<ORIGINAL>

MITSUBISHI ELECTRIC

CITY MULTI

Air-Conditioners For Building Application

HEAT SOURCE UNIT

PQHY-P-Y(S)LM-A1, PQHY-P-Y(S)LM-A2
PQRY-P-Y(S)LM-A1, PQRY-P-Y(S)LM-A2

CE

For use with R410A

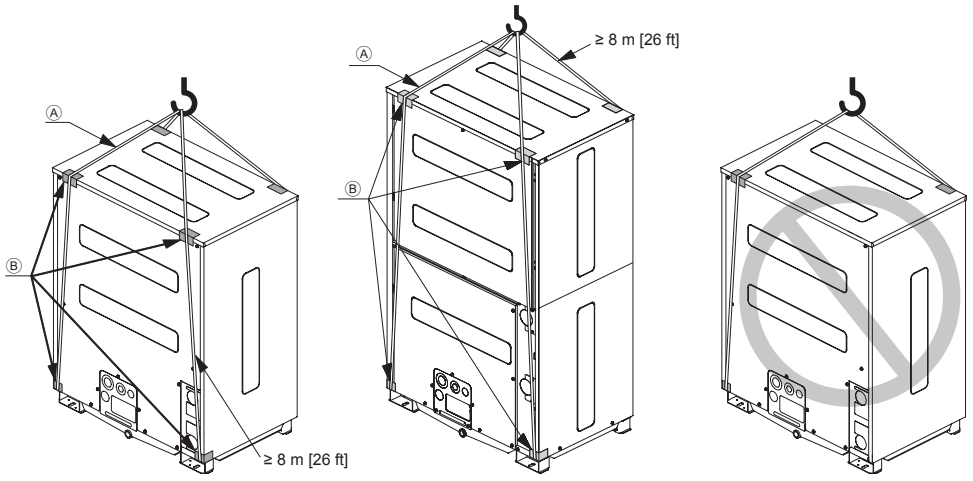
INSTALLATION MANUAL

For safe and correct use, please read this installation manual thoroughly before installing the air-conditioner unit.

GB

6

[Fig. 6.0.1]



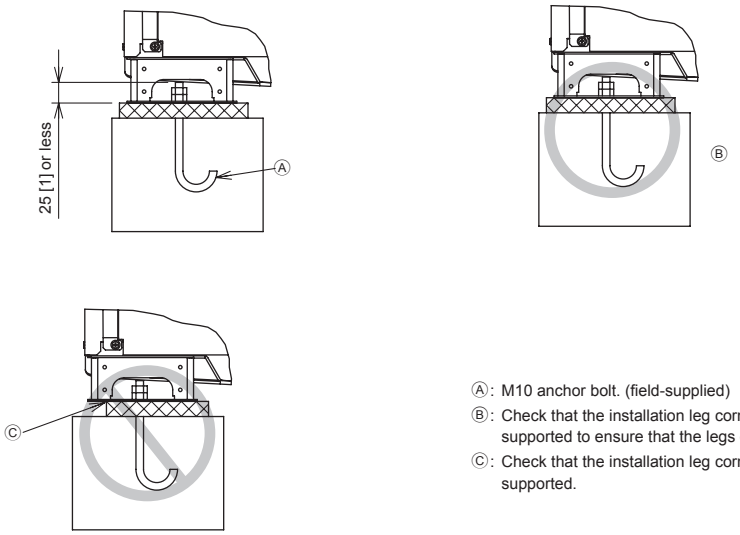
<P200 ~ P300> <P350 ~ P600>

Ⓐ: Suspension Ropes (8 m [26 ft] or longer × 2 ropes)
Ⓑ: Protective Pads (front and back, 4 points)

7 7.1

[Fig. 7.1.1]

(Unit: mm [in])

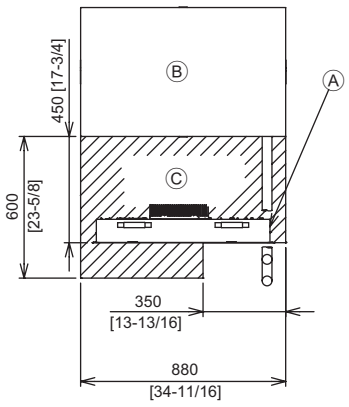


Ⓐ: M10 anchor bolt. (field-supplied)
Ⓑ: Check that the installation leg corners are securely supported to ensure that the legs do not bend.
Ⓒ: Check that the installation leg corners are securely supported.

7 7.2

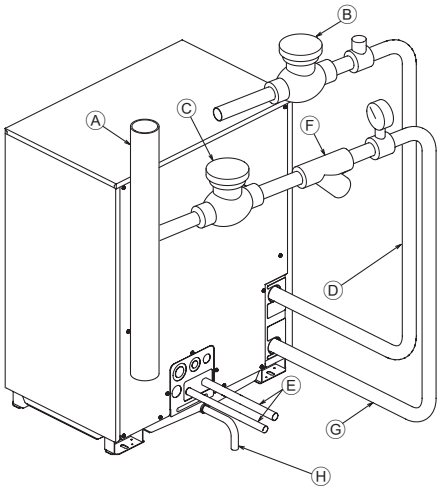
[Fig. 7.2.1]

(Unit: mm [in])



Ⓐ: Space for removing the control box
Ⓑ: Heat source unit
Ⓒ: Service space (front)

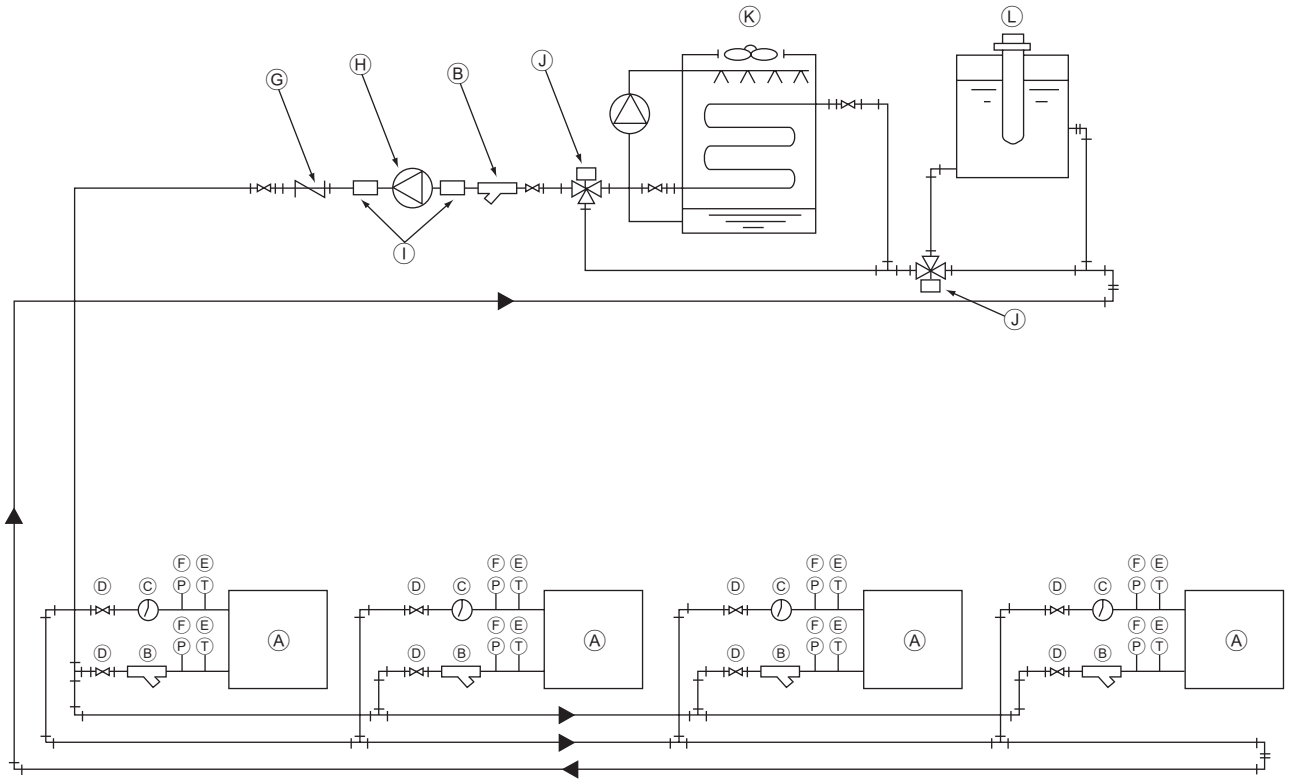
[Fig. 8.1.1]



Ⓐ: Main circulating water pipe
Ⓑ: Shutoff valve
Ⓒ: Shutoff valve
Ⓓ: Water outlet (upper)
Ⓔ: Refrigerant pipes
Ⓕ: Y-type strainer
Ⓖ: Water inlet (lower)
Ⓗ: Drain pipe

Heat source unit sample installation

[Fig. 8.1.2] System example of water circuit



Note: The figure above shows a sample water circuit. This circuit is provided only as a reference, and Mitsubishi Electric Corporation shall not be held for any problems arising from the use of this circuit.

Ⓐ: Heat source unit
Ⓑ: Strainer *1
Ⓒ: Flow Switch *1*2
Ⓓ: Shutoff valve *1
Ⓔ: Temperature gauge *1
Ⓕ: Pressure gauge *1
Ⓖ: Backflow prevention valve
Ⓗ: Pump
Ⓘ: Flexible joint
Ⓙ: 3-way valve
Ⓚ: Cooling tower
Ⓛ: Heating tank

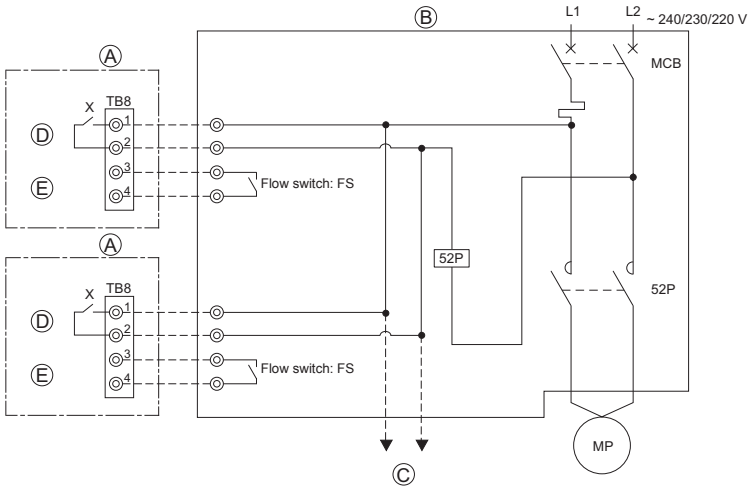
*1 These items are field supplied.
*2 As for flow switch setting, please refer to "8.4 Pump interlock".

8 8.4

[Fig. 8.4.1]

Ⓐ: Pump interlock circuit connection (field-supplied)

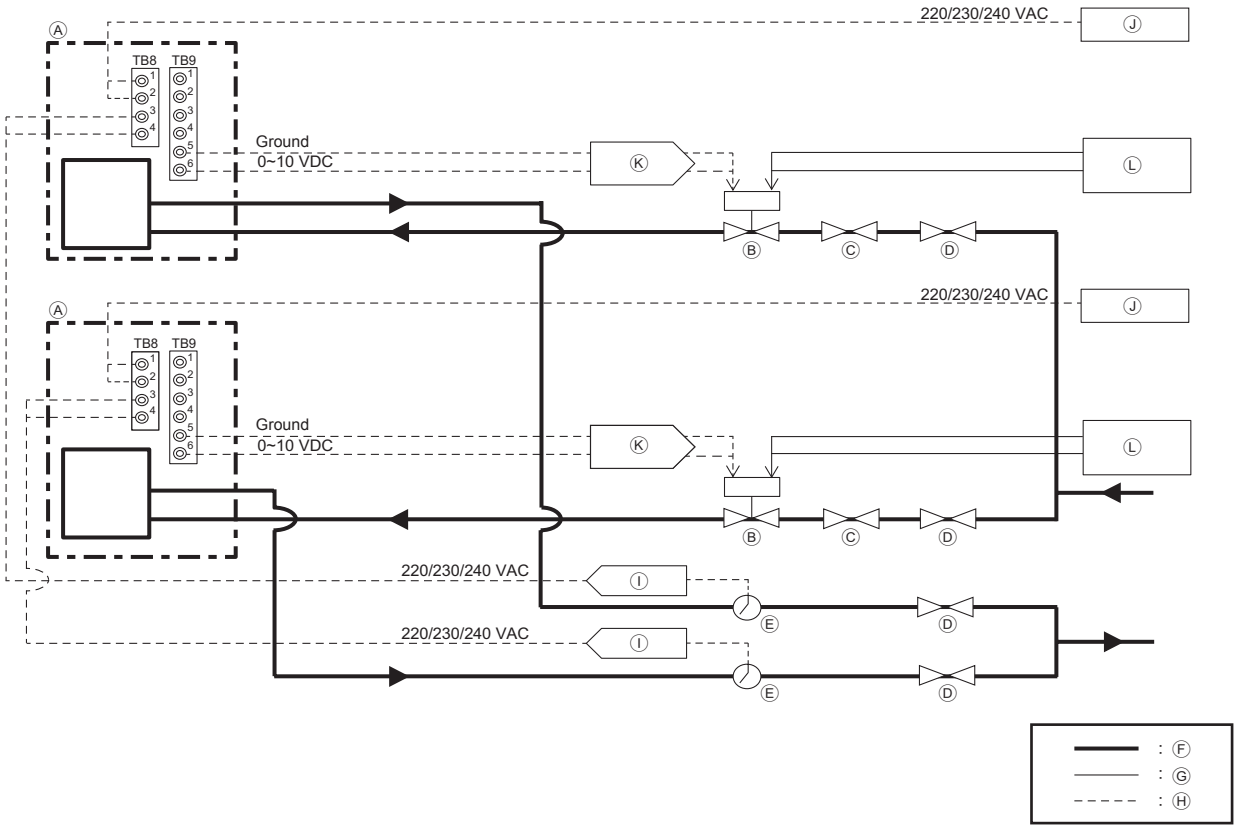
[Fig. 8.4.2]



Ⓐ: Heat source unit
Ⓑ: Control panel (field-supplied)
Ⓒ: To next heat source unit
Ⓓ: Operation ON signal
Ⓔ: Pump interlock

8 8.5

[Fig. 8.5.1]

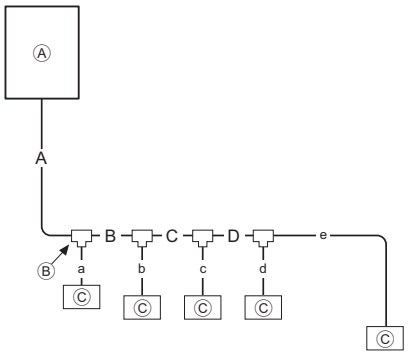


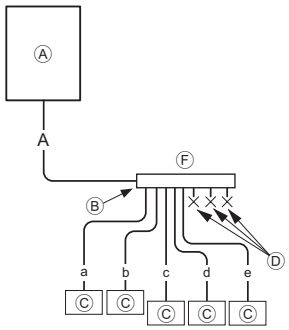
Ⓐ: Heat source unit
Ⓑ: Motor valve *1
Ⓒ: Tuning valve *1
Ⓓ: Shutoff valve *1
Ⓔ: Flow switch *1
Ⓕ: Water pipe
Ⓖ: Power cable
Ⓗ: Signal cable
Ⓘ: Pump interlock
Ⓙ: Operation ON signal
Ⓚ: Opening command
Ⓛ: Power supply for motor valve (24 VAC or 24 VDC) *2

*1 These items are not supplied.
*2 Do not connect the power cables to TB9-1 and 2 to supply power to the motor valve. Doing so may cause damage to the Input/Output board.

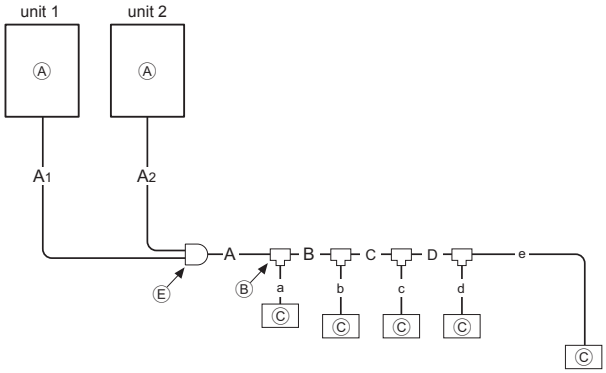
[Fig. 9.2.1]

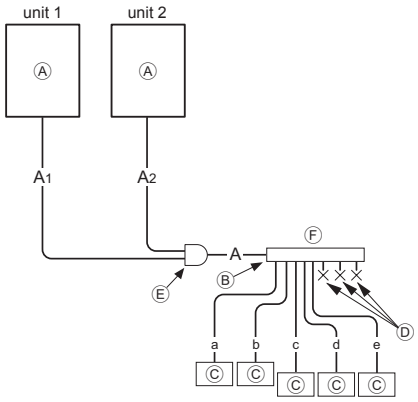
[PQHY-P200~P600YLM-A1, PQHY-P200~P600YLM-A2]





[PQHY-P400~P900YSLM-A1, PQHY-P400~P900YSLM-A2]



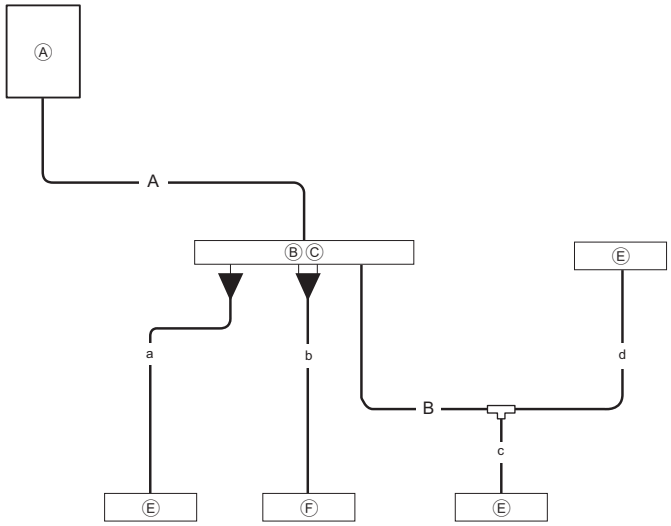


Ⓐ: Heat source unit
Ⓑ: 1st branch
Ⓒ: Indoor unit
Ⓓ: Cap
Ⓔ: Heat source twinning kit
Ⓕ: Header

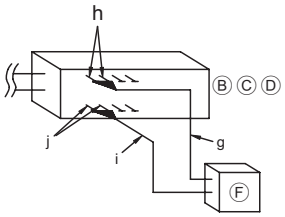
* The total length of A_1 and A_2 is less than 10 m [32 ft].

[Fig. 9.2.2]

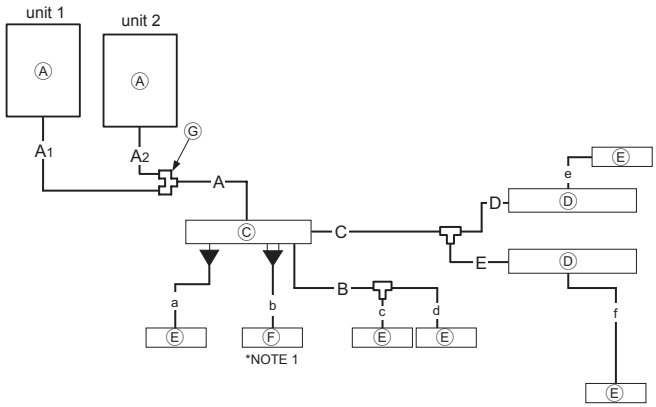
[PQRY-P200~P600YLM-A1, PQRY-P200~P600YLM-A2]



(*NOTE 1)



[PQRY-P400~P900YSLM-A1, PQRY-P400~P900YSLM-A2]



Ⓐ: Heat source unit
Ⓑ: BC controller (standard)
Ⓒ: BC controller (main)
Ⓓ: BC controller (sub)
Ⓔ: Indoor unit (15 ~ 80)
Ⓕ: Indoor unit (100 ~ 250)
Ⓖ: Heat source twinning kit

9 9.2

PQHY-P·Y(S)LM-A1, PQHY-P·Y(S)LM-A2

A

(Unit: mm [in])

Ⓐ Heat source model	Unit combination		A		A1 *4		A2 *4	
	Unit1	Unit2	Ⓑ Liquid side	Ⓒ Gas side	Ⓑ Liquid side	Ⓒ Gas side	Ⓑ Liquid side	Ⓒ Gas side
P200YLM	-	-	ø9.52 [3/8]	ø19.05 [3/4]	-	-	-	-
P250YLM	-	-	*1 ø9.52 [3/8]	ø22.2 [7/8]	-	-	-	-
P300YLM	-	-	*2 ø9.52 [3/8]	ø22.2 [7/8]	-	-	-	-
P350YLM	-	-	ø12.7 [1/2]	ø28.58 [1-1/8]	-	-	-	-
P400YLM	-	-	ø15.88 [5/8]	ø28.58 [1-1/8]	-	-	-	-
P400YSLM	P200	P200	ø15.88 [5/8]	ø28.58 [1-1/8]	ø9.52 [3/8]	ø19.05 [3/4]	ø9.52 [3/8]	ø19.05 [3/4]
P450YLM	-	-	ø15.88 [5/8]	ø28.58 [1-1/8]	-	-	-	-
P450YSLM	P250	P200	ø15.88 [5/8]	ø28.58 [1-1/8]	ø9.52 [3/8]	ø22.2 [7/8]	ø9.52 [3/8]	ø22.2 [7/8]
P500YLM	-	-	ø15.88 [5/8]	ø28.58 [1-1/8]	-	-	-	-
P500YSLM	P250	P250	ø15.88 [5/8]	ø28.58 [1-1/8]	ø9.52 [3/8]	ø22.2 [7/8]	ø9.52 [3/8]	ø22.2 [7/8]
P550YLM	-	-	ø15.88 [5/8]	ø28.58 [1-1/8]	-	-	-	-
P550YSLM	P300	P250	ø15.88 [5/8]	ø28.58 [1-1/8]	ø12.7 [1/2]	ø22.2 [7/8]	ø12.7 [1/2]	ø22.2 [7/8]
P600YLM	-	-	ø15.88 [5/8]	ø28.58 [1-1/8]	-	-	-	-
P600YSLM	P300	P300	ø15.88 [5/8]	ø28.58 [1-1/8]	ø12.7 [1/2]	ø22.2 [7/8]	ø12.7 [1/2]	ø22.2 [7/8]
P700YSLM	P350	P350	ø19.05 [3/4]	ø34.93 [1-3/8]	ø12.7 [1/2]	ø28.58 [1-1/8]	ø12.7 [1/2]	ø28.58 [1-1/8]
P750YSLM	P400	P350	ø19.05 [3/4]	ø34.93 [1-3/8]	ø15.88 [5/8]	ø28.58 [1-1/8]	ø15.88 [5/8]	ø28.58 [1-1/8]
P800YSLM	P400	P400	ø19.05 [3/4]	ø34.93 [1-3/8]	ø15.88 [5/8]	ø28.58 [1-1/8]	ø15.88 [5/8]	ø28.58 [1-1/8]
P850YSLM	P450	P400	ø19.05 [3/4]	ø41.28 [1-5/8]	ø15.88 [5/8]	ø28.58 [1-1/8]	ø15.88 [5/8]	ø28.58 [1-1/8]
P900YSLM	P450	P450	ø19.05 [3/4]	ø41.28 [1-5/8]	ø15.88 [5/8]	ø28.58 [1-1/8]	ø15.88 [5/8]	ø28.58 [1-1/8]

PQRY-P·Y(S)LM-A1, PQRY-P·Y(S)LM-A2

A

(Unit: mm [in])

Ⓐ Heat source model	Unit combination		A		A1 *4		A2 *4	
	Unit1	Unit2	Ⓓ High pressure side	Ⓔ Low pressure side	Ⓓ High pressure side	Ⓔ Low pressure side	Ⓓ High pressure side	Ⓔ Low pressure side
P200YLM	-	-	ø15.88 [5/8]	ø19.05 [3/4]	-	-	-	-
P250YLM	-	-	ø19.05 [3/4]	ø22.2 [7/8]	-	-	-	-
P300YLM	-	-	ø19.05 [3/4]	ø22.2 [7/8]	-	-	-	-
P350YLM	-	-	ø22.2 [7/8]	ø28.58 [1-1/8]	-	-	-	-
P400YLM	-	-	ø22.2 [7/8]	ø28.58 [1-1/8]	-	-	-	-
P400YSLM	P200	P200	ø22.2 [7/8]	ø28.58 [1-1/8]	ø15.88 [5/8]	ø19.05 [3/4]	ø15.88 [5/8]	ø19.05 [3/4]
P450YLM	-	-	ø22.2 [7/8]	ø28.58 [1-1/8]	-	-	-	-
P450YSLM	P250	P200	ø22.2 [7/8]	ø28.58 [1-1/8]	ø19.05 [3/4]	ø22.2 [7/8]	ø19.05 [3/4]	ø22.2 [7/8]
P500YLM	-	-	ø22.2 [7/8]	ø28.58 [1-1/8]	-	-	-	-
P500YSLM	P250	P250	ø22.2 [7/8]	ø28.58 [1-1/8]	ø19.05 [3/4]	ø22.2 [7/8]	ø19.05 [3/4]	ø22.2 [7/8]
P550YLM	-	-	*3 ø22.2 [7/8]	ø28.58 [1-1/8]	-	-	-	-
P550YSLM	P300	P250	*3 ø22.2 [7/8]	ø28.58 [1-1/8]	ø19.05 [3/4]	ø22.2 [7/8]	ø19.05 [3/4]	ø22.2 [7/8]
P600YLM	-	-	*3 ø22.2 [7/8]	ø34.93 [1-3/8]	-	-	-	-
P600YSLM	P300	P300	*3 ø22.2 [7/8]	ø34.93 [1-3/8]	ø19.05 [3/4]	ø22.2 [7/8]	ø19.05 [3/4]	ø22.2 [7/8]
P700YSLM	P350	P350	ø28.58 [1-1/8]	ø34.93 [1-3/8]	ø22.2 [7/8]	ø28.58 [1-1/8]	ø22.2 [7/8]	ø28.58 [1-1/8]
P750YSLM	P400	P350	ø28.58 [1-1/8]	ø34.93 [1-3/8]	ø22.2 [7/8]	ø28.58 [1-1/8]	ø22.2 [7/8]	ø28.58 [1-1/8]
P800YSLM	P400	P400	ø28.58 [1-1/8]	ø34.93 [1-3/8]	ø22.2 [7/8]	ø28.58 [1-1/8]	ø22.2 [7/8]	ø28.58 [1-1/8]
P850YSLM	P450	P400	ø28.58 [1-1/8]	ø41.28 [1-5/8]	ø22.2 [7/8]	ø28.58 [1-1/8]	ø22.2 [7/8]	ø28.58 [1-1/8]
P900YSLM	P450	P450	ø28.58 [1-1/8]	ø41.28 [1-5/8]	ø22.2 [7/8]	ø28.58 [1-1/8]	ø22.2 [7/8]	ø28.58 [1-1/8]

*1 ø12.7 [1/2] for over 90 m [295-1/4 in]

*2 ø12.7 [1/2] for over 40 m [131-3/16 in]

*3 When the piping length is 65 m or longer, use the ø28.58 [1-1/8] pipe for the part that exceeds 65 m.

