

OUTDOOR UNIT

TECHNICAL & SERVICE MANUAL


No. OBD948

Models

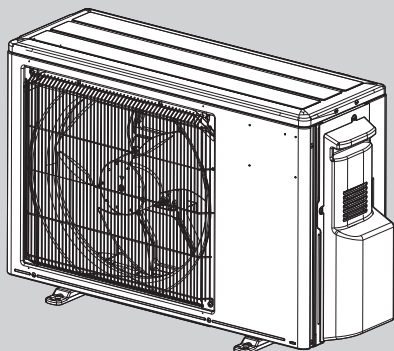
MUZ-JX09WL - U1

MUZ-JX12WL - U1

MUZ-JX09WLH - U1

MUZ-JX12WLH - U1

Indoor unit technical & service manual
MSZ-JX•WL Series (OBD947)
Indoor unit service manual
MSZ-JX•WL Series (OBH947)
Outdoor unit service manual
MUZ-JX•WL/WLH Series (OBH948)



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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.

<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 and pull the power plug.
- Discharge the capacitor 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 refrigeration 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.

WARNING

- When the refrigerant circuit has a leak, do not execute pump down with the compressor.
- When pumping down the refrigerant, stop the compressor before disconnecting the refrigerant pipes.
The compressor may burst if air etc. get into it.
- 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

TECHNICAL CHANGES

MUZ-JX09WL - 

MUZ-JX09WLH - 

MUZ-JX12WL - 

MUZ-JX12WLH - 

1. New model

Servicing precautions for units using refrigerant R454B



Refrigerant
Safety Group
A2L

WARNING

This unit uses a flammable refrigerant.

If refrigerant leaks and comes in contact with fire or heating part, it will create harmful gas and there is risk of fire.

Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer. The appliance should not be stored in a room with continuously operating ignition sources (for example: open flames, an operating gas appliance, or an operating electric heater).

Do not pierce or burn.

Be aware that refrigerants may not contain an odor.

- Maintenance, service and repair operations shall be performed by authorized technician with required qualification.
- Servicing shall be performed only by methods recommended by the manufacturer.
- Refrigerant piping shall be protected from physical damage.
- Field installed piping should be kept to a minimum.
- Compliance with national gas regulations shall be observed.
- All field joints shall be accessible for inspection prior to being covered or enclosed.

⚠️ WARNING

- The mounting height of indoor unit shall be 5.9 ft (1.8 m) or more from the floor. Up to 7.5 ft (2.3 m) is recommended.
- The unit shall be installed in rooms exceed the minimum room area (A_{min}) determined by total refrigerant amount (M).

M			A_{min}	
[kg]	[lbs, oz]		[m ²]	[ft ²]
0.5	1	1	1.9	21
0.6	1	5	2.3	25
0.7	1	8	2.6	28
0.8	1	12	3.0	33
0.9	1	15	3.4	37
1.0	2	3	3.8	41
1.1	2	6	4.1	45
1.2	2	10	4.5	49
1.3	2	13	4.9	53
1.4	3	1	5.2	56
1.5	3	4	5.6	61
1.6	3	8	6.0	65

M			A_{min}	
[kg]	[lbs, oz]		[m ²]	[ft ²]
1.7	3	11	6.3	68
1.8	3	15	6.8	74
1.9	4	3	7.2	78
2.0	4	6	7.6	82
2.1	4	10	7.9	86
2.2	4	13	8.3	90
2.3	5	1	8.7	94
2.4	5	4	9.1	98
2.5	5	8	9.4	102
2.6	5	11	9.8	106
2.7	5	15	10.2	110
2.8	6	2	10.6	115

1. REFRIGERANT PIPE NITROGEN PRESSURE TEST METHOD

(1) Connect the testing tools.

- Make sure the stop valves are closed and do not open them.
- Add pressure to the refrigerant lines through the service port of the stop valve for GAS.

(2) Do not add pressure to the specified pressure all at once; add pressure little by little.

1. Pressurize to 0.5 MPa (73 psig, 5 kgf/cm²G), wait 5 minutes, and make sure the pressure does not decrease.
2. Pressurize to 1.5 MPa (218 psig, 15 kgf/cm²G), wait 5 minutes, and make sure the pressure does not decrease.
3. Pressurize to 4.15 MPa (601 psig, 41.5 kgf/cm²G) and measure the surrounding temperature and refrigerant pressure.

(3) If the specified pressure holds for 24 Hours and does not decrease, the pipes have passed the test and there are no leaks.

- If the surrounding temperature changes by 1°F (0.5°C), the pressure will change by about 1 psig (0.007 MPa). Make the necessary corrections.

(4) If the pressure decreases in steps (2) or (3), there is a gas leak. Look for the source of the gas leak.

2. Additional refrigerant charge

Additional refrigerant charge

Refrigerant for the indoor units and the extended piping is not included in the outdoor unit when the unit is shipped from the factory. Therefore, charge each refrigerant piping system with additional refrigerant at the installation site. In addition, in order to carry out service, enter the size and length of each liquid pipe and additional refrigerant charge amounts in the spaces provided on the "Refrigerant amount" plate on the outdoor unit.

NOTE:

- When the unit is stopped, charge the unit with the additional refrigerant through the liquid stop valve after the pipe extensions and indoor units have been vacuumized.
- When the unit is operating, add refrigerant to the gas check valve using a safety charger. Do not add liquid refrigerant directly to the check valve.

Refrigerant adjustment

Model	MSZ-JX09/12WL
Chargeless pipe length A	25 ft (7.5 m)
Refrigerant adjustment B	0.22 oz/ft (20 g/m)
Additional refrigerant	Pipe length up to A : No need Pipe length exceeds A : $B \times (\text{pipe length} - A)$

3. Cautions for the unit using R454B refrigerant

Basic work procedures are the same as those for conventional units using refrigerant R410A. However, pay careful attention to the following points.

■ Information on servicing

1. Checks to the area

Prior to beginning work on systems containing FLAMMABLE REFRIGERANTS, safety checks are necessary to ensure that the risk of ignition is minimized. For repair to the REFRIGERATING SYSTEM, 2 to 6 below shall be completed prior to conducting work on the system.

2. Work procedure

Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapour being present while the work is being performed.

3. General work area

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

4. Checking for presence of refrigerant

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

5. Presence of fire extinguisher

If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

6. No ignition sources

No person carrying out work in relation to a REFRIGERATING SYSTEM which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.

7. Ventilated area

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

8. Checks to the refrigerating equipment

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer's technical department for assistance. The following checks shall be applied to installations using FLAMMABLE REFRIGERANTS:

- the actual REFRIGERANT CHARGE is in accordance with the room size within which the refrigerant containing parts are installed;
- the ventilation machinery and outlets are operating adequately and are not obstructed;
- marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;
- refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

9. Checks to electrical devices

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised.

Initial safety checks shall include:

- that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
- that no live electrical components and wiring are exposed while charging, recovering or purging the system;
- that there is continuity of earth bonding.

■ Repairs to sealed components

Sealed electrical components must be replaced.

■ Repair to intrinsically safe components

Intrinsically safe components shall be replaced.

■ Cabling

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

■ Detection of flammable refrigerants

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

The following leak detection methods are deemed acceptable for all refrigerant systems.

Electronic leak detectors may be used to detect refrigerant leaks but, in the case of FLAMMABLE REFRIGERANTS, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)

Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.

Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.

Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.

If a leak is suspected, all naked flames shall be removed/extinguished.

If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.

■ Removal and evacuation

When breaking into the refrigerant circuit to make repairs - or for any other purpose -conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration.

The following procedure shall be adhered to:

- safely remove refrigerant following local and national regulations;
- evacuate;
- purge the circuit with inert gas;
- evacuate;
- continuously flush or purge with inert gas when using flame to open circuit; and
- open the circuit.

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes.

For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times.

Compressed air or oxygen shall not be used for purging refrigerant systems.

For appliances containing flammable refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum.

This process shall be repeated until no refrigerant is within the system. When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.

The outlet for the vacuum pump shall not be close to any potential ignition sources, and ventilation shall be available.

■ Charging procedures

In addition to conventional charging procedures, the following requirements shall be followed.

- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
- Cylinders shall be kept in an appropriate position according to the instructions.
- Ensure that the REFRIGERATING SYSTEM is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the REFRIGERATING SYSTEM.

Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

■ Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.

- Become familiar with the equipment and its operation.
- Isolate system electrically.
- Before attempting the procedure, ensure that:
 - mechanical handling equipment is available, if required, for handling refrigerant cylinders;
 - all personal protective equipment is available and being used correctly;
 - the recovery process is supervised at all times by a competent person;
 - recovery equipment and cylinders conform to the appropriate standards.
- Pump down refrigerant system, if possible.
- If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- Make sure that cylinder is situated on the scales before recovery takes place.
- Start the recovery machine and operate in accordance with instructions.
- Do not overfill cylinders (no more than 80 % volume liquid charge).
- Do not exceed the maximum working pressure of the cylinder, even temporarily.
- When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
- Recovered refrigerant shall not be charged into another REFRIGERATING SYSTEM unless it has been cleaned and checked.

■ Labelling

Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing FLAMMABLE REFRIGERANTS, ensure that there are labels on the equipment stating the equipment contains FLAMMABLE REFRIGERANT.

■ Recovery

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.

When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available.

All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e., special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order.

Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of the flammable refrigerant.

If in doubt, the manufacturer should be consulted. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition.

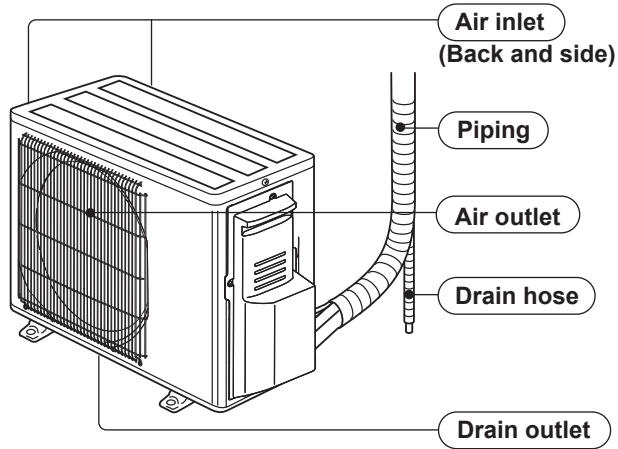
The recovered refrigerant shall be processed according to local legislation in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that FLAMMABLE REFRIGERANT does not remain within the lubricant.

The compressor body shall not be heated by an open flame or other ignition sources to accelerate this process. When oil is drained from a system, it shall be carried out safely.

MUZ-JX09WL
MUZ-JX12WL

MUZ-JX09WLH
MUZ-JX12WLH



Outdoor unit model			MUZ-JX09WL MUZ-JX09WLH	MUZ-JX12WL MUZ-JX12WLH
Capacity Rated (Minimum–Maximum)	Cooling ^{*1}	Btu/h	9,000 (3,600–11,000)	12,000 (3,600–13,400)
	Heating 47 ^{*1}	Btu/h	10,900 (4,000–13,000)	12,200 (4,500–15,500)
Capacity Rated (Maximum)	Heating 17 ^{*2}	Btu/h	6,800 (7,200)	7,800 (9,000)
Power consumption Rated (Minimum–Maximum)	Cooling ^{*1}	W	720 (240–1,100)	960 (230–1,430)
	Heating 47 ^{*1}	W	900 (280–1,400)	990 (250–2,140)
Power consumption Rated (Maximum)	Heating 17 ^{*2}	W	820 (1,230)	900 (1,670)
EER2 ^{*1} [SEER2] ^{*3}	Cooling		12.50 [20.0]	12.50 [20.0]
HSPF2 Region IV ^{*4}	Heating		10.0	10.0
COP	Heating		3.55	3.61
Power factor	Cooling	%	96	98
	Heating	%	99	100
Power supply	V, phase, Hz		115, 1, 60	115, 1, 60
Max. fuse size (time delay)		A	WL: 15 WLH: 20	20
Min. circuit ampacity		A	WL: 15 WLH: 17	WL: 17 WLH: 18
Fan motor	F.L.A	A	1.13	1.13
Compressor	Model		KRB073FATMC	SRB140FQHMC SRB140FQHMT
	R.L.A	A	8.8	9.6
	L.R.A	A	11	12
	Refrigeration oil	fl oz. (L) (Model)	9.1 (0.27)/(RM68EH)	11.8 (0.35)/(RM68EH)
Refrigerant control			Linear expansion valve	Linear expansion valve
Sound level ^{*1}	Cooling	dB(A)	46	49
	Heating	dB(A)	50	51
Airflow High–Med.–Low	Cooling	CFM	1,305–1,031–1,031	1,344–1,166–469
	Heating	CFM	1,196–1,141–794	1,152–1,152–739
Fan speed High–Med.–Low	Cooling	rpm	970–770–770	1,040–910–410
	Heating	rpm	890–850–600	900–900–600
Defrost method			Reverse cycle	Reverse cycle
Dimensions	W	in.	31-1/2	31-1/2
	D	in.	11-1/4	11-1/4
	H	in.	21-5/8	21-5/8
Weight		lb.	WL: 68 WLH: 69	WL: 82 WLH: 83
External finish			Munsell 3Y 7.8/1.1	Munsell 3Y 7.8/1.1
Remote controller			Wireless type	Wireless type
Control voltage (by built-in transformer)		V DC	12–24	12–24
Refrigerant piping			Not supplied	Not supplied
Refrigerant pipe size (Min. wall thickness)	Liquid	in.	1/4 (0.0315)	1/4 (0.0315)
	Gas	in.	3/8 (0.0315)	3/8 (0.0315)
Connection method	Indoor		Flared	Flared
	Outdoor		Flared	Flared
Between the indoor & outdoor units	Height difference	ft.	40	40
	Piping length	ft.	65	65
Refrigerant charge (R454B)			1 lbs. 6 oz	2 lbs. 2 oz

NOTE: Test conditions are based on AHRI 210/240.

*1: Rating conditions (Cooling) — Indoor: 80°FDB, 67°FWB, Outdoor: 95°FDB, (75°FWB)
(Heating) — Indoor: 70°FDB, 60°FWB, Outdoor: 47°FDB, 43°FWB

*2: Rating conditions (Heating) — Indoor: 70°FDB, 60°FWB, Outdoor: 17°FDB, 15°FWB

*3: Test condition (Refer to page 10.)

*4: Test condition (Refer to page 10.)

Test condition

*3, *4

AHRI 210/240	Mode	Test	Indoor air condition (°F)		Outdoor air condition (°F)	
			Dry bulb	Wet bulb	Dry bulb	Wet bulb
	SEER (Cooling)	"A-Full" Cooling Steady State at rated compressor speed	80	67	95	75
		"B-Full" Cooling Steady State at rated compressor speed	80	67	82	65
		"B-Low" Cooling Steady State at minimum compressor speed	80	67	82	65
		"F-Low" Cooling Steady State at minimum compressor speed	80	67	67	53.5
		"E-Int" Cooling Steady State at intermediate compressor speed *5	80	67	87	69
	HSPF (Heating)	"H1-Nom" Heating Steady State at rated compressor speed	70	60	47	43
		"H3-Full" Heating at rated compressor speed	70	60	17	15
		"H0-Low" Heating Steady State at minimum compressor speed	70	60	62	56.5
		"H1-Low" Heating Steady State at minimum compressor speed	70	60	47	43
		"H2-Int" Heating at intermediate compressor speed *5	70	60	35	33

*5: At intermediate compressor speed

= ("Rated compressor speed" - "minimum compressor speed") / 3 + "minimum compressor speed".

