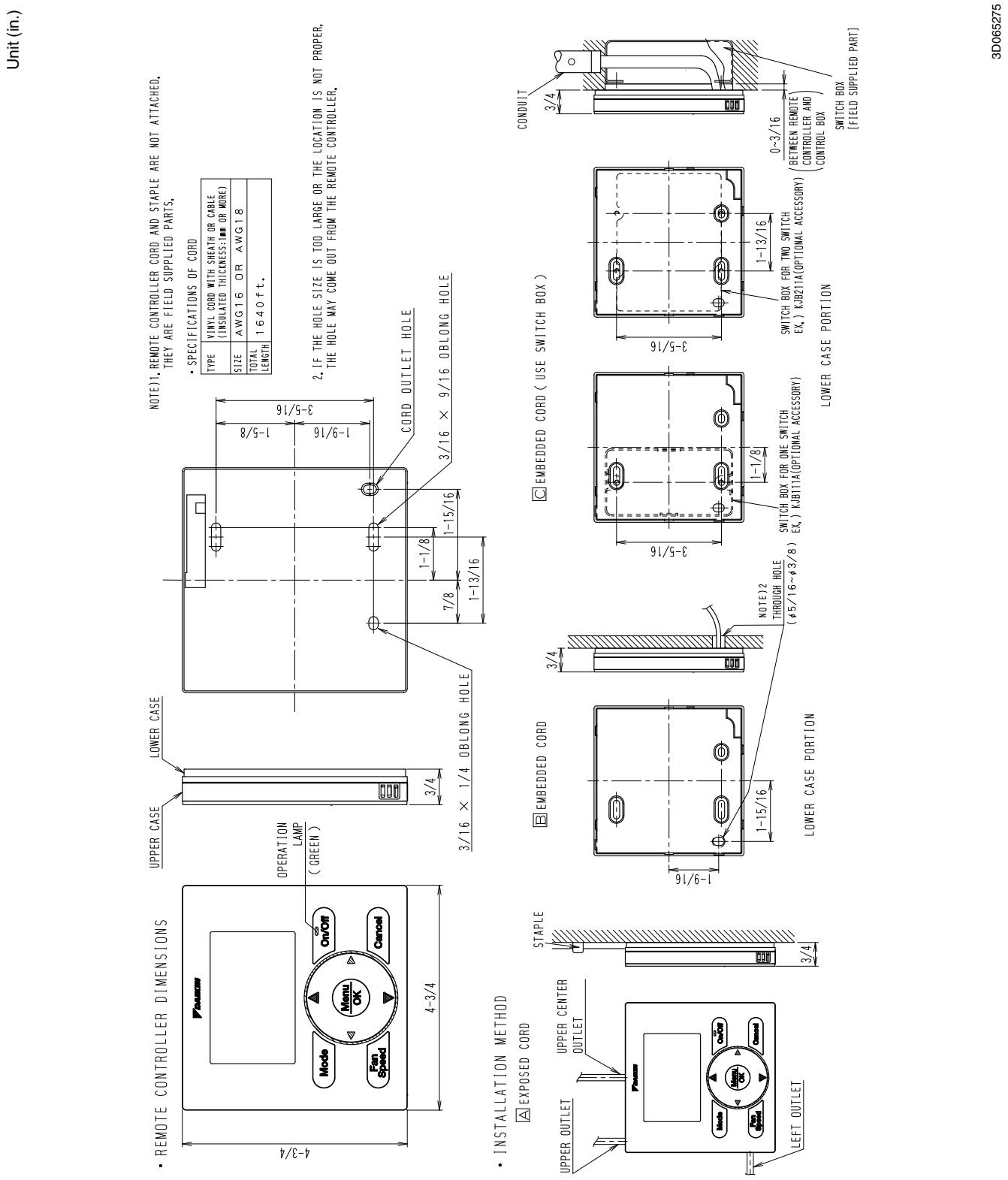


FTQ30PBVJU / FTQ36PBVJU / FTQ42PBVJU

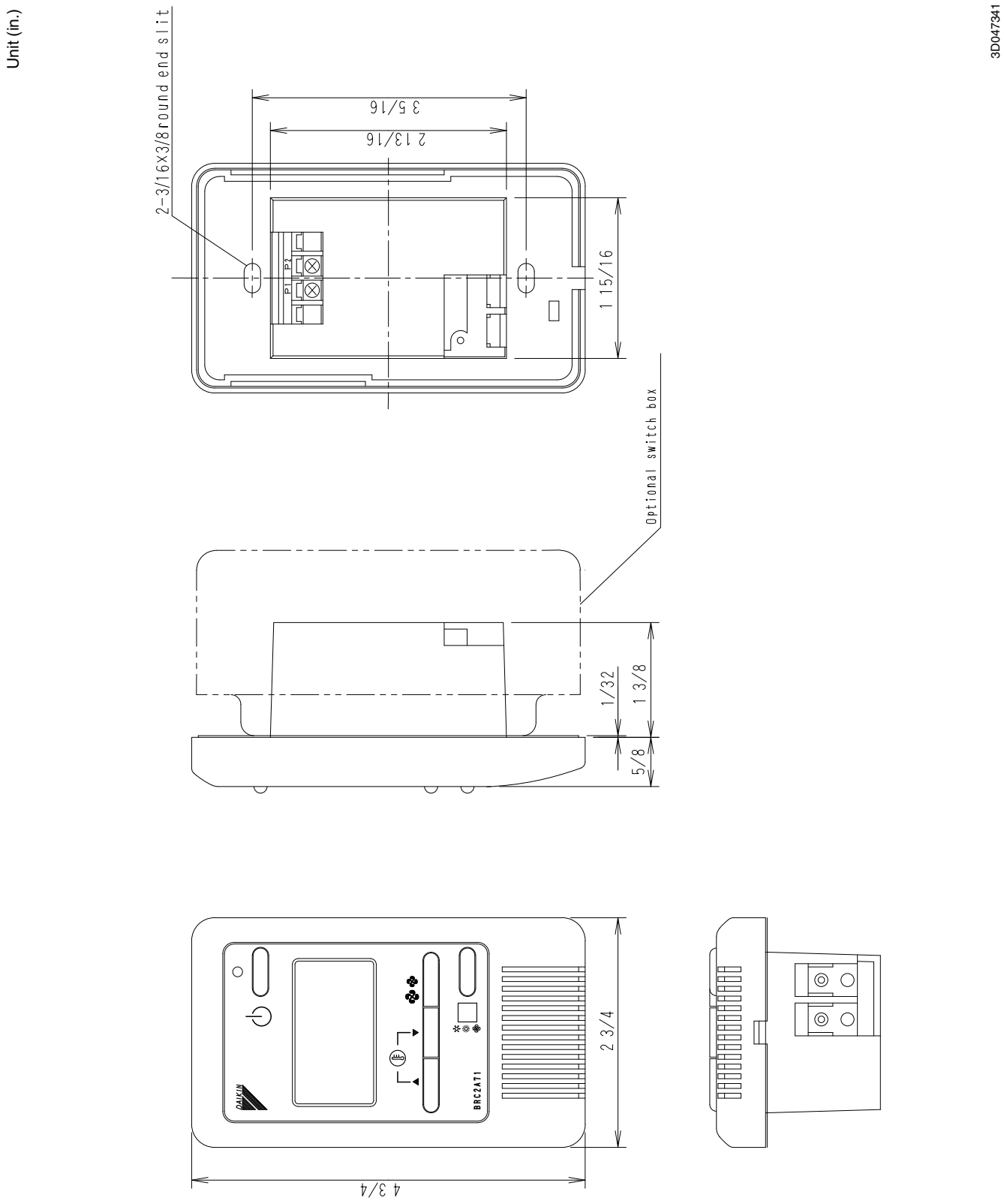


4.2 Wired remote controller (Optional)

BRC1E71



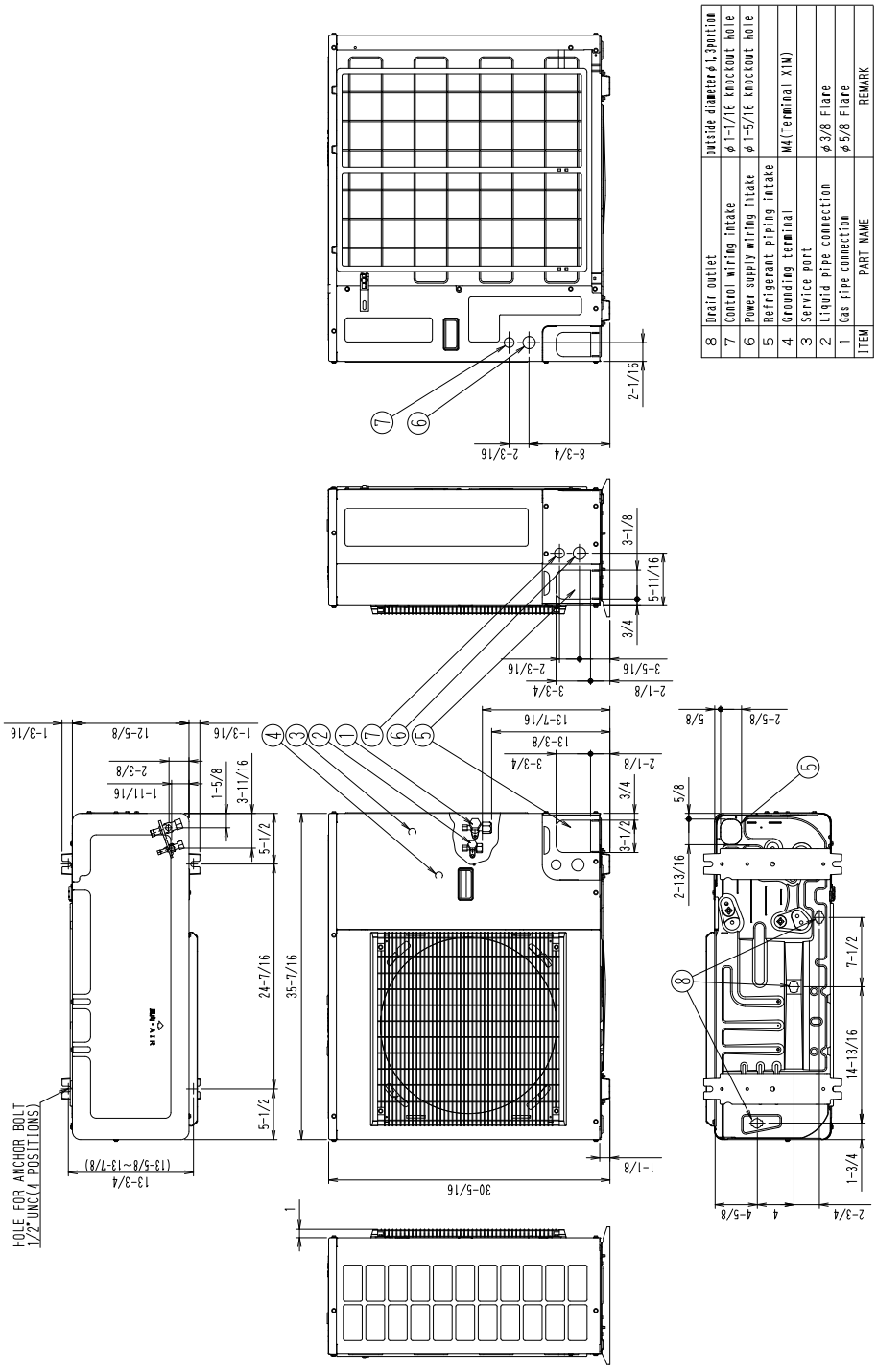
BRC2A71


Unit (in.)
3D047341
2-3/16X3/8round end slit
3 5/16
2 13/16
1 15/16
P1
P2
Optional switch box
1/32
1 3/8
5/8
2 3/4
4 3/4
DAIKIN
BRC2A71

4.3 Outdoor unit

RZQ18PVJU9 / RZQ24PVJU9

Unit (in.)



RZQ30PVJU9 / RZQ36PVJU9 / RZQ42PVJU9

Unit (in.)

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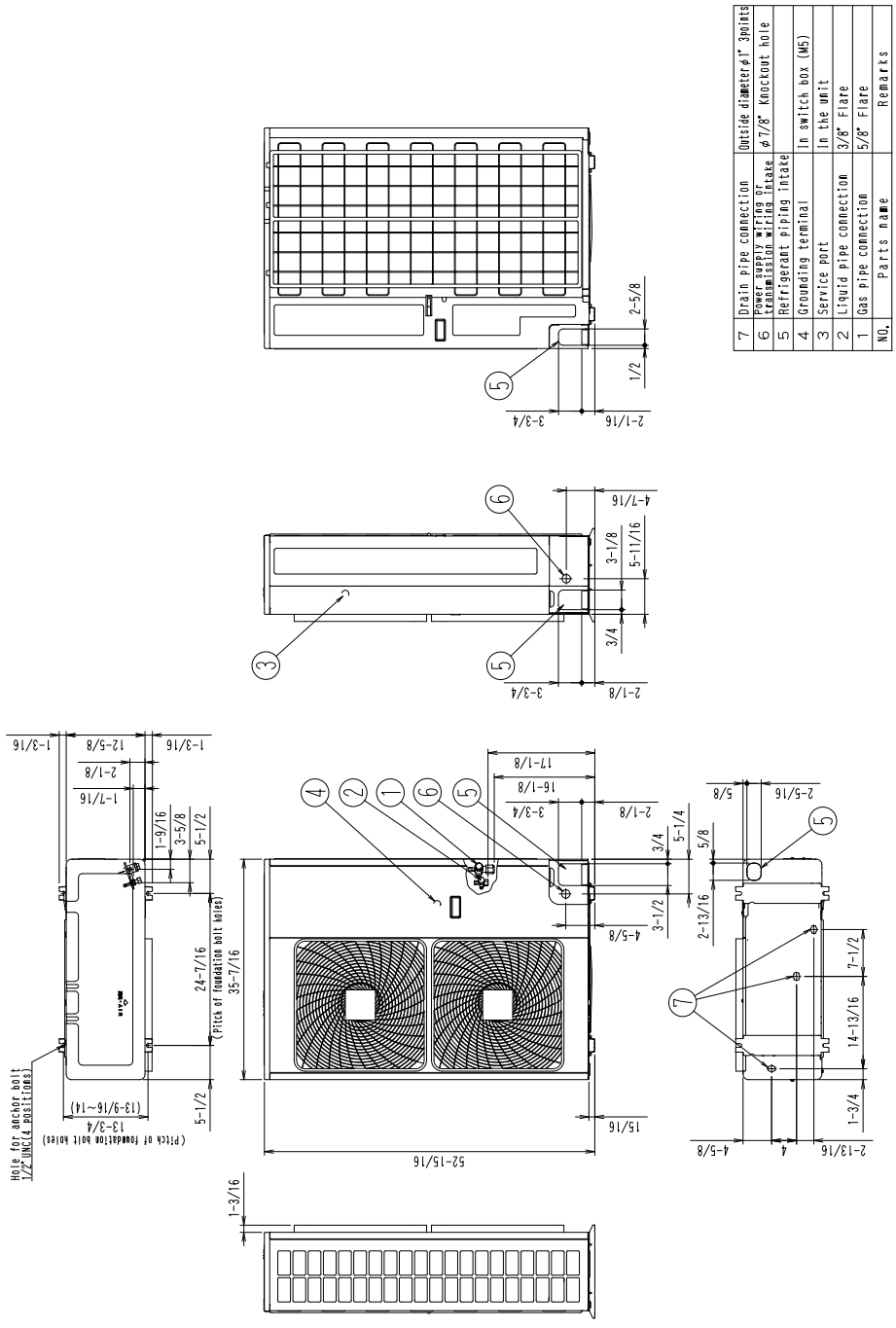


4.4 Installation service space

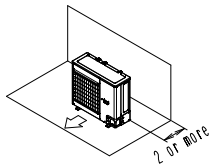
RZQ18PVJU9 / RZQ24PVJU9

INSTALLATION SERVICE SPACE

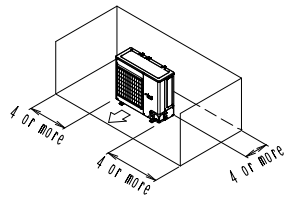
STAND-ALONE INSTALLATION (The measure of these values is "in".)

No obstacle above

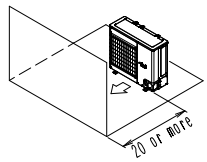
(1)Obstacle on the suction side only



(2)Obstacle on both sides and suction side, too

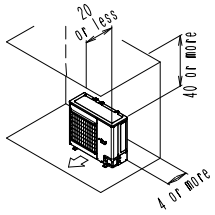


(3)Obstacle on the discharge side only

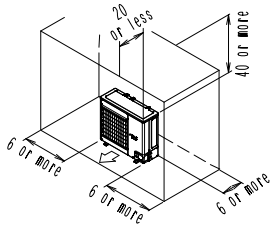


Obstacle above, too

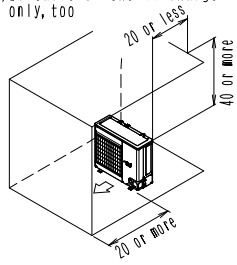
(1)Obstacle on the suction side, too



(2)Obstacle on both sides and suction side, too



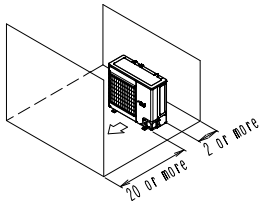
(3)Obstacle on the discharge side only, too



When there are obstacles on both suction and discharge sides

Pattern 1 When the obstacles on the discharge side is higher than the unit

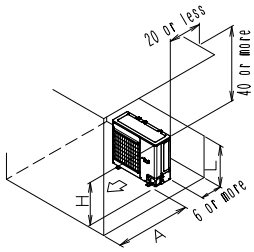
(1)No obstacle above
(There is no limit for the height of obstructions on the suction side.)



(2)Obstacle above, too
The relations between H, A and L are as follows.

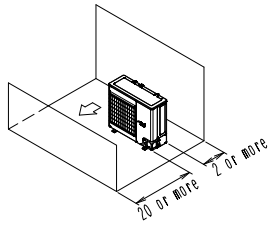
	L	A
L≦H	L≦1/2H	30 or more
	1/2H<L≦H	40 or more
L>H	Set the stand as : L≦H Refer to the column of L≦H for A	

(✽)Close the bottom of the installation frame to prevent the discharged air from being bypassed.



Pattern 2 When the obstacle on the discharge side is lower than the unit

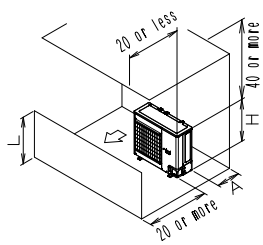
(1)No obstacle above
(There is no limit for the height of obstructions on the suction side.)



(2)Obstacle above, too
The relations between H, A and L are as follows.

	L	A
L≦H	L≦1/2H	2 or more
	1/2H<L≦H	4 or more
L>H	Set the stand as : L≦H Refer to the column of L≦H for A	

(✽)Close the bottom of the installation frame to prevent the discharged air from being bypassed.



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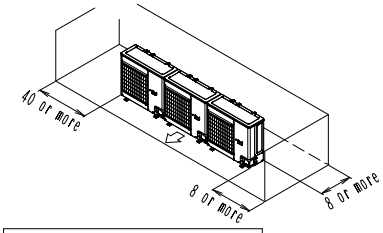
(※) • In side extraction, please provide the space of piping.

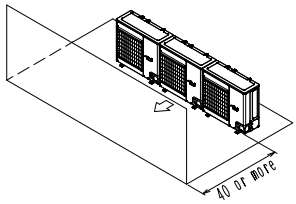
SERIES INSTALLATION (2 OR MORE) (The measure of these values is "in".)

No obstacle above

(1) Obstacle on the suction side and both sides

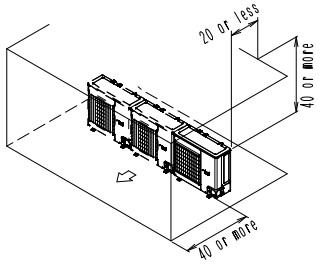


(2) Obstacle on the discharge side only

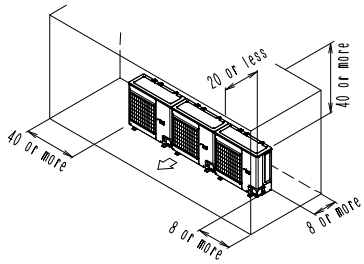


Obstacle above, too

(1) Obstacle on the discharge side



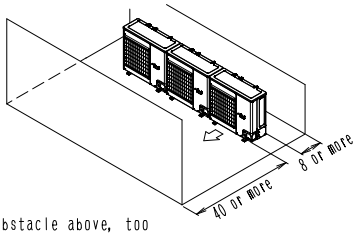
(2) Obstacle on the suction side and both sides



When there are obstacles on both suction and discharge sides

Pattern 1 When the obstacles on the discharge side is higher than the unit

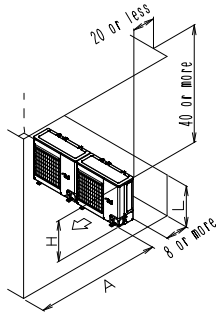
(1) No obstacle above
(There is no limit for the height of obstructions on the suction side.)



(2) Obstacle above, too
The relations between H, A and L are as follows.

	L	A
L≦H	L≦1/2H	40 or more
	1/2H<L≦H	50 or more
L>H	Set the stand as : L≦H Refer to the column of L≦H for A	

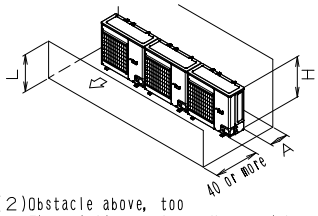
(※) Close the bottom of the installation frame to prevent the discharged air from being bypassed. Limit of series installation is 2 unit.



Pattern 2 When the obstacle on the discharge side is lower than the unit

(1) No obstacle above
(There is no limit for the height of obstructions on the suction side.)
The relations between H, A and L are as follows.

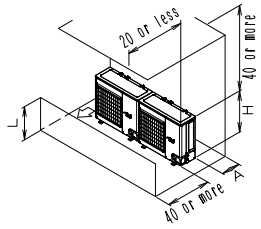
L	A
L≦1/2H	6 or more
1/2H<L≦H	8 or more



(2) Obstacle above, too
The relations between H, A and L are as follows.

	L	A
L≦H	L≦1/2H	6 or more
	1/2H<L≦H	8 or more
L>H	Set the stand as : L≦H Refer to the column of L≦H for A	

(※) Close the bottom of the installation frame to prevent the discharged air from being bypassed. Limit of series installation is 2 unit.



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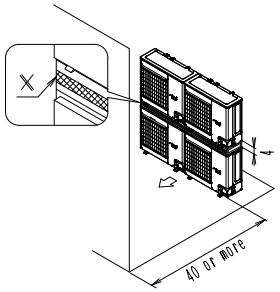
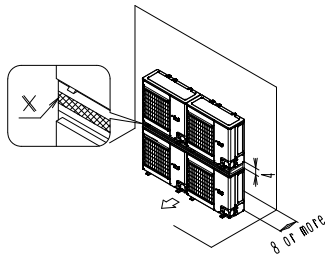
DOUBLE-DECKER INSTALLATION (The measure of these values is "in".)

(❋) • Do not stack more than two unit.
• The drain piping construction size of upper side outdoor unit is needed about 4 in.
• Close " X " to prevent the discharged air from being bypassed
(▨ : the gap between the upper and lower outdoor units).
• In side extraction, please provide the space of piping.

(1) Obstacle on the discharge side



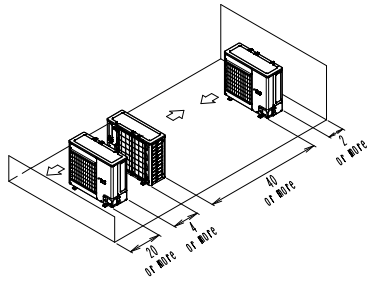
(2) Obstacle on the suction side



MULTIPLE ROWS OF SERIES INSTALLATION (ON THE ROOFTOP, ETC.)

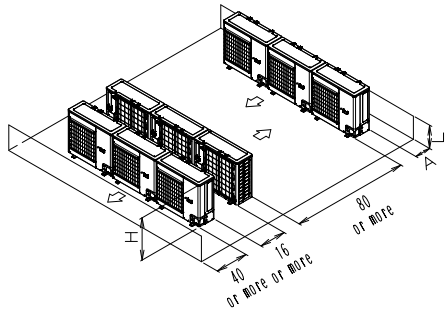
(The measure of these values is "in".)

(1) One row of stand-alone installation



(2) Rows of series installation (2 or more)
The relations between H, A and L are as follows.

	L	A
L≦H	L≦1/2H	6 or more
	1/2H<L≦H	8 or more
L>H	Can not be installed	



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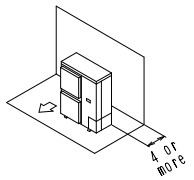
RZQ30PVJU9 / RZQ36PVJU9 / RZQ42PVJU9

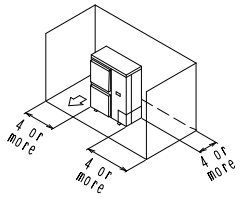
REQUIRED INSTALLATION SPACE

- The unit of the values is inch.
- In case of series installation, some space between the units is needed for wiring with conduit and servicing.

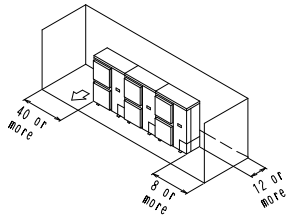
1. Where there is an obstacle on the suction side:
   (a) No obstacle above
   (1)Stand-alone installation
   - Obstacle on the suction side only



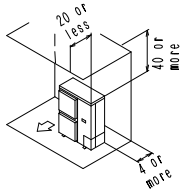
   - Obstacle on both sides



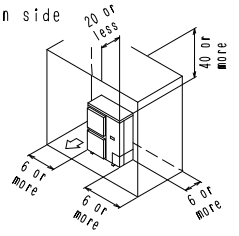
   (2)Series installation
   (2 or more)
   - Obstacle on both sides



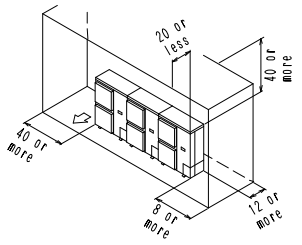
   (b) Obstacle above, too
   (1)Stand-alone installation
   - Obstacle on the suction side, too



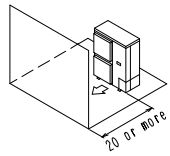
   - Obstacle on the suction side and both sides



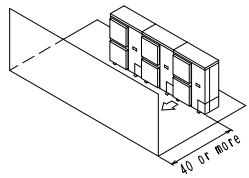
   (2)Series installation
   (2 or more)
   - Obstacle on the suction side and both sides



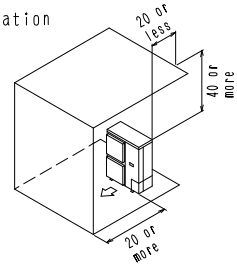
2. Where there is an obstacle on the discharge side:
   (a) No obstacle above
   (1)Stand-alone installation



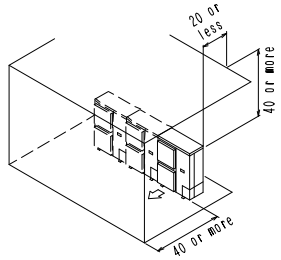
   (2)Series installation
   (2 or more)



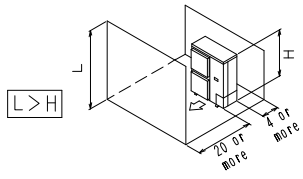
   (b) Obstacle above, too
   (1)Stand-alone installation



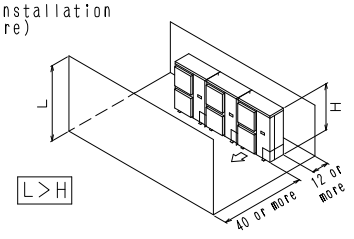
   (2)Series installation
   (2 or more)



3. Where there are obstacles on both suction and discharge sides:
   Pattern 1
   Where the obstacles on the discharge side is higher than the unit:
   (There is no height limit for obstructions on the intake side.)
   (a) No obstacle above
   (1)Stand-alone installation



   (2)Series installation
   (2 or more)



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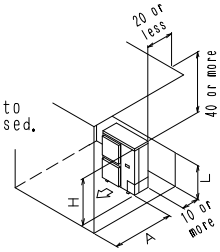
(b) Obstacle above, too

(1)Stand-alone installation

The relations between H, A and L are as follows:

	L	A
L≦H	0<L≦1/2H	30
	1/2H<L≦H	40
H<L	Set the stand as: L≦H.	

Close the bottom of the installation frame to prevent the discharged air from being bypassed.



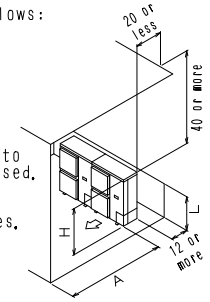
(2)Series installation
(2 or more)

The relations between H, A and L are as follows:

	L	A
L≦H	0<L≦1/2H	40
	1/2H<L≦H	50
H<L	Set the stand as: L≦H.	

Close the bottom of the installation frame to prevent the discharged air from being bypassed.

Only two units can be installed for this series.



Pattern 2

Where the obstacles on the discharge side is lower than the unit:

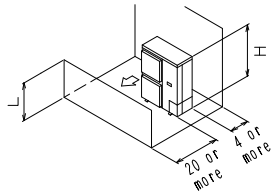
(There is no height limit for obstructions on the intake side.)

(a) No obstacle above

(1)Stand-alone installation

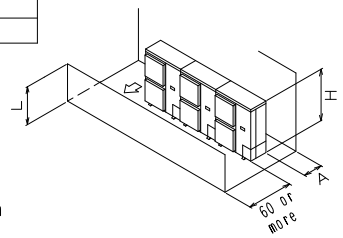
L≦H

(2)Series installation
(2 or more)



The relations between H, A and L are as follows:

L	A
0<L≦1/2H	10
1/2H<L≦H	12



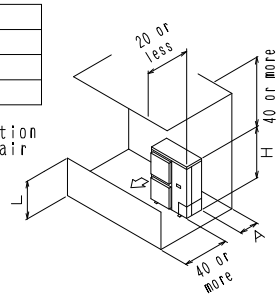
(b) Obstacle above, too

(1)Stand-alone installation

The relations between H, A and L are follows:

	L	A
L≦H	0<L≦1/2H	4
	1/2H<L≦H	8
H<L	Set the stand as: L≦H.	

Close the bottom of the installation frame to prevent the discharged air from being bypassed.



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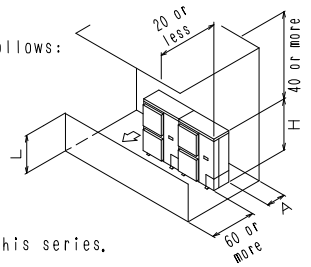
(2)Series installation

The relations between H, A and L are as follows:

	L	A
L≦H	0<L≦1/2H	10
	1/2H<L≦H	12
H<L	Set the stand as: L≦H.	



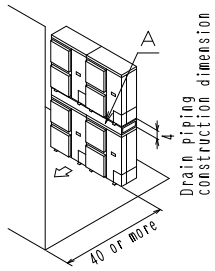
Close the bottom of the installation frame to prevent the discharged air from being bypassed.

Only two units can be installed for this series.

4. Double-decker installation

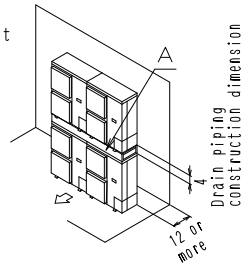
(a) Obstacle on the discharge side
Close the gap A (the gap between the upper and lower outdoor units) to prevent the discharged air from being bypassed.

Do not stack more than two unit.



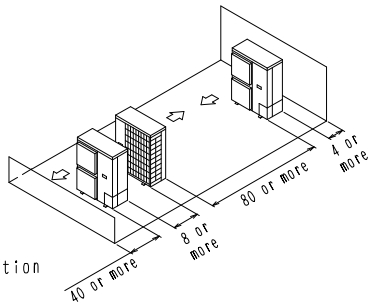
(b) Obstacle on the suction side
Close the gap A (the gap between the upper and lower outdoor units) to prevent the discharged air from being bypassed.

Do not stack more than two unit.



5. Multiple rows of series installation (on the rooftop, etc.)

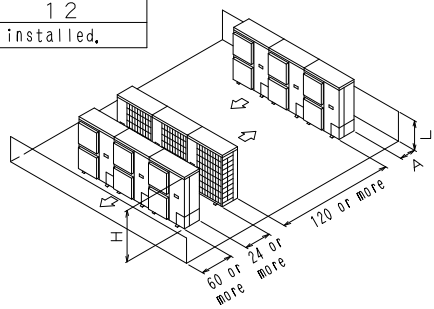
(a) One row of stand-alone installation



(b) Rows of series installation (2 or more)

The relations between H, A and L are as follows:

	L	A
L≦H	0<L≦1/2H	10
	1/2H<L≦H	12
H<L	Cannot be installed.	