*4 The pipe sizes listed in columns A1 to A2 in this table correspond to the sizes for the models listed in the unit 1 and 2 columns. When the order of the models for unit 1 and 2 change, make sure to use the appropriate pipe size.

*5 Ⓑ If the piping length after the first joint exceeds 40 m (≤ 90 m), use the one size larger liquid pipe for the indoor unit. (for PQHY-P series)

*6 Ⓒ When the height difference between the indoor units is 15 m or greater (≤ 30 m), use the one size larger liquid pipe for the indoor unit (lower side). (for PQHY-P series)

*7 For how to connect to the Hydro BC controller, refer to the Installation Manual that came with the Hydro BC controller.

PQHY-P·Y(S)LM-A1, PQHY-P·Y(S)LM-A2

B, C, D (Unit: mm [in])

F Total capacity of indoor units	G Liquid pipe	H Gas pipe
~ 140	ø9.52 [3/8]	ø15.88 [5/8]
141 ~ 200	ø9.52 [3/8]	ø19.05 [3/4]
201 ~ 300	ø9.52 [3/8]	ø22.2 [7/8]
301 ~ 400	ø12.7 [1/2]	ø28.58 [1-1/8]
401 ~ 650	ø15.88 [5/8]	ø28.58 [1-1/8]
651 ~ 800	ø19.05 [3/4]	ø34.93 [1-3/8]
801 ~	ø19.05 [3/4]	ø41.28 [1-5/8]

a, b, c, d, e (Unit: mm [in])

I Model number	G Liquid pipe	H Gas pipe
15, 20, 25, 32, 40, 50	ø6.35 [1/4]	ø12.7 [1/2]
63, 71, 80, 100, 125, 140	ø9.52 [3/8]	ø15.88 [5/8]
200	ø9.52 [3/8]	ø19.05 [3/4]
250	ø9.52 [3/8]	ø22.2 [7/8]

J Downstream unit model total	M Joint
~ 200	CMY-Y102SS-G2
201 ~ 400	CMY-Y102LS-G2
T The 1st branch of P250 ~ P300	
401 ~ 650	CMY-Y202S-G2
K The 1st branch of P350 ~ P600	
651 ~	CMY-Y302S-G2
L The 1st branch of P700 ~ P900	

A Heat source model	Q Heat source twinning kit
P400 ~ P600	CMY-Y100VBK3
P700 ~ P900	CMY-Y200VBK2

N 4-Branch header (Downstream unit model total ≤ 200)	O 8-Branch header (Downstream unit model total ≤ 350)	P 10-Branch header (Downstream unit model total ≤ 600)
CMY-Y104-G	CMY-Y108-G	CMY-Y1010-G

PQRY-P·Y(S)LM-A1, PQRY-P·Y(S)LM-A2

B (Unit: mm [in])

F Total capacity of indoor units	G Liquid pipe	H Gas pipe
~ 80	ø9.52 [3/8]	ø15.88 [5/8]

C, D (Unit: mm [in])

J Downstream unit model total	R High-pressure gas pipe	S Low-pressure gas pipe	G Liquid pipe
~ 200	ø15.88 [5/8]	ø19.05 [3/4]	ø9.52 [3/8]
201 ~ 300	ø19.05 [3/4]	ø22.2 [7/8]	ø9.52 [3/8]
301 ~ 350	ø19.05 [3/4]	ø28.58 [1-1/8]	ø12.7 [1/2]
351 ~ 400	ø22.2 [7/8]	ø28.58 [1-1/8]	ø12.7 [1/2]
401 ~ 450	ø22.2 [7/8]	ø28.58 [1-1/8]	ø15.88 [5/8]

a, b, c, d, e, f (Unit: mm [in])

I Model number	G Liquid pipe	H Gas pipe
15, 20, 25, 32, 40, 50	ø6.35 [1/4]	ø12.7 [1/2]
63, 71, 80, 100, 125, 140	ø9.52 [3/8]	ø15.88 [5/8]
200	ø9.52 [3/8]	ø19.05 [3/4]
250	ø9.52 [3/8]	ø22.2 [7/8]

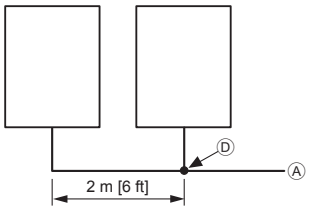
g, h, i, j (Unit: mm [in])

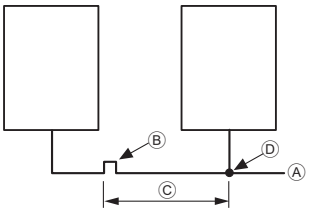
I Model number	G Liquid pipe		H Gas pipe	
	g	h	i	j
100	ø9.52 [3/8]	ø9.52 [3/8]	ø15.88 [5/8]	ø15.88 [5/8]
125	ø9.52 [3/8]	ø9.52 [3/8]	ø15.88 [5/8]	ø15.88 [5/8]
140	ø9.52 [3/8]	ø9.52 [3/8]	ø15.88 [5/8]	ø15.88 [5/8]
200	ø9.52 [3/8]	ø9.52 [3/8]	ø19.05 [3/4]	ø15.88 [5/8]
250	ø9.52 [3/8]	ø9.52 [3/8]	ø22.2 [7/8]	ø15.88 [5/8]

A Heat source model	Q Heat source twinning kit
P400 ~ P600	CMY-Q100CBK2
P700 ~ P900	CMY-Q200CBK

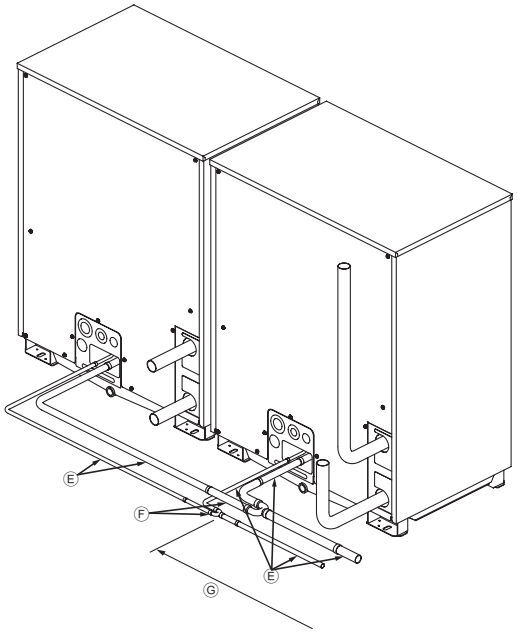
[Fig. 9.2.3]

<A> When the piping (from the twinning pipe) exceeds 2 m [6 ft], include a trap (gas pipe only) within 2 m [6 ft]. Make sure the height of the trap is 200 mm [7-7/8 in] or more. If there is no trap, oil can accumulate inside the pipe, causing a shortage of oil damaging the compressor. (for PQHY-P series)





<B> Example of piping connection (for PQHY-P series)

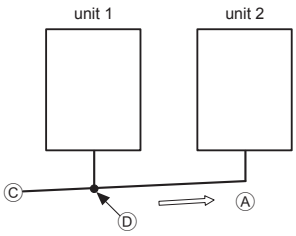


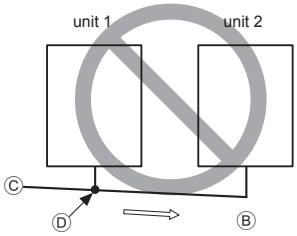
Ⓐ: Indoor unit
Ⓑ: Trap (gas pipe only)
Ⓒ: Within 2 m [6 ft]
Ⓓ: Twinning pipe
Ⓔ: Field-supplied piping
Ⓕ: Twinning kit
Ⓖ: Straight pipe length that is 500 mm [19-11/16 in] or more

[Fig. 9.2.4]

<A> Install the piping so that oil will not accumulate in the stopped heat source unit. (both the liquid and the gas side for PQHY-P series, the high-pressure side only for PQRY-P series)

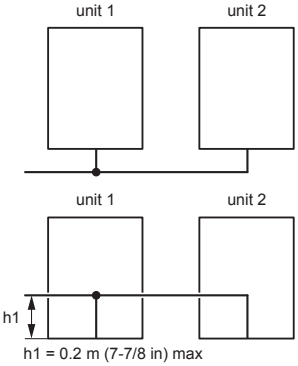
1.

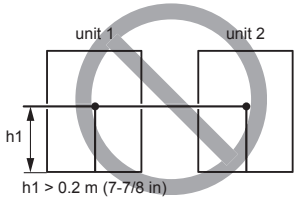




The NG example shows that oil accumulates because the units are installed on a reverse gradient while unit 1 is in operation, and unit 2 is stopped.

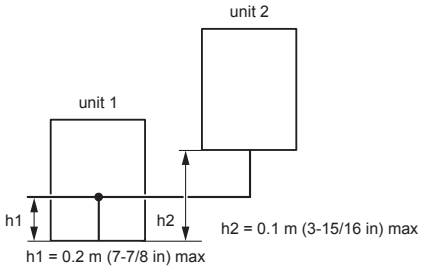
2.

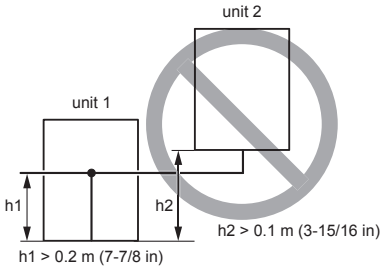




The NG example shows that oil accumulates into unit 1 while unit 2 is in operation, and unit 1 is stopped. Vertical pipe height (h) should be 0.2 m (7-7/8 in) or below.

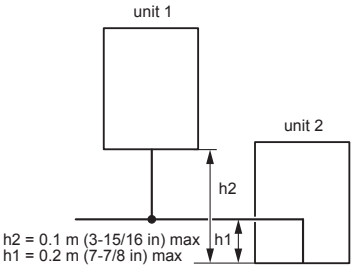
3.

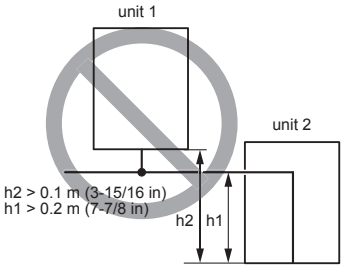




The NG example shows that oil accumulates into unit 1 while unit 2 is in operation, and unit 1 is stopped. Vertical pipe height (h) should be 0.2 m (7-7/8 in) or below.

4.

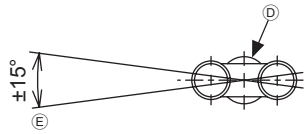




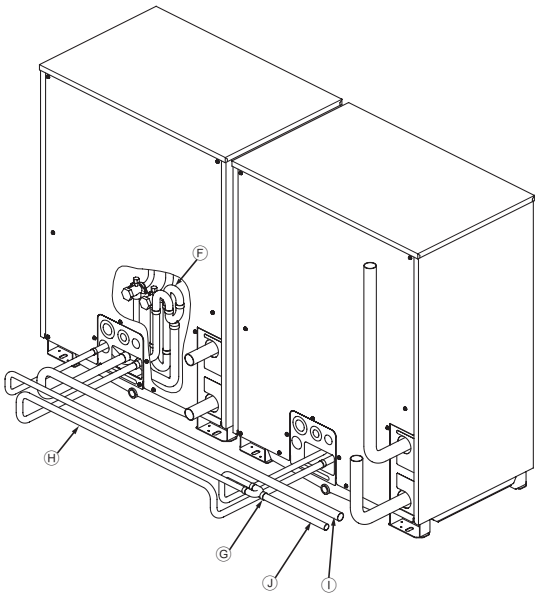
The NG example shows that oil accumulates into unit 2 while unit 1 is in operation, and unit 2 is stopped. Vertical pipe height (h) should be 0.2 m (7-7/8 in) or below.

<B> Slope of twinning pipes (for PQHY-P series)

Make sure the slope of the twinning pipes are at an angle within ±15° to the horizontal plane.
If the slope exceeds the angle specified, the unit may be damaged.



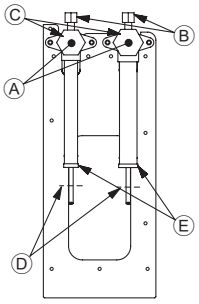
<C> Example of piping connection (for PQRY-P series)



Ⓐ: Slope downward
Ⓑ: Slope upward
Ⓒ: BC controller (standard or main)
Ⓓ: Twinning pipe
Ⓔ: Slope of the twinning pipe is at an angle within ±15° to the earth
Ⓕ: Twinning pipe (low-pressure side)
Ⓖ: Twinning pipe (high-pressure side)
Ⓗ: Field-supplied piping (low-pressure connecting pipe: between heat source units)
Ⓘ: Field-supplied piping (low-pressure main pipe: to BC controller)
Ⓙ: Field-supplied piping (high-pressure main pipe: to BC controller)

[Fig. 10.2.1]

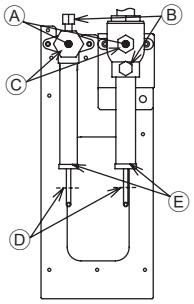
<A> Service valve for refrigerant
(Liquid side/brazed for PQHY-P series)
(High-pressure side/brazed for PQRY-P series)



<P200 ~ P300>

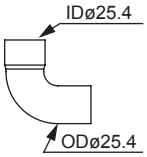
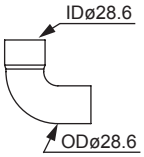
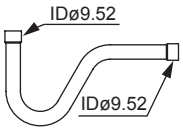
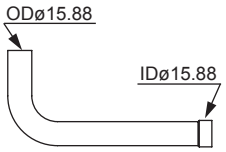
Ⓐ: Shaft
Ⓑ: Service port
Ⓒ: Cap
Ⓓ: Pinched connecting pipe severing portion
Ⓔ: Pinched connecting pipe brazing portion

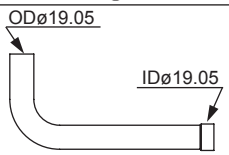
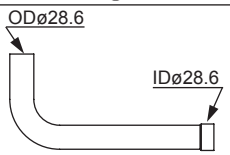
<B> Service valve for refrigerant
(Gas side/brazed for PQHY-P series)
(Low-pressure side/brazed for PQRY-P series)

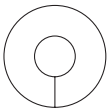


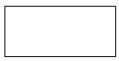
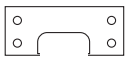
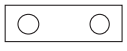
<P350 ~ P600>

[Fig. 10.2.2]

No.		①	②	③	④
Ⓐ Shape					
PQHY	P200YLM	1 <B> Gas side	-	1 <C> Liquid side	-
	P250YLM	1 <B> Gas side	-	1 <C> Liquid side	-
	P300YLM	1 <B> Gas side	-	1 <C> Liquid side	-
	P350YLM	-	1 <B> Gas side	-	1 <C> Liquid side
	P400YLM	-	1 <B> Gas side	-	1 <C> Liquid side
	P450YLM	-	1 <B> Gas side	-	1 <C> Liquid side
	P500YLM	-	1 <B> Gas side	-	1 <C> Liquid side
	P550YLM	-	1 <B> Gas side	-	1 <C> Liquid side
	P600YLM	-	1 <B> Gas side	-	1 <C> Liquid side
PQRY	P200YLM	1 <B> Low-pressure side	-	-	-
	P250YLM	1 <B> Low-pressure side	-	-	-
	P300YLM	1 <B> Low-pressure side	-	-	-
	P350YLM	-	-	-	-
	P400YLM	-	-	-	-
	P450YLM	-	-	-	-
	P500YLM	-	-	-	-
	P550YLM	-	-	-	-
	P600YLM	-	-	-	-

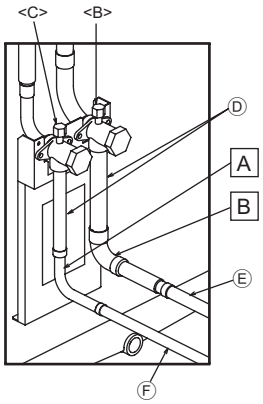
No.		⑤	⑥	⑦	⑧
Ⓐ Shape					
PQHY	P200YLM	-	-	-	1
	P250YLM	-	-	-	1
	P300YLM	-	-	-	1
	P350YLM	-	-	-	1
	P400YLM	-	-	-	1
	P450YLM	-	-	-	1
	P500YLM	-	-	-	1
	P550YLM	-	-	-	1
	P600YLM	-	-	-	1
PQRY	P200YLM	1 <C> High-pressure side	-	-	-
	P250YLM	1 <C> High-pressure side	-	-	-
	P300YLM	1 <C> High-pressure side	-	-	-
	P350YLM	-	1 <B> Low-pressure side	1 <C> High-pressure side	-
	P400YLM	-	1 <B> Low-pressure side	1 <C> High-pressure side	-
	P450YLM	-	1 <B> Low-pressure side	1 <C> High-pressure side	-
	P500YLM	-	1 <B> Low-pressure side	1 <C> High-pressure side	-
	P550YLM	-	1 <B> Low-pressure side	1 <C> High-pressure side	-
	P600YLM	-	1 <B> Low-pressure side	1 <C> High-pressure side	-

No.		⑨	⑩	⑪	⑫	⑬
Ⓐ Shape						
PQHY	P200YLM	1	1	1	1	1
	P250YLM	1	1	1	1	1
	P300YLM	1	1	1	1	1
	P350YLM	1	1	1	1	1
	P400YLM	1	1	1	1	1
	P450YLM	1	1	1	1	1
	P500YLM	1	1	1	1	1
	P550YLM	1	1	1	1	1
	P600YLM	1	1	1	1	1
PQRY	P200YLM	1	-	1	1	1
	P250YLM	1	-	1	1	1
	P300YLM	1	-	1	1	1
	P350YLM	1	-	1	1	1
	P400YLM	1	-	1	1	1
	P450YLM	1	-	1	1	1
	P500YLM	1	-	1	1	1
	P550YLM	1	-	1	1	1
	P600YLM	1	-	1	1	1

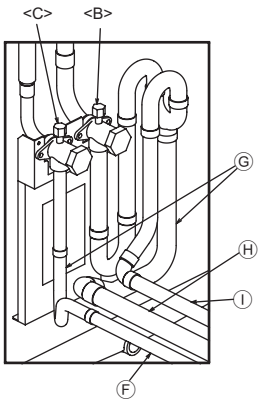
No.		⑭	⑮	⑯	⑰	⑱
Ⓐ Shape						
PQHY	P200YLM	-	-	-	1	1
	P250YLM	-	-	-	1	1
	P300YLM	-	-	-	1	1
	P350YLM	4	4	1	1	1
	P400YLM	4	4	1	1	1
	P450YLM	4	4	1	1	1
	P500YLM	4	4	1	1	1
	P550YLM	4	4	1	1	1
	P600YLM	4	4	1	1	1
PQRY	P200YLM	-	-	-	1	1
	P250YLM	-	-	-	1	1
	P300YLM	-	-	-	1	1
	P350YLM	4	4	1	1	1
	P400YLM	4	4	1	1	1
	P450YLM	4	4	1	1	1
	P500YLM	4	4	1	1	1
	P550YLM	4	4	1	1	1
	P600YLM	4	4	1	1	1

<A> Front pipe routing

Ⓑ Without a low-pressure twinning pipe



Ⓒ With a low-pressure twinning pipe (PQRY-P series ONLY) *1,*2



<B> Low-pressure side PQRY-P series (Gas side PQHY-P series)

<C> High-pressure side PQRY-P series (Liquid side PQHY-P series)

Ⓐ Shape

Ⓓ Refrigerant service valve pipes

Ⓔ Field-supplied piping (low-pressure connecting pipe)

Ⓕ Field-supplied piping (high-pressure connecting pipe)

Ⓖ Twinning kit (sold separately)

Ⓗ Field-supplied piping (low-pressure connecting pipe: to BC controller)

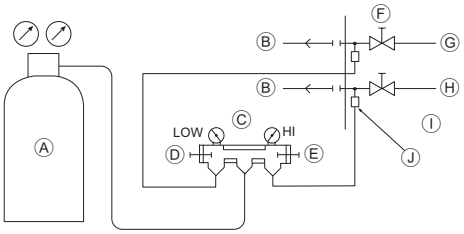
Ⓘ Field-supplied piping (low-pressure connecting pipe: to heat source unit)

*1 To attach the Twinning pipe (sold separately), refer to the instructions included in the kit.

*2 Connection pipe is not used when the Twinning kit is attached.

