

TECHNICAL & SERVICE MANUAL

[Model Name]
<Outdoor unit>

MXZ-4C36NAHZ

MXZ-5C42NAHZ

MXZ-8C48NAHZ

MXZ-8C48NA

MXZ-8C60NA

<Branch box>

PAC-MKA50BC

PAC-MKA30BC

PAC-MKA51BC

PAC-MKA31BC

[Service Ref.]

MXZ-4C36NAHZ

MXZ-5C42NAHZ

MXZ-8C48NAHZ

MXZ-8C48NA

MXZ-8C60NA-U1

PAC-MKA50BC

PAC-MKA30BC

PAC-MKA51BC

PAC-MKA31BC

MXZ-4C36NAHZ-U1

MXZ-5C42NAHZ-U1

MXZ-8C48NAHZ-U1

MXZ-8C48NA-U1

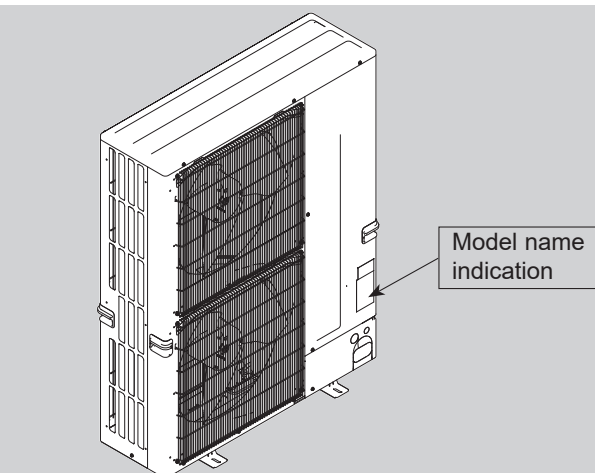
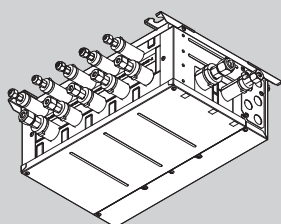
Revision:

- Some descriptions have been modified in REVISED EDITION-G.

OCH573F is void.

Notes:

- This service manual describes technical data of outdoor unit and branch box. As for indoor units, refer to its service manual.


OUTDOOR UNIT: MXZ-4C36NAHZ

BRANCH BOX: PAC-MKA51BC

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PARTS CATALOG (OCB573)

TECHNICAL CHANGES

Service ref. have been changed as follows.

MXZ-4C36NAHZ	➔	MXZ-4C36NAHZ-U1
MXZ-5C42NAHZ	➔	MXZ-5C42NAHZ-U1
MXZ-8C48NAHZ	➔	MXZ-8C48NAHZ-U1
MXZ-8C48NA	➔	MXZ-8C48NA-U1

- The shape of piping around a stop valve (T7W E04 410) has been changed.
- The shape of valve bed has been changed.

1-1. ALWAYS OBSERVE FOR SAFETY

Before obtaining access to terminal, all supply circuit must be disconnected.

Preparation before the repair service

- Prepare the proper tools.
- Prepare the proper protectors.
- Provide adequate ventilation.
- After stopping the operation of the air conditioner, turn off the power-supply breaker.
- Discharge the condenser before the work involving the electric parts.

Precautions during the repair service

- Do not perform the work involving the electric parts with wet hands.
- Do not pour water into the electric parts.
- Do not touch the refrigerant.
- Do not touch the hot or cold areas in the refrigerating cycle.
- When the repair or the inspection of the circuit needs to be done without turning off the power, exercise great caution not to touch the live parts.
- When opening or closing the valve below freezing temperatures, refrigerant may spurt out from the gap between the valve stem and the valve body, resulting in injuries.

1-2. CAUTIONS RELATED TO NEW REFRIGERANT

Caution for units utilizing refrigerant R410A

Use new refrigerant pipes.

Make sure that the inside and outside of refrigerant piping is clean and it has no contaminants such as sulfur, oxides, dirt, shaving particles, etc., which are hazard to refrigerant cycle. In addition, use pipes with specified thickness.

Contamination inside refrigerant piping can cause deterioration of refrigerant oil, etc.

Store the piping indoors, and keep both ends of the piping sealed until just before brazing. (Leave elbow joints, etc. in their packaging.)

If dirt, dust or moisture enters into refrigerant cycle, that can cause deterioration of refrigerant oil or malfunction of compressor.

The refrigerant oil applied to flare and flange connections must be ester oil, ether oil or alkylbenzene oil in a small amount.

If large amount of mineral oil enters, that can cause deterioration of refrigerant oil, etc.

Charge refrigerant from liquid phase of gas cylinder.

If the refrigerant is charged from gas phase, composition change may occur in refrigerant and the efficiency will be lowered.

Do not use refrigerant other than R410A.

If other refrigerant (R22, etc.) is used, chlorine in refrigerant can cause deterioration of refrigerant oil, etc.

Ventilate the room if refrigerant leaks during operation. If refrigerant comes into contact with a flame, poisonous gases will be released.

Use a vacuum pump with a reverse flow check valve.

Vacuum pump oil may flow back into refrigerant cycle and that can cause deterioration of refrigerant oil, etc.

Use the following tools specifically designed for use with R410A refrigerant.

The following tools are necessary to use R410A refrigerant.

Tools for R410A	
Gauge manifold	Flare tool
Charge hose	Size adjustment gauge
Gas leak detector	Vacuum pump adaptor
Torque wrench	Electronic refrigerant charging scale

Handle tools with care.

If dirt, dust or moisture enters into refrigerant cycle, that can cause deterioration of refrigerant oil or malfunction of compressor.

Use the specified refrigerant only.

Never use any refrigerant other than that specified.

Doing so may cause a burst, an explosion, or fire when the unit is being used, serviced, or disposed of. Correct refrigerant is specified in the manuals and on the spec labels provided with our products. We will not be held responsible for mechanical failure, system malfunction, unit breakdown or accidents caused by failure to follow the instructions.

Do not use a charging cylinder.

If a charging cylinder is used, the composition of refrigerant will change and the efficiency will be lowered.

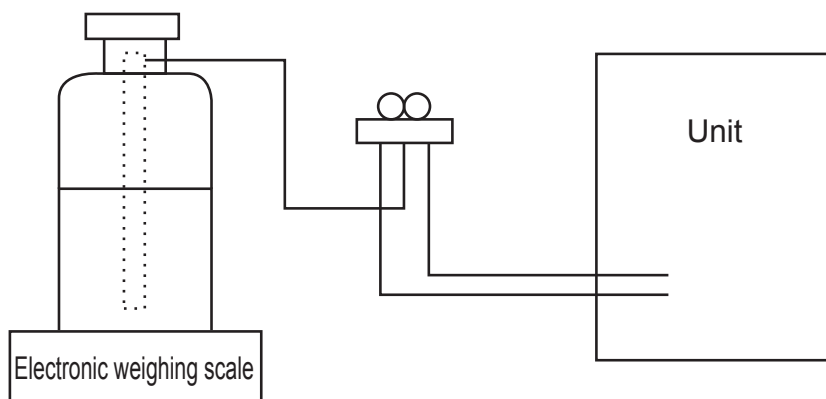
[1] Cautions for service

- (1) Perform service after recovering the refrigerant left in unit completely.
- (2) Do not release refrigerant in the air.
- (3) After completing service, charge the cycle with specified amount of refrigerant.
- (4) If moisture or foreign matter might have entered the refrigerant piping during service, ensure to remove them.

[2] Additional refrigerant charge

When charging directly from cylinder

- (1) Check that cylinder for R410A on the market is a syphon type.
- (2) Charging should be performed with the cylinder of syphon stood vertically. (Refrigerant is charged from liquid phase.)



[3] Service tools

- (1) Use the below service tools as exclusive tools for R410A refrigerant.

No.	Tool name	Specifications
1	Gauge manifold	·Only for R410A ·Use the existing fitting specifications. (UNF1/2) ·Use high-tension side pressure of 768.7 PSIG [5.3 MPaG] or over.
2	Charge hose	·Only for R410A ·Use pressure performance of 738.2 PSIG [5.09MPaG] or over.
3	Electronic weighing scale	—
4	Gas leak detector	·Use the detector for R134a, R407C or R410A.
5	Adaptor for reverse flow check	·Attach on vacuum pump.
6	Refrigerant charge base	—
7	Refrigerant cylinder	·Only for R410A ·Top of cylinder (Pink) ·Cylinder with syphon
8	Refrigerant recovery equipment	—

1-3. Cautions for refrigerant piping work

New refrigerant R410A is adopted for replacement inverter series. Although the refrigerant piping work for R410A is the same as for R22, exclusive tools are necessary so as not to mix with different kind of refrigerant. Furthermore as the working pressure of R410A is 1.6 times higher than that of R22, their sizes of flared sections and flare nuts are different.

① Thickness of pipes

Since the working pressure of R410A is higher compared to R22, be sure to use refrigerant piping with thickness shown below. (Never use pipes of 7/256 in [0.7 mm] or below.)

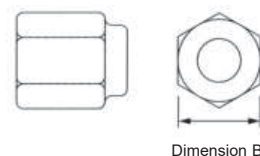
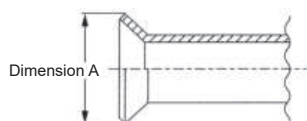
Diagram below: Piping diameter and thickness

Nominal dimensions (inch)	Outside diameter (mm)	Thickness: in [mm]	
		R410A	R22
1/4	6.35	1/32 [0.8]	1/32 [0.8]
3/8	9.52	1/32 [0.8]	1/32 [0.8]
1/2	12.70	1/32 [0.8]	1/32 [0.8]
5/8	15.88	5/128 [1.0]	5/128 [1.0]
3/4	19.05	—	5/128 [1.0]

② Dimensions of flare cutting and flare nut

The component molecules in HFC refrigerant are smaller compared to conventional refrigerants. In addition to that, R410A is a refrigerant, which has higher risk of leakage because its working pressure is higher than that of other refrigerants. Therefore, to enhance airtightness and strength, flare cutting dimension of copper pipe for R410A has been specified separately from the dimensions for other refrigerants as shown below. The dimension B of flare nut for R410A also has partly been changed to increase strength as shown below. Set copper pipe correctly referring to copper pipe flaring dimensions for R410A below. For 1/2 and 5/8 inch pipes, the dimension B changes.

Use torque wrench corresponding to each dimension.



Flare cutting dimensions

Unit: in [mm]

Nominal dimensions (in)	Outside diameter (mm)	Dimension A (+0/-0.4)	
		R410A	R22
1/4	6.35	11/32-23/64 [9.1]	9.0
3/8	9.52	1/2-33/64 [13.2]	13.0
1/2	12.70	41/64-21/32 [16.6]	16.2
5/8	15.88	49/64-25/32 [19.7]	19.4
3/4	19.05	—	23.3

Flare nut dimensions

Unit: in [mm]

Nominal dimensions (in)	Outside diameter (mm)	Dimension B	
		R410A	R22
1/4	6.35	43/64 [17.0]	17.0
3/8	9.52	7/8 [22.0]	22.0
1/2	12.70	1-3/64 [26.0]	24.0
5/8	15.88	1-9/64 [29.0]	27.0
3/4	19.05	—	36.0

③ Tools for R410A (The following table shows whether conventional tools can be used or not.)

Tools and materials	Use	R410A tools	Can R22 tools be used?	Can R407C tools be used?
Gauge manifold	Air purge, refrigerant charge and operation check	Tool exclusive for R410A	×	×
Charge hose		Tool exclusive for R410A	×	×
Gas leak detector	Gas leak check	Tool for HFC refrigerant	×	○
Refrigerant recovery equipment	Refrigerant recovery	Tool exclusive for R410A	×	×
Refrigerant cylinder	Refrigerant charge	Tool exclusive for R410A	×	×
Applied oil	Apply to flared section	Ester oil, ether oil and alkylbenzene oil (minimum amount)	×	Ester oil, ether oil: ○ Alkylbenzene oil: minimum amount
Safety charger	Prevent compressor malfunction when charging refrigerant by spraying liquid refrigerant	Tool exclusive for R410A	×	×
Charge valve	Prevent gas from blowing out when detaching charge hose	Tool exclusive for R410A	×	×
Vacuum pump	Vacuum drying and air purge	Tools for other refrigerants can be used if equipped with adopter for reverse flow check	△(Usable if equipped with adopter for reverse flow)	△(Usable if equipped with adopter for reverse flow)
Flare tool	Flaring work of piping	Tools for other refrigerants can be used by adjusting flaring dimension	△(Usable by adjusting flaring dimension)	△(Usable by adjusting flaring dimension)
Bender	Bend the pipes	Tools for other refrigerants can be used	○	○
Pipe cutter	Cut the pipes	Tools for other refrigerants can be used	○	○
Welder and nitrogen gas cylinder	Weld the pipes	Tools for other refrigerants can be used	○	○
Refrigerant charging scale	Refrigerant charge	Tools for other refrigerants can be used	○	○
Vacuum gauge or thermistor vacuum gauge and vacuum valve	Check the degree of vacuum. (Vacuum valve prevents back flow of oil and refrigerant to thermistor vacuum gauge)	Tools for other refrigerants can be used	○	○
Charging cylinder	Refrigerant charge	Tool exclusive for R410A	×	—

×: Prepare a new tool. (Use the new tool as the tool exclusive for R410A.)

△: Tools for other refrigerants can be used under certain conditions.

○: Tools for other refrigerants can be used.

2-1. SYSTEM CONSTRUCTION

Outdoor unit			MXZ-4C36NAHZ(-U1)	MXZ-5C42NAHZ(-U1)	MXZ-8C48NAHZ(-U1) MXZ-8C48NA(-U1)	MXZ-8C60NA-U1
			4HP	4.5HP	5HP	7HP
Rated capacity (kBtu/h)	Cooling	Heating	36	42	48	60
		Refrigerant	45	48	54	66
	R410A					
Connectable indoor unit	Capacity class		Type 06 to Type 36 Caution: The indoor unit which rated capacity exceeds 36 kBtu/h (Type 36) can NOT be connected.			
	Number of units		2(*1) to 4 units	2(*1) to 5 units	2(*1) to 8 units	2(*1) to 8 units
	Total system wide capacity		33 to 130% of outdoor unit capacity (12 to 46.8 kBtu/h)	29 to 130% of outdoor unit capacity (12 to 54.6 kBtu/h)	25 to 130% of outdoor unit capacity (12 to 62.4 kBtu/h)	20 to 130% of outdoor unit capacity (12 to 78 kBtu/h)
Connectable branch box	Number of units		1 or 2 units			



Connectable indoor unit lineups (Heat pump inverter type)								
Model type	Model name	Capacity class [kBtu/h]						
		06	09	12	15	18	24	30
Deluxe Wall-mounted	MSZ-FE09/12/18NA		●	●		●		
	MSZ-FH06/09/12/15NA, 18NA2	●	●	●	●	●		
Designer	MSZ-EF09/12/15/18NA(W/B/S)		●	●	●	●		
	MSZ-GE06/09/12/15/18/24NA	●	●	●	●	●	●	
Standard Wall-mounted	MSZ-GL06/09/12/15/18/24NA	●	●	●	●	●	●	
	SEZ-KD09/12/15/18NA		●	●	●	●		
Low static ducted*3 *4	PEAD-A24/30/36AA5						●	●
	PEAD-09/12/15/18/24/30/36AA7		●	●	●	●	●	●
1-way cassette	MLZ-KP09/12/18NA		●	●		●		
	SLZ-KA09/12/15NA		●	●	●			
P-series 22*22 4-way cassette	SLZ-KF09/12/15NA		●	●	●			
	PLA-A12/18/24/30/36BA6			●		●	●	●
P-series 33*33 4-way cassette	PLA-A12/18/24/30/36EA7*5			●		●	●	●
	MFZ-KA09/12/18NA		●	●		●		
Floor standing	MFZ-KJ09/12/15/18NA		●	●	●			
	MVZ-A12/18/24/30/36AA4			●		●	●	●



Branch box	PAC-MKA50BC	PAC-MKA51BC	PAC-MKA30BC	PAC-MKA31BC
Number of branches (Indoor unit that can be connected)	5 branches (MAX. 5 units)		3 branches (MAX. 3 units)	

Note: A maximum of 2 branch boxes can be connected to 1 outdoor unit.



2- branch pipe (joint): Optional parts			
In case of using 1- branch box		No need	
In case of using 2- branch boxes		Model name	Connection method
		MSDD-50AR-E	flare
		MSDD-50BR-E	brazing
		Select a model according to the connection method.	



Option	Optional accessories for indoor units and outdoor units are available.
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*1 Only one unit connection is possible with ducted unit.

*2 When connecting a multi-position unit(s), set additional constraints as follows. For connections other than those specified below, consult your dealer.

● **Models other than MXZ-8C60NA** (For each connected branch box)

● **MXZ-8C60NA** (For each connected branch box)

Number of connecting multi-position unit	Constraints
2	Any indoor units other than ducted units are not connectable.
1	- The total system wide capacity should be 130% or below including the ducted unit. - Only 1 ducted unit can be included in the connection.

Number of connecting multi-position unit	Constraints
2	Any indoor units other than ducted unit are not connectable.
1	- The total system wide capacity should be 100% or below including the ducted unit. - Only 1 ducted unit can be included in the connection.

*3 For MXZ-8C60NA; When connecting the SEZ and PEAD-series units, the total system wide capacity per 1 branch box should be 100% or below including the ducted units. (Only if connecting to PAC-MKA50/51BC)

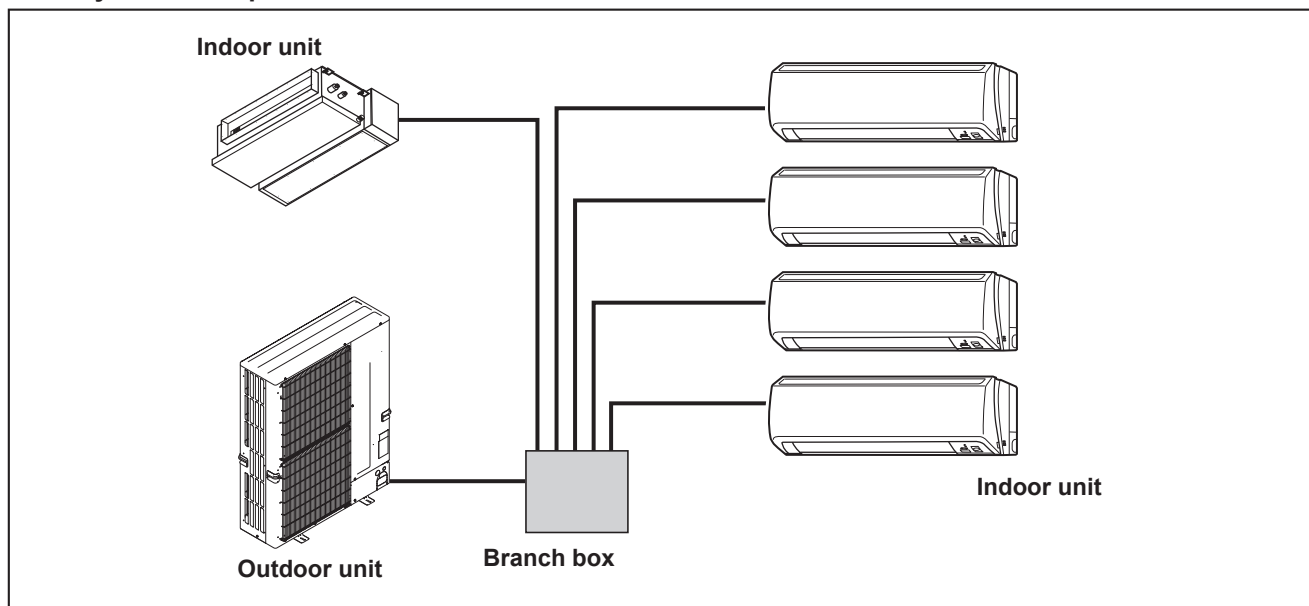
*4 When not outside units 60: A branch box can connect to maximum 3 of the ducted units. When connecting with 3 of the ducted units per 1 branch box, other indoor units cannot be connected.
When outside units 60: A branch box can connect to maximum 2 of the ducted units. When connecting with 1 and over 1 of the ducted units, the total ability including of the ducted units is 100% and below 100%.