OPERATING RANGE

(1) POWER SUPPLY

	Rated voltage	Guaranteed voltage (V)
Outdoor unit	115 V 1 phase 60 Hz	Min. 103 115 Max. 127 -----+-----+-----

(2) OPERATION

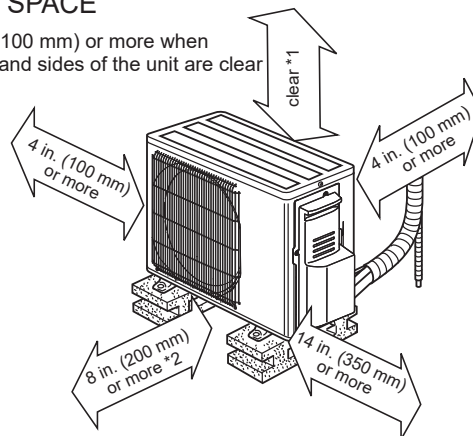
Mode	Condition	Intake air temperature (°F)	
		Outdoor	
		DB	WB
Cooling	Standard temperature	95	—
	Maximum temperature	115	—
	Minimum temperature	14	—
	Maximum humidity	—	
Heating	Standard temperature	47	43
	Maximum temperature	75	65
	Minimum temperature	-5	-6

MUZ-JX09WL MUZ-JX12WL
MUZ-JX09WLH MUZ-JX12WLH

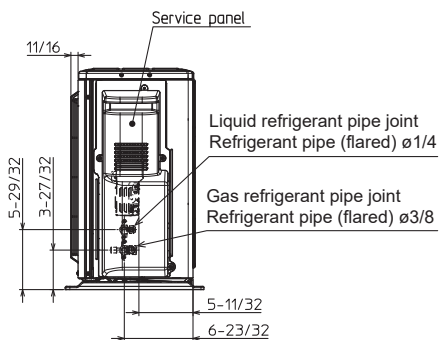
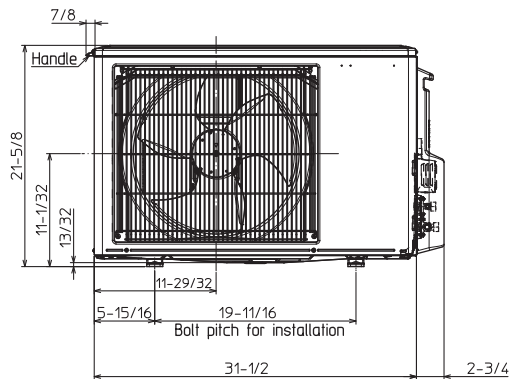
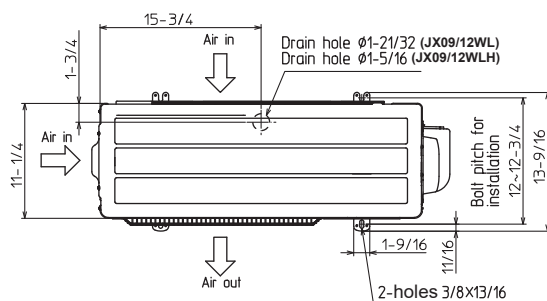
Unit: inch

REQUIRED SPACE

*1 4 in. (100 mm) or more when front and sides of the unit are clear



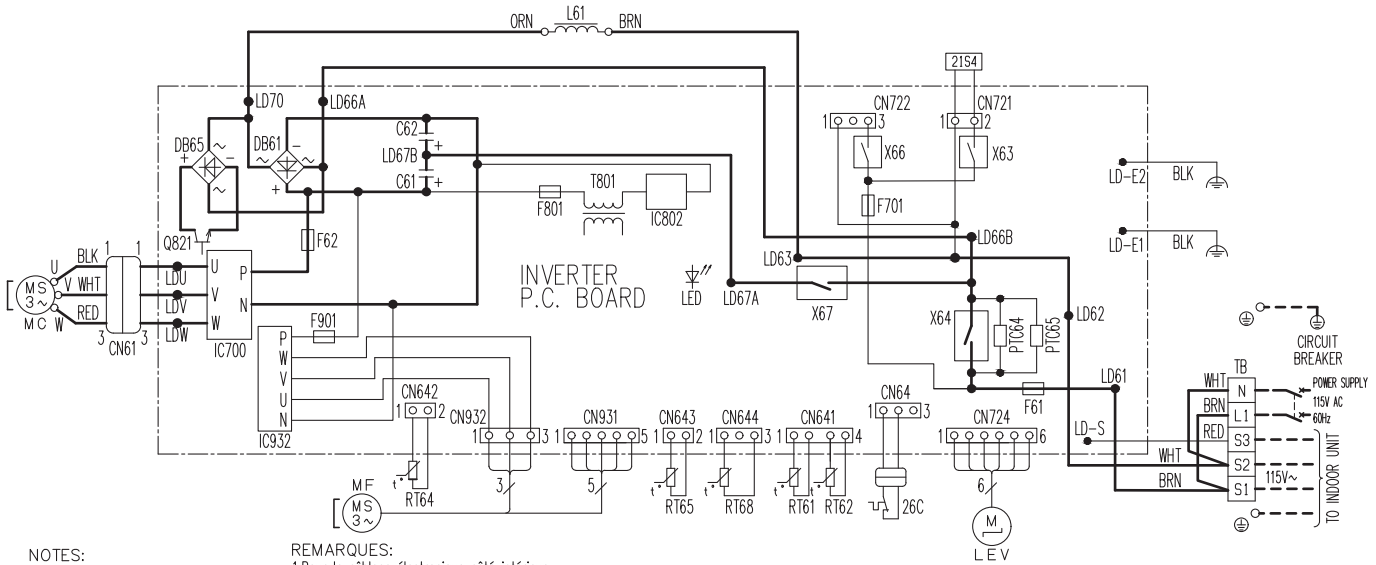
*2 When any 2 sides of left, right and rear of the unit are clear



REFRIGERANT PIPE JOINT	LIQUID REFRIGERANT PIPE	FLARED 1/4"
	GAS REFRIGERANT PIPE	FLARED 3/8"

MUZ-JX09WL

MUZ-JX12WL



NOTES:

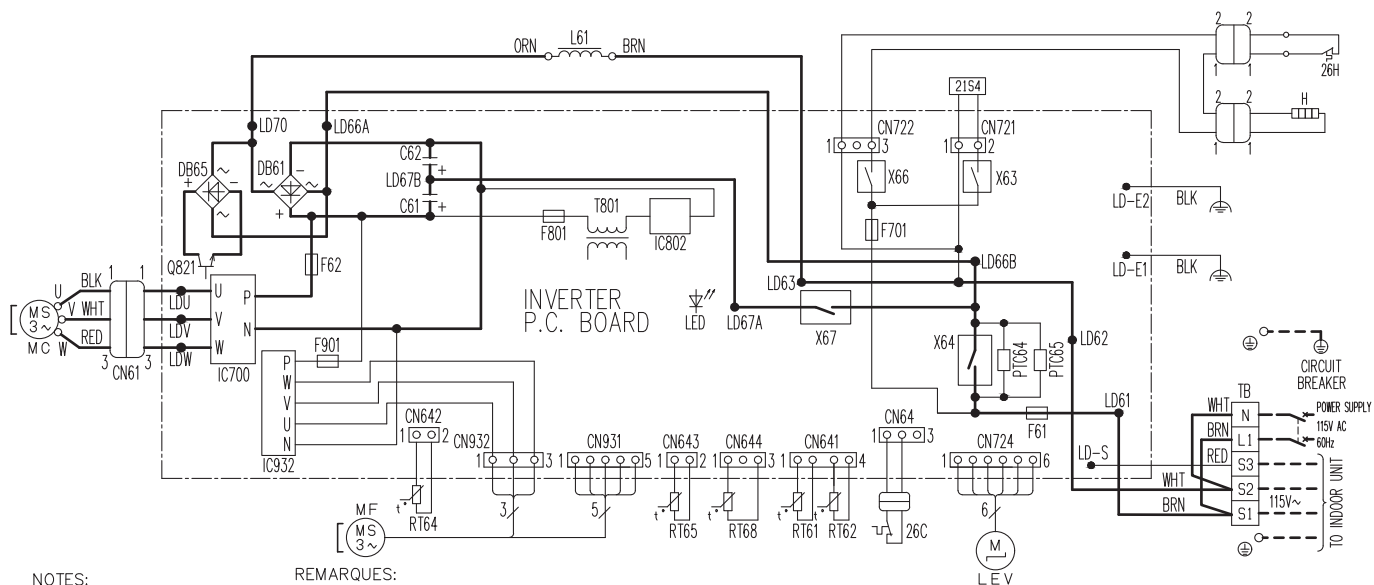
- 1.About the indoor side electric wiring, refer to the indoor unit electric wiring diagram for servicing.
- 2.Use copper supply wires.
- 3.Symbols indicate, :Terminal block :Connector

REMARQUES:

- 1.Pour le câblage électronique côté intérieur, se reporter au schéma d'entretien du câblage électronique de l'appareil intérieur.
- 2.Utiliser des fils d'alimentation en cuivre.
- 3.Les symboles ont les significations suivantes, :Borne :Connecteur

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
CN61	CONNECTOR	LEV	EXPANSION VALVE COIL	RT65	AMBIENT TEMP.THERMISTOR
C61,C62	SMOOTHING CAPACITOR	L61	REACTOR	RT68	OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR
DB61,DB65	DIODE MODULE	MC	COMPRESSOR	TB	TERMINAL BLOCK
F61	FUSE (25A 250V)	MF	FAN MOTOR	T801	TRANSFORMER
F62	FUSE (15A 250V)	PTC64,PTC65	CIRCUIT PROTECTION	X63,X64,X66,X67	RELAY
F701,F801,F901	FUSE (T3, 15AL250V)	Q821	SWITCHING POWER TRANSISTOR	21S4	REVERSING VALVE COIL
IC700,IC932	POWER MODULE	RT61	DEFROST THERMISTOR	26C	COMPRESSOR PROTECTOR
IC802	POWER DEVICE	RT62	DISCHARGE TEMP.THERMISTOR		
LED	LED	RT64	FIN TEMP.THERMISTOR		

MUZ-JX09WLH MUZ-JX12WLH



NOTES:

1.About the indoor side electric wiring, refer to the indoor unit electric wiring diagram for servicing.

2.Use copper supply wires.

3.Symbols indicate, :Terminal block
:Connector

REMARQUES:

1.Pour le câblage électronique côté intérieur,

se reporter au schéma d'entretien du

câblage électronique de l'appareil intérieur.

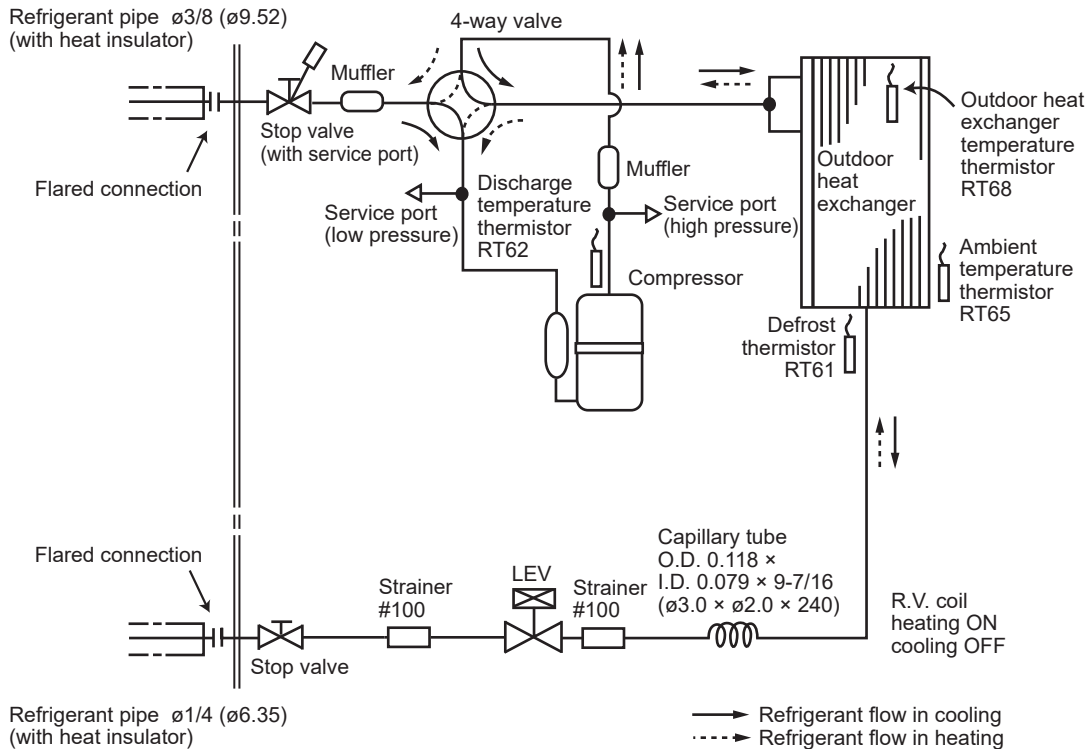
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3.Les symboles ont les significations suivantes, :Borne
:Connecteur