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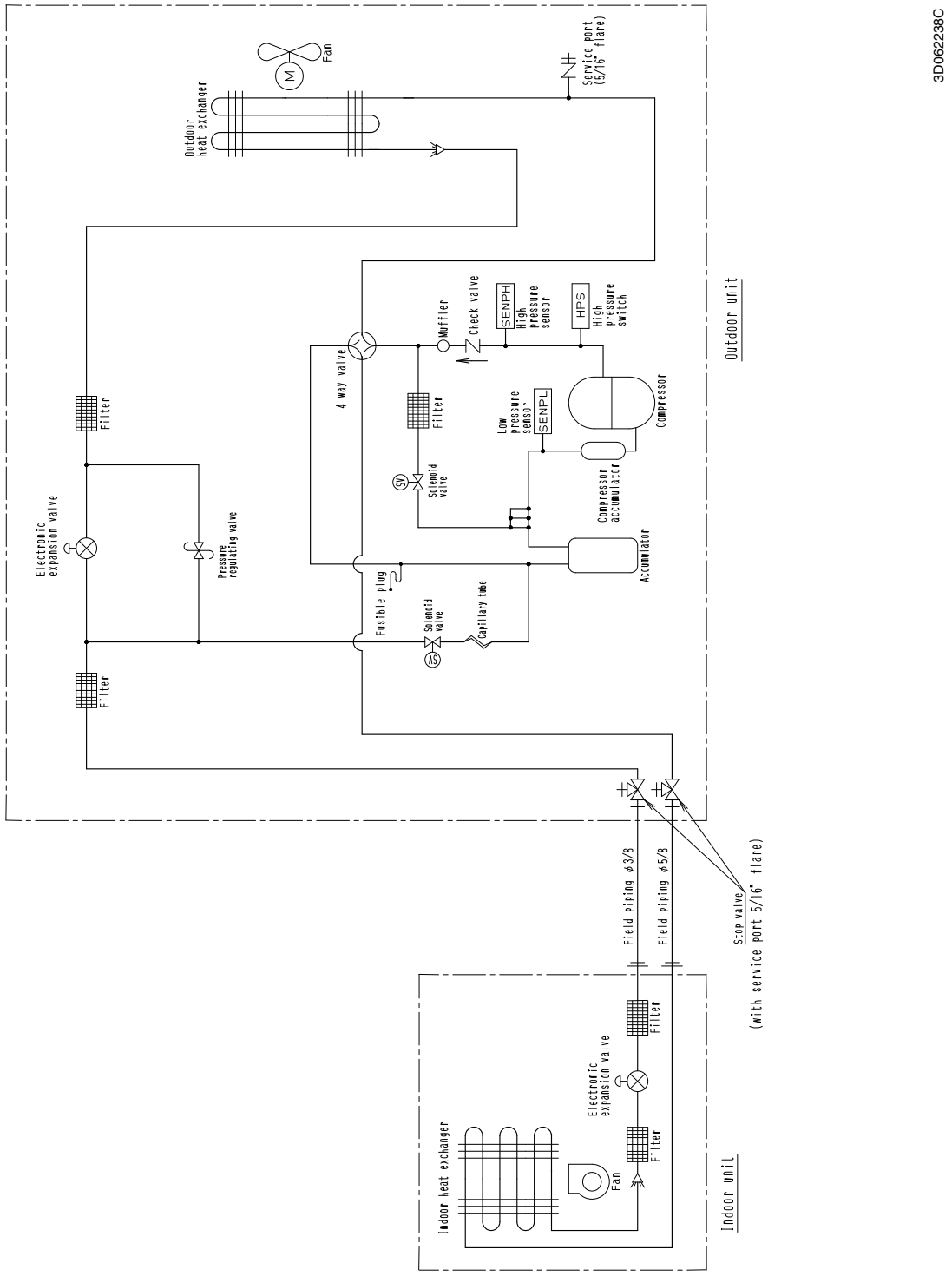
5. Piping diagrams

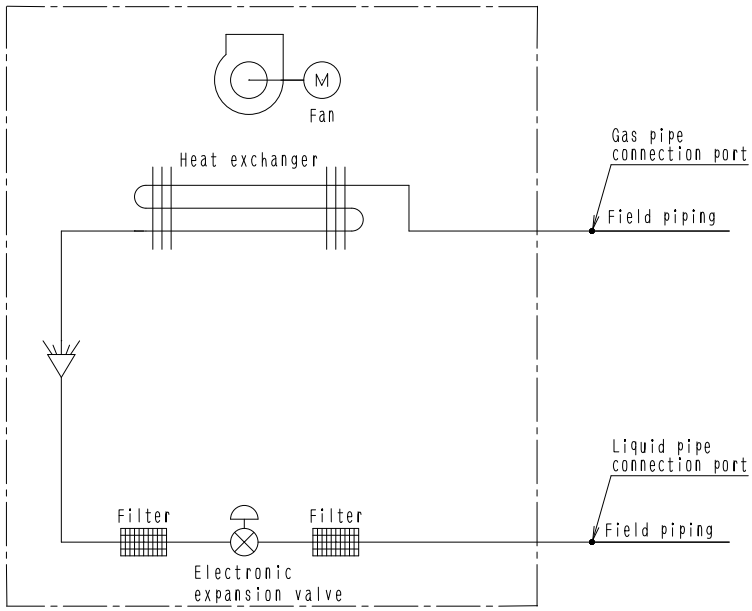
5.1 Indoor unit + Outdoor unit

FTQ18PBVJU + RZQ18PVJU9
FTQ24PBVJU + RZQ24PVJU9



5.2 Indoor unit

FTQ30PBVJU / FTQ36PBVJU / FTQ42PBVJU



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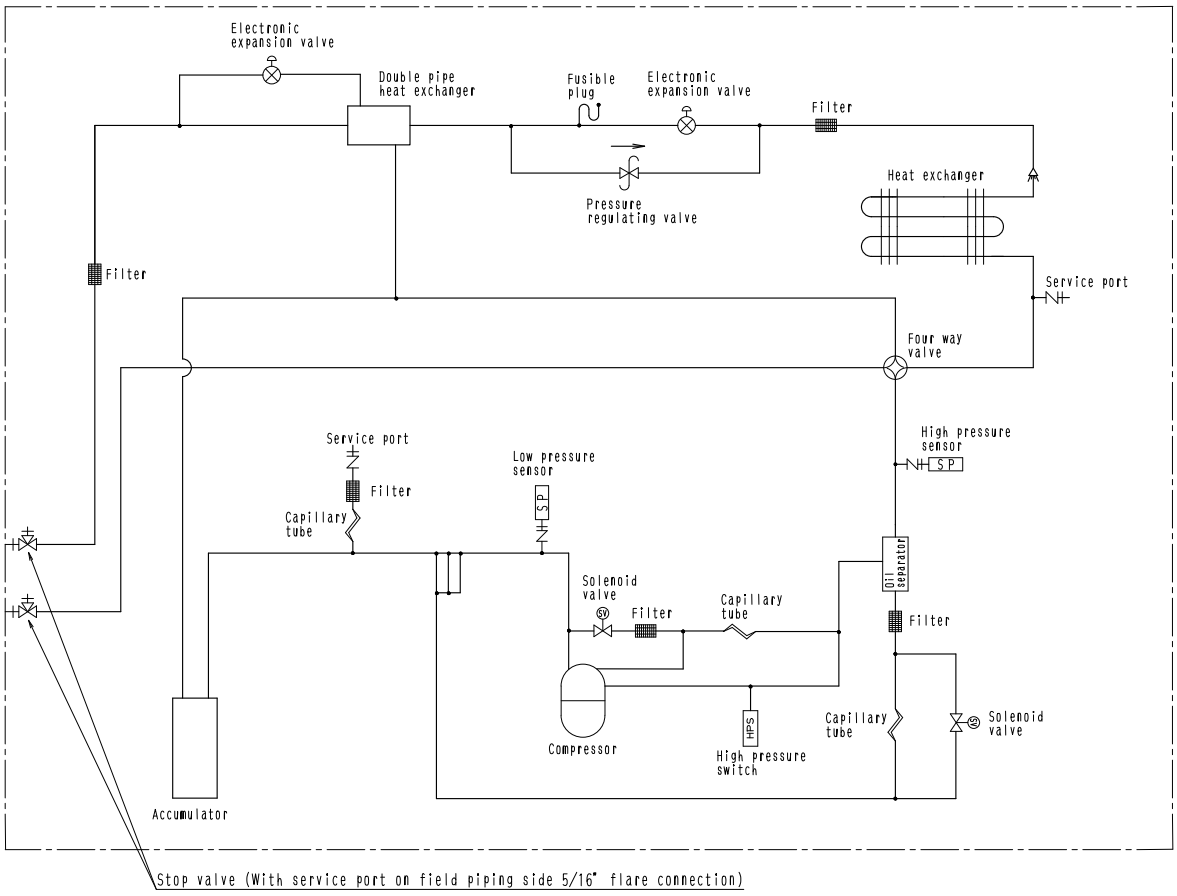
5.3 Outdoor unit

RZQ30PVJU9 / RZQ36PVJU9 / RZQ42PVJU9



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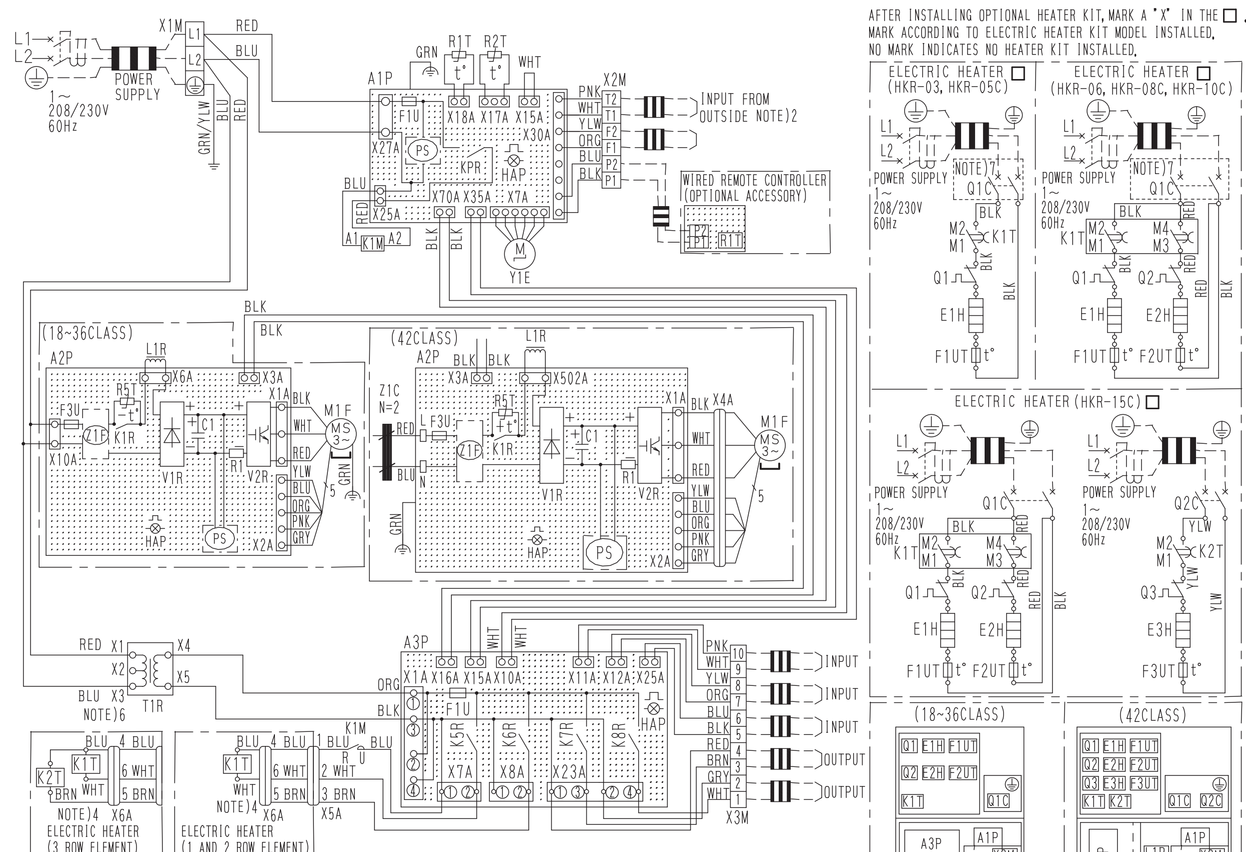
6. Wiring diagrams

6.1 Indoor unit

FTQ18PBVJU / FTQ24PBVJU / FTQ30PBVJU / FTQ36PBVJU / FTQ42PBVJU



INDOOR UNIT							
A1P	PRINTED CIRCUIT BOARD(MAIN)	PS	SWITCHING POWER SUPPLY (A1P, A2P)	X2M	TERMINAL BLOCK(CONTROL)	X6A	CONNECTOR
				X3M	TERMINAL BLOCK(OPTION)		
A2P	PRINTED CIRCUIT BOARD(FAN)	R1	RESISTOR(CURRENT LIMITING)	Y1E	ELECTRONIC EXPANSION VALVE		
A3P	PRINTED CIRCUIT BOARD(SUB)	R1T	THERMISTOR(LIQUID)	Z1C	FERRITE CORE		
C1	CAPACITOR	R2T	THERMISTOR(GAS)	Z1F	NOISE FILTER(A2P)		
F1U	FUSE(A1P, A3P)	R5T	THERMISTOR NTC(A2P) (18~36CLASS)	WIRED REMOTE CONTROLLER			
F3U	FUSE(A2P)			R1T	THERMISTOR(AIR)		
HAP	FLASHING LAMP (SERVICE MONITOR-GREEN) (A1P, A2P, A3P)	R5T	THERMISTOR PTC(A2P) (42CLASS)	ELECTRIC HEATER			
				E1H~E3H	HEATER		
K1M	MAGNETIC CONTACTOR	T1R	TRANSFORMER 240V/24V, 208V/24V	F1UT ~ F3UT	THERMAL FUSE (199.4°F)		
K1R	MAGNETIC RELAY(A2P)						
K5R~K8R	MAGNETIC RELAY(A3P)	V1R	DIODE BRIDGE(A2P)	K1T, K2T	TIMER		
KPR	MAGNETIC RELAY(A1P)	V2R	IGBT POWER MODULE(A2P)	Q1~Q3	SELF-OPERATING THERMAL PROTECTOR		
L1R	REACTOR	X4A, X5A	CONNECTOR				
M1F	MOTOR(FAN)	X1M	TERMINAL BLOCK(POWER SUPPLY)	Q1C, Q2C	CIRCUIT BREAKERS		

NOTES)

1. ═▮▮▮═ :FIELD WIRING, -○- :TERMINAL, ▷ :CONNECTOR, ▭▭▭ :TERMINAL BLOCK, ⊕ :PROTECTIVE GROUND(SCREW), ⏚ :NOISELESS GROUND
2. WHEN CONNECTING THE INPUT WIRES FROM OUTSIDE, FORCED OFF OR ON/OFF CONTROL OPERATION CAN BE SELECTED BY REMOTE CONTROLLER. IN DETAILS, REFER TO THE INSTALLATION MANUAL ATTACHED THE UNIT.
3. COLORS PNK:PINK WHT:WHITE YLW:YELLOW ORG:ORANGE BLU:BLUE BLK:BLACK RED:RED BRN:BROWN GRY:GRAY GRN:GREEN.
4. WHEN INSTALL AN ELECTRIC HEATER, DON'T SHARE THE POWER SUPPLY OF THE ELECTRIC HEATER WITH THAT OF THE INDOOR UNIT. USE THE STANDARD OPTIONAL ELECTRIC HEATER.
5. USE COPPER CONDUCTORS ONLY.
6. RED WIRE TO BE ON X1 FOR 230V AND ON X2 FOR 208V.
7. IN CASE INSTALL HKR-03 OR HKR-06, THERE IS NO CIRCUIT BREAKER.

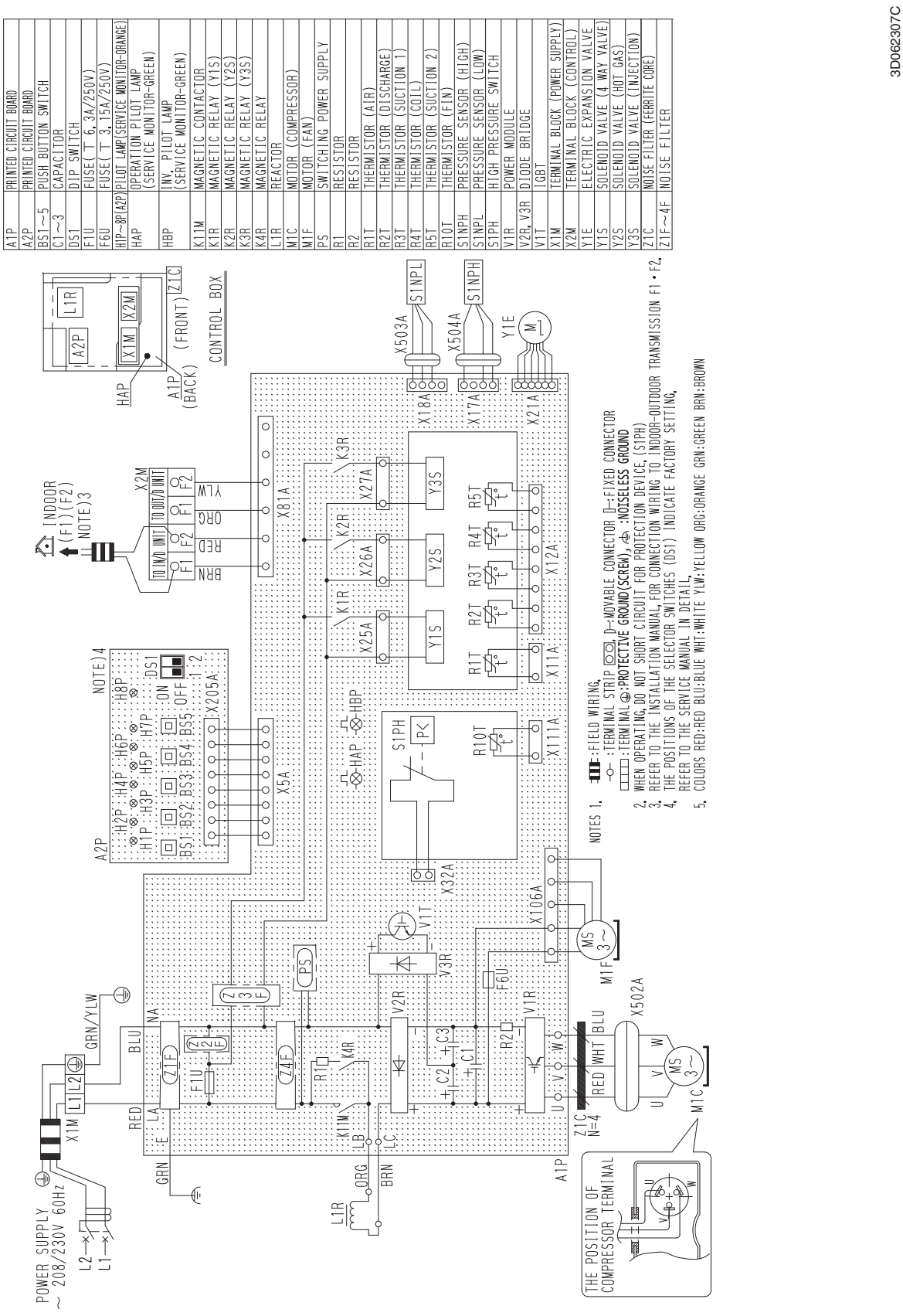
C: 3D071935A

Note:

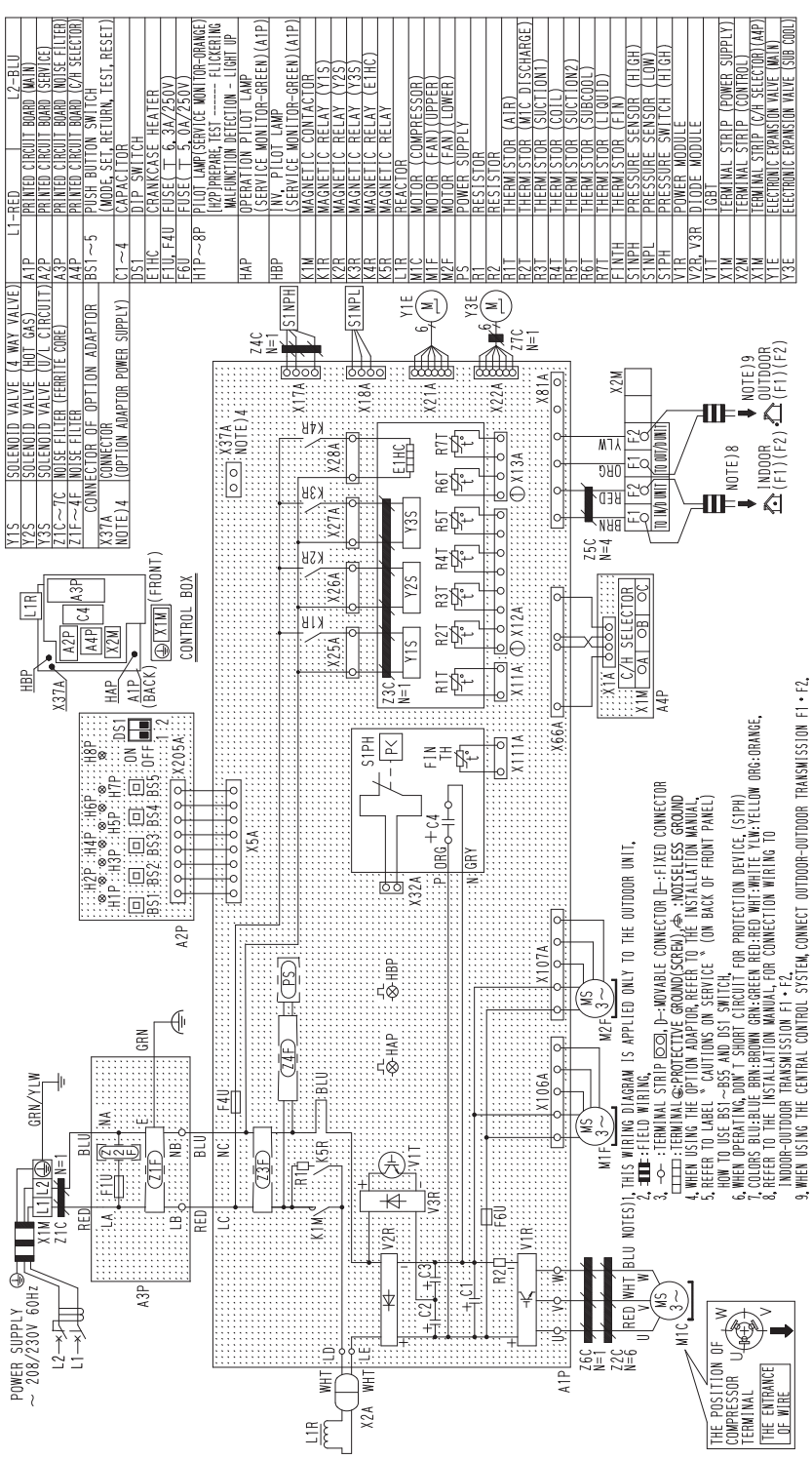
This unit is not equipped with a return air sensor. A remote sensor is required when not using a BRC1E71 controller or if this controller is not positioned to sense space temperature.

6.2 Outdoor unit

RZQ18PVJU9 / RZQ24PVJU9

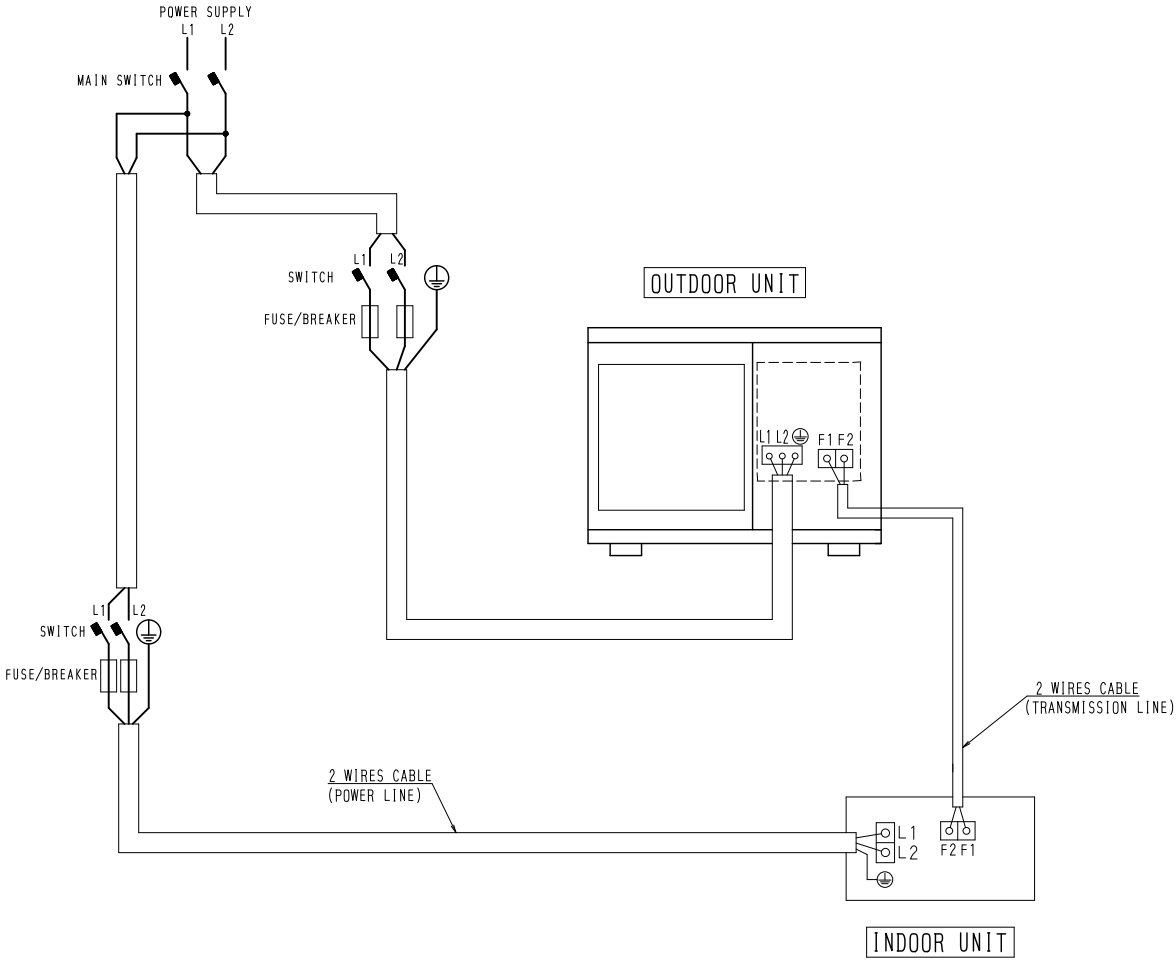


RZQ30PVJU9 / RZQ36PVJU9 / RZQ42PVJU9



6.3 External connection diagram

RZQ18PVJU9 / RZQ24PVJU9



Notes
1) All wiring, components and materials to be procured on the site must comply with the applicable local and national codes.
2) Use copper conductors only.
3) As for details, see wiring diagram.
4) Install circuit breaker for safety.
5) All field wiring and components must be provided by licensed electrician.
6) Unit shall be grounded in compliance with the applicable local and national codes.
7) Wiring shown is general points-of-connection guides only and is not intended for or to include all details for a specific installation.
8) Be sure to install the switch and the fuse to the power line of each equipment.
9) Install the main switch that can interrupt all the power sources in an integrated manner because this system consists of the equipment utilizing the multiple power sources.

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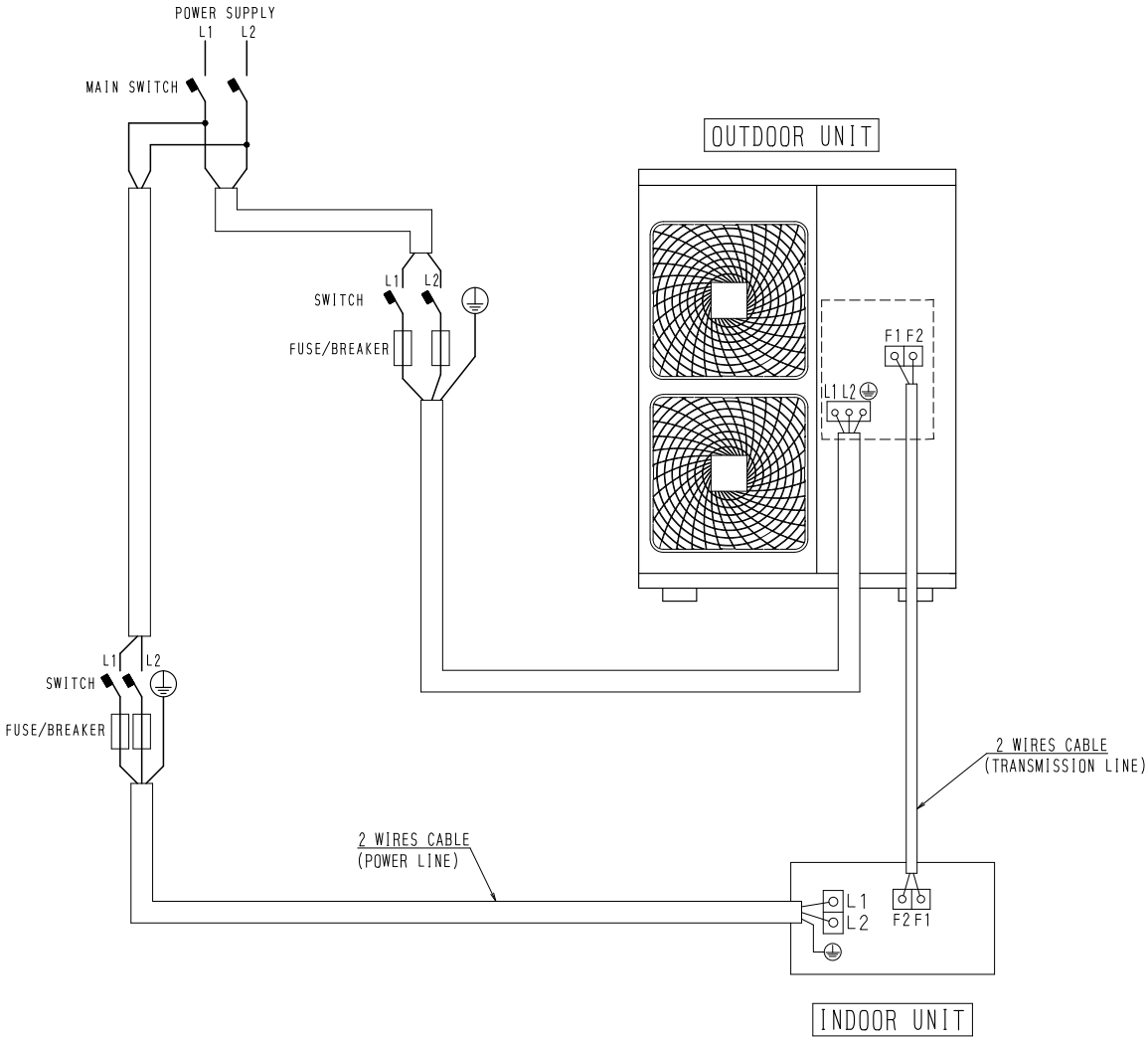
RZQ30PVJU9 / RZQ36PVJU9 / RZQ42PVJU9



Notes
1) All wiring, components and materials to be procured on the site must comply with the applicable local and national codes.
2) Use copper conductors only.
3) As for details, see wiring diagram.
4) Install circuit breaker for safety.
5) All field wiring and components must be provided by licensed electrician.
6) Unit shall be grounded in compliance with the applicable local and national codes.
7) Wiring shown is general points-of-connection guides only and is not intended for or to include all details for a specific installation.
8) Be sure to install the switch and the fuse to the power line of each equipment.
9) Install the main switch that can interrupt all the power sources in an integrated manner because this system consists of the equipment utilizing the multiple power sources.

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7. Electrical characteristics

7.1 Indoor unit

FTQ18PBVJU / FTQ24PBVJU / FTQ30PBVJU / FTQ36PBVJU / FTQ42PBVJU

Model	Power supply					IFM		Input(W)	
	Hz	Volts	Voltage range	MCA	MOP	kW	FLA	Cooling	Heating
FTQ18PBVJU	60	208V/230V	Max. 229V / Min. 187V	1.5	15	350	1.2	170	170
FTQ24PBVJU				1.6	15	350	1.3	196	196
FTQ30PBVJU				2.3	15	350	1.8	267	267
FTQ36PBVJU			Max. 253V / Min. 207V	2.8	15	350	2.2	358	358
FTQ42PBVJU				3.6	15	400	2.8	488	488

NOTES:

1. Voltage range:
   Units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.
3. Maximum allowable voltage variation between phases is 2%.
4. MCA/MOP
   MCA = 1.25 x FLA
   MOP $\leq$ 1.25 x FLA
   Next lower standard protective device rating, miniumum 15A.
5. Select wire size based on the value of MCA.
6. Either a fuse or a circuit breaker is acceptable.

SYMBOLS:

MCA : Minimum Circuit Amps (A)
MOP : Maximum Overcurrent Protective Device (A)
IFM : Indoor Fan Motor
kW : Fan Motor Rated Output (kW)
FLA : Full Load Amps (A)

C: 4D07

7.2 Electric heater

Model	Power supply			CIRCUIT 1			CIRCUIT 2		
	Hz	Volts	Voltage range	H.A.	H.M.C.A.	H.M.O.P.	H.A.	H.M.C.A.	H.M.O.P.
HKR-03	60	208V/230V	Max. 229V Min. 187V / Max. 253V Min. 207V	10.8/12.5	13.5/15.6	20/20	——	——	——
HKR-05C				17.2/19.8	21.4/24.7	25/25	——	——	——
HKR-06				21.6/25	27.1/31.3	30/35	——	——	——
HKR-08C				25.3/29.2	31.6/36.5	35/40	——	——	——
HKR-10C				34.3/39.6	42.9/49.5	45/50	——	——	——
HKR-15C				34.3/39.6	42.9/49.5	45/50	17.2/19.8	21.4/24.7	25/25
HKR-20C				34.3/39.6	42.9/49.5	45/50	34.3/39.6	42.9/49.5	45/50

Symbols:
H.A.: Heater amps
H.M.C.A.: Heater minimum circuit amps
H.M.O.P.: Heater maximum overcurrent protection

Note:
1. Voltage range
   Units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.
2. Maximum allowable voltage unbalance between phases is 2%.
3. H.M.C.A/H.M.O.P
   H.M.C.A = 1.25 X H.A.
4. Select wire size based on the H.M.C.A.
5. Recommended GFCI specification is below table.

Rapid sensitive current	30 mA
Tripping time	0.1 sec.

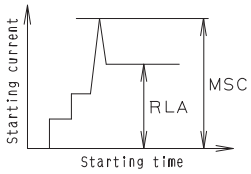
4D068258A

7.3 Outdoor unit

RZQ18PVJU9 / RZQ24PVJU9

Model		Units				Power supply		Comp.		OFM	
Outdoor	H/P C/O	Hz	Volts	Min.	Max.	MCA	MOP	MSC	RLA	W	FLA
RZQ18PVJU9	H/P	60	208	187	229	16.5	20	—	7.1	70	0.3
			230	209	253						
RZQ24PVJU9	H/P	60	208	187	229	16.5	20	—	10.3	70	0.3
			230	209	253						

The relationship between the starting time and the starting current.



NOTES:

1. RLA is based on the following conditions:
   Power supply : 60Hz 208-230V
   Cooling:
   Indoor temp: 80°FDB / 67°FWB
   Outdoor temp: 95°FDB
   Heating:
   Indoor temp: 70°FDB
   Outdoor temp: 47°FDB / 43°FWB
2. Voltage range:
   Units are suitable for use on electrical systems where voltage supplied to unit terminal is not below or above listed range limits.
3. Maximum allowable voltage variation between phases is 2%.
4. MCA represents maximum input current.
   MOP represents capacity which may accept MCA.
5. Select wire size based on the value of MCA.
6. MOP is used to select the circuit breaker and the ground fault circuit interrupter (ground leakage circuit breaker).

SYMBOLS:

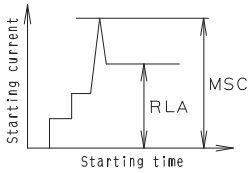
MCA : Minimum Circuit Amps (A)
MOP : Maximum Overcurrent Protective Device (A) (See Note
MSC : Maximum current when starting the compressor. (A)
RLA : Rated Load Amps (A)
OFM : Outdoor Fan Motor (A)
FLA : Full Load Amps (A)
KW : Fan Motor Rated Output. (kW)

C: 3D064

RZQ30PVJU9 / RZQ36PVJU9 / RZQ42PVJU9

Model		Units				Power supply		Comp.		OFM	
Outdoor	H/P C/O	Hz	Volts	Min.	Max.	MCA	MOP	MSC	RLA	KW	FLA
RZQ30PVJU9	H/P	60	208/230	187	253	27.0	30	—	15.7	0.070 + 0.070	0.3 + 0.3
RZQ36PVJU9	H/P	60	208/230	187	253	27.0	30	—	18.6	0.070 + 0.070	0.3 + 0.3
RZQ42PVJU9	H/P	60	208/230	187	253	27.0	30	—	19.6	0.070 + 0.070	0.3 + 0.3

The relationship between the starting time and the starting current.



NOTES:

1. RLA is based on the following conditions:
   Power supply : 60Hz 208-230V
   Cooling:
   Indoor temp: 80°FDB / 67°FWB
   Outdoor temp: 95°FDB
   Heating:
   Indoor temp: 70°FDB
   Outdoor temp: 47°FDB / 43°FWB
2. Voltage range:
   Units are suitable for use on electrical systems where voltage supplied to unit terminal is not below or above listed range limits.
3. Maximum allowable voltage variation between phases is 2%.
4. MCA represents maximum input current.
   MOP represents capacity which may accept MCA.
5. Select wire size based on the value of MCA.
6. MOP is used to select the circuit breaker and the ground fault circuit interrupter (ground leakage circuit breaker).

SYMBOLS:

MCA : Minimum Circuit Amps (A)
MOP : Maximum Overcurrent Protective Device (A) (See Note
MSC : Maximum current when starting the compressor. (A)
RLA : Rated Load Amps (A)
OFM : Outdoor Fan Motor (A)
FLA : Full Load Amps (A)
KW : Fan Motor Rated Output. (kW)

C: 3D06538

8. Safety devices list

8.1 FTQ

FTQ18PBVJU / FTQ24PBVJU / FTQ30PBVJU / FTQ36PBVJU / FTQ42PBVJU

	Safety devices	18	24	30	36	42
FTQ～PBVJU	PC board fuse (MAIN)	T, 3, 15A, 250V	T, 3, 15A, 250V	T, 3, 15A, 250V	T, 3, 15A, 250V	T, 3, 15A, 250V
	PC board fuse (FAN)	T, 6, 3A, 250V	T, 6, 3A, 250V	T, 6, 3A, 250V	T, 6, 3A, 250V	T, 6, 3A, 250V
	PC board fuse (OPTION)	T, 3, 15A, 250V	T, 3, 15A, 250V	T, 3, 15A, 250V	T, 3, 15A, 250V	T, 3, 15A, 250V

3D075604

9. Capacity tables

9.1 FTQ

FTQ18PBVJU + RZQ18PVJU9

Cooling Capacity 〔 208/230V-60Hz 〕

Indoor Air Temp.		Outdoor Air Temp. °FDB																	
		68			77			86			90			95			104		
		TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
°FDB	°FWB	kBTUH	MBh	kW	kBTUH	MBh	kW	kBTUH	MBh	kW	kBTUH	MBh	kW	kBTUH	MBh	kW	kBTUH	MBh	kW
68.0	57.0	11.68	11.6	0.55	11.68	11.6	0.59	11.68	11.6	0.66	11.68	11.6	0.70	11.68	11.6	0.75	11.68	11.6	0.84
72.0	61.0	14.21	13.5	0.64	14.21	13.5	0.72	14.21	13.5	0.82	14.21	13.5	0.86	14.21	13.5	0.93	14.21	13.5	1.06
77.0	64.0	16.10	14.9	0.72	16.10	14.9	0.83	16.10	14.9	0.95	16.10	14.9	1.00	16.10	14.9	1.08	16.10	14.9	1.24
80.0	67.0	18.00	15.1	0.82	18.00	15.1	0.94	18.00	15.1	1.09	18.00	15.1	1.16	18.00	15.1	1.25	17.27	14.6	1.35
86.0	72.0	20.79	15.3	0.97	20.06	14.9	1.07	19.32	14.4	1.17	19.00	14.2	1.21	18.59	14.0	1.26	17.86	13.5	1.36
90.0	75.0	21.14	15.3	0.98	20.41	14.9	1.08	19.68	14.4	1.17	19.35	14.2	1.22	18.95	14.0	1.27	18.21	13.5	1.37

Heating Capacity 〔 208/230V-60Hz 〕

Indoor air temp.	Outdoor Air Temp. °FWB									
	14		23		32		43		50	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
°FDB	MBh	kW	MBh	kW	MBh	kW	MBh	kW	MBh	kW
61	23.33	2.69	23.33	2.32	23.33	2.04	23.33	1.77	23.33	1.64
64	22.22	2.52	22.22	2.18	22.22	1.91	22.22	1.67	22.22	1.54
68	20.74	2.30	20.74	1.99	20.74	1.76	20.74	1.54	20.74	1.42
70	20.00	2.19	20.00	1.90	20.00	1.68	20.00	1.47	20.00	1.36
72	19.26	2.09	19.26	1.81	19.26	1.60	19.26	1.41	19.26	1.30
75	18.15	1.94	18.15	1.69	18.15	1.49	18.15	1.31	18.15	1.22

Symbols:
EWB: Entering wet bulb temp. (°FWB)
EDB: Entering dry bulb temp. (°FDB)
TC : Total cooling (heating) capacity (kW)
PI : Power input (kW)
(Comp.+indoor+outdoor fan motor).

Notes:
1. The above data are based on the following conditions.

Cooling	Heating	Equivalent Piping Length	Hz, Volts
Indoor : 80°FDB, 67°FWB Outdoor : 95°FDB	Indoor : 70°FDB Outdoor : 47°FDB, 43°FWB	25ft (Level Difference : 0)	60Hz, 208/230V

2. Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
3. [ ] shows nominal MAX capacities

FTQ24PBVJU + RZQ24PVJU9

Cooling Capacity 〔 208/230V-60Hz 〕

Indoor Air Temp.		Outdoor Air Temp. °FDB																	
		68			77			86			90			95			104		
		TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
°FDB	°FWB	kBTUH	MBh	kW	kBTUH	MBh	kW	kBTUH	MBh	kW	kBTUH	MBh	kW	kBTUH	MBh	kW	kBTUH	MBh	kW
68.0	57.0	15.57	14.4	0.74	15.57	14.4	0.80	15.57	14.4	0.91	15.57	14.4	0.96	15.57	14.4	1.03	15.57	14.4	1.17
72.0	61.0	18.94	16.5	0.88	18.94	16.5	0.99	18.94	16.5	1.14	18.94	16.5	1.21	18.94	16.5	1.30	18.94	16.5	1.50
77.0	64.0	21.47	18.4	1.00	21.47	18.4	1.15	21.47	18.4	1.33	21.47	18.4	1.41	21.47	18.4	1.53	21.47	18.4	1.77
80.0	67.0	24.00	18.8	1.14	24.00	18.8	1.33	24.00	18.8	1.54	24.00	18.8	1.64	24.00	18.8	1.78	23.02	18.2	1.92
86.0	72.0	27.72	19.4	1.37	26.74	18.8	1.51	25.76	18.3	1.66	25.33	18.0	1.72	24.79	17.7	1.80	23.81	17.1	1.95
90.0	75.0	28.19	19.3	1.38	27.21	18.8	1.52	26.24	18.3	1.67	25.80	18.0	1.73	25.26	17.7	1.81	24.29	17.2	1.96

Heating Capacity 〔 208/230V-60Hz 〕

Indoor air temp.	Outdoor Air Temp. °FWB									
	14		23		32		43		50	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
°FDB	MBh	kW	MBh	kW	MBh	kW	MBh	kW	MBh	kW
61	24.18	2.44	26.67	2.56	30.49	2.66	31.50	2.51	31.50	2.32
64	24.14	2.49	26.63	2.60	30.00	2.70	30.00	2.36	30.00	2.19
68	24.09	2.56	26.57	2.66	28.00	2.49	28.00	2.17	28.00	2.01
70	24.06	2.59	26.55	2.69	27.00	2.38	27.00	2.08	27.00	1.93
72	24.03	2.62	26.00	2.57	26.00	2.27	26.00	1.99	26.00	1.84
75	23.99	2.67	24.50	2.39	24.50	2.11	24.50	1.85	24.50	1.72

Symbols:
EWB: Entering wet bulb temp. (°FWB)
EDB: Entering dry bulb temp. (°FDB)
TC : Total cooling (heating) capacity (kW)
PI : Power input (kW)
(Comp.+indoor+outdoor fan motor).