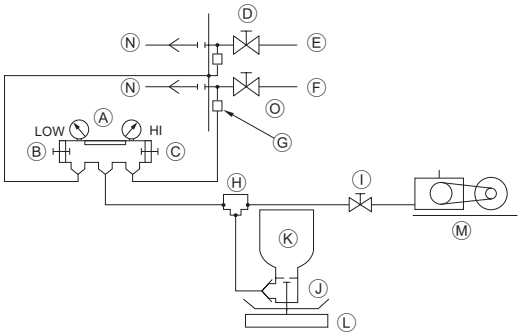
10.3

[Fig. 10.3.1]



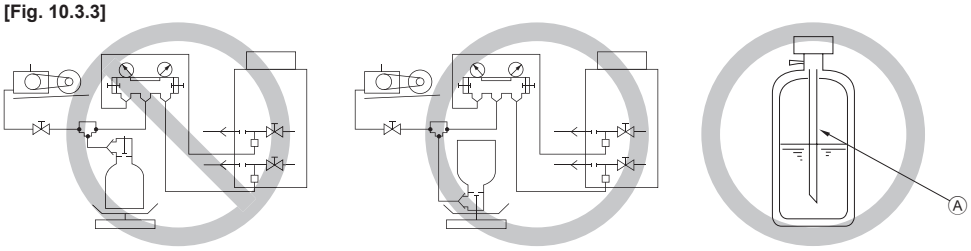
Ⓐ: Nitrogen gas
Ⓑ: To indoor unit
Ⓒ: System analyzer
Ⓓ: Low knob
Ⓔ: High knob
Ⓕ: Valve
Ⓖ: Low-pressure/liquid pipe
Ⓗ: High-pressure/gas pipe
Ⓘ: Heat source unit
Ⓙ: Service port

[Fig. 10.3.2]



Ⓐ: System analyzer
Ⓑ: Low knob
Ⓒ: High knob
Ⓓ: Valve (heat source unit)
Ⓔ: Low-pressure/liquid pipe
Ⓕ: High-pressure/gas pipe
Ⓖ: Service port
Ⓗ: Three-way joint
Ⓘ: Valve
Ⓙ: Valve
Ⓚ: R410A cylinder
Ⓛ: Scale
Ⓜ: Vacuum pump
Ⓝ: To indoor unit
Ⓞ: Heat source unit

[Fig. 10.3.3]

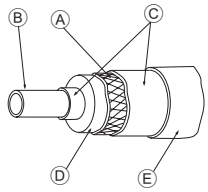


Ⓐ: Siphon pipe

Ⓑ If the R410A cylinder does not have a siphon pipe.

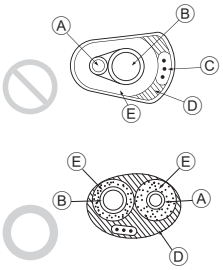
10.4

[Fig. 10.4.1]



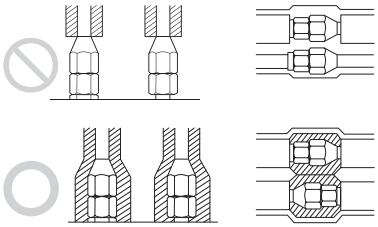
Ⓐ: Steel wire
Ⓑ: Piping
Ⓒ: Asphaltic oily mastic or asphalt
Ⓓ: Insulation material A
Ⓔ: Outer covering B

[Fig. 10.4.2]



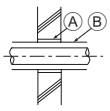
Ⓐ: High-pressure/liquid pipe
Ⓑ: Low-pressure/gas pipe
Ⓒ: Electric wire
Ⓓ: Finishing tape
Ⓔ: Insulation

[Fig. 10.4.3]

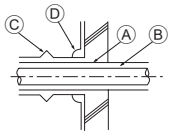


[Fig. 10.4.4]

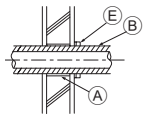
<A> Inside wall (concealed)



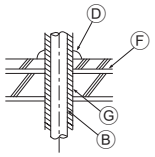
<B> Outside wall



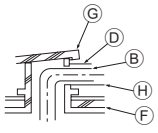
<C> Outside wall (exposed)



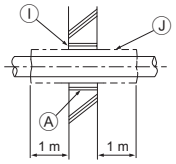
<D> Floor (waterproofing)



<E> Roof pipe shaft



<F> Access hole on fire and boundary walls

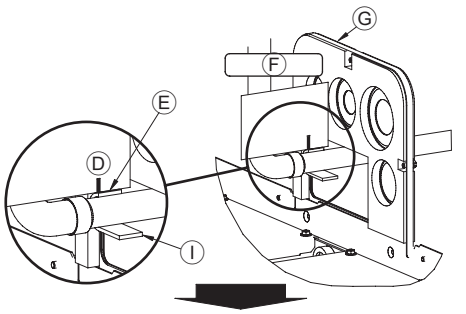


Ⓐ: Sleeve
Ⓑ: Insulation
Ⓒ: Lagging
Ⓓ: Caulking material
Ⓔ: Band
Ⓕ: Waterproofing layer
Ⓖ: Sleeve with edge
Ⓗ: Lagging material
Ⓘ: Mortar or other incombustible caulking
Ⓙ: Explosion-resistant insulation

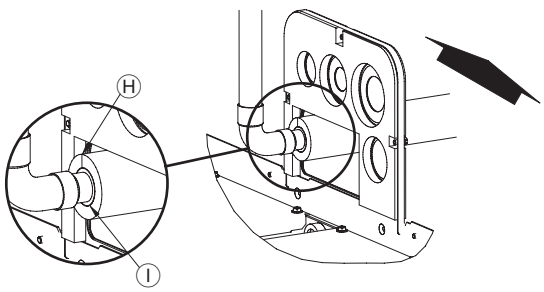
10.5

[Fig. 10.5]

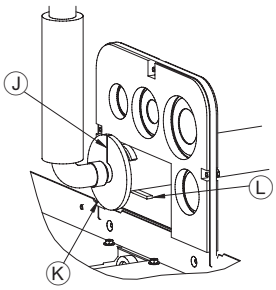
Ⓐ



Ⓑ



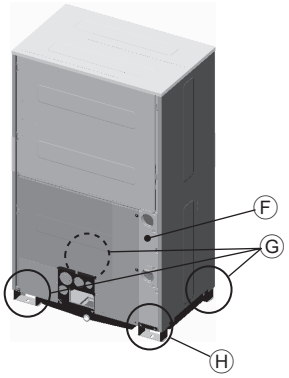
Ⓒ



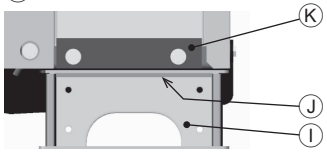
Ⓐ: Position the edge of the supplied paper with mark at the edge of the pipe cover.
Then, wind the sealing material to the pipe, using the mark on the paper to properly align it.
Ⓑ: Extend the field-supplied insulation all the way to the end of the sealing material described in step A.
Ⓒ: Install the water stopper at the end face of the insulation.
Ⓓ: Mark
Ⓔ: Install the sealing material so that the edges of the material meet at the top.
Ⓕ: Inside the unit
Ⓖ: Pipe cover
Ⓗ: The seam of the insulation should be at the top.
Ⓘ: Sealing material for water stopper
Ⓙ: Install the water stopper so that the slit of the water stopper is at the top.
Ⓚ: Water stopper
Ⓛ: Sealing material for field piping

10.6

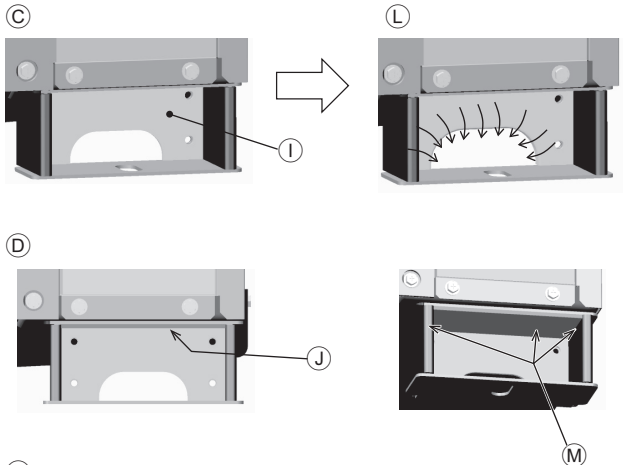
[Fig. 10.6]
PQHY-P·Y(S)LM-A1, PQRY-P·Y(S)LM-A1 only



Ⓐ

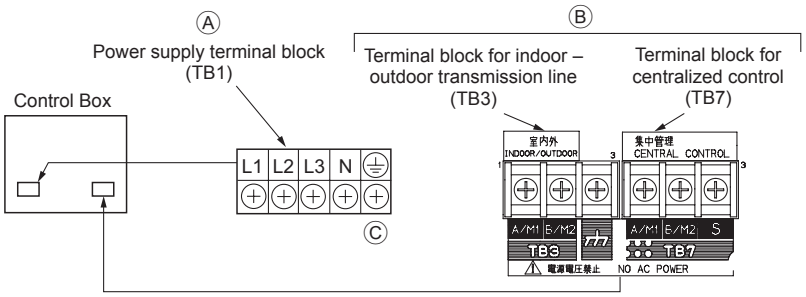


Ⓑ



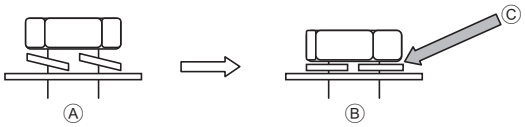
Ⓐ: Enlarged view
Ⓑ: Sealing material attachment process
Ⓒ: Process 1: Attach the sealing material (for base leg) 1.
Ⓓ: Process 2: Attach the sealing material (for base leg) 2.
Ⓔ: Process 3: Attach the sealing material (for water panel). (only right front)
Ⓕ: Panel assy W
Ⓖ: Only sealing materials (for base leg) 1, 2
Ⓗ: Sealing materials (for base leg) 1, 2 and sealing material (for water panel)
Ⓘ: Sealing material (for base leg) 1
Ⓙ: Sealing material (for base leg) 2
Ⓚ: Sealing material (for water panel) (only right front)
Ⓛ: Put sealing material inward.
Ⓜ: Match the end face.

[Fig. 11.2.1]



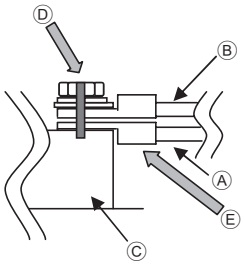
Ⓐ: Power source
Ⓑ: Transmission line
Ⓒ: Earth terminal

[Fig. 11.2.2]



Ⓐ: Terminal block with loose screws
Ⓑ: Properly installed terminal block
Ⓒ: Spring washers must be parallel to the terminal block.

[Fig. 11.2.3]

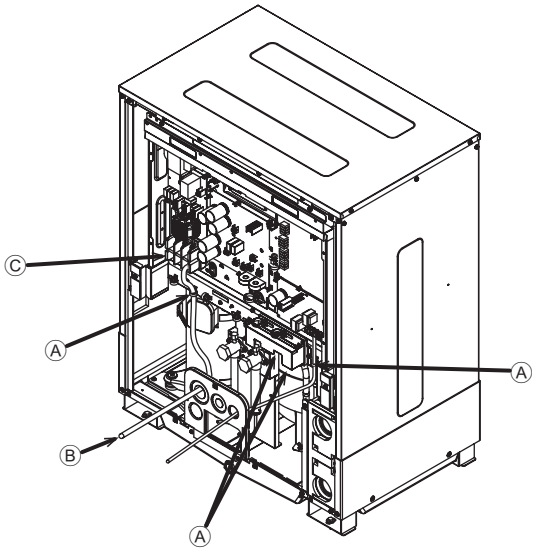


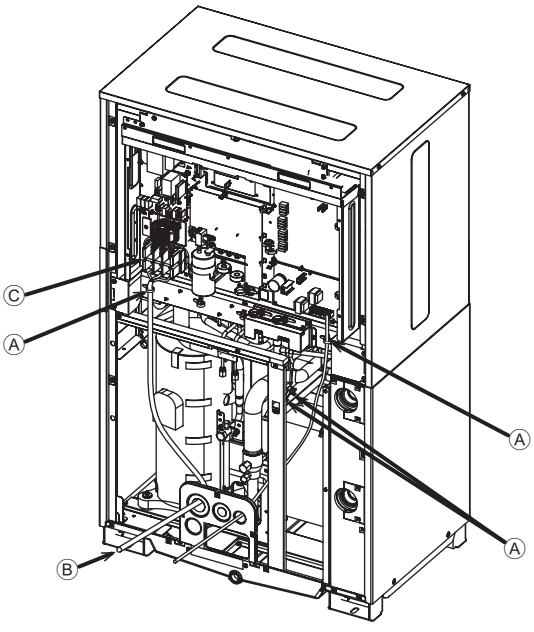
Ⓐ: Power wires, transmission lines
Ⓑ: Daisy-chain (transmission lines only)
Ⓒ: Terminal blocks (TB1, TB3, TB7)
Ⓓ: Make an alignment mark.
Ⓔ: Install the ring terminals back to back.

[Fig. 11.2.4]

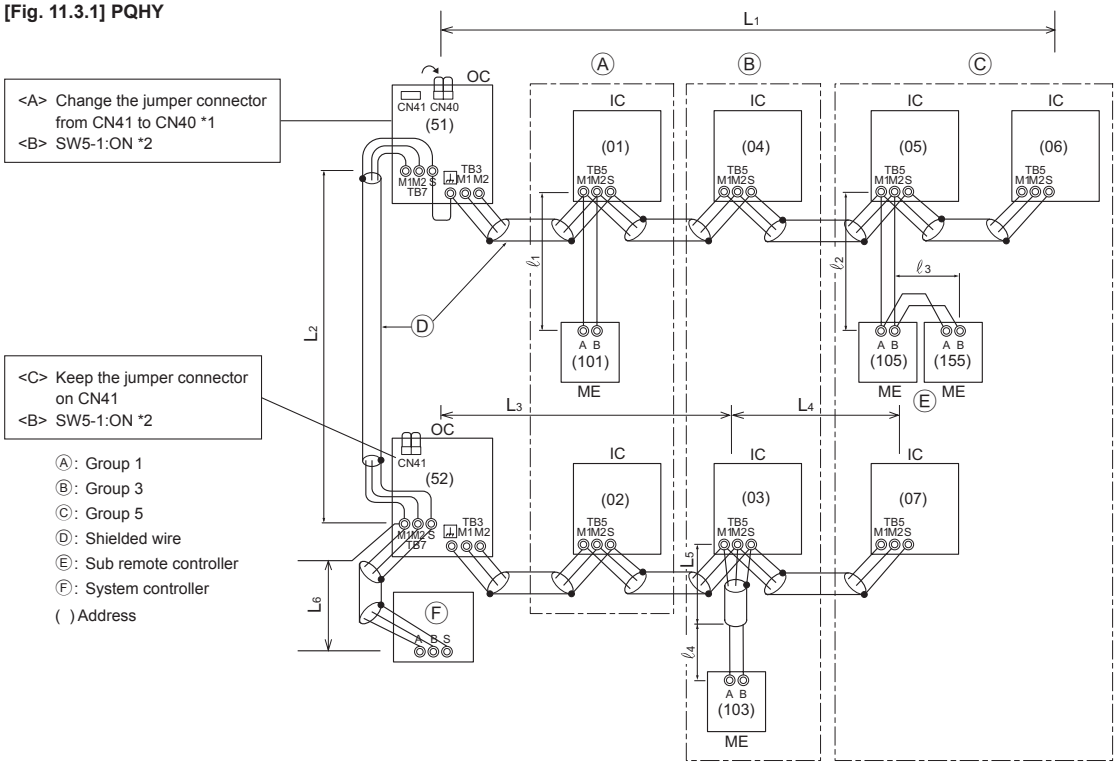
PQHY-P·Y(S)LM-A1, PQRY-P·Y(S)LM-A1
PQHY-P·Y(S)LM-A2, PQRY-P·Y(S)LM-A2

Ⓐ: Cable strap
Ⓑ: Power source cable
Ⓒ: Earth terminal for field wiring connection



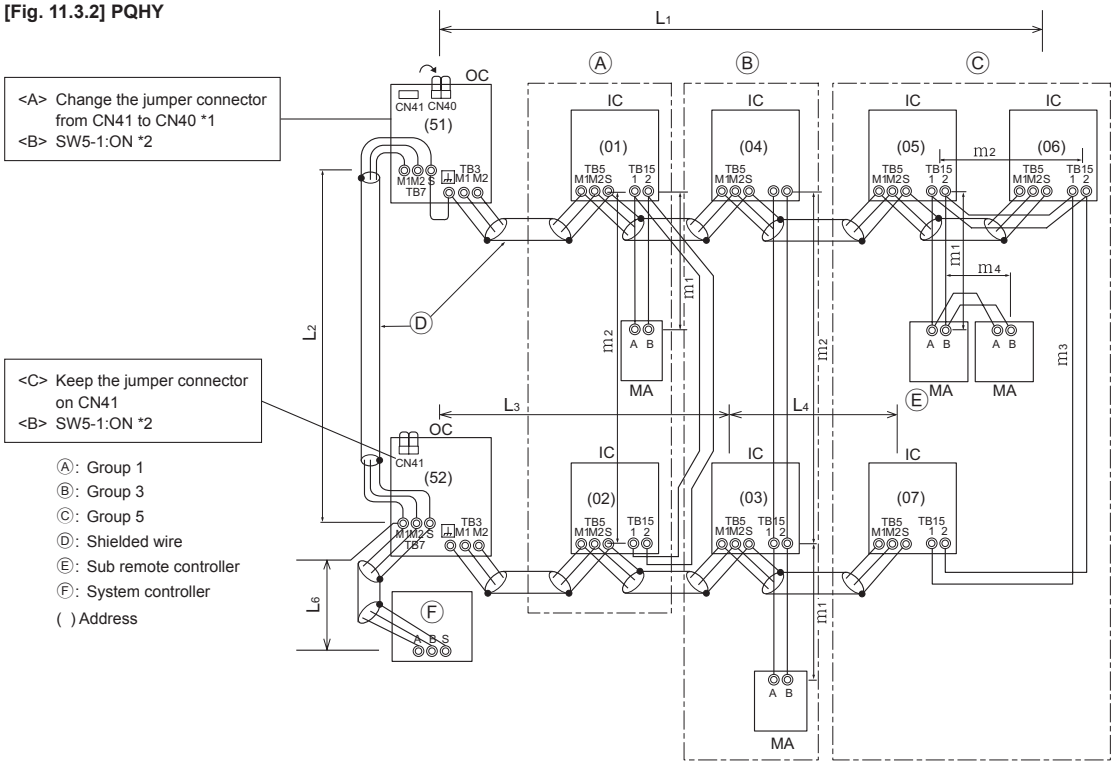


[Fig. 11.3.1] PQHY



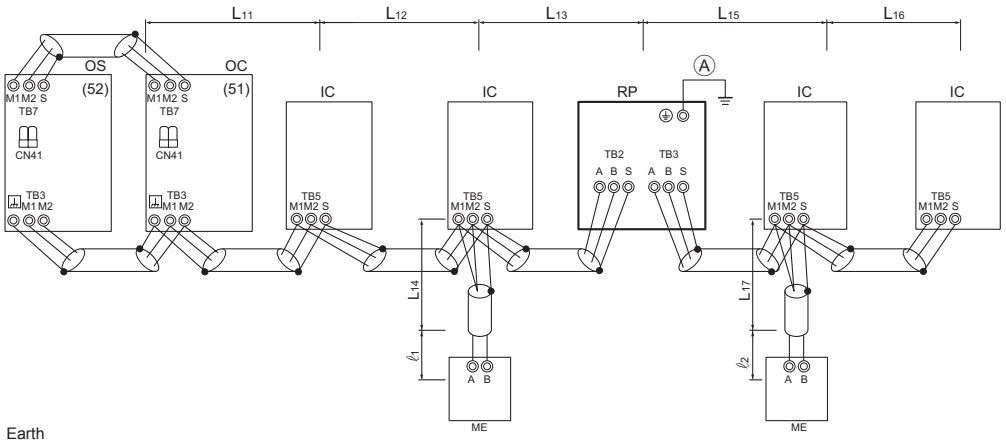
*1: When the power supply unit is not connected to the transmission line for centralized control, disconnect the male power supply connector (CN41) from ONE heat source unit in the system and connect it to CN40.
*2: If a system controller is used, set SW5-1 on all of the heat source units to ON.

[Fig. 11.3.2] PQHY



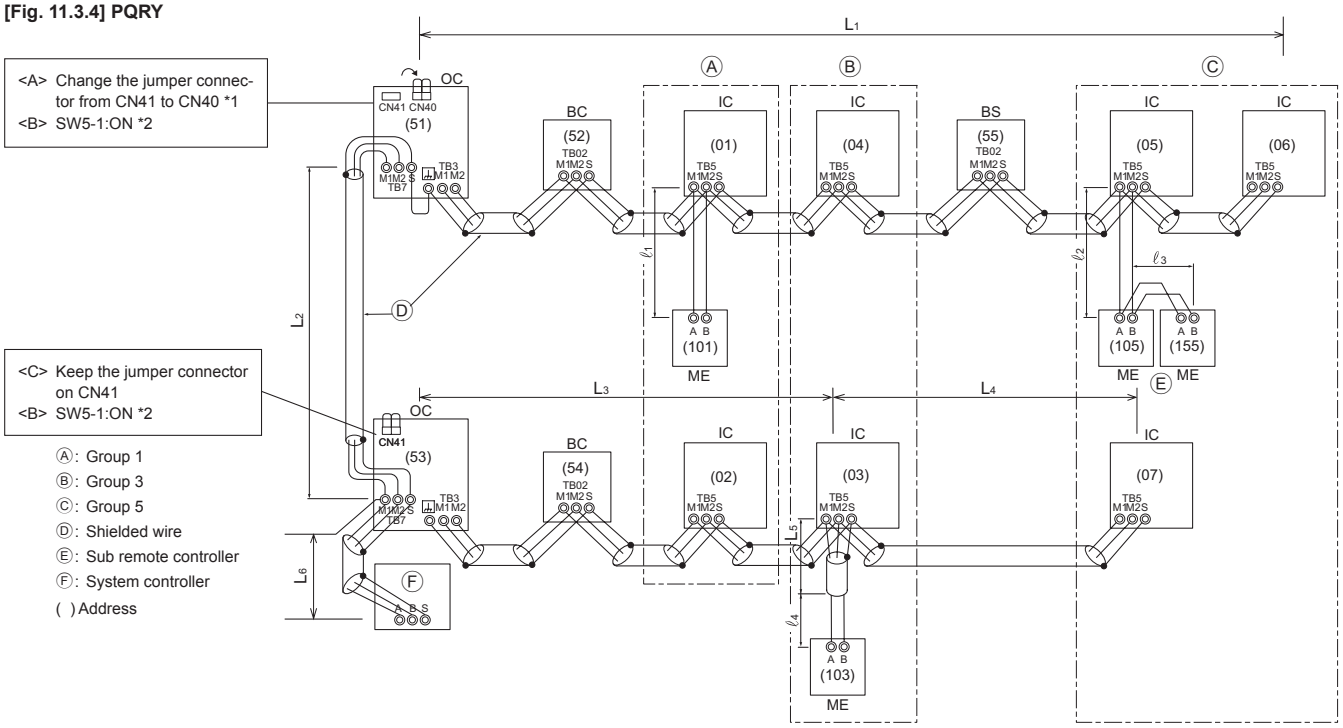
*1: When the power supply unit is not connected to the transmission line for centralized control, disconnect the male power supply connector (CN41) from ONE heat source unit in the system and connect it to CN40.
*2: If a system controller is used, set SW5-1 on all of the heat source units to ON.