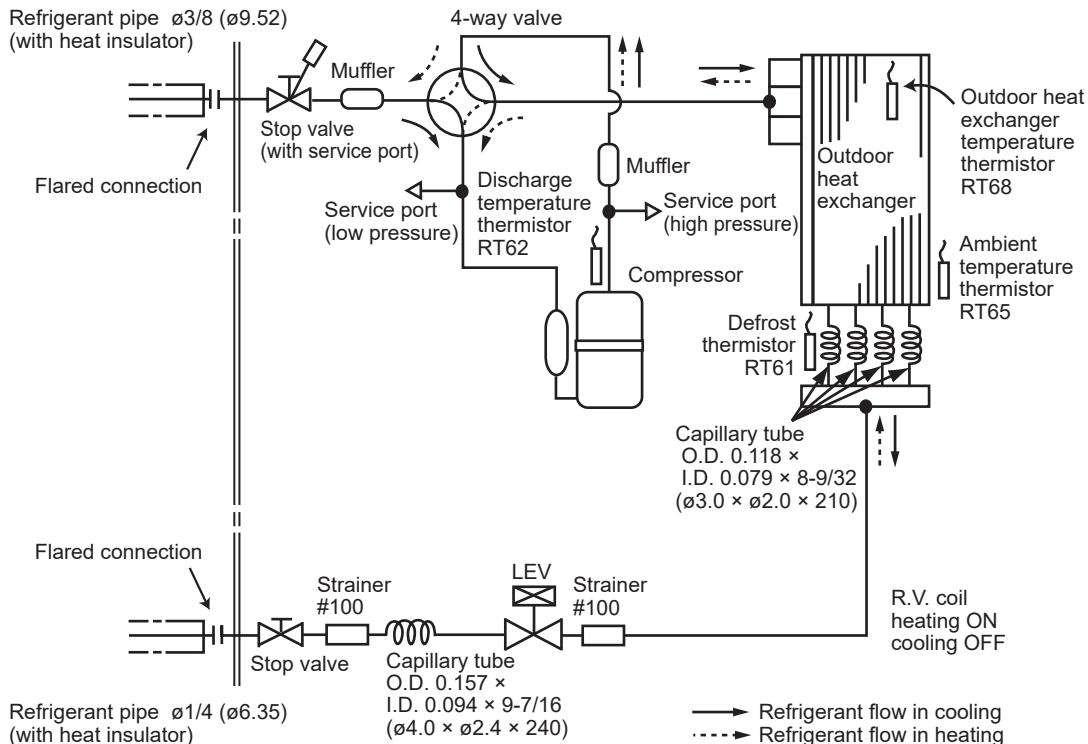
SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
CN61	CONNECTOR	LEV	EXPANSION VALVE COIL	RT68	OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR
C61,C62	SMOOTHING CAPACITOR	L61	REACTOR	TB	TERMINAL BLOCK
DB61,DB65	DIODE MODULE	MC	COMPRESSOR	T801	TRANSFORMER
F61	FUSE (25A 250V)	MF	FAN MOTOR	PTC64,PTC65	CIRCUIT PROTECTION
F62	FUSE (15A 250V)	Q821	SWITCHING POWER TRANSISTOR	X63,X64,X66,X67	RELAY
F701,F801,F901	FUSE (T3, 15A/250V)	RT61	DEFROST THERMISTOR	21S4	REVERSING VALVE COIL
H	DEFROST HEATER	RT62	DISCHARGE TEMP. THERMISTOR	26C	COMPRESSOR PROTECTOR
IC700,IC932	POWER MODULE	RT64	FIN TEMP. THERMISTOR	26H	HEATER PROTECTOR
IC802	POWER DEVICE	RT65	AMBIENT TEMP. THERMISTOR		
LED	LED				

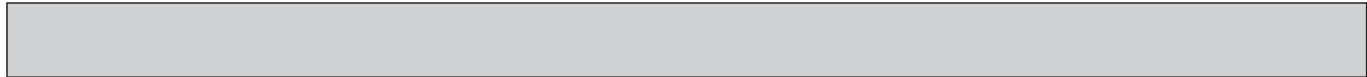
MUZ-JX09WL MUZ-JX09WLH

Unit: Inch (mm)



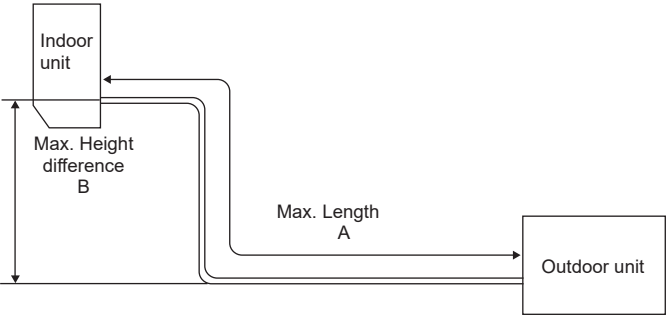
MUZ-JX12WL MUZ-JX12WLH





MAX. REFRIGERANT PIPING LENGTH and MAX. HEIGHT DIFFERENCE

Model	Refrigerant piping: ft.		Piping size O.D: in.	
	Max. Length A	Max. Height difference B	Gas	Liquid
MUZ-JX09WL MUZ-JX09WLH MUZ-JX12WL MUZ-JX12WLH	65	40	3/8	1/4



MUZ-JX09WL MUZ-JX12WL
MUZ-JX09WLH MUZ-JX12WLH

8-1. PERFORMANCE DATA

1) COOLING CAPACITY

Model	Indoor air IWB (°F)	Outdoor intake air DB temperature (°F)											
		75				85				95			
		TC	SHC	SHF	TPC	TC	SHC	SHF	TPC	TC	SHC	SHF	TPC
MUZ-JX09WL MUZ-JX09WLH	71	11.0	7.1	0.65	0.64	10.3	6.7	0.65	0.70	9.7	6.3	0.65	0.76
	67	10.4	8.1	0.78	0.60	9.7	7.6	0.78	0.67	9.0	7.0	0.78	0.72
	63	9.8	9.0	0.91	0.58	9.1	8.3	0.91	0.64	8.5	7.7	0.91	0.69
MUZ-JX12WL MUZ-JX12WLH	71	14.7	10.1	0.69	0.85	13.7	9.4	0.69	0.94	12.9	8.9	0.69	1.01
	67	13.9	11.4	0.82	0.81	13.0	10.6	0.82	0.89	12.0	9.8	0.82	0.96
	63	13.1	12.5	0.95	0.77	12.1	11.6	0.95	0.85	11.3	10.8	0.95	0.92

Model	Indoor air IWB (°F)	Outdoor intake air DB temperature (°F)							
		105				115			
		TC	SHC	SHF	TPC	TC	SHC	SHF	TPC
MUZ-JX09WL MUZ-JX09WLH	71	9.0	5.8	0.65	0.80	8.3	5.4	0.65	0.83
	67	8.4	6.5	0.78	0.76	7.7	6.0	0.78	0.80
	63	7.7	7.0	0.91	0.73	7.0	6.4	0.91	0.76
MUZ-JX12WL MUZ-JX12WLH	71	12.0	8.2	0.69	1.06	11.0	7.6	0.69	1.10
	67	11.2	9.2	0.82	1.02	10.3	8.4	0.82	1.07
	63	10.3	9.8	0.95	0.98	9.4	8.9	0.95	1.02

NOTE: 1. IWB : Intake air wet-bulb temperature TC : Total Capacity ($\times 10^3$ Btu/h)
 SHC : Sensible Heat Capacity ($\times 10^3$ Btu/h) SHF : Sensible Heat Factor
 TPC : Total Power Consumption (kW)
 2. SHC is based on 80°F of indoor Intake air DB temperature.
 3. Data shown are estimated value. Performance may vary depending on operating conditions.

2) COOLING CAPACITY CORRECTIONS

Model	Refrigerant piping length (one way: ft.)		
	25 (std.)	40	65
MUZ-JX09WL MUZ-JX09WLH	1.0	0.993	0.981
MUZ-JX12WL MUZ-JX12WLH	1.0	0.987	0.967

3) HEATING CAPACITY CORRECTIONS

Model	Refrigerant piping length (one way: ft.)		
	25 (std.)	40	65
MUZ-JX09WL MUZ-JX12WL MUZ-JX09WLH MUZ-JX12WLH	1.0	0.997	0.993

4) HEATING CAPACITY

Model	Indoor air	Outdoor intake air WB temperature (°F)													
	IDB (°F)	5		15		25		35		43		45		55	
		TC	TPC	TC	TPC	TC	TPC	TC	TPC	TC	TPC	TC	TPC	TC	TPC
MUZ-JX09WL	75	4.8	0.53	6.3	0.67	7.9	0.79	9.4	0.88	10.6	0.92	11.0	0.94	12.4	0.97
	70	5.2	0.51	6.7	0.65	8.2	0.77	9.6	0.86	10.9	0.90	11.2	0.92	12.7	0.95
	65	5.5	0.49	6.9	0.62	8.6	0.74	10.0	0.83	11.2	0.88	11.6	0.89	13.0	0.94
MUZ-JX12WL	75	5.4	0.58	7.1	0.74	8.8	0.87	10.6	0.97	11.9	1.01	12.3	1.03	13.9	1.07
	70	5.8	0.56	7.5	0.71	9.2	0.85	10.8	0.94	12.2	0.99	12.6	1.01	14.2	1.05
	65	6.1	0.53	7.7	0.68	9.6	0.82	11.2	0.92	12.6	0.97	12.9	0.98	14.5	1.03
MUZ-JX09WLH	75	4.8	0.66	6.3	0.80	7.9	0.92	9.4	0.88	10.6	0.92	11.0	0.94	12.4	0.97
	70	5.2	0.64	6.7	0.78	8.2	0.90	9.6	0.86	10.9	0.90	11.2	0.92	12.7	0.95
	65	5.5	0.62	6.9	0.75	8.6	0.87	10.0	0.83	11.2	0.88	11.6	0.89	13.0	0.94
MUZ-JX12WLH	75	5.4	0.71	7.1	0.87	8.8	1.00	10.6	0.97	11.9	1.01	12.3	1.03	13.9	1.07
	70	5.8	0.69	7.5	0.84	9.2	0.98	10.8	0.94	12.2	0.99	12.6	1.01	14.2	1.05
	65	6.1	0.66	7.7	0.81	9.6	0.95	11.2	0.92	12.6	0.97	12.9	0.98	14.5	1.03

NOTE: 1. IDB : Intake air dry-bulb temperature

TC : Total Capacity (x10³ Btu/h) TPC : Total Power Consumption (kW)

2. Above data is for heating operation without any frost.

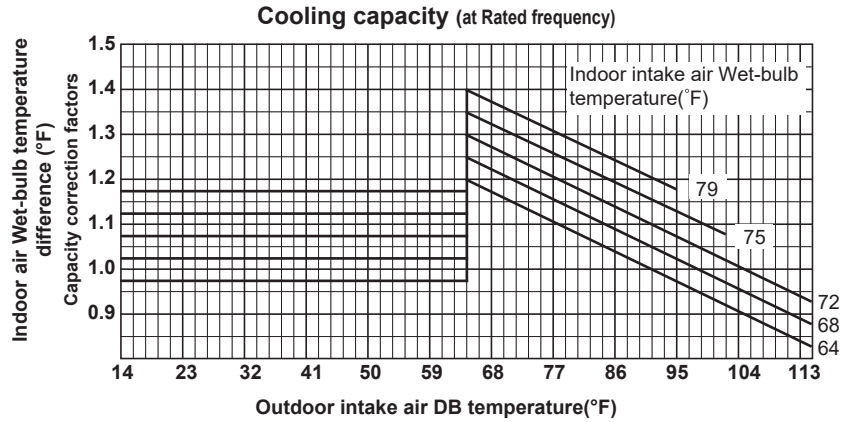
3. Data shown are estimated value. Performance may vary depending on operating conditions.

How to operate with fixed operational frequency of the compressor.

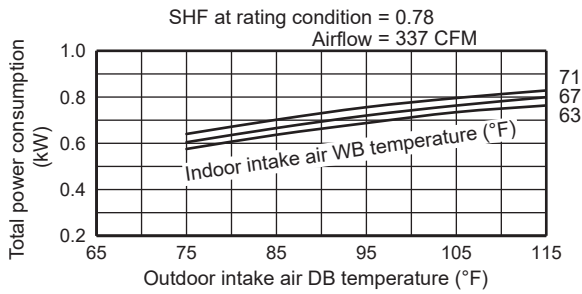
1. Press the emergency operation switch on the front of the indoor unit, and select either EMERGENCY COOL mode or EMERGENCY HEAT mode before starting to operate the air conditioner.
2. The compressor starts with operational frequency.
3. The fan speed of the indoor unit is High.
4. This operation continues for 30 minutes.
5. In order to release this operation, press the emergency operation switch twice or once, or press any button on the remote controller.

8-2. PERFORMANCE CURVE

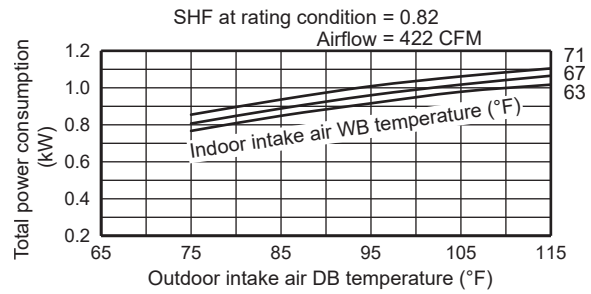
Cooling (at Rated frequency)



MUZ-JX09WL MUZ-JX09WLH



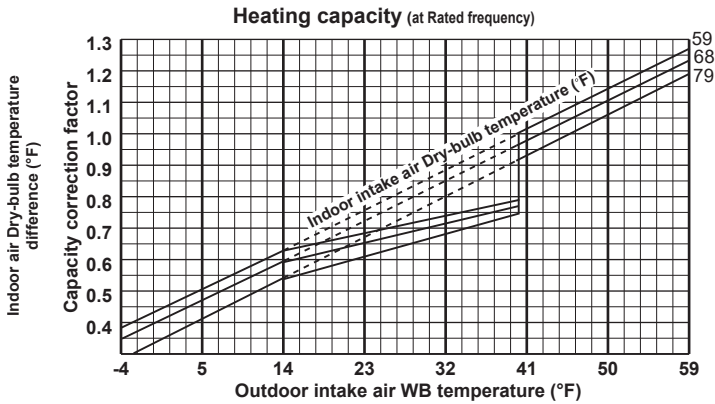
MUZ-JX12WL MUZ-JX12WLH



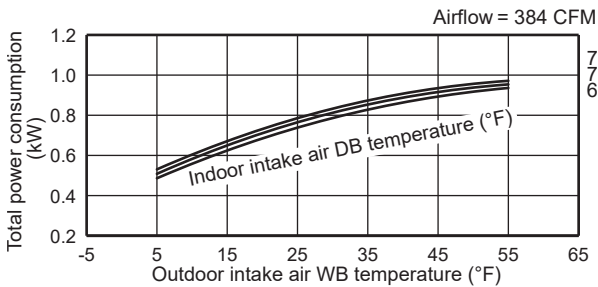
This value of frequency is not the same as the actual frequency in operating. Refer to 8-5 and 8-6 for the relationships between frequency and capacity.

NOTE: Data shown are estimated value. Performance may vary depending on operating conditions.

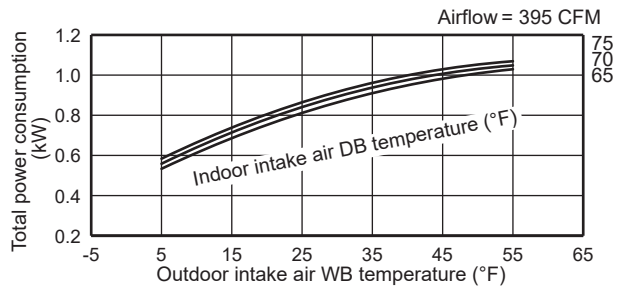
Heating (at Rated frequency)



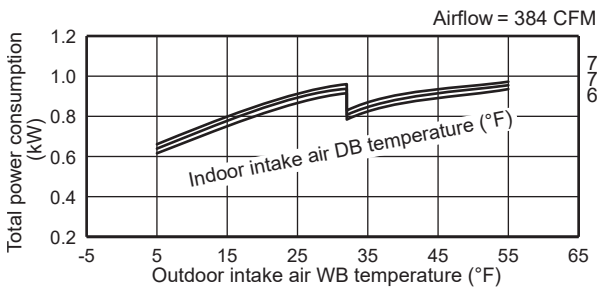
MUZ-JX09WL



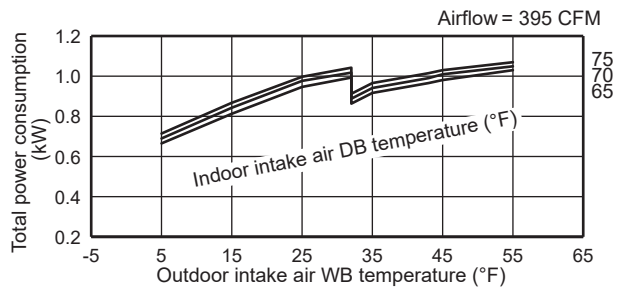
MUZ-JX12WL



MUZ-JX09WLH



MUZ-JX12WLH



This value of frequency is not the same as the actual frequency in operating. Refer to 8-5 and 8-6 for the relationships between frequency and capacity.