Notes:
1. The above data are based on the following conditions.

Cooling	Heating	Equivalent Piping Length	Hz, Volts
Indoor : 80°FDB, 67°FWB Outdoor : 95°FDB	Indoor : 70°FDB Outdoor : 47°FDB, 43°FWB	25ft (Level Difference : 0)	60Hz, 208/230V

2. Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
3. [ ] shows nominal MAX capacities

FTQ30PBVJU + RZQ30PVJU9

Cooling Capacity 〔 208/230V-60Hz 〕

Indoor Air Temp.		Outdoor Air Temp. °FDB																	
		68			77			86			90			95			104		
		TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
°FDB	°FWB	kBTUH	MBh	kW	kBTUH	MBh	kW	kBTUH	MBh	kW	kBTUH	MBh	kW	kBTUH	MBh	kW	kBTUH	MBh	kW
68.0	57.0	19.47	17.8	0.90	19.47	17.8	0.97	19.47	17.8	1.11	19.47	17.8	1.18	19.47	17.8	1.27	19.47	17.8	1.45
72.0	61.0	23.68	19.1	1.08	23.68	19.1	1.22	23.68	19.1	1.40	23.68	19.1	1.49	23.68	19.1	1.61	23.68	19.1	1.86
77.0	64.0	26.84	21.3	1.22	26.84	21.3	1.42	26.84	21.3	1.65	26.84	21.3	1.76	26.84	21.3	1.90	26.84	21.3	2.20
80.0	67.0	30.00	22.0	1.41	30.00	22.0	1.64	30.00	22.0	1.91	30.00	22.0	2.04	30.00	22.0	2.22	28.78	21.4	2.40
86.0	72.0	34.65	23.0	1.70	33.43	22.4	1.88	32.21	21.8	2.06	31.66	21.5	2.14	30.99	21.1	2.25	29.77	20.5	2.43
90.0	75.0	35.24	22.9	1.71	34.02	22.3	1.89	32.80	21.7	2.07	32.25	21.5	2.16	31.58	21.1	2.26	30.36	20.5	2.45

Heating Capacity 〔 208/230V-60Hz 〕

Indoor air temp.	Outdoor Air Temp. °FWB									
	14		23		32		43		50	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
°FDB	MBh	kW	MBh	kW	MBh	kW	MBh	kW	MBh	kW
61	24.41	2.15	26.89	2.30	30.72	2.42	34.22	2.55	36.45	2.62
64	24.36	2.21	26.84	2.36	30.66	2.48	34.17	2.60	36.40	2.66
68	24.29	2.30	26.77	2.44	30.59	2.55	34.10	2.66	35.26	2.60
70	24.25	2.35	26.74	2.48	30.56	2.58	34.00	2.69	34.00	2.49
72	24.22	2.39	26.70	2.52	30.53	2.62	32.74	2.57	32.74	2.38
75	24.17	2.45	26.65	2.57	30.47	2.67	30.85	2.39	30.85	2.22

Symbols:
EWB: Entering wet bulb temp. (°FWB)
EDB: Entering dry bulb temp. (°FDB)
TC : Total cooling (heating) capacity (kW)
PI : Power input (kW) (Comp.+indoor+outdoor fan motor).

Notes:
1. The above data are based on the following conditions.

Cooling	Heating	Equivalent Piping Length	Hz, Volts
Indoor : 80°FDB, 67°FWB Outdoor : 95°FDB	Indoor : 70°FDB Outdoor : 47°FDB, 43°FWB	25ft (Level Difference : 0)	60Hz, 208/230V

2. Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
3. ☐ shows nominal MAX capacities

FTQ36PBVJU + RZQ36PVJU9

Cooling Capacity 〔 208/230V-60Hz 〕

Indoor Air Temp.		Outdoor Air Temp. °FDB																	
		68			77			86			90			95			104		
		TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
°FDB	°FWB	kBTUH	MBh	kW	kBTUH	MBh	kW	kBTUH	MBh	kW	kBTUH	MBh	kW	kBTUH	MBh	kW	kBTUH	MBh	kW
68.0	57.0	23.36	19.8	1.14	23.36	19.8	1.23	23.36	19.8	1.42	23.36	19.8	1.51	23.36	19.8	1.63	23.36	19.8	1.86
72.0	61.0	28.42	21.4	1.38	28.42	21.4	1.55	28.42	21.4	1.80	28.42	21.4	1.92	28.42	21.4	2.08	28.42	21.4	2.40
77.0	64.0	32.21	24.0	1.57	32.21	24.0	1.82	32.21	24.0	2.12	32.21	24.0	2.27	32.21	24.0	2.46	32.21	24.0	2.86
80.0	67.0	36.00	25.0	1.81	36.00	25.0	2.12	36.00	25.0	2.47	36.00	25.0	2.65	36.00	25.0	2.88	34.54	24.3	3.12
86.0	72.0	41.57	26.4	2.19	40.11	25.7	2.43	38.65	25.0	2.67	38.00	24.7	2.78	37.18	24.3	2.91	35.72	23.6	3.16
90.0	75.0	42.28	26.3	2.21	40.82	25.6	2.45	39.36	24.9	2.69	38.71	24.6	2.80	37.89	24.2	2.93	36.43	23.5	3.18

Heating Capacity 〔 208/230V-60Hz 〕

Indoor air temp.	Outdoor Air Temp. °FWB									
	14		23		32		43		50	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
°FDB	MBh	kW	MBh	kW	MBh	kW	MBh	kW	MBh	kW
61	30.51	2.83	34.02	3.00	37.53	3.15	41.82	3.29	44.54	3.37
64	30.45	2.90	33.96	3.07	37.47	3.21	41.76	3.35	44.44	3.42
68	30.37	3.01	33.88	3.16	37.39	3.29	41.48	3.40	41.48	3.16
70	30.33	3.06	33.84	3.21	37.35	3.34	40.00	3.26	40.00	3.03
72	30.29	3.11	33.80	3.26	37.31	3.38	38.52	3.12	38.52	2.91
75	30.23	3.18	33.74	3.32	36.30	3.31	36.30	2.92	36.30	2.72

Symbols:
EWB: Entering wet bulb temp. (°FWB)
EDB: Entering dry bulb temp. (°FDB)
TC : Total cooling (heating) capacity (kW)
PI : Power input (kW) (Comp.+indoor+outdoor fan motor).

Notes:
1. The above data are based on the following conditions.

Cooling	Heating	Equivalent Piping Length	Hz, Volts
Indoor : 80°FDB, 67°FWB Outdoor : 95°FDB	Indoor : 70°FDB Outdoor : 47°FDB, 43°FWB	25ft (Level Difference : 0)	60Hz, 208/230V

2. Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
3. ☐ shows nominal MAX capacities

FTQ42PBVJU + RZQ42PVJU9

Cooling Capacity 〔 208/230V-60Hz 〕

Indoor Air Temp.		Outdoor Air Temp. °FDB																	
		68			77			86			90			95			104		
		TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI	TC	SHC	PI
°FDB	°FWB	kBTUH	MBh	kW	kBTUH	MBh	kW	kBTUH	MBh	kW	kBTUH	MBh	kW	kBTUH	MBh	kW	kBTUH	MBh	kW
68.0	57.0	27.25	21.7	1.39	27.25	21.7	1.51	27.25	21.7	1.75	27.25	21.7	1.86	27.25	21.7	2.01	27.25	21.7	2.31
72.0	61.0	33.15	23.7	1.70	33.15	23.7	1.92	33.15	23.7	2.23	33.15	23.7	2.38	33.15	23.7	2.58	33.15	23.7	2.99
77.0	64.0	37.58	26.6	1.93	37.58	26.6	2.26	37.58	26.6	2.63	37.58	26.6	2.82	37.58	26.6	3.06	37.58	26.6	3.56
80.0	67.0	42.00	27.9	2.24	42.00	27.9	2.63	42.00	27.9	3.08	42.00	27.9	3.30	42.00	27.9	3.59	40.29	27.1	3.89
86.0	72.0	48.50	29.6	2.72	46.80	28.8	3.02	45.09	28.1	3.33	44.33	27.7	3.46	43.38	27.3	3.63	41.67	26.5	3.94
90.0	75.0	49.33	29.4	2.74	47.62	28.6	3.04	45.92	27.9	3.35	45.16	27.6	3.48	44.21	27.1	3.66	42.50	26.4	3.97

Heating Capacity 〔 208/230V-60Hz 〕

Indoor air temp.	Outdoor Air Temp. °FWB									
	14		23		32		43		50	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
°FDB	MBh	kW	MBh	kW	MBh	kW	MBh	kW	MBh	kW
61	34.53	3.43	38.50	3.68	42.46	3.88	47.30	4.07	50.38	4.18
64	34.46	3.54	38.42	3.77	42.39	3.96	47.23	4.15	50.31	4.25
68	34.37	3.68	38.33	3.90	42.29	4.07	47.14	4.25	48.74	4.15
70	34.32	3.75	38.28	3.96	42.24	4.13	47.00	4.30	47.00	3.98
72	34.27	3.82	38.23	4.02	42.20	4.19	45.26	4.10	45.26	3.81
75	34.20	3.92	38.16	4.12	42.13	4.27	42.65	3.83	42.65	3.55

Symbols:

EWB: Entering wet bulb temp. (°FWB)
EDB: Entering dry bulb temp. (°FDB)
TC : Total cooling (heating) capacity (kW)
PI : Power input (kW)
(Comp.+indoor+outdoor fan motor).

Notes:

1. The above data are based on the following conditions.

Cooling	Heating	Equivalent Piping Length	Hz, Volts
Indoor : 80°FDB, 67°FWB Outdoor : 95°FDB	Indoor : 70°FDB Outdoor : 47°FDB, 43°FWB	25ft (Level Difference : 0)	60Hz, 208/230V

2. Capacities are net, including a deduction for cooling (an addition for heating) for indoor fan motor heat.
3. ☐ shows nominal MAX capacities

9.2 Capacity correction ratio

RZQ18PVJU9 / RZQ24PVJU9

C: 3D064228B

1. Rate of change in cooling capacity

<In case of connecting indoor unit:FTQ>

2. Rate of change in heating capacity

<In case of connecting indoor unit:FTQ>

[Explanation of symbols]

H_P : Level difference(ft)between indoor and outdoor units
Where indoor unit in inferior position

H_M : Level difference(ft)between indoor and outdoor units
Where indoor unit in superior position

L : Equivalent pipe length(ft)

α : Capacity correction factor

[Diameter of pipes]

Model	gas	liquid
RZQ18, 24PVJU9	φ 5/8"	φ 3/8"

[Notes]

1. Heating is only available for RZQ-P models.
2. These figures illustrate the rate of change in capacity of a standard indoor unit system at maximum load (with the thermostat set to maximum)under standard conditions.
   Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the above figures.
3. With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
4. Method of calculating cooling / heating capacity (max. capacity for combination with standard indoor unit)

cooling / heating capacity = cooling / heating capacity obtained from performance characteristics table × each capacity rate of change

RZQ30PVJU9 / RZQ36PVJU9 / RZQ42PVJU9

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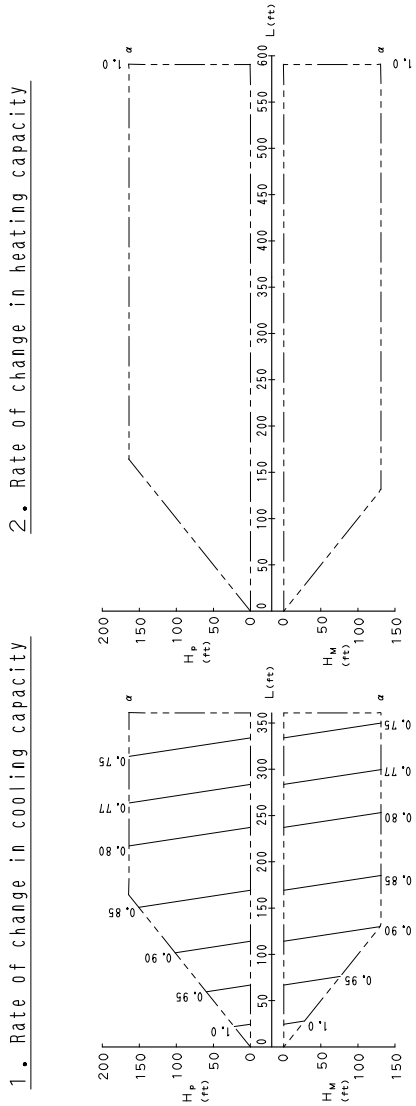


[Explanation of symbols]

Hp : Level difference(ft)between indoor and outdoor units where indoor unit in inferior position

HM : Level difference(ft)between indoor and outdoor units where indoor unit in superior position

L : Equivalent pipe length(ft)

α : Capacity correction factor

[Diameter of pipes]

Model	gas	liquid
RZQ30, 36, 42PVJU9	φ 5/8"	φ 3/8"

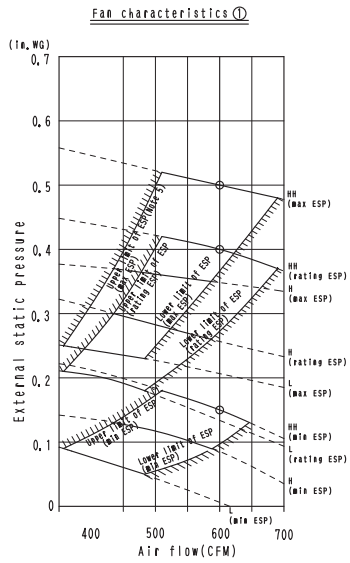
[Notes]

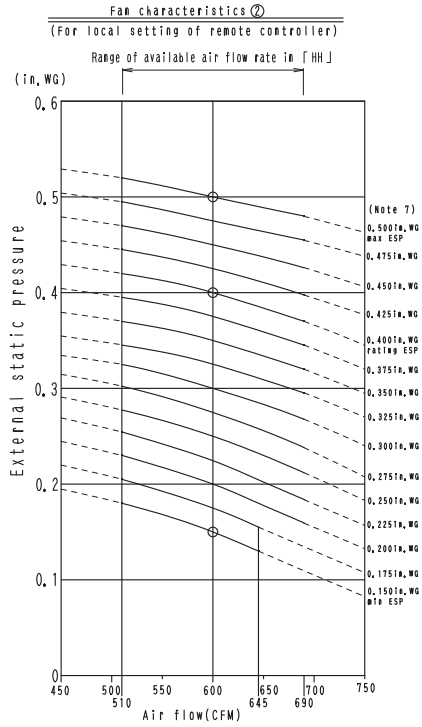
1. These figures illustrate the rate of change in capacity of a standard indoor unit system at maximum load (with the thermostat set to maximum)under standard conditions.
   Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the above figures.
2. With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
3. Method of calculating cooling / heating capacity (max. capacity for combination with standard indoor unit)

   cooling / heating capacity = cooling / heating capacity obtained from performance characteristics table × each capacity rate of change

10. Fan Performances

FTQ18PBVJU





Notes:
1. The external static pressure (ESP) can be changed in 14 levels by the remote controller.
2. Fan Characteristics (Graph 1) show a fan characteristic at the time of ***maximum ESP***, ***rating ESP***, or ***minimum ESP***.
3. Fan Characteristics (Graph 2) for field setting of remote controller show a Fan Characteristic of each ESP field setting's possible airflow.
4. Choose ESP setting by using Fan Characteristics (Graph 1) and Fan Characteristics (Graph 2) by the resistance of a connected duct.
5. The remote controller can be used to change **HH**, **H**, and **L**.
6. ESP: external static pressure.
7. The value in Graph 2 shows ESP in rating airflow.
8. Set the external static pressure of the suction duct at 0.6" Wg or less.

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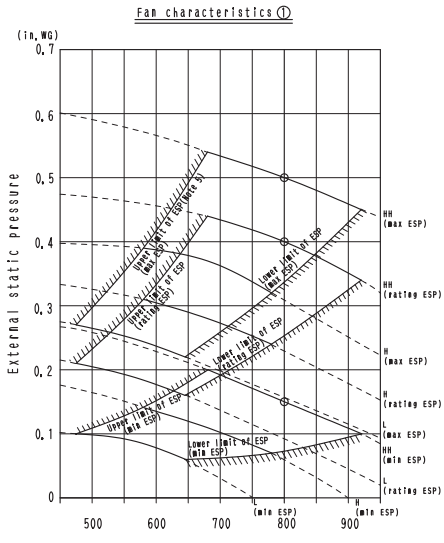
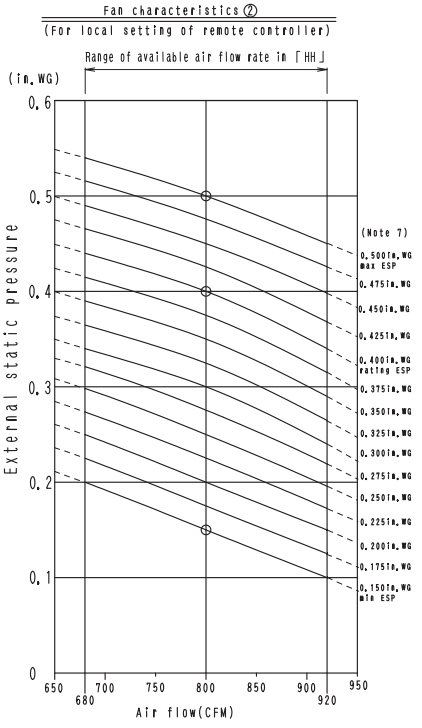
FTQ24PBVJU





Notes:
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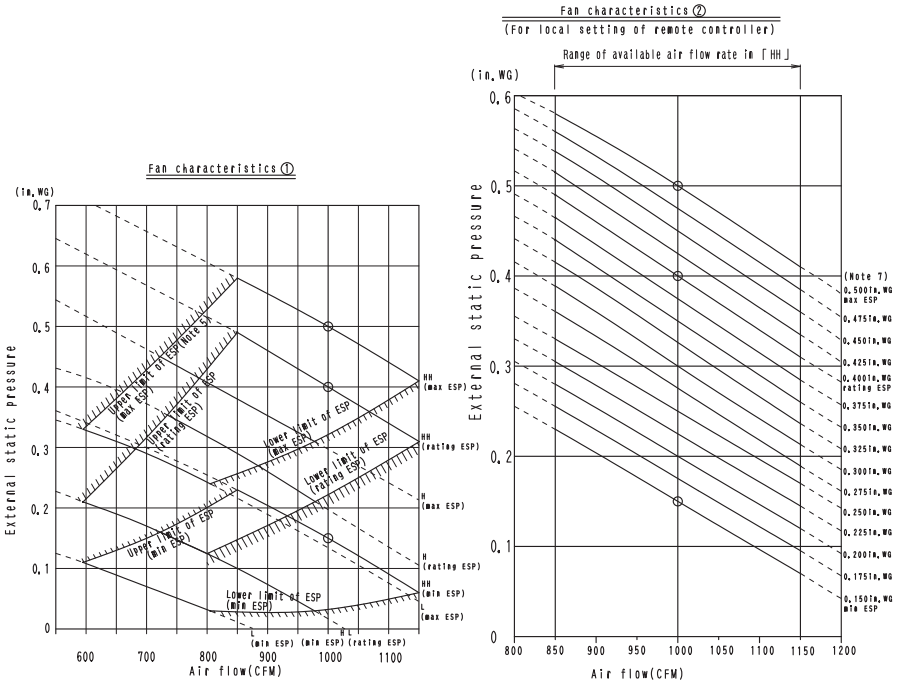
5. The remote controller can be used to change **HH**, **H**, and **L**.
6. ESP: external static pressure.
7. The value in Graph 2 shows ESP in rating airflow.
8. Set the external static pressure of the suction duct at 0.6" Wg or less.

FTQ30PBVJU



Notes:
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2. Fan Characteristics (Graph 1) show a fan characteristic at the time of ***maximum ESP***, ***rating ESP***, or ***minimum ESP***.
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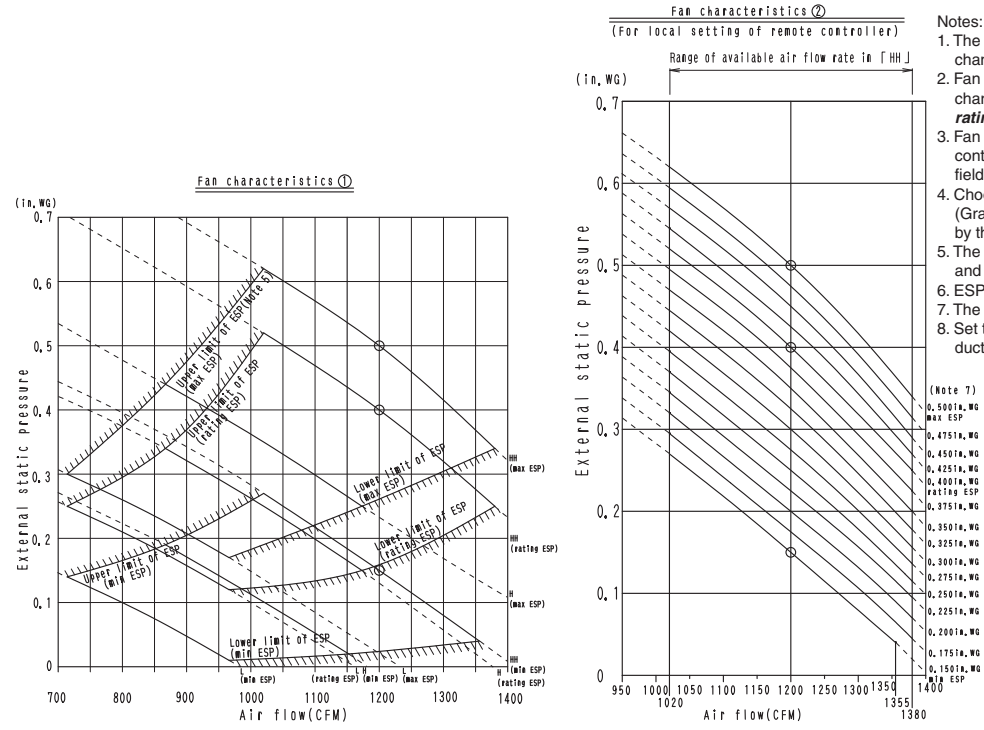
4. Choose ESP setting by using Fan Characteristics (Graph 1) and Fan Characteristics (Graph 2) by the resistance of a connected duct.
5. The remote controller can be used to change **HH**, **H**, and **L**.
6. ESP: external static pressure.
7. The value in Graph 2 shows ESP in rating airflow.
8. Set the external static pressure of the suction duct at 0.6" Wg or less.

FTQ36PBVJU



Notes:
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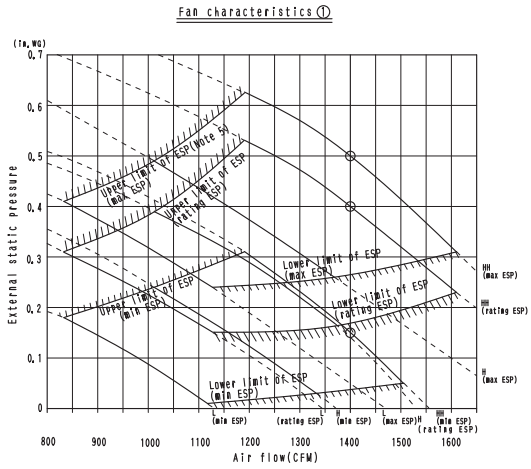
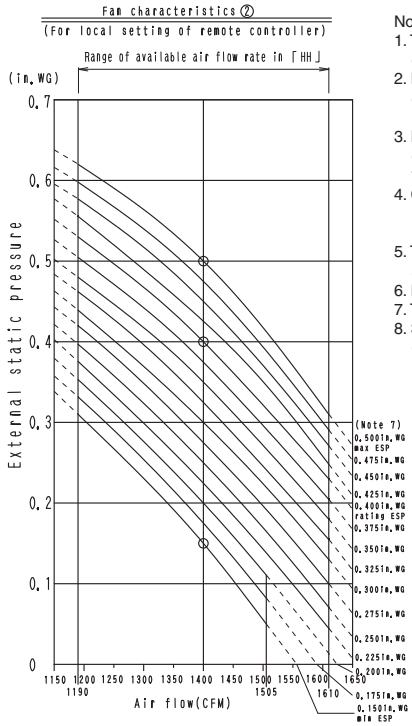
4. Choose ESP setting by using Fan Characteristics (Graph 1) and Fan Characteristics (Graph 2) by the resistance of a connected duct.
5. The remote controller can be used to change **HH**, **H**, and **L**.
6. ESP: external static pressure.
7. The value in Graph 2 shows ESP in rating airflow.
8. Set the external static pressure of the suction duct at 0.6" Wg or less.

FTQ42PBVJU





Notes:
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6. ESP: external static pressure.
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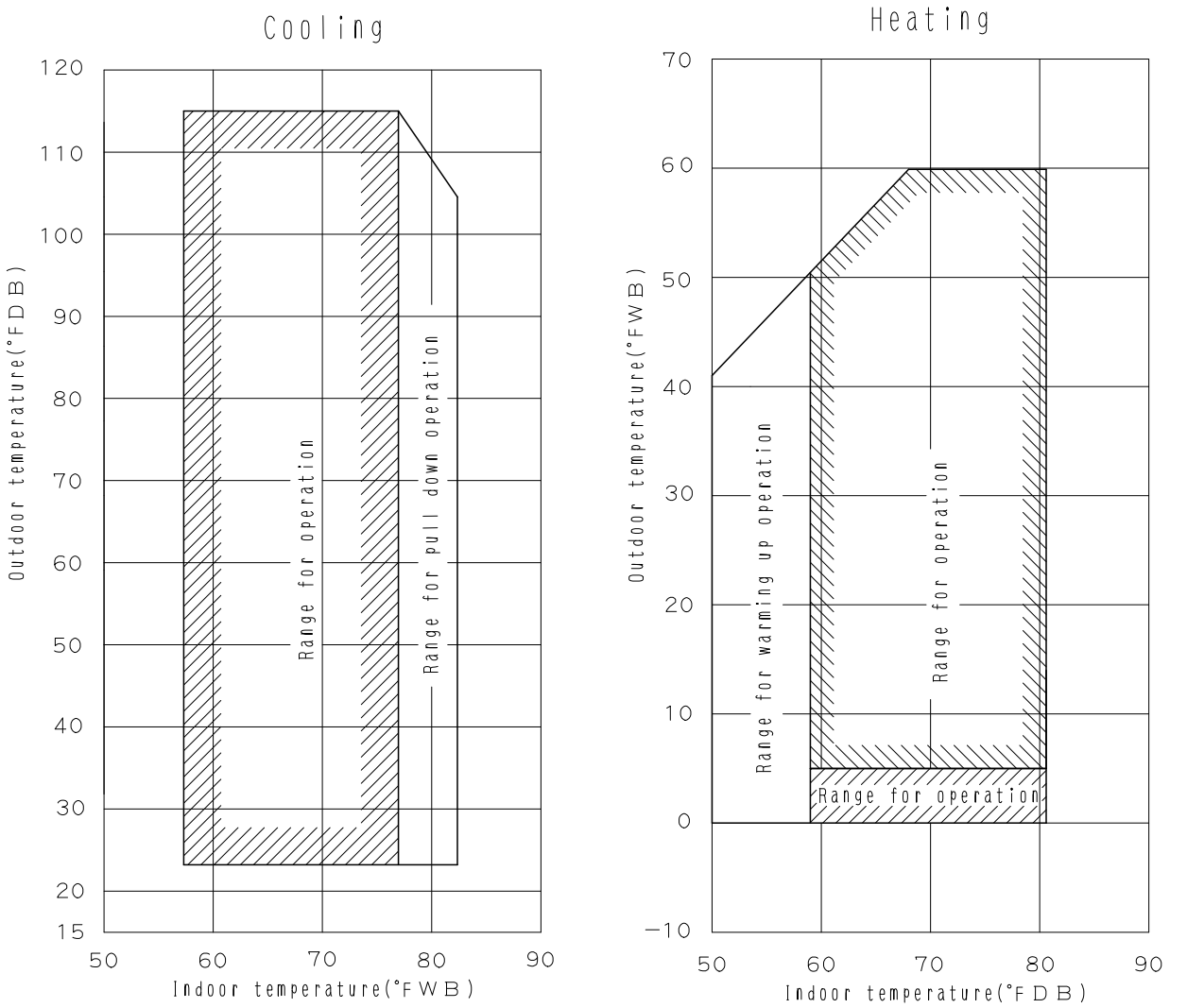
8. Set the external static pressure of the suction duct at 0.6" Wg or less.

11. Operation limits

RZQ18PVJU9 / RZQ24PVJU9



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Notes:

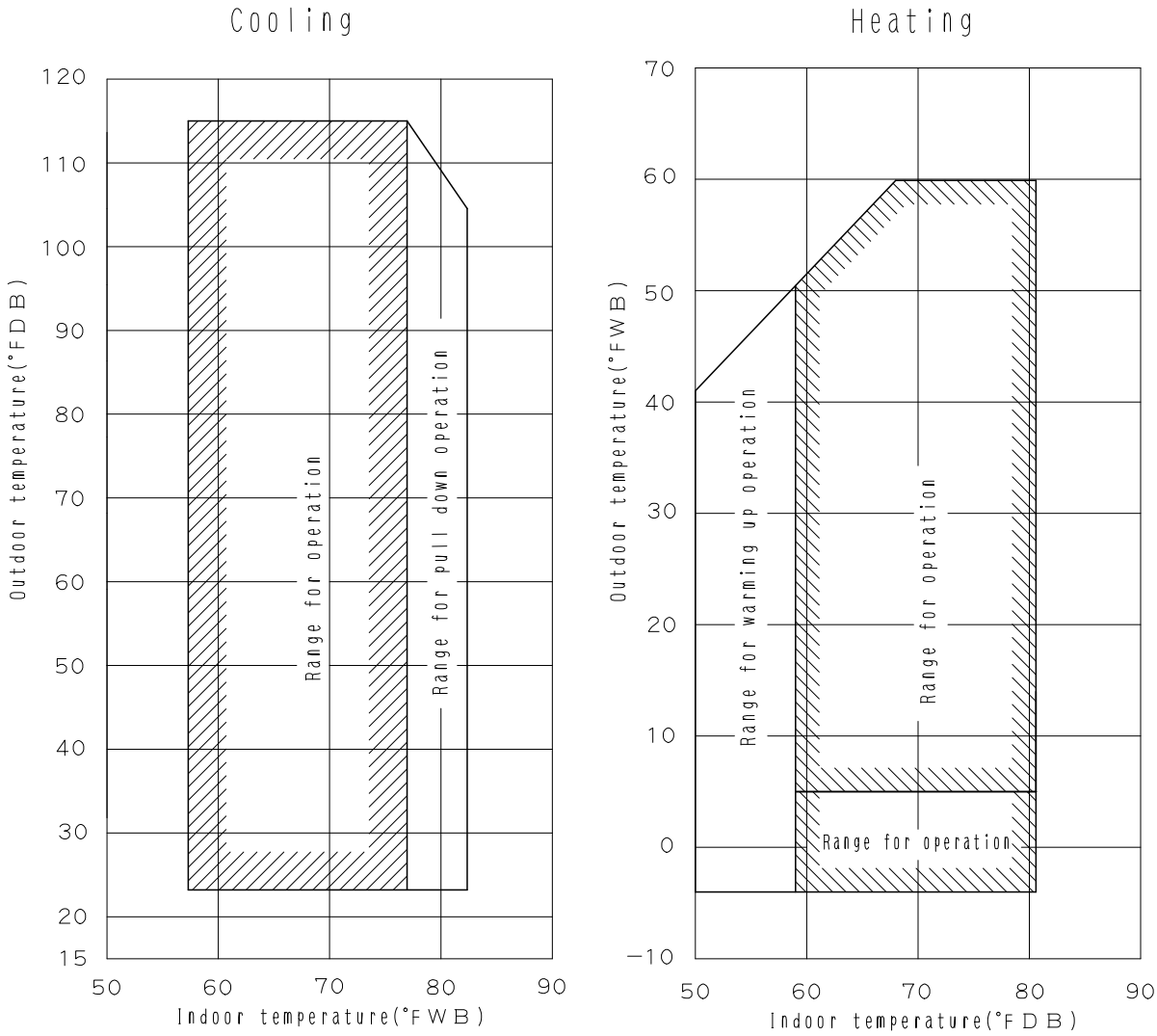
These figures assume the following operation conditions,

Indoor and outdoor units:

Equivalent pipe length: 25 ft.

Level difference: 0 ft.

RZQ30PVJU9 / RZQ36PVJU9 / RZQ42PVJU9



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Notes:

These figures assume the following operation conditions,

Indoor and outdoor units:

Equivalent pipe length: 25 ft.

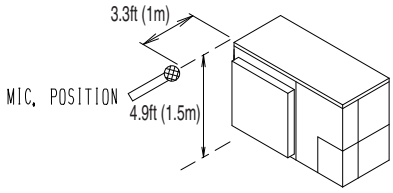
Level difference: 0 ft.

12. Sound levels (Reference)

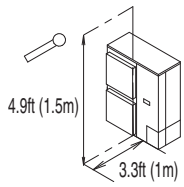
12.1 Outdoor unit

12.1.1 Overall

Location of microphone
RZQ18PVJU9 / RZQ24PVJU9



Location of microphone
RZQ30PVJU9 / RZQ36PVJU9 / RZQ42PVJU9



dB(A)

Model (Heat pump)	208/230V, 60Hz
RZQ18PVJU9	49
RZQ24PVJU9	49
RZQ30PVJU9	58
RZQ36PVJU9	58
RZQ42PVJU9	58

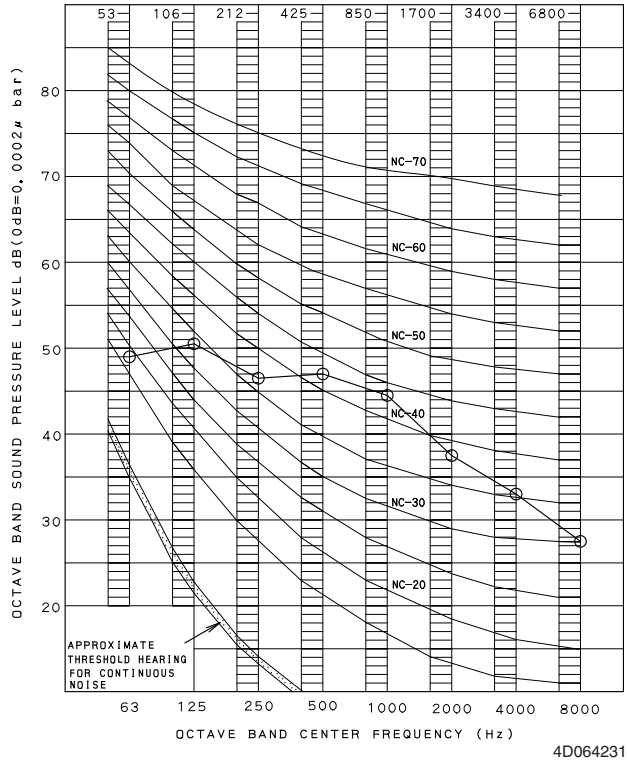
Notes:

1. The operation conditions are assumed to be standard (JIS conditions). Power source 208/230V, 60Hz.
2. The operation values were obtained in an anechoic chamber (conversion values).
3. Sound levels will vary depending on a range of factors such as the construction (acoustic absorption coefficient) of the particular room in which the equipment is installed.

12.1.2 Octave Band Level

○——○ 208/230V, 60Hz

RZQ18PVJU9 / RZQ24PVJU9



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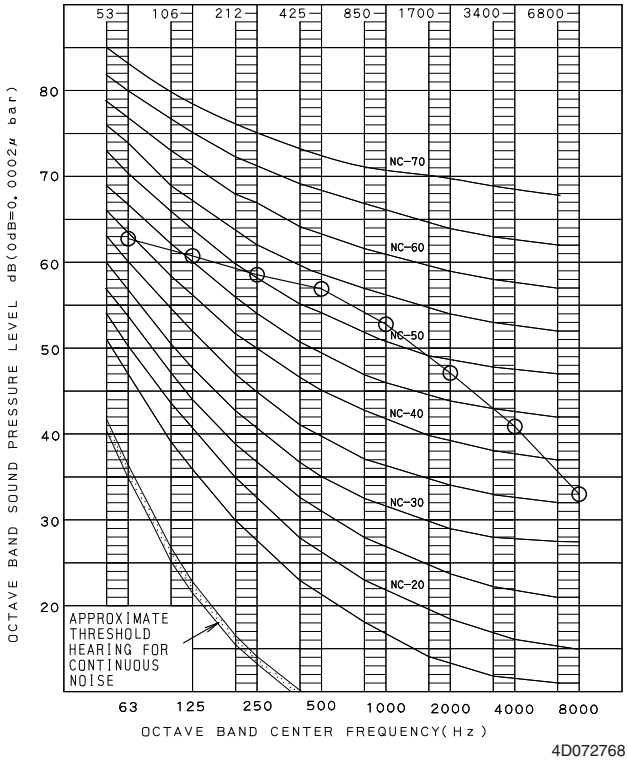
RZQ30PVJU9 / RZQ36PVJU9



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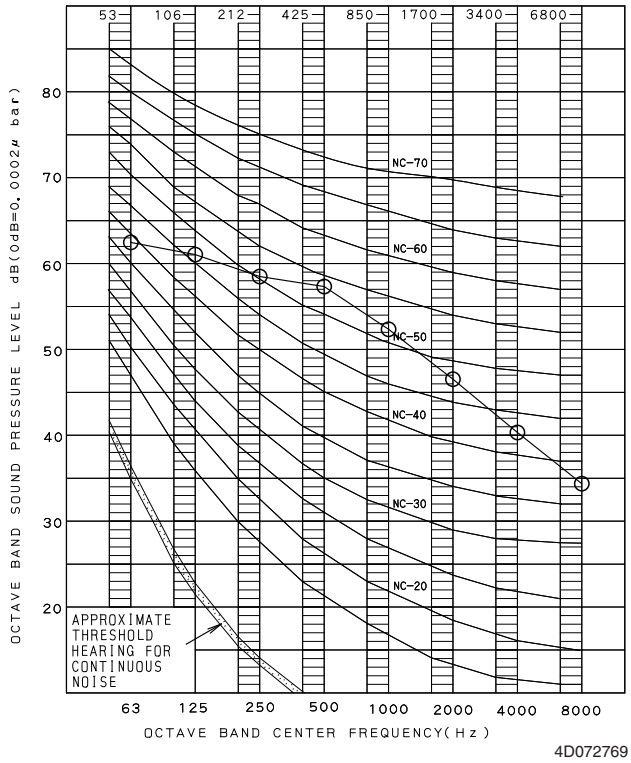
RZQ42PVJU9



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13. Accessories

13.1 Indoor unit

13.1.1 FTQ

Optional accessories (For unit)

Model name	Electric heater capacity					
	HKR-03	HKR-05C	HKR-06	HKR-08C	HKR-10C	HKR-15C
FTQ18PBVJU	◎	○	○	×	×	×
FTQ24PBVJU	◎	○	○	○	○	×
FTQ30PBVJU	◎	◎	○	○	○	×
FTQ36PBVJU	◎	◎	○	○	○	×
FTQ42PBVJU	◎	◎	◎	◎	○	○ (Note 1)

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◎: Electric heater operation with heat pump is allowed.
○: Only electric heater operation is allowed.
×: Not allowed.
Note: 1. Acceptable for 2-step control.