[Fig. 11.3.3] PQHY



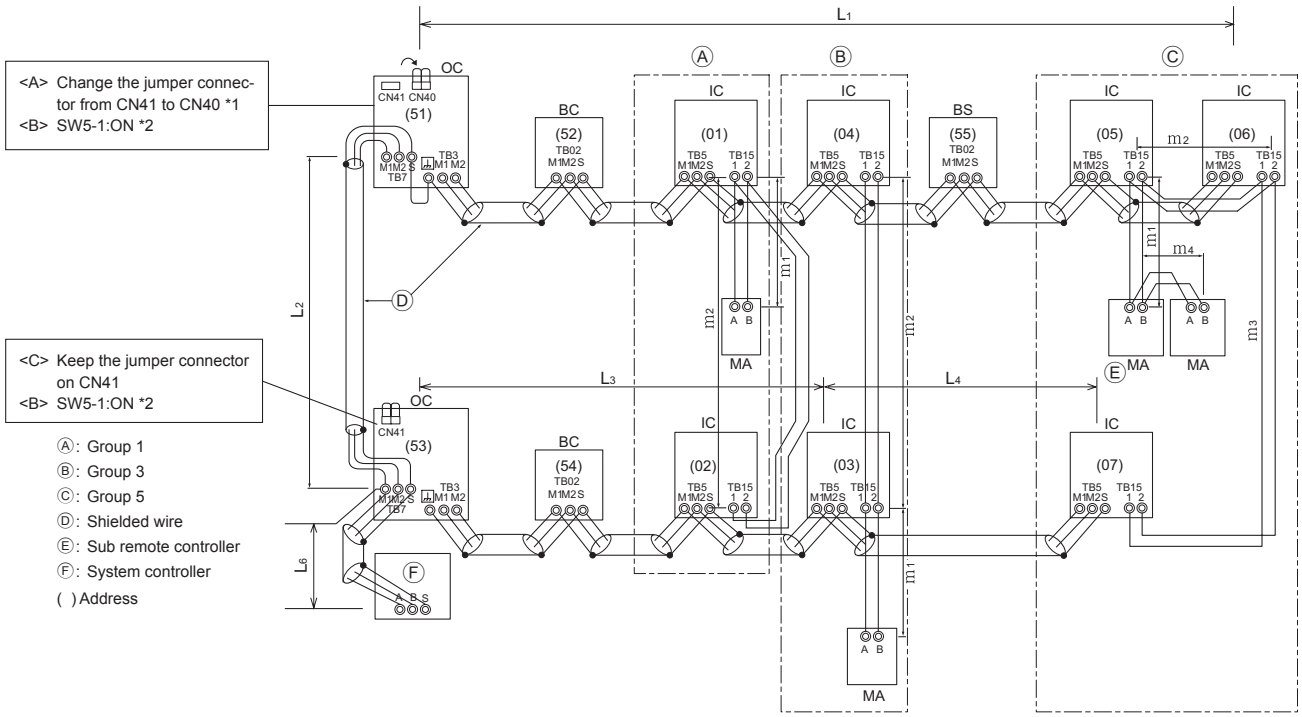
Ⓐ: Earth
- ( ) Address
- Daisy-chain terminals (TB3) on heat source units in the same refrigerant system together.
- Leave the power jumper connector on CN41 as it is. When connecting a system controller to the transmission line (TB7) for centralized control, refer to [Fig. 11.3.1], [Fig. 11.3.2], or DATA BOOK.

[Fig. 11.3.4] PQRY



*1: When the power supply unit is not connected to the transmission line for centralized control, disconnect the male power supply connector (CN41) from ONE heat source unit in the system and connect it to CN40.
*2: If a system controller is used, set SW5-1 on all of the heat source units to ON.

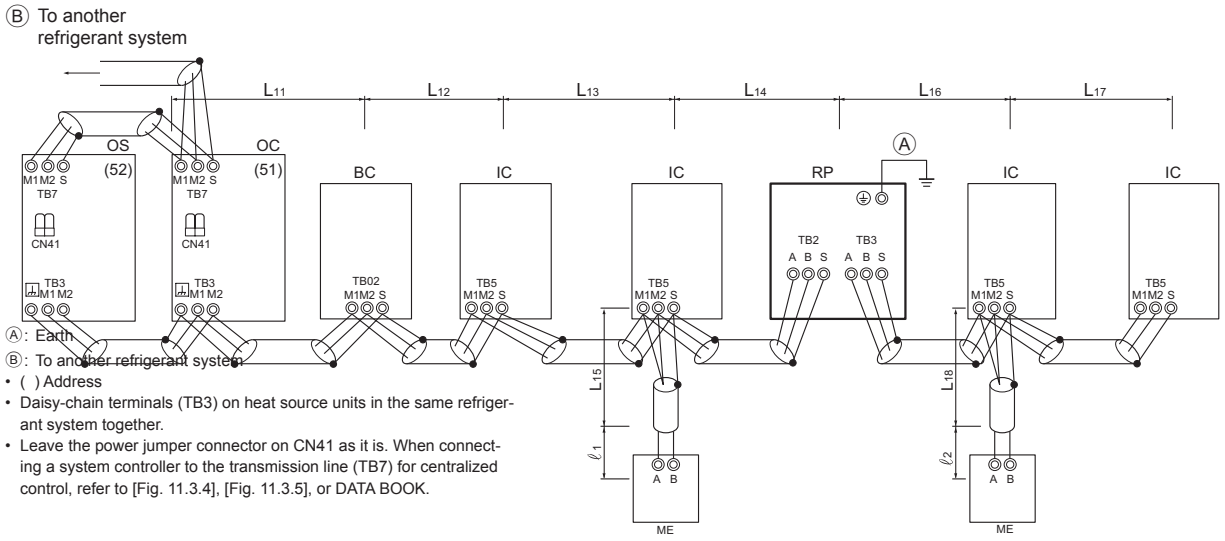
[Fig. 11.3.5] PQRY



*1: When the power supply unit is not connected to the transmission line for centralized control, disconnect the male power supply connector (CN41) from ONE heat source unit in the system and connect it to CN40.

*2: If a system controller is used, set SW5-1 on all of the heat source units to ON.

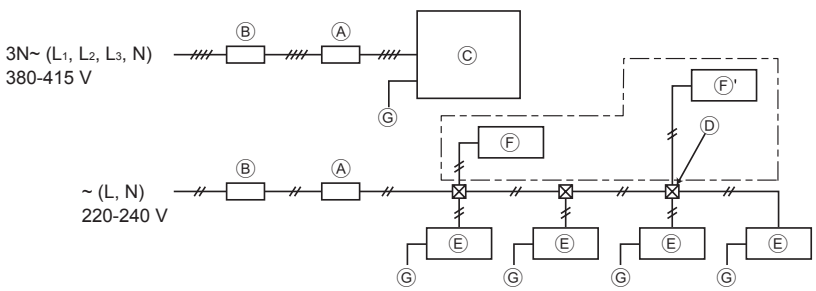
[Fig. 11.3.6] PQRY



11.4

[Fig. 11.4.1]

Ⓐ : Switch (Overcurrent breaker and earth leakage breaker)
Ⓑ : Earth leakage breaker
Ⓒ : Heat source unit
Ⓓ : Pull box
Ⓔ : Indoor unit
Ⓕ : BC controller/HBC controller (standard or main) (for PQRY-P series)
Ⓕ' : BC controller (sub)/HBC controller (sub) (for PQRY-P series)
Ⓖ: Earth



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1. Safety precautions

1.1. Before installation and electric work

▶ **Before installing the unit, make sure you read all the "Safety precautions".**

▶ **The "Safety precautions" provide very important points regarding safety. Make sure you follow them.**

Symbols used in the text

⚠ Warning:
Describes precautions that should be observed to prevent danger of injury or death to the user.

⚠ Caution:
Describes precautions that should be observed to prevent damage to the unit.

Symbols used in the illustrations

⃠ : Indicates an action that must be avoided.

❗ : Indicates that important instructions must be followed.

⏚ : Indicates a part which must be earthed.

⚠ : Beware of electric shock. (This symbol is displayed on the main unit label.) <Color: yellow>

⚠ Warning:
Carefully read the labels affixed to the main unit.

⚠ HIGH VOLTAGE WARNING:

- **Control box houses high-voltage parts.**
- **When opening or closing the front panel of the control box, do not let it come into contact with any of the internal components.**
- **Before inspecting the inside of the control box, turn off the power, keep the unit off for at least 10 minutes, and confirm that the capacitor voltage (inverter main circuit) has dropped to 20 VDC or less.**
  (It takes about 10 minutes to discharge electricity after the power supply is turned off.)
- **Control box houses high temperature parts. Be well careful even after turning off the power source.**

⚠ Warning:

- **Do not use refrigerant other than the type indicated in the manuals provided with the unit and on the nameplate.**
  - Doing so may cause the unit or pipes to burst, or result in explosion or fire during use, during repair, or at the time of disposal of the unit.
  - It may also be in violation of applicable laws.
  - MITSUBISHI ELECTRIC CORPORATION cannot be held responsible for malfunctions or accidents resulting from the use of the wrong type of refrigerant.
- **The water circuit should be a closed circuit.**
- **Ask the dealer or an authorized technician to install the air conditioner.**
  - Improper installation by the user may result in water leakage, electric shock, or fire.
- **Install the unit at a place that can withstand its weight.**
  - Failure to do so may cause the unit to fall down, resulting in injuries and damage to the unit.
- **Use the specified cables for wiring. Make the connections securely so that the outside force of the cable is not applied to the terminals.**
  - Inadequate connection and fastening may generate heat and cause a fire.
- **Prepare for strong winds and earthquakes and install the unit at the specified place.**
  - Improper installation may cause the unit to topple and result in injury and damage to the unit.
- **Always use filters and other accessories specified by Mitsubishi Electric.**
  - Ask an authorized technician to install the accessories. Improper installation by the user may result in water leakage, electric shock, or fire.
- **Never repair the unit. If the air conditioner must be repaired, consult the dealer.**
  - If the unit is repaired improperly, water leakage, electric shock, or fire may result.
- **Do not touch the fan and heat exchanger fins.**
- **If refrigerant gas leaks during installation work, ventilate the room.**
  - If the refrigerant gas comes into contact with a flame, poisonous gases will be released.
- **Install the air conditioner according to this Installation Manual.**
  - If the unit is installed improperly, water leakage, electric shock, or fire may result.
- **Have all electric work done by a licensed electrician according to "Electric Facility Engineering Standard" and "Interior Wire Regulations" and the instructions given in this manual and always use a dedicated power supply.**
  - If the power source capacity is inadequate or electric work is performed improperly, electric shock and fire may result.
- **Keep the electric parts away from water (washing water etc.).**
  - It might result in electric shock, catching fire or smoke.
- **Securely install the heat source unit terminal cover (panel).**
  - If the terminal cover (panel) is not installed properly, dust or water may enter the heat source unit and fire or electric shock may result.
- **When installing and moving the air conditioner to another site, do not charge it with a refrigerant different from the refrigerant specified on the unit.**
  - If a different refrigerant or air is mixed with the original refrigerant, the refrigerant cycle may malfunction and the unit may be damaged.
- **If the air conditioner is installed in a small room, measures must be taken to prevent the refrigerant concentration from exceeding the safety limit if the refrigerant should leak.**
  - Consult the dealer regarding the appropriate measures to prevent the safety limit from being exceeded. Should the refrigerant leak and cause the safety limit to be exceeded, hazards due to lack of oxygen in the room could result.
- **When moving and reinstalling the air conditioner, consult the dealer or an authorized technician.**
  - If the air conditioner is installed improperly, water leakage, electric shock, or fire may result.
- **After completing installation work, make sure that refrigerant gas is not leaking.**
  - If the refrigerant gas leaks and is exposed to a fan heater, stove, oven, or other heat source, it may generate noxious gases.
- **Do not reconstruct or change the settings of the protection devices.**
  - If the pressure switch, thermal switch, or other protection device is shorted or operated forcibly, or parts other than those specified by Mitsubishi Electric are used, fire or explosion may result.
- **To dispose of this product, consult your dealer.**
- **The installer and system specialist shall secure safety against leakage according to local regulation or standards.**
  - Choose the appropriate wire size and the switch capacities for the main

power supply described in this manual if local regulations are not available.
- **Pay special attention to the place of installation, such as a basement, etc. where refrigeration gas can accumulate, since refrigerant is heavier than the air.**
- **This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.**
- **This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.**
- **Children should be supervised to ensure that they do not play with the appliance.**

1.2. Precautions for devices that use R410A refrigerant

⚠ Caution:
- **Do not use existing refrigerant piping.**
  - The old refrigerant and refrigerant oil in the existing piping contains a large amount of chlorine which may cause the refrigerant oil of the new unit to deteriorate.
  - R410A is a high-pressure refrigerant and can cause the existing piping to burst.
- **Use refrigerant piping made of phosphorus deoxidized copper and copper alloy seamless pipes and tubes. In addition, be sure that the inner and outer surfaces of the pipes are clean and free of hazardous sulphur, oxides, dust/dirt, shaving particles, oils, moisture, or any other contaminant.**
  - Contaminants on the inside of the refrigerant piping may cause the refrigerant oil to deteriorate.
- **Store the piping to be used during installation indoors and keep both ends of the piping sealed until just before brazing. (Store elbows and other joints in a plastic bag.)**
  - If dust, dirt, or water enters the refrigerant cycle, deterioration of the oil and compressor failure may result.
- **Apply a small amount of ester oil, ether oil, or alkyl benzene to flares. (for indoor unit)**
  - Infiltration of a large amount of mineral oil may cause the refrigerant oil to deteriorate.
- **Use liquid refrigerant to fill the system.**
  - If gas refrigerant is used to fill the system, the composition of the refrigerant in the cylinder will change and performance may drop.
- **Do not use a refrigerant other than R410A.**
  - If another refrigerant (R22, etc.) is mixed with R410A, the chlorine in the refrigerant may cause the refrigerant oil to deteriorate.
- **Use a vacuum pump with a reverse flow check valve.**
  - The vacuum pump oil may flow back into the refrigerant cycle and cause the refrigerant oil to deteriorate.
- **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, refrigerant recovery equipment)
  - If the conventional refrigerant and refrigerant oil are mixed in the R410A, the refrigerant may deteriorate.
  - If water is mixed in the R410A, the refrigerant oil may deteriorate.
  - Since R410A does not contain any chlorine, gas leak detectors for conventional refrigerants will not react to it.
- **Do not use a charging cylinder.**
  - Using a charging cylinder may cause the refrigerant to deteriorate.
- **Be especially careful when managing the tools.**
  - If dust, dirt, or water gets into the refrigerant cycle, the refrigerant may deteriorate.
- **Wear protective gloves when working on the unit.**
  - Failure to do so may result in injury.

1.3. Before installation

⚠ Caution:
- **Do not install the unit where combustible gas may leak.**
  - If the gas leaks and accumulates around the unit, an explosion may result.
- **Do not use the air conditioner where food, pets, plants, precision instruments, or artwork are kept.**
  - The quality of the food, etc. may deteriorate.
- **Do not use the air conditioner in special environments.**
  - Oil, steam, sulfuric smoke, etc. can significantly reduce the performance of the air conditioner or damage its parts.
- **When installing the unit in a hospital, communication station, or similar place, provide sufficient protection against noise.**
  - Inverter equipment, private power generator, high-frequency medical equipment, or radio communication equipment may cause the air conditioner to operate erroneously, or fail to operate. On the other hand, the air conditioner may affect such equipment by creating noise that disturbs medical treatment or image broadcasting.
- **Do not install the unit on or over things that are subject to water damage.**
  - When the room humidity exceeds 80% or when the drain pipe is clogged, condensation may drip from the indoor unit. Perform collective drainage work together with the heat source unit, as required.
  - When using a heat source unit PQHY-P·YLM-A2, PQRY-P·YLM-A2, do not install it on the things that are vulnerable to water damage.

1.4. Before installation (relocation) - electrical work

⚠ Caution:
- **Earth the unit.**
  - Do not connect the earth wire to gas or water pipes, lightning rods, or telephone earth lines. Improper earthing may result in electric shock.
- **Never connect in reverse phases.**
  - If the unit is miss wired, when power is supplied, some electrical parts will be damaged.
- **Install the power cable so that tension is not applied to the cable.**
  - Tension may cause the cable to break and generate heat and cause a fire.
- **Install a leak circuit breaker, as required.**
  - If a leak circuit breaker is not installed, electric shock may result.
- **Use power line cables of sufficient current carrying capacity and rating.**
  - Cables that are too small may leak, generate heat, and cause a fire.
- **Tighten terminal screws to the specified torque.**
  - Poor wire contact caused by loose screws may result in overheating and resultant fire.
- **Use only a circuit breaker and fuse of the specified capacity.**
  - A fuse or circuit breaker of a larger capacity, or the use of a substitute simple steel or copper wire may result in a general unit failure or fire.
- **Do not wash the air conditioner units.**
  - Washing them may cause an electric shock.
- **Be careful that the installation base is not damaged by long use.**
  - If the damage is left uncorrected, the unit may fall and cause personal injury or property damage.
- **Install the drain piping to ensure proper drainage. Wrap thermal insulation around the pipes to prevent condensation.**
  - Improper drain piping may cause water leakage and damage to furniture and other possessions.
- **Be very careful about transporting the product.**
  - One person should not carry the product. Its weight is in excess of 20kg [45LBS].
  - Some products use PP bands for packaging. Do not use any PP bands as a means of transportation. It is dangerous.
  - Do not touch the heat exchanger fins. Doing so may cut your fingers.
  - When transporting the heat source unit, support it at the specified positions on the unit base. Also support the heat source unit at four points so that it cannot slip sideways.
- **Safely dispose of the packing materials.**
  - Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries.
  - Tear apart and throw away plastic packaging bags so that children will not play with them. If children play with a plastic bag which has not been torn apart, they face the risk of suffocation.

1.5. Before starting the test run

⚠ Caution:
- **Turn on the power at least 12 hours before starting operation.**
  - Starting operation immediately after turning on the main power switch can result in irreversible damage to internal parts. Keep the power switch turned on during the operational season. Make sure of the phase order of power supply and voltage between each phase.
- **Do not touch the switches with wet fingers.**
  - Touching a switch with wet fingers can result in an electric shock.
- **Do not touch the refrigerant pipes during and immediately after operation.**
  - During and immediately after operation, 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.
- **Do not operate the air conditioner with the panels and guards removed.**
  - Rotating, hot, or high-voltage parts can cause injuries.
- **Do not turn off the power immediately after stopping operation.**
  - Always wait at least 5 minutes before turning off the power. Otherwise, drainage water leakage or mechanical failure of sensitive parts may occur.
- **Do not touch the surface of the compressor during servicing.**
  - If unit is connected to a supply and not running, the crank case heater located at the base of the compressor may still be operating.

2. About the product

- This unit uses R410A-type refrigerant.
- Piping for systems using R410A may be different from that for systems using conventional refrigerant because the design pressure for R410A systems is higher. Refer to the Data Book for more information.
- Some of the tools and equipment used for installing with systems that use other types of refrigerant cannot be used with the systems using R410A. Refer to the Data Book for more information.
- Do not use the existing piping, as it contains chlorine, which is found in conventional refrigerating machine oil and refrigerant. This chlorine will deteriorate the refrigerant machine oil in the new equipment. The existing piping must not be used as the design pressure for R410A systems is higher than that in the systems using other types of refrigerant and the existing pipes may burst.

3. Combination of heat source units

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PQHY module are listed below.

Model name	module	
PQHY-P200YLM-A1	-	-
PQHY-P250YLM-A1	-	-
PQHY-P300YLM-A1	-	-
PQHY-P350YLM-A1	-	-
PQHY-P400YLM-A1	-	-
PQHY-P400YSLM-A1	PQHY-P200YLM-A1	PQHY-P200YLM-A1
PQHY-P450YLM-A1	-	-
PQHY-P450YSLM-A1	PQHY-P250YLM-A1	PQHY-P200YLM-A1
PQHY-P500YLM-A1	-	-
PQHY-P500YSLM-A1	PQHY-P250YLM-A1	PQHY-P250YLM-A1
PQHY-P550YLM-A1	-	-
PQHY-P550YSLM-A1	PQHY-P300YLM-A1	PQHY-P250YLM-A1
PQHY-P600YLM-A1	-	-
PQHY-P600YSLM-A1	PQHY-P300YLM-A1	PQHY-P300YLM-A1
PQHY-P700YSLM-A1	PQHY-P350YLM-A1	PQHY-P350YLM-A1
PQHY-P750YSLM-A1	PQHY-P400YLM-A1	PQHY-P350YLM-A1
PQHY-P800YSLM-A1	PQHY-P400YLM-A1	PQHY-P400YLM-A1
PQHY-P850YSLM-A1	PQHY-P450YLM-A1	PQHY-P400YLM-A1
PQHY-P900YSLM-A1	PQHY-P450YLM-A1	PQHY-P450YLM-A1

Model name	module	
PQHY-P200YLM-A2	-	-
PQHY-P250YLM-A2	-	-
PQHY-P300YLM-A2	-	-
PQHY-P350YLM-A2	-	-
PQHY-P400YLM-A2	-	-
PQHY-P400YSLM-A2	PQHY-P200YLM-A2	PQHY-P200YLM-A2
PQHY-P450YLM-A2	-	-
PQHY-P450YSLM-A2	PQHY-P250YLM-A2	PQHY-P200YLM-A2
PQHY-P500YLM-A2	-	-
PQHY-P500YSLM-A2	PQHY-P250YLM-A2	PQHY-P250YLM-A2
PQHY-P550YLM-A2	-	-
PQHY-P550YSLM-A2	PQHY-P300YLM-A2	PQHY-P250YLM-A2
PQHY-P600YLM-A2	-	-
PQHY-P600YSLM-A2	PQHY-P300YLM-A2	PQHY-P300YLM-A2
PQHY-P700YSLM-A2	PQHY-P350YLM-A2	PQHY-P350YLM-A2
PQHY-P750YSLM-A2	PQHY-P400YLM-A2	PQHY-P350YLM-A2
PQHY-P800YSLM-A2	PQHY-P400YLM-A2	PQHY-P400YLM-A2
PQHY-P850YSLM-A2	PQHY-P450YLM-A2	PQHY-P400YLM-A2
PQHY-P900YSLM-A2	PQHY-P450YLM-A2	PQHY-P450YLM-A2

PQRY module are listed below.

Model name	module	
PQRY-P200YLM-A1	-	-
PQRY-P250YLM-A1	-	-
PQRY-P300YLM-A1	-	-
PQRY-P350YLM-A1	-	-
PQRY-P400YLM-A1	-	-
PQRY-P400YSLM-A1	PQRY-P200YLM-A1	PQRY-P200YLM-A1
PQRY-P450YLM-A1	-	-
PQRY-P450YSLM-A1	PQRY-P250YLM-A1	PQRY-P200YLM-A1
PQRY-P500YLM-A1	-	-
PQRY-P500YSLM-A1	PQRY-P250YLM-A1	PQRY-P250YLM-A1
PQRY-P550YLM-A1	-	-
PQRY-P550YSLM-A1	PQRY-P300YLM-A1	PQRY-P250YLM-A1
PQRY-P600YLM-A1	-	-
PQRY-P600YSLM-A1	PQRY-P300YLM-A1	PQRY-P300YLM-A1
PQRY-P700YSLM-A1	PQRY-P350YLM-A1	PQRY-P350YLM-A1
PQRY-P750YSLM-A1	PQRY-P400YLM-A1	PQRY-P350YLM-A1
PQRY-P800YSLM-A1	PQRY-P400YLM-A1	PQRY-P400YLM-A1
PQRY-P850YSLM-A1	PQRY-P450YLM-A1	PQRY-P400YLM-A1
PQRY-P900YSLM-A1	PQRY-P450YLM-A1	PQRY-P450YLM-A1

Model name	module	
PQRY-P200YLM-A2	-	-
PQRY-P250YLM-A2	-	-
PQRY-P300YLM-A2	-	-
PQRY-P350YLM-A2	-	-
PQRY-P400YLM-A2	-	-
PQRY-P400YSLM-A2	PQRY-P200YLM-A2	PQRY-P200YLM-A2
PQRY-P450YLM-A2	-	-
PQRY-P450YSLM-A2	PQRY-P250YLM-A2	PQRY-P200YLM-A2
PQRY-P500YLM-A2	-	-
PQRY-P500YSLM-A2	PQRY-P250YLM-A2	PQRY-P250YLM-A2
PQRY-P550YLM-A2	-	-
PQRY-P550YSLM-A2	PQRY-P300YLM-A2	PQRY-P250YLM-A2
PQRY-P600YLM-A2	-	-
PQRY-P600YSLM-A2	PQRY-P300YLM-A2	PQRY-P300YLM-A2
PQRY-P700YSLM-A2	PQRY-P350YLM-A2	PQRY-P350YLM-A2
PQRY-P750YSLM-A2	PQRY-P400YLM-A2	PQRY-P350YLM-A2
PQRY-P800YSLM-A2	PQRY-P400YLM-A2	PQRY-P400YLM-A2
PQRY-P850YSLM-A2	PQRY-P450YLM-A2	PQRY-P400YLM-A2
PQRY-P900YSLM-A2	PQRY-P450YLM-A2	PQRY-P450YLM-A2

* When using this unit as Hybrid City Multi system, up to P500 (single module only) can be connected. (PQRY only)

4. Specifications

PQHY-P·YLM-A1, PQHY-P·YLM-A2

Model		P200YLM	P250YLM	P300YLM	P350YLM	P400YLM	P450YLM	P500YLM	P550YLM	P600YLM
Sound pressure level		46 dB <A>	48 dB <A>	54 dB <A>	52 dB <A>	52 dB <A>	54 dB <A>	54 dB <A>	56.5 dB <A>	56.5 dB <A>
Net weight		170 kg			214 kg				243 kg	
Maximum water pressure		2.0 MPa								
Refrigerant		R410A: 5.0 kg			R410A: 6.0 kg				R410A: 11.7 kg	
Indoor units	Total capacity	50 ~ 130%*1								
	Model	15 ~ 250								
	Quantity	1 ~ 17	1 ~ 21	1 ~ 26	1 ~ 30	1 ~ 34	1 ~ 39	1 ~ 43	2 ~ 47	2 ~ 50
Operation temperature		Water temperature: 10°C ~ 45°C								

Model		P400YSLM	P450YSLM	P500YSLM	P550YSLM	P600YSLM
Sound pressure level		49 dB <A>	50 dB <A>	51 dB <A>	55 dB <A>	57 dB <A>
Net weight		170 kg + 170 kg				
Maximum water pressure		2.0 MPa				
Refrigerant		R410A: 5.0 kg + 5.0 kg				
Indoor units	Total capacity	50 ~ 130%*1				
	Model	15 ~ 250				
	Quantity	1 ~ 34	1 ~ 39	1 ~ 43	2 ~ 47	2 ~ 50
Operation temperature		Water temperature: 10°C ~ 45°C				

Model		P700YSLM	P750YSLM	P800YSLM	P850YSLM	P900YSLM
Sound pressure level		55 dB <A>	55 dB <A>	55 dB <A>	56 dB <A>	57 dB <A>
Net weight		214 kg + 214 kg				
Maximum water pressure		2.0 MPa				
Refrigerant		R410A: 6.0 kg + 6.0 kg				
Indoor units	Total capacity	50 ~ 130%*1				
	Model	15 ~ 250				
	Quantity	2 ~ 50	2 ~ 50	2 ~ 50	2 ~ 50	2 ~ 50
Operation temperature		Water temperature: 10°C ~ 45°C				

*1: The total indoor capacity of units run simultaneously is 130% or less.