*5 When the system includes 1 unit of ducted units, the number of the maximum connectable indoor units is decreased as follows:
3 for MXZ-4C36NAHZ-U1, 4 for MXZ-5C42NAHZ-U1, and 6 for MXZ-8C48NA(HZ)-U1 and MXZ-8C60NA-U1

2-2. SYSTEM OUTLINE

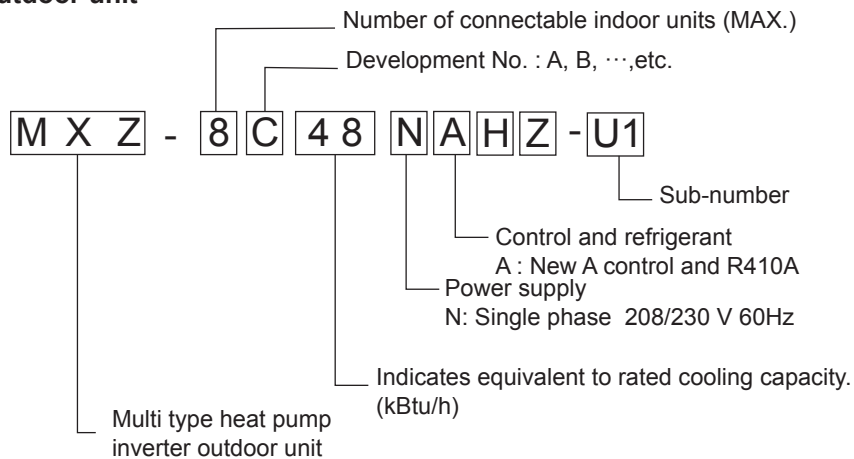
The additional connection of the branch box together with employment of the compact trunk-looking outdoor unit can successfully realize a long distance piping for large houses. Equipped with a microprocessor, the branch box can translate the transmission signal of indoor units to achieve the optimum control.

2-2-1. System example

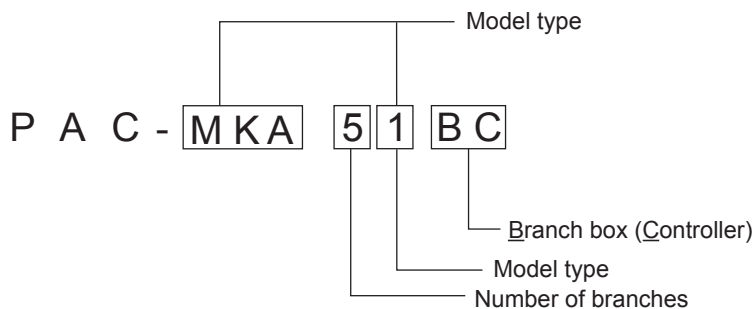


2-2-2. Method for identifying

■ Outdoor unit

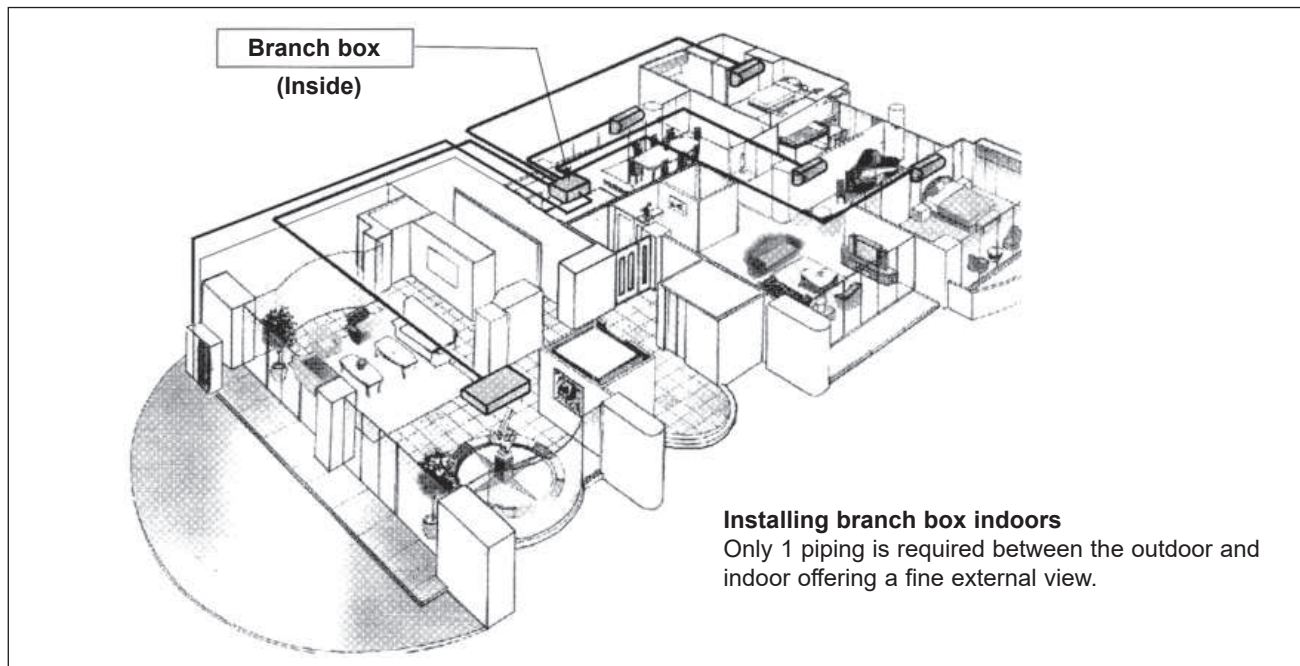


■ Branch box

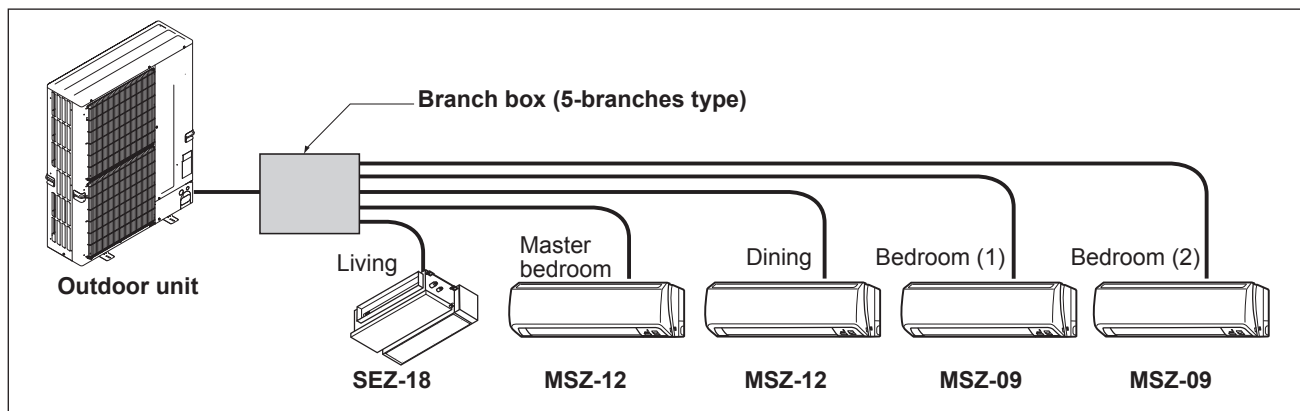


2-3. TYPICAL COMBINATION EXAMPLE

Branch box is located **INSIDE** of condominium



■ System example of 5 indoor units



■ Verification

The rated capacity should be determined by observing the table below. The unit's quantities are limited to 1(*) to 8 units. For the next step, make sure that the selected total rated capacity is 130% or less of outdoor unit capacity. The total indoor unit capacity should be within the outdoor units. (= 100% of outdoor unit capacity is preferred). Combination of excessive indoor units and an outdoor unit may reduce the capacity of each indoor unit.

*Single unit connection is possible only with multi-position unit. Connect 2 or more units for models other than multi-position unit.

Example:

SEZ-18	= 18	Total rated capacity $60 \leq 62.4 \text{ kBtu/h}$
+		
MSZ-12	= 12	
+		
MSZ-12	= 12	
+		
MSZ-09	= 9	
+		
MSZ-09	= 9	

Indoor unit type (capacity class)	06	09	12	15	18	24	30	36
Rated capacity (cooling) (kBtu/h)	6	9	12	15	18	24	30	36

2-4. SIMPLIFIED PIPING SYSTEM

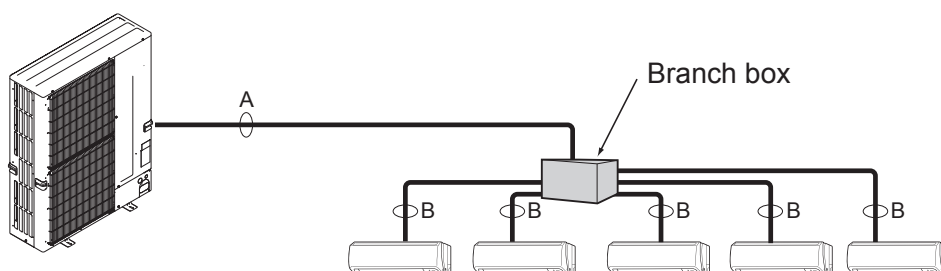
Piping connection size

	A	B
Liquid	ø3/8 inch [9.52 mm]	The piping connection size differs according to the type and capacity of indoor units. Match the piping connection size of branch box with indoor unit. If the piping connection size of branch box does not match the piping connection size of indoor unit, use optional different-diameter (deformed) joints to the branch box side. (Connect deformed joint directly to the branch box side.)
Gas	ø5/8 inch / ø3/4 inch* [15.88 mm] / [19.05 mm]	

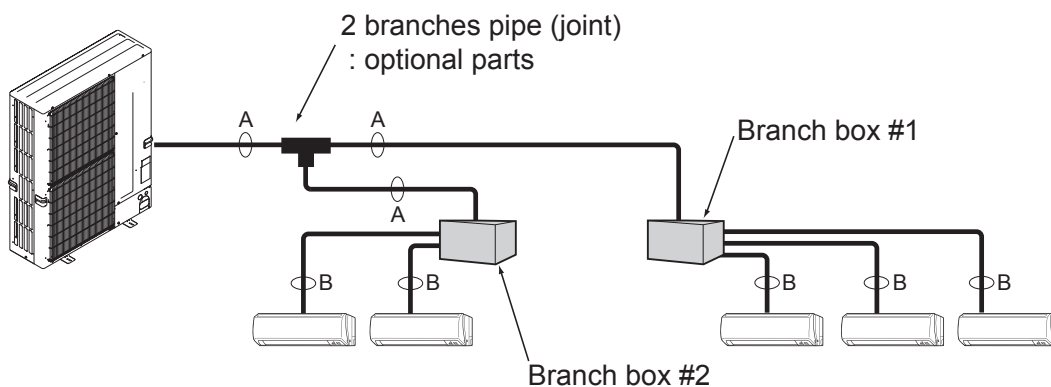
* MXZ-8C60NA only

Flare connection employed. (No brazing!)

- In case of using 1-branch box
Flare connection employed (No brazing)



- In case of using 2-branch boxes



- Installation procedure (2 branches pipe (joint))
Refer to the installation manuals of MSDD-50AR-E and MSDD-50BR-E.

SPECIFICATIONS

3-1. OUTDOOR UNIT:

MXZ-4C36/5C42/8C48NAHZ(-U1), MXZ-8C48NA(-U1), MXZ-8C60NA-U1

Conversion formula:	$\text{kcal/h} = \text{kW} \times 860$ $\text{Btu/h} = \text{kW} \times 3412$ $\text{CFM} = \text{m}^3/\text{min} \times 35.31$
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Service Ref.				MXZ-4C36NAHZ(-U1)			MXZ-5C42NAHZ(-U1)		
Standard performance	Indoor type			Non-Ducted	Mix	Ducted	Non-Ducted	Mix	Ducted
	Cooling	Capacity Rated* ¹	Btu/h	36,000	36,000	36,000	42,000	42,000	42,000
		Rated power consumption* ¹	W	2,570	2,845	3,180	3,130	3,470	3,890
		EER	Btu/Wh	14.00	12.65	11.30	13.40	12.10	10.80
		SEER	Btu/Wh	19.1	17.5	15.8	19.0	17.0	15.0
	Heating	Capacity Rated 47°F* ¹	Btu/h	45,000	45,000	45,000	48,000	48,000	48,000
		Capacity Max. 17°F* ²	Btu/h	45,000	45,000	45,000	48,000	48,000	48,000
		Capacity Max. 5°F	Btu/h	45,000	45,000	45,000	48,000	48,000	48,000
		Rated power consumption 47°F* ¹	W	3,340	3,795	4,250	3,430	3,890	4,350
		COP 47°F* ¹	Btu/Wh	3.95	3.48	3.10	4.10	3.62	3.23
HSPF IV/V		Btu/Wh	11.3/9.2	10.7/8.9	10.1/8.5	11.0/9.1	10.6/9.0	10.1/8.8	
OUTDOOR UNIT	Connectable indoor units (Max.)			4			5		
	Max. Connectable Capacity		Btu/h	46,000			54,000		
	Power supply			1 Phase 208/230 V, 60 Hz					
	Breaker Size/Max. fuse size			50 A/52 A 50 A/50 A (for the models with U1)					
	Min. circuit ampacity			42 A					
	Sound level (Cool/Heat)		dB	49/ 53			50/ 54		
	External finish			Munsell 3Y 7.8/ 1.1					
	Refrigerant control			Linear Expansion Valve					
	Compressor			Hermetic					
		Model		ANB33FJSMT					
		Motor output	kW	2.8			3.0		
		Starting method		Inverter					
	Heat exchanger			Cross fin and tube					
	Fan	Fan (drive) × No.		Propeller fan × 2					
		Fan motor output		kW		0.06 + 0.06 0.074 + 0.074 (for the models with U1)			
		Airflow	m³/min (CFM)	110 (3885)					
	Dimensions	Width	in (mm)	41-11/32 (1050)					
		Depth	in (mm)	13+1 (330+25)					
		Height	in (mm)	52-11/16 (1338)					
	Weight		lb (kg)	276 (125)					
	Refrigerant			R410A					
		Charge	lb (kg)	10 lbs. 9 oz.(4.8)					
		Oil volume/Model	oz (L)	78 (2.3)/Ethereal oil (FV50S)					
	Protection de- vices	High pressure protection		HP switch					
		Compressor protection		Compressor thermo, Overcurrent detection					
		Fan motor protection		Overheating/Voltage protection					
	Guaranteed operation range		(cool)	D.B 23 to 115°F [D.B. -5 to 46°C] * ³					
		(heat)	D.B. -13 to 70°F [D.B. -25 to 21°C]						
REFRIGERANT PIPING	Total Piping length (Max.)		ft (m)		492 (150)				
	Farthest		ft (m)		262 (80)				
	Max. Height difference		ft (m)		164 (50)* ⁴				
	Chargeless length		ft (m)		0				
	Piping diameter	Liquid	inch (mm)	ø3/8 (9.52)					
		Gas	inch (mm)	ø5/8 (15.88)					
	Connection method	Indoor side		Flared					
Outdoor side		Flared							

*1 Rating conditions Cooling Indoor : D.B. 80°F/W.B. 67 °F [D.B.26.7°C/W.B. 19.4°C]
Outdoor : D.B. 95°F [D.B. 35.0°C]

Heating Indoor : D.B. 70°F [D.B. 21.1°C]
Outdoor : D.B. 47°F/W.B. 43°F [D.B. 8.3°C/W.B. 6.1°C]

*2 Conditions	Outdoor	: D.B. 47 °F/W.B. 43 °F [D.B. 8.3 °C/W.B. 6.1 °C]
	Heating Indoor	: D.B. 70 °F [D.B. 21.1 °C]
	Outdoor	: D.B. 17 °F/W.B. 15 °F [D.B. -8.3 °C/W.B. -9.4 °C]

*3 D.B. 5 to 115°F [D.B. -15 to 46°C], when an optional Air Outlet Guide is installed.

*4 131 ft [40 m], in case of installing outdoor unit lower than indoor unit.

Note: Refer to the indoor unit's service manual for the indoor units specifications.

Conversion formula:	kcal/h = kW × 860
	Btu/h = kW × 3412
	CFM = m³/min × 35.31

Service Ref.			MXZ-8C48NAHZ(-U1)			MXZ-8C48NA(-U1)			
Standard performance	Indoor type		Non-Ducted	Mix	Ducted	Non-Ducted	Mix	Ducted	
	Cooling	Capacity Rated* ¹	Btu/h	48,000	48,000	48,000	48,000	48,000	48,000
		Rated power consumption* ¹	W	4,000	4,465	5,050	4,000	4,465	5,050
		EER	Btu/Wh	12.00	10.75	9.50	12.00	10.75	9.50
		SEER	Btu/Wh	18.9	16.8	14.7	18.9	16.8	14.7
	Heating	Capacity Rated 47°F* ¹	Btu/h	54,000	54,000	54,000	54,000	54,000	54,000
		Capacity 17°F* ²	Btu/h	54,000	54,000	54,000	36,600	36,600	36,600
		Capacity 5°F	Btu/h	54,000	54,000	54,000	32,400	32,400	32,400
		Rated power consumption 47°F* ¹	W	4,220	4,605	4,990	4,220	4,605	4,990
		COP 47°F* ¹	Btu/Wh	3.75	3.44	3.17	3.75	3.44	3.17
HSPF IV/V		Btu/Wh	11.0/9.2	10.5/9.2	10.0/9.2	11.4/8.7	10.8/8.6	10.1/8.4	
OUTDOOR UNIT	Connectable indoor units (Max.)		8						
	Max. Connectable Capacity		Btu/h		62,000				
	Power supply		1 Phase 208/230 V, 60 Hz						
	Breaker Size / Max. fuse size		50 A/ 52 A 50 A/50 A (for the models with U1)			40 A/52 A 40 A/50 A (for the models with U1)			
	Min. circuit ampacity		42 A			37 A			
	Sound level (Cool/Heat)		dB		51/ 54				
	External finish		Munsell 3Y 7.8 / 1.1						
	Refrigerant control		Linear Expansion Valve						
	Compressor		Hermetic						
		Model	ANB33FJSMT			ANB33FNHMT			
		Motor output	kW		3.4				
		Starting method		Inverter					
	Heat exchanger		Cross fin and tube						
	Fan	Fan (drive) × No.		Propeller fan × 2					
		Fan motor output		kW		0.06 + 0.06 0.074 + 0.074 (for the models with U1)			
		Airflow		m³/min (CFM)		110 (3885)			
	Dimensions	Width	inch (mm)	41-11/32 (1050)					
		Depth	inch (mm)	13+1 (330+25)					
		Height	inch (mm)	52-11/16 (1338)					
	Weight		lb (kg)		276 (125)		269 (122)		
	Refrigerant		R410A						
		Charge	lb (kg)		10 lbs. 9 oz. (4.8)				
		Oil volume/Model	oz (L)		78 (2.3) / Ethereal oil (FV50S)				
	Protection devices	High pressure protection		HP switch					
		Compressor protection		Compressor thermo, Over current detection					
		Fan motor protection		Overheating/Voltage protection					
	Guaranteed operation range		(cool)	D.B. 23 to 115°F [D.B. -5 to 46°C]* ³					
		(heat)	D.B. -13 to 70°F [D.B. -25 to 21°C]			D.B. -4 to 70°F [D.B. -20 to 21°C]			
REFRIGERANT PIPING	Total Piping length (Max.)		ft (m)		492 (150)				
	Farthest		ft (m)		262 (80)				
	Max. Height difference		ft (m)		164 (50)* ⁴				
	Chargeless length		ft (m)		0				
	Piping diameter	Liquid	inch (mm)		ø3/8 (9.52)				
		Gas	inch (mm)		ø5/8 (15.88)				
	Connection method	Indoor side		Flared					
Outdoor side		Flared							

*1 Rating conditions Cooling Indoor : D.B. 80°F/W.B. 67°F [D.B. 26.7°C/W.B. 19.4°C]

Outdoor : D.B. 95°F [D.B. 35.0°C]

Heating Indoor : D.B. 70°F [D.B. 21.1°C]

Outdoor : D.B. 47°F/W.B. 43°F [D.B. 8.3°C/W.B. 6.1°C]

*2 Conditions Heating Indoor : D.B. 70°F [D.B. 21.1°C]

Outdoor : D.B. 17°F/W.B. 15°F [D.B. -8.3°C/W.B. -9.4°C]

*3 D.B. 5 to 115°F [D.B. -15 to 46°C], when an optional Air Outlet Guide is installed.

*4 131 ft [40 m], in case of installing outdoor unit lower than indoor unit.

Note: Refer to the indoor unit's service manual for the indoor units specifications.