Optional accessories (For controls)

No.	Item	Model				
		FTQ18PBVJU	FTQ24PBVJU	FTQ30PBVJU	FTQ36PBVJU	FTQ42PBVJU
1	Wired remote controller	BRC1E71				
2	Simplified remote controller	BRC2A71 (Note 1)				
3	Remote sensor	KRCS01-4B				
4	Group control adaptor	★ KRP4A74				
5	Installation box for adaptor PCB.	KRP1B101 (Note 2)				
6	Central remote controller	DCS302C71				
6-1	Electrical box with ground terminal (3 blocks)	KJB311AA				
7	Unified ON/OFF controller	DCS301C71				
7-1	Electrical box with ground terminal (2 blocks)	KJB212AA				
8	External control adaptor for outdoor unit (Must be installed on indoor units)	★ DTA104A53				
9	Wiring adaptor PCB.	★ KRP1C75				
10	Setback time clock	BRC15A71				
11	DIII-net expander adaptor	DTA109A51				
12	Electric heater connection kit	KER26A60				

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Notes:
1. When using the remote controller not to have temperature sensor in it as simplified remote controller: BRC2A71, the remote sensor: KRCS01-4B must be needed.
   In the case that the temperature sensor in remote controller can not sense the accuracy temperature of the room, the remote sensor: KRCS01-4B installation is also recommended.
2. Installation box (No. 5) is necessary for each adaptor marked ★.

13.2 Outdoor unit

13.2.1 RZQ

Optional accessories (For unit)

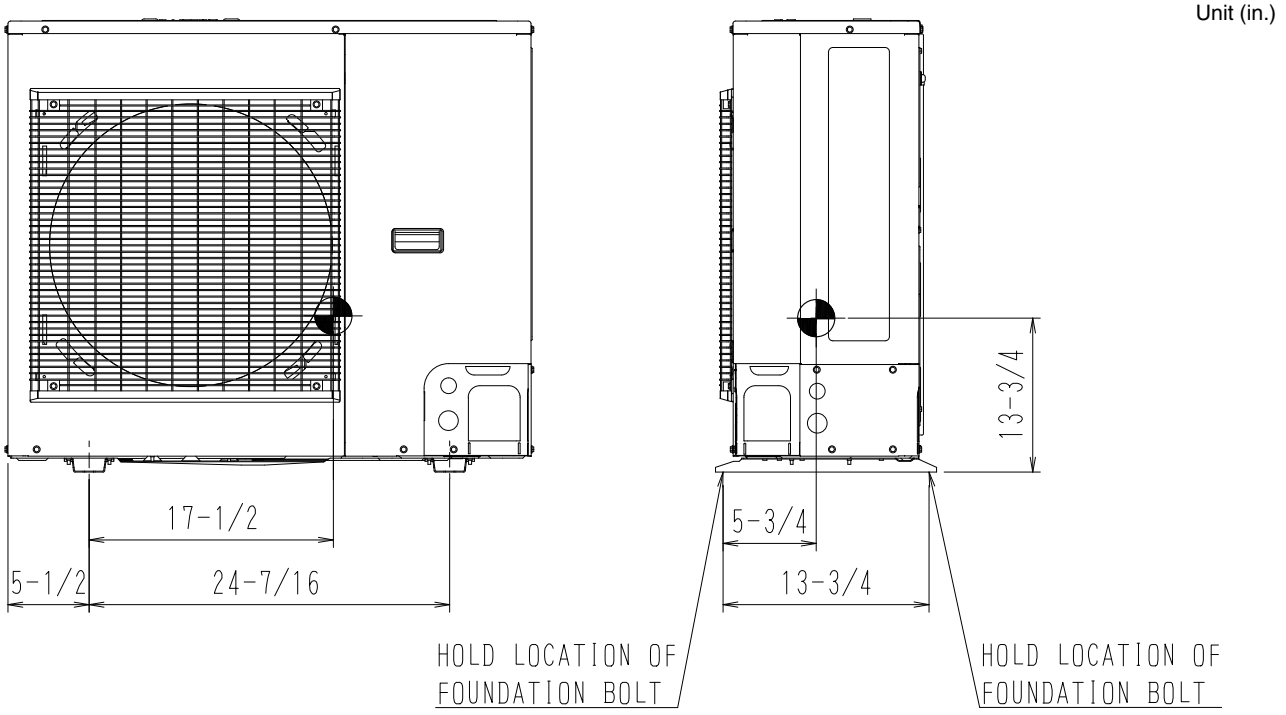
Item	Model				
	RZQ18PVJU9	RZQ24PVJU9	RZQ30PVJU9	RZQ36PVJU9	RZQ42PVJU9
Central drain plug	KKPJ5F180				
Fixture for preventing overturning	KPT-60B160				
Wire fixture for preventing overturning	K-KYZP15C				

14. Center of gravity

14.1 Outdoor unit

RZQ18PVJU9 / RZQ24PVJU9

Unit (in.)



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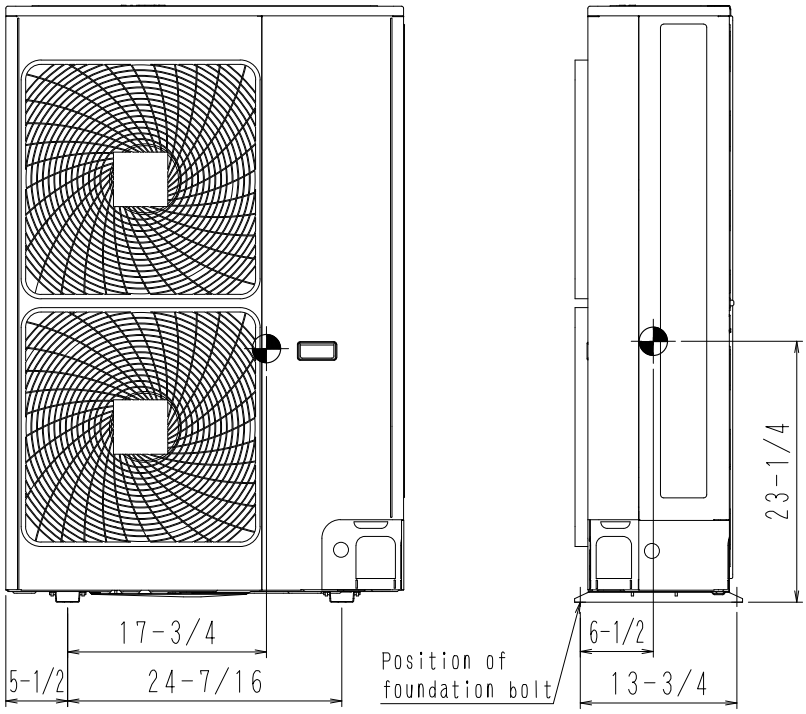
RZQ30PVJU9 / RZQ36PVJU9 / RZQ42PVJU9

Unit (in.)



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15. Installation of indoor unit

15.1 FTQ18PBVJU / FTQ24PBVJU / FTQ30PBVJU / FTQ36PBVJU / FTQ42PBVJU

DAIKIN

SPLIT SYSTEM HEAT PUMP Installation manual

CONTENTS

1. SAFETY CONSIDERATIONS

Read these "SAFETY CONSIDERATIONS for Installation" carefully before installing an air conditioner or heat pump. After completing the installation, make sure that the unit operates properly during the startup operation.
Instruct the customer on how to operate and maintain the unit. Inform customers that they should store this Installation Manual with the Operation Manual for future reference.
Always use a licensed installer or contractor to install this product. Improper installation can result in water or refrigerant leakage, electrical shock, fire, or explosion.
This air conditioner comes under the term "appliances not accessible to the general public".
Meanings of **DANGER**, **WARNING**, **CAUTION**, and **NOTE** Symbols:

⚠ **DANGER** ..... Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ **WARNING** ..... Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ **CAUTION** ..... Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

⚠ **NOTE** ..... Indicates situations that may result in equipment or property-damage accidents only.

⚠ DANGER

- **Refrigerant gas is heavier than air and replaces oxygen. A massive leak can lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.**
- **Do not ground units to water pipes, gas pipes, telephone wires, or lightning rods as incomplete grounding can cause a severe shock hazard resulting in severe injury or death. Additionally, grounding to gas pipes could cause a gas leak and potential explosion causing severe injury or death.**
- **If refrigerant gas leaks during installation, ventilate the area immediately. Refrigerant gas may produce toxic gas if it comes in contact with fire. Exposure to this gas could cause severe injury or death.**
- **After completing the installation work, check that the refrigerant gas does not leak throughout the system.**
- **Do not install unit in an area where flammable materials are present due to risk of explosions that can cause serious injury or death.**
- **Safely dispose all packing and transportation materials in accordance with federal/state/local laws or ordinances. Packing materials such as nails and other metal or wood parts, including plastic packing materials used for transportation may cause injuries or death by suffocation.**

⚠ WARNING

- **All phases of the field-installation, including, but not limited to, electrical, piping, safety, etc. must be in accordance with manufacturer's instructions and must comply with national, state, provincial and local codes.**
- **Only qualified personnel must carry out the installation work. Installation must be done in accordance with this installation manual. Improper installation may result in water leakage, electric shock, or fire.**
- **When installing the unit in a small room, take measures to keep the refrigerant concentration from exceeding allowable safety limits. Excessive refrigerant leaks, in the event of an accident in a closed ambient space, can lead to oxygen deficiency.**
- **Use only specified accessories and parts for installation work. Failure to use specified parts may result in water leakage, electric shocks, fire, or the unit falling.**
- **Install the air conditioner or heat pump on a foundation strong enough that it can withstand the weight of the unit. A foundation of insufficient strength may result in the unit falling and causing injuries.**
- **Take into account strong winds, typhoons, or earthquakes when installing. Improper installation may result in the unit falling and causing accidents.**
- **Make sure that a separate power supply circuit is provided for this unit and that all electrical work is carried out by qualified personnel according to local, state, and national regulations. An insufficient power supply capacity or improper electrical construction may lead to electric shocks or fire.**

- Make sure that all wiring is secured, that specified wires are used, and that no external forces act on the terminal connections or wires. Improper connections or installation may result in fire.
- When wiring, position the wires so that the control box cover can be securely fastened. Improper positioning of the control box cover may result in electric shocks, fire, or the terminals overheating.
- Before touching electrical parts, turn off the unit.
- It is recommended to install a ground fault circuit interrupter if one is not already available. This helps prevent electrical shocks or fire.
- Securely fasten the outdoor unit terminal cover (panel). If the terminal cover/panel is not installed properly, dust or water may enter the outdoor unit causing fire or electric shock.
- When installing or relocating the system, keep the refrigerant circuit free from substances other than the specified refrigerant (R410A) such as air. Any presence of air or other foreign substance in the refrigerant circuit can cause an abnormal pressure rise or rupture, resulting in injury.
- Do not change the setting of the protection devices. If the pressure switch, thermal switch, or other protection device is shorted and operated forcibly, or parts other than those specified by Daikin are used, fire or explosion may occur.
- Heat exchanger fins are sharp enough to cut.
  To avoid injury wear glove or cover the fins when working around them.

⚠ CAUTION

- Do not touch the switch with wet fingers. Touching a switch with wet fingers can cause electric shock.
- Do not allow children to play on or around the unit to prevent injury.
- Do not touch the refrigerant pipes during and immediately after operation as the refrigerant pipes may be hot or cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigerant cycle parts. Your hands may suffer burns or frostbite if you touch the refrigerant pipes. To avoid injury, give the pipes time to return to normal temperature or, if you must touch them, be sure to wear proper gloves.
- Install drain piping to proper drainage. Improper drain piping may result in water leakage and property damage.
- Insulate piping to prevent condensation.
- Be careful when transporting the product.
- Do not turn off the power immediately after stopping operation. Always wait for at least 5 minutes before turning off the power. Otherwise, water leakage may occur.

- Do not touch the refrigerant pipes during and immediately after operation as the refrigerant pipes may be hot or cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigerant cycle parts. Your hands may suffer burns or frostbite if you touch the refrigerant pipes. To avoid injury, give the pipes time to return to normal temperature or, if you must touch them, be sure to wear proper gloves.
- Do not use a charging cylinder. Using a charging cylinder may cause the refrigerant to deteriorate.
- Refrigerant R410A in the system must be kept clean, dry, and tight.
  (a) Clean and Dry -- Foreign materials (including mineral oils such as SUNISO oil or moisture) should be prevented from getting into the system.
  (b) Tight -- R410A does not contain any chlorine, does not destroy the ozone layer, and does not reduce the earth's protection again harmful ultraviolet radiation. R410A can contribute to the greenhouse effect if it is released. Therefore take proper measures to check for the tightness of the refrigerant piping installation. Read the chapter Refrigerant Piping work and follow the procedures.
- Since R410A is a blend, the required additional refrigerant must be charged in its liquid state. If the refrigerant is charged in a state of gas, its composition can change and the system will not work properly.
- The indoor unit is for R410A. See the catalog for indoor models that can be connected. Normal operation is not possible when connected to other units.
- Remote controller transmitting distance can be shorter than expected in rooms with electronic fluorescent lamps (inverter or rapid start types). Install the indoor unit far away from fluorescent lamps as much as possible.
- Install in a machine room that is free of moisture.
  The unit is designed for indoor use.
- Indoor units are for indoor installation only. Outdoor units can be installed either outdoors or indoors. This unit is for indoor use.
- Do not install the air conditioner or heat pump in the following locations:
  (a) Where a mineral oil mist or oil spray or vapor is produced, for example, in a kitchen.
  Plastic parts may deteriorate and fall off or result in water leakage.
  (b) Where corrosive gas, such as sulfurous acid gas, is produced.
  Corroding copper pipes or soldered parts may result in refrigerant leakage.
  (c) Near machinery emitting electromagnetic waves. Electromagnetic waves may disturb the operation of the control system and cause the unit to malfunction.
  (d) Where flammable gas may leak, where there is carbon fiber, or ignitable dust suspension in the air, or where volatile flammables such as thinner or gasoline are handled. Operating the unit in such conditions can cause a fire.

- **Take adequate measures to prevent the outdoor unit from being used as a shelter by small animals. Small animals making contact with electrical parts can cause malfunctions, smoke, or fire. Instruct the customer to keep the area around the unit clean.**

⚠ NOTE

- **Install the power supply and control wires for the indoor and outdoor units at least 3.5 feet away from televisions or radios to prevent image interference or noise. Depending on the radio waves, a distance of 3.5 feet may not be sufficient to eliminate the noise.**
- **In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.**
- **Dismantling the unit, treatment of the refrigerant, oil and additional parts must be done in accordance with the relevant local, state, and national regulations.**
- **Do not use the following tools that are used with conventional refrigerants: gauge manifold, charge hose, gas leak detector, reverse flow check valve, refrigerant charge base, vacuum gauge, or refrigerant recovery equipment.**
- **If the conventional refrigerant and refrigerator oil are mixed in R410A, the refrigerant may deteriorate.**
- **This air conditioner or heat pump is an appliance that should not be accessible to the general public.**
- **As design pressure is 478 psi, the wall thickness of field-installed pipes should be selected in accordance with the relevant local, state, and national regulations.**

2. BEFORE INSTALLATION

⚠ WARNING

- Entrust installation to the place of purchase or a qualified serviceman. Improper installation could lead to leaks and, in worse cases, electric shock or fire.
- Use of unspecified parts could lead to the unit falling, leaks and, in worse cases, electric shock or fire.

⚠ NOTE

- Be sure to read this manual before installing the indoor unit.
- Be sure to mount an air filter (part to be procured in the field) in the suction air passage in order to prevent water leaking, etc.

The accessories needed for installation must be retained in your custody until the installation work is completed. Do not discard them.

1. Decide upon a line of transport.
2. Leave the unit inside its packaging while moving, until reaching the installation site. Where unpacking is unavoidable, use a sling of soft material or protective plates together with a rope when lifting, to avoid damage or scratches to the unit.

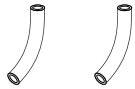
Be sure to check the type of R410A refrigerant to be used before installing the unit.
(Using an incorrect refrigerant will prevent normal operation of the unit.)
For the installation of an outdoor unit, refer to the installation manual attached to the outdoor unit.

2-1 PRECAUTIONS

- Be sure to instruct customers how to properly operate the unit (operating different functions, and adjusting the temperature) by having them carry out operations themselves while looking at the operation manual.
- Do not install in locations where the air contains high levels of salt such as that near the ocean and where voltage fluctuates greatly such as that in factories, or in vehicles or vessels.

2-2 ACCESSORIES

Check the following accessories are included with your unit.

Name	Clamp material (1)	Insulation tube	Metal clamp (4)	Drain hose (5)
Quantity	6 pcs.	1 set	1 pc.	1 pc.
Shape		 Small (2) 1 pc. Large (3) 1 pc.		

Name	Insulation for fitting	Sealing pad	
Quantity	1 each	–	
Shape	 for liquid pipe (6)  for gas pipe (7)	 1 pc. Large (9)  2 pcs. Small (8)	(Other) • Operation manual • Installation manual • Note sheet

2-3 OPTIONAL ACCESSORIES

- This indoor unit requires one of the operation remote controls listed below.

Remote controller	
Wired type	BRC1E71

NOTE

- If you wish to use a remote controller that is not listed in Table 1, select a suitable remote controller after consulting catalogs and engineering data.

FOR THE FOLLOWING ITEMS, TAKE SPECIAL CARE DURING CONSTRUCTION AND CHECK AFTER INSTALLATION IS FINISHED.

a. Items to be checked after completion of work

Items to be checked	If not properly done, what is likely to occur.	Check
Are the indoor and outdoor unit fixed firmly?	The units may drop, vibrate or make noise.	
Was the installation of the outdoor unit completed?	The unit may malfunction or the components burn out.	
Is the gas leak test finished?	No cooling or heating.	
Is the unit fully insulated? (Refrigerant piping, drain piping, and duct)	Condensate water may drip.	
Dose drainage flow smoothly?	Condensate water may drip.	
Does the power supply voltage conform to the indication on the name plate?	The unit may malfunction or the components burn out.	
Are wiring and piping correct?	The unit may malfunction or the components burn out.	
Is the air conditioner or heat pump properly grounded?	Dangerous in case of current leakage.	
Is wiring size according to specifications?	The unit may malfunction or the components burn out.	
Is something blocking the air outlet or inlet of either the indoor or outdoor units?	No cooling or heating.	
Did you set the external static pressure?	No cooling or heating.	
Are refrigerant piping length and additional refrigerant charge noted down?	The refrigerant charge in the system is not clear.	
Did you check that no wiring connection screws were loose?	Electric shock or fire.	

Also review the “SAFETY CONSIDERATIONS”.

b. Items to be checked at the time of delivery

Items to be checked	Check
Are you sure the control box lid, air filter, air inlet grille, and air outlet grille are mounted?	
Did you explain about operations while showing the operation manual to your customer?	
Did you deliver the operation manual along with the installation manual to the customer?	
Did you explain the customer the handling and cleaning methods of the field supplies (e.g., the air filter, air inlet grilles, and air outlet grille)?	
Did you deliver instruction manual, if any, for the field supplies to the customer?	

c. Points for explanation about operations

The items with ⚠ WARNING and ⚠ CAUTION marks in the operation manual are the items pertaining to possibilities for bodily injury and material damage in addition to the general usage of the product. Accordingly, it is necessary that you make a full explanation about the described contents and also ask your customers to read the operation manual.

3. SELECTING INSTALLATION SITE

⚠ CAUTION

- If you think the humidity inside the installation space might exceed 86°F and RH80%, reinforce the insulation on the unit body.
  Use glass wool or polyethylene foam as insulation so that the thickness is more than 2 in. and fits inside the installation space opening.

(1) Select an installation site where the following conditions are fulfilled and that meets with your customer’s approval.

- Where optimum air distribution can be ensured.
- Where nothing blocks air passage.
- Where condensate can be properly drained.
- Where the supports are strong enough to bear the indoor unit weight.
- Where the false ceiling is not noticeably on an incline.
- Where sufficient clearance for maintenance and service can be ensured. **(Refer to Fig. 1-1 and Fig. 1-2)**
- Where piping between indoor and outdoor units is possible within the allowable limit. (Refer to the installation manual for the outdoor unit.)
- If the a return-air duct is not installed, carefully select the place and method of product installation so that air flow into the product will not be blocked.

If installed vertically

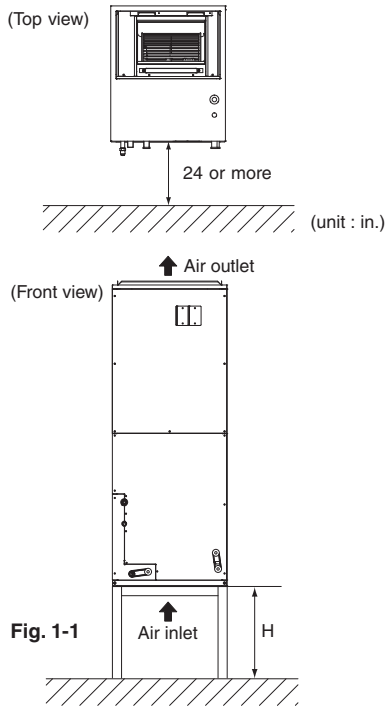


Fig. 1-1

If installed horizontally

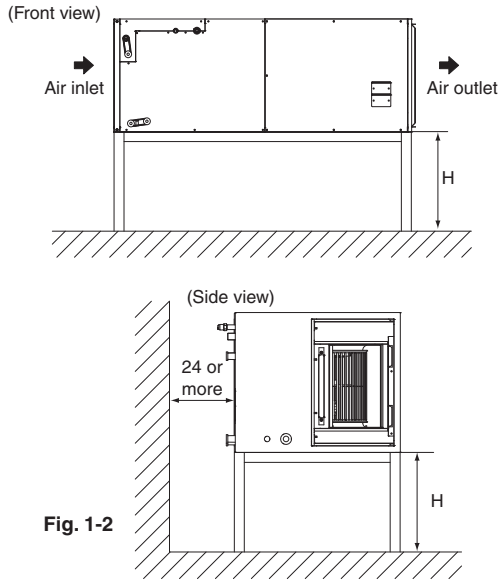


Fig. 1-2

⚠ WARNING

- When installing the unit horizontally, be sure to tilt the unit in the direction shown in Fig. 1-2. If the unit is tilted in any other way, water can leak.

- Ensure sufficient space for the bottom of the product (H dimensions) so that a downward slope of 1/100 can be maintained for drain piping, as described for the intake duct installation and in "**6. DRAIN PIPING WORK**".

[PRECAUTION]

- Install the indoor and outdoor units, power supply wiring and connecting wires at least 3.5 ft. away from televisions or radios in order to prevent image interference or noise. (Depending on the radio waves, a distance of 3.3 ft. may not be sufficient to eliminate the noise.)
- If installing the wireless kit in a room with electronic fluorescent lighting (inverter or rapid start type), the remote controller's transmission distance may be shortened. Indoor units should be installed as far away from fluorescent lighting as possible.

⚠ DANGER

- Do not install unit in an area where flammable materials are present due to the risk of an explosion resulting in serious injury or death.

⚠ WARNING

- If the supporting structural members are not strong enough to take the unit's weight, the unit could fall out of place and cause serious injury.

4. PREPARATIONS BEFORE INSTALLATION AND INSTALLATION

(1) When installing the product, refer to "3. SELECTING INSTALLATION SITE" and consider the product size as shown Fig. 2 and Table 1.

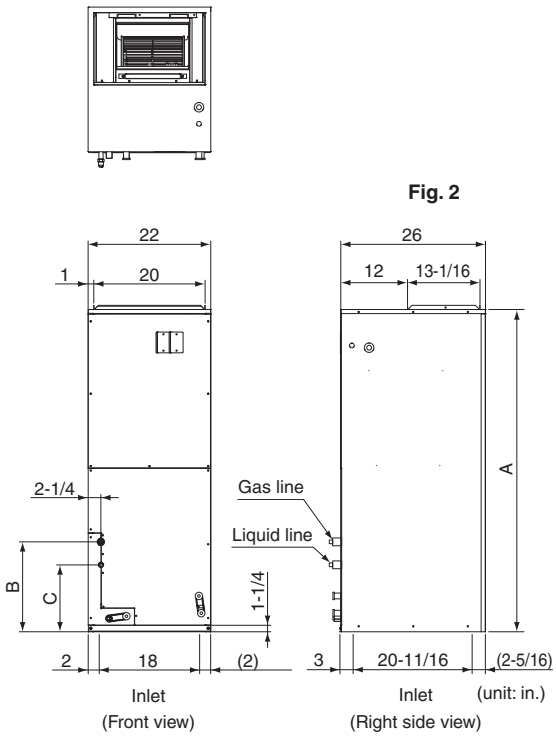


Fig. 2

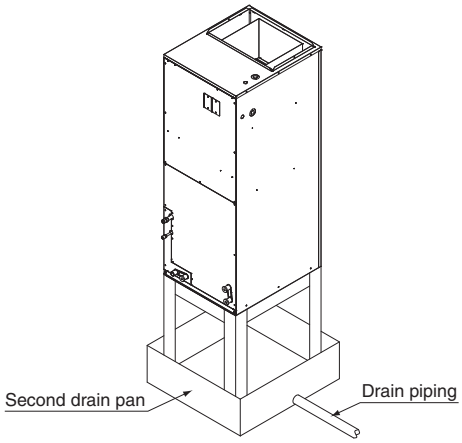
Table 1

	A	B	C
FTQ30 - 42	58-1/4	16-1/4	12-1/16
FTQ18 - 24	48-1/8	13-3/16	9-1/16

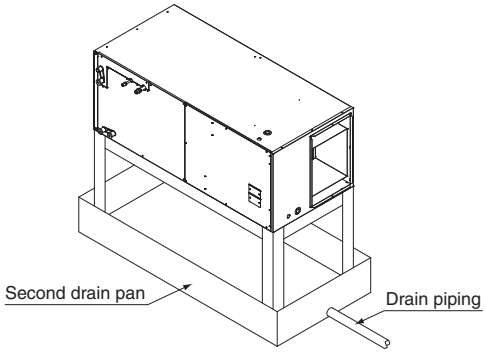
(2) Make sure the range of the unit's external static pressure is not exceeded. (up to 0.5 in.W.C. at "HH" speed.)

(3) Condensation may form on the product during COOL operation. Be sure to provide (field supplied) and install a second drain pan.

If installed vertically



If installed horizontally

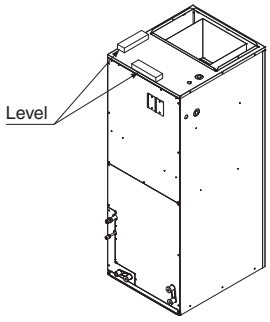


(4) Check if the unit is horizontally level.

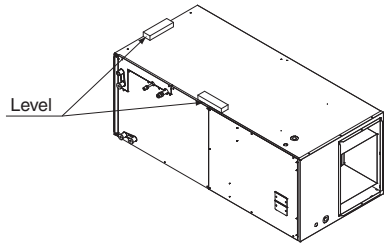
⚠ CAUTION

- Make sure the unit is installed level using a level: four sides. (One thing to watch out for in particular is if the unit is installed so that the slope is not in the direction of the drain piping, this might cause leaking.)

If installed vertically



If installed horizontally



(5) Secure the unit firmly to prevent it from falling.

5. REFRIGERANT PIPING WORK

〈Observe the requirements listed below for refrigerant piping sizes.〉

Liquid	Gas
3/8 in.	5/8 in.

〈Execute heat insulation work completely on both sides of the gas piping and the liquid piping or else a water leakage might result.
Failing to insulate the pipes may cause leaking or burns. And be sure to use the insulation which can withstand such temperatures of 248°F or more for the gas piping. Reinforce the insulation on the refrigerant piping according to the installation environment. If the temperature or humidity in the product installation location might reach 86°F or 80%, respectively. Condensation may form on the surface of the insulation.〉

⚠ CAUTION

Follow the points at below.

- Use a tube cutter and flare suitable for the type of refrigerant.
- To prevent dust, moisture or other foreign matter from infiltrating the piping, either pinch the end or cover it with tape.
- Do not allow anything other than the designated refrigerant to get mixed into the refrigerant circuit, such as air. If any refrigerant gas leaks while working on the unit, immediately ventilate the room.

(1) Connect the piping.

- The outdoor unit is filled with refrigerant.
- When connecting or disconnecting piping to or from the unit, **be sure to use two spanners and two torque wrenches. (Refer to Fig. 3)**

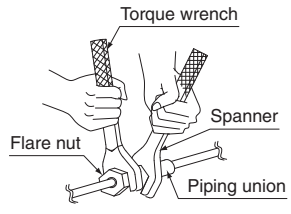


Fig. 3

- Refer to Table 2 for the processing dimensions of the flare.
- Use the flare nut provided with the unit.
- **Apply ether oil or ester oil only to inner side of the flare** and screw in the flare nut three to four turns first by hand at the time of connecting the flare nut. **(Refer to Fig. 4)**

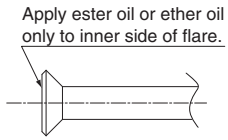
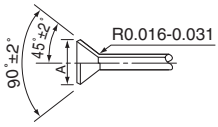


Fig. 4

- Refer to Table 2 for the corresponding tightening torque.

Table 2

Pipe size	Tightening torque	Flare dimensions A (in.)	Flare shape
ϕ 3/8	26.7 ±2.6 lbf·ft	0.504 – 0.520	
ϕ 5/8	50.6 ±5.0 lbf·ft	0.760 – 0.776	

⚠ CAUTION

- **Do not excessively tighten the flare nut.** Doing so will break the flare nut and refrigerant leakage may result.
- **Make sure that all parts around the flare are free of oil.** The drain pan and the resin part may be deteriorated if oil is attached.

- If no torque wrenches are available, refer to Table 3 as a standard.
  When the flare nut is tightened with the spanner, the tightening torque should increase suddenly. Tighten the flare nut further for the corresponding angle shown in Table 3.

Table 3

Pipe size	Further tightening angle	Recommended arm length of tool
ϕ 3/8	60 to 90 degrees	Approx. 7-7/8 in.
ϕ 5/8	30 to 60 degrees	Approx. 11-13/16 in.

(2) On completion of installation work, **check that there is no gas leakage.**

(3) Refer to the illustration on the right-hand side and be sure to perform heat insulation work on the piping joints after gas leakage checks. **(Refer to Fig. 5)**

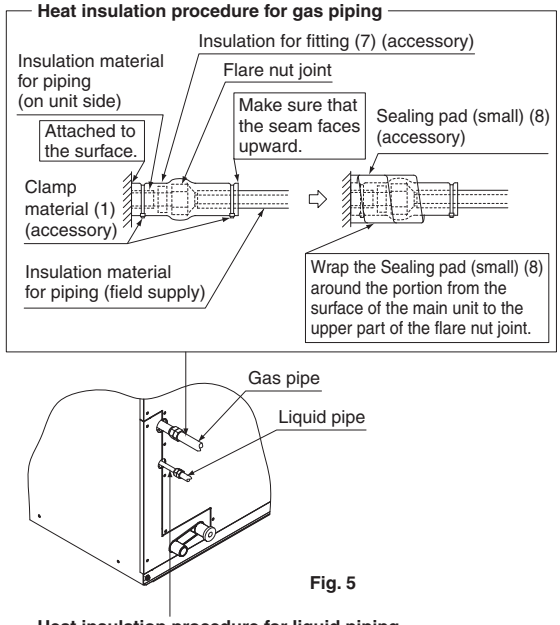


Fig. 5

- Use the Insulation for fitting (6) and (7) provided to the liquid piping and gas piping, respectively, and conduct heat insulation work.
  (Tighten both edges of the Insulation for fitting (6) and (7) for each joint with the Clamp material (1).)
- Make sure that the joint of the Insulation for fitting (6) and (7) for the joint on the liquid piping and gas piping side faces upward.
- Wrap the Sealing pad (small) (8) around the Insulation for fitting (6) and (7) for the joint (flare nut part).

⚠ CAUTION

- Be sure to insulate any field piping all the way to the piping connection inside the unit. Any exposed piping may cause condensation or burns if touched.

• When brazing the refrigerant piping, perform nitrogen replacement first, or perform the brazing while feeding nitrogen into the refrigerant piping. **(Refer to Fig. 6)**

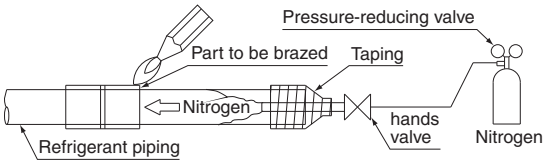


Fig. 6

⚠ CAUTION

• When brazing piping while feeding nitrogen inside the piping, make sure to set the nitrogen pressure to 2.9 psi or less using the pressure reducing valve.
(This pressure is such that a breeze is blown to your cheek.)

⚠ DANGER

• Use of oxygen could result in an explosion resulting in serious injury or death. Only use dry nitrogen gas.
• Refrigerant gas may produce toxic gas if it comes in contact with fire such as from a fan heater, stove or cooking device. Exposure to this gas could cause severe injury or death.

⚠ NOTE

• Do not use flux when brazing refrigerant piping. Therefore, use the phosphor copper brazing filler metal (BCuP) which does not require flux.
Flux has an extremely negative effect on refrigerant piping systems. For instance, if chlorine based flux is used, it will cause piping corrosion. Flux containing fluorine will damage refrigerant oil.

6. DRAIN PIPING WORK

⚠ CAUTION

• Make sure all water is out before making the duct connection.

(1) Install drain piping as described Fig. 7.

In case of vertical installation

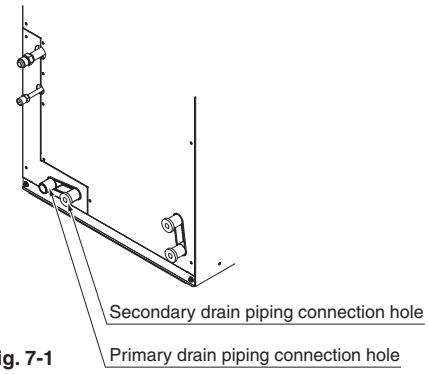


Fig. 7-1

In case of horizontal installation

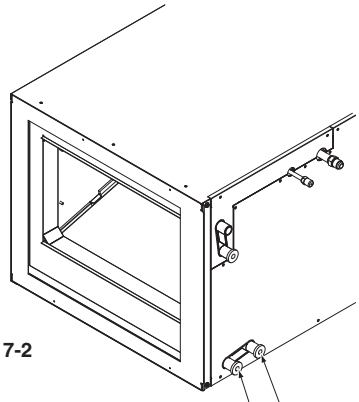
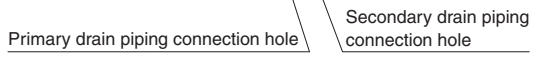


Fig. 7-2

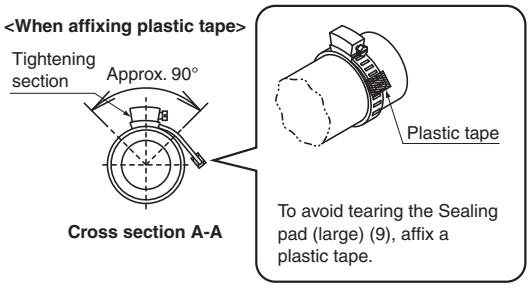


• Perform drain work so that the unit is drained thoroughly. (Be sure to insulate the following 2 locations since condensation may cause water leakage.)
• Be sure to use the included Drain hose (5) and Metal clamp (4).
Insert the Drain hose (5) up to the step on the drain socket. Within the range of the tape section at the end of the inserted hose, tighten the Metal clamp (4) to the torques of 0.99 ± 0.1 lbf·ft (11.9 ± 1.2 lbf·in).

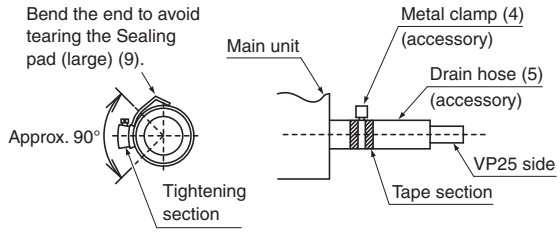
⚠ CAUTION

• Do not tighten the Metal clamp (4) to torques exceeding the specification. Otherwise, the Drain hose (5), the socket, and the Metal clamp (4) may become damaged.

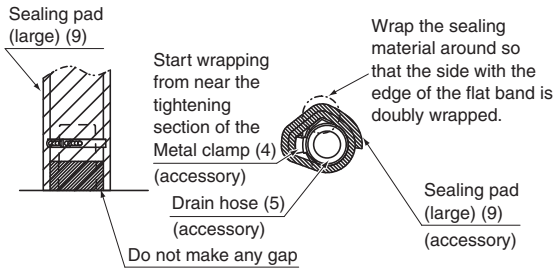
• To avoid the Sealing pad (large) (9) from tearing at the edge of the Metal clamp (4), either affix a plastic tape on the edge of the Metal clamp (4) or bend the end of the Metal clamp (4) inward as shown in the figure.



<When bending the end>

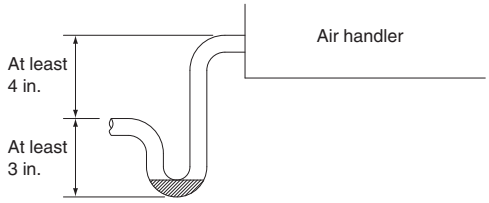


- Refer to the following figure and check the drain. Then, use the included Sealing pad (large) (9) to thermally insulate the Metal clamp (4) and the Drain hose (5).



<Drain socket thermal insulation work>

- The drain pan has connections for a primary and secondary drain.
- The diameter of the drain piping should be greater than or equal to the diameter of the connecting pipe (vinyl tube; pipe size : 25/32 in. ; outer dimension : 1-1/32 in.). (not including a riser)
- Keep piping runs short with a downward slope of at least 1/100 to prevent air pocket from forming.
- Be sure to install a drain trap at the drain outlet since the inside of the unit is at negative pressure relative to atmospheric pressure during operation.
- To keep the piping from becoming clogged with dirt, avoid bends where possible and install so that traps can be cleaned.