NOTE: Data shown are estimated value. Performance may vary depending on operating conditions.

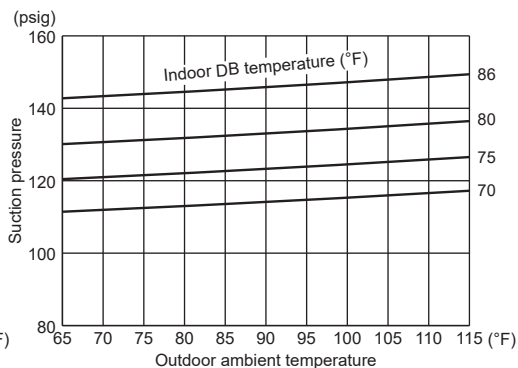
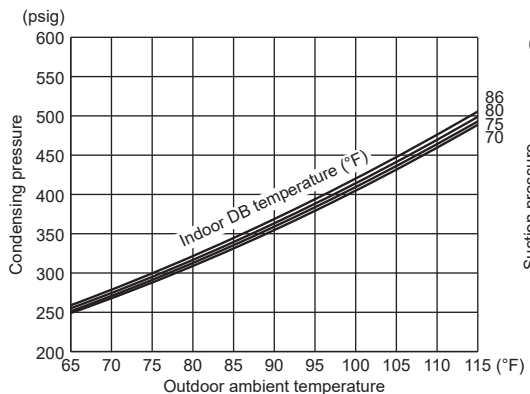
8-3. CONDENSING PRESSURE

Cooling

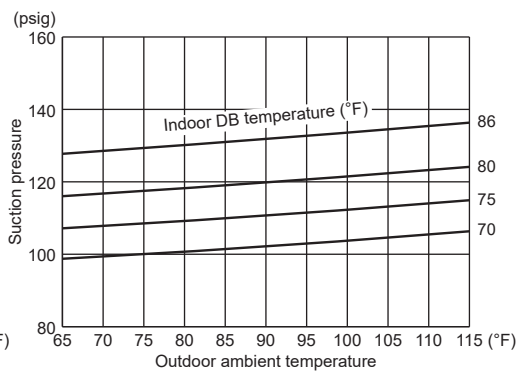
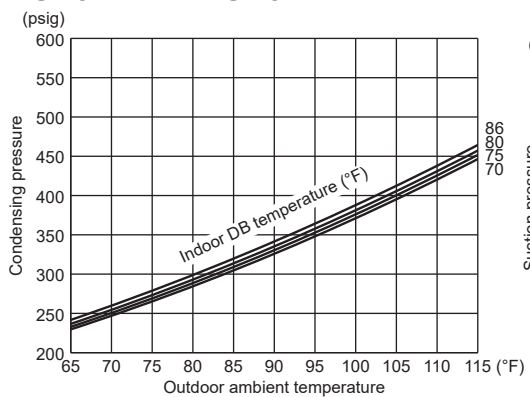
Data are based on the condition of indoor humidity 50 %.

Air flow should be set to High speed.

MUZ-JX09WL MUZ-JX09WLH



MUZ-JX12WL MUZ-JX12WLH



NOTE: Data shown are estimated value. Performance may vary depending on operating conditions.

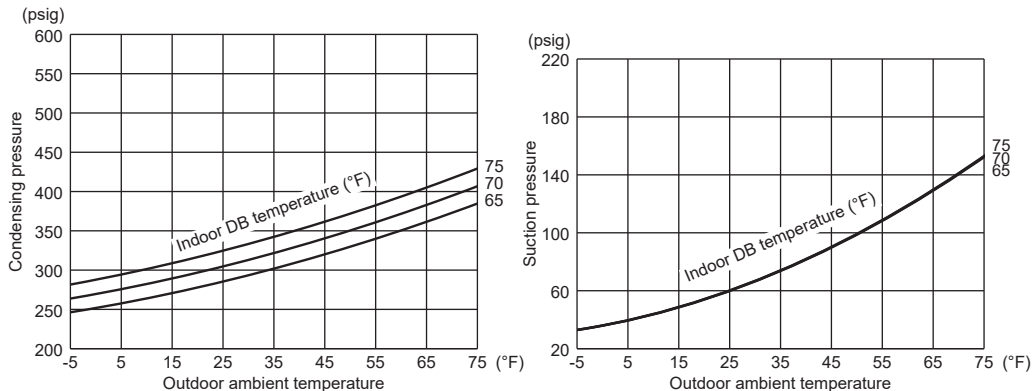
Heating

Data are based on the condition of outdoor humidity 75%.

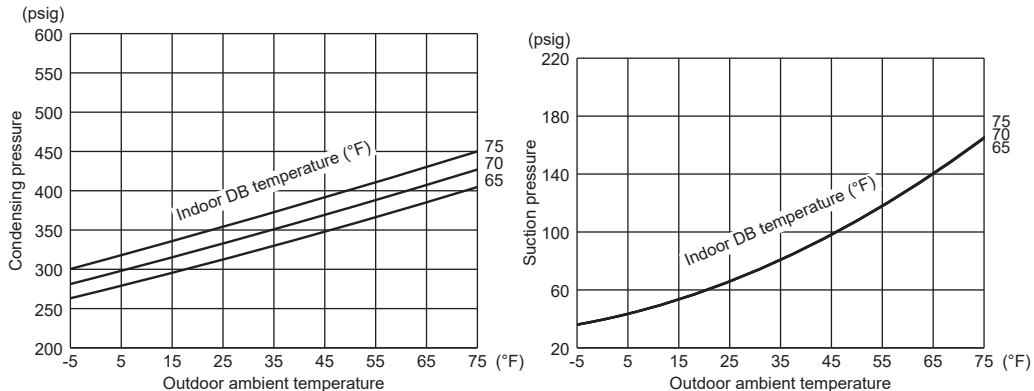
Air flow should be set to High speed.

Data are for heating operation without any frost.

MUZ-JX09WL MUZ-JX09WLH



MUZ-JX12WL MUZ-JX12WLH



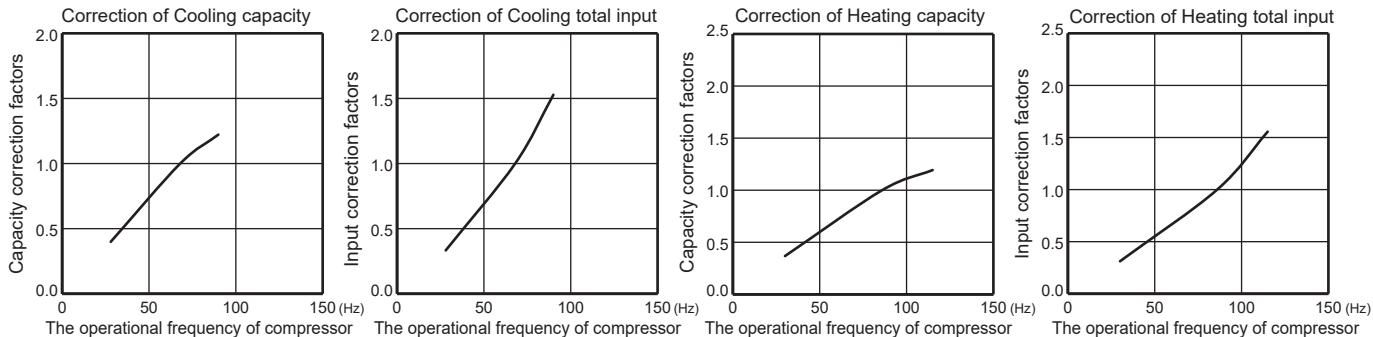
- NOTE:**
1. Press the emergency operation switch on the front of the indoor unit, and select either EMERGENCY COOL mode or EMERGENCY HEAT mode before starting to operate the air conditioner.
 2. The compressor starts with operational frequency.
 3. The fan speed of the indoor unit is High.
 4. This operation continues for 30 minutes.
 5. In order to release this operation, press the emergency operation switch twice or once, or press any button on the remote controller.
 6. Data shown are estimated value. Performance may vary depending on operating conditions.

8-4. STANDARD OPERATION DATA

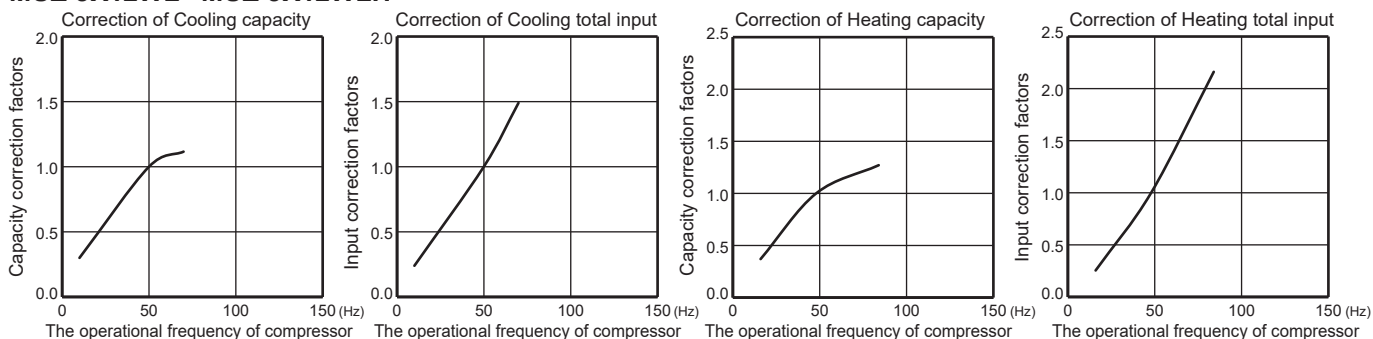
Model			MSZ-JX09WL		MSZ-JX12WL	
Item		Unit	COOL	HEAT	COOL	HEAT
Total	Capacity	Btu/h	9,000	10,900	12,000	12,200
	SHF	—	0.78	—	0.82	—
	Input	kW	0.72	0.9	0.96	0.99
	Rated frequency	Hz	68	86	50	48
Electrical circuit	Indoor unit		MSZ-JX09WL		MSZ-JX12WL	
	Power supply	V, phase, Hz	115, 1, 60		115, 1, 60	
	Input	kW	0.018	0.019	0.032	0.020
	Fan motor current	A	0.29	0.31	0.48	0.33
	Outdoor unit		MUZ-JX09WL MUZ-JX09WLH		MUZ-JX12WL MUZ-JX12WLH	
	Power supply	V, phase, Hz	115, 1, 60		115, 1, 60	
	Input	kW	0.702	0.881	0.928	0.970
	Comp. current	A	5.87	6.91	7.42	7.93
	Fan motor current	A	0.41	0.49	0.59	0.58
Refrigerant circuit	Condensing pressure	psig	387	336	364	394
	Suction pressure	psig	135	93	124	103
	Discharge temperature	°F	173	174	170	179
	Condensing temperature	°F	121	110	116	122
	Suction temperature	°F	56	37	54	36
	Comp. shell bottom temperature	°F	171	172	155	163
	Ref. pipe length	ft.	25		25	
	Refrigerant charge (R454B)		1 lbs. 6 oz		2 lbs. 2 oz	
Indoor unit	Intake air temperature	DB °F	80	70	80	70
		WB °F	67	60	67	60
	Discharge air temperature	DB °F	58	100	57	104
		WB °F	57	—	56	—
	Fan speed	rpm	980	1,000	1,160	1,020
	Airflow	CFM	337 (wet)	384	421 (wet)	395
Outdoor unit	Intake air temperature	DB °F	95	47	95	47
		WB °F	—	43	—	43
	Fan speed	rpm	770	850	910	900
	Airflow	CFM	1,031	1,141	1,166	1,152

8-5. CAPACITY AND INPUT CORRECTION BY INVERTER OUTPUT FREQUENCY

MUZ-JX09WL MUZ-JX09WLH



MUZ-JX12WL MUZ-JX12WLH



NOTE: 1. Data shown are estimated value. Performance may vary depending on operating conditions.

2. Conditions are based on AHRI 210/240.

Rating conditions (Cooling) — Indoor: 80°FDB, 67°FWB, Outdoor: 95°FDB, (75°FWB)

(Heating) — Indoor: 70°FDB, 60°FWB, Outdoor: 47°FDB, 43°FWB

8-6. HOW TO OPERATE FIXED-FREQUENCY OPERATION (Test run operation)

1. Press the emergency operation switch to start COOL or HEAT mode (COOL: Press once, HEAT: Press twice).
2. Test run operation starts and continues to operate for 30 minutes.
3. Compressor operates at rated frequency in COOL mode or 58 Hz in HEAT mode.
4. Indoor fan operates at High speed.
5. After 30 minutes, test run operation finishes and EMERGENCY OPERATION starts (operation frequency of compressor varies).
6. To cancel test run operation (EMERGENCY OPERATION), press the emergency operation switch or any button on remote controller.

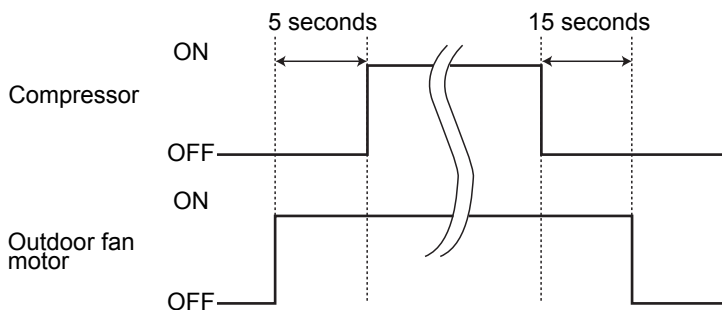
MUZ-JX09WL MUZ-JX12WL
MUZ-JX09WLH MUZ-JX12WLH

9-1. OUTDOOR FAN MOTOR CONTROL

The fan motor turns ON/OFF, interlocking with the compressor.

[ON] The fan motor turns ON 5 seconds before the compressor starts up.

[OFF] The fan motor turns OFF 15 seconds after the compressor has stopped running.