PQRY-P·YLM-A1,PQRY-P·YLM-A2

Model		P200YLM	P250YLM	P300YLM	P350YLM	P400YLM	P450YLM	P500YLM	P550YLM	P600YLM
Sound pressure level		46 dB <A>	48 dB <A>	54 dB <A>	52 dB <A>	52 dB <A>	54 dB <A>	54 dB <A>	56.5 dB <A>	56.5 dB <A>
Net weight		173 kg			217 kg				247 kg	
Maximum water pressure		2.0 MPa								
Refrigerant		R410A: 5.0 kg			R410A: 6.0 kg				R410A: 11.7 kg	
Indoor units	Total capacity	50 ~ 150%*1								
	Model	15 ~ 250								
	Quantity	1 ~ 20	1 ~ 25	1 ~ 30	1 ~ 35	1 ~ 40	1 ~ 45	1 ~ 50	2 ~ 50*2	2 ~ 50*2
Operation temperature		Water temperature: 10°C ~ 45°C								

Model		P400YSLM	P450YSLM	P500YSLM	P550YSLM	P600YSLM
Sound pressure level		49 dB <A>	50 dB <A>	51 dB <A>	55 dB <A>	57 dB <A>
Net weight		173 kg + 173 kg				
Maximum water pressure		2.0 MPa				
Refrigerant		R410A: 5.0 kg + 5.0 kg				
Indoor units	Total capacity	50 ~ 150%*1				
	Model	15 ~ 250				
	Quantity	1 ~ 40	1 ~ 45	1 ~ 50	2 ~ 50*2	2 ~ 50*2
Operation temperature		Water temperature: 10°C ~ 45°C				

Model		P700YSLM	P750YSLM	P800YSLM	P850YSLM	P900YSLM
Sound pressure level		55 dB <A>	55 dB <A>	55 dB <A>	56 dB <A>	57 dB <A>
Net weight		217 kg + 217 kg				
Maximum water pressure		2.0 MPa				
Refrigerant		R410A: 6.0 kg + 6.0 kg				
Indoor units	Total capacity	50 ~ 150%*1				
	Model	15 ~ 250				
	Quantity	2 ~ 50*2	2 ~ 50*2	2 ~ 50*2	2 ~ 50*2	2 ~ 50*2
Operation temperature		Water temperature: 10°C ~ 45°C				

*1: The total indoor capacity of units run simultaneously is 150% or less.
*2: Connectable branch pipe number is max. 48.

5. Parts list

- Check if the unit is shipped with the parts listed below.
- For precautions, see section 10.2.

PQHY-P·YLM-A1, PQHY-P·YLM-A2

Model	① Connecting elbow IDø25.4, ODø25.4 <Gas side>	② Connecting elbow IDø28.6, ODø28.6 <Gas side>	③ Connecting pipe IDø9.52, ODø9.52 <Liquid side>	④ Connecting pipe IDø15.88, ODø15.88 <Liquid side>	⑤ Connecting pipe IDø19.05, ODø19.05	⑥ Connecting pipe IDø28.6, ODø28.6	⑦ Connecting pipe IDø25.4, ODø22.2	⑧ Water stopper <Liquid side>	⑨ Water stopper <Gas side>
P200	1 pc.	-	1 pc.	-	-	-	-	1 pc.	1 pc.
P250	1 pc.	-	1 pc.	-	-	-	-	1 pc.	1 pc.
P300	1 pc.	-	1 pc.	-	-	-	-	1 pc.	1 pc.
P350	-	1 pc.	-	1 pc.	-	-	-	1 pc.	1 pc.
P400	-	1 pc.	-	1 pc.	-	-	-	1 pc.	1 pc.
P450	-	1 pc.	-	1 pc.	-	-	-	1 pc.	1 pc.
P500	-	1 pc.	-	1 pc.	-	-	-	1 pc.	1 pc.
P550	-	1 pc.	-	1 pc.	-	-	-	1 pc.	1 pc.
P600	-	1 pc.	-	1 pc.	-	-	-	1 pc.	1 pc.

Model	⑩ Sealing material for water stopper <Liquid side>	⑪ Sealing material for water stopper <Gas side>	⑫ Sealing material for field piping <Liquid side>	⑬ Sealing material for field piping <Gas side>	⑭ Sealing material for base leg	⑮ Sealing material for base leg	⑯ Sealing material for water panel	⑰ Pipe cover <Gas side>	⑱ Sealing material for drain socket
P200	1 pc.	1 pc.	1 pc.	1 pc.	-	-	-	1 pc.	1 pc.
P250	1 pc.	1 pc.	1 pc.	1 pc.	-	-	-	1 pc.	1 pc.
P300	1 pc.	1 pc.	1 pc.	1 pc.	-	-	-	1 pc.	1 pc.
P350	1 pc.	1 pc.	1 pc.	1 pc.	4 pc.	4 pc.	1 pc.	1 pc.	1 pc.
P400	1 pc.	1 pc.	1 pc.	1 pc.	4 pc.	4 pc.	1 pc.	1 pc.	1 pc.
P450	1 pc.	1 pc.	1 pc.	1 pc.	4 pc.	4 pc.	1 pc.	1 pc.	1 pc.
P500	1 pc.	1 pc.	1 pc.	1 pc.	4 pc.	4 pc.	1 pc.	1 pc.	1 pc.
P550	1 pc.	1 pc.	1 pc.	1 pc.	4 pc.	4 pc.	1 pc.	1 pc.	1 pc.
P600	1 pc.	1 pc.	1 pc.	1 pc.	4 pc.	4 pc.	1 pc.	1 pc.	1 pc.

PQRY-P·YLM-A1, PQRY-P·YLM-A2

Model	① Connecting elbow IDø25.4, ODø25.4 <Low-pressure side>	② Connecting elbow IDø28.6, ODø28.6	③ Connecting pipe IDø9.52, ODø9.52	④ Connecting pipe IDø15.88, ODø15.88	⑤ Connecting pipe IDø19.05, ODø19.05 <High-pressure side>	⑥ Connecting pipe IDø28.6, ODø28.6 <Low-pressure side>	⑦ Connecting pipe IDø25.4, ODø22.2 <High-pressure side>	⑧ Water stopper <High-pressure side>	⑨ Water stopper <Low-pressure side>
P200	1 pc.	-	-	-	1 pc.	-	-	-	1 pc.
P250	1 pc.	-	-	-	1 pc.	-	-	-	1 pc.
P300	1 pc.	-	-	-	1 pc.	-	-	-	1 pc.
P350	-	-	-	-	-	1 pc.	1 pc.	-	1 pc.
P400	-	-	-	-	-	1 pc.	1 pc.	-	1 pc.
P450	-	-	-	-	-	1 pc.	1 pc.	-	1 pc.
P500	-	-	-	-	-	1 pc.	1 pc.	-	1 pc.
P550	-	-	-	-	-	1 pc.	1 pc.	-	1 pc.
P600	-	-	-	-	-	1 pc.	1 pc.	-	1 pc.

Model	⑩ Sealing material for water stopper	⑪ Sealing material for water stopper <Low-pressure side>	⑫ Sealing material for field piping <High-pressure side>	⑬ Sealing material for field piping <Low-pressure side>	⑭ Sealing material for base leg	⑮ Sealing material for base leg	⑯ Sealing material for water panel	⑰ Pipe cover <Low-pressure side>	⑱ Sealing material for drain socket
P200	-	1 pc.	1 pc.	1 pc.	-	-	-	1 pc.	1 pc.
P250	-	1 pc.	1 pc.	1 pc.	-	-	-	1 pc.	1 pc.
P300	-	1 pc.	1 pc.	1 pc.	-	-	-	1 pc.	1 pc.
P350	-	1 pc.	1 pc.	1 pc.	4 pc.	4 pc.	1 pc.	1 pc.	1 pc.
P400	-	1 pc.	1 pc.	1 pc.	4 pc.	4 pc.	1 pc.	1 pc.	1 pc.
P450	-	1 pc.	1 pc.	1 pc.	4 pc.	4 pc.	1 pc.	1 pc.	1 pc.
P500	-	1 pc.	1 pc.	1 pc.	4 pc.	4 pc.	1 pc.	1 pc.	1 pc.
P550	-	1 pc.	1 pc.	1 pc.	4 pc.	4 pc.	1 pc.	1 pc.	1 pc.
P600	-	1 pc.	1 pc.	1 pc.	4 pc.	4 pc.	1 pc.	1 pc.	1 pc.

6. Transporting the unit

[Fig. 6.0.1] (P.2)

Ⓐ Suspension Ropes (8 m [26 ft] or longer × 2 ropes)
Ⓑ Protective Pads (front and back, 4 points)

- Use transporting ropes that can hold the weight of the unit.
- When moving the unit, use a **4-point suspension**, and avoid giving impacts to the unit (Do not use **2-point suspension**).
- Place protective pads on the unit where it comes in contact with the ropes to protect the unit from being scratched.
- Set the angle of roping at 40° or less.
- Use 2 ropes that are each longer than 8 m [26 ft].

⚠ Caution:

Be very careful when carrying/moving the product.

- When installing the heat source unit, suspend the unit at the specified location of the unit base. Support the unit of the four points, and stabilize as necessary. If the unit is suspended with 3-point support, the unit may fall.

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7. Installation

7.1. Installation

[Fig. 7.1.1] (P.2)

Ⓐ M10 anchor bolt. (field-supplied)
Ⓑ Check that the installation leg corners are securely supported to ensure that the legs do not bend.
Ⓒ Check that the installation leg corners are securely supported.

- Attach unit tightly with bolts so that it will not fall down due to earthquakes or strong winds.
- Use concrete or an angle bracket for the foundation.
- Vibration may be transmitted to the installation area and noise and vibration may be generated from the floor and walls, depending on the conditions. Provide ample vibration proofing (cushion pads, cushion frame, etc.).
- Be sure that the corners are firmly attached. If the corners are not firmly attach, the feet of the unit may be bent.
- When using pads, be sure that the full width of the unit is covered.
- The projecting length of the anchor bolt should be less than 25 mm [1 in].
- The PQHY/PQRY-P series should not be installed at outdoor.

⚠ Warning:

- **Install the unit in a location strong enough to withstand its weight. Any lack of strength may cause unit to fall down, resulting in a personal injury.**
- **Have installation work in order to protect against strong winds and earthquakes.**
  Improper installation may cause unit to fall down, resulting in a personal injury.

When building the foundation, give full attention to the floor strength, drain water disposal <during operation, drain water flows out of the unit>, and piping and wiring routes.

7.2. Service space

- Allow for clearance space.
- In case of a single unit installation, include 600 mm or more of space for easier access when servicing the unit from back.

[Fig. 7.2.1] (P.2)

Ⓐ Space for removing the control box
Ⓑ Heat source unit
Ⓒ Service space (front)

8. Water pipe installation

Please observe the following precautions during installation.

8.1. Precautions during installation

- The water pressure resistance of the water pipes in the heat source unit is 2.0 MPa [290 psi].
- Use the reverse-return method to insure proper pipe resistance to each unit.
- Provide some joints and bulbs around inlet/outlet of each unit for easy maintenance, checkup, and replacement.
- To protect the heat source unit, install a strainer on the circulating water inlet pipe within 1.5 m [4-7/8 ft] from the heat source unit.
- Install a suitable air vent on the water pipe. After flowing water through the pipe, vent any excess air.
- Water may collect in the low-temperature sections of heat source unit. Add a drainage pipe to the drain valve at the base of the unit to drain the water.
- Install a back flow-prevention valve on the pump and a flexible joint to prevent excess vibration.
- Use a sleeve to protect the pipes at the point where they go through a wall.
- Secure the pipes with metal fitting, positioning them in locations to protect pipes against breakage and bending.
- Do not confuse the water intake and outlet valves.
- This unit doesn't include a heater to prevent freezing within tubes. If the water flow is stopped on low ambient, drain the water out.
- The unused knockout holes should be closed and the refrigerant pipes, water pipes, power source and transmission wires access holes should be filled with putty.
- The drain plug is installed on the back of the unit at factory for field-connection of the drain pipes on the front of the unit. Move the plug to the front to connect the drain pipes on the back. Verify that there are no leaks from pipe connections.
- For installing two units, install water pipes in parallel to each other so that the water flow rate through both units will be equal.
- Wrap sealing tape as follows.
  ① Wrap the joint with sealing tape following the direction of the threads (clockwise), do not wrap the tape over the edge.
  ② Overlap the sealing tape by two-thirds to three-fourths of its width on each turn. Press the tape with your fingers so that it is tight against each thread.
  ③ Do not wrap the 1.5th through 2nd farthest threads away from the pipe end.
- When installing the pipes or strainer, tighten the on-site water piping screws to a torque of 150 N·m (1500 kg·cm), without fixing the water piping on the unit side in place.
- When connecting heat source unit water piping and on-site water piping, apply liquid sealing material for water piping over the sealing tape before connection.
- Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit.

Example of heat source unit installation (using left piping)

[Fig. 8.1.1] (P.3)

Ⓐ Main circulating water pipe
Ⓑ Shutoff valve
Ⓒ Shutoff valve
Ⓓ Water outlet (upper)
Ⓔ Refrigerant pipes
Ⓕ Y-type strainer
Ⓖ Water inlet (lower)
Ⓗ Drain pipe

- In order to protect the unit, consider the water circuit design that uses the water circuit parts such as those shown in [Fig. 8.1.2].

System example of water circuit

[Fig. 8.1.2] (P.3)

Ⓐ Heat source unit
Ⓑ Strainer *1
Ⓒ Flow Switch *1*2
Ⓓ Shutoff valve *1
Ⓔ Temperature gauge *1
Ⓕ Pressure gauge *1
Ⓖ Backflow prevention valve
Ⓗ Pump
Ⓘ Flexible joint
Ⓙ 3-way valve
Ⓚ Cooling tower
Ⓛ Heating tank

*1 These items are field supplied.
*2 As for flow switch setting, please refer to "8.4 Pump interlock".
Note: The figure above shows a sample water circuit. This circuit is provided only as a reference, and Mitsubishi Electric Corporation shall not be held for any problems arising from the use of this circuit.

8.2. Insulation installation

As long as the temperature range of the circulating water is kept to average temperatures year-round (30°C [86°F] in the summer, 20°C [68°F] in the winter), there is no need to insulate the indoor piping. Insulation should be installed in the following situations:

- On any heat source piping.
- Indoor piping in cold-weather regions where frozen pipes are a problem.
- When air coming from the outside causes condensation to form on piping.
- On any drainage piping.

8.3. Water processing and water quality control

To preserve water quality, use the closed type of cooling tower. When the circulating water quality is poor, the water heat exchanger can develop scales, leading to a reduction in heat-exchange power and possible corrosion. Pay careful attention to water processing and water quality control when installing the water circulation system.

- Removing of foreign objects or impurities within the pipes.
  During installation, make sure that foreign objects, such as welding fragments, sealant particles, or rust, do not enter the pipes.
- Water Quality Processing
  ① Depending on the quality of the cold-temperature water used in the air conditioner, the copper piping of the heat exchanger may corrode. Regular water quality processing is recommended.
  Cold water circulation systems using open heat storage tanks are particularly prone to corrosion.
  When using an open-type heat storage tank, install a water-to-water heat exchanger, and use a closed-loop circuit on the air conditioner side. If a water supply tank is installed, keep air contact to a minimum, and keep the level of dissolved oxygen in the water no higher than 1mg/ℓ.

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② Water quality standard

Items		Low to mid-range temperature water system		Tendency	
		Recirculating water [20<T<60°C] [68<T<140°F]	Make-up water	Corrosive	Scale-forming
Standard items	pH (25°C) [77°F]	7.0 ~ 8.0	7.0 ~ 8.0	○	○
	Electric conductivity (mS/m) (25°C) [77°F] (μ s/cm) (25°C) [77°F]	30 or less [300 or less]	30 or less [300 or less]	○	○
	Chloride ion (mg Cl^-/ℓ)	50 or less	50 or less	○	
	Sulfate ion (mg SO_4^{2-}/ℓ)	50 or less	50 or less	○	
	Acid consumption (pH 4.8) (mg $CaCO_3$/ℓ)	50 or less	50 or less		○
	Total hardness (mg $CaCO_3$/ℓ)	70 or less	70 or less		○
	Calcium hardness (mg $CaCO_3$/ℓ)	50 or less	50 or less		○
	Ionic silica (mg SiO_2/ℓ)	30 or less	30 or less		○
Reference items	Iron (mg Fe/ℓ)	1.0 or less	0.3 or less	○	○
	Copper (mg Cu/ℓ)	1.0 or less	0.1 or less	○	
	Sulfide ion (mg S^{2-}/ℓ)	not to be detected	not to be detected	○	
	Ammonium ion (mg NH_4^+/ℓ)	0.3 or less	0.1 or less	○	
	Residual chlorine (mg Cl/ℓ)	0.25 or less	0.3 or less	○	
	Free carbon dioxide (mg CO_2/ℓ)	0.4 or less	4.0 or less	○	
	Ryzner stability index	–	–	○	○

Reference : Guideline of Water Quality for Refrigeration and Air Conditioning Equipment (JRA GL02E-1994)

③ Consult with a specialist about water quality control methods and calculations before using anti-corrosive solutions.

④ When replacing a previously installed air conditioning device (even when only the heat exchanger is being replaced), first conduct a water quality analysis and check for possible corrosion.
Corrosion can occur in cold-water systems even if there has been no prior signs of corrosion.
If the water quality level has dropped, adjust water quality before replacing the unit.

8.4. Pump interlock

The heat source unit may become damaged if it is operated with no water circulating through the pipes.
Interlock unit operation and the water-circuit pump. Use the terminal blocks for interlocking (TB8-1, 2, 3, 4) that can be found on the unit.
Connect the pump interlock circuit signal cable to the TB8-3, 4. Also, use pressure valve 63PW with a minimum current of 5mA or less to prevent miss detection due to poor connection.
Pump interlock cords of parts of appliances for heat source use shall not be lighter than polychloroprene sheathed flexible cord (design 245 IEC 57).

[Fig. 8.4.1] (P.4)

Ⓐ Pump interlock circuit connection (field-supplied)

[Fig. 8.4.2] (P.4)

This circuit is for interlocking of the heat source unit operation and the water-circuit pump.

Ⓐ Heat source unit
Ⓑ Control panel (field-supplied)
Ⓒ To next heat source unit
Ⓓ Operation ON signal
Ⓔ Pump interlock

X : Relay
FS : Flow switch
52P : Magnetic contactor for water circuit pump
MP : Water circuit pump
MCB : Circuit breaker

* Use an insulated ring terminal to connect the wiring to TB8.

Terminal No.	TB8-1, 2
Output	Relay contacts output Rated voltage: 220 ~ 240 V Rated load: 1 A
Operation	• When setting No. 917 for Dip switch SW4 (Dip switch SW6-10 is ON) is OFF. The relay closes during compressor operation.

SW4 0: OFF, 1: ON									
1	2	3	4	5	6	7	8	9	10
1	0	1	0	1	0	0	1	1	1

• When setting No. 917 for Dip switch SW4 (Dip switch SW6-10 is ON) is ON.
The relay closes during reception of cooling or the heating operation signal from the controller.
(Note: It outputs even if the thermostat is OFF (when the compressor is not operating).)

8.5. Water flow rate control

Precautions on installation work for water flow rate control are as follows.

① Check that the water circuit parts required for water flow rate control are already installed. [Fig. 8.5.1]

② Connect the power cables required for water flow rate control. [Fig. 8.5.1]

③ When using a 0-10 VDC output device, the water flow rate can be adjusted without operating the heat source unit.
Check the flow rate of water supplied to the heat source unit is within the allowable range.
If a 0-10 VDC output device is not used, skip this check and go to ④.
1. Connect the signal cables for the 0-10 VDC output device and the motor valve.
2. Power on the pump and motor valve.
3. Check the water flow rate.
   - Motor valve specification (0 V: fully open, 10 V: closed)
   - When 0 V is output, check the flow rate of water supplied to the heat source unit does not exceed the upper limit.
     When 5.5 V (5 V +10%) is output, check the flow rate of water supplied to the heat source unit is not less than the lower limit.
   - Motor valve specification (0 V: closed, 10 V: fully open)
     When 10 V is output, check the flow rate of water supplied to the heat source unit does not exceed the upper limit.
     When 6.8 V (7.6 V -10%) is output, check the flow rate of water supplied to the heat source unit is not less than the lower limit.

Status	A	B-1	B-2	C
Condition	When stopped	When all heat source units are in thermo-off state		While compressor is in operation
		SW4 (901) = ON	SW4 (901) = OFF	
SW4 (810) = OFF	10 V	10 V	5 V (Minimum water flow rate)	5~0 V
SW4 (810) = ON	0 V	0 V	7.6 V (Minimum water flow rate)	7.6~9.1 V

*Up to approximately 10% output fluctuation can be caused.

Model		Water flow rate range
P200~P300	8~12 HP	3.0~7.2 m^3/h (50~120 L/min)
P350~P500	14~20 HP	4.5~11.6 m^3/h (75~192 L/min)
P550~P600	22~24 HP	6.0~14.4 m^3/h (100~240 L/min)

④ Connect the signal cables for pump interlock (TB8-3 and 4) and for motor valve opening command (TB9-5 and 6).

⑤ If the water flow rate has not been checked in ③ above, check the flow rate of water supplied to the heat source unit is within the allowable range.

- Motor valve specification (0 V: fully open, 10 V: closed)
  1. Power on the pump, motor valve, and unit.
  2. Set Dip switch SW6-10 to ON, and No. 810 for Dip switch SW4 to ON.
  3. When the indoor unit is not operated, check the flow rate of water supplied to the heat source unit does not exceed the upper limit.
  4. Set Dip switch SW6-10 to ON, and No. 810 for Dip switch SW4 to OFF.
  5. Operate the indoor unit (cooling or heating mode) from the remote controller.
  6. When all heat source units are operated in thermo-off state, check the flow rate of water supplied to the heat source unit is not less than the lower limit.
- Motor valve specification (0 V: closed, 10 V: fully open)
  1. Power on the pump , motor valve, and unit.
  2. When the indoor unit is not operated, check the flow rate of water supplied to the heat source unit does not exceed the upper limit.
  3. Set Dip switch SW6-10 to ON, and No. 810 for Dip switch SW4 to ON.
  4. Operate the indoor unit (cooling or heating mode) from the remote controller.
  5. When all heat source units are operated in thermo-off state, check the flow rate of water supplied to the heat source unit is not less than the lower limit.

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⑥ Connect the signal cables (TB8-1 and 2) for pump operation ON signal.

⑦ Make function settings according to the system.