3-2. BRANCH BOX: PAC-MKA50BC PAC-MKA51BC PAC-MKA30BC PAC-MKA31BC

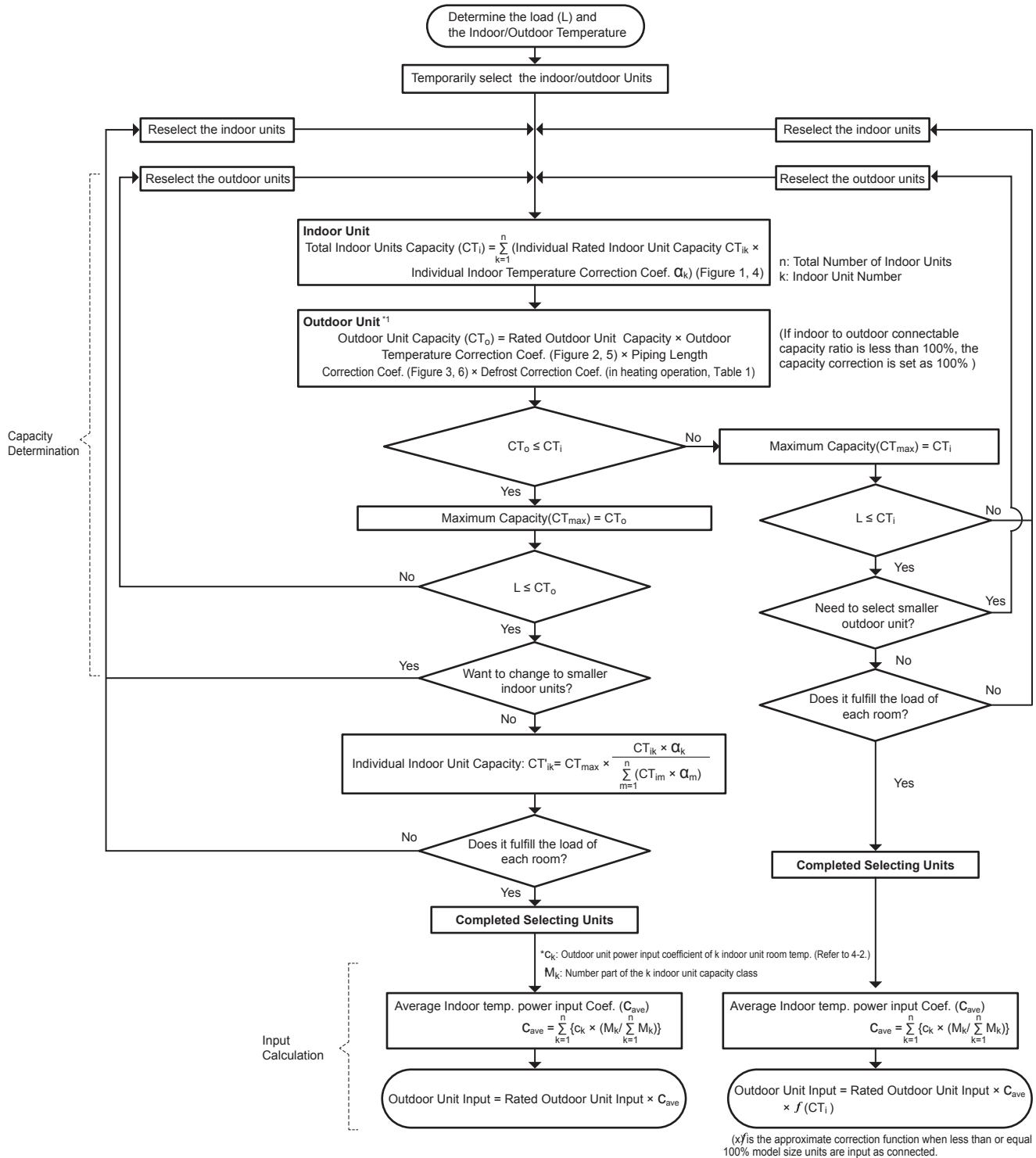
Model name				PAC-MKA50BC PAC-MKA51BC		PAC-MKA30BC PAC-MKA31BC		
Connectable number of indoor units				Maximum 5		Maximum 3		
Power supply				Single phase, 208/230 V, 60 Hz				
Input			kW	0.003				
Running current			A	0.05				
External finish				Galvanized sheets				
Dimensions	Width		inch (mm)	17-23/32 (450)				
	Depth		inch (mm)	11-1/32 (280)				
	Height		inch (mm)	6-11/16 (170)				
Weight			lb (kg)	16 (7.4)		15 (6.7)		
Piping connection (Flare)	Branch (indoor side)*		Liquid	inch (mm)	ø1/4 (6.35) × 5 {A,B,C,D,E}		ø1/4 (6.35) × 3 {A,B,C}	
			Gas	inch (mm)	ø3/8 (9.52) × 4 {A,B,C,D}, ø1/2 (12.7) × 1{E}		ø3/8 (9.52) × 3 {A,B,C}	
	Main (outdoor side)		Liquid	inch (mm)	ø3/8 (9.52)			
			Gas	inch (mm)	ø5/8 (15.88)			

*The piping connection size differs according to the type and capacity of indoor units. Match the piping connection size for indoor and branch box. If the piping connection size of branch box does not match the piping connection size of indoor units, use optional different-diameter (deformed) joints to the branch box side. (Connect deformed joint directly to the branch box side.)

4-1. SELECTION OF COOLING/HEATING UNITS

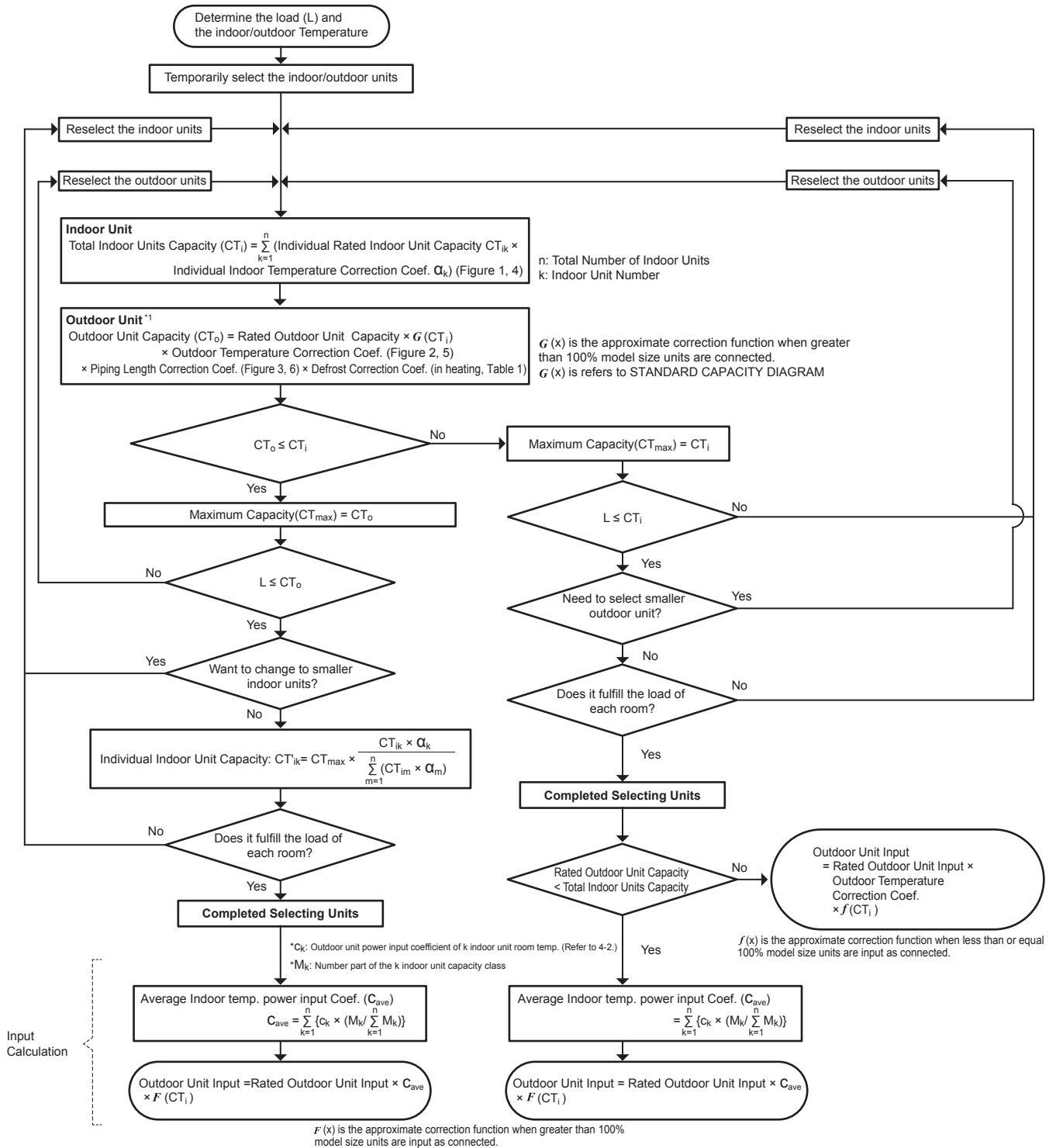
How to determine the capacity when less than or equal 100% indoor model size units are connected in total:

The purpose of this flow chart is to select the indoor and outdoor units. For other purposes, this flow chart is intended only for reference.



How to determine the capacity when greater than 100% indoor model size units are connected in total:

The purpose of this flow chart is to select the indoor and outdoor units. For other purposes, this flow chart is intended only for reference.



<Cooling>

Design Condition	
Outdoor Design Dry Bulb Temperature	98.6°F (37.0°C)
Total Cooling Load	29.6 kBtu/h
Room1	
Indoor Design Dry Bulb Temperature	80.6°F (27.0°C)
Indoor Design Wet Bulb Temperature	68.0°F (20.0°C)
Cooling Load	13.6 kBtu/h
Room2	
Indoor Design Dry Bulb Temperature	75.2°F (24.0°C)
Indoor Design Wet Bulb Temperature	66.2°F (19.0°C)
Cooling Load	16.0 kBtu/h
<Other>	
Indoor/Outdoor Equivalent Piping Length	250 ft

Rated capacity of indoor unit [kBtu/h]

Model name	Capacity class							
	06	09	12	15	18	24	30	36
MVZ	-	-	12.0	-	18.0	24.0	30.0	36.0
SLZ-KF	-	8.4	11.1	15.0	-	-	-	-
SEZ-KD	-	8.1	11.5	14.1	17.2	-	-	-
MFZ-KJ	-	9.0	12.0	15.0	17.0	-	-	-
MLZ-KP	-	9.0	12.0	-	17.2	-	-	-
MSZ-FH	6.0	9.0	12.0	15.0	17.2	-	-	-
MSZ-GL	6.0	9.0	12.0	14.0	17.2	22.5	-	-
PEAD	-	9.0	12.0	15.0	18.0	24.0	30.0	36.0
PLA	-	-	12.0	-	18.0	24.0	30.0	36.0

1. Cooling Calculation

(1) Temporary Selection of Indoor Units

Room1
MSZ-FH15 **15.0 kBtu/h (Rated)**

Room2
MSZ-FH18 **17.2 kBtu/h (Rated)**

(2) Total Indoor Units Capacity

15 + 18 = 33

(3) Selection of Outdoor Unit

The P36 outdoor unit is selected as total indoor units capacity is P33

MXZ-4C36 **36.0 kBtu/h**

(4) Total Indoor Units Capacity Correction Calculation

Room1
Indoor Design Wet Bulb Temperature Correction (68.0°F) 1.02 (Refer to Figure 1)

Room2
Indoor Design Wet Bulb Temperature Correction (66.2°F) 0.98 (Refer to Figure 1)

Total Indoor Units Capacity (CTi)

CTi = Σ (Indoor Unit Rating $\times$ Indoor Design Temperature Correction)

= 15.0 $\times$ 1.02 + 17.2 $\times$ 0.98

= 32.2 kBtu/h

(5) Outdoor Unit Correction Calculation

Outdoor Design Dry Bulb Temperature Correction (98.6°F) 0.98 (Refer to Figure 2)

Piping Length Correction (250 ft) 0.93 (Refer to Figure 3)

Total Outdoor Unit Capacity (CTo)

CTo = Outdoor Rating $\times$ Outdoor Design Temperature Correction $\times$ Piping Length Correction

= 36.0 $\times$ 0.98 $\times$ 0.93

= 32.2 kBtu/h

(6) Determination of Maximum System Capacity

Comparison of Capacity between Total Indoor Units Capacity (CTi) and Total Outdoor Unit Capacity (CTo)

CTi = 32.2 < CTo = 32.8, thus, select CTi.

CTx = CTi = 32.2 kBtu/h

(7) Comparison with Essential Load

Against the essential load 29.6 kBtu/h, the maximum system capacity is 32.2 kBtu/h: Proper outdoor units have been selected.

(8) Calculation of Maximum Indoor Unit Capacity of Each Room

CTx = CTi, thus, calculate by the calculation below

Room1

Indoor Unit Rating $\times$ Indoor Design Temperature Correction

= 15.0 $\times$ 1.02

= 15.3 kBtu/h

OK: fulfills the load 13.6 kBtu/h

Room2

Indoor Unit Rating $\times$ Indoor Design Temperature Correction

= 17.2 $\times$ 0.98

= 16.9 kBtu/h

OK: fulfills the load 16.0 kBtu/h

Go on to the heating trial calculation since the selected units fulfill the cooling loads of Room 1, 2.

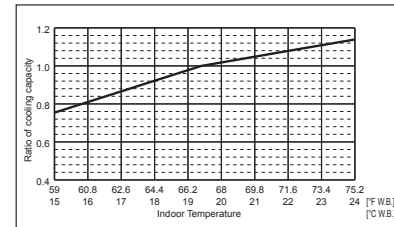


Figure 1 Indoor unit temperature correction
To be used to correct indoor unit only

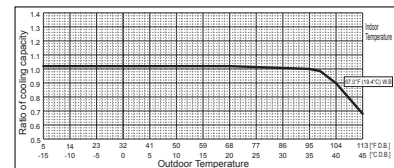


Figure 2 Outdoor unit temperature correction
To be used to correct outdoor unit only

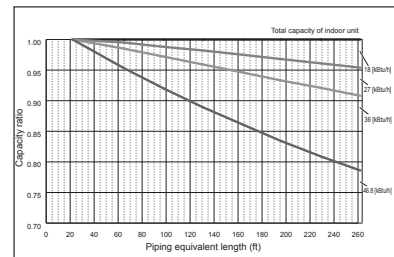


Figure 3 Correction of refrigerant piping length

<Heating>

Design Condition	
Outdoor Design Wet Bulb Temperature	23.0°F (-5.0°C)
Total Heating Load	34.0 kBtu/h
Room1	
Indoor Design Dry Bulb Temperature	69.8°F (21.0°C)
Heating Load	16.3 kBtu/h
Room2	
Indoor Design Dry Bulb Temperature	73.4°F (23.0°C)
Heating Load	17.7 kBtu/h
<Other> Indoor/Outdoor Equivalent Piping Length	230 ft

Rated capacity of indoor unit [kBtu/h]

Model name	Capacity class							
	06	09	12	15	18	24	30	36
MVZ	-	-	12.0	-	18.0	27.0	34.0	40.0
SLZ-KF	-	10.2	13.7	17.1	-	-	-	-
SEZ-KD	-	10.9	13.6	18.0	17.2	-	-	-
MFZ-KJ	-	10.9	13.0	18.0	21.0	-	-	-
MLZ-KP	-	10.9	13.0	-	21.0	-	-	-
MSZ-FH	6.0	10.9	13.6	18.0	20.3	-	-	-
MSZ-GL	6.0	10.9	14.4	18.0	21.6	27.6	-	-
PEAD	-	10.9	13.5	15.7	18.0	26.0	34.0	40.0
PLA	-	-	13.5	-	18.0	26.0	34.0	40.0

2. Heating Calculation

(1) Temporary Selection of Indoor Units

Room1	
MSZ-FH15	18.0 kBtu/h (Rated)
Room2	
MSZ-FH18	20.3 kBtu/h (Rated)

(2) Total Indoor Units Capacity

$$15 + 18 = 33$$

(3) Selection of Outdoor Unit

The P36 outdoor unit is selected as total indoor units capacity is P33

MXZ-4C36	45.0 kBtu/h
----------	-------------

(4) Total Indoor Units Capacity Correction Calculation

Room1	
Indoor Design Dry Bulb Temperature Correction (69.8°F)	1.00 (Refer to Figure 4)
Room2	
Indoor Design Dry Bulb Temperature Correction (73.4°F)	0.92 (Refer to Figure 4)

Total Indoor Units Capacity (CTi)

$$\begin{aligned}
 CTi &= \Sigma (\text{Indoor Unit Rating} \times \text{Indoor Design Temperature Correction}) \\
 &= 18.0 \times 1.00 + 20.3 \times 0.92 \\
 &= 36.7 \text{ kBtu/h}
 \end{aligned}$$

(5) Outdoor Unit Correction Calculation

Outdoor Design Wet Bulb Temperature Correction (23.0°F)	0.85 (Refer to Figure 5)
Piping Length Correction (230 ft)	0.96 (Refer to Figure 6)
Defrost Correction	0.95 (Refer to Table 1)

Total Outdoor Unit Capacity (CTo)

$$\begin{aligned}
 CTo &= \text{Outdoor Unit Rating} \times \text{Outdoor Design Temperature Correction} \times \text{Piping Length Correction} \times \text{Defrost Correction} \\
 &= 45.0 \times 1.0 \times 0.85 \times 0.95 \\
 &= 34.9 \text{ kBtu/h}
 \end{aligned}$$

Table 1 Table of correction factor at frost and defrost

Outdoor Intake temperature <W.B.°F (°C)>	43(6)	37(4)	36(2)	32(0)	28(-2)	25(-4)	21(-6)	18(-8)	14(-10)	5(-15)	-4(-20)	-13(-25)
Correction factor	1.0	0.98	0.89	0.88	0.89	0.9	0.95	0.95	0.95	0.95	0.95	0.95

(6) Determination of Maximum System Capacity

Comparison of Capacity between Total Indoor Units Capacity (CTi) and Total Outdoor Unit Capacity (CTo)

$$CTi = 36.7 > CTo = 34.9, \text{ thus, select } CTo.$$

$$CTx = CTo = 34.9 \text{ kBtu/h}$$

(7) Comparison with Essential Load

Against the essential load 34.0 kBtu/h, the maximum system capacity is 34.9 kBtu/h: Proper outdoor units have been selected.

(8) Calculation of Maximum Indoor Unit Capacity of Each Room

CTx = CTo, thus, calculate by the calculation below

Room1

$$\begin{aligned}
 &\text{Maximum Capacity} \times \text{Room1 Capacity after the Temperature Correction} / (\text{Room1,2 Total Capacity after the Temperature Correction}) \\
 &= 34.9 \times (18.0 \times 1.00) / (18.0 \times 1.00 + 20.3 \times 0.92) \\
 &= 17.1 \text{ kBtu/h} \quad \text{OK: fulfills the load 16.3 kBtu/h}
 \end{aligned}$$

Room2

$$\begin{aligned}
 &\text{Maximum Capacity} \times \text{Room1 Capacity after the Temperature Correction} / (\text{Room1,2 Total Capacity after the Temperature Correction}) \\
 &= 34.9 \times (20.3 \times 0.92) / (18.0 \times 1.00 + 20.3 \times 0.92) \\
 &= 17.8 \text{ kBtu/h} \quad \text{OK: fulfills the load 17.7 kBtu/h}
 \end{aligned}$$

Completed selecting units since the selected units fulfill the heating loads of Room 1, 2.

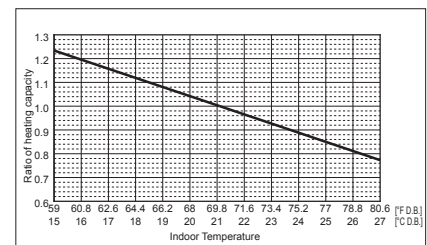


Figure 4 Indoor unit temperature correction
To be used to correct indoor unit only

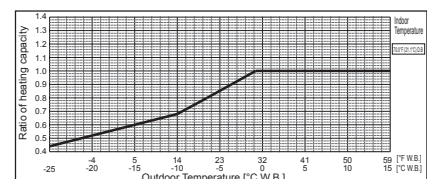


Figure 5 Outdoor unit temperature correction
To be used to correct outdoor unit only

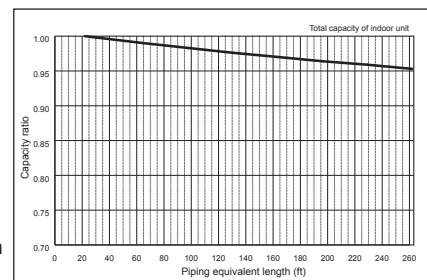


Figure 6 Correction of refrigerant piping length

3. Power input of outdoor unit

Outdoor unit : MXZ-4C36

Indoor unit 1 : MSZ-FH15

Indoor unit 2 : MSZ-FH18

<Cooling>

(1) Rated power input of outdoor unit

2.57 kW

(2) Calculation of the average indoor temperature power input coefficient (Cave)

Coefficient of the outdoor unit for indoor unit 1 (Outdoor temp. 98.6°F [37.0°C] D.B., Indoor temp. 68.0°F [20.0°C] W.B.)

1.04 (Refer to "4-2. CORRECTION BY TEMPERATURE".)

Coefficient of the outdoor unit for indoor unit 2 (Outdoor temp. 98.6°F [37.0°C] D.B., Indoor temp. 66.2°F [19.0°C] W.B.)

1.00 (Refer to "4-2. CORRECTION BY TEMPERATURE".)

$$\text{Average indoor temp. power input coefficient (C}_{ave}\text{)} = \sum_{k=1}^n \{c_k \times (M_k / \sum_{k=1}^n M_k)\}$$

n: Total number of the indoor units

k: Number of the indoor unit

c_k: Outdoor unit power input coefficient of k indoor unit room temp.

M_k: Number part of the k indoor unit capacity class

$$= 1.04 \times 15 / (15 + 18) + 1.00 \times 18 / (15 + 18)$$

$$= 1.02$$

(3) Coefficient of the partial load f(CTi)

Total Indoor units capacity

15 + 18 = 33, thus, f(CTi) = 0.96 (Refer to the tables in "4-4.STANDARD CAPACITY DIAGRAM".)