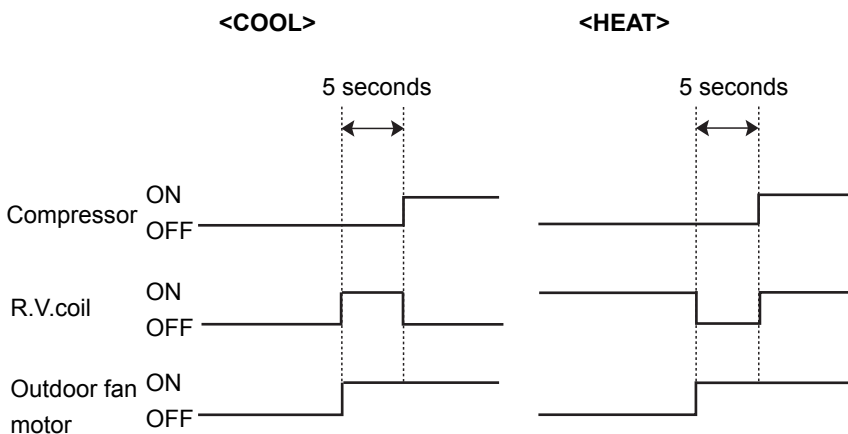
9-2. R.V. COIL CONTROL

Heating ON

Cooling OFF

Dry OFF

NOTE: The 4-way valve reverses for 5 seconds right before startup of the compressor.



9-3. RELATION BETWEEN MAIN SENSOR AND ACTUATOR

Sensor	Purpose	Actuator					
		Compressor	LEV	Outdoor fan motor	R.V.coil	Indoor fan motor	Defrost heater *
Discharge temperature thermistor	Protection	○	○				
Indoor coil temperature thermistor	Cooling: Coil frost prevention	○					
	Heating: High pressure protection	○	○				
Defrost thermistor	Heating: Defrosting	○	○	○	○	○	
Fin temperature thermistor	Protection	○		○			
Ambient temperature thermistor	Cooling: Low ambient temperature operation	○	○	○			
	Heating: Defrosting (Heater)						○
Outdoor heat exchanger temperature thermistor	Cooling: Low ambient temperature operation	○	○	○			
	Cooling: High pressure protection	○	○	○			

* MUZ-JX•WLH only.

MUZ-JX09WL MUZ-JX12WL
MUZ-JX09WLH MUZ-JX12WLH

10-1. CHANGE IN DEFROST SETTING

Changing defrost finish temperature

<JS> To change the defrost finish temperature, cut/solder the JS wire of the outdoor inverter P.C. board (Refer to 11-6.1.).

Jumper		Defrost finish temperature
JS	Soldered (Initial setting)	46°F (8°C)
	None (Cut)	55°F (13°C)

10-2. PRE-HEAT CONTROL SETTING

Prolonged low load operation, in which the thermostat is OFF for a long time, at low outside temperature [32°F (0°C) or less] may cause the following troubles. To prevent those troubles, activate the pre-heat control.

- 1) If moisture gets into the refrigerant cycle and freezes, it may interfere the startup of the compressor.
- 2) If liquid refrigerant collects in the compressor, a failure in the compressor may occur.

The pre-heat control turns ON when the compressor temperature is 68°F (20°C) or below. When the pre-heat control turns ON, the compressor is energized. (About 70 W)

Pre-heat control setting

<JK>

ON: To activate the pre-heat control, cut JK wire of the inverter P.C. board.

OFF: To deactivate the pre-heat control, solder JK wire of the inverter P.C. board.

(Refer to 11-6.1)

Jumper		Pre-heat control setting
JK	Soldered	Deactivated (Initial setting)
	Cut	Activated

NOTE: When the inverter P.C. board is replaced, check the jumper wires, and cut/solder them if necessary.

MUZ-JX09WL MUZ-JX12WL
MUZ-JX09WLH MUZ-JX12WLH

11-1. CAUTIONS ON TROUBLESHOOTING

1. Before troubleshooting, check the following

- 1) Check the power supply voltage.
- 2) Check the indoor/outdoor connecting wire for miswiring.

2. Take care of the following during servicing

- 1) Before servicing the air conditioner, be sure to turn OFF the main unit first with the remote controller, then after confirming the horizontal vane is closed, turn off the breaker and/or disconnect the power plug.
- 2) Be sure to turn OFF the power supply before removing the front panel, the cabinet, the top panel, and the electronic control P.C. board.
- 3) When removing the electrical parts, be careful of the residual voltage of smoothing capacitor.
- 4) When removing the electronic control P.C. board, hold the edge of the board with care NOT to apply stress on the components.
- 5) When connecting or disconnecting the connectors, hold the connector housing. DO NOT pull the lead wires.

<Incorrect>



Lead wiring

<Correct>



Connector housing

3. Troubleshooting procedure

- 1) Check if the operation indicator lamp on the indoor unit is blinking on and off to indicate an abnormality.
To make sure, check how many times the operation indicator lamp is blinking on and off before starting service work.
- 2) Before servicing, verify that all connectors and terminals are connected properly.
- 3) When the electronic control P.C. board seems to be defective, check for disconnection of the copper foil pattern and burnt or discolored components.
- 4) Refer to 11-2 and 11-3.

11-2. FAILURE MODE RECALL FUNCTION AND ERROR CODE DISPLAY MODE

Outline of the function

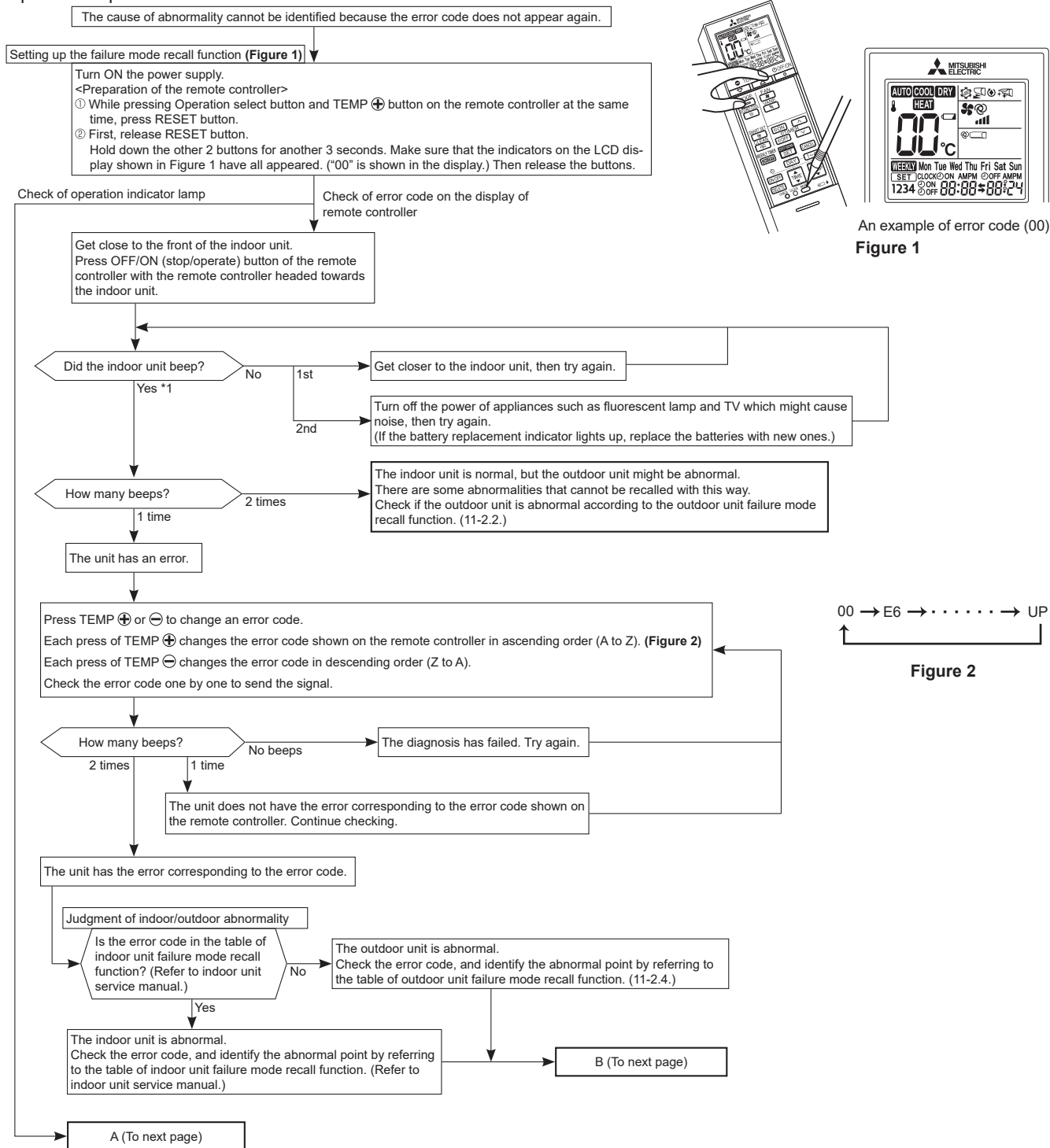
This air conditioner can memorize the failure which has occurred last time.

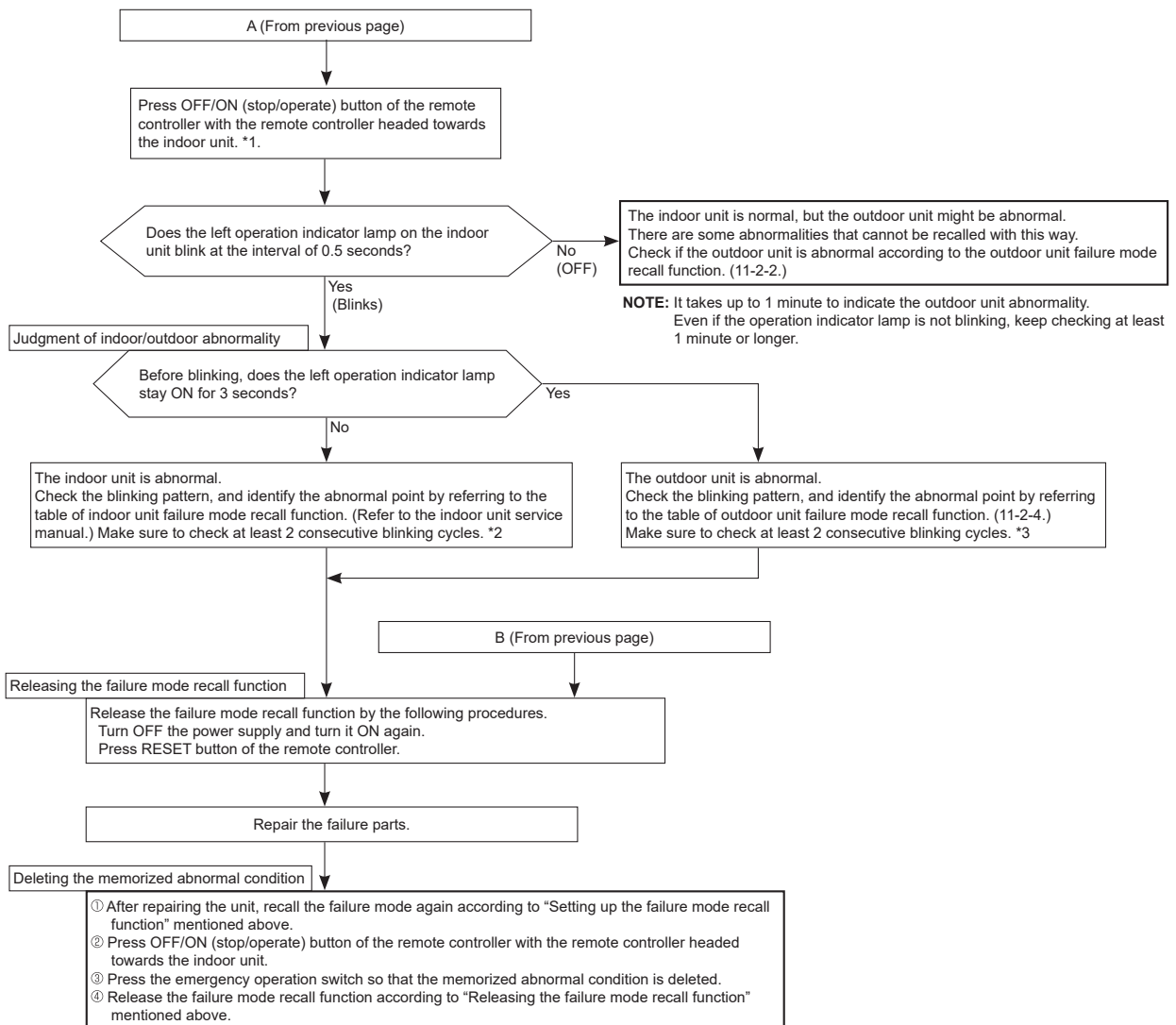
Even though LED indication listed on the troubleshooting check table (11-3.) disappears, the memorized failure can be recalled.

Also, error code can be checked on the display of remote controller while the left operation indicator lamp on the indoor unit is blinking.

1. Flow chart of failure mode recall function for the indoor/outdoor unit

Operational procedure

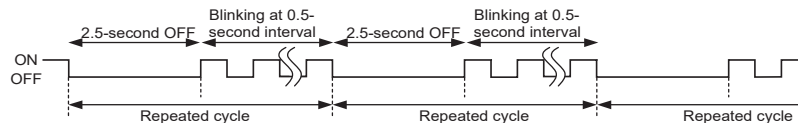




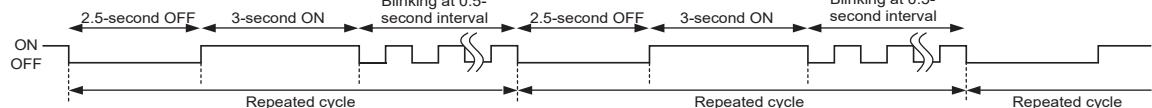
NOTE: 1. Make sure to release the failure mode recall function after it is set up, otherwise the unit cannot operate properly.
2. If the abnormal condition is not deleted from the memory, the last abnormal condition is kept memorized.

*1. Regardless of normal or abnormal condition, 2 short beeps are emitted once the signal is received.

*2. Blinking pattern when the indoor unit is abnormal:



*3. Blinking pattern when the outdoor unit is abnormal:



2. Flow chart of the outdoor unit failure mode recall function

Operational procedure

The outdoor unit might be abnormal.
Check if the outdoor unit is abnormal according to the following procedures.

Make sure that the remote controller is set to the failure mode recall function.