Switch No.	810
Operation	• When No. 810 for Dip switch SW4 is set to OFF (default) 0 V: fully open, 10 V: closed (for motor valve)
	• When No. 810 for Dip switch SW4 is set to ON 0 V: closed, 10 V: fully open (for motor valve)

Switch No.	901
Operation	• When No. 901 for Dip switch SW4 is set to OFF (default) Motor valve is open while all heat source units (OC/OS) are in the thermo-off state.
	• When No. 901 for Dip switch SW4 is set to ON Motor valve is closed while all heat source units (OC/OS) are in the thermo-off state.

Switch No.	917
Operation	• When No. 917 for Dip switch SW4 is set to OFF (default) The relay is closed while the compressor is in operation.
	• When No. 917 for Dip switch SW4 is set to ON The relay is closed when cooling or heating operation signal is received from the controller.

Switch No.	SW4 0: OFF, 1: ON									
	1	2	3	4	5	6	7	8	9	10
810	0	1	0	1	0	1	0	0	1	1
901	1	0	1	0	0	0	0	1	1	1
917	1	0	1	0	1	0	0	1	1	1

*Take the following steps for function setting.
1. Set Dip switch SW6-10 to ON.
2. Set Dip switch SW4.
3. Press SWP1 for two seconds or longer to change the settings.

*Use the following setting combination of Dip switches.
- No. 901 for Dip switch SW4 is OFF, and No. 917 for Dip switch SW4 is ON.
- No. 901 for Dip switch SW4 is ON, and No. 917 for Dip switch SW4 is OFF.

⑧ Check for proper operation of water flow rate control system including the heat source unit.
1. Power on the pump, motor valve, and unit.
2. Operate the indoor unit (cooling or heating mode) from the remote controller.
3. Check that “2000 error” (pump interlock error) is not occurring.

⑨ Check that the flow rate of water supplied to the heat source unit is within the allowable range.
- Ensure that circulating water temperature is within the allowable range.
- Ensure that there is no clogging of the strainer.
- When several heat-source units are operated by one pump, ensure that the flow rate of water supplied to each heat source unit is within the allowable range regardless of the ON/OFF status of the heat source units in the system.

[Fig. 8.5.1] (P.4)

System diagram for the use of water flow rate control.

Ⓐ Heat source unit
Ⓑ Motor valve *1
Ⓒ Tuning valve *1
Ⓓ Shutoff valve *1
Ⓔ Flow switch *1
Ⓕ Water pipe
Ⓖ Power cable
Ⓗ Signal cable
Ⓘ Pump interlock
Ⓙ Operation ON signal
Ⓚ Opening command
Ⓛ Power supply for motor valve (24 VAC or 24 VDC) *2

*1 These items are not supplied.
*2 Do not connect the power cables to TB9-1 and 2 to supply power to the motor valve. Doing so may cause damage to the Input/Output board.

9. Refrigerant piping installation

The pipe is connected via a terminal-branch type connection in which refrigerant piping from the heat source unit is branched at the terminal and is connected to each of the indoor units.
The method of pipe connection is as follows: flare connection for the indoor units, Gas (low-pressure for PQRY-P series) pipes and Liquid (high-pressure for PQRY-P series) pipes for heat source, brazed connection. Note that the branched sections are brazed.

⚠ Warning:

Do not use refrigerant other than the type indicated in the manuals provided with the unit and on the nameplate.
- Doing so may cause the unit or pipes to burst, or result in explosion or fire during use, during repair, or at the time of disposal of the unit.
- It may also be in violation of applicable laws.
- MITSUBISHI ELECTRIC CORPORATION cannot be held responsible for malfunctions or accidents resulting from the use of the wrong type of refrigerant.

Always use extreme care to prevent the refrigerant gas from leaking while using fire or flame. If the refrigerant gas comes in to contact with a flame from any source, such as a gas stove, it breaks down and generates a poisonous gas which can cause gas poisoning. Never weld in an unventilated room. Always conduct an inspection for gas leakage after installation of the refrigerant piping has been completed.

9.1. Caution

This unit uses refrigerant R410A. Follow the local regulations on materials and pipe thickness when selecting pipes. (Refer to the table below.)

① Use the following materials for refrigeration piping.
- Material: Use copper alloy seamless pipes made of phosphorus deoxidized copper. Ensure the inside and outside surfaces of the pipes are clean and free from hazardous sulfur, oxide, dusts, shaving particles, oils, and moisture (contamination).
- Size: Refer to item 9.2. for detailed information on refrigerant piping system.

② Field-supplied piping often contains dust and other materials. Always blow it clean with a dry inert gas.

③ Use care to prevent dust, water or other contaminants from entering the piping during installation.

④ Reduce the number of bending portions as much as possible, and make bending radii as big as possible.

⑤ For branching and connecting pipes for indoor and heat source units, use the following twinning and connecting pipe sets (sold separately).

Indoor twinning pipe kit model PQRY-P series ONLY
Line branch
Down-stream unit model Less than 80 in total
CMY-Y102SS-G2

Indoor junction pipe kit model PQRY-P series ONLY
Total indoor model P100~P250
CMY-R160C-J

Heat source twinning kit model PQRY-P series ONLY	
Total heat source model P400 ~ P600	Total heat source model P700 ~ P900
CMY-Q100CBK2	CMY-Q200CBK

Copper pipe size and radial thickness for R410A CITY MULTI.

Size (mm)	Size (in)	Radial thickness (mm)	Radial thickness (mil)	Pipe type
ø6.35	ø1/4	0.8	32	Type-O
ø9.52	ø3/8	0.8	32	Type-O
ø12.7	ø1/2	0.8	32	Type-O
ø15.88	ø5/8	1.0	40	Type-O
*ø19.05	ø3/4	1.2	48	Type-O
*ø19.05	ø3/4	1.0	40	Type-1/2H or H
ø22.2	ø7/8	1.0	40	Type-1/2H or H
ø25.4	ø1	1.0	40	Type-1/2H or H
ø28.58	ø1-1/8	1.0	40	Type-1/2H or H
ø31.75	ø1-1/4	1.1	44	Type-1/2H or H
ø34.93	ø1-3/8	1.2	48	Type-1/2H or H
ø41.28	ø1-5/8	1.4	56	Type-1/2H or H

* Both pipe types can be used for pipe size ø19.05 mm (3/4 in) for R410A air conditioner.

⑥ Use a fitting if a specified refrigerant pipe has a different diameter from that of a branching pipe.

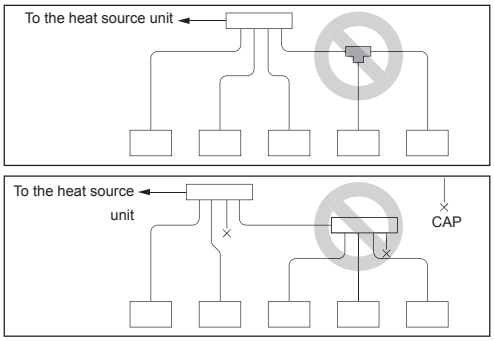
⑦ Follow the restrictions on the refrigerant piping (such as rated length, height difference, and piping diameter) to prevent equipment failure or a decline in heating/cooling performance.

Indoor twinning pipe set model PQHY-P series ONLY			
Line branch			
Down-stream unit model Less than 200 in total	Down-stream unit model More than 201 and less than 400 in total	Down-stream unit model More than 401 and less than 650 in total	Down-stream unit model More than 651 in total
CMY-Y102SS-G2	CMY-Y102LS-G2	CMY-Y202S-G2	CMY-Y302S-G2

Indoor twinning pipe set model PQHY-P series ONLY		
Header branch		
4 branching	8 branching	10 branching
CMY-Y104-G	CMY-Y108-G	CMY-Y1010-G

Heat source twinning kit model PQHY-P series ONLY	
Total heat source model P400 ~ P600	Total heat source model P700 ~ P900
CMY-Y100VBK3	CMY-Y200VBK2

⑧ Indoor units cannot be further branched down stream after the branch header. (See diagram below.) *PQHY-P series ONLY.



⑨ A lack or an excess of refrigerant can cause the unit to stop. Charge the system with the appropriate amount of refrigerant. When servicing, always check the information concerning pipe length and amount of additional refrigerant at the refrigerant volume calculation table on the back of the service panel and the additional refrigerant section on the labels for the combined number of indoor units (Refer to item 9.2. for detailed information on refrigerant piping system).

⑩ **Charge the system using liquid refrigerant.**

⑪ **Never use refrigerant to air purge.** Always evacuate using a vacuum pump.

⑫ Always insulate the piping properly. Insufficient insulation will result in a decline in heating/cooling performance, condensation and other such problems (Refer to item 10.4 for insulation of the refrigerant piping).

⑬ When connecting the refrigerant piping, make sure the valve of the heat source unit is completely closed (the factory setting) and do not operate it until the refrigerant piping for the heat source unit, indoor units and BC controller has been connected, a refrigerant leakage test has been performed, and the evacuation process has been completed.

⑭ **Braze only with non-oxided material. Failure to do so may damage the compressor. Braze using nitrogen purge.**
Do not use any commercially available anti-oxidizing agent, because it may cause pipe corrosion and degrade the refrigerant oil.
Contact Mitsubishi Electric for more details.
(Refer to item 10.2. for details of the piping connection and valve operation)

⑮ **Never perform piping connections when raining.**

⚠ Warning:

When installing and relocating the unit, do not charge the system with any other refrigerant other than what is specified.
- Mixing different refrigerant, air, etc. may cause the refrigerant cycle to malfunction and result in severe damage.

⚠ Caution:

- **Use a vacuum pump with a reverse flow check valve.**
  - If the vacuum pump does not have a reverse flow check valve, the vacuum pump oil may flow back into the refrigerant cycle and cause deterioration of the refrigerant oil.
- **Do not use the tools shown below used with conventional refrigerant. (Gauge manifold, charge hose, gas leak detector, check valve, refrigerant charge base, vacuum gauge, refrigerant recovery equipment)**
  - Mixing of conventional refrigerant and refrigerant oil may cause the refrigerant oil to deteriorate.
  - Mixing of water will cause the refrigerant oil to deteriorate.
  - R410A refrigerant does not contain any chlorine. Therefore, gas leak detectors for conventional refrigerants will not react to it.
- **Manage tools used for R410A carefully.**
  - If dust, dirt, or water gets in the refrigerant cycle, the refrigerant oil will deteriorate.
- **Never use existing refrigerant piping.**
  - The large amount of chlorine in conventional refrigerant and refrigerant oil in existing piping will cause the new refrigerant to deteriorate.
- **Store the piping to be used during installation indoors and keep both ends of the piping sealed until just before brazing.**
  - If dust, dirt, or water get into the refrigerant cycle, the oil will deteriorate and the compressor may fail.
- **Do not use a charging cylinder.**
  - Using a charging cylinder may cause the refrigerant to deteriorate.
- **Do not use special detergents to wash the piping.**

9.2. Refrigerant piping system

Example of refrigerant piping system

[Fig. 9.2.1] (P.5, P.7 - 8)

- Ⓐ Heat source model
- Ⓑ Liquid side
- Ⓒ Gas side
- Ⓕ Total capacity of indoor units
- Ⓖ Liquid pipe
- Ⓗ Gas pipe
- Ⓘ Model number
- Ⓙ Downstream unit model total
- Ⓚ The 1st branch of P350 ~ P600
- Ⓛ The 1st branch of P700 ~ P900
- Ⓜ Joint
- Ⓝ 4-Branch header (Downstream unit model total ≤ 200)
- Ⓞ 8-Branch header (Downstream unit model total ≤ 350)
- Ⓟ 10-Branch header (Downstream unit model total ≤ 600)
- Ⓠ Heat source twinning kit
- Ⓣ The 1st branch of P250 ~ P300
- ⓐ Heat source unit
- ⓑ 1st branch
- ⓒ Indoor unit
- ⓓ Cap
- ⓔ Heat source twinning kit
- ⓕ Header

* The total length of A^1 and A^2 is less than 10 m [32 ft].

*1 ø12.7 for over 90 m [295-1/4 in]

*2 ø12.7 for over 40 m [131-3/16 in]

*4 The pipe sizes listed in columns A1 to A2 in this table correspond to the sizes for the models listed in the unit 1 and 2 columns. When the order of the models for unit 1 and 2 change, make sure to use the appropriate pipe size.

*5 ⓑ If the piping length after the first joint exceeds 40 m (≤ 90 m), use the one size larger liquid pipe for the indoor unit. (for PQHY-P series)

*6 ⓒ When the height difference between the indoor units is 15 m or greater (≤ 30 m), use the one size larger liquid pipe for the indoor unit (lower side). (for PQHY-P series)

*7 For how to connect to the Hydro BC controller, refer to the Installation Manual that came with the Hydro BC controller.

[Fig. 9.2.2] (P.6 - 8)

- Ⓐ Heat source model
- Ⓓ High-pressure side
- Ⓔ Low-pressure side
- Ⓕ Total capacity of indoor units
- Ⓖ Liquid pipe
- Ⓗ Gas pipe
- Ⓘ Model number
- Ⓙ Downstream unit model total
- Ⓠ Heat source twinning kit
- Ⓡ High-pressure gas pipe
- Ⓢ Low-pressure gas pipe
- ⓐ Heat source unit
- ⓑ BC controller (standard)
- ⓒ BC controller (main)
- ⓓ BC controller (sub)
- ⓔ Indoor unit (15 ~ 80)
- ⓕ Indoor unit (100 ~ 250)
- ⓖ Heat source twinning kit

*3 When the piping length is 65 m or longer, use the ø28.58 [1-1/8] pipe for the part that exceeds 65 m.

*4 The pipe sizes listed in columns A1 to A2 in this table correspond to the sizes for the models listed in the unit 1 and 2 columns. When the order of unit 1 and 2 change, make sure to use the appropriate pipe size for the model.

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Precautions for heat source unit combinations
Refer to [Fig. 9.2.3] for the positioning of twinning pipes.

[Fig. 9.2.3] (P.9)

<A> When the piping (from the twinning pipe) exceeds 2 m [6 ft], include a trap (gas pipe only) within 2 m [6 ft]. Make sure the height of the trap is 200 mm [7-7/8 in] or more.
If there is no trap, oil can accumulate inside the pipe, causing a shortage of oil damaging the compressor. (for PQHY-P series)
<B> Example of piping connection (for PQHY-P series)
Ⓐ Indoor unit
Ⓑ Trap (gas pipe only)
Ⓒ Within 2 m [6 ft]
Ⓓ Twinning pipe
Ⓔ Field-supplied piping
Ⓕ Twinning kit
Ⓖ Straight pipe length that is 500 mm [19-11/16 in] or more

Precautions for heat source unit combinations
Refer to [Fig. 9.2.4] for the positioning of twinning pipes.

[Fig. 9.2.4] (P.9 - 10)

<A> Install the piping so that oil will not accumulate in the stopped heat source unit. (both the liquid and the gas side for PQHY-P series, the high-pressure side only for PQRY-P series)
1. The NG example shows that oil accumulates because the units are installed on a reverse gradient while unit 1 is in operation, and unit 2 is stopped.
2. The NG example shows that oil accumulates into unit 1 while unit 2 is in operation, and unit 1 is stopped. Vertical pipe height (h) should be 0.2 m (7-7/8 in) or below.
3. The NG example shows that oil accumulates into unit 1 while unit 2 is in operation, and unit 1 is stopped. Vertical pipe height (h) should be 0.2 m (7-7/8 in) or below.
4. The NG example shows that oil accumulates into unit 2 while unit 1 is in operation, and unit 2 is stopped. Vertical pipe height (h) should be 0.2 m (7-7/8 in) or below.

<B> Slope of twinning pipes (for PQHY-P series)
Make sure the slope of the twinning pipes are at an angle within ±15° to the horizontal plane.
If the slope exceeds the angle specified, the unit may be damaged.
<C> Example of piping connection (for PQRY-P series)
Ⓐ Slope downward
Ⓑ Slope upward
Ⓒ BC controller (standard or main)
Ⓓ Twinning pipe
Ⓔ Slope of the twinning pipe is at an angle within ±15° to the earth
Ⓕ Twinning pipe (low-pressure side)
Ⓖ Twinning pipe (high-pressure side)
Ⓗ Field-supplied piping (low-pressure connecting pipe: between heat source units)
Ⓘ Field-supplied piping (low-pressure main pipe: to BC controller)
Ⓙ Field-supplied piping (high-pressure main pipe: to BC controller)

⚠ Caution:

- **Do not install traps to prevent oil backflow and compressor start-up failure.**
- **Do not install solenoid valves to prevent oil backflow and compressor start-up failure.**
- **Do not install a sight glass because it may show improper refrigerant flow.**
  If a sight glass is installed, inexperienced technicians that use the glass may overcharge the refrigerant.

10. Additional refrigerant charge

At the time of shipping, the heat source unit is charged with refrigerant. This charge does not include the total amount necessary for extended piping lengths, so an additional charge of each refrigerant line will be required on site. Always keep a record of the size and length of each refrigerant line and the amount of additional charge by writing it in the space provided on the heat source unit for future reference.

10.1. Calculation of additional refrigerant charge

- Calculate the amount of additional charge based on extended piping lengths and the refrigerant line size.
- Use the table below as a guide for calculating the amount of additional charge and then charge the system accordingly.
- If the calculation results in a fraction of less than 0.1 kg [4 oz], round up to the next 0.1 kg [4 oz]. For example, if the result of the calculation was 28.73 kg [1014 oz], round the result up to 28.8 kg [1016 oz].

For PQHY-P·Y(S)LM-A1, PQHY-P·Y(S)LM-A2

<Additional Charge>

- Piping length from outdoor unit to the farthest indoor unit ≤ 30.5 m [100 ft]: Use table [A].
- Piping length from outdoor unit to the farthest indoor unit > 30.5 m [100 ft]: Use table [B].

Additional refrigerant charge	
[A]	(kg)[oz]
[B]	(kg)[oz]

=

Liquid pipe size Total length of ø19.05 mm [3/4 in]	
[A]	(m) × 0.29 (kg/m) (ft) × 3.12 (oz/ft)
[B]	(m) × 0.26 (kg/m) (ft) × 2.80 (oz/ft)

+

Liquid pipe size Total length of ø15.88 mm [5/8 in]	
[A]	(m) × 0.2 (kg/m) (ft) × 2.16 (oz/ft)
[B]	(m) × 0.18 (kg/m) (ft) × 1.94 (oz/ft)

+

Liquid pipe size Total length of ø12.7 mm [1/2 in]	
[A]	(m) × 0.12 (kg/m) (ft) × 1.30 (oz/ft)
[B]	(m) × 0.11 (kg/m) (ft) × 1.19 (oz/ft)

+

Liquid pipe size Total length of ø9.52 mm [3/8 in]	
[A]	(m) × 0.06 (kg/m) (ft) × 0.65 (oz/ft)
[B]	(m) × 0.054 (kg/m) (ft) × 0.59 (oz/ft)

+

Liquid pipe size Total length of ø6.35 mm [1/4 in]	
[A]	(m) × 0.024 (kg/m) (ft) × 0.26 (oz/ft)
[B]	(m) × 0.021 (kg/m) (ft) × 0.23 (oz/ft)

+

Additional charge		
Heat source unit model		Charged amount
Single	P550	1.0 kg [36 oz]
	P600	1.0 kg [36 oz]

+ α

<Example>

Indoor	1: 36	A: ø12.7 [1/2 in]	40 m [131 ft]	a: ø9.52 [3/8 in]	10 m [32 ft]	At the conditions below:
	2: 30	B: ø9.52 [3/8 in]	10 m [32 ft]	b: ø9.52 [3/8 in]	5 m [16 ft]	
	3: 15	C: ø9.52 [3/8 in]	15 m [49 ft]	c: ø6.35 [1/4 in]	10 m [32 ft]	
	4: 12	D: ø9.52 [3/8 in]	10 m [32 ft]	d: ø6.35 [1/4 in]	10 m [32 ft]	
	5: 24			e: ø9.52 [3/8 in]	10 m [32 ft]	

The total length of each liquid line is as follows:

ø12.7 [1/2 in]: A = 40 m [131 ft]

ø9.52 [3/8 in]: B + C + D + a + b + e = 10 [32] + 15 [49] + 10 [32] + 10 [32] + 5 [16] + 10 [32] = 60 m [193 ft]

ø6.35 [1/4 in]: c + d = 10 [32] + 10 [32] = 20 m [64 ft]

Therefore, additional refrigerant charge

= 40 m [131 ft] × 0.11 kg/m [1.19 oz/ft] + 60 m [193 ft] × 0.054 kg/m [0.59 oz/ft] + 20 m [64 ft] × 0.021 kg/m [0.23 oz/ft] + 3.0 kg [106 oz] = 11.1 kg [391 oz]

Value of α

Total capacity of connected indoor units	α
80 or below	2.0 kg [71 oz]
81 to 160	2.5 kg [89 oz]
161 to 330	3.0 kg [106 oz]
331 to 390	3.5 kg [124 oz]
391 to 480	4.5 kg [159 oz]
481 to 630	5.0 kg [177 oz]
631 to 710	6.0 kg [212 oz]
711 to 800	8.0 kg [283 oz]
801 to 890	9.0 kg [318 oz]
891 to 1070	10.0 kg [353 oz]
1071 to 1250	12.0 kg [424 oz]
1251 or above	14.0 kg [494 oz]

Note:

For PQHY/PQRY-P·Y(S)LM-A1, PQHY/PQRY-P·Y(S)LM-A2

* When connecting PEFY-P20VMA3-E units, add 0.54 kg of refrigerant for each of these units.
* When connecting PEFY-P25/32/40VMA3-E units, add 0.74 kg of refrigerant for each of these units.
* When connecting PEFY-P50/63/71/80/100/125VMA3-E units, add 1.16 kg of refrigerant for each of these units.

For PQRY-P·Y(S)LM-A1, PQRY-P·Y(S)LM-A2

<Additional charge>

- Piping length from outdoor unit to the farthest indoor unit ≤ 30.5 m [100 ft]: Use table [A].
- Piping length from outdoor unit to the farthest indoor unit > 30.5 m [100 ft]: Use table [B].

Additional refrigerant charge	
[A]	(kg)[oz]
[B]	(kg)[oz]

=

High-pressure pipe size Total length of ø28.58 mm [1-1/8 in]	
[A]	(m) × 0.36 (kg/m) (ft) × 3.88 (oz/ft)
[B]	(m) × 0.33 (kg/m) (ft) × 3.55 (oz/ft)

+

High-pressure pipe size Total length of ø22.2 mm [7/8 in]	
[A]	(m) × 0.23 (kg/m) (ft) × 2.48 (oz/ft)
[B]	(m) × 0.21 (kg/m) (ft) × 2.26 (oz/ft)

+

High-pressure pipe size Total length of ø19.05 mm [3/4 in]	
[A]	(m) × 0.16 (kg/m) (ft) × 1.73 (oz/ft)
[B]	(m) × 0.14 (kg/m) (ft) × 1.51 (oz/ft)

+

High-pressure pipe size Total length of ø15.88 mm [5/8 in]	
[A]	(m) × 0.11 (kg/m) (ft) × 1.19 (oz/ft)
[B]	(m) × 0.1 (kg/m) (ft) × 1.08 (oz/ft)

+

Liquid Piping Size Total length of ø15.88 mm [5/8 in]	
[A]	(m) × 0.2 (kg/m) (ft) × 2.16 (oz/ft)
[B]	(m) × 0.18 (kg/m) (ft) × 1.94 (oz/ft)

+

Liquid Piping Size Total length of ø12.7 mm [1/2 in]	
[A]	(m) × 0.12 (kg/m) (ft) × 1.30 (oz/ft)
[B]	(m) × 0.11 (kg/m) (ft) × 1.19 (oz/ft)

+

Liquid Piping Size Total length of ø9.52 mm [3/8 in]	
[A]	(m) × 0.06 (kg/m) (ft) × 0.65 (oz/ft)
[B]	(m) × 0.054 (kg/m) (ft) × 0.59 (oz/ft)

+

Liquid Piping Size Total length of ø6.35 mm [1/4 in]	
[A]	(m) × 0.024 (kg/m) (ft) × 0.26 (oz/ft)
[B]	(m) × 0.021 (kg/m) (ft) × 0.23 (oz/ft)

+

Additional charge		
Heat source unit model		Charged amount
Single	P550	1.0 kg [36 oz]
	P600	1.0 kg [36 oz]

+

HBC controller (CMB-WP108/ 1016V-GA1)
3.0 kg [106 oz]

+

BC controller (Standard/Main)
3.0 kg [106 oz]

+

BC controller (Main) HA-Type
2.0 kg [71 oz]

+

BC controller (Sub) Total Units	BC controller (Sub) Per Unit
1	1.0 kg [36 oz]
2	2.0 kg [71 oz]

+

Total capacity of connected indoor units	Amount (to be added for indoor units)
80 or below	2.0 kg [71 oz]
81 to 160	2.5 kg [89 oz]
161 to 330	3.0 kg [106 oz]
331 to 390	3.5 kg [124 oz]
391 to 480	4.5 kg [159 oz]
481 to 630	5.0 kg [177 oz]
631 to 710	6.0 kg [212 oz]
711 to 800	8.0 kg [283 oz]
801 to 890	9.0 kg [318 oz]
891 to 1070	10.0 kg [353 oz]
1071 to 1250	12.0 kg [424 oz]
1251 or above	14.0 kg [494 oz]

* For Hybrid City Multi system, the refrigerant charge amount for indoor units is excluded.