(4) Outdoor power input (Plo)

Maximum System Capacity (CTx) = Total Indoor unit Capacity (CTi), so use the following formula

Plo = Outdoor unit Cooling Rated Power Input × Correction Coefficient of Indoor temperature (Cave) × f(CTi)

$$= 2.57 \times 1.02 \times 0.96$$

$$= 2.52 \text{ kW}$$

<Heating>

(1) Rated power input of outdoor unit

3.34 kW

(2) Calculation of the average indoor temperature power input coefficient

Coefficient of the outdoor unit for indoor unit 1 (Outdoor temp. 23.0°F [-5.0°C] W.B., Indoor temp. 69.8°F [21.0°C] D.B.)

1.10 (Refer to "4-2. CORRECTION BY TEMPERATURE".)

Coefficient of the outdoor unit for indoor unit 2 (Outdoor temp. 23.0°F [-5.0°C] W.B., Indoor temp. 73.4°F [23.0°C] D.B.)

1.12 (Refer to "4-2. CORRECTION BY TEMPERATURE".)

Average indoor temp. power input coefficient (C_{ave}) = $\sum_{k=1}^n \{c_k \times (M_k / \sum_{k=1}^n M_k)\}$

n: Total number of the indoor units

k: Number of the indoor unit

c_k : Outdoor unit power input coefficient of k indoor unit room temp.

M_k : Number part of the k indoor unit capacity class

$$= 1.10 \times 15 / (15 + 18) + 1.12 \times 18 / (15 + 18)$$

$$= 1.11$$

(3) No need to consider coefficient of partial load f (CTi)

(4) Outdoor power input (Plo)

Maximum System Capacity (CTx) = Total Outdoor unit Capacity (CTo), so use the following formula

Plo = Outdoor unit Heating Rated Power Input × Correction Coefficient of Indoor temperature × (Cave)

$$= 3.34 \times 1.20 \times 1.11$$

$$= 3.71 \text{ kW}$$

4-2. CORRECTION BY TEMPERATURE

The outdoor units have varied capacity at different designing temperature. Using the nominal cooling/heating capacity value and the ratio below, the capacity can be observed at various temperature.

<Cooling>

Figure 7 Indoor unit temperature correction

To be used to correct indoor unit capacity only

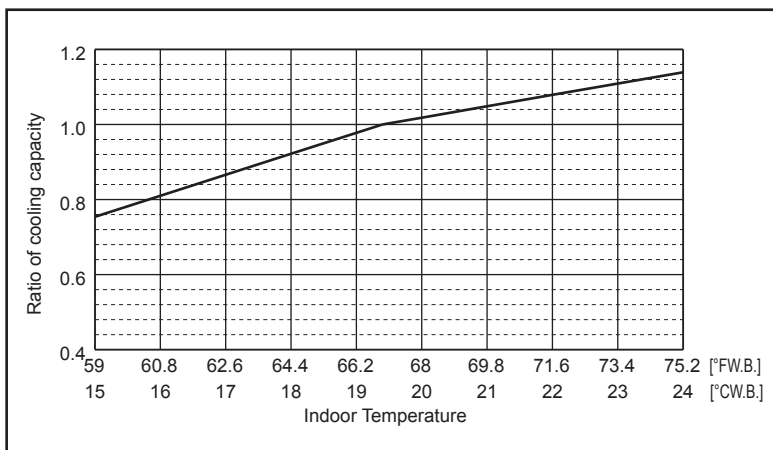
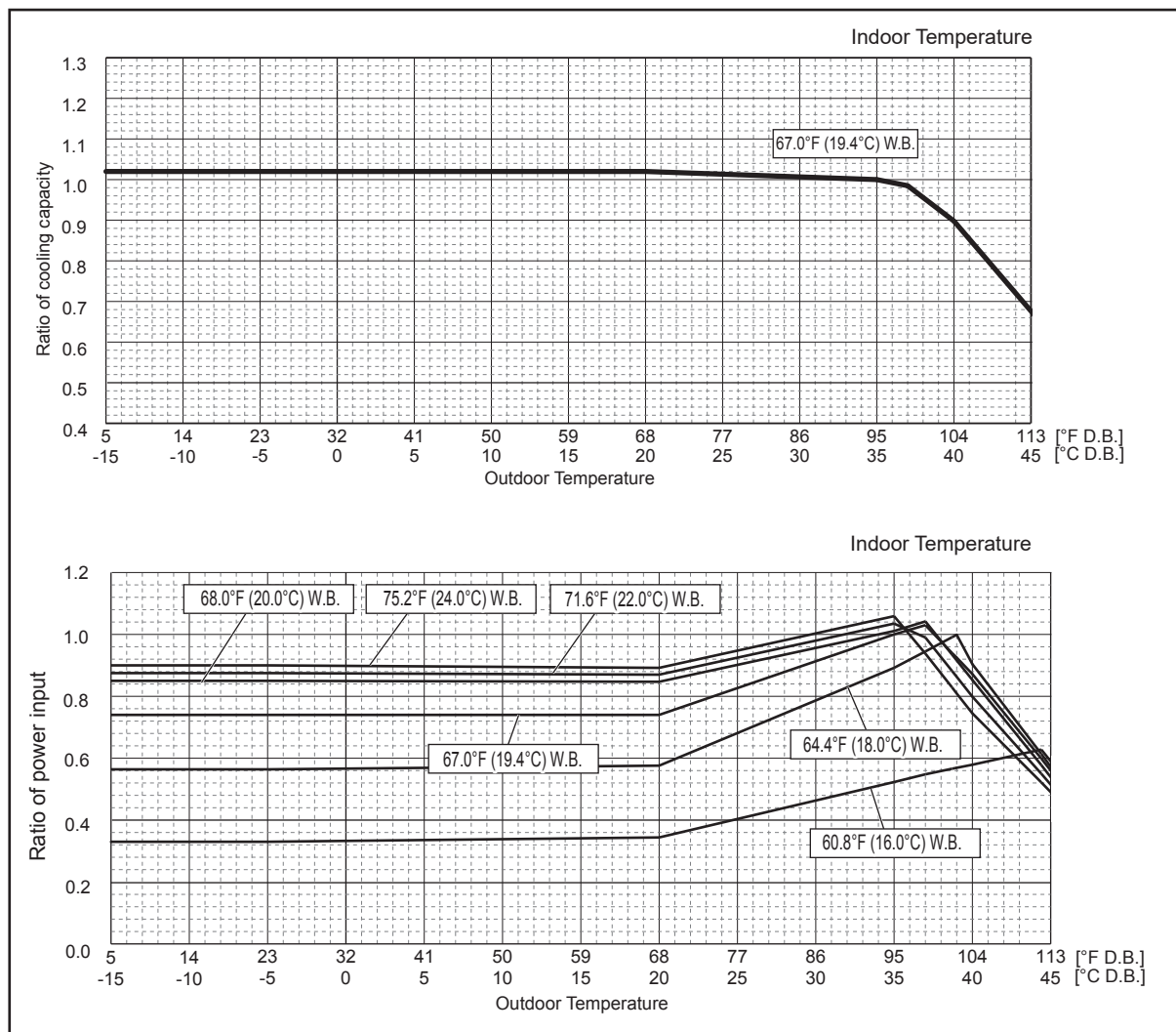


Figure 8 Outdoor unit temperature correction

To be used to correct outdoor unit capacity only



<Heating>

Figure 9 Indoor unit temperature correction

To be used to correct indoor unit capacity only

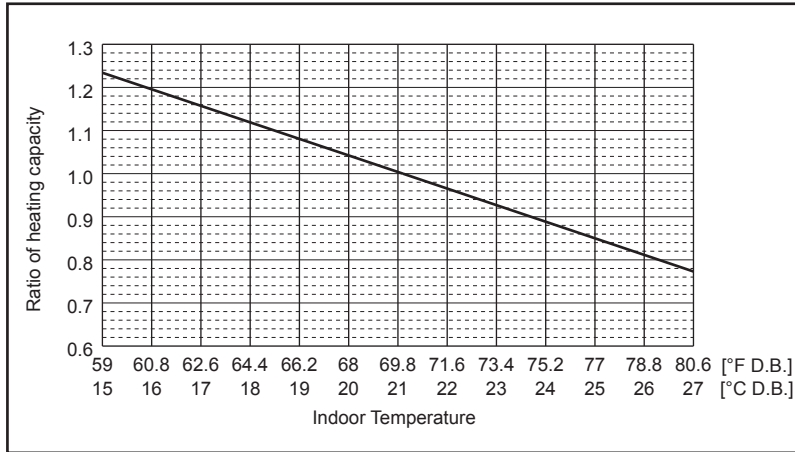
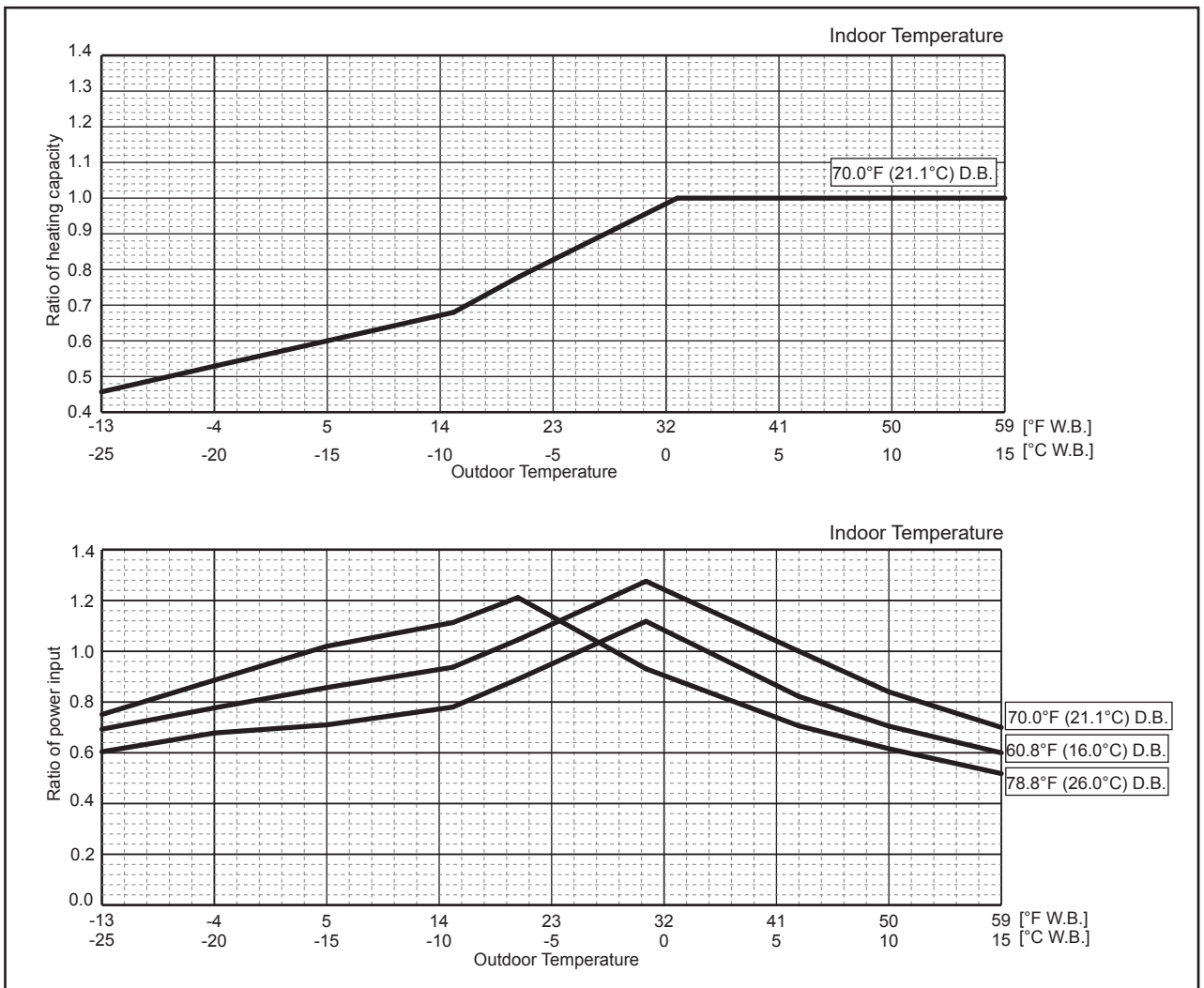


Figure 10 Outdoor unit temperature correction

To be used to correct outdoor unit capacity only



<Heating> (NAHZ)

Figure 11 Indoor unit temperature correction
To be used to correct indoor unit capacity only

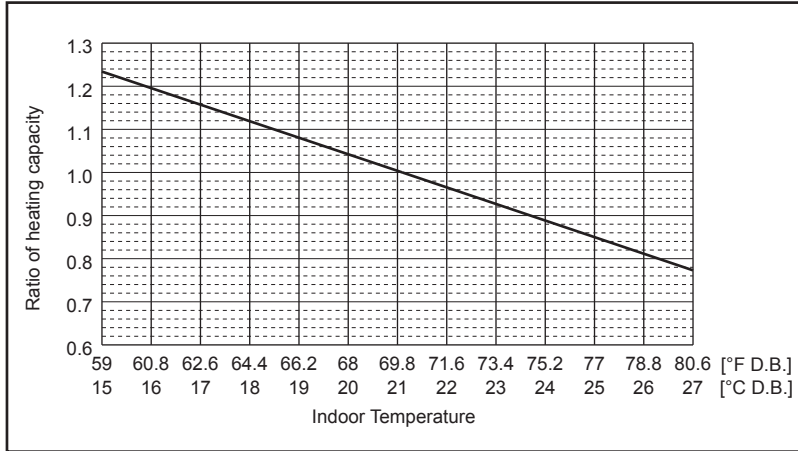
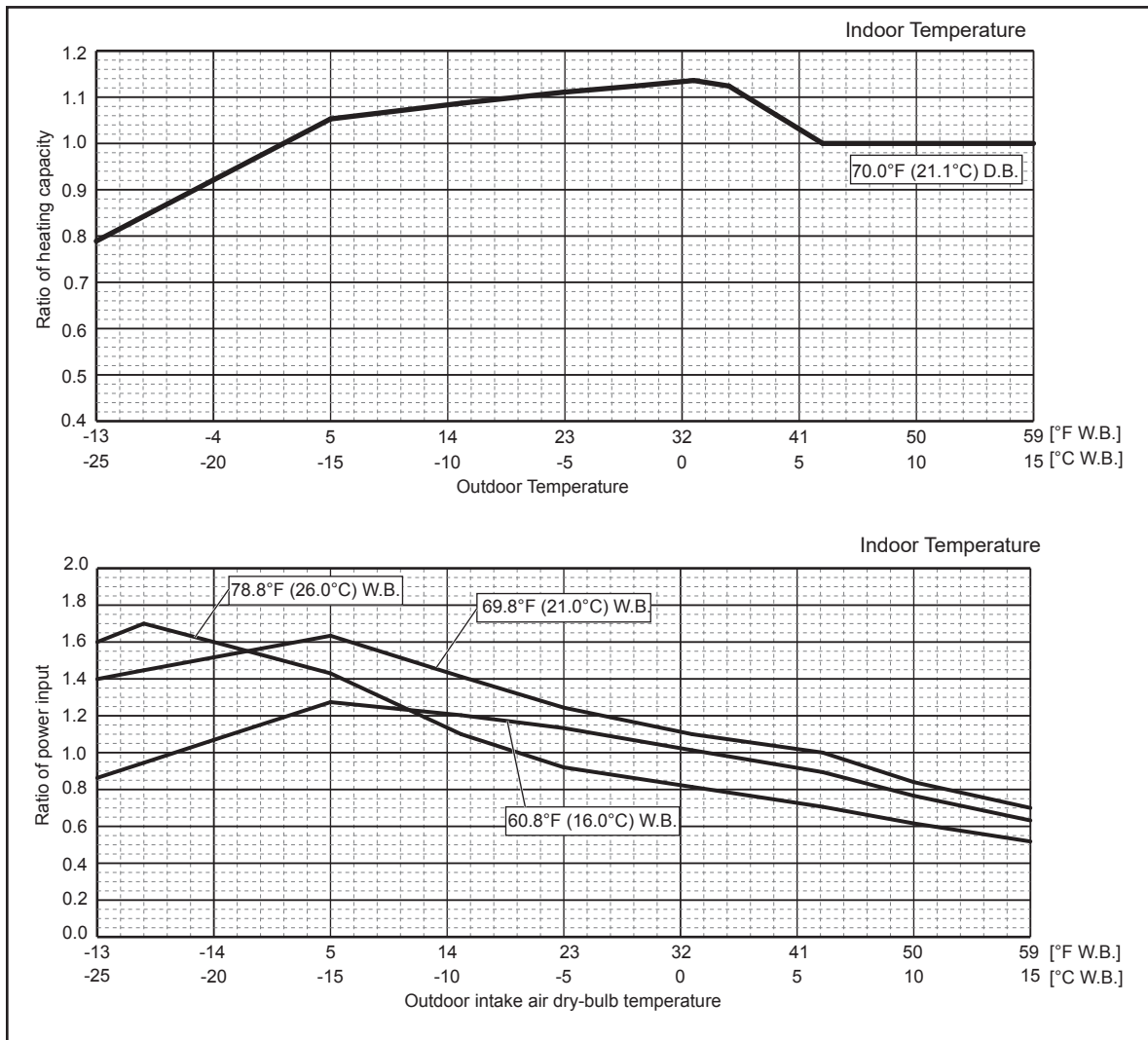


Figure 12 Outdoor unit temperature correction
To be used to correct outdoor unit capacity only



4-3. STANDARD OPERATION DATA (REFERENCE DATA)

Operation				Outdoor unit model			
				MXZ-4C36NAHZ		MXZ-5C42NAHZ	
Operating conditions	Ambient temperature	Indoor	DB/WB	80°F/67°F	70°F/60°F	80°F/67°F	70°F/60°F
		Outdoor		95°F/75°F	47°F/43°F	95°F/75°F	47°F/43°F
	Indoor unit	No. of connected units	Unit	4		4	
		No. of units in operation		4		4	
		Model		09 × 4		09 × 2 + 12 × 2	
	Piping	Main pipe	ft (m)	9.84 (3)		9.84 (3)	
		Branch pipe		14.76 (4.5)		14.76 (4.5)	
		Total pipe length		68.90 (21)		68.90 (21)	
	Fan speed		—	Hi		Hi	
	Amount of refrigerant		lb oz (kg)	17 lb 7 oz (7.9)		17 lb 7 oz (7.9)	
Outdoor unit	Electric current		A	14.1	18.7	17.2	19.1
	Voltage		V	230		230	
	Compressor frequency		Hz	59	74	70	80
LEV opening	Indoor unit		Pulse	112	128	129	128
Pressure	High pressure/Low pressure		MPaG	2.57/0.98	2.78/0.64	2.72/0.80	2.80/0.56
			PSIG	373/142	403/93	395/116	406/81
Temp. of each section	Outdoor unit	Discharge	°F (°C)	143.8 (62.1)	151.5 (66.4)	148.6 (64.8)	145.8 (63.2)
		Heat exchanger outlet		100.8 (38.2)	36.7 (2.6)	101.8 (38.8)	35.6 (2.0)
		Accumulator inlet		50.5 (10.3)	36.1 (2.3)	49.5 (9.7)	34.9 (1.6)
		Compressor inlet		47.1 (8.4)	34.0 (1.1)	45.3 (7.4)	32.7 (0.4)
	Indoor unit	LEV inlet		70.0 (21.1)	103.5 (39.7)	83.7 (28.7)	100.2 (37.9)
		Heat exchanger inlet		54.1 (12.3)	138.9 (59.4)	49.6 (9.8)	132.3 (55.7)