Get close to the front of the indoor unit. With the remote controller headed towards the indoor unit, press  button to set the indicator shown in Figure 1 to 25. *1 (Figure 1)

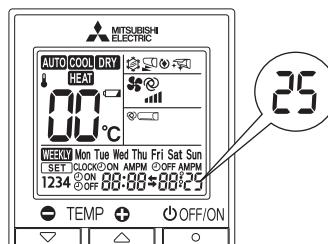
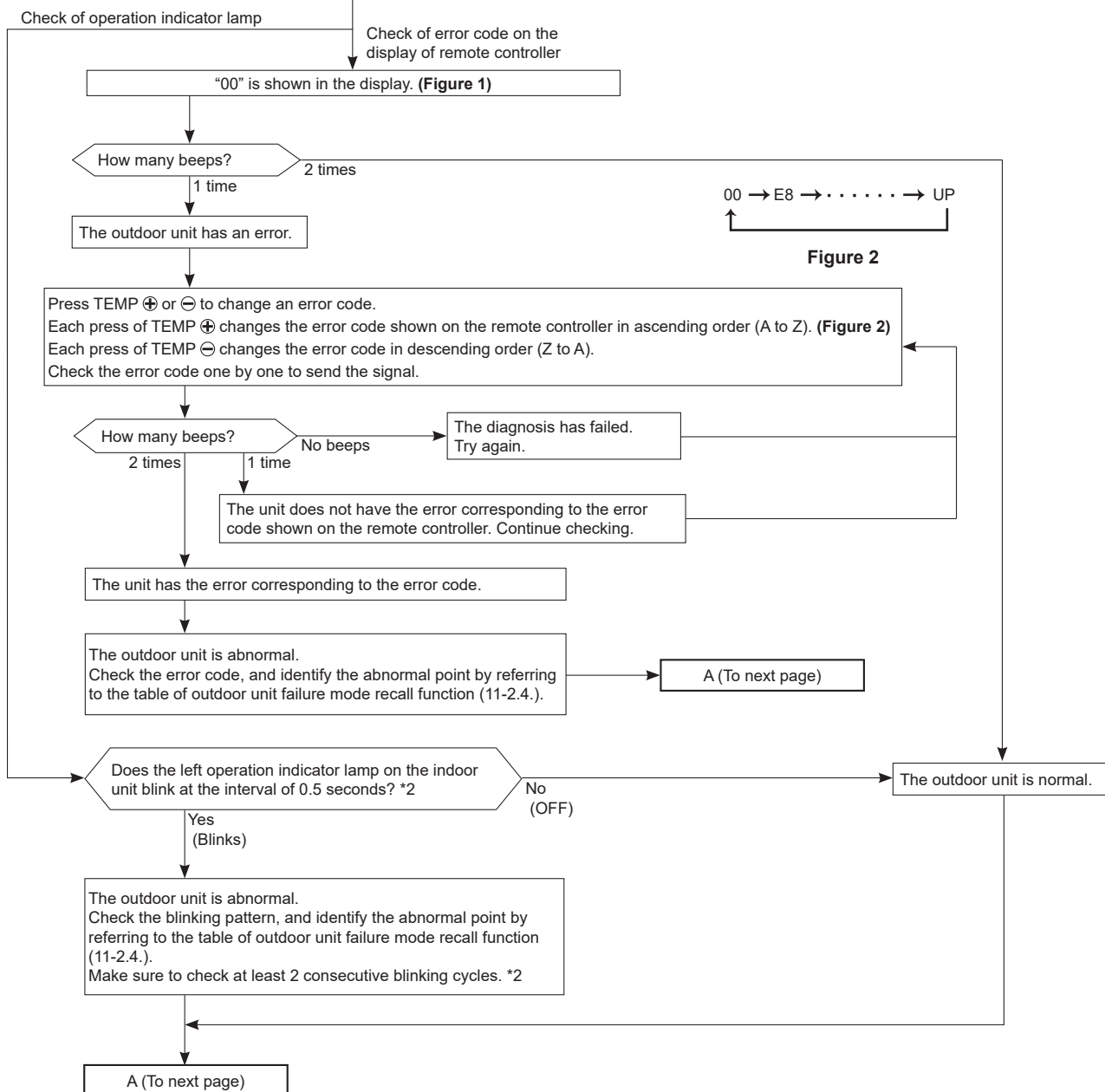
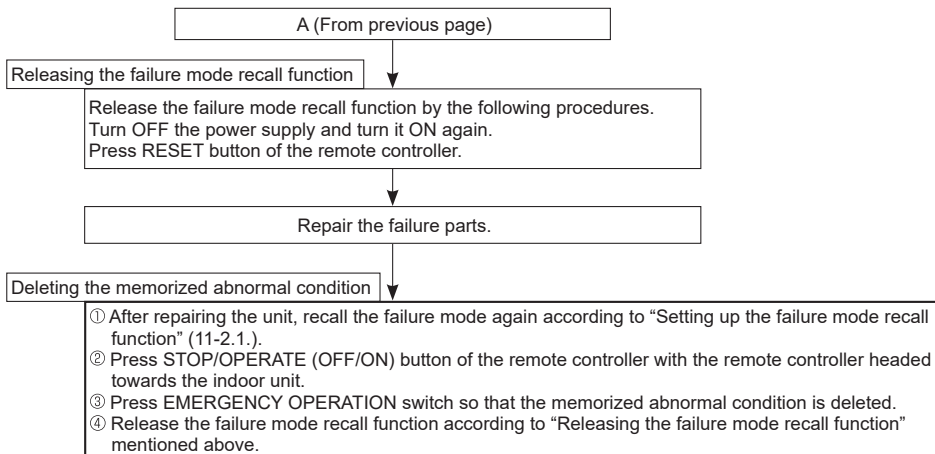
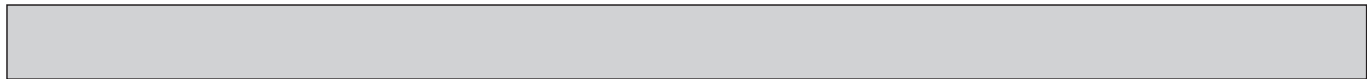


Figure 1

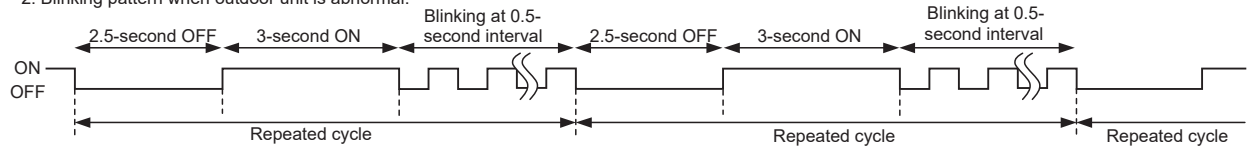




NOTE: 1. Make sure to release the failure mode recall function after it is set up, otherwise the unit cannot operate properly.
2. If the abnormal condition is not deleted from the memory, the last abnormal condition is kept memorized.

*1. Regardless of normal or abnormal condition, 2 short beeps are emitted once the signal is received.

*2. Blinking pattern when outdoor unit is abnormal:



3. Flow chart of error code display mode

This explains how customers can check the error code on their own.
This is included in OPERATING INSTRUCTIONS.

Operational procedure

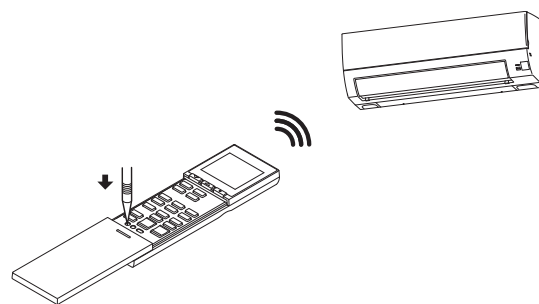


Figure 1

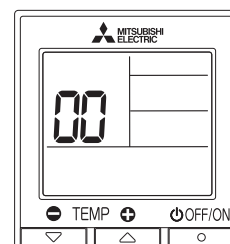
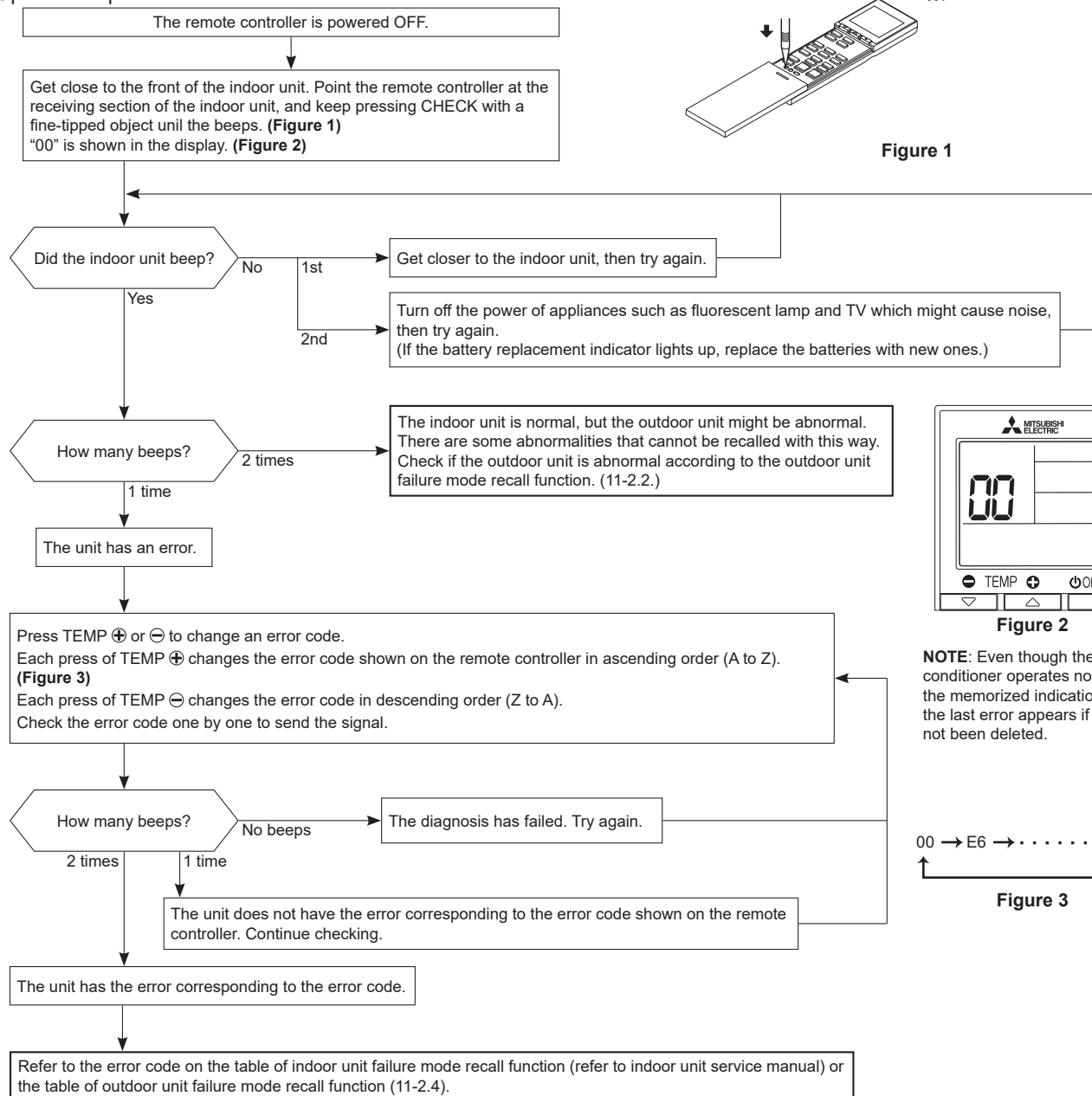


Figure 2

NOTE: Even though the air conditioner operates normally, the memorized indication for the last error appears if it has not been deleted.

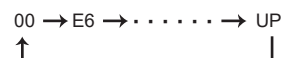


Figure 3

4. Table of outdoor unit failure mode recall function

Operation indicator lamp (Indoor unit)	Error code	Abnormal point (Failure mode/protection)	LED indication (Outdoor P.C. board)	Condition	Remedy	Indoor/outdoor unit failure mode recall function	Outdoor unit failure mode recall function
Not blink	00	None (Normal)	—	—	—	—	—
1-time blink 2.5 seconds OFF	E8	Indoor/outdoor communication, receiving error	—	Any signals from the inverter P.C. board cannot be received normally for 3 minutes.	• Refer to 11-5.⑩ "How to check miswiring and serial signal error".	○	○
	E9	Indoor/outdoor communication, receiving error	—	Although the inverter P.C. board sends signal "0", signal "1" has been received 30 consecutive times.	• Refer to 11-5.⑩ "How to check miswiring and serial signal error".		
	EC	Indoor/outdoor communication, start-up process abnormality	—	The start-up process of the outdoor unit does not complete for 4 minutes.	• Replace the indoor electronic control P.C. board.		
2-time blink 2.5 seconds OFF	UP	Outdoor power system	—	Overcurrent protection cut-out operates 3 consecutive times within 1 minute after the compressor gets started.	• Reconnect connectors. • Refer to 11-5.④ "How to check inverter/compressor". • Check stop valve.	○	○
3-time blink 2.5 seconds OFF	U3	Discharge temperature thermistor	1-time blink every 2.5 seconds	Thermistor shorts or opens during compressor running.	• Refer to 11-5.③ "Check of outdoor thermistors". Defective outdoor thermistors can be identified by checking the blinking pattern of LED. • Replace the inverter P.C. board.	○	○
	U4	Defrost thermistor					
		Ambient temperature	2-time blink 2.5 seconds OFF				
		Fin temperature thermistor	3-time blink 2.5 seconds OFF				
		Outdoor heat exchanger temperature thermistor	—				
		P.C. board temperature thermistor	4-time blink 2.5 seconds OFF				
4-time blink 2.5 seconds OFF	UF	Overcurrent	11-time blink 2.5 seconds OFF	Large current flows into power module (IC700).	• Reconnect compressor connector. • Refer to 11-5.④ "How to check inverter/compressor". • Check stop valve.	—	○
		Compressor synchronous abnormality	12-time blink 2.5 seconds OFF	Waveform of compressor current is distorted.	• Reconnect compressor connector.	—	○
		Compressor start-up failure protection	13-time blink 2.5 seconds OFF	Overcurrent cutoff within 10 seconds after activating the compressor.	• Refer to 11-5.④ "How to check inverter/compressor".	—	○
5-time blink 2.5 seconds OFF	U2	Discharge temperature	—	Temperature of discharge temperature thermistor exceeds 116°C, compressor stops. Compressor can restart if discharge temperature thermistor reads 100°C or less 3 minutes later.	• Check refrigerant circuit and refrigerant amount. • Refer to 11-5.⑧ "Check of LEV".	—	○
6-time blink 2.5 seconds OFF	Ud	High pressure	—	Temperature of outdoor heat exchanger temperature thermistor exceeds 70°C in COOL mode.	• Check refrigerant circuit and refrigerant amount. • Check stop valve.	—	○
7-time blink 2.5 seconds OFF	U5	Fin temperature	7-time blink 2.5 seconds OFF	Temperature of fin temperature thermistor on the inverter P.C. board exceeds 75 – 86°C, or temperature of P.C. board temperature thermistor on the inverter P.C. board exceeds 72 – 85°C.	• Check around outdoor unit. • Check outdoor unit air passage. • Refer to 11-5.① "Check of outdoor fan motor".	—	○
	Ub	P.C. board temperature					
8-time blink 2.5 seconds OFF	U8	Outdoor fan motor	—	Outdoor fan has stopped 3 times in a row within 30 seconds after outdoor fan start-up.	• Refer to 11-5.① "Check of outdoor fan motor". Refer to 11-5.① "Check of inverter P.C. board".	—	○

NOTE: Blinking patterns of this mode differ from the ones of TROUBLESHOOTING CHECK TABLE (11-3.).