- Observe the following guidelines when installing concentrated drain piping. Select the thickness of the concentrated drain piping to reflect the capacity of the machine to which it will be connected.

⚠ CAUTION

- Water accumulating in the drain piping can cause the drain to clog.

〈**PRECAUTIONS**〉

Drain piping connections

- Do not connect the drain piping directly to sewage piping that smell of ammonia. The ammonia in the sewage might enter the indoor unit through the drain piping and corrode the heat exchanger.
- Do not twist or bend the drain hose, as excessive force may cause it to leak.

(2) After piping work is finished, check drainage flows smoothly.

- Gradually insert approximately 1 quart of water into the drain pan to check drainage in the manner described below.

7. INSTALLING THE DUCT

Exercise care regarding the following when performing duct work.

- Verify that duct work does not exceed the unit's setting range of external static pressure (up to 0.5 Wg at "HH" speed).
- Install canvas ducts at air outlets and inlets so that vibrations from the main unit are not transmitted to ducts or the floor. Additionally, line the duct with sound-absorbing material (heat insulation material) as necessary.
- Be sure to install an air filter to the product's air inlet or to a field-supplied air inlet inside the air passage on the suction side.
- Perform the curing and other work during duct welding so that the inside of the product is not exposed to spatter.
- If the metal duct passes through a metal lath, wire lath, or metal plate of a wooden structure, isolate the duct from the wall electrically.
- Be sure to heat-insulate the duct to prevent the formation of condensation. (Material: Glass wool or polyethylene foam; thickness: 1 inch.)
- Explain to the customer how to operate and clean field-supplied components such as air filters, air inlet grilles, air outlet grilles.
- To prevent drafts, locate the air outlet grille on the indoor side so that warm air from the outlet does not come into direct contact with room occupants.
- When an electric heater (optional) is installed, use metal duct and wrap the duct with a glass-wool insulation material.

8. ELECTRIC WIRING WORK

8-1 GENERAL INSTRUCTIONS

- Shut off the power before doing any work.
- All field supplied parts and materials, electric works must conform to local codes.
- Use copper conductors only.
- See also the "Wiring Diagram Label" located inside the unit's front cover.
- For details on hooking up the remote controller, refer to the "REMOTE CONTROLLER INSTALLATION MANUAL".
- All wiring must be performed by an authorized electrician.
- Install a wiring interrupter or ground-fault circuit interrupter for the power wiring.
- Make sure the ground resistance is no greater than 100Ω.
- To avoid short circuiting the power supply wire, be sure to use insulated terminals.
- Do not turn on the power supply (wiring interrupter or ground-fault circuit interrupter) until all other work is done.

⚠ DANGER

- Do not ground units to water piping, telephone wires or lightning rods because incomplete grounding could cause a severe shock hazard resulting in severe injury or death, nor to gas piping because a gas leak could result in an explosion which could lead to severe injury or death.

8-2 LIST OF STANDARD WIRING EQUIPMENT

Power supply wiring (including ground wire)		Transmission wiring Remote controller wiring	
Protective device	Size	Wire	Size
15A	Must comply with local codes.	2-conductor, stranded, non-shielded copper/PVC or vinyl jacket	AWG18 – 16

NOTES

1. If the wiring is in a place where people it can be easily touched by people, install a ground-fault circuit interrupter to prevent electric shock.
2. When using a ground-fault circuit interrupter, make sure to select one useful also to protection against overcurrent and short-circuit.
   When using a ground-fault circuit interrupter only for grounding device, make sure to use a wiring interrupter together.

- The length of the transmission wiring and remote controller wiring are as follows.

Length of the transmission wiring and remote controller wiring

Outdoor unit – Indoor unit	Max. 3280 ft. (Total wiring length: 6560 ft.)
Indoor unit – Remote controller	Max. 1640 ft.

8-3 ELECTRICAL CHARACTERISTICS

Units				Power supply		Fan motor	
Model	Hz	Volts	Voltage range	MCA	MOP	HP	FLA
18 type	60	208/230	Min. 187 Max. 229/ Min. 207 Max. 253	1.5	15	350	1.2
24 type				1.6			1.3
30 type				2.3			1.8
36 type				2.8			2.2
42 type				3.6		400	2.8

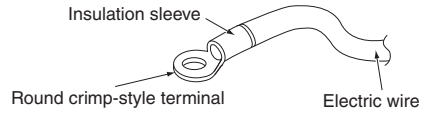
MCA: Minimum Circuit Amps (A)
MOP: Max Overcurrent Protective Device (A)
HP: Fan motor output (W)
FLA: Full Load Amps (A)

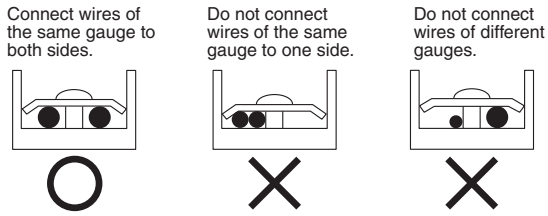
9. WIRING EXAMPLE

9-1 HOW TO CONNECT WIRINGS

〈**Precautions when laying power supply wiring**〉

- Wiring of different thicknesses cannot be connected to the power supply wiring terminal block. Slack in the power supply wiring may cause abnormal heat.
- Use sleeve-insulated round crimp-style terminals for connections to the power supply wiring terminal block. When none are available, connect wires of the same diameter to both sides, as shown in the figure.





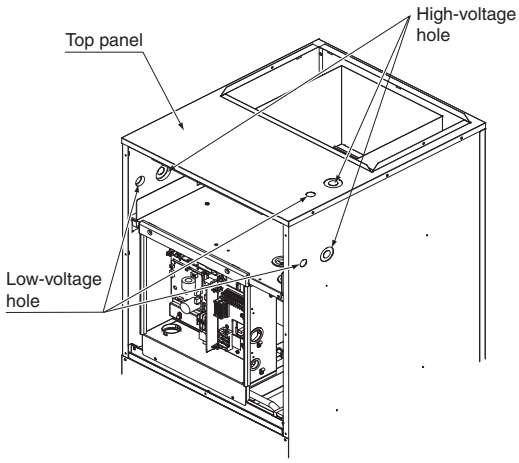
If the wiring gets too hot due to loose power-supply wiring, use the following precautions:

- For wiring, use the designated power supply wiring and connect firmly, then secure to prevent outside pressure being exerted on the terminal board.
- Use the correct screwdriver for tightening the terminal screws. If the blade of screwdriver is too small, the head of the screw might be damaged, and the screw will not be properly tightened.
- If the terminal screws are tightened too hard, screws might be damaged.
- Refer to Table 4 for the tightening torque of the terminal screws.

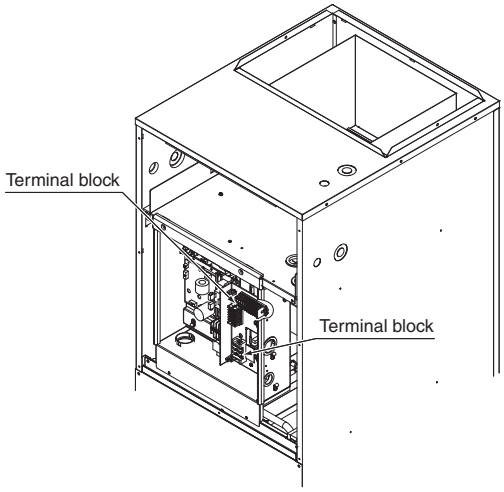
Table 4

Terminal block	Tightening torque (ft · lbf)
Remote controller / transmission wiring terminal block (6P) (10P)	0.58 – 0.72
Power supply wiring terminal block (3P)	0.87 – 1.06

(1) Remove the front panel (upper).

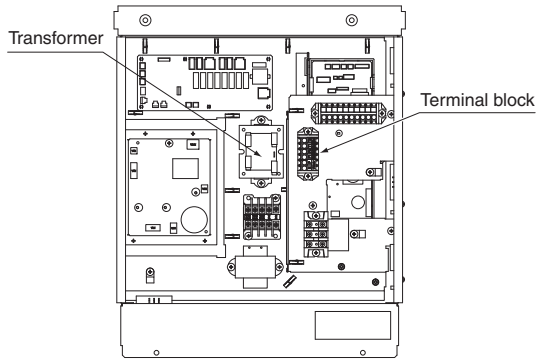


(2) Remove the electric component box cover.

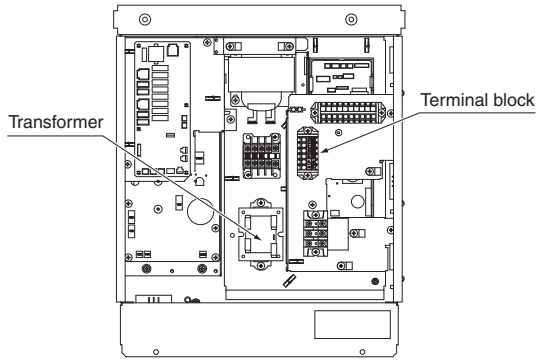


(3) Pass the power supply wiring and the ground wire through the top panel's high-voltage hole (requires use of conduit) and pass the remote controller wiring and transmission wiring through the top panel's low-voltage hole.

- Pass the included insulation tube through the hole in the panel before connecting the electric wires and the ground wire to the terminal block shown in Fig. 8.
- Pass the included insulation tube through the hole in the panel before connecting the remote controller wiring and transmission wires to the terminal block shown in Fig. 8.
- Then secure them in place with the included Clamp material (1) as shown in Fig. 8 to protect them from external force from outside the unit.
- If the power supply voltage is 208V, change the transformer wire connection from the 240V terminal to the 208V terminal. **(Refer to Fig. 9)**



<FTQ18,24,30,36PBVJU models>



<FTQ42PBVJU model>

Fig. 8

Changing the transformer wire connection

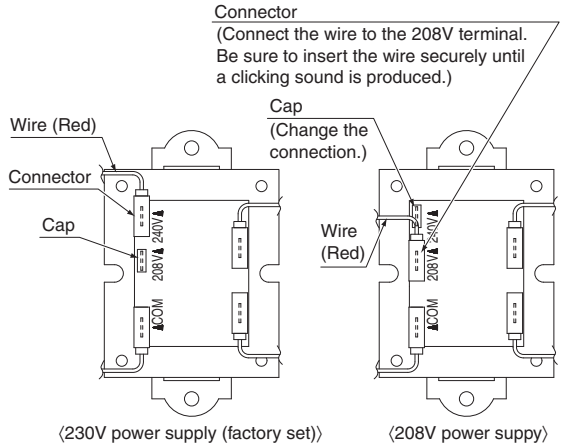
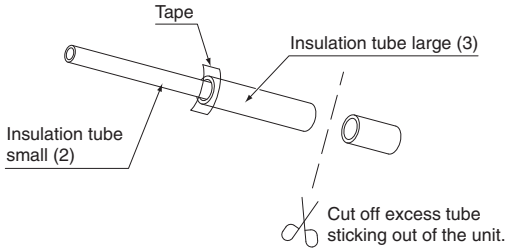


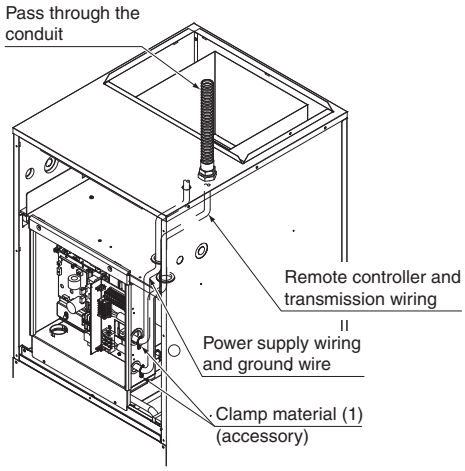
Fig. 9

How to use insulation tube.
- Use the insulation tube to cover the wiring.
- Joint the insulation tube with the tape and cut off the excess tube sticking out of the unit.



(4) Pass the power supply wiring and the ground wire through the conduit (conduit should be field supplied). The hole for running wires through should be sealed completely to prevent air from entering.

* When installing an optional electric heater kit, run both the power supply wiring and ground wire of the electric heater kit through the conduit.



(5) Install the front panel (upper).

⚠ DANGER
- Use only specified wire and connect wires to terminals tightly. Be careful that wires do not place external stress on terminals. Keep wires in neat order so as to not to obstruct other equipment. Make sure that the electric component box cover closes tightly. Incomplete connections could result in overheating, and in worse cases, electric shock or fire.

⚠ WARNING
- Never connect power supply wiring to the terminal block for remote controller wiring as this could damage the entire system.

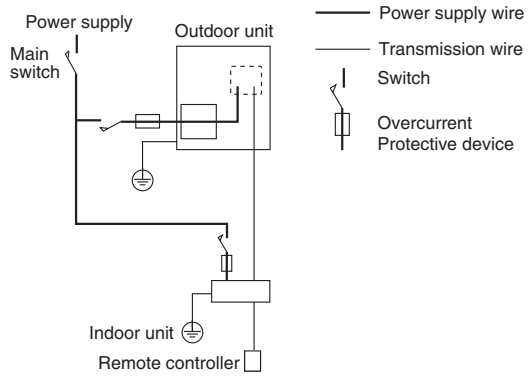
⚠ CAUTION
- When doing the wiring, make sure the wiring is neat and does not cause the electric front panel to stick up, then close the panel firmly. When attaching the front panel, make sure you do not pinch any wires.
- Outside the air conditioners, separate the low voltage wiring (remote controller and transmission wiring) and high voltage wiring (ground wire and power supply wiring) by at least 5 in. so that they do not pass through the same place together. Proximity may cause electrical interference, malfunctions, and breakage.

[PRECAUTIONS]
- Refer to the “REMOTE CONTROLLER INSTALLATION MANUAL” on how to install and lay the wiring for the remote controller.
- See also the “Wiring Diagram Label” located inside the unit’s blower deck.
- Connect the remote controller and transmission wiring their respective terminal blocks.

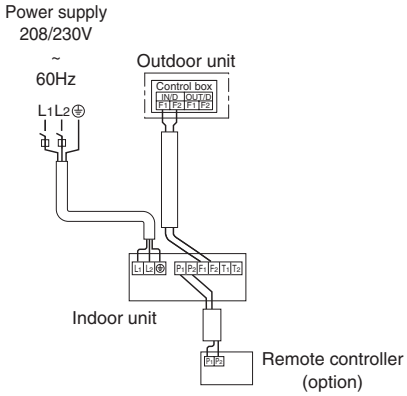
⚠ CAUTION
- Do not, under any circumstances, connect the power supply wiring to the remote controller or transmission wiring terminal block. Doing so can destroy the entire system.

[WIRING EXAMPLE]
- Fit the power supply wire of each unit with a switch and fuse as shown in the drawing.

COMPLETE SYSTEM EXAMPLE

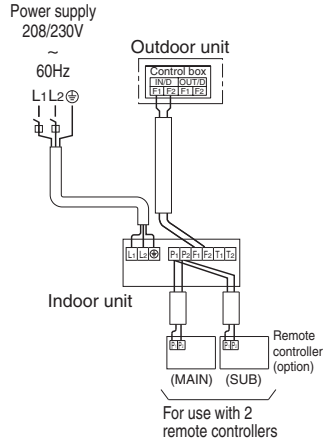


1. When using 1 remote controller for 1 indoor unit. (Normal operation)



3P250363-4C

2. When using 2 remote controllers for 1 indoor unit.



NOTE

1. A single switch can be used to supply power to units on the same system. However, branch switches and branch circuit breakers must be selected carefully.
2. Do not ground the equipment on gas piping, water piping or lightning rods, or crossground with telephones. Improper grounding could result in electric shock.

9-2 CONTROL BY 2 REMOTE CONTROLLERS (Controlling 1 indoor unit by 2 remote controllers)

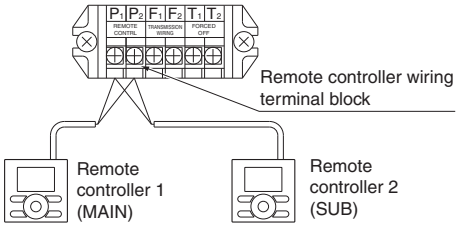
- When using 2 remote controllers, one must be set to "MAIN" and the other to "SUB".
- If the remote controller to be used is Model BRC1E71, read the installation manual supplied with the remote controller.

MAIN/SUB CHANGEOVER

(1) Press and hold the operation switch button of the remote controller for one of the two units for four seconds or more. When the LCD display changes from the display as the main remote controller to the display as the sub remote controller, the setting is complete.

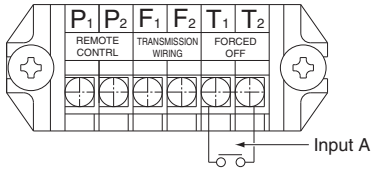
(2) Remove the front panel.

(3) Add remote controller 2 (SUB) to the terminal block for remote controller (P_1, P_2) in the electric component box. (There is no polarity.)



9-3 REMOTE CONTROL (FORCED OFF AND ON/OFF OPERATION)

- Connect input lines from the outside to the terminals T_1 and T_2 on the terminal block (6P) for remote controller to achieve remote control.
- See the "**10. FIELD SETTING AND TEST RUN**" for details on operation.



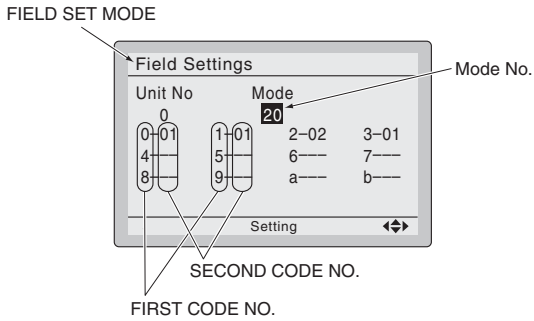
Wire specification	Sheathed vinyl cord or cable (2 wires)
Gauge	AWG18 – 16
Length	Max. 328 ft.
External terminal	Contact that can ensure the minimum applicable load of 15 V DC, 1 mA.

10. FIELD SETTING AND TEST RUN

〈**Field settings may have to be performed using the remote controller, depending on the type of installation.**〉

(1) Make sure the control box covers are closed on the indoor and outdoor units.

(2) Depending on the type of installation, make the field settings from the remote controller after the power is turned on, following the "Field Settings" manual which came with the remote controller.
- The settings can select "Mode No.", "FIRST CODE NO." and "SECOND CODE NO.".
- The "Field Settings" included with the remote controller lists the order of the settings and method of operation.



- Lastly, make sure the customer keeps the "Field Settings" manual, along with the operating manual, in a safe place.

10-1 SETTINGS WHEN USING THE OPTIONAL REMOTE SENSOR

This product does not include an air inlet thermistor.
It uses a remote controller thermistor for control purposes.
For this reason, it is necessary to install an optional remote thermistor in the following cases:

- When the remote controller will be installed at a location where it cannot accurately measure the indoor temperature.
- When using a remote controller without a built-in thermistor (simple remote controller, wireless remote controller, no remote controller).

When using an optional remote sensor, change the settings as described Table 5:
(The SECOND CODE NO. is set to "03" when shipped.)

Table 5

	Mode No.	FIRST CODE NO.	SECOND CODE NO.
To use both the remote controller thermistor and the remote sensor	10 (20)	2	01
To use only the remote sensor			02
To use only the remote controller thermistor			03*

* factory set

10-2 REMOTE CONTROL SETTING

- Forced off and ON/OFF operation should be selected by selecting the SECOND CODE NO. as shown in the table Table 6.

Table 6

External ON/OFF input	Mode No.	FIRST CODE NO.	SECOND CODE NO.
Forced off	12 (22)	1	01*
ON/OFF operation			02

* factory set

- Input A of forced off and ON/OFF operation work as shown in Table 7.

Table 7

Forced off	ON/OFF operation
Input A "on" to force a stop (remote controller reception prohibited)	Unit operated by changing input A from "off" to "on"
Input A "off" to allow remote controller	Unit stopped by changing input A from "on" to "off"

10-3 SETTING THE FILTER SIGN DISPLAY INTERVAL

- Explain the following to the customer if the filter dirt settings have been changed.
- The filter sign display time is set to 2500 hours (equivalent to 1 year's use) when shipped.
- The settings can be changed to not display.
- When installing the unit in a dusty place, set the filter sign display time to shorter intervals (1,250 hours).
- Explain it to the customer that the filter needs to be cleaned regularly to prevent clogging and also the time that is set.

Mode No.	FIRST CODE NO.		SECOND CODE NO.	
			01	02
10 (20)	0	Filter dirt	low	high
	1 (low/high)	Displayed time (units: hours)	2500/1250	10000/5000
	3	Filter sign display	ON	OFF

10-4 EXTERNAL STATIC PRESSURE SETTING

(1) Setting remote controller.

The "SECOND CODE NO." is set to 11 (an external static pressure of 0.4 in.W.G.) at factory set.

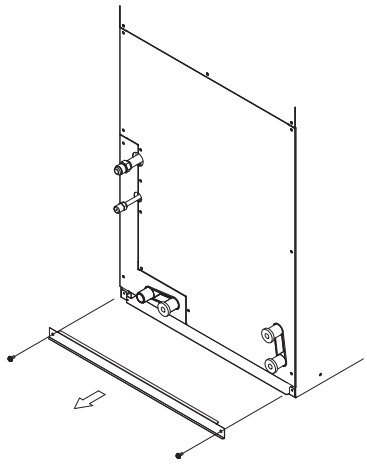
External Static Pressure (in.W.G.)	Mode No.	FIRST CODE NO.	SECOND CODE NO.
0.150	13 (23)	06	01
0.175			02
0.200			03
0.225			04
0.250			05
0.275			06
0.300			07
0.325			08
0.350			09
0.375			10
0.400			11
0.425			12
0.450			13
0.475			14
0.500			15

⚠ CAUTION

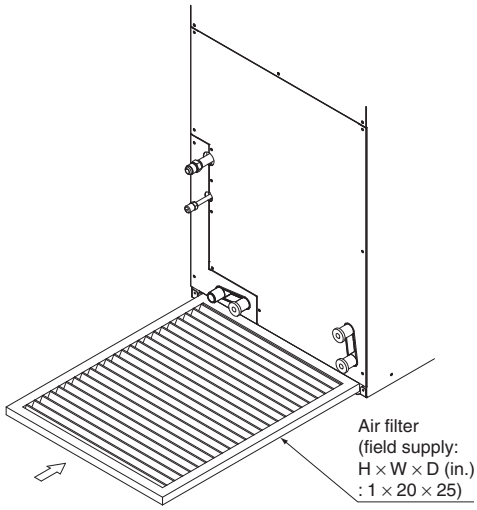
- Keep in mind that a shortage of airflow quantity or water leakage will result because the air conditioner will be operated outside the rated range of airflow quantity if the external static pressure is wrongly set.

10-5 INSTALLATION OF AN AIR FILTER

(1) Take off the part on the bottom of the front panel.



(2) Insert the air filter as far as it can go.



10-6 SETTING FOR LOCAL SUPPLIED OPTION

(1) Installation of the humidifier, economizer and air purifier (UV lamp)

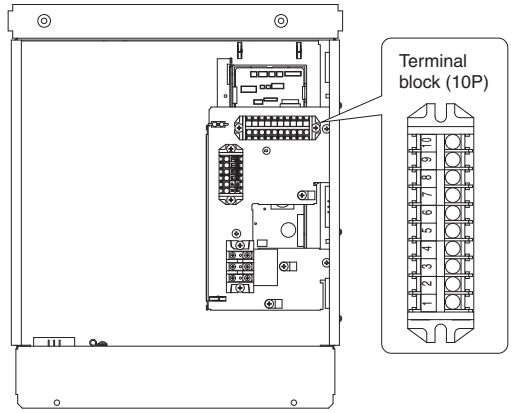
- Humidifier, economizer and air purifier (UV lamp) are sold separately. For the method of installation, refer to the manual provided with each optional product.

⚠ WARNING

- If the unit is installed with an electric heater, install the optional product at a location where it is not exposed directly to the heat from the electric heater. Direct exposure to heat can result in an equipment malfunction or fire.

(2) Connect the wires

- Run the wires through the low-voltage hole.
- Connect the wires to the terminal block (10P) of the product. The terminal Nos. for wire connection are shown below. Refer to the information as needed. Terminal Nos. are indicated on the name plate for the terminal block.



Terminal No.	Input/output signal
1, 2	Outputs: indoor unit ON signal. (AC 24V)
3, 4	Outputs: indoor unit cooling THERMO ON signal. (AC 24V)
5, 6	Receives input: Air purifier operation ON signal. (dry contact)
7, 8	Receives input: Humidifier operation ON signal. (dry contact)
9, 10	Receives input: Forced closure of Indoor Unit Electronic Expansion Valve during cooling operation. (dry contact)

(3) On-site setting of air purifier/humidifier

Mode No.	FIRST CODE NO.		01	02	03
14 (24)	4	FAN SPEED UNDER OPERATING purifier and humidifier	Refer to remote controller setting SPEED	H*	
14 (24)	5	FAN RESIDUE TIME FOR HUMIDIFIER	30 [sec.]	60* [sec.]	120 [sec.]

* factory set

10-7 SETTINGS FOR SEPARATELY SOLD ACCESSORIES

- See the instruction manuals included with optional accessories for the necessary settings.

〈**When using a wireless remote controller**〉

- A wireless remote controller address needs to be set when using a wireless remote controller. See the installation manual included with the wireless remote controller for details on how to make the settings.

Perform a test run according to the outdoor unit's installation manual.

- The operation lamp of the remote controller will flash when a malfunction occurs. Check the malfunction code on the liquid crystal display to identify the point of trouble. An explanation of malfunction codes and the corresponding trouble is provided in "CAUTION FOR SERVICING" of the outdoor unit.
  If the display shows any of the following, there is a possibility that the wiring was done incorrectly or that the power is not on, so check again.

Remote controller display	Contents
"A8" lit	• Error in power supply voltage to indoor unit.
"C1" lit	• Fan driver PCB of indoor unit ↔ indoor control PCB transmission error.
"C6" lit	• Improper combination of fan driver PCB of indoor unit or setting failure in control PCB type.
"U3" lit	• Test operation of outdoor unit has not been finished.
"CENTRAL CONTROL" is lit up	• There is a short circuit at the FORCED OFF terminals (T_1, T_2)
"U4" is lit up "UH" is lit up	• The power on the outdoor unit is off. • The outdoor unit has not been wired for power supply. • Incorrect wiring for the transmission wiring and / or FORCED OFF wiring.
No display	• The power on the indoor unit is off. • The indoor unit has not been wired for power supply. • Incorrect wiring for the remote controller wiring, the transmission wiring and / or the FORCED OFF wiring.

⚠ CAUTION

- Always stop the test run using the remote controller to stop operation.

16. Installation of outdoor unit

16.1 RZQ18PVJU9 / RZQ24PVJU9

DAIKIN

SPLIT SYSTEM Air Conditioners Installation manual

CONTENTS

1. SAFETY CONSIDERATIONS

Read these "SAFETY CONSIDERATIONS for Installation" carefully before installing air conditioning equipment. After completing the installation, make sure that the unit operates properly during the startup operation.
Instruct the customer on how to operate and maintain the unit. Inform customers that they should store this Installation Manual with the Operation Manual for future reference.
Always use a licensed installer or contractor to install this product. Improper installation can result in water or refrigerant leakage, electrical shock, fire, or explosion.
Meanings of **DANGER**, **WARNING**, **CAUTION**, and **NOTE** Symbols:

⚠ **DANGER**..... Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ **WARNING**..... Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ **CAUTION**..... Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

⚠ **NOTE**..... Indicates situations that may result in equipment or property-damage accidents only.

⚠ DANGER

- **Refrigerant gas is heavier than air and replaces oxygen. A massive leak can lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.**
- **Do not ground units to water pipes, gas pipes, telephone wires, or lightning rods as incomplete grounding can cause a severe shock hazard resulting in severe injury or death. Additionally, grounding to gas pipes could cause a gas leak and potential explosion causing severe injury or death.**
- **If refrigerant gas leaks during installation, ventilate the area immediately. Refrigerant gas may produce toxic gas if it comes in contact with fire. Exposure to this gas could cause severe injury or death.**
- **After completing the installation work, check that the refrigerant gas does not leak throughout the system.**
- **Do not install unit in an area where flammable materials are present due to risk of explosions that can cause serious injury or death.**
- **Safely dispose all packing and transportation materials in accordance with federal/state/local laws or ordinances. Packing materials such as nails and other metal or wood parts, including plastic packing materials used for transportation may cause injuries or death by suffocation.**

⚠ WARNING

- **Only qualified personnel must carry out the installation work. Installation must be done in accordance with this installation manual. Improper installation may result in water leakage, electric shock, or fire.**
- **When installing the unit in a small room, take measures to keep the refrigerant concentration from exceeding allowable safety limits. Excessive refrigerant leaks, in the event of an accident in a closed ambient space, can lead to oxygen deficiency.**
- **Use only specified accessories and parts for installation work. Failure to use specified parts may result in water leakage, electric shocks, fire, or the unit falling.**
- **Install the air conditioner on a foundation strong enough that it can withstand the weight of the unit. A foundation of insufficient strength may result in the unit falling and causing injuries.**
- **Take into account strong winds, typhoons, or earthquakes when installing. Improper installation may result in the unit falling and causing accidents.**
- **Make sure that a separate power supply circuit is provided for this unit and that all electrical work is carried out by qualified personnel according to local, state, and national regulations. An insufficient power supply capacity or improper electrical construction may lead to electric shocks or fire.**
- **Make sure that all wiring is secured, that specified wires are used, and that no external forces act on the terminal connections or wires. Improper connections or installation may result in fire.**

- When wiring, position the wires so that the control box cover can be securely fastened. Improper positioning of the control box cover may result in electric shocks, fire, or the terminals overheating.
- Before touching electrical parts, turn off the unit.
- Be sure to install a ground fault circuit interrupter if one is not already available. This helps prevent electrical shocks or fire.
- Securely fasten the outdoor unit terminal cover (panel). If the terminal cover/panel is not installed properly, dust or water may enter the outdoor unit causing fire or electric shock.
- When installing or relocating the system, keep the refrigerant circuit free from substances other than the specified refrigerant (R410A) such as air. Any presence of air or other foreign substance in the refrigerant circuit can cause an abnormal pressure rise or rupture, resulting in injury.
- Do not change the setting of the protection devices. If the pressure switch, thermal switch, or other protection device is shorted and operated forcibly, or parts other than those specified by Daikin are used, fire or explosion may occur.

⚠ CAUTION

- Do not touch the switch with wet fingers. Touching a switch with wet fingers can cause electric shock.
- Do not allow children to play on or around the unit to prevent injury.
- Do not touch the refrigerant pipes during and immediately after operation as the refrigerant pipes may be hot or cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigerant cycle parts. Your hands may suffer burns or frostbite if you touch the refrigerant pipes. To avoid injury, give the pipes time to return to normal temperature or, if you must touch them, be sure to wear proper gloves.
- Heat exchanger fins are sharp enough to cut.
  To avoid injury wear glove or cover the fins when working around them.
- Install drain piping to proper drainage. Improper drain piping may result in water leakage and property damage.
- Insulate piping to prevent condensation.
- Be careful when transporting the product.
- Do not turn off the power immediately after stopping operation. Always wait for at least 5 minutes before turning off the power. Otherwise, water leakage may occur.
- Do not use a charging cylinder. Using a charging cylinder may cause the refrigerant to deteriorate.
- Refrigerant R410A in the system must be kept clean, dry, and tight.
  (a) Clean and Dry -- Foreign materials (including mineral oils such as SUNISO oil or moisture) should be prevented from getting into the system.
  (b) Tight -- R410A does not contain any chlorine, does not destroy the ozone layer, and does not reduce the earth's protection again harmful ultraviolet radiation. R410A can contribute to the greenhouse effect if it is released. Therefore take proper measures to check for the tightness of the refrigerant piping installation. Read the chapter Refrigerant Piping Work and follow the procedures.
- Since R410A is a blend, the required additional refrigerant must be charged in its liquid state. If the refrigerant is charged in a state of gas, its composition can change and the system will not work properly.
- The indoor unit is for R410A. See the catalog for indoor models that can be connected. Normal operation is not possible when connected to other units.
- Remote controller (wireless kit) transmitting distance can be shorter than expected in rooms with electronic fluorescent lamps (inverter or rapid start types). Install the indoor unit far away from fluorescent lamps as much as possible.
- Indoor units are for indoor installation only. Outdoor units can be installed either outdoors or indoors.
- Do not install the air conditioner in the following locations:
  (a) Where a mineral oil mist or oil spray or vapor is produced, for example, in a kitchen.
  Plastic parts may deteriorate and fall off or result in water leakage.
  (b) Where corrosive gas, such as sulfurous acid gas, is produced.
  Corroding copper pipes or soldered parts may result in refrigerant leakage.
  (c) Near machinery emitting electromagnetic waves.
  Electromagnetic waves may disturb the operation of the control system and cause the unit to malfunction.
  (d) Where flammable gas may leak, where there is carbon fiber, or ignitable dust suspension in the air, or where volatile flammables such as thinner or gasoline are handled. Operating the unit in such conditions can cause a fire.
- Take adequate measures to prevent the outdoor unit from being used as a shelter by small animals. Small animals making contact with electrical parts can cause malfunctions, smoke, or fire. Instruct the customer to keep the area around the unit clean.

⚠ NOTE

- Install the power supply and control wires for the indoor and outdoor units at least 3.5 feet away from televisions or radios to prevent image interference or noise. Depending on the radio waves, a distance of 3.5 feet may not be sufficient to eliminate the noise.
- Dismantling the unit, treatment of the refrigerant, oil and additional parts must be done in accordance with the relevant local, state, and national regulations.
- Do not use the following tools that are used with conventional refrigerants: gauge manifold, charge hose, gas leak detector, reverse flow check valve, refrigerant charge base, vacuum gauge, or refrigerant recovery equipment.
- If the conventional refrigerant and refrigeration oil are mixed in R410A, the refrigerant may deteriorate.

- **This air conditioner is an appliance that should not be accessible to the general public.**
- **The wall thickness of field-installed pipes should be selected in accordance with the relevant local, state, and national regulations.**

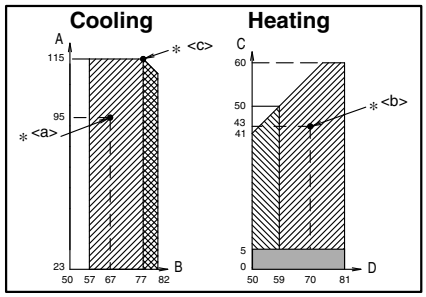
〈**Safety Precaution**〉
The PCI Data Station is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

2. INTRODUCTION

2-1 Standard operation limit

The figures below assume following operating conditions for indoor and outdoor units:

Equivalent pipe length.....25 ft.
Level difference.....0 ft.



A Outdoor temperature (°FDB)
B Indoor temperature (°FWB)
C Outdoor temperature (°FWB)
D Indoor temperature (°FDB)

Range for continuous operation
Range for pull down operation
Range for warming up operation
Range for operation

2-2 Technical specifications

(∗<a> and ∗<b> in the table indicate the operating condition (shown in the left figure).)

Model		RZQ18PVJU RZR18PVJU	RZQ24PVJU RZR24PVJU	RZQ30PVJU RZR30PVJU	Precaution
Refrigerant		R410A			
Power		208/230V 60Hz			
[FAQ] Wall mounted					
Cooling (MBh)		18.0	24.0	–	∗<a>
Heating (MBh) (RZQ only)		20.0	26.0	–	∗<b>
[FCQ] Ceiling mounted					
Cooling (MBh)		18.0	24.0	30.0	∗<a>
Heating (MBh) (RZQ only)		20.0	27.0	34.0	∗<b>
[FHQ] Ceiling Suspended					
Cooling (MBh)		18.0	24.0	30.0	∗<a>
Heating (MBh) (RZQ only)		20.0	27.0	34.0	∗<b>
(RZQ only)					
[FTQ] Air Handling Unit					
Cooling (MBh)		18.0	24.0	–	∗<a>
Heating (MBh)		20.0	26.0	–	∗<b>
Dimensions H × W × D	(inch)	30-5/16 × 35 7/16 × 12 5/8			
Weight	(lb.)	150			
Connections					
Gas	(inch)	5/8			
Liquid	(inch)	3/8			

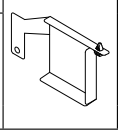
2-3 Electrical specifications

(∗<c> in the table indicate the operating condition (shown in the left figure).)

Model		RZQ18PVJU RZR18PVJU	RZQ24PVJU RZR24PVJU	RZQ30PVJU RZR30PVJU	Precaution
Power					
Phase		~			
Frequency	(Hz)	60			
Voltage	(V)	208/230			
Voltage tolerance	(%)	±10			
Max.Overcurrent Protective device	(A)	20			
Min. Circuit Amps.	(A)	16.5			∗<c>
Compressor					
Phase		3~			
Frequency	(Hz)	60			
Voltage	(V)	208/230			

2-4 Accessories

Confirm that the following accessories are supplied.

Clamp	Insulation tube				Cover (Handle)
	(Large-1)	(Large-2)	(Small-1)	(Small-2)	
					
(1 pc.)	(2 pcs.)	(1 pc.)	(2 pcs.)	(1 pc.)	

Screw	Conduit mounting plate		Others
			• Installation manual
(1 pc.)	(2 pcs.)	(2 pcs.)	

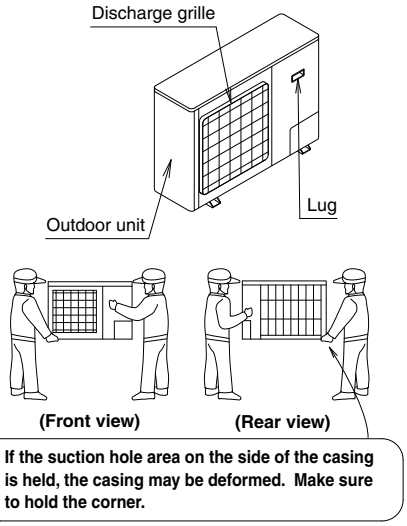
2-5 Main components

For main components and function of the main components, refer to the Engineering Data Book.

3. BEFORE INSTALLATION

〈**Bringing-in**〉

Bring in the outdoor unit slowly by holding the lugs provided on the left and right sides as shown in the figures below.
(Take care so that hands and objects do not touch the fin on the rear.)



◎ Make sure to use accessories and specified specification parts in the installation work.

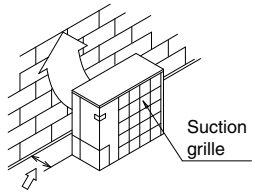
4. SELECTION OF INSTALLATION LOCATION

The refrigerant R410A itself is nontoxic, nonflammable and safe. If the refrigerant should leak however, its concentration may exceed the allowable limit depending on room size. Due to this it could be necessary to take measures against leakage. Refer to the chapter "Caution for refrigerant leaks".