<Example>

Indoor	1: 30	A: ø28.58 [1-1/8 in]	40 m [131 ft]	a: ø9.52 [3/8 in]	10 m [32 ft]	At the conditions below:
	2: 96	B: ø9.52 [3/8 in]	10 m [32 ft]	b: ø9.52 [3/8 in]	5 m [16 ft]	
	3: 12	C: ø9.52 [3/8 in]	20 m [64 ft]	c: ø6.35 [1/4 in]	5 m [16 ft]	
	4: 15	D: ø9.52 [3/8 in]	5 m [16 ft]	d: ø6.35 [1/4 in]	10 m [32 ft]	
	5: 12	E: ø9.52 [3/8 in]	5 m [16 ft]	e: ø6.35 [1/4 in]	5 m [16 ft]	
	6: 24	F: ø22.2 [7/8 in]	3 m [9 ft]	f: ø9.52 [3/8 in]	5 m [16 ft]	
		G: ø19.05 [3/4 in]	1 m [3 ft]			

The total length of each liquid line is as follows:

ø28.58 [1-1/8 in]: A = 40 m [131 ft]

ø22.2 [7/8 in]: F = 3 m [9 ft]

ø19.05 [3/4 in]: G = 1 m [3 ft]

ø9.52 [3/8 in]: C + D + E + a + b + f = 50 m [164 ft]

ø6.35 [1/4 in]: c + d + e = 20 m [64 ft]

Therefore, additional refrigerant charge

= 40 m [131 ft] × 0.33 kg/m [3.55 oz/ft] + 3 m [9 ft] × 0.21 kg/m [2.26 oz/ft] + 1 [3 ft] × 0.14 kg/m [1.51 oz/ft] + 50 m [164 ft] × 0.054 kg/m [0.59 oz/ft] + 20 m [64 ft] × 0.021 kg/m [0.23 oz/ft] + 3.0 kg [106 oz] + 2.0 kg [71 oz] + 5.0 kg [177 oz]

= 27.1 kg [956 oz]

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■ Limitation of the amount of refrigerant to be charged
The above calculation result of the amount of refrigerant to be charged must become below the value in the table below.

For PQHY-P·Y(S)LM-A1, PQHY-P·Y(S)LM-A2

Heat source unit model	P200	P250	P300	P350	P400	P400S	P450	P450S	P500	P500S
Maximum amount of refrigerant*1 kg [oz]	21.0 [741]	28.0 [988]	29.5 [1041]	41.5 [1464]	50.0 [1764]	50.0 [1764]	51.5 [1817]	51.5 [1817]	53.5 [1888]	53.5 [1888]

Heat source unit model	P550	P550S	P600	P600S	P700S	P750S	P800S	P850S	P900S
Maximum amount of refrigerant*1 kg [oz]	55.5 [1958]	54.5 [1923]	57.0 [2011]	55.5 [1958]	65.5 [2311]	67.5 [2381]	67.5 [2381]	70.0 [2470]	70.0 [2470]

For PQRY-P·Y(S)LM-A1, PQRY-P·Y(S)LM-A2

Heat source unit model	P200	P250	P300	P350	P400	P400S	P450	P450S	P500	P500S
Maximum amount of refrigerant*1 kg [oz]	27.0 [953]	32.0 [1129]	33.0 [1165]	52.0 [1835]	52.0 [1835]	52.0 [1835]	53.0 [1870]	53.0 [1870]	55.0 [1941]	55.0 [1941]

Heat source unit model	P550	P550S	P600	P600S	P700S	P750S	P800S	P850S	P900S
Maximum amount of refrigerant*1 kg [oz]	57.0 [2011]	61.5 [2170]	58.0 [2046]	64.5 [2276]	72.0 [2540]	74.0 [2611]	74.0 [2611]	76.0 [2681]	76.0 [2681]

*1: Amount of additional refrigerant to be charged on site

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10.2. Precautions concerning piping connection and valve operation

- Conduct piping connection and valve operation accurately and carefully.
- **Removing the pinched connecting pipe**
  When shipped, a pinched connecting pipe is attached to the on-site high-pressure/liquid and low-pressure/gas valves to prevent gas leakage.
  Take the following steps ① through ④ to remove the pinched connecting pipe before connecting refrigerant pipes to the heat source unit.
  ① Check that the refrigerant service valve is fully closed (clockwise).
  ② Connect a charging hose to the service port on the low-pressure/high-pressure liquid/gas refrigerant service valve, and extract the gas in the piping between the refrigerant service valve and the pinched connecting pipe (Tightening torque 12 N·m [120 kg·cm]).
  ③ After vacuuming gas from the pinched connecting pipe, sever the pinched connecting pipe at the location shown in [Fig.10.2.1] and drain the refrigerant.
  ④ After completing ② and ③, heat the brazed section to remove the pinched connecting pipe.

[Fig. 10.2.1] (P.11)

<A> Service valve for refrigerant
(Liquid side/brazed for PQHY-P series)
(High-pressure side/brazed for PQRY-P series)
<B> Service valve for refrigerant
(Gas side/brazed for PQHY-P series)
(Low-pressure side/brazed for PQRY-P series)
Ⓐ Shaft
Ⓑ Service port
Ⓒ Cap
Ⓓ Pinched connecting pipe severing portion
Ⓔ Pinched connecting pipe brazing portion

⚠ Warning:

- **The areas between the refrigerant service valves and the pinched connecting pipes are filled with gas and refrigerant oil. Extract the gas and refrigerant oil in that section before heating the brazed section.**
  - If the brazed section is heated without first extracting the gas and refrigerant oil, the pipe may burst or the pinched connecting pipe may blow off and ignite the refrigerant oil, causing serious injury.

⚠ Caution:

- **Place a wet towel on the refrigerant service valve before heating the brazed section to keep the valve temperature from exceeding 120˚C [248˚F].**
- **Direct the flame away from the wiring and metal sheets inside the unit.**

⚠ Caution:

- **Refrigerant pipe connection**
  This product includes connecting pipes for front piping. (Refer to [Fig.10.2.2])
  Check the high-pressure/low-pressure piping dimensions before connecting the refrigerant pipe.
  Refer to item 9.2 Refrigerant piping system for piping dimensions.
  Make sure that the refrigerant pipe does not touch other refrigerants pipes, unit panels, or base plates.
  Use non-oxidative brazing when connecting pipes.
  Do not burn the wiring and plate when brazing.

<Example of refrigerant piping connection>

[Fig.10.2.2] (P.11 - 12)

① Connecting elbow (ID 25.4 [1], OD 25.4 [1]) (Gas/Low-pressure) <Included with heat source unit>
② Connecting elbow (ID 28.6 [1-1/8], OD 28.6 [1-1/8]) (Gas) <Included with heat source unit>
③ Connecting pipe (ID 9.52 [3/8], OD 9.52 [3/8]) (Liquid) <Included with heat source unit>
④ Connecting pipe (ID 15.88 [5/8], OD 15.88 [5/8]) (Liquid) <Included with heat source unit>
⑤ Connecting pipe (ID 19.05 [3/4], OD 19.05 [3/4]) (High-pressure) <Included with heat source unit>
⑥ Connecting pipe (ID 28.6 [1-1/8], OD 28.6 [1-1/8]) (Low-pressure) <Included with heat source unit>
⑦ Connecting pipe (ID 25.4 [1], OD 22.2 [7/8]) (High-pressure) <Included with heat source unit>
⑧ Water stopper (Liquid / High-pressure)
⑨ Water stopper (Gas/Low-pressure)
⑩ Sealing material for water stopper (Liquid)
⑪ Sealing material for water stopper (Gas / Low-pressure)
⑫ Sealing material for field piping (Liquid / High-pressure)
⑬ Sealing material for field piping (Gas / Low-pressure)
⑭ Sealing material for base leg
⑮ Sealing material for base leg
⑯ Sealing material for water panel
⑰ Pipe cover (Gas / Low-pressure)
⑱ Sealing material for drain socket
<A> Front pipe routing
<B> Low-pressure side PQRY-P series (Gas side PQHY-P series)
<C> High-pressure side PQRY-P series (Liquid side PQHY-P series)
Ⓐ Shape
Ⓑ Without a low-pressure twinning pipe
Ⓒ With a low-pressure twinning pipe (PQRY-P series ONLY) *1, *2
Ⓓ Refrigerant service valve pipes
Ⓔ Field-supplied piping (low-pressure connecting pipe)
Ⓕ Field-supplied piping (high-pressure connecting pipe)
Ⓖ Twinning kit (sold separately)
Ⓗ Field-supplied piping (low-pressure connecting pipe: to BC controller)
Ⓘ Field-supplied piping (low-pressure connecting pipe: to heat source unit)

*1 To attach the Twinning pipe (sold separately), refer to the instructions included in the kit.
*2 Connection pipe is not used when the Twinning kit is attached.

- **Pipe routing (for PQHY-P series)**

A	P200~P300	: Use the included connecting pipe ③ to connect.
	P350	: Use the pipe joint (field supply) and the included connecting pipe ④ to connect.
	P400~P600	: Use the included connecting pipe ④ to connect.
B	P200~P300	: Use the pipe joint (field supply) and the included connecting elbow ① to connect.
	P350~P600	: Use the included connecting elbow ② to connect.

- **Pipe routing (for PQRY-P series)**

A	P200	: Use the pipe joint (field supply) and the included connecting pipe ⑤ to connect.
	P250, P300	: Use the included connecting pipe ⑤ to connect.
	P350~P600	: Use the included connecting pipe ⑦ to connect.
B	P200~P300	: Use the pipe joint (field supply) and the included connecting elbow ① to connect.
	P350~P550	: Use the included connecting pipe ⑥ to connect.
	P600	: Use the pipe joint (field supply) and the included connecting pipe ⑥ to connect.

Satisfy the minimum insertion depth in the table below when expanding field-supplied piping

Pipe diameter (mm [in])	Minimum insertion depth (mm [in])
5 [7/32] or more, less than 8 [11/32]	6 [1/4]
8 [11/32] or more, less than 12 [1/2]	7 [9/32]
12 [1/2] or more, less than 16 [21/32]	8 [11/32]
16 [21/32] or more, less than 25 [1]	10 [13/32]
25 [1] or more, less than 35 [1-13/32]	12 [1/2]
35 [1-13/32] or more, less than 45 [1-25/32]	14 [9/16]

- After evacuation and refrigerant charging, ensure that the handle is fully open. If keep the valve closed, the high- or low-pressure side of the refrigerant circuit may be subjected to abnormal pressure and may damage the compressor, four-way valve, etc.
- Determine the amount of additional refrigerant charge by using the formula, and charge refrigerant through the service port after connecting the pipes.
- Tighten the service port and cap securely so gas does not leak. (Refer to the table below for appropriate tightening torque.)

Appropriate tightening torque:

Outside diameter of copper pipe (mm [in])	Cap (N·m/kg·cm)	Shaft (N·m/kg·cm)	Size of hexagonal wrench (mm)	Service port (N·m/kg·cm)
ø9.52 [3/8]	15/150	6/60	4	12/120
ø12.7 [1/2]	20/200	9/90	4	
ø15.88 [5/8]	25/250	15/150	6	
ø19.05 [3/4]	25/250	30/300	8	
ø25.4 [1]	25/250	30/300	8	

⚠ Caution:
- **Keep the valve closed until the refrigerant charging is finished. Opening the valve before charging the refrigerant may cause damage to the unit.**
- **Do not use a leak detection additive.**

10.3. Airtight test, evacuation, and refrigerant charging

① **Airtight test**

Perform with the valve of the heat source unit closed, charging the refrigerant pressurize the connection piping and the indoor unit from the service port provided on the valve of the heat source unit. (Always pressurize from both the high-pressure/gas pipe and the low-pressure/liquid pipe service ports.)

[Fig. 10.3.1] (P.13)

Ⓐ Nitrogen gas Ⓑ To indoor unit Ⓒ System analyzer
Ⓓ Low knob Ⓔ High knob Ⓕ Valve
Ⓖ Low-pressure/liquid pipe Ⓗ High-pressure/gas pipe Ⓘ Heat source unit
Ⓙ Service port

Observe the following restrictions when conducting the air tightness test to prevent negative effects on the refrigerating machine oil. Also, with nonazeotropic refrigerant (R410A), gas leakage causes the refrigerant composition to change and affects performance. Therefore, conduct the airtightness test cautiously.

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Airtight test procedure	Restriction
(1) After obtaining to the design pressure (4.15 MPa [602 psi]) using nitrogen gas, allow the system to stand for about one day. If the pressure does not drop, airtightness is good. However, if the pressure drops, and the leakage area is unknown, the following bubble test may also be performed. (2) After the pressurization described above, spray the flare connection parts, brazed parts, and other potential leakage areas with a bubbling agent (Kyuboflex, etc.) and visually check for bubbles. (3) After the airtight test, wipe off the bubbling agent.	• If a flammable gas or air (oxygen) is used as the pressurization gas, it may catch fire or explode.

⚠ Caution:

Only use R410A refrigerant.

- Using other refrigerants such as R22 or R407C, which contains chlorine, will deteriorate the refrigerating machine oil or cause the compressor to malfunction.

② **Evacuation**

Evacuate with the valve of the heat source unit closed and evacuate both the connection piping and the indoor unit from the service port provided on the valve of the heat source unit using a vacuum pump. (Always evacuate from the service port of both the high-pressure/gas pipe and the low-pressure/liquid pipe.) After the vacuum reaches 650 Pa [abs] [0.0943 psi/5 Torr], evacuate for at least one hour or more. Then, stop the vacuum pump and leave it for 1 hour. Ensure the degree of vacuum has not increased. **(If the degree of vacuum increase is larger than 130 Pa [0.01886 psi/1.0 Torr], water might present. Apply pressure to dry nitrogen gas up to 0.05 MPa [7.25 psi] and vacuum again. Repeat the evacuation process three or more times until the vacuum pressure is lost by 130 Pa or below.)** Finally, seal in with the liquid refrigerant through the high-pressure/gas pipe, and adjust the low-pressure/liquid piping to obtain an appropriate amount of the refrigerant for operation.

* Never perform air purging with refrigerant.

[Fig. 10.3.2] (P.13)

Ⓐ System analyzer Ⓑ Low knob Ⓒ High knob
Ⓓ Valve (heat source unit) Ⓔ Low-pressure/liquid pipe Ⓕ High-pressure/gas pipe
Ⓖ Service port Ⓗ Three-way joint Ⓘ Valve
Ⓙ Valve Ⓚ R410A cylinder Ⓛ Scale
Ⓜ Vacuum pump Ⓝ To indoor unit Ⓞ Heat source unit

Note:
- **Always add the appropriate amount of refrigerant. Also always charge the system with liquid refrigerant.**
- **Use a gauge manifold, charging hose, and other parts for the refrigerant indicated on the unit.**
- **Use a graviometer. (One that can measure down to 0.1 kg [302 oz].)**
- **Use a vacuum pump with a reverse flow check valve. (Recommended vacuum gauge: ROBINAIR 14830A Thermistor Vacuum Gauge or Micron Gauge) Do not use a manifold gauge to measure vacuum pressure. Also use a vacuum gauge that reaches 65 Pa [abs] [0.00943 psi/0.5 Torr] or below after operating for five minutes.**

<Triple Evacuation>
- **Evacuate the system to 4,000 microns from both service valves. System manifold gauges must not be used to measure vacuum. A micron gauge must be used at all times.**
  - Break the vacuum with Nitrogen (N2) into the discharge service valve to 0 PSIG.
- **Evacuate the system to 1,500 microns from the suction service valve.**
  - Break the vacuum with Nitrogen (N2) into the discharge service valve to 0 PSIG.
- **Evacuate the system to 500 microns. System must hold the vacuum at 500 microns for a minimum of 1 hour.**
- **Conduct a rise test for a minimum of 30 minutes.**

③ **Refrigerant Charging**

Do not use refrigerant other than the type indicated in the manuals provided with the unit and on the nameplate.
- Doing so may cause the unit or pipes to burst, or result in explosion or fire during use, during repair, or at the time of disposal of the unit.
- It may also be in violation of applicable laws.
- MITSUBISHI ELECTRIC CORPORATION cannot be held responsible for malfunctions or accidents resulting from the use of the wrong type of refrigerant.

Because the refrigerant used with the unit is nonazerotropic, it must be charged in the liquid state. Consequently, when charging the unit with refrigerant from a cylinder, if the cylinder does not have a siphon pipe, charge the liquid refrigerant by turning the cylinder upside-down as shown in Fig.10.3.3. If the cylinder has a siphon pipe like that shown in the picture on Fig.10.3.3, the liquid refrigerant can be charged with the cylinder standing upright. Follow the cylinder specifications carefully. If the unit should accidentally be charged with gas refrigerant, replace all the refrigerant with new refrigerant. Do not use the refrigerant remaining in the cylinder.

[Fig. 10.3.3] (P.13)

Ⓐ Siphon pipe Ⓑ If the R410A cylinder does not have a siphon pipe.

10.4. Thermal insulation of refrigerant piping

Add insulation to refrigerant piping by covering high-pressure/liquid pipe and low-pressure/gas pipe separately with enough heat resistant polyethylene, so that there isn't a gap insulation in the joint between indoor unit and insulation, and itself. When insulation is insufficient, there is a possibility of condensation, etc. Pay special attention to insulation in the ceiling plenum.

[Fig. 10.4.1] (P.13)

Ⓐ Steel wire
Ⓑ Piping
Ⓒ Asphaltic oily mastic or asphalt
Ⓓ Insulation material A
Ⓔ Outer covering B

Heat insulation material A	Glass fiber + Steel wire	
	Adhesive + Heat - resistant polyethylene foam + Adhesive tape	
Outer covering B	Indoor	Vinyl tape
	Floor exposed	Water-proof hemp cloth + Bronze asphalt
	Heat source	Water-proof hemp cloth + Zinc plate + Oily paint

Note:

- **When using polyethylene as the insulation, asphalt shall not be required.**
- **Do not insulate the electric wires.**

[Fig. 10.4.2] (P.13)

Ⓐ High-pressure/liquid pipe Ⓑ Low-pressure/gas pipe Ⓒ Electric wire
Ⓓ Finishing tape Ⓔ Insulation

[Fig. 10.4.3] (P.13)

Penetrations

[Fig. 10.4.4] (P.13)

<A> Inside wall (concealed)
<B> Outside wall
<C> Outside wall (exposed)
<D> Floor (waterproofing)
<E> Roof pipe shaft
<F> Access hole on fire and boundary walls
Ⓐ Sleeve
Ⓑ Insulation
Ⓒ Lagging
Ⓓ Caulking material
Ⓔ Band
Ⓕ Waterproofing layer
Ⓖ Sleeve with edge
Ⓗ Lagging material
Ⓘ Mortar or other incombustible caulking
Ⓙ Explosion-resistant insulation

When filling a gap with mortar, cover the access hole part with steel plate so that the insulation will not caved in. Use incombustible materials for both insulation and covering. (Vinyl covering should not be used.)

- Insulation for the pipes to be added on site must meet the following specifications:

Heat source unit -BC controller for PQRY-P series	High-pressure pipe	10 mm [13/32 in] or more
	Low-pressure pipe	20 mm [13/16 in] or more
BC controller -indoor unit for PQRY-P series	Pipe size 6.35 to 25.4 mm [1/4 to 1 in]	10 mm [13/32 in] or more
	Pipe size 28.58 to 38.1 mm [1-1/8 to 1-21/32 in]	15 mm [19/32 in] or more
Heat source unit -indoor unit for PQHY-P series	Pipe size 6.35 to 25.4 mm [1/4 to 1 in]	10 mm [13/32 in] or more
	Pipe size 28.58 to 38.1 mm [1-1/8 to 1-21/32 in]	15 mm [19/32 in] or more
Temperature Resistance	100°C [212°F] min.	

* If pipes are located in a high-temperature high-humidity environment, such as the top floor of a building, insulation thicker than the ones specified in the chart above.

* When the client presents certain specifications, ensure that those also meet the specifications on the chart above.

10.5. Installing the water stopper

Make sure to install the supplied water stopper and sealing material when providing insulation.

* When using PQRY-P series, install them to only the low-pressure pipe.

* When using PQHY-P series, install them to both liquid pipe and gas pipe. Use the water stoppers and sealing material that fit each pipe.

[Fig. 10.5] (P.14)

Ⓐ Position the edge of the supplied paper with mark at the edge of the pipe cover. Then, wind the sealing material to the pipe, using the mark on the paper to properly align it.
Ⓑ Extend the field-supplied insulation all the way to the end of the sealing material described in step A.
Ⓒ Install the water stopper at the end face of the insulation.
Ⓓ Mark
Ⓔ Install the sealing material so that the edges of the material meet at the top.
Ⓕ Inside the unit
Ⓖ Pipe cover
Ⓗ The seam of the insulation should be at the top.
Ⓘ Sealing material for water stopper
Ⓙ Install the water stopper so that the slit of the water stopper is at the top.
Ⓚ Water stopper
Ⓛ Sealing material for field piping

10.6. Installing the sealing material for base leg

[Fig. 10.6] (P.14)

PQHY-P·Y(S)LM-A1, PQRY-P·Y(S)LM-A1 only

Ⓐ Enlarged view
Ⓑ Sealing material attachment process
Ⓒ Process 1: Attach the sealing material (for base leg) 1.
Ⓓ Process 2: Attach the sealing material (for base leg) 2.
Ⓔ Process 3: Attach the sealing material (for water panel). (only right front)
Ⓕ Panel assy W
Ⓖ Only sealing materials (for base leg) 1, 2
Ⓗ Sealing materials (for base leg) 1, 2 and sealing material (for water panel)
Ⓘ Sealing material (for base leg) 1
Ⓙ Sealing material (for base leg) 2
Ⓚ Sealing material (for water panel) (only right front)
Ⓛ Put sealing material inward.
Ⓜ Match the end face.

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11. Wiring (For details, refer to the installation manual of each unit and controller.)

11.1. Caution

① Follow ordinance of your governmental organization for technical standard related to electrical equipment, wiring regulations and guidance of each electric power company.

② Control wiring (hereinafter referred to as transmission line) shall be 5 cm [2 in] or more apart from power source wiring so that it is not affected by electric noise from power source wiring (Do not insert transmission line and power source wire in the same conduit).

③ Provide designated earthing work to the heat source unit.

④ Include some allowance to wiring for the electrical control box on the indoor and heat source units, because these boxes are sometimes removed at the time of service work.

⑤ Never connect the main power source to the terminal block of the transmission line. If connected, electrical parts will be damaged.

⑥ Use 2-core shield cable for the transmission line. If transmission lines of different systems are wired with the same multiplecore cable, the resultant poor transmitting and receiving will cause erroneous operations.

⑦ Only the transmission line specified should be connected to the terminal block for heat source unit transmission.
The system will not operate with improper connection.

⑧ In the case of connecting a system controller or to conducting group operation in different refrigerant systems, a transmission line is required between the heat source units in different refrigerant systems.
Connect the transmission between the terminal blocks for centralized control (two-wire line with no polarity).

⑨ Use the remote controller to set the groups.