NOTE: Blinking patterns of this mode differ from the ones of TROUBLESHOOTING CHECK TABLE (11-3.).

Operation indicator lamp (Indoor unit)	Error code	Abnormal point (Failure mode/protection)	LED indication (Outdoor P.C. board)	Condition	Remedy	Indoor/outdoor unit failure mode recall function	Outdoor unit failure mode recall function
9-time blink 2.5 seconds OFF	FC	Nonvolatile memory data	5-time blink 2.5 seconds OFF	Nonvolatile memory data cannot be read properly.	• Replace the inverter P.C. board.	○	○
	U6	Power module (IC700)	6-time blink 2.5 seconds OFF	The interface short circuit occurs in the output of the power module (IC700). The compressor winding shorts circuit.	• Refer to 11-5.④ "How to check inverter/compressor".	—	○
10-time blink 2.5 seconds OFF	U7	Discharge temperature	—	Temperature of discharge temperature thermistor has been 50°C or less for 20 minutes.	• Refer to 11-5.④ "Check of LEV". • Check refrigerant circuit and refrigerant amount.	—	○
11-time blink 2.5 seconds OFF	UJ	Bus-bar voltage (DC)	8-time blink 2.5 seconds OFF	Bus-bar voltage of inverter cannot be detected normally.	• Refer to 11-5.④ "How to check inverter/compressor".	—	○
	UH	Each phase current of compressor	9-time blink 2.5 seconds OFF	Each phase current of compressor cannot be detected normally.			
13-time blink 2.5 seconds OFF	Fd	Abnormal of wrong voltage power supply connected.	—	When 100 V power supply is connected to 200 V model.	• Check power supply voltage	○	○
14-time blink 2.5 seconds OFF *1	UE	Stop valve (Closed valve)	14-time blink 2.5 seconds OFF	• Closed valve is detected by compressor current. • An abnormality of the indoor thermistors is detected.	• Check stop valve. • Refer to "TEST POINT DIAGRAM AND VOLTAGE" on the service manual of indoor unit for the characteristics of the thermistors. (Do not start the operation again without repair to prevent hazards.)	○	○
	P8	Pipe temperature	16-time blink 2.5 seconds OFF	• The indoor coil thermistor detects an abnormal temperature. • An abnormality of the indoor thermistors is detected.	• Replace the inverter P.C. board. • Refer to "TEST POINT DIAGRAM AND VOLTAGE" on the service manual of indoor unit for the characteristics of the thermistors. (Do not start the operation again without repair to prevent hazards.)	○	○
16-time blink 2.5 seconds OFF *1	PL	Outdoor refrigerant system abnormality	1-time blink 2.5 seconds OFF	• A closed valve and air trapped in the refrigerant circuit are detected based on the temperature sensed by the indoor and outdoor thermistors and the current of the compressor. • An abnormality of the indoor thermistors is detected.	• Check for a gas leak in a connecting piping etc. • Check the stop valve. • Refer to 11-5.④ "Check of outdoor refrigerant circuit". • Refer to "TEST POINT DIAGRAM AND VOLTAGE" on the service manual of indoor unit for the characteristics of the thermistors. (Do not start the operation again without repair to prevent hazards.)	○	○

*1 There is possibility that diesel explosion may occur due to the air mixed in the refrigerant circuit.

First, ensure that there are no leakage points on the valves, flare connections, etc. that allow the air to flow into the refrigerant circuit, or no blockage points (e.g. clogged or closed valves) in the refrigerant circuit that cause an increase in pressure.

If there is no abnormal point like above and the system operates cooling mode normally, the indoor thermistor might have a problem, resulting in false detection. Check both the indoor coil thermistor and the room temperature thermistor, and replace faulty thermistor(s), if any.

NOTE: Do not start the operation again without repair to prevent hazards.

11-3. TROUBLESHOOTING CHECK TABLE

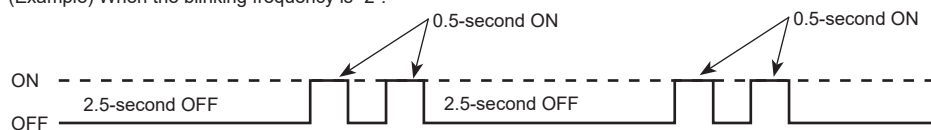
No.	Symptom	LED indication	Abnormal point/ Condition	Condition	Remedy
1	Outdoor unit does not operate.	1-time blink every 2.5 seconds	Outdoor power system	Overcurrent protection cut-out operates 3 consecutive times within 1 minute after the compressor gets started.	• Reconnect connector of compressor. • Refer to 11-5.Ⓐ "How to check inverter/compressor". • Check stop valve.
2			Outdoor thermistors	Discharge temperature thermistor, fin temperature thermistor, defrost thermistor, outdoor heat exchanger temperature thermistor or ambient temperature thermistor shorts or opens during compressor running.	• Refer to 11-5.Ⓒ "Check of outdoor thermistors".
				P.C. board temperature thermistor shorts or opens during compressor running.	• Replace inverter P.C. board.
3			Outdoor control system	Nonvolatile memory data cannot be read properly. (The left lamp of the operation indicator lamp on the indoor unit lights up or blinks 7-time.)	• Replace inverter P.C. board.
4		6-time blink 2.5 seconds OFF	Serial signal	The communication fails between the indoor and outdoor unit for 3 minutes.	• Refer to 11-5.Ⓜ "How to check miswiring and serial signal error."
5		11-time blink 2.5 seconds OFF	Stop valve/ Closed valve	Closed valve is detected by compressor current.	• Check stop valve.
6		14-time blink 2.5 seconds OFF	Outdoor unit (Other abnormality)	Outdoor unit is defective.	• Refer to 11-2.2. "Flow chart of the detailed outdoor unit failure mode recall function".
7		16-time blink 2.5 seconds OFF	4-way valve/ Pipe temperature	The 4-way valve does not work properly. The indoor coil thermistor detects an abnormal temperature.	• Refer to 11-5.Ⓢ "Check of R.V. coil". • Replace the inverter P.C. board.
8	'Outdoor unit stops and restarts 3 minutes later' is repeated.	17-time blink 2.5 seconds OFF	Outdoor refrigerant system abnormality	A closed valve and air trapped in the refrigerant circuit are detected based on the temperature sensed by the indoor and outdoor thermistors and the current of the compressor.	• Check for a gas leak in a connecting piping etc. • Check the stop valve. • Refer to 11-5.Ⓒ "Check of outdoor refrigerant circuit".
9		2-time blink 2.5 seconds OFF	Overcurrent protection	Large current flows into the power module (IC700).	• Reconnect connector of compressor. • Refer to 11-5.Ⓐ "How to check inverter/compressor". • Check stop valve.
10		3-time blink 2.5 seconds OFF	Discharge temperature overheat protection	Temperature of discharge temperature thermistor exceeds 241°F (116°C), compressor stops. Compressor can restart if discharge temperature thermistor reads 212°F (100°C) or less 3 minutes later.	• Check refrigerant circuit and refrigerant amount. • Refer to 11-5.Ⓢ "Check of LEV".
11		4-time blink 2.5 seconds OFF	Fin temperature /P.C. board temperature thermistor overheat protection	Temperature of the fin temperature thermistor on the heat sink exceeds 167 – 187°F (75 – 86°C) or temperature of P.C. board temperature thermistor on the inverter P.C. board exceeds 162 – 185°F (72 – 85°C).	• Check around outdoor unit. • Check outdoor unit air passage. • Refer to 11-5.Ⓢ "Check of outdoor fan motor".
12		5-time blink 2.5 seconds OFF	High pressure protection	Indoor coil thermistor exceeds 158°F (70°C) in HEAT mode. Defrost thermistor exceeds 158°F (70°C) in COOL mode.	• Check refrigerant circuit and refrigerant amount. • Check stop valve.
13		8-time blink 2.5 seconds OFF	Compressor synchronous abnormality	The waveform of compressor current is distorted.	• Reconnect connector of compressor. • Refer to 11-5.Ⓐ "How to check inverter/compressor".
14		10-time blink 2.5 seconds OFF	Outdoor fan motor	Outdoor fan has stopped 3 times in a row within 30 seconds after outdoor fan startup.	• Refer to 11-5.Ⓢ "Check of outdoor fan motor." • Refer to 11-5.Ⓢ "Check of inverter P.C. board."
15		12-time blink 2.5 seconds OFF	Each phase current of compressor	Each phase current of compressor cannot be detected normally.	• Refer to 11-5.Ⓐ "How to check inverter/compressor".
16		13-time blink 2.5 seconds OFF	Bus-bar voltage (DC)	Bus-bar voltage of inverter cannot be detected normally.	• It occurs with following case. • Instantaneous power voltage drop. (Short time power failure) • Refer to 11-5.Ⓢ "Check of power supply". • Refer to 11-5.Ⓐ "How to check inverter/compressor".



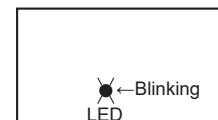
No.	Symptom	LED indication	Abnormal point/ Condition	Condition	Remedy
17	Outdoor unit operates.	1-time blink 2.5 seconds OFF	Deceleration of the operational frequency of the compressor by the current protection control	When the input current exceeds approximately 10A, compressor frequency lowers.	The unit is normal, but check the following. • Check if indoor filters are clogged. • Check if refrigerant is short. • Check if indoor/outdoor unit air circulation is short cycled.
18		3-time blink 2.5 seconds OFF	Deceleration of the operational frequency of the compressor by the high pressure protection	Temperature of indoor coil thermistor exceeds 131°F (55°C) in HEAT mode, compressor frequency lowers.	
			Deceleration of the operational frequency of the compressor by the overcooling prevention of the indoor heat exchanger	Indoor coil thermistor reads 46°F (8°C) or less in COOL mode, compressor frequency lowers.	
19		4-time blink 2.5 seconds OFF	Deceleration of the operational frequency of the compressor by the discharge temperature protection	Temperature of discharge temperature thermistor exceeds 232°F (111°C), compressor frequency lowers.	• Check refrigerant circuit and refrigerant amount. • Refer to 11-5.Ⓒ “Check of LEV”. • Refer to 11-5.Ⓒ “Check of outdoor thermistors”.
20		5-time blink 2.5 seconds OFF	Outside temperature thermistor protection	When the outside temperature thermistor shorts or opens, protective operation without that thermistor is performed.	• Refer to 11-5.Ⓒ “Check of outdoor thermistors”.
21	Outdoor unit operates.	7-time blink 2.5 seconds OFF	Low discharge temperature protection	Temperature of discharge temperature thermistor has been 122°F (50°C) or less for 20 minutes.	• Refer to 11-5.Ⓒ “Check of LEV”. • Check refrigerant circuit and refrigerant amount.
22		8-time blink 2.5 seconds OFF	PAM protection PAM: Pulse Amplitude Modulation	The overcurrent flows into IGBT(Q821) or the bus-bar voltage reaches 394 V or more, PAM stops and restarts.	This is not malfunction. PAM protection will be activated in the following cases: 1 Instantaneous power voltage drop. (Short time power failure) 2 When the power supply voltage is high.
23		9-time blink 2.5 seconds OFF	Inverter check mode	The connector of compressor is disconnected, inverter check mode starts.	• Check if the connector of the compressor is correctly connected. Refer to 11-5.Ⓐ “How to check inverter/compressor”.

NOTE: 1. The location of LED is illustrated at the right figure. Refer to 11-6.1.
2. LED is lit during normal operation.

The blinking frequency shows the number of times the LED blinks after every 2.5-second OFF.
(Example) When the blinking frequency is "2".



Inverter P.C. board



11-4. TROUBLESHOOTING CRITERION OF MAIN PARTS

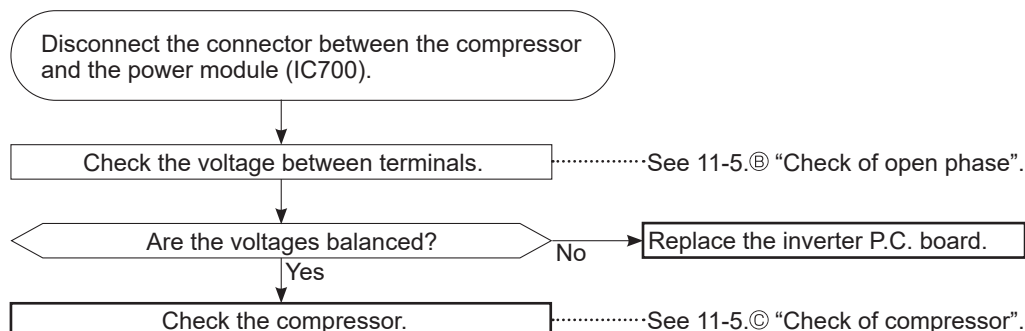
MUZ-JX09WL MUZ-JX12WL

MUZ-JX09WLH MUZ-JX12WLH

Part name	Check method and criterion	Figure															
Defrost thermistor (RT61) Fin temperature thermistor (RT64) Ambient temperature thermistor (RT65) Outdoor heat exchanger temperature thermistor (RT68)	Measure the resistance with a multimeter. Refer to 11-6. "Test point diagram and voltage", 1. "Inverter P.C. board", for the chart of thermistor.																
Discharge temperature thermistor (RT62)	Measure the resistance with a multimeter. Before measurement, hold the thermistor with your hands to warm it up. Refer to 11-6. "Test point diagram and voltage", 1. "Inverter P.C. board", for the chart of thermistor.																
Compressor	Measure the resistance between terminals using a multimeter. [Temperature: 14 – 104°F (-10 – 40°C)] <table border="1"><thead><tr><th></th><th colspan="2">Normal (Ω)</th></tr><tr><th></th><th>MUZ-JX09WL MUZ-JX09WLH</th><th>MUZ-JX12WL MUZ-JX12WLH</th></tr></thead><tbody><tr><td>U-V</td><td></td><td></td></tr><tr><td>U-W</td><td>2.21 – 2.99</td><td>1.30 – 1.77</td></tr><tr><td>V-W</td><td></td><td></td></tr></tbody></table>		Normal (Ω)			MUZ-JX09WL MUZ-JX09WLH	MUZ-JX12WL MUZ-JX12WLH	U-V			U-W	2.21 – 2.99	1.30 – 1.77	V-W			
	Normal (Ω)																
	MUZ-JX09WL MUZ-JX09WLH	MUZ-JX12WL MUZ-JX12WLH															
U-V																	
U-W	2.21 – 2.99	1.30 – 1.77															
V-W																	
Outdoor fan motor	Measure the resistance between lead wires using a multimeter. [Temperature: 14 – 104°F (-10 – 40°C)] <table border="1"><thead><tr><th>Color of lead wire</th><th>Normal (Ω)</th></tr></thead><tbody><tr><td>RED – BLK</td><td rowspan="3">26 – 40</td></tr><tr><td>BLK – WHT</td></tr><tr><td>WHT – RED</td></tr></tbody></table>	Color of lead wire	Normal (Ω)	RED – BLK	26 – 40	BLK – WHT	WHT – RED										
Color of lead wire	Normal (Ω)																
RED – BLK	26 – 40																
BLK – WHT																	
WHT – RED																	
R. V. coil (21S4)	Measure the resistance using a multimeter. [Temperature: 14 – 104°F (-10 – 40°C)] <table border="1"><thead><tr><th>Normal (kΩ)</th></tr></thead><tbody><tr><td>0.39 - 0.60</td></tr></tbody></table>	Normal (kΩ)	0.39 - 0.60														
Normal (kΩ)																	
0.39 - 0.60																	
Expansion valve coil (LEV)	Measure the resistance using a multimeter. [Temperature: 14 – 104°F (-10 – 40°C)] <table border="1"><thead><tr><th>Color of lead wire</th><th>Normal (Ω)</th></tr></thead><tbody><tr><td>BRN – ORN</td><td rowspan="4">37 – 54</td></tr><tr><td>BRN – WHT</td></tr><tr><td>RED – BLU</td></tr><tr><td>RED – YLW</td></tr></tbody></table>	Color of lead wire	Normal (Ω)	BRN – ORN	37 – 54	BRN – WHT	RED – BLU	RED – YLW									
Color of lead wire	Normal (Ω)																
BRN – ORN	37 – 54																
BRN – WHT																	
RED – BLU																	
RED – YLW																	
Defrost heater	Measure the resistance using a multimeter. [Temperature: 14 to 104°F (-10 to 40°C)] <table border="1"><thead><tr><th>Normal (Ω)</th></tr></thead><tbody><tr><td>MUZ-JX09/12WLH</td></tr><tr><td>79 - 118</td></tr></tbody></table>	Normal (Ω)	MUZ-JX09/12WLH	79 - 118													
Normal (Ω)																	
MUZ-JX09/12WLH																	
79 - 118																	

11-5. TROUBLESHOOTING FLOW

Ⓐ How to check inverter/compressor



Ⓑ Check of open phase

- With the connector between the compressor and the power module (IC700) disconnected, activate the inverter and check if the inverter is normal by measuring **the voltage balance** between the terminals.