(1) Select a proper location satisfying the following requirements with approval of the customer.
- Sufficient ventilation is secured.
- Adjacent houses are not annoyed.
- The foundation is strong enough to support the weight and withstand vibrations of the outdoor unit, and the location is safe and allows horizontal installation.
- The outdoor unit is exposed to rain as less as possible.
- The space for installation and servicing is secured around the outdoor unit.
- The indoor/outdoor piping length and wiring length are within the allowable range.

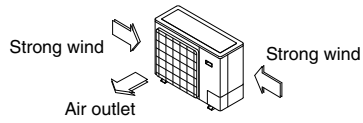
(2) When installing the outdoor unit in a location affected by strong wind, pay special attention to the following items.
- If strong wind whose velocity is 11 mph or more blows to the outdoor unit from the air outlet side, the air flow rate of the outdoor unit is reduced, the outlet air is sucked again (short-circuit), and the following effect may be caused:
  - The capacity is deteriorated.
  - The adhered frost increases during heating operation.
  - The operation is stopped by pressure rise.
- If excessive strong wind continuously blows from the air outlet side of the outdoor unit, the fan may rotate in the reverse direction at high speed, and lead to damage. Install the outdoor unit in reference to the following figures.

• Position the air outlet side toward the building wall, fence or windbreak screen.



(Secure the space for installation and servicing.)

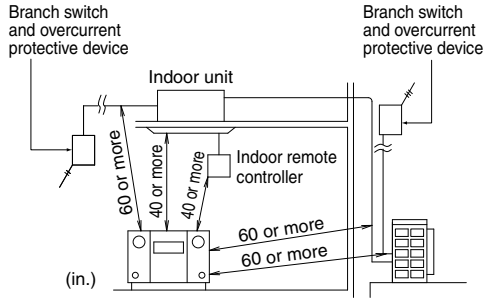
• Let the air outlet direction face be at right angles to the wind direction.



(3) When installing the outdoor unit in a location with heavy snowfall, pay special attention to the following items:
- Prepare strong foundation.
- Attach the snow hood (optional accessory).
- Remove the suction grill on the rear so that snow will not be accumulated in the rear fin.

(4) When there is a possibility of short-circuit depending on the ambient situation, use the wind direction adjusting plate (optional accessory).

(5) The inverter type air conditioner may cause noise in electric products.
When selecting an installation location, keep sufficient distance from the air conditioner units and wiring to radios, personal computers, stereos, etc. as shown in the figure below.
In areas with weak electric waves, keep a distance of 120 in. or more from the indoor remote controller, etc., put the power cables and connection cables in conduit tubes, and ground the conduit tubes.



⚠ DANGER

- Do not install unit in an area where flammable materials are present due to risk of explosion resulting in serious injury or death.
- Refrigerant is heavier than air and replaces oxygen. A massive leak could lead to oxygen depletion , especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.

Installation place (unit: inch)

〈**Cautions on continuous installation**〉

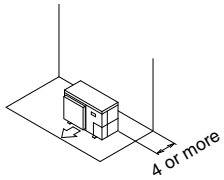
- The connection piping outlet direction in the continuous installation shown in the figures below is frontward or downward.
- When routing the piping rearward, secure space of 10 in. or more on the right side of the outdoor unit. (The unit of numeric values below is “inch”.)
- Make some space for wiring with conduit and servicing between the units.

(A) When an obstruction is present on the air inlet side

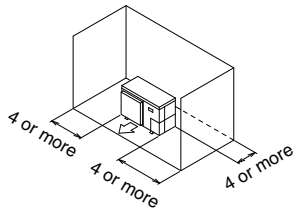
- **When the upward area is open**

(1) When one outdoor unit is installed individually

- When an obstruction is present only on the air inlet side

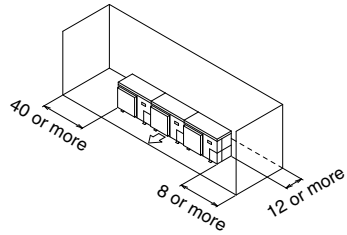


- When an obstruction is present on the both sides



(2) When two or more outdoor units are installed side by side

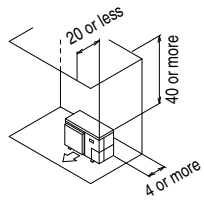
- When an obstruction is present on the both sides



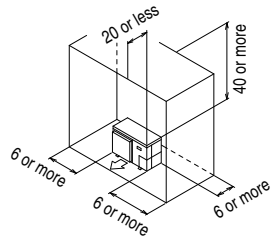
- **When an obstruction is present also in the upward area**

(1) When one outdoor unit is installed individually

- When an obstruction is present also on the air inlet side

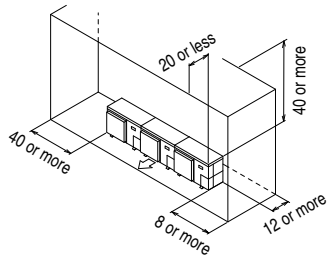


- When an obstruction is present also on the air inlet side and both sides



(2) When two or more outdoor units are installed side by side

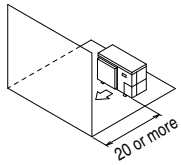
- When an obstruction is present also on the air inlet side and both sides



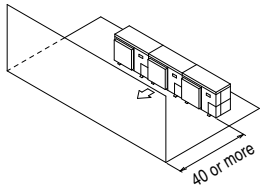
(B) When an obstruction is present on the air outlet side

- **When the upward area is open**

(1) When one outdoor unit is installed individually

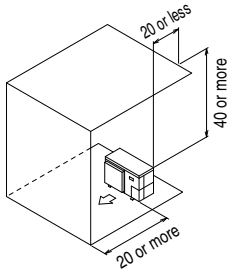


(2) When two or more outdoor units are installed side by side

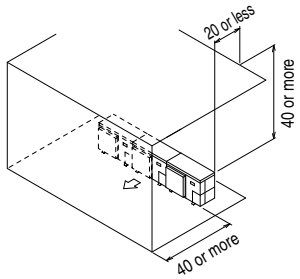


- **When an obstruction is present also in the upward area**

(1) When one outdoor unit is installed individually



(2) When two or more outdoor units are installed side by side



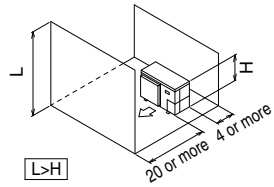
(C) When an obstruction is present on both the air inlet and air outlet sides

<Pattern 1>

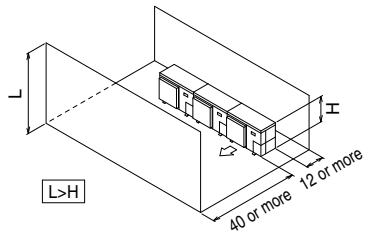
When an obstruction on the air outlet side is higher than the outdoor unit (There is no restriction in the height of obstruction on the air inlet side.)

- **When the upward area is open**

(1) When one outdoor unit is installed individually

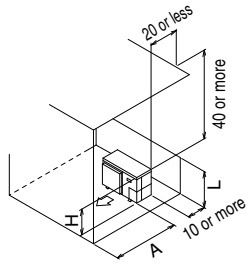


(2) When two or more outdoor units are installed side by side



- **When an obstruction is present also in the upward area**

(1) When one outdoor unit is installed individually



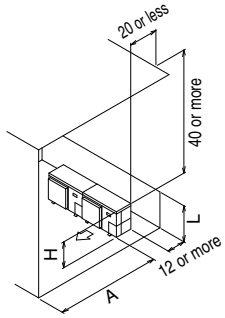
The dimensional relationship between H, L and A is as shown in the table below.

	L	A
L ≤ H	0 < L ≤ 1/2H	30
	1/2H < L ≤ H	40
H < L	**Install the frame to achieve "L ≤ H".**	

⚠ NOTE

- Close the area under the frame so that the outlet air does not bypass there.

(2) When only two outdoor units are installed side by side



The dimensional relationship between H, L and A is as shown in the table below.

	L	A
L ≤ H	0 < L ≤ 1/2H	40
	1/2H < L ≤ H	50
H < L	**Install the frame to achieve "L ≤ H".**	

NOTE

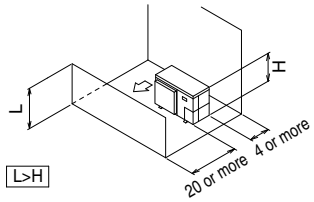
1. Close the area under the frame so that the outlet air does not bypass there.
2. Only two outdoor units can be installed side by side.

<Pattern 2>

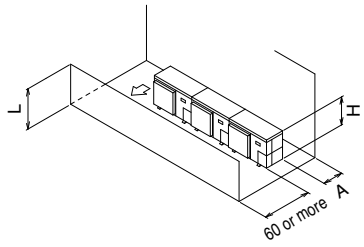
When an obstruction on the air outlet side is lower than the outdoor unit (There is no restriction in the height of obstruction on the air inlet side.)

- **When the upward area is open**

(1) When one outdoor unit is installed individually



(2) When two or more outdoor units are installed side by side

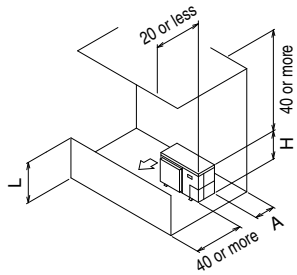


The dimensional relationship between H, L and A is as shown in the table below.

L	A
0 < L ≤ 1/2H	10
1/2H < L ≤ H	12

- **When an obstruction is present also in the upward area**

(1) When one outdoor unit is installed individually



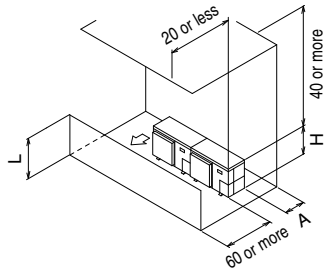
The dimensional relationship between H, L and A is as shown in the table below.

	L	A
L ≤ H	0 < L ≤ 1/2H	4
	1/2H < L ≤ H	8
H < L	**Install the frame to achieve "L ≤ H".**	

NOTE

- Close the area under the frame so that the outlet air does not bypass there.

(2) When only two outdoor units are installed side by side



The dimensional relationship between H, L and A is as shown in the table below.

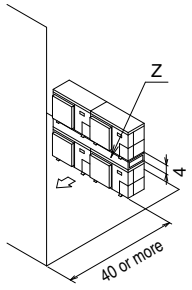
	L	A
L ≤ H	0 < L ≤ 1/2H	10
	1/2H < L ≤ H	12
H < L	**Install the frame to achieve "L ≤ H".**	

NOTE

1. Close the area under the frame so that the outlet air does not bypass there.
2. Only two outdoor units can be installed side by side.

(D) When outdoor units are stacked

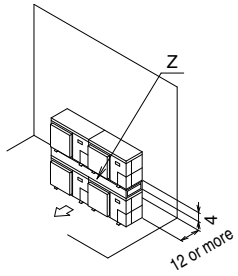
(1) When an obstruction is present on the air outlet side



NOTE

1. Only two outdoor units can be stacked.
2. About 4 in. is required as the drain piping size for the upper outdoor unit.
3. Close the area Z (gap between the upper outdoor unit and the lower outdoor unit) so that the outlet air does not by-pass there.

(2) When an obstruction is present on the air inlet side

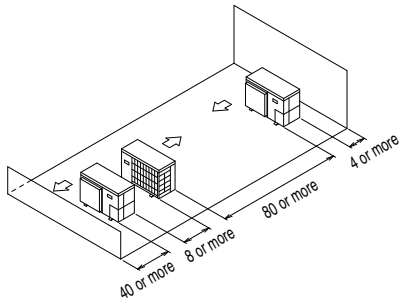


NOTE

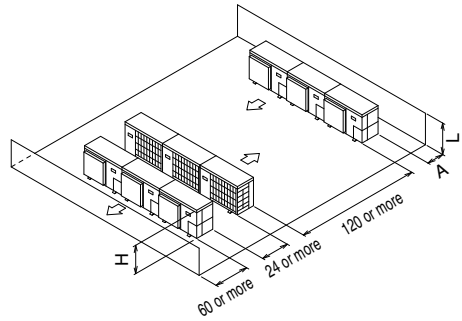
1. Only two outdoor units can be stacked.
2. About 4 in. is required as the drain piping size for the upper outdoor unit.
3. Close the area Z (gap between the upper outdoor unit and the lower outdoor unit) so that the outlet air does not by-pass there.

(E) When outdoor units are installed in rows (on the rooftop, etc.)

(1) When one outdoor unit is installed in each row



(2) When two or more outdoor units are installed side by side

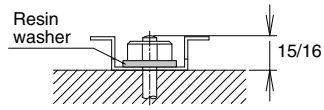


The dimensional relationship between H, L and A is as shown in the table below.

	L	A
L ≤ H	0 < L ≤ 1/2H	10
	1/2H < L ≤ H	12
H < L	**Installation is not allowed.**	

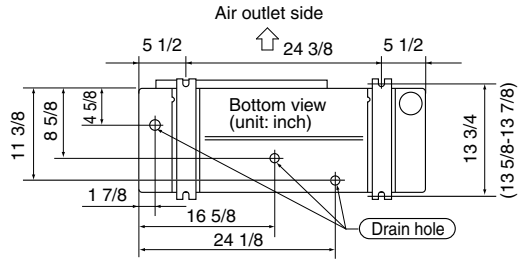
5. CAUTIONS ON INSTALLATION

- Before installation, confirm the strength and levelness of the foundation so that vibrations and noise are not generated.
- Fix the outdoor unit securely on a rigid base with foundation bolts as shown in the foundation drawing below. (Prepare 4 sets of commercially available M12-type or equivalent foundation bolts, nuts and washers.)
- Use resin washers to prevent the paint from being scratched off and rusting.
- The foundation bolts should be protruded by 15/16 in. **(Refer to figure)**



〈〈**Drain treatment**〉〉

- In a location where drain from the outdoor unit may cause troubles (for example, where drainage may splash on general passersby), perform the drain piping work using the drain plug (optional).
- For drain treatment, space of at least 4 in. is required under the bottom frame of the outdoor unit.
- In the drain piping work, make sure that drainage is discharged securely. (When routing the piping downward, check for water leakage.)



6. REFRIGERANT PIPING WORK

⚠ CAUTION

<To piping technician>

- **Make sure to open the stop valves after finishing the piping work. (Refer to the table shown in " 6-7 Additional refrigerant charge".)**
  (Operating the air conditioner with the stop valve shut may damage the compressor.)
- Use R410A to add refrigerant. (The R410A refrigerant cylinder has a pink stripe painted around it.)
  All field piping must be installed by a licensed refrigeration technician and must comply with relevant local and national regulations.
- **BRAZING REFRIGERANT PIPING**
  Do not use flux when brazing copper-to copper refrigerant piping.
  (Particularly for the HFC refrigerant piping) Therefore, use the phosphor copper brazing filler metal (BCuP) which does not require flux.
  (Flux has an extremely negative effect on refrigerant piping systems. For instance, if chlorine based flux is used, it will cause pipe corrosion. Flux containing fluorine will damage refrigeration oil.)

⚠ NOTE

- Maximum piping length between the outdoor and indoor unit:

Indoor unit	FAQ FCQ FHQ	FTQ
Max. piping length	164 ft.	98 ft.

- Installation tools:
  Make sure to use installation tools (gauge manifold charge hose, etc.) that are exclusively used for R410A installations to withstand the pressure and to prevent foreign materials (e.g. mineral oils such as SUNISO and moisture) from mixing into the system.
  (The screw specifications differ for R410A and R407C.)
  Vacuum pump (use a 2-stage vacuum pump with a non-return valve):
  1. Make sure the pump oil does not flow oppositely into the system while the pump is not working.
  2. Use a vacuum pump which can evacuate to –14.6 psi.

6-1 Selection of piping material

1. Foreign materials inside pipes (including oils for fabrication) must be 0.14gr/10ft. or less.
2. Use the following material specification for refrigerant pipping:
   - Construction material: Phosphoric acid deoxidized seamless copper for refrigerant.
   - Size: liquid pipe: ϕ3/8"
     gas pipe: ϕ5/8"

6-2 Protection of piping

- Protect the piping to prevent moisture and dusts from coming into the piping.
- Especially, pay attention when passing the piping through a hole or connecting the end of piping to the outdoor.

Location	Working period	Protection method
Outdoor	1 month or more	Pinch pipes
	Less than 1 month	Pinch or tape pipes
Indoor	Regardless of period	

6-3 Piping connection

- **For handling of stop valves, refer to "Stop valve operation method" in "6-7 Additional refrigerant charge".**
- **Only use the flare nuts attached to the stop valves. Using different flare nuts may cause the refrigerant to leak.**
- **Be sure to perform a nitrogen blow when brazing.**

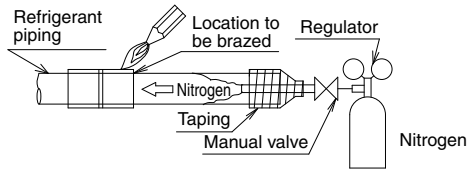
(Brazing without performing nitrogen replacement or releasing nitrogen into the piping will create large quantities of oxidized film inside the pipes, adversely affecting valves and compressor in the refrigerating system and preventing normal operation.)

⚠ DANGER

- Use of oxygen could cause an explosion resulting in severe injury or death. Only use nitrogen gas.
- Refrigerant gas may produce toxic gas if it comes in contact with fire such as from a fan heater, stove or cooking device. Exposure to this gas could cause severe injury or death.

⚠ NOTE

- When brazing with blowing nitrogen, set the nitrogen pressure to 2.9 psi or less by using a pressure reducing valve.



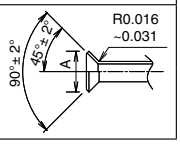
⚠ CAUTION

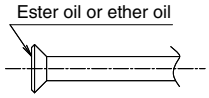
- Do not use anti-oxidants when brazing.
  Residue can clog pipes and break the unit.

◎ Do not let any refrigerant other than the specified refrigerant enter the refrigerant system.
◎ Do not let any gas such as air enter the refrigerant system.

〈**Precautions when connecting the piping**〉

- See the following table for flare dimensions.
- When connecting the flare nuts, apply refrigeration oil to the inside of the flares and turn them three or four times at first. (Use ester oil or ether oil.)
- See the following table for tightening torque. (Applying too much torque may cause the flares to crack.)
- After connecting all the piping perform a gas leak check by using nitrogen.

Pipe size	Tightening torque (ft·lbf)	Flare dimension A (in.)	Flare shape (in.)
ϕ3/8”	24.1 - 29.4	0.504 - 0.520	
ϕ5/8”	45.6 - 55.6	0.760 - 0.776	



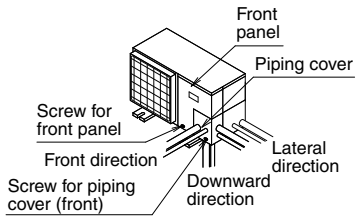
- If you are obliged to install the unit without a torque wrench, you may follow the installation method mentioned below. After the work is finished, make sure to check that there is no gas leak.
- When you keep on tightening the flare nut with a spanner, there is a point where the tightening torque suddenly increases.
  From that position, further tighten the flare nut the angle shown below.

Pipe size	Tightening angle (Guideline)	Recommended arm length of tool (in.)
ϕ3/8”	60°~90°	Approx. 7 7/8
ϕ5/8”	30°~60°	Approx. 11 13/16

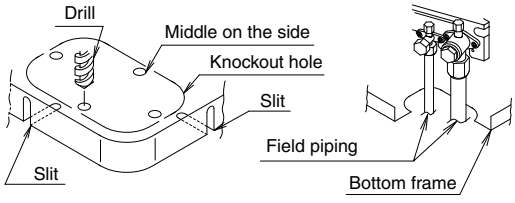
Disposal requirements
Dismantling of the unit, treatment of the refrigerant, oil and eventual other parts should be comply the relevant local and national regulations.

6-4 Refrigerant piping work procedure

◎ The field piping can be connected in three directions.



◎ When connecting the piping downward, remove the knockout hole by making four holes in the middle on the each side of the knockout hole with a drill.



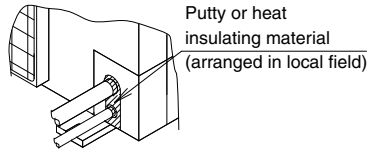
Then cut out the corner of the bottom frame along the slits (in two positions) by using a hacksaw.
◎ After removing the parts, it is recommended to apply repair paint on the edges, to prevent rusting.

Cautions on connecting the connection piping

- When it is expected that water condensed in the stop valve will reach the indoor unit through the gap between the heat insulating material and the piping (for example, when the outdoor unit is installed in a higher position than the indoor unit), take proper action such as caulking the connection area.

[Measures to prevent invasion of small creatures and litter]

- Block all gaps in the piping penetration areas with putty or heat insulating material (arranged in the local field) as shown in the figure below.
  (If small creatures such as insects or litter enter the outdoor unit, a short-circuit may be caused inside the control box.)



6-5 Heat insulation of piping

- Make sure to insulate the field piping (on both the liquid line and gas line) and refrigerant branching kit.
  (If they are not insulated, water leakage may be caused.)

  (The maximum temperature of the piping on the gas line is about 248 °F during heating operation. Use an insulation sufficiently resistant to this temperature.)

- Reinforce the refrigerant piping according to the installation environment. If it is not reinforced, condensate may form on the surface of the insulation.

⚠ WARNING

- Make sure to insulate the field piping up to the piping connection area inside the unit. If the piping is exposed, dew condensation and burn by contact may be caused.

6-6 Airtight test and vacuum drying

The unit has been checked for leaks by the manufacturer. Confirm that the valves are firmly closed before airtight test or vacuumdrying.
To prevent entry of any impurities and insure sufficient pressure resistance, always use the special tools dedicated for R410A.

Perform the following inspections securely after the piping work.

- **Airtight test** - Make sure to use nitrogen gas. (For the service port position, refer to the figure in “**Stop valve operation method**”.)
  [Procedure] Pressurize the air conditioner from the liquid pipe and gas pipe up to 450 psi (Make sure not to exceed 450 psi). When the pressure does not drop for 24 hours, the piping work shall be accepted.
  If the pressure drops, check for leakage positions. (Confirm that there is no leakage, then release nitrogen.)

- **Vacuum drying** - Use a vacuum pump which can evacuate up to –14.6 psi or less.
  [Procedure] Operate the vacuum pump for evacuation for 2 hours or more using both liquid pipe and gas pipe until the vacuum pressure reaches –14.6 psi or less. Leave the air conditioner at –14.6 psi or less for 1 hour or more, and confirm that the vacuum pressure indicated by the vacuum gage does not increase.
  (If the vacuum pressure increases, the system may contain moisture or have leakage.)

If there is a possibility of moisture remaining in the piping (for example, when there is a possibility of dew condensation inside the piping because the piping work was performed in the rainy season or over a long period of time, or when rainwater may have entered the piping during the work)
Perform evacuation described above for 2 hours (vacuum drying), pressurize the air conditioner up to 7 psi (vacuum break) with nitrogen gas, then evacuate the air conditioner using the vacuum pump for 1 hour to achieve –14.6 psi or less (vacuum drying).
(If the vacuum pressure does not reach –14.6 psi or less even after evacuation for 2 hours or more, repeat vacuum break and vacuum drying.) Leave the air conditioner in the vacuum status for 1 hour or more, and confirm that the vacuum pressuree indicated by the vacuum gauge does not increase.

6-7 Additional refrigerant charge

⚠ WARNING

- To avoid injury always use protective gloves and eye protection when charging refrigerant.
- To avoid injury do not charge with unsuitable substances. Use only the appropriate refrigerant.

⚠ NOTE

- Refrigerant cannot be charged until field wiring has been completed.
  Refrigerant may only be charged after performing the air-tight test and the vacuum drying (see above).
  When charging refrigerant into the system, take care that its maximum allowable charge is never exceeded, in view of the danger of liquid hammer.
  Refrigerant containers shall be opened slowly.
  To avoid compressor breakdown, do not charge the refrigerant more than the specifed amount to raise the condensing pressure.

- This outdoor unit is factory charged with refrigerant.
- Charge the additional refrigerant calculated by the formula below.

Additional charging amount	=	Liquid piping length × 0.036	+	Additional charging depended on type of indoor unit
(lb.)		(ft.)×0.036		A (lb.)

Indoor unit	FAQ FCQ FHQ	FTQ
Additional charging A (lb.)	0	1.54

Record the additional amount to the label stuck on the back of front panel.

- Charge the refrigerant to the liquid pipe in its liquid state. Since R410A is a mixed refrigerant, its composition changes if charged in a state of gas and normal system operation would no longer be assured.
- Before filling, check whether the tank has a siphon attached or not.

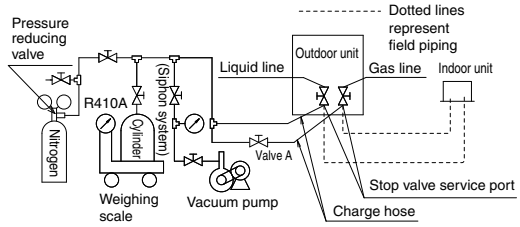
How to fill a tank with a siphon attached.

Fill with the tank upright.
(There is a siphon tube inside, so there is no need to turn the tank upside-down.)

Other ways of filling the tank

Fill with the tank upside-down.

- After the vacuum drying is finished, charge the additional refrigerant in its liquid state through the liquid stop valve service port.
  Taking into account following instructions:
  1. Check that gas and liquid stop valves are closed.
  2. Charge the specified amount of refrigerant.
- If the outdoor unit is not in operation and the total amount cannot be charged, follow the procedures for additional refrigerant charge shown below.
- Make sure to use installation tools you exclusively use on R410A installations to withstand the pressure and to prevent foreign materials from mixing into the system.
- Procedures for charging additional refrigerant.



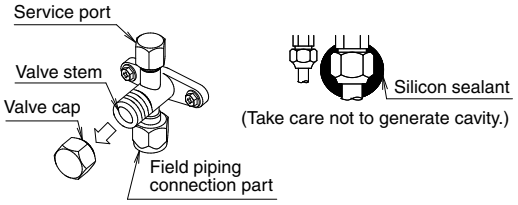
See the “Cautions on service” label on the back of the front panel for the settings for operation after replenishing refrigerant.

1. Open the gas line stop valve (leaving the liquid line stop valve, valve A in the diagram above, close) and perform the operation to add the refrigerant.
2. Once the appropriate amount of refrigerant is in, press the confirmation button (BS3) on the outdoor unit PC board (A2P), and stop operation.
3. Open the stop valves quickly (both liquid and gas line valves).
   (This must be done quickly to avoid the possibility that the pipe might burst.)

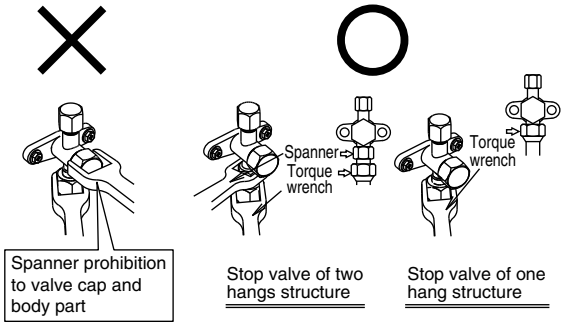
Stop valve operation

Cautions on handling the stop valve

- The figure below shows the name of each part required in handling the stop valve. At the time of shipment, the stop valve is closed.



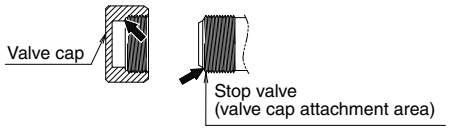
- If only a torque wrench is used to loosen or tighten the flare nut, the side plate may be distorted. Make sure to fix the stop valve with a spanner, then loosen or tighten the flare nut with a torque wrench.



- When it is expected that the operating pressure will be low (for example, when cooling will be performed while the outside air temperature is low), seal sufficiently the flare nut in the stop valve on the gas line with silicon sealant to prevent freezing.

Cautions on handling the valve cap

- The valve is sealed in the arrow area. Take care not to damage the arrow area.



- After handling the valve, make sure to tighten the valve cap securely.

Liquid line	Gas line
10.0~12.2 ft·lbf	16.6~20.3 ft·lbf

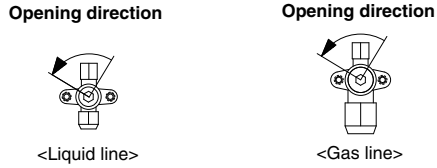
Cautions on handling the service port

- Use charge hose equipped with push in the work.
- After the work, make sure to tighten the valve cap securely. Tightening torque.....8.5~10.3 ft·lbf

[Stop valve operation method]
Prepare hexagon wrenches (whose size is 4 mm and 6 mm).

How to open the stop valve
1. Insert a hexagon wrench into the valve stem, and turn the valve stem counterclockwise.
2. When the valve stem cannot be turned any more, stop turning. Now, the valve is open.

How to close the stop valve
1. Insert a hexagon wrench into the valve stem, and turn the valve stem clockwise.
2. When the valve stem cannot be turned any more, stop turning. Now, the valve is closed.



7. ELECTRIC WIRING WORK

⚠ DANGER

- Do not ground units to water pipes, telephone wires or lightning rods because incomplete grounding could cause a severe shock hazard resulting in severe injury or death, and to gas pipes because a gas leak could result in an explosion which could lead to severe injury or death.

⚠ WARNING

- Disconnect all power to unit to avoid possible electric shock during installation.
- Use only specified wire and connect wires to terminals tightly. Be careful that wires do not place external stress on terminals. Keep wires in neat order so as to not to obstruct other equipment. Incomplete connections could result in overheating, and in worse cases, electric shock or fire. For the details, refer to "**7-3 Power supply wiring connection procedure**".

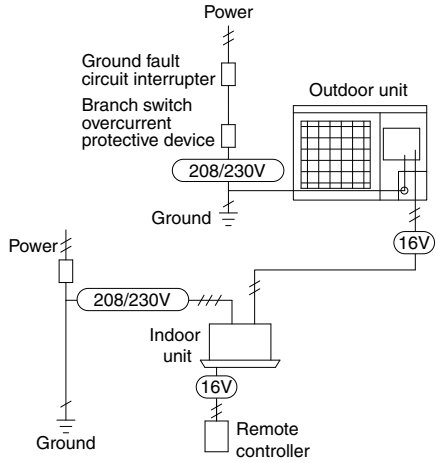
⚠ CAUTION

<To electrician>
- Do not operate the air conditioner until the refrigerant piping work is completed. (Operating the air conditioner before the refrigerant piping work is completed may damage the compressor.)
- Install a ground fault circuit interrupter. (The inverter is provided in the air conditioner. In order to prevent malfunction of the ground fault circuit interrupter itself, use a breaker resistant to higher harmonics.)

- Electricians having sufficient knowledge should perform the electric wiring work. All wiring must comply with local electrical codes and National Electrical Code (NEC).

- Perform the electric wiring work in accordance with the "electric wiring diagram label".
  Make sure to turn OFF the branch switch and overcurrent protective device before starting the work.
- Perform grounding to the indoor unit and outdoor unit.
- Use only copper wires.
- Make sure to turn the power off before starting the electric wiring work.
  Do not turn ON any switch until the work is completed.
- The outdoor unit has an inverter which generates noise and charges the outer casing with the leakage current. The outdoor unit should be grounded so that the effect of the generated noise on other equipment can be reduced, and that the outer casing can be discharged.
- As this unit is equipped with an inverter, installing a phase advancing capacitor will not only reduce the power factor improvement factor, but may also cause the capacitor to overheat due to high-frequency waves. Therefore, never install a phase advancing capacitor.
- Never push excessive electric wires into the units.
- Protect electric wires with conduit tubes or vinyl tubes so that they will not be damaged by edges of knockout holes.
- Fix electric wires with clamps as accessories so that they will not come to contact with pipes and stop valves.
  (Refer to "**7-3 Power supply wiring connection procedure**".)

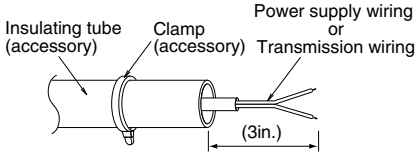
7-1 Connection example of whole system wiring



7-2 Routing power supply wiring and transmission wiring

Let the power supply wiring with a conduit pass through one of the knockout holes on the front or side cover, and let the transmission wiring with a conduit pass through another knockout hole.

- For protection from uninsulated live parts, thread the power supply wiring or the transmission wiring through the included insulating tube and secure it with the included clamp.



〈**Precautions when knocking out knockout holes**〉

- To punch the knockout hole, hit it with a hammer.
- After removing the knockout hole, it is recommended that the edges should be painted to prevent rusting.

⚠ CAUTION

- Use conduit for both the power supply wiring and transmission wiring.
- Outside the unit, make sure to keep the wirings 5 inches away.
  Otherwise, the outdoor unit may be affected by electrical noise (external noise), and malfunction or fail.
- Be sure to connect the power supply wiring to the terminal block and secure it as described in "7-3 Power supply wiring connection procedure".
- Fix the wiring between the units in accordance with "7-4 Transmission wiring connection procedure".
- Secure the wirings with the clamps (accessory) so that do not touch the piping.
- Make sure the wirings will not be pinched by the front panel, and close the panel firmly.
- Route the conduit along the unit by using a elbow socket and so on to prevent it from being stepped on.

7-3 Power supply wiring connection procedure

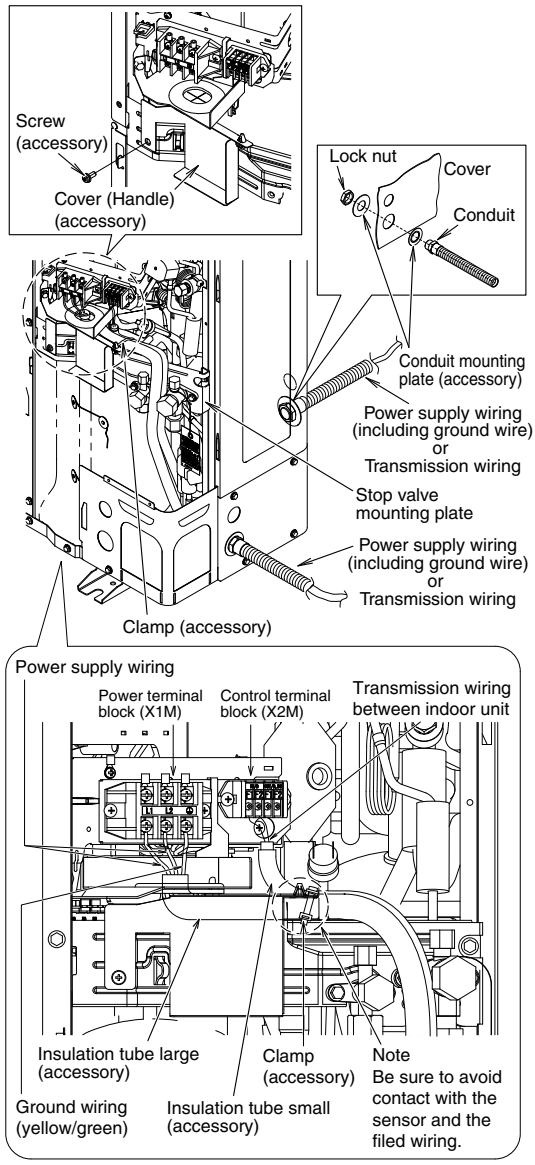
⚠ WARNING

- Never connect power supply wiring to the terminal block for remote controller wiring as this could damage the entire system.

Install a ground fault circuit interrupter.

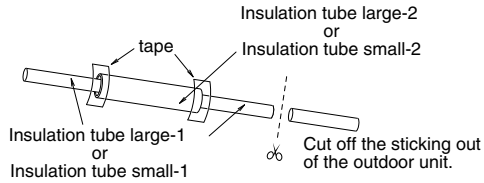
- It is obliged to install a ground fault circuit interrupter to prevent electric shock and fire accident.

Model	Phase and frequency	Voltage	Max.Overcurrent Protective Device	Min. Circuit Amps.
RZQ18PVJU RZR18PVJU	~ 60Hz	208/230V	20A	16.5A
RZQ24PVJU RZR24PVJU				
RZQ30PVJU RZR30PVJU				



How to Insulation tube.

- Use the insulation tube large to cover the power supply wiring.
  Use the insulation tube small to cover the transmission wiring.
- Joint the insulation tube with the tape and cut off the tube sticking out of the outdoor unit.

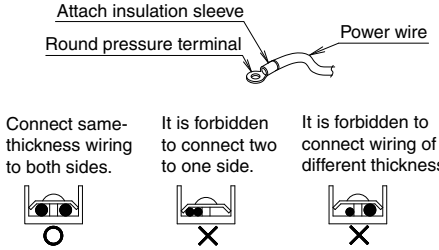


⚠ CAUTION

- After finishing the electric wiring work, confirm that all the wirings are connected securely.

〈〈**Precautions when laying power wiring**〉〉

- Two electric wires of different thickness cannot be connected to the power terminal block.
  (Slack in the electric wires may generate abnormal heat.)
- Use round pressure terminals with insulting sleeve for connection to the power terminal block.
  If such terminals are not available for unavoidable reasons, connect an electric wire of the same thickness to each side as shown in the figure.



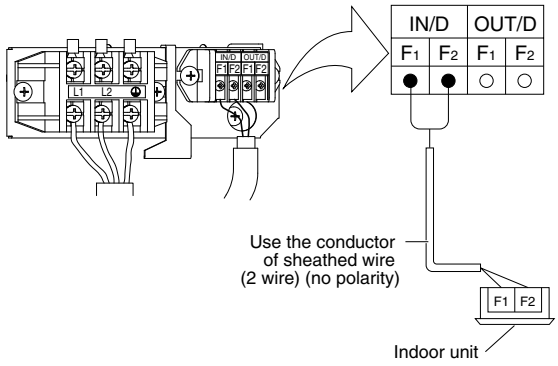
Make sure to observe the following items. If they are not observed, abnormal heat may be generated by slack in electric wires, etc.

- For wiring, use the designated power wire and connect firmly, then secure to prevent outside pressure being exerted on the terminal board.
- Use an appropriate screwdriver for tightening the terminal screws.
  A screwdriver with a small head will strip the head and make proper tightening impossible.
- Over-tightening the terminal screws may break them.
- See the table below for tightening torque for the terminal screws.

Tightening torque (ft·lbf)		
M5	(Power supply and ground terminal block)	1.76 ~ 2.15
M4	(Shielded ground)	0.87 ~ 1.06
M3.5	(Transmission wiring terminal block)	0.58 ~ 0.72

7-4 Transmission wiring connection procedure

- **If an excessive force is applied while connecting a cable to the terminal block on the PC board, the PC board may be damaged.**



⚠ CAUTION

- For low-noise operation, it is necessary to install the optional "External control adaptor for outdoor unit".
  For details, see the installation manual attached to the adaptor.