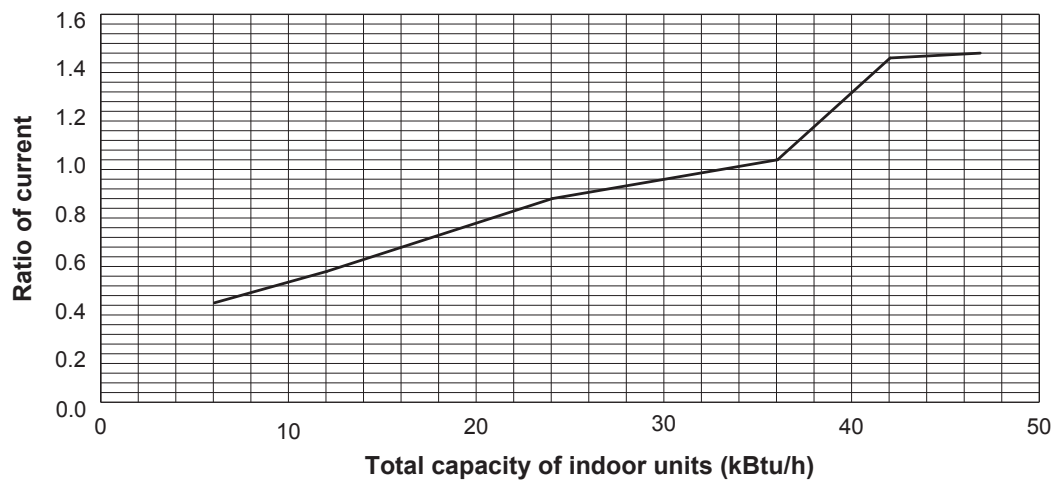
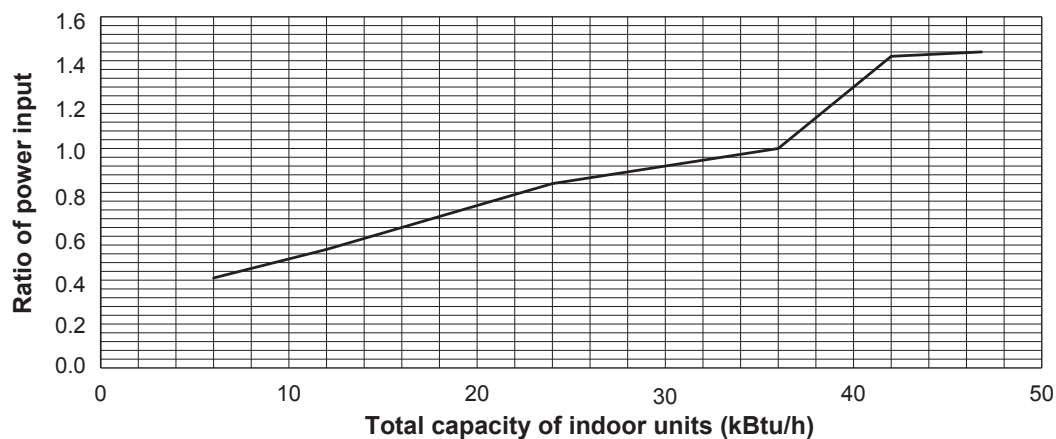
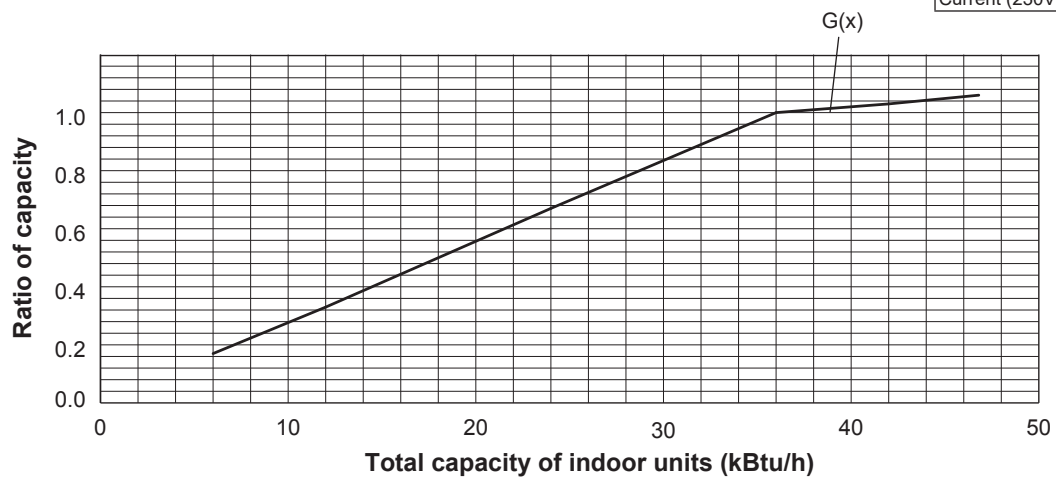
Operation				Outdoor unit model			
				MXZ-8C48NA/NAHZ		MXZ-8C60NA	
Operating conditions	Ambient temperature	Indoor	DB/WB	80°F/67°F	70°F/60°F	80°F/67°F	70°F/60°F
		Outdoor		95°F/75°F	47°F/43°F	95°F/75°F	47°F/43°F
	Indoor unit	No. of connected units	Unit	4		5	
		No. of units in operation		4		5	
		Model		12 × 4		09 × 3 + 15 + 18	
	Piping	Main pipe	ft (m)	9.84 (3)		9.84 (3)	
		Branch pipe		14.76 (4.5)		14.76 (4.5)	
		Total pipe length		68.90 (21)		83.79 (25.5)	
	Fan speed		—	Hi		Hi	
	Amount of refrigerant		lb oz (kg)	17 lb 7 oz (7.9)		20 lb (8.9)	
Outdoor unit	Electric current		A	22.1	21.9	20.4	24.4
	Voltage		V	230		230	
	Compressor frequency		Hz	86	91	45	51
LEV opening	Indoor unit		Pulse	112	132	187	229
Pressure	High pressure/Low pressure		MPaG	2.83/0.77	2.82/0.55	2.84/0.92	2.44/0.672
			PSIG	410/112	409/80	412/134	354/97.5
Temp. of each section	Outdoor unit	Discharge	°F (°C)	157.6 (69.8)	149.2 (65.1)	167 (75.0)	133.9 (56.6)
		Heat exchanger outlet		105.6 (40.9)	34.3 (1.3)	98.8 (37.1)	51.1 (10.2)
		Accumulator inlet		47.1 (8.4)	33.4 (0.8)	49.5 (9.7)	32.4 (0.2)
		Compressor inlet		42.4 (5.8)	30.6 (−0.8)	72.5 (22.5)	31.6 (−0.2)
	Indoor unit	LEV inlet		71.1 (21.7)	98.8 (37.1)	59.7 (15.4)	81.9 (27.7)
		Heat exchanger inlet		47.5 (8.6)	134.6 (57.0)	52.5 (11.4)	104.2 (40.1)

4-4. STANDARD CAPACITY DIAGRAM

Before calculating the sum of total capacity of indoor units, please convert the value into the kW model capacity following the formula on "4-1. Method for obtaining system cooling and heating capacity".

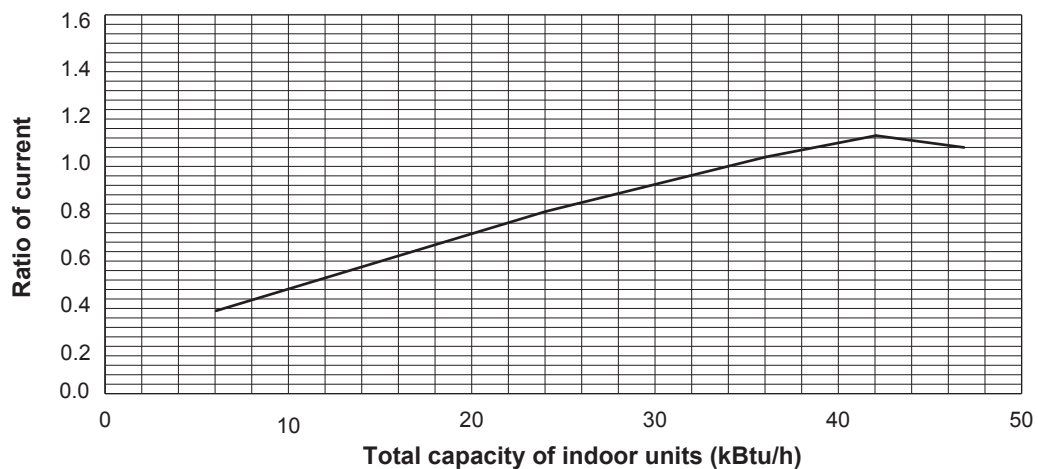
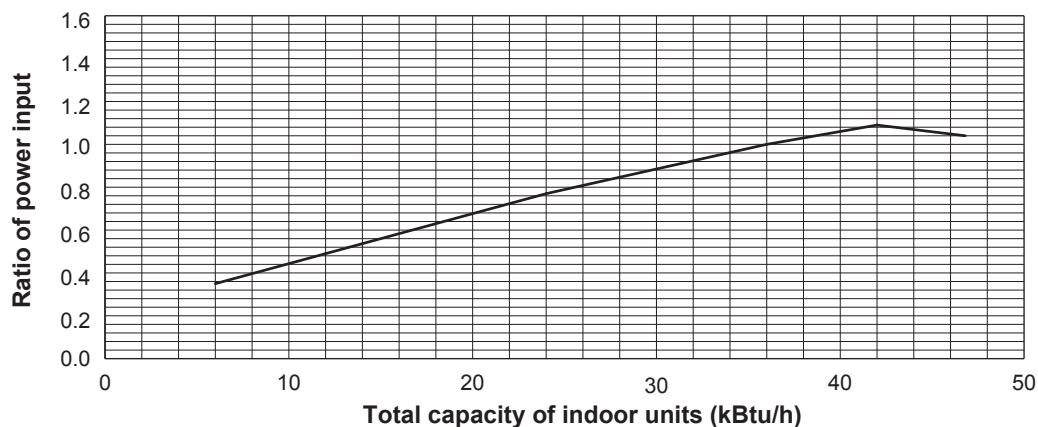
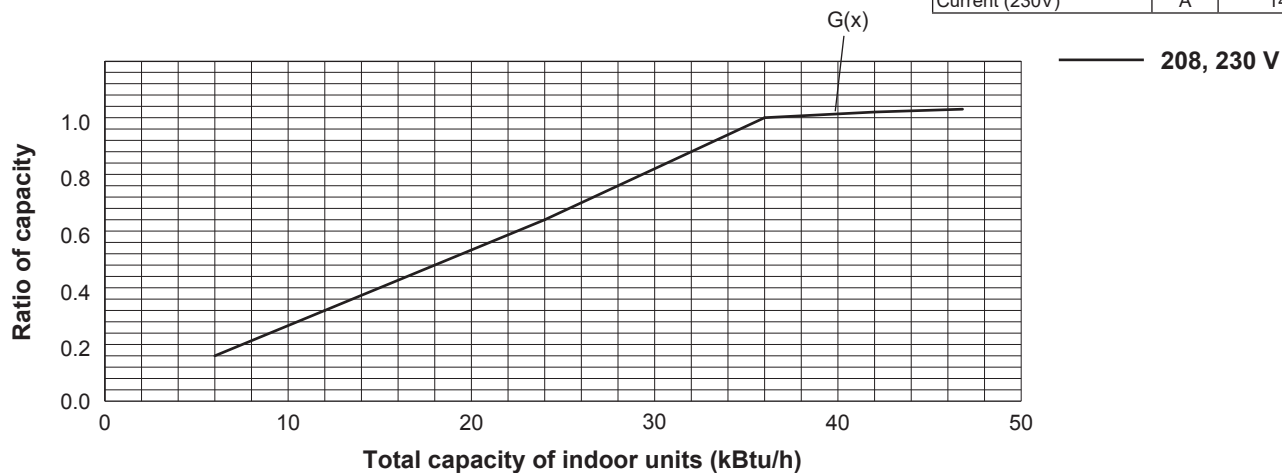
4-4-1. MXZ-4C36NAHZ <cooling>

		MXZ
		4C36NAHZ
Nominal cooling capacity	Btu/h	36,000
Input	kW	2.57
Current (208V)	A	12.8
Current (230V)	A	11.6



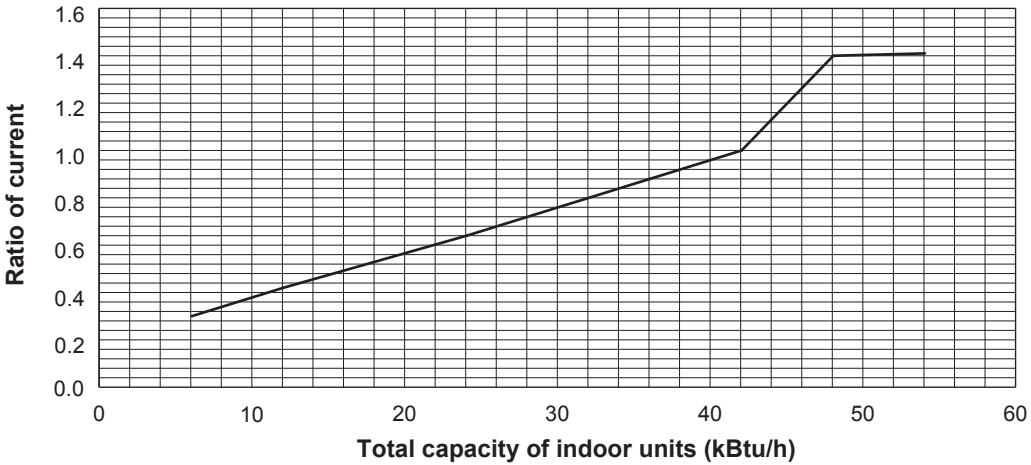
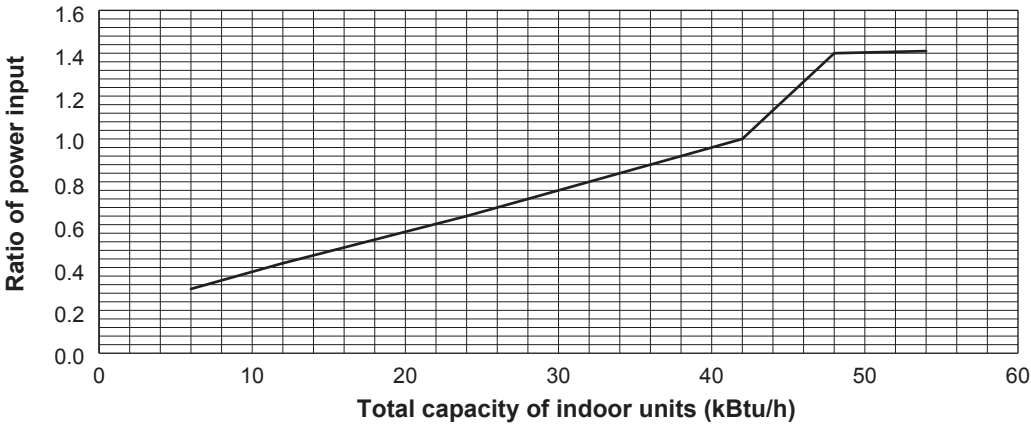
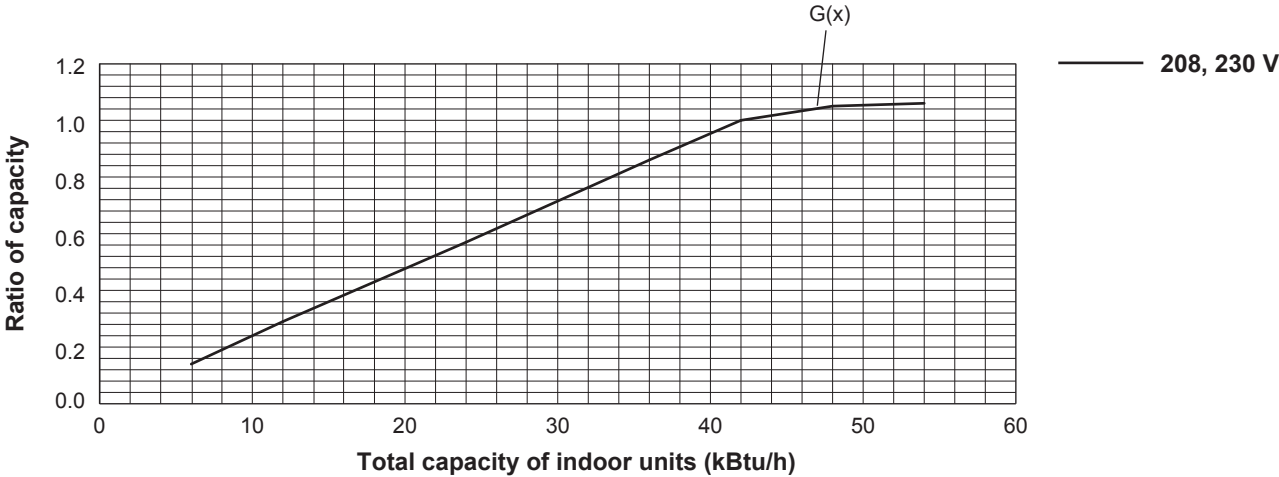
4-4-2. MXZ-4C36NAHZ <heating>

		MXZ
		4C36NAHZ
Nominal heating capacity	Btu/h	45,000
Input	kW	3.34
Current (208V)	A	16.4
Current (230V)	A	14.8



4-4-3. MXZ-5C42NAHZ <cooling>

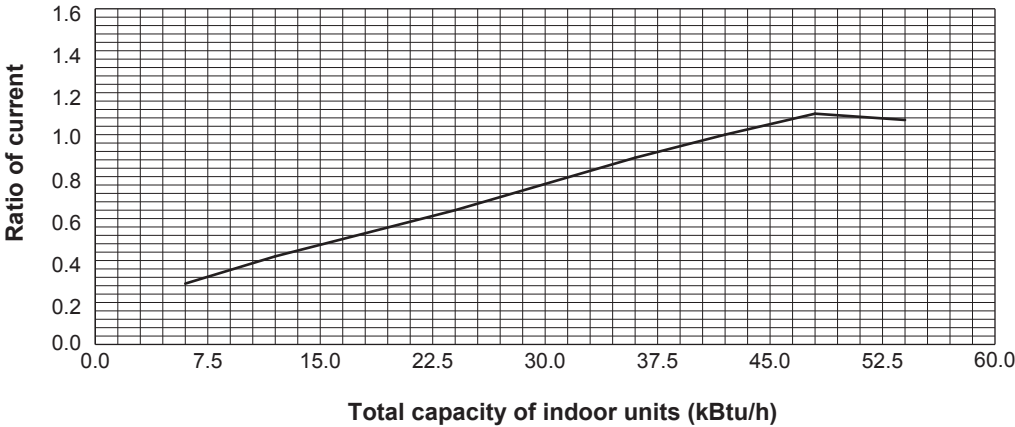
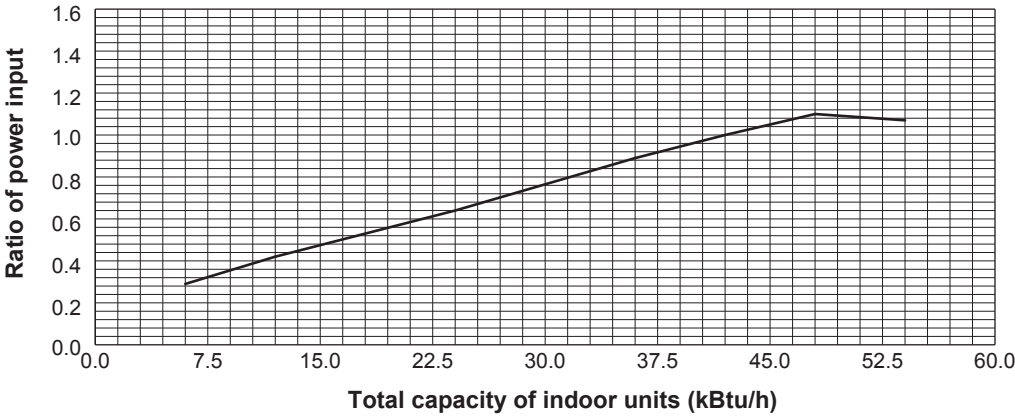
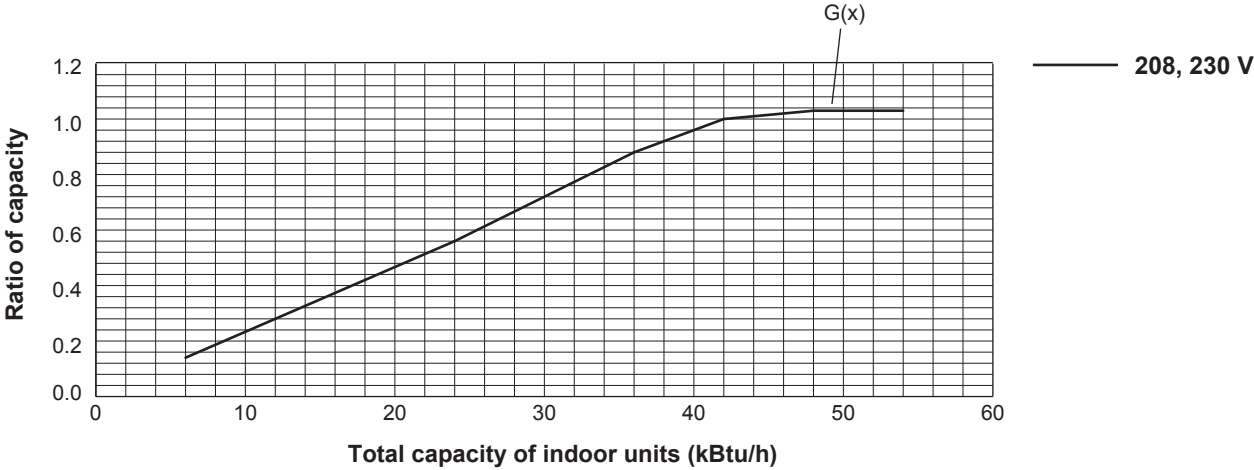
		MXZ
		5C42NAHZ
Nominal cooling capacity	Btu/h	42,000
Input	kW	3.13
Current (208V)	A	15.4
Current (230V)	A	14.0