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11.2. Control box and connecting position of wiring

① **Heat source unit**

1. Remove the front panel of the heat source unit by unscrewing the screws, and pushing it up, then pulling it out.
2. Connect the indoor - heat source transmission line to the terminal block (TB3).
   If multiple heat source units are connected in the same refrigerant system, daisy-chain TB3 (M1, M2, ⏚ Terminal) on the heat source units. Connect the indoor - heat source transmission line to TB3 (M1, M2, ⏚ Terminal) of only one of the heat source units.
3. Connect the transmission lines for centralized control (between the centralized control system and the heat source unit of different refrigerant systems) to the terminal block for centralized control (TB7). If the multiple heat source units are connected to the same refrigerant system, daisy-chain TB7 (M1, M2, S Terminal) on the heat source units. (*1)
   *1: If TB7 on the heat source unit in the same refrigerant system is not daisy-chained, connect the transmission line for centralized control to TB7 on the OC (*2). If the OC is out of order, or if the centralized control is being conducted during the power supply shut-off, daisy-chain TB7 on the OC and OS (In the case that the heat source unit whose power supply connector CN41 on the control board has been replaced with CN40 is out of order or the power is shut-off, centralized control will not be conducted even when TB7 is daisy-chained).
   *2: OC and OS of the heat source units in the same refrigerant system are automatically identified. They are identified as OC and OS in descending order of capacity (If the capacity is the same, they will be in ascending order of their address number).
4. The indoor-heat source transmission line, connect the shield earth to the earth terminal (⏚). For the centralized transmission lines, connect to the shield terminal (S) on the terminal block (TB7). If the heat source units whose power supply connector CN41 is replaced with CN40, short circuit the shield terminal (S) and the earth terminal (⏚) in addition to the above.
5. Attach the connected wires securely with the cable strap at the bottom of the terminal block. External force applied to the terminal block may damage it, resulting in a short circuit, earth fault, or a fire.

⚠ Caution:

Tighten terminal screws to the specified torque.

- Poor wire contact caused by loose screws may result in overheating and resultant fire.
- The use of the unit with a damaged circuit board may result in overheating and resultant fire.

Note:

- **Tighten terminal screws to the specified torque.** (*1)
  *1: Terminal block (TB1 (M6 screw)) : 2.5 ~ 2.9 [N·m]
  Terminal block (TB3, TB7 (M3.5 screw)) : 0.82 ~ 1.0 [N·m]
- **Make sure that the spring washers are parallel to the terminal block.**
- **Make sure that the wires are securely fastened to the terminal screws.**
- **Drive the screws straight down, and use caution not to damage the screw heads.**
- **Install the ring terminals back to back so that the screws can be driven straight down.**
- **Make an alignment mark with a permanent marker across the screw head, washer, and terminal after tightening the screws.**

[Fig. 11.2.1] (P.15)

Ⓐ Power source Ⓑ Transmission line
Ⓒ Earth terminal

[Fig. 11.2.2] (P.15)

Ⓐ Terminal block with loose screws Ⓑ Properly installed terminal block
Ⓒ Spring washers must be parallel to the terminal block.

[Fig. 11.2.3] (P.15)

Ⓐ Power wires, transmission lines Ⓑ Daisy-chain (transmission lines only)
Ⓒ Terminal blocks (TB1, TB3, TB7) Ⓓ Make an alignment mark.
Ⓔ Install the ring terminals back to back.

[Fig. 11.2.4] (P.15)

Ⓐ Cable strap Ⓑ Power source cable
Ⓒ Earth terminal for field wiring connection

② **Conduit tube installation**

- Hammer the knockout holes for the conduit tube located on the base and the bottom part of the front panel.
- When installing the conduit tube directly through the knockout holes, remove burrs and protect the tube with masking tape.
- Use the conduit tube to narrow the opening if there is a possibility of small animals entering the unit.

11.3. Wiring transmission cables

① **Types of control cables**

1. Wiring transmission cables
- Types of transmission cables: Shielding wire CVVS, CPEVS or MVVS
- Cable diameter: More than 1.25 mm² [AWG16]
- Maximum wiring length: Within 200 m [656 ft]
- Maximum length of transmission lines for centralized control and indoor/heat source transmission lines: 500 m [1640 ft] at the maximum
  The maximum length of wiring between power supply unit for transmission lines (for centralized control), and each heat source unit and system controller is 200 m [656 ft].

2. Remote control cables

- **ME Remote Controller**

Type of remote control cable	Sheathed 2-core cable (CVV, shielded CVVS, CPEVS, or MVVS)
Cable diameter	0.3 to 1.25 mm² [AWG 22 to 16] (0.75 to 1.25 mm² [AWG 18 to 16])*
Remarks	When 10 m [32 ft] is exceeded, use cable with the same specifications as 1. Wiring transmission cables.

* Connected with simple remote controller.
CVVS, MVVS: PVC insulated PVC jacketed shielded control cable
CPEVS: PE insulated PVC jacketed shielded communication cable
CVV: PVC insulated PVC sheathed control cable

- **MA Remote Controller**

Type of remote control cable	Sheathed 2-core cable (unshielded) CVV
Cable diameter	0.3 to 1.25 mm² [AWG 22 to 16] (0.75 to 1.25 mm² [AWG 18 to 16])*
Remarks	Within 200 m [656 ft]

* Connected with simple remote controller.

② **Wiring examples**

• Controller name, symbol and maximum number of controllers.

Name		Code	Possible unit connections
Heat source unit	Main unit	OC	– (*2)
	Sub unit	OS	– (*2)
BC controller	Main unit	BC	1 controller for 1 OC (0 when an HB exists)
	Sub unit	BS	0, 1 or 2 controllers for 1 OC
HBC controller	Main unit	HB	1 or 2 units for 1 OC (0 when a BC exists)
	Sub unit	HS	0 or 1 unit for 1 HB
Indoor unit	Indoor unit controller	IC	1 to 50 units per 1 OC (*1)
Remote controller	Remote controller (*1)	RC	2 units maximum per group
Other	Transmission booster unit	RP	0 to 2 units per 1 OC (*1)

*1 A transmission booster (RP) may be required, depending on the number of connected indoor unit controllers.

*2 OC and OS of the heat source units in the same refrigerant system are automatically identified. They are identified as in descending order of capacity. (If the capacity is the same, they will be in ascending order of their address number.)

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Example of a group operation system with multiple heat source units (Shielding wires and address setting are necessary.)

<Examples of transmission cable wiring>

[Fig. 11.3.1] [Fig. 11.3.3] [Fig. 11.3.4] [Fig. 11.3.6] ME Remote Controller (P.16 - 18)

[Fig. 11.3.2] [Fig. 11.3.5] MA Remote Controller (P.16, 18)

<A> Change the jumper connector from CN41 to CN40 *1
<B> SW5-1: ON *2
<C> Keep the jumper connector on CN41
Ⓐ Group 1 Ⓑ Group 3 Ⓒ Group 5 Ⓓ Shielded wire Ⓔ Sub remote controller Ⓕ System controller ( ) Address

For [Fig. 11.3.1] [Fig. 11.3.2] [Fig. 11.3.4] [Fig. 11.3.5]

*1: When the power supply unit is not connected to the transmission line for centralized control, disconnect the male power supply connector (CN41) from ONE heat source unit in the system and connect it to CN40.

*2: If a system controller is used, set SW5-1 on all of the heat source units to ON.

[Fig. 11.3.3] [Fig. 11.3.6] Combination of heat source units and transmission booster unit (P.17, 18)

Ⓐ Earth Ⓑ To another refrigerant system

• ( ) Address
• Daisy-chain terminals (TB3) on heat source units in the same refrigerant system together.
• Leave the power jumper connector on CN41 as it is. When connecting a system controller to the transmission line (TB7) for centralized control, refer to [Fig. 11.3.1], [Fig. 11.3.2] or [Fig. 11.3.4], [Fig. 11.3.5] or DATA BOOK.

<Wiring Method and Address Settings>

a. Always use shielded wire when connecting the heat source unit (OC) and the indoor unit (IC), as well for all OC-OC, OC-OS, and IC-IC wiring intervals.
b. Use feed wiring to connect terminals M1 and M2 and the earth terminal ⏚ on the transmission line terminal block (TB3) of each heat source unit (OC) to terminals M1, M2 and terminal S on the transmission line block of the indoor unit (IC). For OC and OS, connect TB3 to TB3.
c. Connect terminals 1 (M1) and 2 (M2) on the transmission line terminal block of the indoor unit (IC) that has the most recent address within the same group to the terminal block on the remote controller (RC).
d. Connect together terminals M1, M2 and terminal S on the terminal block for central control (TB7) for the heat source unit in a different refrigerant system (OC). For OC and OS in the same refrigerant system, connect TB7 to TB7.
e. When the power supply unit is not installed on the central control transmission line, change the jumper connector on the control board from CN41 to CN40 on only one heat source unit in the system.
f. Connect the terminal S on the terminal block for central control (TB7) for the heat source unit (OC) for the unit into which the jumper connector was inserted into CN40 in the step above to the earth terminal ⏚ in the electrical component box.
g. Set the address setting switch as follows.

* To set the heat source unit address to 100, the heat source address setting switch must be set to 50.

Unit	Range	Setting Method
Indoor unit (Main)	01 to 50	Use the most recent address within the same group of indoor units. With an R2 system with sub BC controllers, set the indoor unit address in the following order: ① Indoor units connected to the main BC controller ② Indoor units connected to BC sub controller 1 ③ Indoor units connected to BC sub controller 2 Set the indoor unit addresses so that all the addresses of ① are smaller than those of ②, and that all the addresses of ② are smaller than those of ③.
Indoor unit (Sub)	01 to 50	Use an address, other than that of the IC (Main) from the units within the same group of indoor units. This must be in sequence with the IC (Main)
Heat source Unit (OC, OS)	51 to 100	Set the addresses of the heat source units in the same refrigerant system in the order of sequence. OC and OS are automatically identified. (*1)
BC controller (Main)	51 to 100	Heat source unit address plus 1. When the set indoor unit address duplicates the address of another indoor unit, set the new address to a vacant address within the set range.
BC controller (Sub)	51 to 100	Lowest address within the indoor units connected to the BC controller (sub) plus 50
ME R/C (Main)	101 to 150	Set at an IC (Main) address within the same group plus 100
ME R/C (Sub)	151 to 200	Set at an IC (Main) address within the same group plus 150
MA R/C	–	Unnecessary address setting (Necessary main/sub setting)

h. Group setting operation among the multiple indoor units is performed by the remote controller (RC) after the power has been turned on.
i. When the centralized remote controller is connected to the system, set centralized control switches (SW5-1) on control boards in all heat source units (OC and OS) to “ON”.

*1 OC and OS of the heat source units in the same refrigerant system are automatically identified. They are identified as OC and OS in descending order of capacity (If the capacity is the same, they are identified in the ascending order of their address number).

<Maximum Lengths>

① **ME Remote controller [Fig. 11.3.1] [Fig. 11.3.4] (P.16, 17)**

- Max length via heat source units (M-NET cable): $L_1+L_2+L_3+L_4$ and $L_1+L_2+L_3+L_5$ and $L_1+L_2+L_6 \leq 500$ m [1,640 ft] (1.25 mm² [AWG 16] or more)
- Max transmission cable length (M-NET cable): L_1 and L_3+L_4 and L_3+L_5 and L_6 and $L_2+L_6 \leq 200$ m [656 ft] (1.25 mm² [AWG 16] or more)
- Remote controller cable length: ℓ_1, ℓ_2, ℓ_3, $\ell_4 \leq 10$ m [32 ft] (0.3 to 1.25 mm² [AWG 22 to 16])
  If the length exceeds 10 m [32 ft], use a 1.25 mm² [AWG 16] shielded wire. The length of this section (L_5) should be included in the calculation of the maximum length and overall length.

② **MA Remote controller [Fig. 11.3.2] [Fig. 11.3.5] (P.16, 18)**

- Max length via heat source units (M-NET cable): $L_1+L_2+L_3+L_4$ and $L_1+L_2+L_6 \leq 500$ m [1,640 ft] (1.25 mm² [AWG 16] or more)
- Max transmission cable length (M-NET cable): L_1 and L_3+L_4 and L_6 and $L_2+L_6 \leq 200$ m [656 ft] (1.25 mm² [AWG 16] or more)
- Remote controller cable length: m_1+m_2 and $m_1+m_2+m_3+m_4 \leq 200$ m [656 ft] (0.3 to 1.25 mm² [AWG 22 to 16])

③ **Transmission booster [Fig. 11.3.3] [Fig. 11.3.6] (P.17, 18)**

- Max transmission cable length (M-NET cable): For PQHY
  ① $L_{11} + L_{12} + L_{13} + L_{15} + L_{16} \leq 200$ m [656 ft] (1.25 mm² [AWG 16])
  ② $L_{11} + L_{12} + L_{13} + L_{15} + L_{17} \leq 200$ m [656 ft] (1.25 mm² [AWG 16])
  ③ $L_{11} + L_{12} + L_{14} \leq 200$ m [656 ft] (1.25 mm² [AWG 16])
  ④ $L_{16} + L_{15} + L_{13} + L_{14}$, $L_{14} + L_{13} + L_{15} + L_{17} \leq 200$ m [656 ft] (1.25 mm² [AWG 16])
  For PQRY
  ① $L_{11} + L_{12} + L_{13} + L_{14} + L_{16} + L_{17} \leq 200$ m [656 ft] (1.25 mm² [AWG 16])
  ② $L_{11} + L_{12} + L_{13} + L_{14} + L_{16} + L_{18} \leq 200$ m [656 ft] (1.25 mm² [AWG 16])
  ③ $L_{11} + L_{12} + L_{13} + L_{15} \leq 200$ m [656 ft] (1.25 mm² [AWG 16])
  ④ $L_{17} + L_{16} + L_{14} + L_{15}$, $L_{15} + L_{14} + L_{16} + L_{18} \leq 200$ m [656 ft] (1.25 mm² [AWG 16])

- Remote controller cable length: ℓ_1, $\ell_2 \leq 10$ m [32 ft] (0.3 to 1.25 mm² [AWG 22 to 16])
  If the length exceeds 10 m [32 ft], use 1.25 mm² [AWG 16] shielded cable and calculate the length of that portion (L_{14} and L_{17} refer to [Fig.11.3.3], L_{15} and L_{18} refer to [Fig.11.3.6]) as within the total extended length and the longest remote length.

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11.4. Wiring of main power supply and equipment capacity

Schematic Drawing of Wiring (Example)

[Fig. 11.4.1] (P.18)

Ⓐ Switch (Overcurrent breaker and earth leakage breaker)
Ⓑ Earth leakage breaker
Ⓒ Heat source unit
Ⓓ Pull box
Ⓔ Indoor unit
Ⓕ BC controller/HBC controller (standard or main) (for PQRY-P series)
Ⓕ' BC controller (sub)/HBC controller (sub) (for PQRY-P series)
Ⓖ Earth

Thickness of wire for main power supply, capacities of the switch and system impedance

Model		Minimum size (mm² [AWG])			Earth leakage breaker	Local switch (A)		Overcurrent breaker (NFB) (A)
		Power cable	Power cable after branching point	Earth wire		Capacity	Fuse	
PQHY	P200YLM	4.0 [12]	-	4.0 [12]	30 A 100 mA 0.1 sec. or less	25	25	30
	P250YLM	4.0 [12]	-	4.0 [12]	30 A 100 mA 0.1 sec. or less	25	25	30
	P300YLM	4.0 [12]	-	4.0 [12]	30 A 100 mA 0.1 sec. or less	25	25	30
	P350YLM	4.0 [12]	-	4.0 [12]	30 A 100 mA 0.1 sec. or less	25	25	30
	P400YLM	4.0 [12]	-	4.0 [12]	30 A 100 mA 0.1 sec. or less	32	32	30
	P450YLM	6.0 [10]	-	6.0 [10]	40 A 100 mA 0.1 sec. or less	40	40	40
	P500YLM	6.0 [10]	-	6.0 [10]	40 A 100 mA 0.1 sec. or less	40	40	40
	P550YLM	10.0 [8]	-	10.0 [8]	60 A 100 mA 0.1 sec. or less	63	63	60
	P600YLM	10.0 [8]	-	10.0 [8]	60 A 100 mA 0.1 sec. or less	63	63	60
PQRY	P200YLM	4.0 [12]	-	4.0 [12]	30 A 100 mA 0.1 sec. or less	25	25	30
	P250YLM	4.0 [12]	-	4.0 [12]	30 A 100 mA 0.1 sec. or less	25	25	30
	P300YLM	4.0 [12]	-	4.0 [12]	30 A 100 mA 0.1 sec. or less	25	25	30
	P350YLM	4.0 [12]	-	4.0 [12]	30 A 100 mA 0.1 sec. or less	25	25	30
	P400YLM	4.0 [12]	-	4.0 [12]	30 A 100 mA 0.1 sec. or less	32	32	30
	P450YLM	6.0 [10]	-	6.0 [10]	40 A 100 mA 0.1 sec. or less	40	40	40
	P500YLM	6.0 [10]	-	6.0 [10]	40 A 100 mA 0.1 sec. or less	40	40	40
	P550YLM	10.0 [8]	-	10.0 [8]	60 A 100 mA 0.1 sec. or less	63	63	60
	P600YLM	10.0 [8]	-	10.0 [8]	60 A 100 mA 0.1 sec. or less	63	63	60

1. **Use dedicated power supplies for the heat source unit and indoor unit. Ensure OC and OS are wired individually.**
2. **Bear in mind ambient conditions (ambient temperature, direct sunlight, rain water, etc.) when proceeding with the wiring and connections.**
3. **The wire size is the minimum value for metal conduit wiring. If the voltage drops, use a wire that is one rank thicker in diameter. Make sure the power-supply voltage does not drop more than 10%.**
4. **Specific wiring requirements should adhere to the wiring regulations of the CSA22-1 and ANSI/NFPA No.70.**
5. **Power supply cords of parts of appliances for heat source use shall not be lighter than polychloroprene sheathed flexible cord (design 245 IEC57).**
6. **A switch with at least 3 mm [1/8 in] contact separation in each pole shall be provided by the Air Conditioner installer.**
7. **If the power cable is damaged, it must be replaced by the manufacture, its service agent or similarly qualified persons in order to avoid a hazard.**

⚠ Warning:

- **Be sure to use specified wires for connections and ensure no external force is imparted to terminal connections. If connections are not fixed firmly, heating or fire may result.**
- **Be sure to use the appropriate type of overcurrent protection switch. Note that generated overcurrent may include some amount of direct current.**

⚠ Caution:

- **Some installation sites may require attachment of an earth leakage breaker for the inverter. If no earth leakage breaker is installed, there is a danger of electric shock.**
- **Do not use anything other than a breaker and fuse with the correct capacity. Using a fuse or wire of too large capacity may cause malfunction or fire.**

12. Test run

12.1. The following phenomena do not represent faults.

Phenomenon	Display of remote controller	Cause
Indoor unit does not perform cooling (heating) operation.	**"Cooling (heating)" flashes**	When another indoor unit is performing the heating (cooling) operation, the cooling (heating) operation is not performed.
The auto vane rotates and begins to blow air horizontally.	**Normal display**	If air has been blowing downward for 1 hour during cooling, the unit may automatically change to horizontal blowing with the control operation of the auto vane. During defrosting or immediately after heating start-up/shut-down, the auto vane automatically rotates to blow air horizontally for a short period of time.
Fan setting changes during heating.	**Normal display**	Ultra-low speed operation is commenced at thermostat OFF. Light air automatically changes over to set value by time or piping temperature at thermostat ON.
Fan does not stop while operation has been stopped.	**No lighting**	The fan is set to run for 1 minute after stopping to exhaust residual heat (only in heating).
No setting of fan while start SW has been turned on.	**Heat ready**	Ultra low-speed operation for 5 minutes after SW ON or until piping temperature becomes 35°C, low speed operation for 2 minutes thereafter, and then set notch is commenced (Hot adjust control).
Indoor unit remote controller shows "HO" or "PLEASE WAIT" indicator for about five minutes when turning ON universal power supply.	**"HO" or "PLEASE WAIT" flashes**	The system is being started up. Operate remote controller again after "HO" or "PLEASE WAIT" disappears.
Drain pump continues to operate even after the unit has been turned off.	**No display**	After turning off the cooling operation, unit continues to operate the drain pump for 3 minutes, then shuts it off. Unit also continues to operate drain pump if condensate has been generated.
Indoor unit emits noise when switching from heating to cooling and vice versa.	**Normal display**	This is a switching sound of the refrigerant circuit and does not imply a problem.
Immediately after startup, the indoor unit emits the sound of the refrigerant flow.	**Normal display**	Unstable flow of the refrigerant emits a sound. This is temporary and does not imply a problem.
Warm air comes from an indoor unit that is not performing a heating operation.	**Normal display**	The LEV is slightly open to prevent refrigerant, of the indoor unit that is not performing the heating operation, from being liquefied. This does not imply a problem.

13. Information on rating plate

PQHY-P·YLM-A1, PQHY-P·YLM-A2

Individual unit	P200YLM	P250YLM	P300YLM	P350YLM	P400YLM	P450YLM	P500YLM	P550YLM	P600YLM
Module set	-	-	-	-	-	-	-	-	-
Refrigerant (R410A)	5.0 kg			6.0 kg				11.7 kg	
Allowable pressure (Ps)	HP: 4.15 MPa, LP: 2.21 MPa								
Net weight	170 kg			214 kg				243 kg	

Individual unit	P400YSLM	P450YSLM	P500YSLM	P550YSLM	P600YSLM	P700YSLM	P750YSLM	P800YSLM	P850YSLM	P900YSLM
Module set	P200 + P200	P250 + P200	P250 + P250	P300 + P250	P300 + P300	P350 + P350	P400 + P350	P400 + P400	P450 + P400	P450 + P450
Refrigerant (R410A)	5.0 kg + 5.0 kg					6.0 kg + 6.0 kg				
Allowable pressure (Ps)	HP: 4.15 MPa, LP: 2.21 MPa									
Net weight	170 kg + 170 kg					214 kg + 214 kg				

PQRY-P·YLM-A1, PQRY-P·YLM-A2

Individual unit	P200YLM	P250YLM	P300YLM	P350YLM	P400YLM	P450YLM	P500YLM	P550YLM	P600YLM
Module set	-	-	-	-	-		-	-	-
Refrigerant (R410A)	5.0 kg			6.0 kg				11.7 kg	
Allowable pressure (Ps)	HP: 4.15 MPa, LP: 2.21 MPa								
Net weight	173 kg			217 kg				247 kg	

Individual unit	P400YSLM	P450YSLM	P500YSLM	P550YSLM-A	P600YSLM-A	P700YSLM-A	P750YSLM-A	P800YSLM-A	P850YSLM	P900YSLM
Module set	P200 + P200	P250 + P200	P250 + P250	P300 + P250	P300 + P300	P350 + P350	P400 + P350	P400 + P400	P450 + P400	P450 + P450
Refrigerant (R410A)	5.0 kg + 5.0 kg					6.0 kg + 6.0 kg				
Allowable pressure (Ps)	HP: 4.15 MPa, LP: 2.21 MPa									
Net weight	173 kg + 173 kg					217 kg + 217 kg				

MITSUBISHI ELECTRIC

AIR CONDITIONER HEAT SOURCE UNIT

MODEL

REFRIGERANT	R410A kg
ALLOWABLE PRESSURE(Ps)	HP 4.15MPa (41.5bar) LP 2.21MPa (22.1bar)
ALLOWABLE WATER TEMP.	10°C ~ 45°C
ALLOWABLE WATER VOLUME	m^3/h
MAXIMUM WATER PRESSURE	2.0 MPa
WEIGHT	kg
IP CODE	IP20
YEAR OF MANUFACTURE	
SERIAL No.	

OPERATION		COOLING			HEATING		
RATED VOLTAGE 3N~	V	380	400	415	380	400	415
FREQUENCY	Hz	50 / 60			50 / 60		
CAPACITY	kW kcal/h Btu/h						
RATED INPUT	kW						
RATED CURRENT	A						
MAX CURRENT (INDOOR 35°CDB,24°CWB, CIRCULATING WATER 45°C)	A						
RATED CONDITION DB / WB	°C	INDOOR 27 / 19 CIRCULATING WATER 30			INDOOR 20 / - CIRCULATING WATER 20		

Contains fluorinated greenhouse gases.

MANUFACTURER:
MITSUBISHI ELECTRIC CORPORATION
AIR-CONDITIONING & REFRIGERATION SYSTEMS WORKS
5-66, TEBIRA, 6-CHOME, WAKAYAMA CITY, JAPAN
MADE IN JAPAN

This product is designed and intended for use in the residential, commercial and light-industrial environment.

The product at hand is based on the following EU regulations:

- Low Voltage Directive 2014/35/EU
- Electromagnetic Compatibility Directive 2014/30/EU
- Pressure Equipment Directive 2014/68/EU
- Machinery Directive 2006/42/EC

Please be sure to put the contact address/telephone number on this manual before handing it to the customer.

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BLDG., 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN

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