Caution on the wiring length between units

Make sure to observe the restrictions below. If they are not observed, transmission error may occur.
Maximum wiring length: 3280 ft.

Cautions on the wiring between units

- Never connect 208/230V to the terminal block for the transmission wiring.
  Doing so will break the entire system.
- The transmission wiring from the indoor unit must be connected to the F1/F2 (TO IN/D UNIT) terminals on the PC board in the outdoor unit.

* Make sure to use sheathed two-core cables of AWG18-16 in the wiring shown above.
* **All cables used in the wiring between the units should be procured on the site.**

8. CHECKS AFTER COMPLETION OF WORK

After completing the work, make sure to confirm the following items:

1. Connection of drain piping and removal of transport fittings:
   Refer to "**5. CAUTIONS ON INSTALLATION**".
2. Connection of power supply wiring and tightening of screws:
   Refer to "**7-3 Power supply wiring connection procedure**".
3. Connection of transmission wiring and tightening of screws:
   Refer to "**7-4 Transmission wiring connection procedure**".
4. Freezing connection of refrigerant piping
   Refer to "**6. REFRIGERANT PIPING WORK**".
5. Piping size and heat insulation:
   Refer to "**6-1 Selection of piping material**", "**6-5 Heat insulation of piping**".
6. Check of stop valve:
   Confirm that the stop valve is open on both the liquid line and gas line.
7. Record of amount of additional refrigerant:
   Record the amount on the label stuck on the back of the front panel.
8. Measurement of insulation in main power circuit:
   - Use the megatester for 500 V.
   - Do not use any megatester for low voltage electric circuits except 230 V.
     (Wiring between the outdoor unit and the indoor unit)

⚠ CAUTION

<To piping technician>

- Make sure to open the stop valve after finishing the piping work.
  (Operating the air conditioner with the stop valve shut may damage the compressor.)

9. TEST RUN PROCEDURE

A crankcase heater is mounted for smooth startup. Make sure to turn on the power 6 hours before starting operation for supplying the power to the crankcase heater.

⚠ WARNING

- Make sure to close the front panel before leaving the outdoor unit in the power ON status. ⚠
- To avoid injury, always make sure that the overcurrent protective device on the power supply panel of the installation is switched off before doing any work.

Cautions before turning on the power

- **Put the insulating cover securely onto the control box.**
- **After turning on the power, check the settings and LED indicators on the PC board (A1P) in the outdoor unit through the opening of the insulating cover.**

9-1 Power on and check operation

- Make sure to perform the check operation after installation.
  (If the air conditioner is operated using the indoor remote controller without performing the check operation, the malfunction code "U3" is displayed in the indoor remote controller, and normal operation is disabled.)

- In the check operation, the status of the outdoor unit is checked, and incorrect wiring is checked for.

(1) • Close the front panel of the outdoor unit.
• Turn ON the power to the outdoor unit and indoor unit.

⚠ **Caution** Make sure to turn on the power 6 hours before starting operation for supplying the power to the crankcase heater.

(2) • Open the front panel of the outdoor unit.
• Check the LED on the PC board (A1P and A2P) in the outdoor unit to see if the data transmission is performed normally.

The power is supplied to the outdoor unit. Take due care during the work to prevent electric shock.

	A1P	A2P						
LED display (Default status before delivery)	SERVICE MONITOR	MODE	TEST/HWL	IND	MASTER	SLAVE	L.N.O.P.	DEMAND
	HAP	**H1P**	**H2P**	**H3P**	**H4P**	**H5P**	**H6P**	**H7P**
Outdoor unit installed	◑	●	●	○	●	●	●	●

LED display: ● OFF ○ ON ◑ Blinking

(3) • When performing the low-noise operation (L.N.O.P.) or demand (DEMAND) operation upon request from the customer, perform the setting using the pushbutton switches (BS1 to BS5) on the PC board (A2P) in the outdoor unit.
• Press each pushbutton switch from the opening of the insulation cover. (Do not remove the insulation cover.)

• The power is supplied to the outdoor unit. Take due care during the work to prevent electric shock.
• Before using the pushbutton switches (BS1 to BS5) for setting, confirm that the microcomputer (SERVICE) monitor is lit.
• For the setting method, refer to the [Cautions on service] label attached on the back of the front panel of the outdoor unit. (Make sure to write the contents of setting on the [Cautions on service] label.)

(4) Confirm that the stop valves are open on both the liquid and gas lines. If they are closed, open them.

⚠ **Caution** Do not leave any stop valve closed. Otherwise the compressor will fail.

(5) Press and hold the test run button (BS4) for 5 seconds or more to start the check operation. For the details, refer to the **Check operation procedure** on the [Cautions on service] label.

• When leaving the outdoor unit during the check operation for unavoidable reasons, ask another installation worker to watch the outdoor unit, or close the front panel.
• The system operates the check operation for about 15 minutes (30 minutes maximum), then stops automatically.
The system can start normal operation about 5 minutes after the check operation if the remote controller does not display any malfunction code.
• During the check operation, the status under execution is indicated on the remote controller.

(6) After the check operation, make sure to close the front panel of the outdoor unit.

<Cautions on check operation>

- If the air conditioner is started within about 12 minutes after the power of the indoor/outdoor unit is turned on, the H2P indicator lights and the compressor does not run. Confirm that the LED status is as shown in the table in (2) in "**9-1 Power on and check operation**" before starting the air conditioner.
- The air conditioner may require about 10 minutes maximum until it can start the compressor after start of operation. This period of time is required to homogenize the refrigerant status, and does not indicate any failure.
- The check operation does not provide any means of checking the indoor unit individually. For that purpose, perform the normal operation using the remote controller after finishing the check operation.
- The check operation is not available in any other mode such as the recovery mode.
- Before running a check on the unit, changing the indoor remote controller settings might cause the error code "UF" to be displayed and prevent a proper check to be run.

9-2 Checks in normal operation

- After finishing the check operation, operate the air conditioner normally. (Heating is not available if the outside air temperature is 75 °F or more. Refer to the operation manual supplied together with the unit.) (Heating is only available for RZQ-P models.)
- Confirm that the indoor and outdoor units are operating normally. (If a knocking sound is heard in the liquid compression of the compressor, stop the air conditioner immediately and energize the crankcase heater for a sufficient period of time, then start the operation again.)
- Check to see if cold (or hot) air is coming out of the indoor unit.
- Press the fan direction button and fan speed control button on the remote controller to see if the fan is operating normally.

<Cautions for normal operation check>

- Once stopped, the compressor will not start for about 5 minutes even if the "**ON/OFF**" button on the remote controller is pressed.
- When the system operation is stopped by the remote control, the outdoor unit may continue to operate for a further 3 minutes.
- If the system has not undergone the check operation by the test run button since it was first installed, a malfunction code "U3" is displayed. In this case, perform the check operation by referring to "**9-1 Power on and check operation**".

When a malfunction code is displayed in the remote controller

(Check a malfunction code in the remote controller connected to the indoor unit.)

Malfunction code	Cause	Solution
E3	The stop valves in the outdoor unit remain closed.	Open the stop valve on both the gas and liquid lines.
	The refrigerant is overcharged.	Calculate again the required amount of refrigerant to be charged based on the piping length, recover the refrigerant using the refrigerant recovery device, then achieve proper amount of refrigerant.
E4 F3	The stop valves in the outdoor unit remain closed.	Open the stop valve on both the gas side and liquid side.
	The operation mode on the remote controller was changed before the check operation.	Set the operation mode on all indoor unit remote controllers to "cooling."
	The refrigerant is insufficient.	• Check whether additional refrigerant charge has been finished correctly. • Calculate again the required amount of refrigerant to be charged based on the piping length, then charge additionally proper amount of refrigerant.
F6	The refrigerant is overcharged.	Calculate again the required amount of refrigerant to be charged based on the piping length, recover the refrigerant using the refrigerant recovery device, then achieve proper amount of refrigerant.
U3	The check operation has not performed.	Perform the check operation.
U4	The power is not supplied to the outdoor unit.	Connect correctly the power supply wiring of the outdoor unit.
UA	Improper type of indoor unit is connected.	Check the type of indoor unit currently connected. If it is not proper, replace it with proper one.
UF	The stop valves in the outdoor unit remain closed.	Open the stop valve on both the gas and liquid lines.
	The piping and wiring of the indoor unit are not connected correctly to the outdoor unit.	Confirm that the piping and wiring of the indoor unit are connected correctly to the outdoor unit.
	The operation mode on the remote controller was changed before the check operation.	Set the operation mode on indoor unit remote controller to "cooling."
UH	The transmission wiring is not connected correctly.	Connect correctly the transmission wiring to the F1 and F2 (TO IN/D UNIT) terminals on the PC board (A1P) in the outdoor unit.

When nothing is displayed in the remote controller

- There might be a problem with the connection or transmission between the indoor unit and the remote controller. Check connections, and check for wire breakage.

⚠ CAUTION

<To piping technician>
<To electrician>
- **After finishing the test run and before using the unit by customer, confirm that the front panel and screws are attached securely to the unit.**

10. CAUTION FOR REFRIGERANT LEAKS

⚠ DANGER

- Refrigerant gas is heavier than air and replaces oxygen. A massive leak could lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.

(Points to note in connection with refrigerant leaks)

Introduction

The installer and system specialist shall secure safety against leakage according to local regulations or standards. The following standards may be applicable if local regulations are not available.

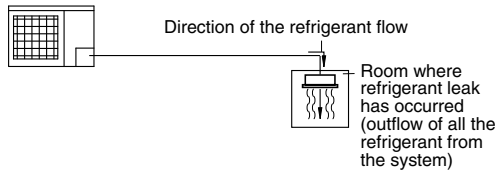
The Split System, like other air conditioning systems, uses R410A as refrigerant. R410A itself is an entirely safe non-toxic, non-combustible refrigerant. Nevertheless care must be taken to ensure that air conditioning facilities are installed in a room which is sufficiently large. This assures that the maximum concentration level of refrigerant gas is not exceeded, in the unlikely event of major leak in the system and this in accordance to the local applicable regulations and standards.

Maximum concentration level

The maximum charge of refrigerant and the calculation of the maximum concentration of refrigerant is directly related to the humanly occupied space in to which it could leak.

The unit of measurement of the concentration is lb./ft³ (the weight in lb. of the refrigerant gas in 1ft³ volume of the occupied space).

Compliance to the local applicable regulations and standards for the maximum allowable concentration level is required.



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Pay a special attention to the place, such as a basement, etc. where refrigerant can stay, since refrigerant is heavier than air.

Procedure for checking maximum concentration

Check the maximum concentration level in accordance with steps 1 to 4 below and take whatever action is necessary to comply.

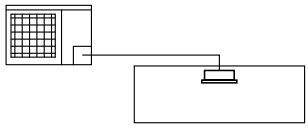
1. Calculate the amount of refrigerant (lb.) charged to each system separately.

amount of refrigerant in the unit (amount of refrigerant with which the system is charged before leaving the factory)	+	additional charging amount (amount of refrigerant added locally in accordance with the length or diameter of the refrigerant piping and type of indoor unit)	=	total amount of refrigerant (lb.) in the system

⚠ NOTE

- Where a single refrigerant facility is divided into 2 entirely independent refrigerant systems then use the amount of refrigerant with which each separate system is charged.

2. Calculate a room volume (ft³)



3. Calculate the refrigerant concentration by using the results of the calculations in steps 1 and 2 above.

$$\frac{\text{total amount of refrigerant in the system}}{\text{volume (ft}^3\text{) of the room in which there is an indoor unit installed}} \leq \text{maximum concentration level (lb./ft}^3\text{)}$$

4. Deal with the situations where the result exceeds the maximum concentration level.
Where the installation of a facility results in a concentration in excess of the maximum concentration level then it will be necessary to revise the system.
Please consult your dealer.

16.2 RZQ30PVJU9 / RZQ36PVJU9 / RZQ42PVJU9

DAIKIN

SPLIT SYSTEM Air Conditioners Installation manual

CONTENTS

1. SAFETY CONSIDERATIONS

Read these "SAFETY CONSIDERATIONS for Installation" carefully before installing air conditioning equipment. After completing the installation, make sure that the unit operates properly during the startup operation.
Instruct the customer on how to operate and maintain the unit. Inform customers that they should store this Installation Manual with the Operation Manual for future reference.
Always use a licensed installer or contractor to install this product. Improper installation can result in water or refrigerant leakage, electrical shock, fire, or explosion.
Meanings of **DANGER**, **WARNING**, **CAUTION**, and **NOTE** Symbols:

⚠ **DANGER** ..... Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ **WARNING**..... Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ **CAUTION**..... Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
It may also be used to alert against unsafe practices.

⚠ **NOTE**..... Indicates situations that may result in equipment or property-damage accidents only.

⚠ DANGER

- **Refrigerant gas is heavier than air and replaces oxygen. A massive leak can lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.**
- **Do not ground units to water pipes, gas pipes, telephone wires, or lightning rods as incomplete grounding can cause a severe shock hazard resulting in severe injury or death. Additionally, grounding to gas pipes could cause a gas leak and potential explosion causing severe injury or death.**
- **If refrigerant gas leaks during installation, ventilate the area immediately. Refrigerant gas may produce toxic gas if it comes in contact with fire. Exposure to this gas could cause severe injury or death.**
- **After completing the installation work, check that the refrigerant gas does not leak throughout the system.**
- **Do not install unit in an area where flammable materials are present due to risk of explosions that can cause serious injury or death.**
- **Safely dispose all packing and transportation materials in accordance with federal/state/local laws or ordinances. Packing materials such as nails and other metal or wood parts, including plastic packing materials used for transportation may cause injuries or death by suffocation.**

⚠ WARNING

- **Only qualified personnel must carry out the installation work. Installation must be done in accordance with this installation manual. Improper installation may result in water leakage, electric shock, or fire.**
- **When installing the unit in a small room, take measures to keep the refrigerant concentration from exceeding allowable safety limits. Excessive refrigerant leaks, in the event of an accident in a closed ambient space, can lead to oxygen deficiency.**
- **Use only specified accessories and parts for installation work. Failure to use specified parts may result in water leakage, electric shocks, fire, or the unit falling.**
- **Install the air conditioner on a foundation strong enough that it can withstand the weight of the unit. A foundation of insufficient strength may result in the unit falling and causing injuries.**
- **Take into account strong winds, typhoons, or earthquakes when installing. Improper installation may result in the unit falling and causing accidents.**
- **Make sure that a separate power supply circuit is provided for this unit and that all electrical work is carried out by qualified personnel according to local, state, and national regulations. An insufficient power supply capacity or improper electrical construction may lead to electric shocks or fire.**
- **Make sure that all wiring is secured, that specified wires are used, and that no external forces act on the terminal connections or wires. Improper connections or installation may result in fire.**
- **When wiring, position the wires so that the control box cover can be securely fastened. Improper positioning of the control box cover may result in electric shocks, fire, or the terminals overheating.**
- **Before touching electrical parts, turn off the unit.**
- **Be sure to install a ground fault circuit interrupter if one is not already available. This helps prevent electrical shocks or fire.**
- **Securely fasten the outdoor unit terminal cover (panel). If the terminal cover/panel is not installed properly, dust or water may enter the outdoor unit causing fire or electric shock.**
- **When installing or relocating the system, keep the refrigerant circuit free from substances other than the specified refrigerant (R410A) such as air. Any presence of air or other foreign substance in the refrigerant circuit can cause an abnormal pressure rise or rupture, resulting in injury.**
- **Do not change the setting of the protection devices. If the pressure switch, thermal switch, or other protection device is shorted and operated forcibly, or parts other than those specified by Daikin are used, fire or explosion may occur.**

⚠ CAUTION

- **Do not touch the switch with wet fingers. Touching a switch with wet fingers can cause electric shock.**
- **Do not allow children to play on or around the unit to prevent injury.**
- **Do not touch the refrigerant pipes during and immediately after operation as the refrigerant pipes may be hot or cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigerant cycle parts. Your hands may suffer burns or frostbite if you touch the refrigerant pipes. To avoid injury, give the pipes time to return to normal temperature or, if you must touch them, be sure to wear proper gloves.**

- **Heat exchanger fins are sharp enough to cut.**
  To avoid injury wear glove or cover the fins when working around them.
- **Install drain piping to proper drainage. Improper drain piping may result in water leakage and property damage.**
- **Insulate piping to prevent condensation.**
- **Be careful when transporting the product.**
- **Do not turn off the power immediately after stopping operation. Always wait for at least 5 minutes before turning off the power. Otherwise, water leakage may occur.**
- **Do not use a charging cylinder. Using a charging cylinder may cause the refrigerant to deteriorate.**
- **Refrigerant R410A in the system must be kept clean, dry, and tight.**
  (a) Clean and Dry -- Foreign materials (including mineral oils such as SUNISO oil or moisture) should be prevented from getting into the system.
  (b) Tight -- R410A does not contain any chlorine, does not destroy the ozone layer, and does not reduce the earth's protection again harmful ultraviolet radiation. R410A can contribute to the greenhouse effect if it is released. Therefore take proper measures to check for the tightness of the refrigerant piping installation. Read the chapter Refrigerant Piping and follow the procedures.
- **Since R410A is a blend, the required additional refrigerant must be charged in its liquid state. If the refrigerant is charged in a state of gas, its composition can change and the system will not work properly.**
- **The indoor unit is for R410A. See the catalog for indoor models that can be connected. Normal operation is not possible when connected to other units.**
- **Remote controller (wireless kit) transmitting distance can be shorter than expected in rooms with electronic fluorescent lamps (inverter or rapid start types). Install the indoor unit far away from fluorescent lamps as much as possible.**
- **Indoor units are for indoor installation only. Outdoor units can be installed either outdoors or indoors.**
- **Do not install the air conditioner in the following locations:**
  (a) Where a mineral oil mist or oil spray or vapor is produced, for example, in a kitchen.
  Plastic parts may deteriorate and fall off or result in water leakage.
  (b) Where corrosive gas, such as sulfurous acid gas, is produced.
  Corroding copper pipes or soldered parts may result in refrigerant leakage.
  (c) Near machinery emitting electromagnetic waves.
  Electromagnetic waves may disturb the operation of the control system and cause the unit to malfunction.
  (d) Where flammable gas may leak, where there is carbon fiber, or ignitable dust suspension in the air, or where volatile flammables such as thinner or gasoline are handled. Operating the unit in such conditions can cause a fire.
- **Take adequate measures to prevent the outdoor unit from being used as a shelter by small animals. Small animals making contact with electrical parts can cause malfunctions, smoke, or fire. Instruct the customer to keep the area around the unit clean.**

⚠ NOTE

- **Install the power supply and control wires for the indoor and outdoor units at least 3.5 feet away from televisions or radios to prevent image interference or noise.**
  Depending on the radio waves, a distance of 3.5 feet may not be sufficient to eliminate the noise.
- **Dismantling the unit, treatment of the refrigerant, oil and additional parts must be done in accordance with the relevant local, state, and national regulations.**
- **Do not use the following tools that are used with conventional refrigerants: gauge manifold, charge hose, gas leak detector, reverse flow check valve, refrigerant charge base, vacuum gauge, or refrigerant recovery equipment.**
- **If the conventional refrigerant and refrigerator oil are mixed in R410A, the refrigerant may deteriorate.**
- **This air conditioner is an appliance that should not be accessible to the general public.**
- **The wall thickness of field-installed pipes should be selected in accordance with the relevant local, state, and national regulations.**

⟨Safety Precaution⟩

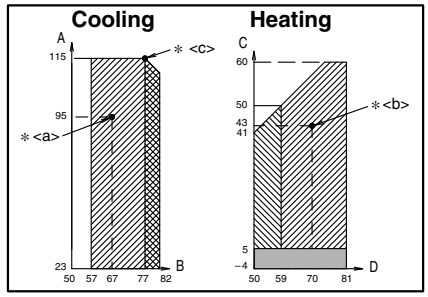
The PCI Data Station is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

2. INTRODUCTION

2-1 Standard operation limit

The figures below assume following operating conditions for indoor and outdoor units:

Equivalent pipe length ..... 25 ft.
Level difference ..... 0 ft.



A Outdoor temperature (°FDB)
B Indoor temperature (°FWB)
C Outdoor temperature (°FWB)
D Indoor temperature (°FDB)

Range for continuous operation
Range for pull down operation
Range for warming up operation
Range for operation

2-2 Technical specifications

(∗<a> and ∗<b> in the table indicate the operating condition (shown in the previous figure).)

Model		RZQ30PVJU9	RZQ36PVJU9 RZR36PVJU	RZQ42PVJU9 RZR42PVJU	Precaution
Refrigerant		R410A			
Power		208/230V 60Hz			
[FCQ] Ceiling mounted					
Cooling (MBh)		–	36.0	40.5	*<a>
Heating (MBh) (RZQ only)		–	39.5	41.5	*<b>
[FHQ] Ceiling suspended					
Cooling (MBh)		–	36.0	40.5	*<a>
Heating (MBh) (RZQ only)		–	37.5	39.5	*<b>
[FTQ] Air handling unit					
Cooling (MBh)		30.0	36.0	42.0	*<a>
Heating (MBh) (RZQ only)		34.0	40.0	47.0	*<b>
Dimensions H × W × D	(inch)	52-15/16 × 35-7/16 × 12-5/8			
Weight	(lb.)	283			
Connections					
Gas	(inch)	5/8			
Liquid	(inch)	3/8			

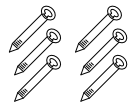
2-3 Electrical specifications

(*<c> in the table indicates the operating condition (shown in the previous figure).)

Model		RZQ30PVJU9	RZQ36PVJU9 RZR36PVJU	RZQ42PVJU9 RZR42PVJU	Precaution
Power					
Phase		~			
Frequency	(Hz)	60			
Voltage	(V)	208/230			
Voltage tolerance	(%)	±10			
Max. Overcurrent Protective device	(A)	30			
Min. Circuit Amps.	(A)	27.0			*<c>
Compressor					
Phase		3~			
Frequency	(Hz)	60			
Voltage	(V)	208/230			

2-4 Accessories

Confirm that the following accessories are supplied.

Clamp	Insulation tube		Others
	Large	Small	
 (6 pcs.)	 (1 pc.)	 (1 pc.)	• Installation manual

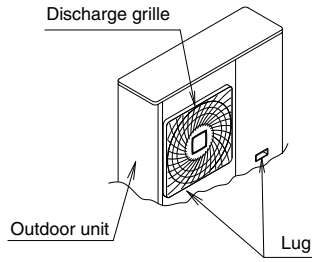
2-5 Main components

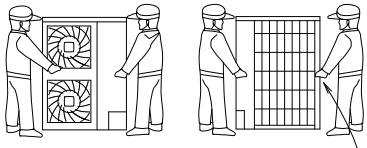
For main components and function of the main components, refer to the Engineering Data Book.

3. BEFORE INSTALLATION

<Bringing-in>

Bring in the outdoor unit slowly by holding the lugs provided on the left and right sides as shown in the figures below.
(Take care so that hands and objects do not touch the fin on the rear.)





(Front view) **(Rear view)**

If the suction hole area on the side of the casing is held, the casing may be deformed. Make sure to hold the corner.

◎ Make sure to use accessories and specified specification parts in the installation work.

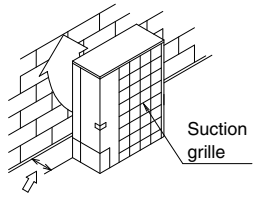
4. SELECTION OF INSTALLATION LOCATION

The refrigerant R410A itself is nontoxic, nonflammable and safe. If the refrigerant should leak however, its concentration may exceed the allowable limit depending on room size. Due to this it could be necessary to take measures against leakage. Refer to the chapter "Caution for refrigerant leaks".

(1) Select a proper location satisfying the following requirements with approval of the customer.
- Sufficient ventilation is secured.
- Adjacent houses are not annoyed.
- The foundation is strong enough to support the weight and withstand vibrations of the outdoor unit, and the location is safe and allows horizontal installation.
- The outdoor unit is exposed to rain as less as possible.
- The space for installation and servicing is secured around the outdoor unit.
- The indoor/outdoor piping length and wiring length are within the allowable range.

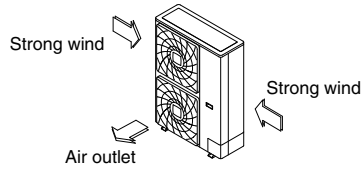
(2) When installing the outdoor unit in a location affected by strong wind, pay special attention to the following items.
- If strong wind whose velocity is 11 mph or more blows to the outdoor unit from the air outlet side, the air flow rate of the outdoor unit is reduced, the outlet air is sucked again (short-circuit), and the following effect may be caused:
  - The capacity is deteriorated.
  - The adhered frost increases during heating operation.
  - The operation is stopped by pressure rise.
- If excessive strong wind continuously blows from the air outlet side of the outdoor unit, the fan may rotate in the reverse direction at high speed, and lead to damage. Install the outdoor unit in reference to the following figures.

• Position the air outlet side toward the building wall, fence or windbreak screen.



(Secure the space for installation and servicing.)

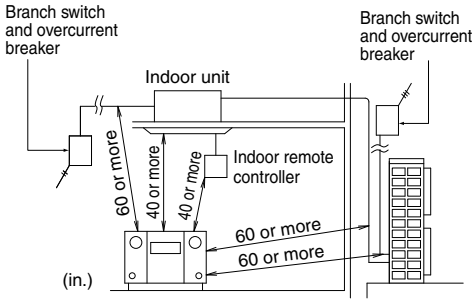
• Let the air outlet direction face be at right angles to the wind direction.



(3) When installing the outdoor unit in a location with heavy snowfall, pay special attention to the following items:
- Prepare strong foundation.
- Attach the snow hood (optional accessory).
- Remove the suction grill on the rear so that snow will not be accumulated in the rear fin.

(4) When there is a possibility of short-circuit depending on the ambient situation, use the wind direction adjusting plate (optional accessory).

(5) The inverter type air conditioner may cause noise in electric products.
When selecting an installation location, keep sufficient distance from the air conditioner unit and wiring to radios, personal computers, stereos, etc. as shown in the figure below. In areas with weak electric waves, keep a distance of 120 in. or more from the indoor remote controller, etc., put the power cables and connection cables in conduit tubes, and ground the conduit tubes.

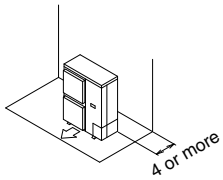


⚠ DANGER

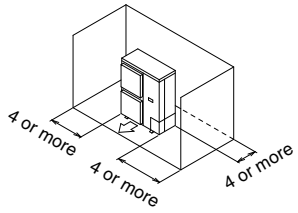
- Do not install unit in an area where flammable materials are present due to risk of explosion resulting in serious injury or death.
- Refrigerant is heavier than air and replaces oxygen. A massive leak could lead to oxygen depletion , especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.

Installation place (unit: inch)
〈Cautions on continuous installation〉
- The connection piping outlet direction in the continuous installation shown in the figures below is frontward or downward.
- When routing the piping rearward, secure space of 10 in. or more on the right side of the outdoor unit. (The unit of numeric values below is “inch”.)
- Make some space for wiring with conduit and servicing between the units.

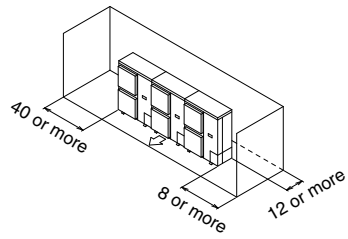
(A) When an obstruction is present on the air inlet side
- **When the upward area is open**
  (1)When one outdoor unit is installed individually
  - When an obstruction is present only on the air inlet side



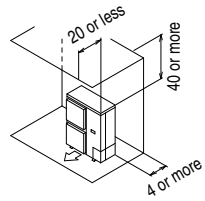
  - When an obstruction is present on the both sides



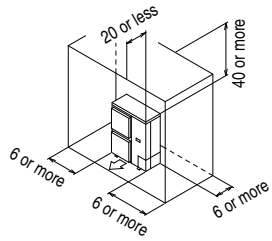
(2)When two or more outdoor units are installed side by side
- When an obstruction is present on the both sides



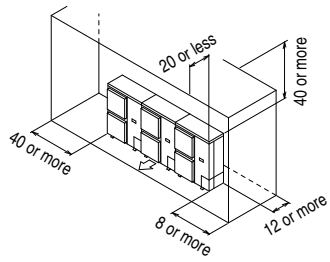
- **When an obstruction is present also in the upward area**
  (1)When one outdoor unit is installed individually
  - When an obstruction is present also on the air inlet side



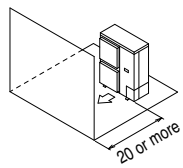
  - When an obstruction is present also on the air inlet side and both sides



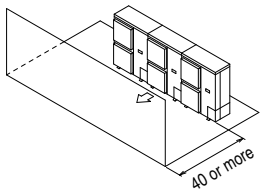
(2)When two or more outdoor units are installed side by side
- When an obstruction is present also on the air inlet side and both sides



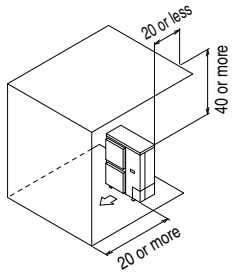
(B) When an obstruction is present on the air outlet side
- **When the upward area is open**
  (1)When one outdoor unit is installed individually



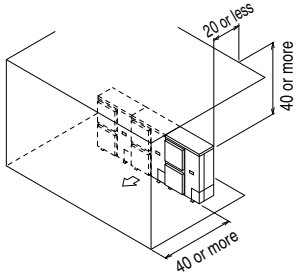
(2)When two or more outdoor units are installed side by side



- **When an obstruction is present also in the upward area**
  (1)When one outdoor unit is installed individually



(2)When two or more outdoor units are installed side by side

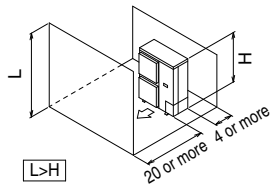


(C) When an obstruction is present on both the air inlet and air outlet sides

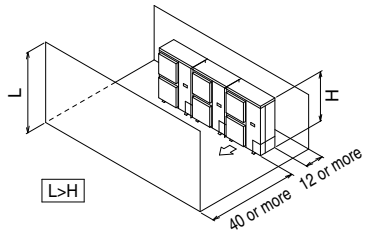
<Pattern 1>

When an obstruction on the air outlet side is higher than the outdoor unit (There is no restriction in the height of obstruction on the air inlet side.)

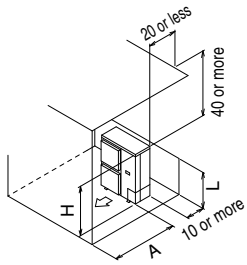
- **When the upward area is open**
  (1)When one outdoor unit is installed individually



(2)When two or more outdoor units are installed side by side



- **When an obstruction is present also in the upward area**
  (1)When one outdoor unit is installed individually



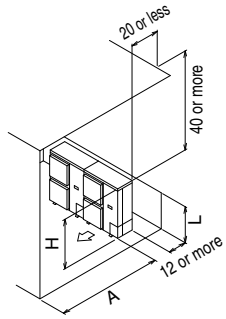
The dimensional relationship between H, L and A is as shown in the table below.

	L	A
L ≤ H	0 < L ≤ 1/2H	30
	1/2H < L ≤ H	40
H < L	**Install the frame to achieve "L ≤ H".**	

NOTE

- Close the area under the frame so that the outlet air does not bypass there.

(2)When only two outdoor units are installed side by side



The dimensional relationship between H, L and A is as shown in the table below.

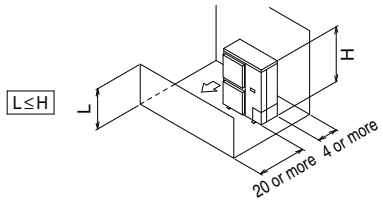
	L	A
L ≤ H	0 < L ≤ 1/2H	40
	1/2H < L ≤ H	50
H < L	**Install the frame to achieve "L ≤ H".**	

NOTE

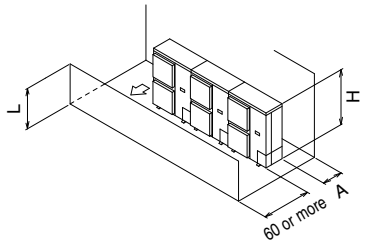
1. Close the area under the frame so that the outlet air does not bypass there.
2. Only two outdoor units can be installed side by side.

<Pattern 2>
When an obstruction on the air outlet side is lower than the outdoor unit (There is no restriction in the height of obstruction on the air inlet side.)

- **When the upward area is open**
  (1)When one outdoor unit is installed individually



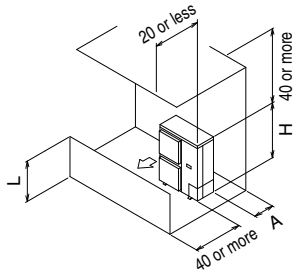
(2)When two or more outdoor units are installed side by side



The dimensional relationship between H, L and A is as shown in the table below.

L	A
0 < L ≤ 1/2H	10
1/2H < L ≤ H	12

- **When an obstruction is present also in the upward area**
  (1)When one outdoor unit is installed individually



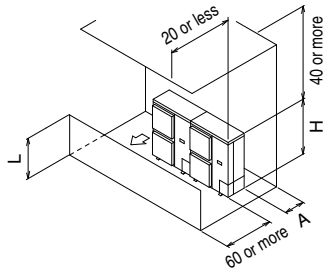
The dimensional relationship between H, L and A is as shown in the table below.

	L	A
L ≤ H	0 < L ≤ 1/2H	4
	1/2H < L ≤ H	8
H < L	**Install the frame to achieve "L ≤ H".**	

NOTE

- Close the area under the frame so that the outlet air does not bypass there.

(2)When only two outdoor units are installed side by side



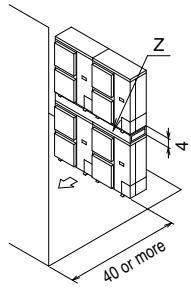
The dimensional relationship between H, L and A is as shown in the table below.

	L	A
L ≤ H	0 < L ≤ 1/2H	10
	1/2H < L ≤ H	12
H < L	**Install the frame to achieve "L ≤ H".**	

NOTE

1. Close the area under the frame so that the outlet air does not bypass there.
2. Only two outdoor units can be installed side by side.

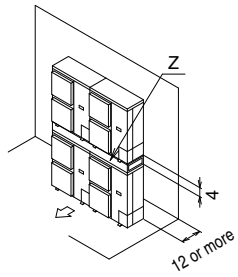
(D) When outdoor units are stacked
(1)When an obstruction is present on the air outlet side



NOTE

1. Only two outdoor units can be stacked.
2. About 4 in. is required as the drain piping size for the upper outdoor unit.
3. Close the area Z (gap between the upper outdoor unit and the lower outdoor unit) so that the outlet air does not bypass there.

(2)When an obstruction is present on the air inlet side

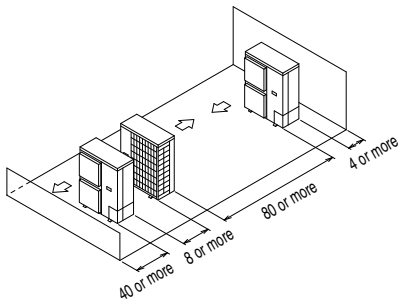


NOTE

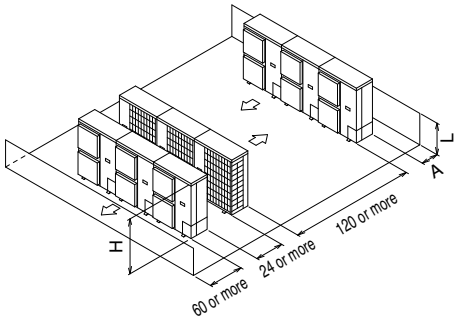
1. Only two outdoor units can be stacked.
2. About 4 in. is required as the drain piping size for the upper outdoor unit.
3. Close the area Z (gap between the upper outdoor unit and the lower outdoor unit) so that the outlet air does not bypass there.

(E) When outdoor units are installed in rows (on the rooftop, etc.)

(1)When one outdoor unit is installed in each row



(2)When two or more outdoor units are installed side by side

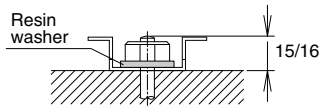


The dimensional relationship between H, L and A is as shown in the table below.

	L	A
L ≤ H	0 < L ≤ 1/2H	10
	1/2H < L ≤ H	12
H < L	**Installation is not allowed.**	

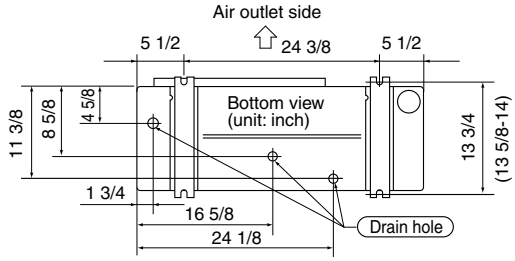
5. CAUTIONS ON INSTALLATION

- Before installation, confirm the strength and levelness of the foundation so that vibrations and noise are not generated.
- Fix the outdoor unit securely on a rigid base with foundation bolts as shown in the foundation drawing below.
  (Prepare 4 sets of commercially available M12-type or equivalent foundation bolts, nuts and washers.)
- Use resin washers to prevent the paint from being scratched off and rusting.
- The foundation bolts should be protruded by 15/16 in.
  (Refer to figure)



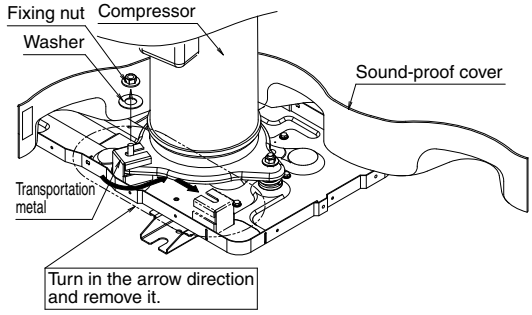
⟨⟨Drain treatment⟩⟩

- In a location where drain from the outdoor unit may cause troubles (for example, where drainage may splash on general passersby), perform the drain piping work using the drain plug (optional).
- For drain treatment, space of at least 4 in. is required under the bottom frame of the outdoor unit.
- In the drain piping work, make sure that drainage is discharged securely.
  (When routing the piping downward, check for water leakage.)



Transportation metal removal procedure

- A transportation metal in yellow and a washer are provided on the leg of the compressor for protecting the unit during transport. Remove them as described below.



(1) Open the sound-proof cover as shown in the above figure.
  At this time, do not pull the sound-proof cover, and do not remove it from the compressor.
(2) Remove the fixing nut.
(3) Remove the transportation metal and the washer as shown in the above figure.
(4) Return and tighten the fixing nut again.
(5) Return the sound-proof cover to achieve the former status.

⚠ CAUTION

- If the unit is operated with the transportation metal attached, abnormal vibration or sound may be generated.