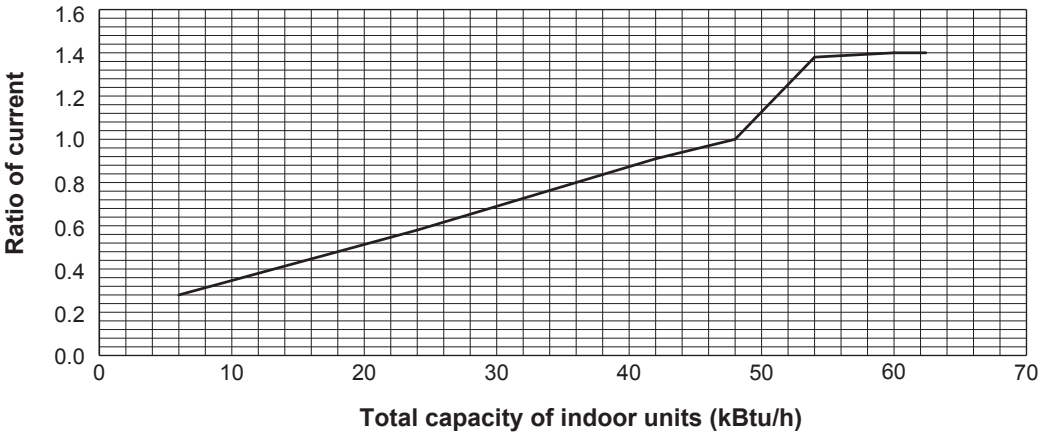
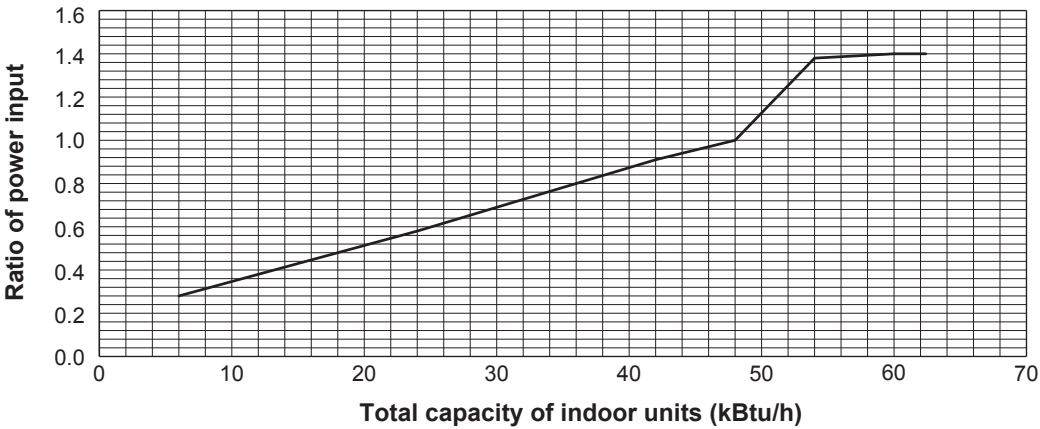
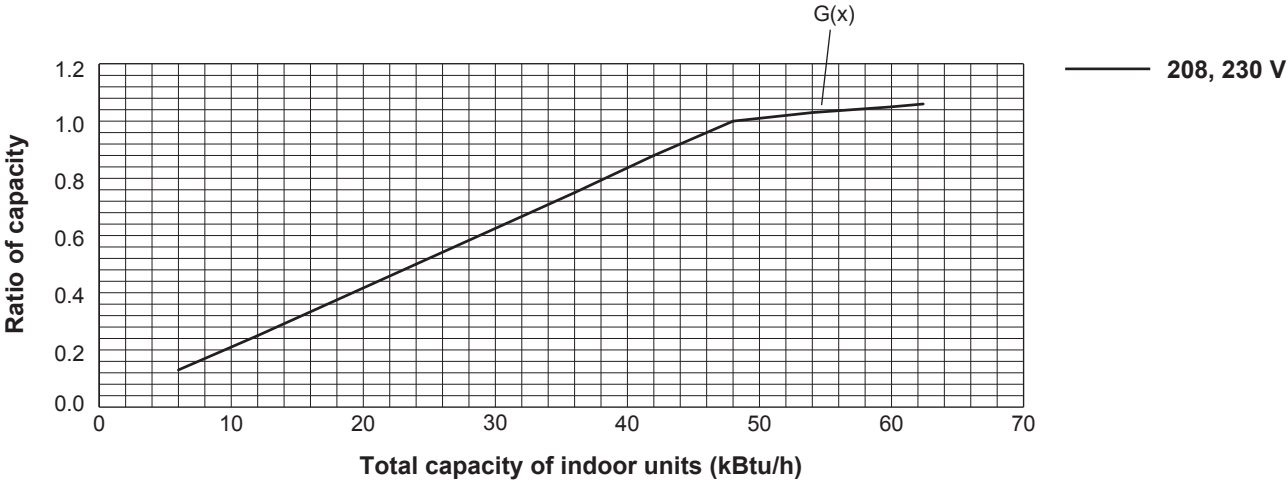
4-4-4. MXZ-5C42NAHZ <heating>

		MXZ
		5C42NAHZ
Nominal heating capacity	Btu/h	48,000
Input	kW	3.43
Current (208V)	A	16.8
Current (230V)	A	15.2



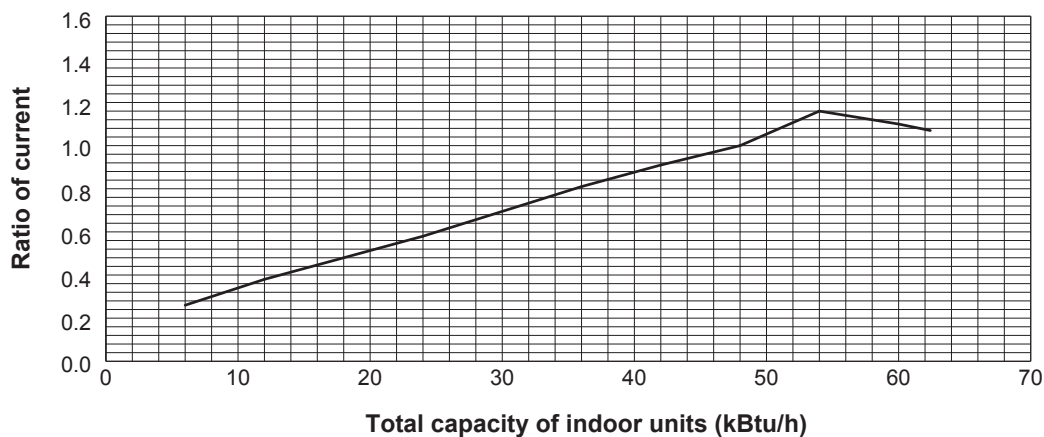
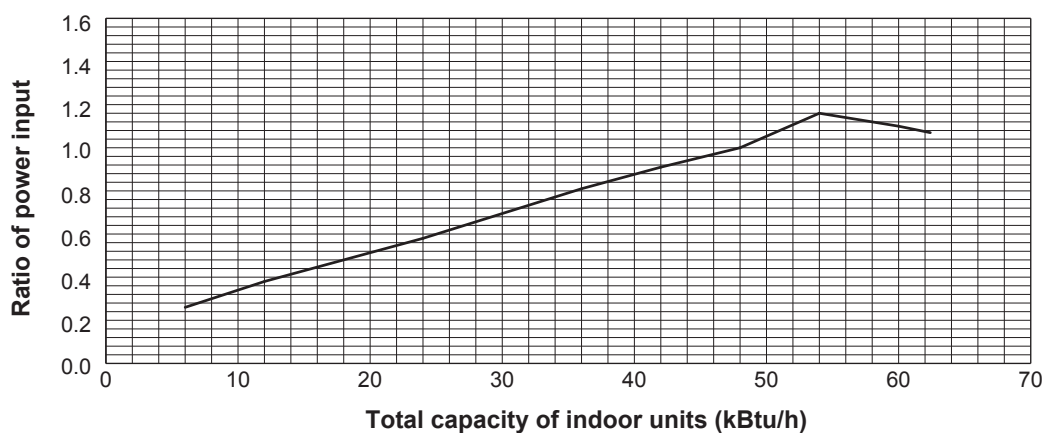
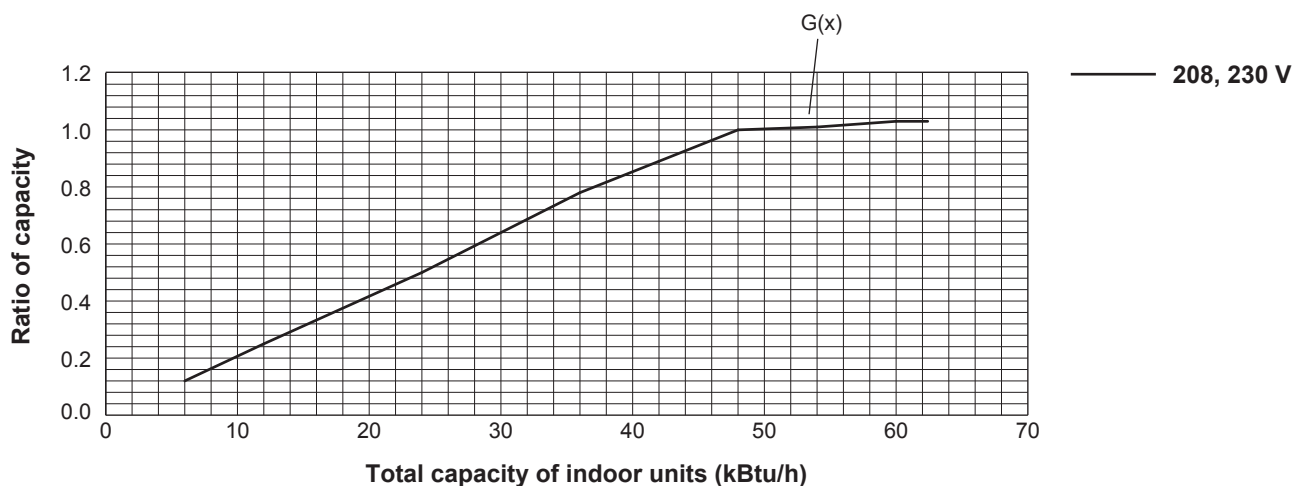
4-4-5. MXZ-8C48NA MXZ-8C48NAHZ <cooling>

		MXZ
		8C48NAHZ
Nominal cooling capacity	Btu/h	48,000
Input	kW	4.00
Current (208V)	A	19.5
Current (230V)	A	17.6



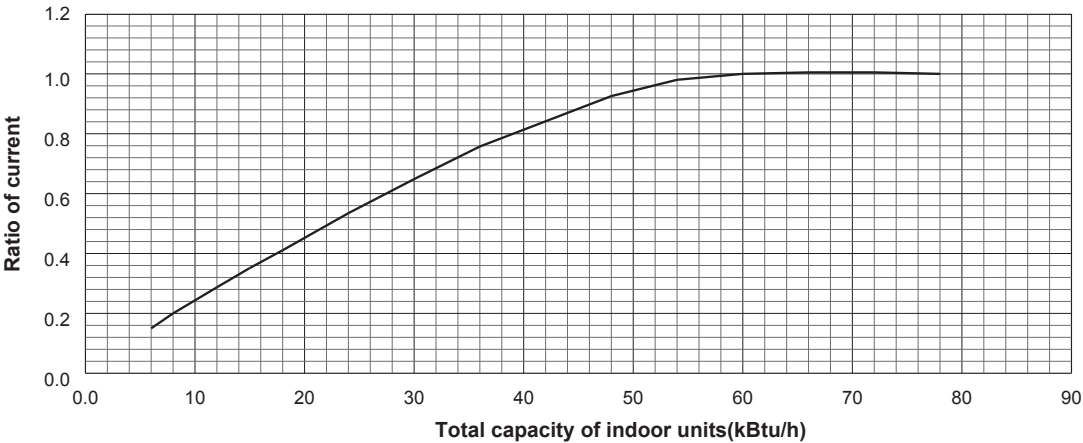
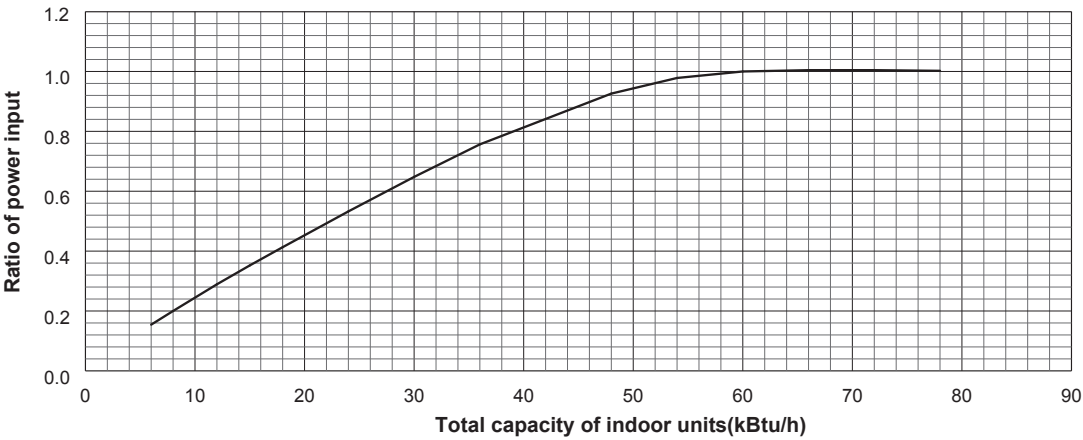
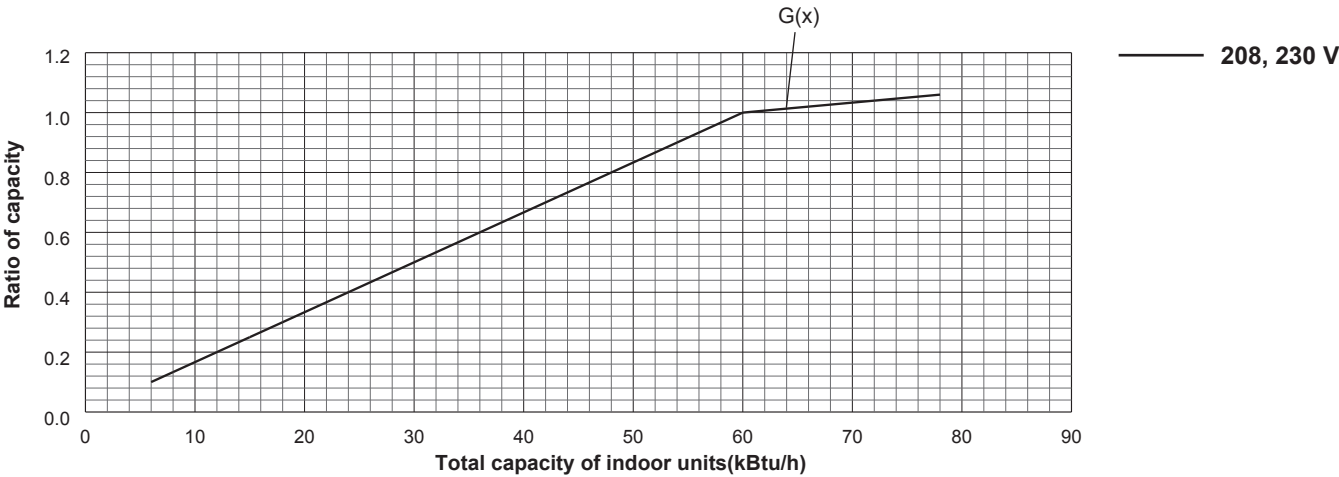
4-4-6. MXZ-8C48NA MXZ-8C48NAHZ <heating>

		MXZ
		8C48NA(HZ)
Nominal heating capacity	Btu/h	54,000
Input	kW	4.22
Current (208V)	A	20.5
Current (230V)	A	18.6



4-4-7. MXZ-8C60NA <cooling>

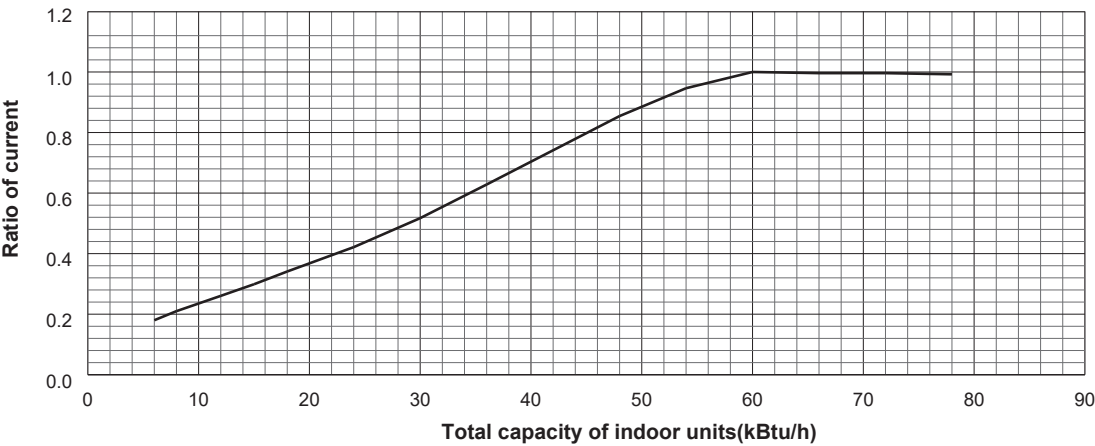
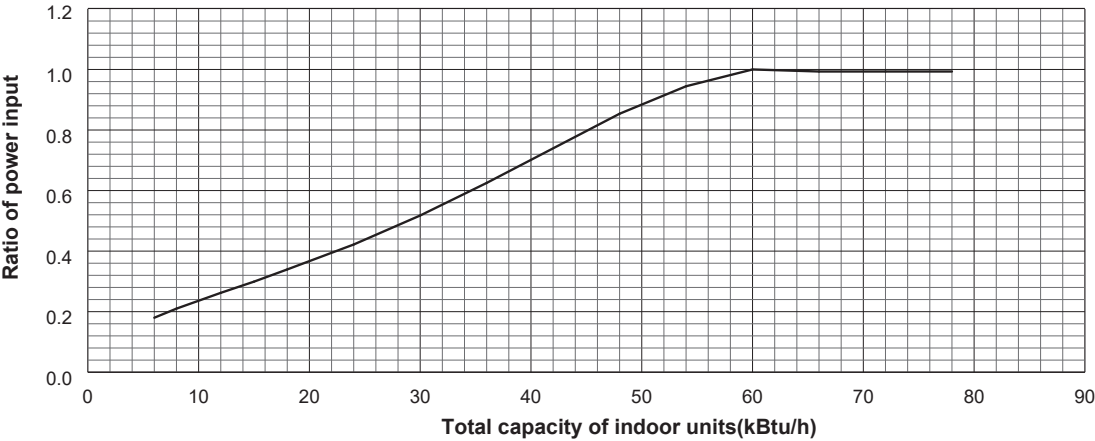
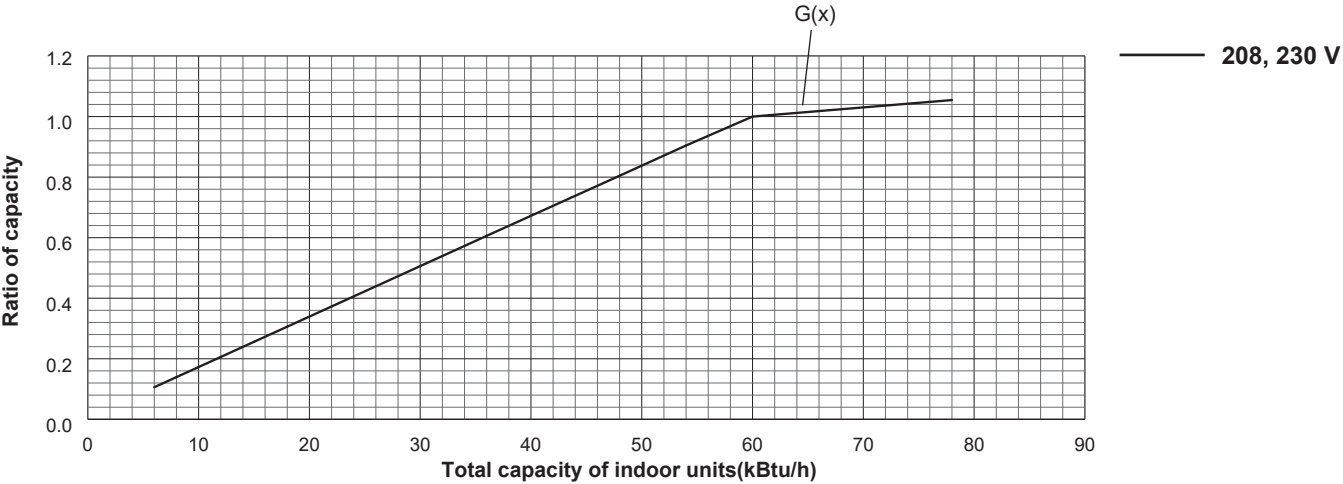
		MXZ
		8C60NA
Nominal cooling capacity	Btu/h	60,000
Input	kW	4.80
Current (208V)	A	24.1
Current (230V)	A	21.8





4-4-8. MXZ-8C60NA <heating>

		MXZ
		8C60NA
Nominal heating capacity	Btu/h	66,000
Input	kW	5.67
Current (208V)	A	28.5
Current (230V)	A	25.7



4-5. CORRECTING CAPACITY FOR CHANGES IN THE LENGTH OF REFRIGERANT PIPING

- (1) During cooling, obtain the ratio (and the equivalent piping length) of the outdoor units rated capacity and the total in-use indoor capacity, and find the capacity ratio corresponding to the standard piping length from Figure 13 to 16. Then multiply by the cooling capacity from Figure 7 and 8 in "4-2. CORRECTION BY TEMPERATURE" to obtain the actual capacity.
- (2) During heating, find the equivalent piping length, and find the capacity ratio corresponding to standard piping length from Figure 17 to 18. Then multiply by the heating capacity from Figure 9 to 12 in "4-2. CORRECTION BY TEMPERATURE" to obtain the actual capacity.

(1) Capacity Correction Curve

Figure 13 MXZ-4C36NAHZ <Cooling>

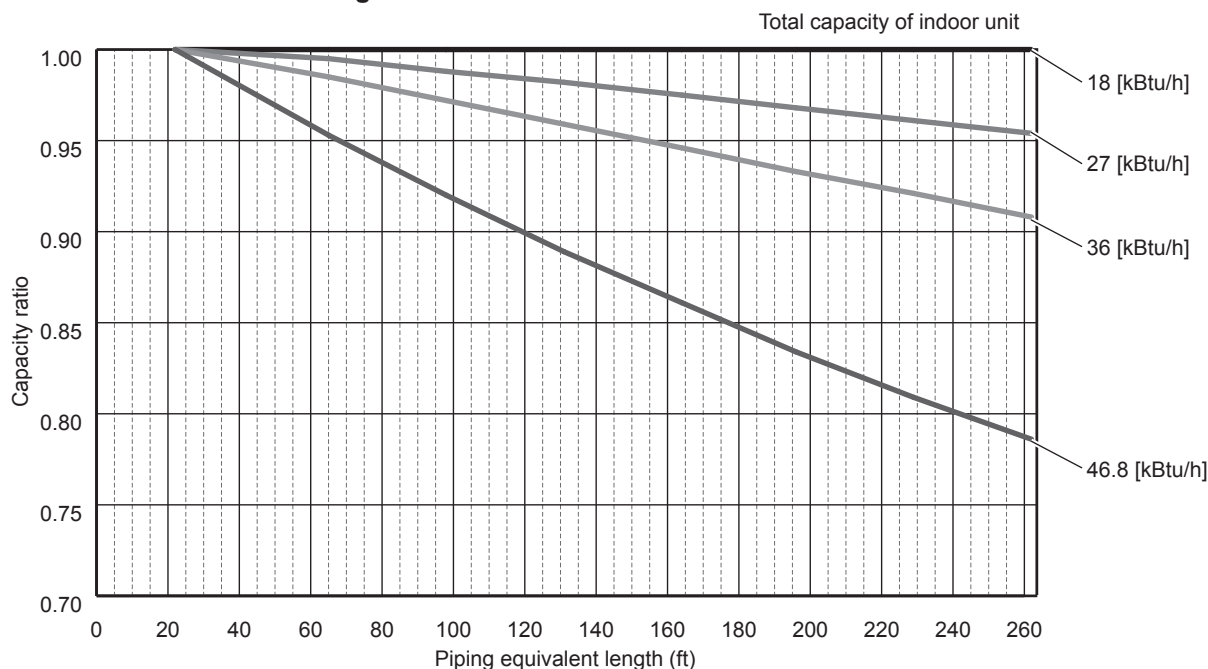


Figure 14 MXZ-5C42NAHZ <Cooling>

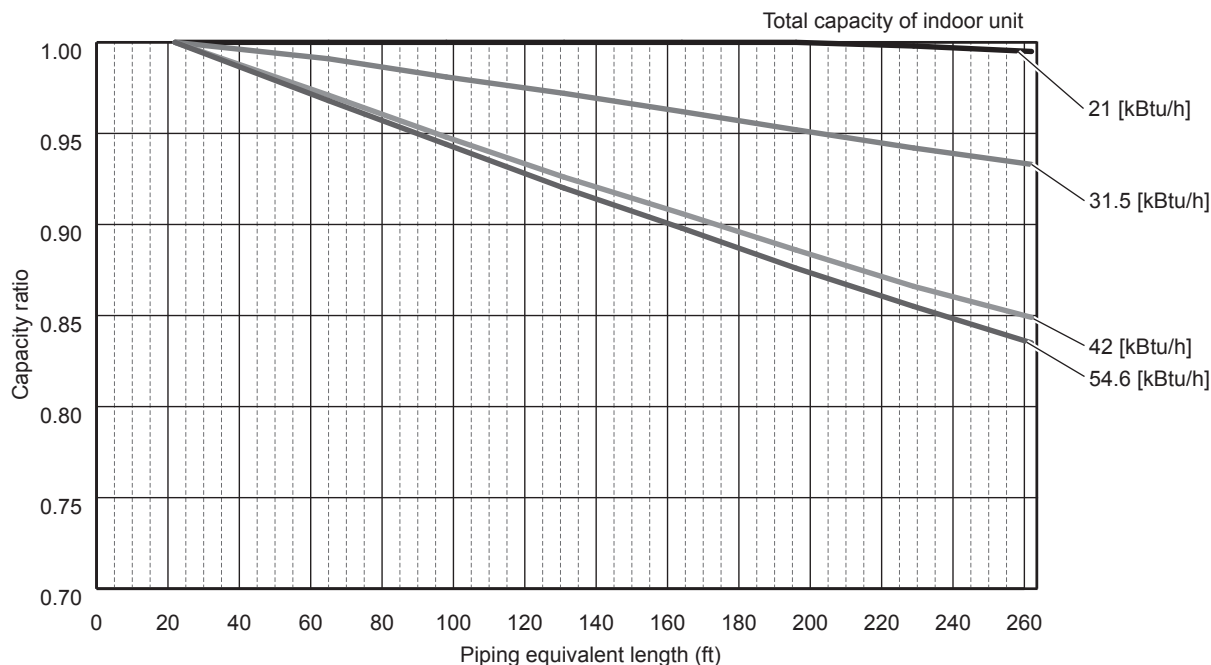


Figure 15 MXZ-8C48NA <Cooling>

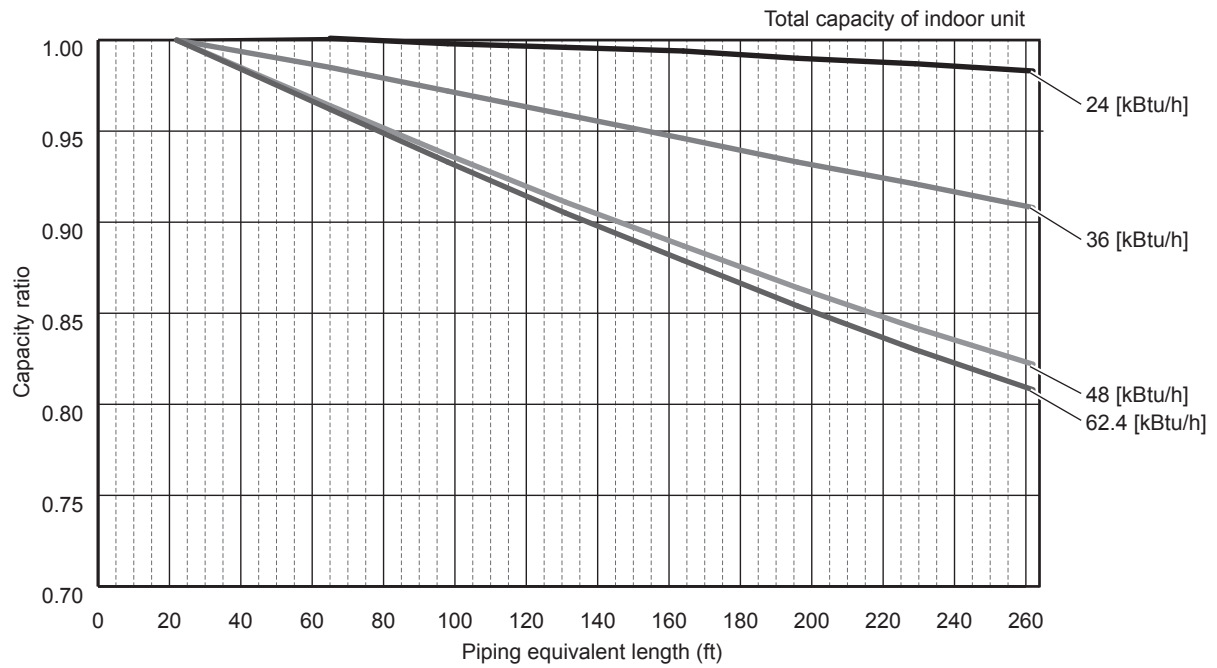


Figure 16 MXZ-8C60NA <Cooling>

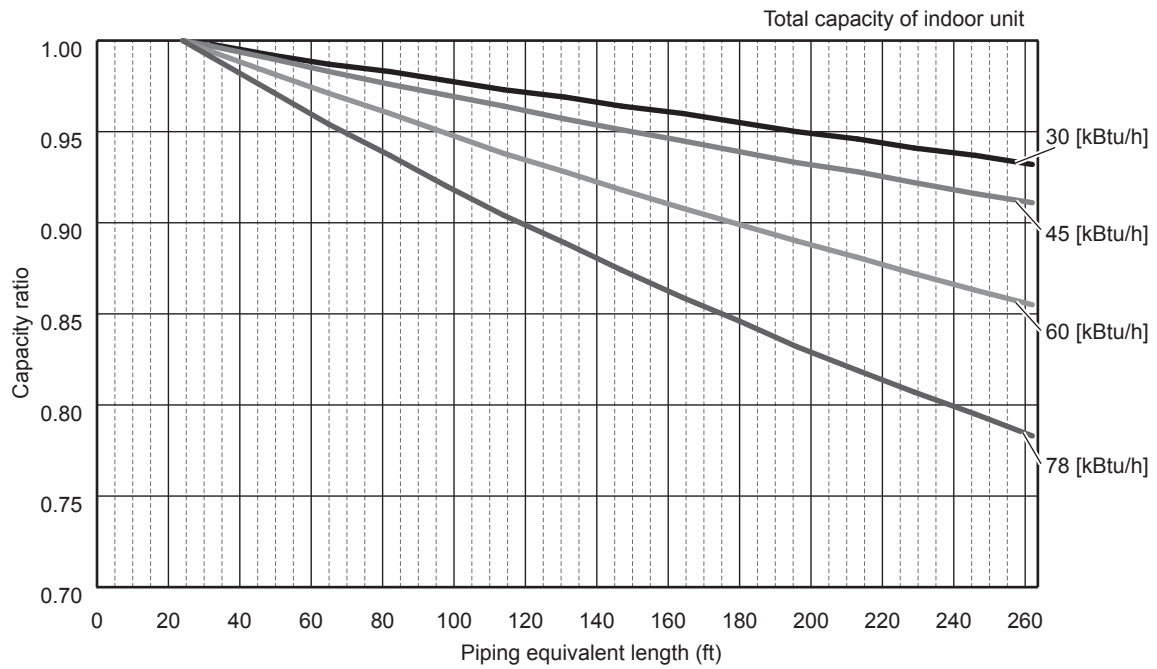


Figure 17 MXZ-4C36NAHZ/5C42NAHZ/8C48NA <Heating>

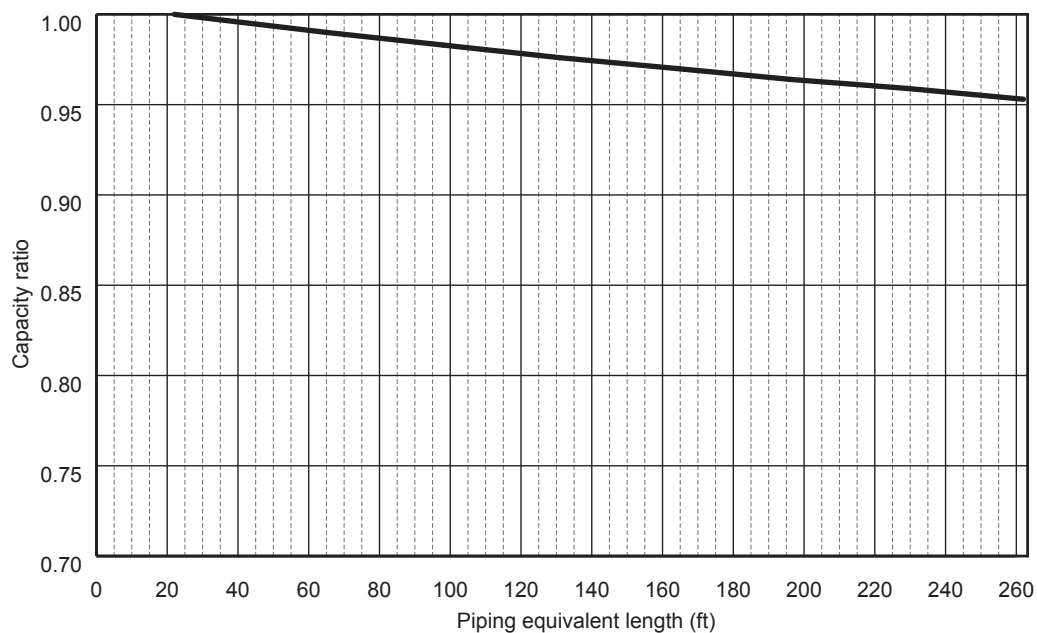
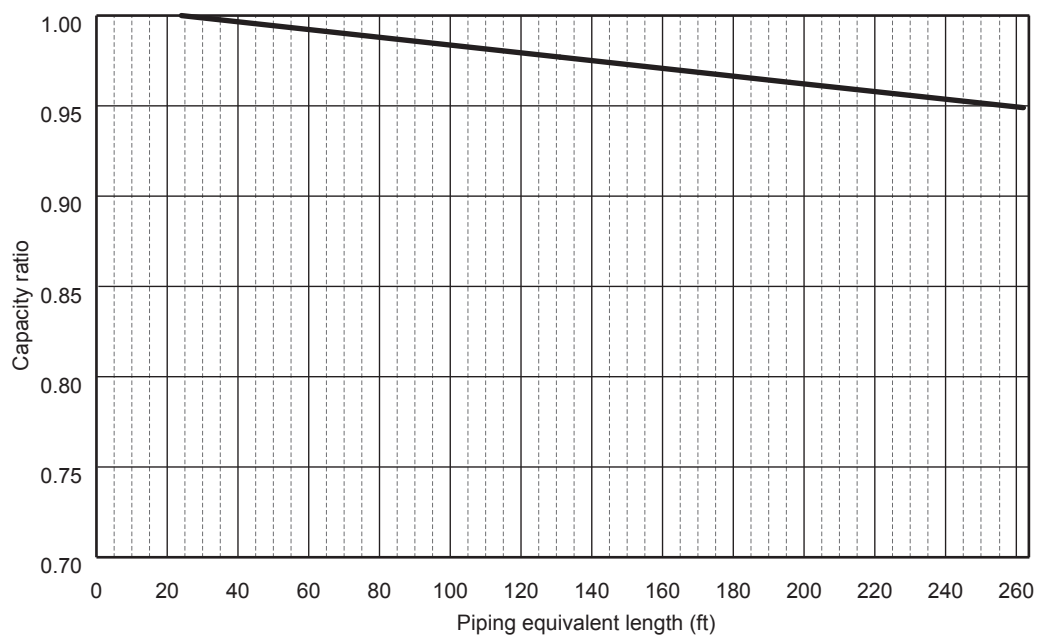


Figure 18 MXZ-8C60NA <Heating>



(2) Method for Obtaining the Equivalent Piping Length

Equivalent length = (length of piping to farthest indoor unit) + (0.3 × number of bends in the piping) (m)

4-5-1. Correction of Heating Capacity for Frost and Defrosting

If heating capacity has been reduced due to frost formation or defrosting, multiply the capacity by the appropriate correction factor from the following table to obtain the actual heating capacity.

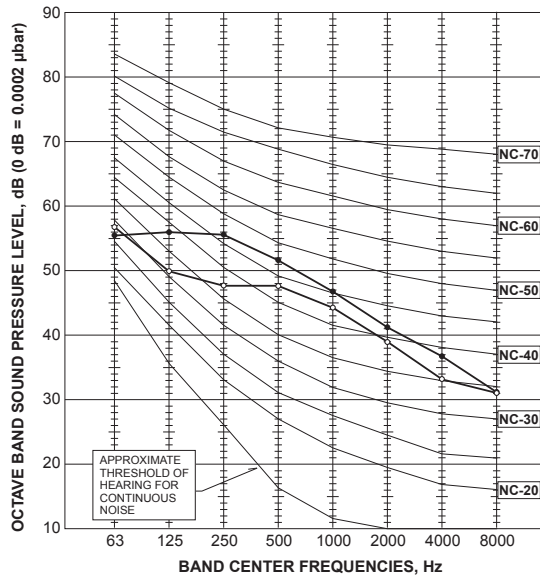
Correction factor diagram

Outdoor Intake temperature <W.B. °F (°C)>	43(6)	39(4)	36(2)	32(0)	28(-2)	25(-4)	21(-6)	18(-8)	14(-10)	5(-15)	-4(-20)	-13(-25)
Correction factor	1.0	0.98	0.89	0.88	0.89	0.9	0.95	0.95	0.95	0.95	0.95	0.95

4-6. NOISE CRITERION CURVES

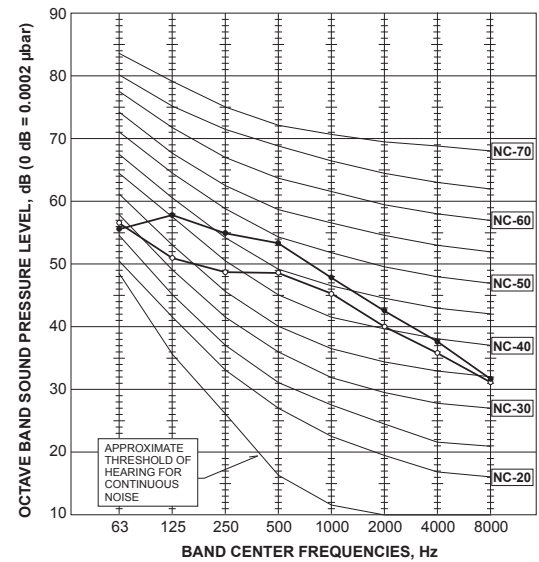
MXZ-4C36NAHZ
MXZ-4C36NAHZ-U1

MODE	SPL(dB)	LINE
COOLING	49	○—○
HEATING	53	●—●



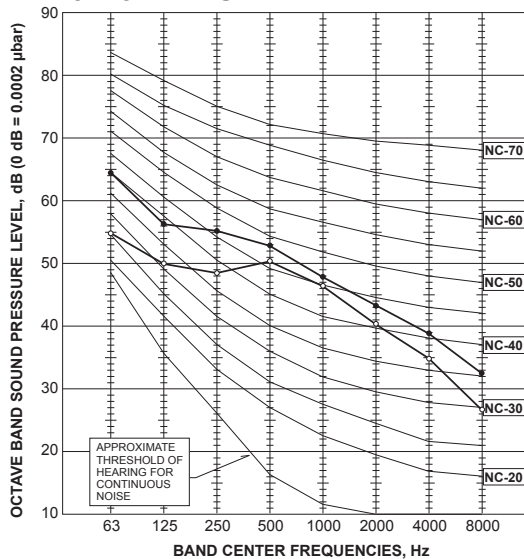
MXZ-5C42NAHZ
MXZ-5C42NAHZ-U1

MODE	SPL(dB)	LINE
COOLING	50	○—○
HEATING	54	●—●



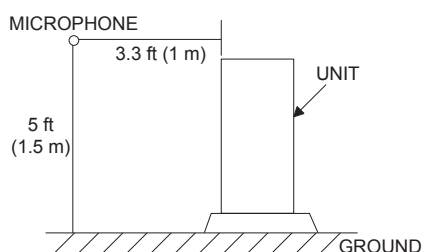
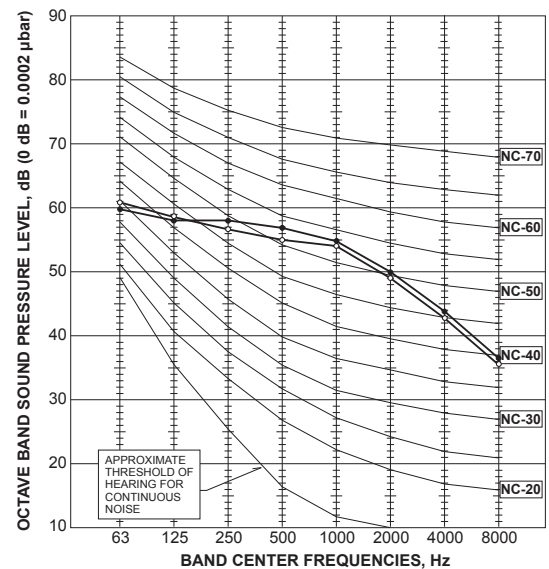
MXZ-8C48NA
MXZ-8C48NA-U1
MXZ-8C48NAHZ
MXZ-8C48NAHZ-U1