6. REFRIGERANT PIPING WORK

⚠ CAUTION

<To piping technician>

- **Make sure to open the stop valves after finishing the piping work. (Refer to the table shown in " 6-7 Additional refrigerant charge".)**
  (Operating the air conditioner with the stop valve shut may damage the compressor.)
- Use R410A to add refrigerant. (The R410A refrigerant cylinder has a pink stripe painted around it.)
  All field piping must be installed by a licensed refrigeration technician and must comply with relevant local and national regulations.
- **BRAZING REFRIGERANT PIPING**
  Do not use flux when brazing copper-to copper refrigerant piping. (Particularly for the HFC refrigerant piping) Therefore, use the phosphor copper brazing filler metal (BCuP) which does not require flux.
  (Flux has an extremely negative effect on refrigerant piping systems. For instance, if chlorine based flux is used, it will cause pipe corrosion. Flux containing fluorine will damage refrigerant oil.)

NOTE

- Maximum piping length between the outdoor and indoor unit is 230ft.
- Installation tools:
  Make sure to use installation tools (gauge manifold charge hose, etc.) that are exclusively used for R410A installations to withstand the pressure and to prevent foreign materials (e.g. mineral oils such as SUNISO and moisture) from mixing into the system.
  (The screw specifications differ for R410A and R407C.)
  Vacuum pump (use a 2-stage vacuum pump with a non-return valve):
  1. Make sure the pump oil does not flow oppositely into the system while the pump is not working.
  2. Use a vacuum pump which can evacuate to –14.6 psi.

6-1 Selection of piping material

1. Foreign materials inside pipes (including oils for fabrication) must be 0.14gr/10ft. or less.
2. Use the following material specification for refrigerant piping:
   - construction material: Phosphoric acid deoxidized seamless copper for refrigerant.

6-2 Protection of piping

- Protect the piping to prevent moisture and dusts from coming into the piping.
- Especially, pay attention when passing the piping through a hole or connecting the end of piping to the outdoor.

Location	Working period	Protection method
Outdoor	1 month or more	Pinch pipes
	Less than 1 month	Pinch or tape pipes
Indoor	Regardless of period	

6-3 Piping connection

- **For handling of stop valves, refer to "Stop valve operation method" in "6-7 Additional refrigerant charge".**
- **Only use the flare nuts attached to the stop valves. Using different flare nuts may cause the refrigerant to leak.**
- **Be sure to perform a nitrogen blow when brazing.**

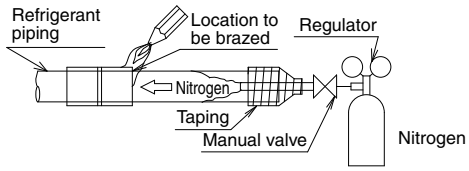
(Brazing without performing nitrogen replacement or releasing nitrogen into the piping will create large quantities of oxidized film inside the pipes, adversely affecting valves and compressor in the refrigerating system and preventing normal operation.)

DANGER

- Use of oxygen could cause an explosion resulting in severe injury or death. Only use nitrogen gas.
- Refrigerant gas may produce toxic gas if it comes in contact with fire such as from a fan heater, stove or cooking device. Exposure to this gas could cause severe injury or death.

NOTE

- When brazing with blowing nitrogen, set the nitrogen pressure to 2.9 psi or less by using a pressure reducing valve.



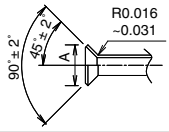
CAUTION

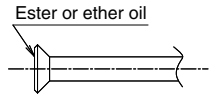
- Do not use anti-oxidants when brazing.
  Residue can clog pipes and break the unit.

◎ Do not let any refrigerant other than the specified refrigerant enter the refrigerant system.
◎ Do not let any gas such as air enter the refrigerant system.

〈Precautions when connecting the piping〉

- See the following table for flare dimensions.
- When connecting the flare nuts, apply refrigerant oil to the inside and outside of the flares and turn them three or four times at first. (Use ester oil or ether oil.)
- See the following table for tightening torque. (Applying too much torque may cause the flares to crack.)
- After connecting all the piping perform a gas leak check by using nitrogen.

Pipe size	Tightening torque (ft·lbf)	Flare dimension A (in.)	Flare shape (in.)
ϕ3/8"	24.1 - 29.4	0.504 - 0.520	
ϕ5/8"	45.6-55.6	0.760 - 0.776	



- If you are obliged to install the unit without a torque wrench, you may follow the installation method mentioned below.
  After the work is finished, make sure to check that there is no gas leak.
- When you keep on tightening the flare nut with a spanner, there is a point where the tightening torque suddenly increases.
  From that position, further tighten the flare nut the angle shown below.

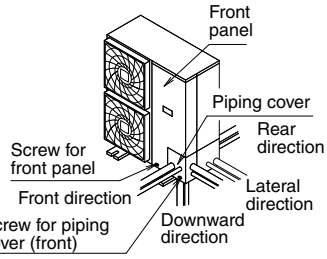
Pipe size	Tightening angle (Guideline)	Recommended arm length of tool (in.)
ϕ 3/8"	60°~90°	Approx. 7 7/8
ϕ 5/8"	30°~60°	Approx. 11 13/16

Disposal requirements

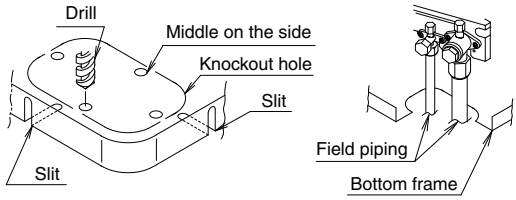
Dismantling of the unit, treatment of the refrigerant, oil and eventual other parts should be comply the relevant local and national regulations.

6-4 Refrigerant piping work procedure

◎ The field piping can be connected in four directions.



◎ When connecting the piping downward, remove the knockout hole by making four holes in the middle on the each side of the knockout hole with a drill.

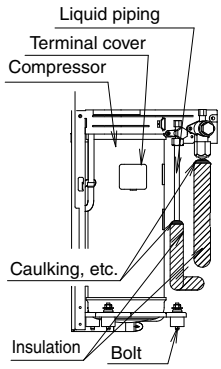


Then cut out the corner of the bottom frame along the slits (in two positions) by using a hacksaw.

◎ After removing the parts, it is recommended to apply repair paint on the edges, to prevent rusting.

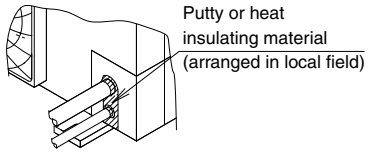
Cautions on connecting the connection piping

- Be careful not to let the field piping come into contact with the compressor terminal cover.
  Adjust the height of the insulation material on liquid pipe when it has the possibility of getting in contact with the terminal. Also make sure that the field piping does not touch the mounting bolt of the compressor.
- When it is expected that water condensed in the stop valve will reach the indoor unit through the gap between the heat insulating material and the piping (for example, when the outdoor unit is installed in a higher position than the indoor unit), take proper action such as caulking the connection area.



[Measures to prevent invasion of small creatures and litter]

- Block all gaps in the piping penetration areas with putty or heat insulating material (arranged in the local field) as shown in the figure below.
  (If small creatures such as insects or litter enter the outdoor unit, a short-circuit may be caused inside the control box.)



6-5 Heat insulation of piping

- Make sure to insulate the field piping (on both the liquid line and gas line) and refrigerant branching kit.
  (If they are not insulated, water leakage may be caused.)

  (The maximum temperature of the piping on the gas line is about 248 °F during heating operation. Use an insulation sufficiently resistant to this temperature.)

- Reinforce the refrigerant piping according to the installation environment. If it is not reinforced, condensate may form on the surface of the insulation.

⚠ WARNING

- Make sure to insulate the field piping up to the piping connection area inside the unit. If the piping is exposed, dew condensation and burn by contact may be caused.

6-6 Airtight test and vacuum drying

The unit has been checked for leaks by the manufacturer.
Confirm that the valves are firmly closed before airtight test or vacuum-drying.
To prevent entry of any impurities and insure sufficient pressure resistance, always use the special tools dedicated for R410A.

Perform the following inspections securely after the piping work.

- **Airtight test** - Make sure to use nitrogen gas. (For the service port position, refer to the figure in **"Stop valve operation method"**.)
  [Procedure] Pressurize the air conditioner from the liquid pipe and gas pipe up to 450 psi (Make sure not to exceed 450 psi). When the pressure does not drop for 24 hours, the piping work shall be accepted.
  If the pressure drops, check for leakage positions. (Confirm that there is no leakage, then release nitrogen.)
- **Vacuum drying** - Use a vacuum pump which can evacuate up to –14.6 psi or less.
  [Procedure] Operate the vacuum pump for evacuation for 2 hours or more using both liquid pipe and gas pipe until the vacuum pressure reaches –14.6 psi or less. Leave the air conditioner at –14.6 psi or less for 1 hour or more, and confirm that the vacuum pressure indicated by the vacuum gage does not increase.
  (If the vacuum pressure increases, the system may contain moisture or have leakage.)

If there is a possibility of moisture remaining in the piping (for example, when there is a possibility of dew condensation inside the piping because the piping work was performed in the rainy season or over a long period of time, or when rainwater may have entered the piping during the work)
Perform evacuation described above for 2 hours (vacuum drying), pressurize the air conditioner up to 7 psi (vacuum break) with nitrogen gas, then evacuate the air conditioner using the vacuum pump for 1 hour to achieve –14.6 psi or less (vacuum drying).
(If the vacuum pressure does not reach –14.6 psi or less even after evacuation for 2 hours or more, repeat vacuum break and vacuum drying.) Leave the air conditioner in the vacuum status for 1 hour or more, and confirm that the vacuum pressure indicated by the vacuum gauge does not increase.

6-7 Additional refrigerant charge

⚠ WARNING

- To avoid injury always use protective gloves and eye protection when charging refrigerant.
- To avoid injury do not charge with unsuitable substances. Use only the appropriate refrigerant.

⚠ NOTE

- Refrigerant cannot be charged until field wiring has been completed.
  Refrigerant may only be charged after performing the airtight test and the vacuum drying (see above).
  When charging refrigerant into the system, take care that its maximum allowable charge is never exceeded, in view of the danger of liquid hammer.
  Refrigerant containers shall be opened slowly.
  To avoid compressor breakdown, do not charge the refrigerant more than the specified amount to raise the condensing pressure.

- This outdoor unit is factory charged with refrigerant.
- Charge the additional refrigerant calculated by the formula below.

$$\frac{\text{Additional charging amount (lb.)}}{} = \frac{\text{Liquid piping length} \times 0.036}{\text{(ft.)} \times 0.036}$$

Record the additional amount to the label stuck on the back of front panel.

- Charge the refrigerant to the liquid pipe in its liquid state. Since R410A is a mixed refrigerant, its composition changes if charged in a state of gas and normal system operation would no longer be assured.
- Before filling, check whether the tank has a siphon attached or not.

  How to fill a tank with a siphon attached.

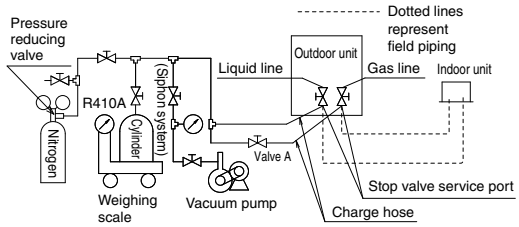
  Fill with the tank upright.
  (There is a siphon tube inside, so there is no need to turn the tank upside-down.)

  Other ways of filling the tank

  Fill with the tank upside-down.

- After the vacuum drying is finished, charge the additional refrigerant in its liquid state through the liquid stop valve service port.
  Taking into account following instructions:
  1. Check that gas and liquid stop valves are closed.
  2. Charge the specified amount of refrigerant.

- If the outdoor unit is not in operation and the total amount cannot be charged, follow the procedures for additional refrigerant charge shown below.
- Make sure to use installation tools you exclusively use on R410A installations to withstand the pressure and to prevent foreign materials from mixing into the system.
- Procedures for charging additional refrigerant.



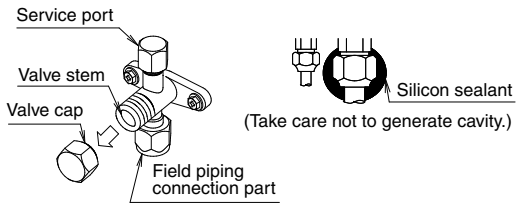
See the "Cautions on service" label on the back of the front panel for the settings for operation after replenishing refrigerant.

1. Open the gas line stop valve (leaving the liquid line stop valve, valve A in the diagram above, close) and perform the operation to add the refrigerant.
2. Once the appropriate amount of refrigerant is in, press the confirmation button (BS3) on the outdoor unit PC board (A1P), and stop operation.
3. Open the stop valves quickly (both liquid and gas line valves). (This must be done quickly to avoid the possibility that the pipe might burst.)

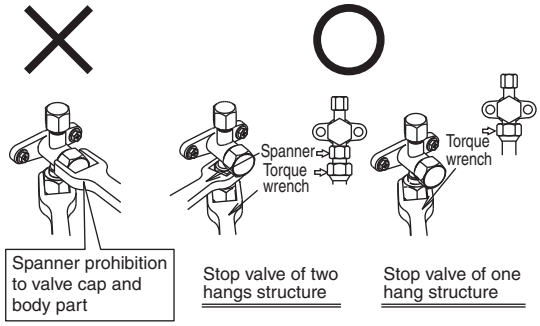
Stop valve operation method

Cautions on handling the stop valve

- The figure below shows the name of each part required in handling the stop valve. At the time of shipment, the stop valve is closed.



- If only a torque wrench is used to loosen or tighten the flare nut, the side plate may be distorted. Make sure to fix the stop valve with a spanner, then loosen or tighten the flare nut with a torque wrench.



- When it is expected that the operating pressure will be low (for example, when cooling will be performed while the outside air temperature is low), seal sufficiently the flare nut in the stop valve on the gas line with silicon sealant to prevent freezing.

[Stop valve operation method]
Prepare hexagon wrenches (whose size is 4 mm and 6 mm).

How to open the stop valve

1. Insert a hexagon wrench into the valve stem, and turn the valve stem counterclockwise.
2. When the valve stem cannot be turned any more, stop turning. Now, the valve is open.

How to close the stop valve

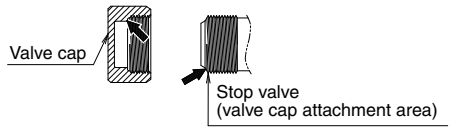
1. Insert a hexagon wrench into the valve stem, and turn the valve stem clockwise.
2. When the valve stem cannot be turned any more, stop turning. Now, the valve is closed.

Opening direction **Opening direction**

<Liquid line> <Gas line>

Cautions on handling the valve cap

- The valve is sealed in the arrow area. Take care not to damage the arrow area.



- After handling the valve, make sure to tighten the valve cap securely.

Liquid line	Gas line
10.0~12.2 ft·lbf	16.6~20.3 ft·lbf

Cautions on handling the service port

- Use charge hose equipped with push in the work.
- After the work, make sure to tighten the valve cap securely. Tightening torque.....8.5~10.3 ft·lbf

7. ELECTRIC WIRING WORK

⚠ DANGER

- Do not ground units to water pipes, telephone wires or lightning rods because incomplete grounding could cause a severe shock hazard resulting in severe injury or death, and to gas pipes because a gas leak could result in an explosion which could lead to severe injury or death.

⚠ WARNING

- Disconnect all power to unit to avoid possible electric shock during installation.
- Use only specified wire and connect wires to terminals tightly. Be careful that wires do not place external stress on terminals. Keep wires in neat order so as to not to obstruct other equipment. Incomplete connections could result in overheating, and in worse cases, electric shock or fire.
  For the details, refer to **"7-3 Power supply wiring connection procedure"**.

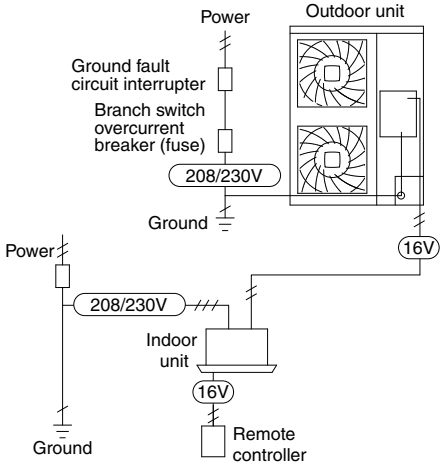
⚠ CAUTION

<To electrician>

- Do not operate the air conditioner until the refrigerant piping work is completed.
  (Operating the air conditioner before the refrigerant piping work is completed may damage the compressor.)
- Install a ground fault circuit interrupter.
  (The inverter is provided in the air conditioner. In order to prevent malfunction of the ground fault circuit interrupter itself, use a breaker resistant to higher harmonics.)

- Electricians having sufficient knowledge should perform the electrical wiring work.
  All wiring must comply with local electrical codes and National Electrical Code (NEC).
- Perform the electric wiring work in accordance with the "wiring diagram label".
  Make sure to turn OFF the branch switch and overcurrent breaker before starting the work.
- Perform grounding to the indoor unit and outdoor unit.
- Use only copper wires.
- Make sure to turn the power off before starting the electric wiring work.
  Do not turn ON any switch until the work is completed.
- The outdoor unit has an inverter which generates noise and charges the outer casing with the leakage current. The outdoor unit should be grounded so that the effect of the generated noise on other equipment can be reduced, and that the outer casing can be discharged.
- As this unit is equipped with an inverter, installing a phase advancing capacitor will not only reduce the power factor improvement factor, but may also cause the capacitor to overheat due to high-frequency waves. Therefore, never install a phase advancing capacitor.
- Never push excessive electric wires into the units.
- Protect electric wires with conduit tubes or vinyl tubes so that they will not be damaged by edges of knockout holes.
- Fix electric wires with clamps as accessories so that they will not come to contact with pipes and stop valves.
  (Refer to **"7-3 Power supply wiring connection procedure"**.)

7-1 Connection example of whole system wiring

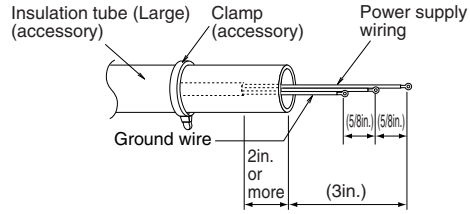


7-2 Routing power supply wiring and transmission wiring

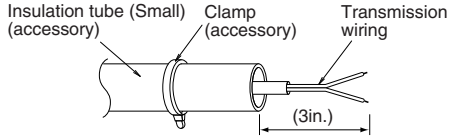
Let the power supply wiring and transmission wiring with a conduit pass through one of the knockout holes on the front or side piping cover, and let the transmission wiring with a conduit pass through another knockout hole.

- For protection from uninsulated live parts, thread the power supply wiring and the transmission wiring through the included insulation tube and secure it with the included clamp.

<Power supply wiring>

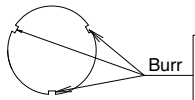


<Transmission wiring>



Precautions knockout holes

- Open the knockout holes with a hammer or the like.
- After knocking out the holes, we recommend you remove burrs in the knockout holes and paint the edges and areas around the edges using the repair paint to prevent rusting.
- When passing wiring through knockout holes, make sure there are no burrs, and protect the wiring with protective tape.



If small animals might enter the unit, block the knockout holes with an appropriate material (field supply).

⚠ CAUTION

- Use conduit for both the power supply wiring and transmission wiring.
- Outside the unit, make sure to keep the wirings 5 inch away. Otherwise, the outdoor unit may be affected by electrical noise (external noise), and malfunction or fail.
- Be sure to connect the power supply wiring to the terminal block and secure it as described in "7-3 Power supply wiring connection procedure".
- Fix the wiring between the units in accordance with "7-4 Transmission wiring connection procedure".
- Secure the wirings with the clamps (accessory) so that do not touch the piping.
- Make sure the wirings will not be pinched by the front panel, and close the panel firmly.
- Route the conduit along the unit by using a elbow socket and so on to prevent it from being stepped on.

7-3 Power supply wiring connection procedure

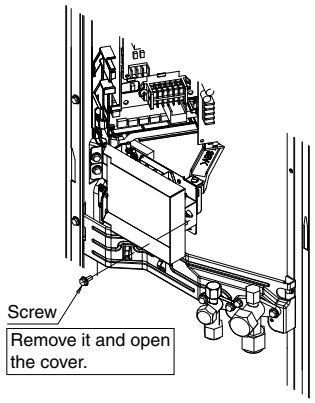
⚠ WARNING

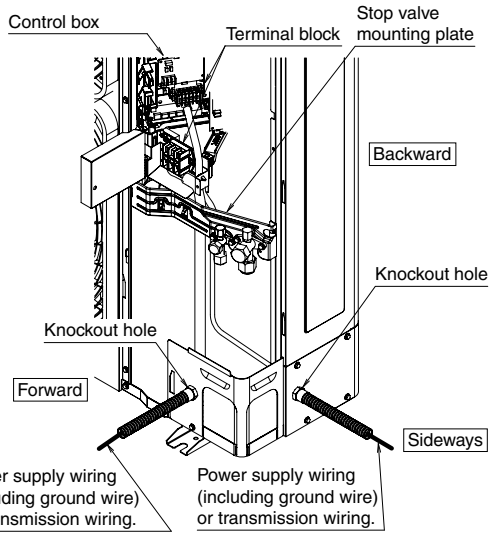
- Never connect power supply wiring to the terminal block for remote controller wiring as this could damage the entire system.

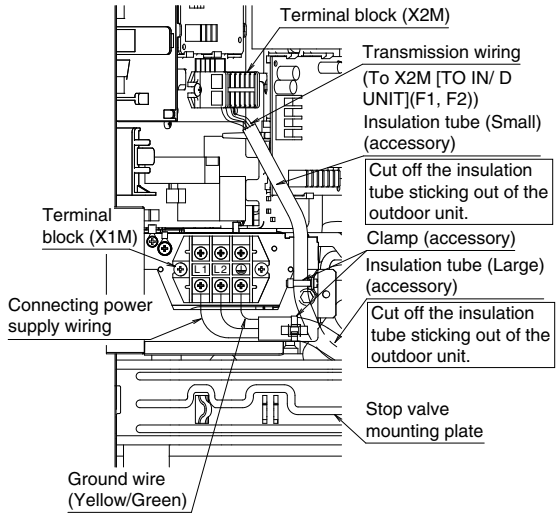
Install a ground fault circuit interrupter.

- It is obliged to install a ground fault circuit interrupter to prevent electric shock and fire accident.

Model	Phase and frequency	Voltage	Max. Overcurrent Protective device	Min. Circuit Amps.
RZQ30PVJU9	~ 60Hz	208/230V	30A	27A
RZQ36PVJU9 RZR36PVJU				
RZQ42PVJU9 RZR42PVJU				





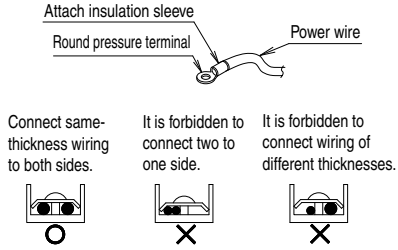


⚠ CAUTION

- After finishing the electric wiring work, confirm that all the wirings are connected securely.

⟨⟨Precautions when laying power wiring⟩⟩

- Two electric wires of different thickness cannot be connected to the power terminal block.
  (Slack in the electric wires may generate abnormal heat.)
- Use round pressure terminals with insulting sleeve for connection to the power terminal block.
  If such terminals are not available for unavoidable reasons, connect an electric wire of the same thickness to each side as shown in the figure.



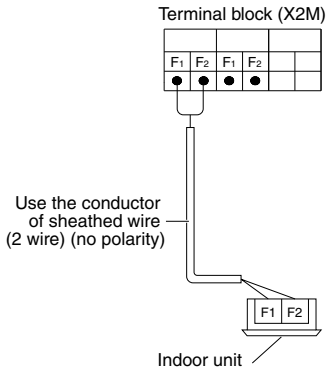
Make sure to observe the following items. If they are not observed, abnormal heat may be generated by slack in electric wires, etc.

- For wiring, use the designated power wire and connect firmly, then secure to prevent outside pressure being exerted on the terminal board.
- Use an appropriate screwdriver for tightening the terminal screws. A screwdriver with a small head will strip the head and make proper tightening impossible.
- Over-tightening the terminal screws may break them.
- See the table below for tightening torque for the terminal screws.

Tightening torque (ft·lbf)		
M5	(Power supply and ground terminal block)	1.76 ~ 2.15
M4	(Shielded ground)	0.87 ~ 1.06
M3.5	(Transmission wiring terminal block)	0.58 ~ 0.72

7-4 Transmission wiring connection procedure

- **If an excessive force is applied while connecting a cable to the terminal block on the PC board, the PC board may be damaged.**



CAUTION

- For low-noise operation, it is necessary to install the optional "External control adaptor for outdoor unit".
  For details, see the installation manual attached to the adaptor.

Caution on the wiring length between units

Make sure to observe the restrictions below. If they are not observed, transmission error may occur.

Maximum wiring length: 3280 ft.

Cautions on the wiring between units

- Never connect 208/230V to the terminal block for the transmission wiring.
  Doing so will break the entire system.
- The transmission wiring from the indoor unit must be connected to the F1/F2 (TO IN/D UNIT) terminals on the PC board in the outdoor unit.

* Make sure to use sheathed two-core cables of AWG18-16 in the wiring shown above.
* **All cables used in the wiring between the units should be procured on the site.**

8. CHECKS AFTER COMPLETION OF WORK

After completing the work, make sure to confirm the following items:

1. Connection of drain piping and removal of transportation metal:
   Refer to **"5. CAUTIONS ON INSTALLATION"**.
2. Connection of power supply wiring and tightening of screws:
   Refer to **"7-3 Power supply wiring connection procedure"**.
3. Connection of transmission wiring and tightening of screws:
   Refer to **"7-4 Transmission wiring connection procedure"**.
4. Freezing connection of refrigerant piping
   Refer to **"6. REFRIGERANT PIPING WORK"**.
5. Piping size and heat insulation:
   Refer to **"6-1 Selection of piping material"**, **"6-5 Heat insulation of piping"**.
6. Check of stop valve:
   Confirm that the stop valve is open on both the liquid line and gas line.
7. Record of amount of additional refrigerant:
   Record the amount on the label stuck on the back of the front panel.
8. Measurement of insulation in main power circuit:
   - Use the megatester for 500 V.
   - Do not use any megatester for low voltage electric circuits except 230 V.
     (Wiring between the outdoor unit and the indoor unit)

CAUTION

<To piping technician>

- Make sure to open the stop valve after finishing the piping work.
  (Operating the air conditioner with the stop valve shut may damage the compressor.)

9. TEST RUN PROCEDURE

A crankcase heater is mounted for smooth startup. Make sure to turn on the power 6 hours before starting operation for supplying the power to the crankcase heater.

WARNING

- Make sure to close the front panel before leaving the outdoor unit in the power ON status.
- To avoid injury, always make sure that the circuit breaker on the power supply panel of the installation is switched off before doing any work.

Cautions before turning on the power

- **Put the insulating cover securely onto the control box.**
- **After turning on the power, check the settings and LED indicators on the PC board (A2P) in the outdoor unit through the opening of the insulating cover.**

9-1 Power on and check operation

- Make sure to perform the check operation after installation. (If the air conditioner is operated using the indoor remote controller without performing the check operation, the malfunction code "U3" is displayed in the indoor remote controller, and normal operation is disabled.)
- In the check operation, the status of the outdoor unit is checked, and incorrect wiring is checked for.

(1) • Close the front panel of the outdoor unit.
• Turn ON the power to the outdoor unit and indoor unit.

⚠ **Caution** Make sure to turn on the power 6 hours before starting operation for supplying the power to the crankcase heater.

(2) • Open the front panel of the outdoor unit.
• Check the LED on the PC board (A1P and A2P) in the outdoor unit to see if the data transmission is performed normally.

The power is supplied to the outdoor unit. Take due care during the work to prevent electric shock.

	A1P	A2P						
LED display (Default status before delivery)	SERVICE MONITOR	MODE	TEST/HWL	IND	MASTER	SLAVE	L.N.O.P.	DEMAND
	HAP	**H1P**	**H2P**	**H3P**	**H4P**	**H5P**	**H6P**	**H7P**
Outdoor unit installed	◑	●	●	○	●	●	●	●

LED display: ● OFF ○ ON ◑ Blinking

(3) • When performing the low-noise operation (L.N.O.P.) or demand (DEMAND) operation upon request from the customer, perform the setting using the pushbutton switches (BS1 to BS5) on the PC board (A2P) in the outdoor unit.
• Press each pushbutton switch from the opening of the insulation cover. (Do not remove the insulation cover.)

• The power is supplied to the outdoor unit. Take due care during the work to prevent electric shock.
• Before using the pushbutton switches (BS1 to BS5) for setting, confirm that the microcomputer (SERVICE) monitor is lit.
• For the setting method, refer to the [Cautions on service] label attached on the back of the front panel of the outdoor unit. (Make sure to write the contents of setting on the [Cautions on service] label.)

(4) Confirm that the stop valves are open on both the liquid and gas lines. If they are closed, open them.

⚠ **Caution** Do not leave any stop valve closed. Otherwise the compressor will fail.

(5) Press and hold the test run button (BS4) for 5 seconds or more to start the check operation.
For the details, refer to the **Check operation procedure** on the [Cautions on service] label.

• When leaving the outdoor unit during the check operation for unavoidable reasons, ask another installation worker to watch the outdoor unit, or close the front panel.
• The system operates the check operation for about 15 minutes (30 minutes maximum), then stops automatically. The system can start normal operation about 5 minutes after the check operation if the remote controller does not display any malfunction code.
• During the check operation, the status under execution is indicated on the remote controller.

(6) After the check operation, make sure to close the front panel of the outdoor unit.

<Cautions on check operation>

- If the air conditioner is started within about 12 minutes after the power of the indoor/outdoor unit is turned on, the H2P indicator lights and the compressor does not run.
  Confirm that the LED status is as shown in the table in (2) in **"9-1 Power on and check operation"** before starting the air conditioner.
- The air conditioner may require about 10 minutes maximum until it can start the compressor after start of operation.
  This period of time is required to homogenize the refrigerant status, and does not indicate any failure.
- The check operation does not provide any means of checking the indoor unit individually. For that purpose, perform the normal operation using the remote controller after finishing the check operation.
- The check operation is not available in any other mode such as the recovery mode.
- Before running a check on the unit, changing the indoor remote controller settings might cause the error code "UF" to be displayed and prevent a proper check to be run.

9-2 Checks in normal operation

- After finishing the check operation, operate the air conditioner normally. (Heating operation is only available for RZQ-P models.) (Heating is not available if the outside air temperature is 75 °F or more. Refer to the operation manual supplied together with the unit.)
- Confirm that the indoor and outdoor units are operating normally. (If a knocking sound is heard in the liquid compression of the compressor, stop the air conditioner immediately and energize the crankcase heater for a sufficient period of time, then start the operation again.)
- Run the indoor unit one by one in turn, and confirm that the corresponding outdoor unit is running.
- Check to see if cold (or hot) air is coming out of the indoor unit.
- Press the fan direction button and fan speed control button on the remote controller to see if the fan is operating normally.

<Cautions for normal operation check>

- Once stopped, the compressor will not start for about 5 minutes even if the **"ON/OFF"** button on the remote controller is pressed.
- When the system operation is stopped by the remote control, the outdoor unit may continue to operate for a further 3 minutes.
- If the system has not undergone the check operation by the test run button since it was first installed, a malfunction code "U3" is displayed.
  In this case, perform the check operation by referring to **"9-1 Power on and check operation"**.

When a malfunction code is displayed in the remote controller

(Check a malfunction code in the remote controller connected to the indoor unit.)

Malfunction code	Cause	Solution
E3	The stop valves in the outdoor unit remain closed.	Open the stop valve on both the gas and liquid lines.
	The refrigerant is overcharged.	Calculate again the required amount of refrigerant to be charged based on the piping length, recover the refrigerant using the refrigerant recovery device, then achieve proper amount of refrigerant.
E4 F3	The stop valves in the outdoor unit remain closed.	Open the stop valve on both the gas side and liquid side.
	The operation mode on the remote controller was changed before the check operation.	Set the operation mode on all indoor unit remote controllers to "cooling."
	The refrigerant is insufficient.	• Check whether additional refrigerant charge has been finished correctly. • Calculate again the required amount of refrigerant to be charged based on the piping length, then charge additionally proper amount of refrigerant.
F6	The refrigerant is overcharged.	Calculate again the required amount of refrigerant to be charged based on the piping length, recover the refrigerant using the refrigerant recovery device, then achieve proper amount of refrigerant.
U3	The check operation has not performed.	Perform the check operation.
U4	The power is not supplied to the outdoor unit.	Connect correctly the power supply wiring of the outdoor unit.
UA	Improper type of indoor unit is connected.	Check the type of indoor unit currently connected. If it is not proper, replace it with proper one.
UF	The stop valves in the outdoor unit remain closed.	Open the stop valve on both the gas and liquid lines.
	The piping and wiring of the indoor unit are not connected correctly to the outdoor unit.	Confirm that the piping and wiring of the indoor unit are connected correctly to the outdoor unit.
	The operation mode on the remote controller was changed before the check operation.	Set the operation mode on indoor unit remote controller to "cooling."
UH	The transmission wiring is not connected correctly.	Connect correctly the transmission wiring to the F1 and F2 (TO IN/D UNIT) terminals on the PC board (A1P) in the outdoor unit.

When nothing is displayed in the remote controller

- There might be a problem with the connection or transmission between the indoor unit and the remote controller. Check connections, and check for wire breakage.

⚠ CAUTION

<To piping technician>
<To electrician>

- **After finishing the test run and before using the unit by customer, confirm that the front panel and screws are attached securely to the unit.**

10. CAUTION FOR REFRIGERANT LEAKS

⚠ DANGER

- Refrigerant gas is heavier than air and replaces oxygen. A massive leak could lead to oxygen depletion, especially in basements, and an asphyxiation hazard could occur leading to serious injury or death.

(Points to note in connection with refrigerant leaks)

Introduction

The installer and system specialist shall secure safety against leakage according to local regulations or standards. The following standards may be applicable if local regulations are not available.

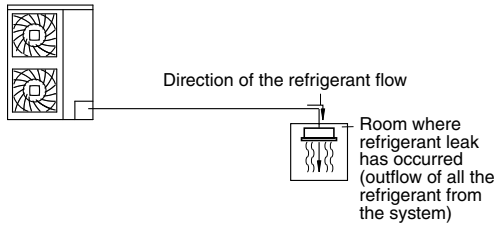
The Split System, like other air conditioning systems, uses R410A as refrigerant. R410A itself is an entirely safe non-toxic, non-combustible refrigerant. Nevertheless care must be taken to ensure that air conditioning facilities are installed in a room which is sufficiently large. This assures that the maximum concentration level of refrigerant gas is not exceeded, in the unlikely event of major leak in the system and this in accordance to the local applicable regulations and standards.

Maximum concentration level

The maximum charge of refrigerant and the calculation of the maximum concentration of refrigerant is directly related to the humanly occupied space in to which it could leak.

The unit of measurement of the concentration is lb./ft^3 (the weight in lb. of the refrigerant gas in 1ft^3 volume of the occupied space).

Compliance to the local applicable regulations and standards for the maximum allowable concentration level is required.



Pay a special attention to the place, such as a basement, etc. where refrigerant can stay, since refrigerant is heavier than air.

Procedure for checking maximum concentration

Check the maximum concentration level in accordance with steps 1 to 4 below and take whatever action is necessary to comply.

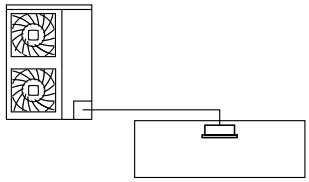
1. Calculate the amount of refrigerant (lb.) charged to each system separately.

amount of refrigerant in the unit (amount of refrigerant with which the system is charged before leaving the factory)	+	additional charging amount (amount of refrigerant added locally in accordance with the length or diameter of the refrigerant piping)	=	total amount of refrigerant (lb.) in the system

NOTE

- Where a single refrigerant facility is divided into 2 entirely independent refrigerant systems then use the amount of refrigerant with which each separate system is charged.

2. Calculate a room volume (ft^3)



3. Calculate the refrigerant concentration by using the results of the calculations in steps 1 and 2 above.

$$\frac{\text{total amount of refrigerant in the system}}{\text{volume } (ft^3) \text{ of the room in which there is an indoor unit installed}} \leq \text{maximum concentration level } (lb./ft^3)$$

4. Deal with the situations where the result exceeds the maximum concentration level.
Where the installation of a facility results in a concentration in excess of the maximum concentration level then it will be necessary to revise the system.
Please consult your dealer.

Warning

- Daikin products are manufactured for export to numerous countries throughout the world. Prior to purchase, please confirm with your local authorized importer, distributor and/or retailer whether this product conforms to the applicable standards, and is suitable for use, in the region where the product will be used. This statement does not purport to exclude, restrict or modify the application of any local legislation.
- Ask a qualified installer or contractor to install this product. Do not try to install the product yourself. Improper installation can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Use only those parts and accessories supplied or specified by Daikin. Ask a qualified installer or contractor to install those parts and accessories. Use of unauthorized parts and accessories or improper installation of parts and accessories can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Read the User's Manual carefully before using this product. The User's Manual provides important safety instructions and warnings. Be sure to follow these instructions and warnings.

If you have any inquiries, please contact your local importer, distributor and/or retailer.

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Cautions on product corrosion

1. Air conditioners should not be installed in areas where corrosive gases, such as acid gas or alkaline gas, are produced.
2. If the outdoor unit is to be installed close to the sea shore, direct exposure to the sea breeze should be avoided. If you need to install the outdoor unit close to the sea shore, contact your local distributor.

ISO 9001
JMI-0107

Organization:
DAIKIN INDUSTRIES, LTD.
AIR CONDITIONING MANUFACTURING DIVISION

Scope of Registration:
THE DESIGN/DEVELOPMENT AND MANUFACTURE OF COMMERCIAL AIR CONDITIONING, HEATING, COOLING, REFRIGERATING EQUIPMENT, HEATING EQUIPMENT, RESIDENTIAL AIR CONDITIONING EQUIPMENT, HEAT RECLAIM VENTILATION, AIR CLEANING EQUIPMENT, COMPRESSORS AND VALVES.

ISO 9001
JQA-1452

Organization:
DAIKIN INDUSTRIES (THAILAND) LTD.

Scope of Registration:
THE DESIGN/DEVELOPMENT AND MANUFACTURE OF AIR CONDITIONERS AND THE COMPONENTS INCLUDING COMPRESSORS USED FOR THEM

ISO 14001
EC99J2044

All of the Daikin Group's business facilities and subsidiaries in Japan are certified under the ISO 14001 international standard for environment management.

Dealer

DAIKIN AC (AMERICAS), INC.
1645 Wallace Drive, Suite 110
Carrollton, TX75006
info@daikinac.com
www.daikinac.com

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