MODE	SPL(dB)	LINE
COOLING	51	○—○
HEATING	54	●—●



MXZ-8C60NA-U1

MODE	SPL(dB)	LINE
COOLING	58	○—○
HEATING	59	●—●



5 OUTLINES AND DIMENSIONS

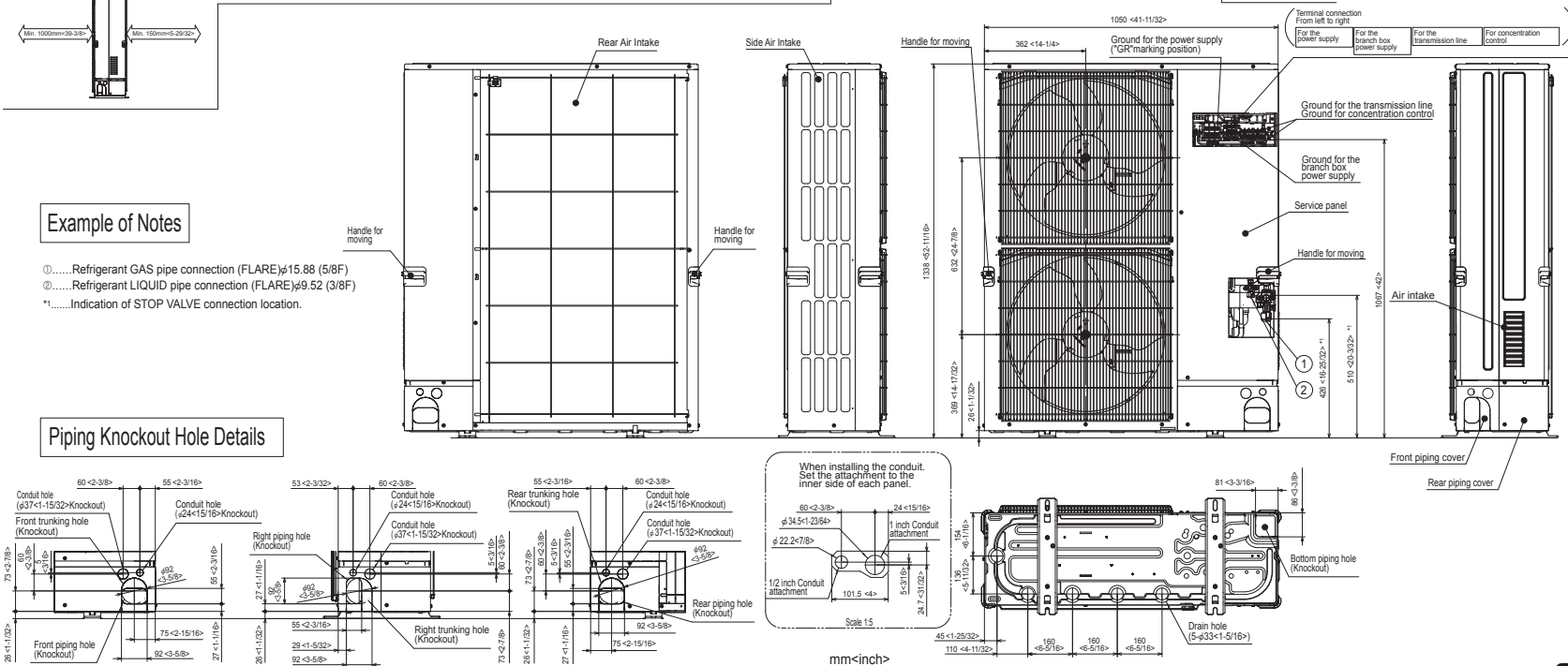
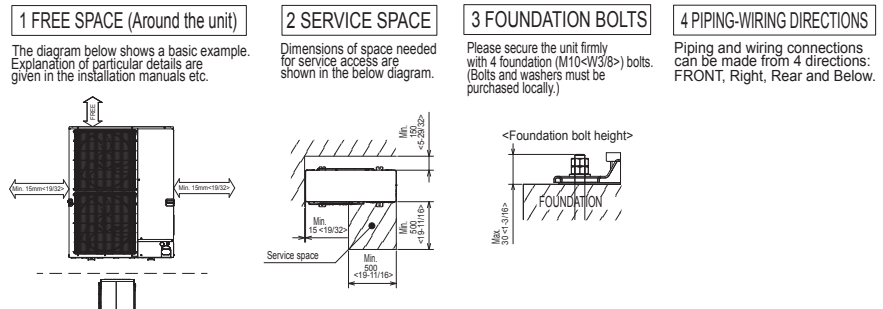
5-1. OUTDOOR UNIT
MXZ-4C36NAHZ

MXZ-5C42NAHZ

MXZ-8C48NAHZ

MXZ-8C48NA

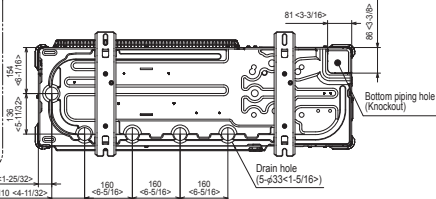
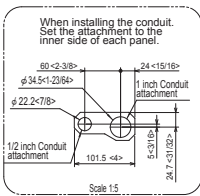
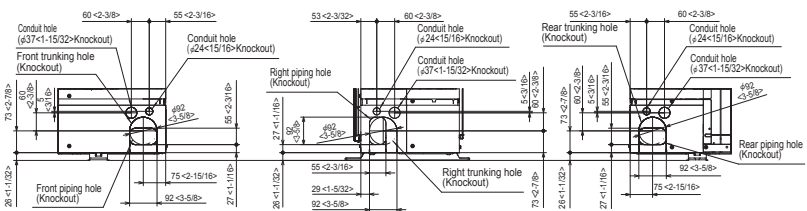
Unit: mm <inch>



Example of Notes

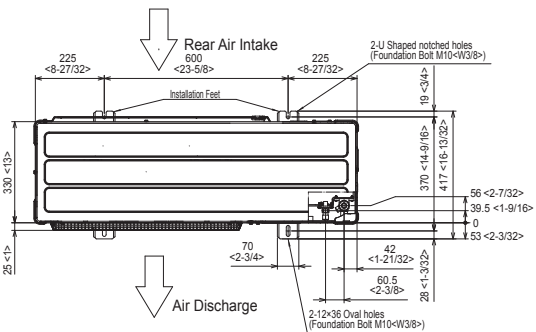
- ①.....Refrigerant GAS pipe connection (FLARE)φ15.88 (5/8F)
- ②.....Refrigerant LIQUID pipe connection (FLARE)φ9.52 (3/8F)
- *1.....Indication of STOP VALVE connection location.

Piping Knockout Hole Details

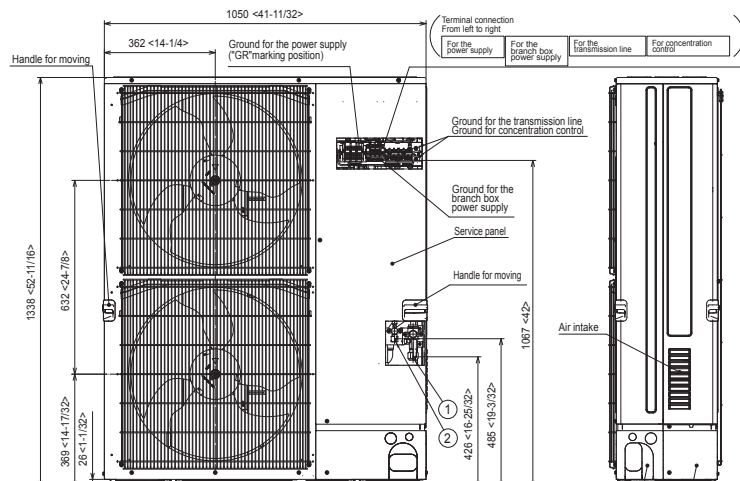
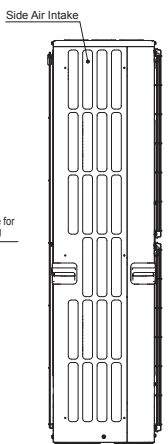
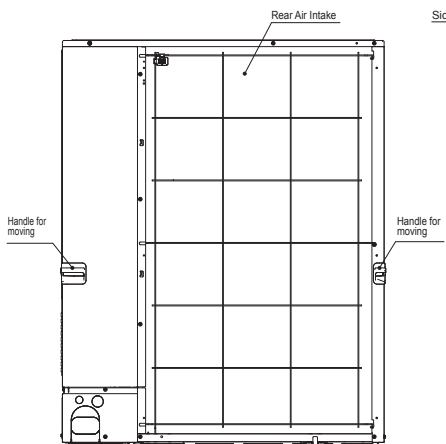


mm<inch>

Side Air Intake

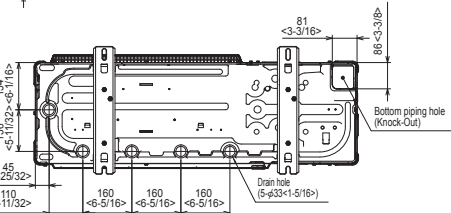
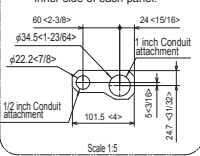


① ***Refrigerant GAS pipe connection (FLARE) φ15.88 (5/8F)
 ② ***Refrigerant LIQUID pipe connection (FLARE) φ9.52(3/8F)
 *1 ***Indication of STOP VALVE connection location.



Technical drawings of two types of cable tray cross-sections, Type A (left) and Type B (right). Both show a U-shaped tray with various mounting holes and dimensions. Dimensions are given in inches and millimeters. Labels include 'Conduit hole', 'Front trunking hole', 'Rear trunking hole', 'Front piping hole', 'Right piping hole', and 'Right trunking hole'. A note at the bottom right says 'mm<inch>'.

When installing the conduit
Set the attachment to the
inner side of each panel.

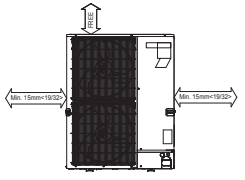


Unit: mm <inch>

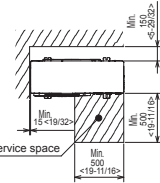
Unit: mm <inch>

1 FREE SPACE (Around the unit)

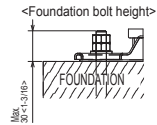
The diagram below shows a basic example. Explanation of particular details are given in the installation manuals etc.

**2 SERVICE SPACE**

Dimensions of space needed for service access are shown in the below diagram.

**3 FOUNDATION BOLTS**

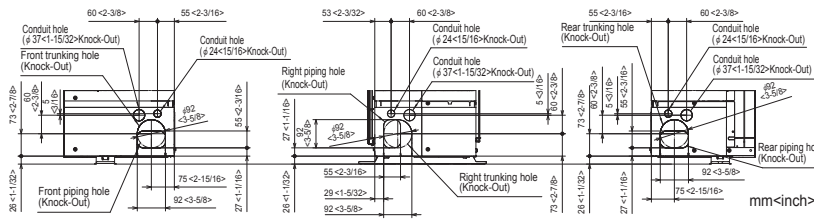
Please secure the unit firmly with 4 foundation (M10×W3/8") bolts. (Bolts and washers must be purchased locally.)

**4 PIPING-WIRING DIRECTIONS**

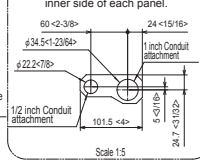
Piping and wiring connections can be made from 4 directions: FRONT, Right, Rear and Below.

Example of Notes

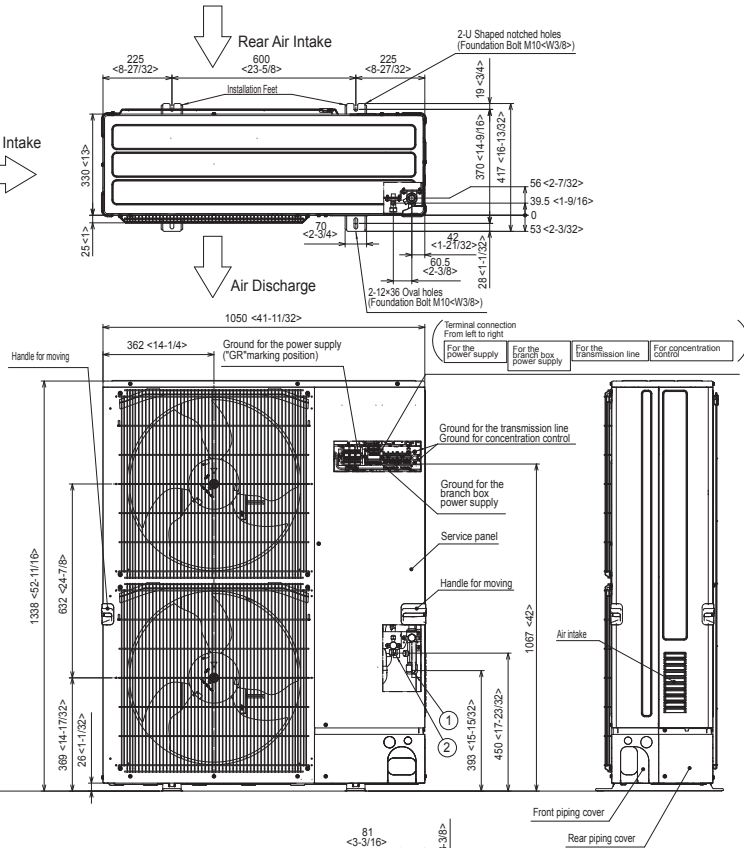
- ① ...Refrigerant GAS pipe connection (FLARE) φ19.05 (3/4F)
 ② ...Refrigerant LIQUID pipe connection (FLARE) φ9.52 (3/8F)
 *1 ...Indication of STOP VALVE connection location.

Piping Knock-Out Hole Details

When installing the conduit. Set the attachment to the inner side of each panel.



Side Air Intake



5-2. BRANCH BOX
PAC-MKA50BC
PAC-MKA51BC

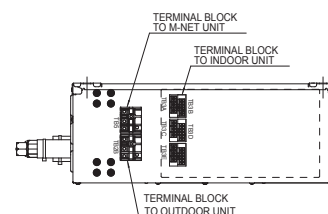
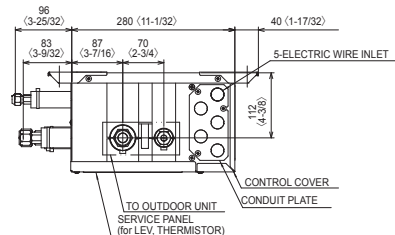
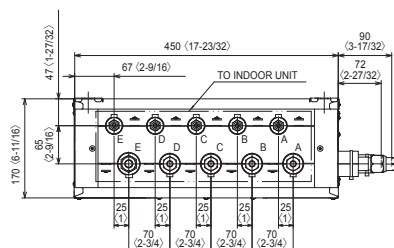
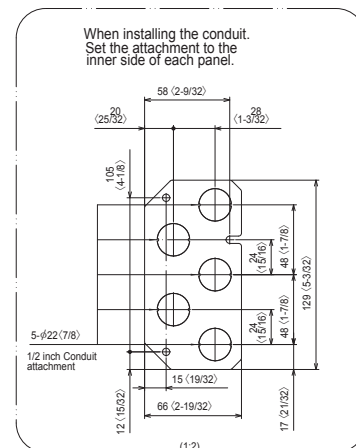
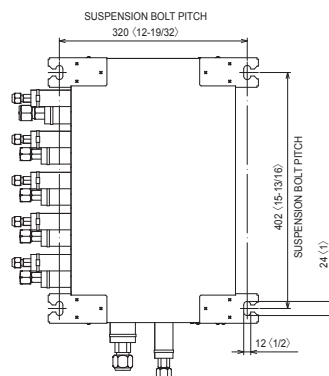
Unit: mm <inch>

SUSPENSION BOLT : W3/8(M10)

REFRIGERANT PIPE FLARED CONNECTION

Unit: inch

	A	B	C	D	E	TO OUTDOOR UNIT
LIQUID PIPE	1/4F	1/4F	1/4F	1/4F	1/4F	3/8F
GAS PIPE	3/8F	3/8F	3/8F	3/8F	1/2F	5/8F



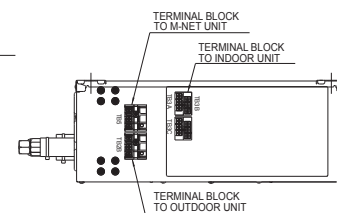
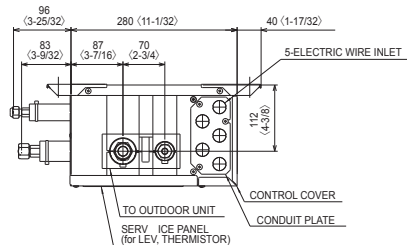
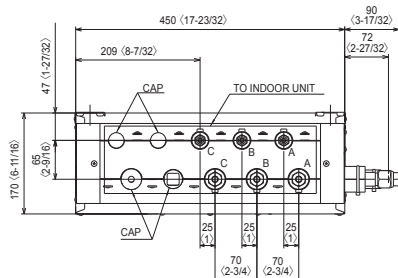
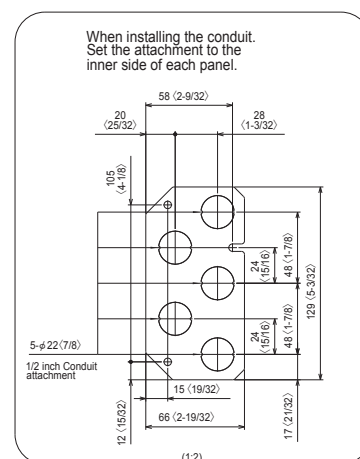
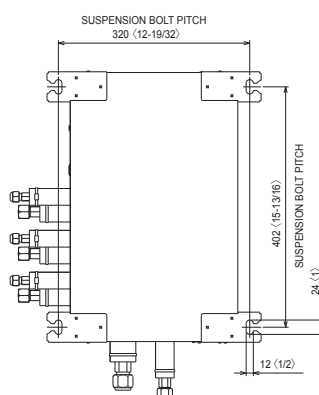
PAC-MKA30BC
PAC-MKA31BC

SUSPENSION BOLT : W3/8(M10)

REFRIGERANT PIPE FLARED CONNECTION

Unit: inch

	A	B	C		TO OUTDOOR UNIT
LIQUID PIPE	1/4F	1/4F	1/4F		3/8F
GAS PIPE	3/8F	3/8F	3/8F		5/8F



6-1. OUTDOOR UNIT MXZ-4C36NAHZ

MXZ-5C42NAHZ

MXZ-8C48NAHZ

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
TB1	Terminal Block (Power Supply)	TH6	Thermistor (Suction Pipe)	SW7	Switch (Function Selection)
TB1B	Terminal Block (Branch Box)	TH7	Thermistor (Ambient)	SW8	Switch (Model Selection)
TB3	Terminal Block (Branch box/Outdoor Transmission Line)	TH8	Thermistor (Heat Sink)	SW9	Switch (Function Selection)
TB7	Terminal Block (Centralized Control Transmission Line)	LEV-A,LEV-B	Electronic Expansion Valve	SWU1	Switch (Unit Address Selection, 1st digit)
FUSE1,FUSE2	Fuse (T20AL250V)	DCL	Reactor	SWU2	Switch (Unit Address Selection, 2nd digit)
MC	Motor For Compressor	P.B.	Power Circuit Board	CNS1	Connector (Branch box/Outdoor Transmission Line)
MF1,MF2	Fan Motor	LI	Connection Terminal (L-Phase)	CNS2	Connector (Centralized Control Transmission Line)
21S4	Solenoid Valve (Four-Way Valve)	NI	Connection Terminal (N-Phase)	SS	Connector (Base heater)
63H	High Pressure Switch	DCL1,DCL2	Connection Terminal (Reactor)	CN3D	Connector (Connection For Option)
63HS	High Pressure Sensor	IGBT	Power Module	CN3S	Connector (Connection For Option)
63LS	Low Pressure Sensor	E1,E2,E3,E4	Connection Terminal (Ground)	CN3N	Connector (Connection For Option)
SV1	Solenoid Valve (Bypass Valve)	MULTI.B.	Controller Circuit Board	CN51	Connector (Connection For Option)
SV2	Solenoid Valve (Switching Valve)	SW1	Switch (Display Selection)	LED1,LED2	LED (Operation Inspection Display)
BH	Base heater	SW2	Switch (Function Selection)	LED3	LED (Power Supply to Main Microcomputer)
TH2	Thermistor (Hic Pipe)	SW3	Switch (Test Run)	F1,F2	Fuse (T6,3AL250V)
TH3	Thermistor (Outdoor Liquid Pipe)	SW4	Switch (Model Selection)	X501~505	Relay
TH4	Thermistor (Compressor)	SW5	Switch (Function Selection)	M-NET P.B.	M-NET Power Circuit Board
		SW6	Switch (Function Selection)	TB1	Connection Terminal (Ground)