Output voltage is 50 – 130 V. (The voltage may differ according to the multimeter.)

<< Operation method>>

Start cooling or heating operation by pressing the emergency operation switch on the indoor unit. (TEST RUN OPERATION: Refer to 8-6.)

<<Measurement point>>

At 3 points

*Measure AC voltage between the lead wires at 3 points.

BLK (U)-WHT (V)

BLK (U)-RED (W)

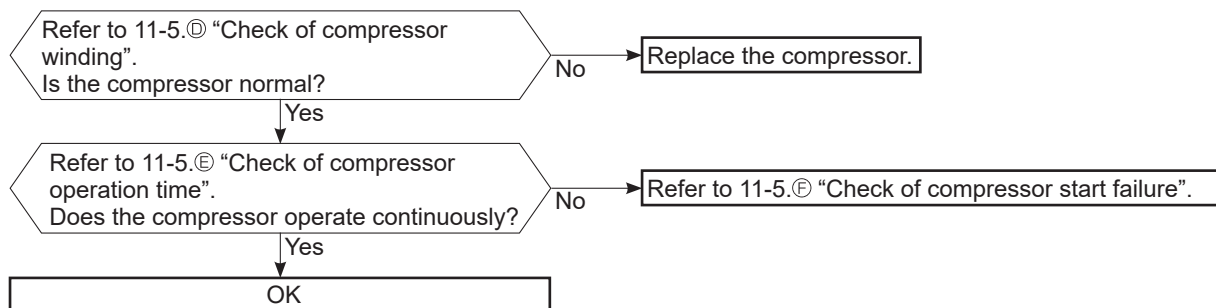
WHT(V)-RED (W)

NOTE: 1. Output voltage varies according to power supply voltage.

2. Measure the voltage by analog type multimeter.

3. During this check, LED of the inverter P.C. board blinks 9 times. (Refer to 11-6.1.)

Ⓒ Check of compressor



D Check of compressor winding

- Disconnect the connector between the compressor and the power module (IC700), and measure the resistance between the compressor terminals.

<<Measurement point>>

At 3 points *Measure the resistance between the lead wires at 3 points.

BLK-WHT

BLK-RED

WHT-RED

<<Judgement>>

Refer to 11-4.

0 [Ω] Abnormal [short]

Infinite [Ω] Abnormal [open]

NOTE: Be sure to zero the ohmmeter before measurement.

E Check of compressor operation time

- Connect the compressor and activate the inverter. Then measure the time until the inverter stops due to overcurrent.

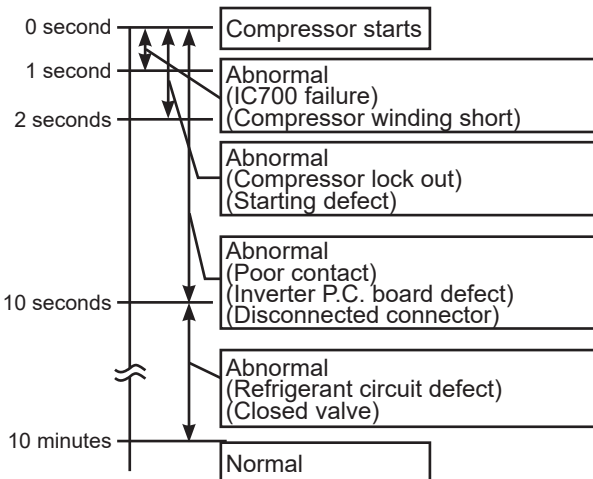
<<Operation method>>

Start heating or cooling operation by pressing the emergency operation switch on the indoor unit. (TEST RUN OPERATION: Refer to 8-6.)

<<Measurement>>

Measure the time from the start of compressor to the stop of compressor due to overcurrent.

<<Judgement>>



F Check of compressor start failure

Confirm that ①~④ is normal.

• Electrical circuit check

①. Contact of the compressor connector

②. Output voltage of inverter P.C. board and balance of them (See 11-5.⑥)

③. Direct current voltage between DB61(+) and (-) on the inverter P.C. board

④. Voltage between outdoor terminal block S1-S2

Does the compressor run for 10 seconds or more after it starts?

Yes

Check the refrigerant circuit.
Check the stop valve.

No

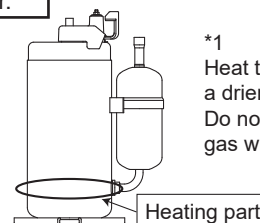
After the compressor is heated with a drier, does the compressor start? *1

No

Replace the compressor.

Yes

Compressor start failure. Activate pre-heat control.
(Refer to 10-2. "PRE-HEAT CONTROL SETTING")



*1
Heat the compressor with a drier for about 20 minutes.
Do not recover refrigerant gas while heating.

Ⓒ Check of outdoor thermistors

Disconnect the connector of thermistor in the inverter P.C. board (see below table), and measure the resistance of thermistor.

Is the resistance of thermistor normal?
(Refer to 11-6.1.)

No

Replace the thermistor except RT64.
When RT64 is abnormal, replace the inverter P.C. board.

Yes

Reconnect the connector of thermistor.
Turn ON the power supply and press the emergency operation switch.

Does the unit operate for 10 minutes or more
without showing thermistor abnormality?

No

Replace the inverter P.C. board.

Yes

OK
(Cause is poor contact.)

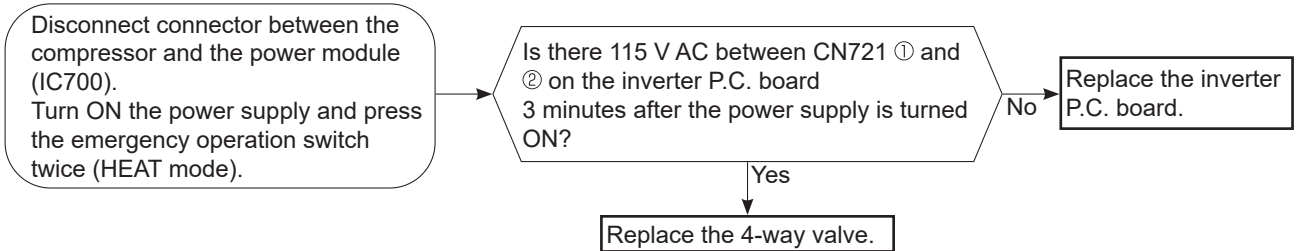
Thermistor	Symbol	Connector, Pin No.	Board
Defrost	RT61	Between CN641 pin1 and pin2	Inverter P.C. board
Discharge temperature	RT62	Between CN641 pin3 and pin4	
Fin temperature	RT64	Between CN642 pin1 and pin2	
Ambient temperature	RT65	Between CN643 pin1 and pin2	
Outdoor heat exchanger temperature	RT68	Between CN644 pin1 and pin3	

H Check of R.V. coil

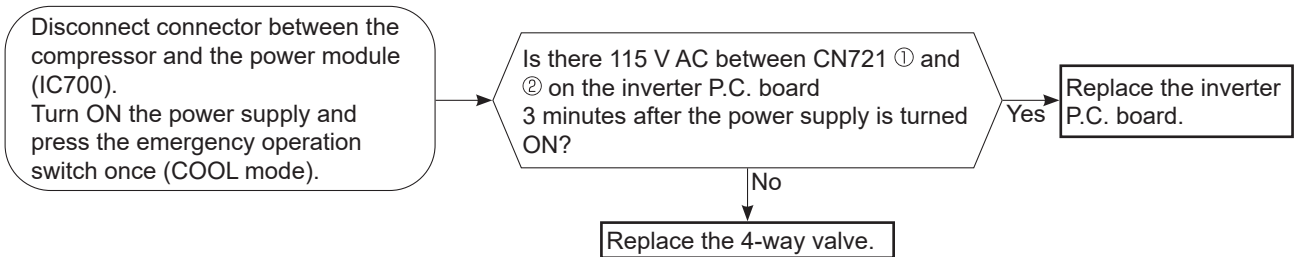
MUZ-JX09/12

- * First of all, measure the resistance of R.V. coil to check if the coil is defective. Refer to 11-4.
- * In case CN721 is disconnected or R.V. coil is open, voltage is generated between the terminal pins of the connector although no signal is being transmitted to R.V. coil.
Check if CN721 is connected.

Unit operates in COOL mode even if it is set to HEAT mode.



Unit operates in HEAT mode even if it is set to COOL mode.



① Check of outdoor fan motor

Disconnect the connectors CN931 and CN932 from the inverter P.C. board.
Check the connection between the connector CN931 and CN932.

Is the resistance between each terminal of outdoor fan motor normal?
(Refer to 11-4.)

Yes

Disconnect CN932 from the inverter P.C. board, and turn on the power supply.

Rotate the outdoor fan motor manually and measure the voltage of CN931.
Between 1(+) and 5(-)
Between 2(+) and 5(-)
Between 3(+) and 5(-)

(Fixed to either 5 or 0 V DC)

No

Does the voltage between each terminal become 5 and 0 V DC repeatedly?

Yes

Does the outdoor fan motor rotate smoothly?

No

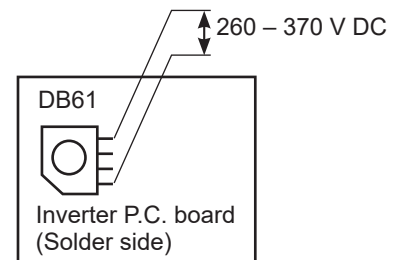
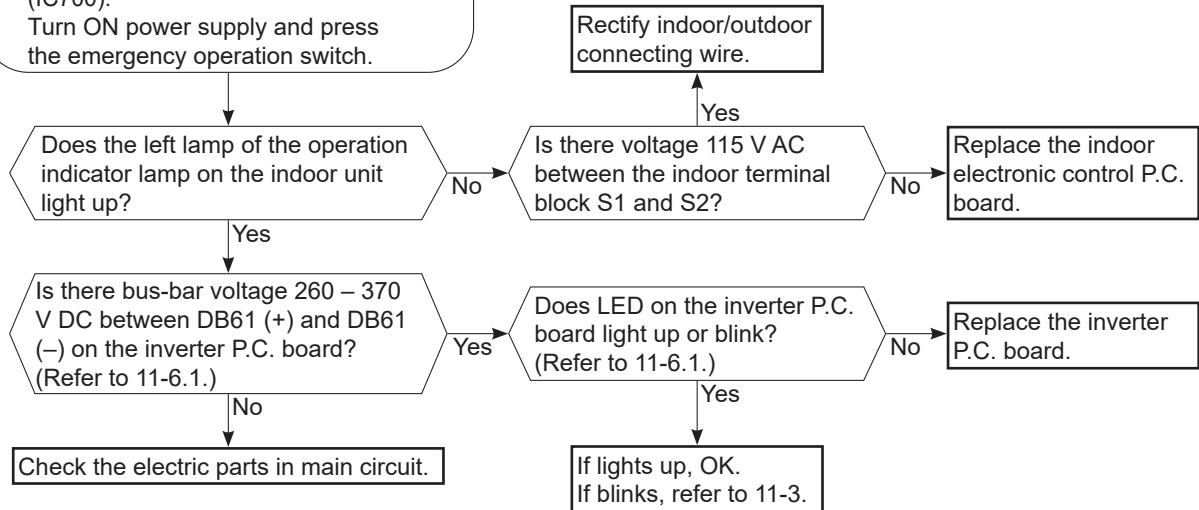
Yes

Replace the outdoor fan motor.

Replace the inverter P.C. board.

J Check of power supply

Disconnect the connector between the compressor and the power module (IC700).
Turn ON power supply and press the emergency operation switch.

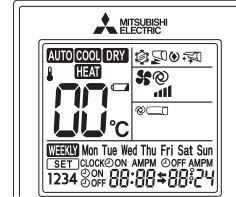
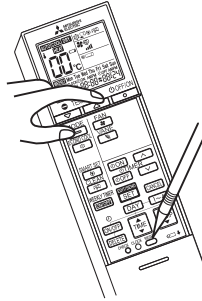


K Check of LEV (Expansion valve)

Turn ON the power supply.

<Preparation of the remote controller>

- ① While pressing both Operation select button and TEMP $\oplus$ button on the remote controller at the same time, press RESET button.
- ② First, release RESET button.
Hold down the other 2 buttons for another 3 seconds.
Make sure that the indicators on the LCD screen shown in the right figure are all displayed. Then release the buttons.



An example of error code (00)

Press OFF/ON (stop/operate) button of the remote controller (the set temperature is displayed) with the remote controller headed towards the indoor unit. *1

Expansion valve operates in full-opening direction.

Do you hear the expansion valve "click, click....."?
Do you feel the expansion valve vibrate when touching it?

Yes

OK

No

Is LEV coil properly fixed to the expansion valve?

No

Properly fix the LEV coil to the expansion valve.

Yes

Does the resistance of LEV coil have the characteristics? (Refer to 11-4.)

Yes

Measure each voltage between connector pins of CN724 on the inverter P.C. board.
1. Pin ③ (-) — Pin ① (+)
2. Pin ④ (-) — Pin ① (+)
3. Pin ⑤ (-) — Pin ① (+)
4. Pin ⑥ (-) — Pin ① (+)
Is there about 3 – 5 V DC between each?
NOTE: Measure the voltage by an analog multimeter.

Replace the inverter P.C. board.

Yes

Replace the expansion valve.

No

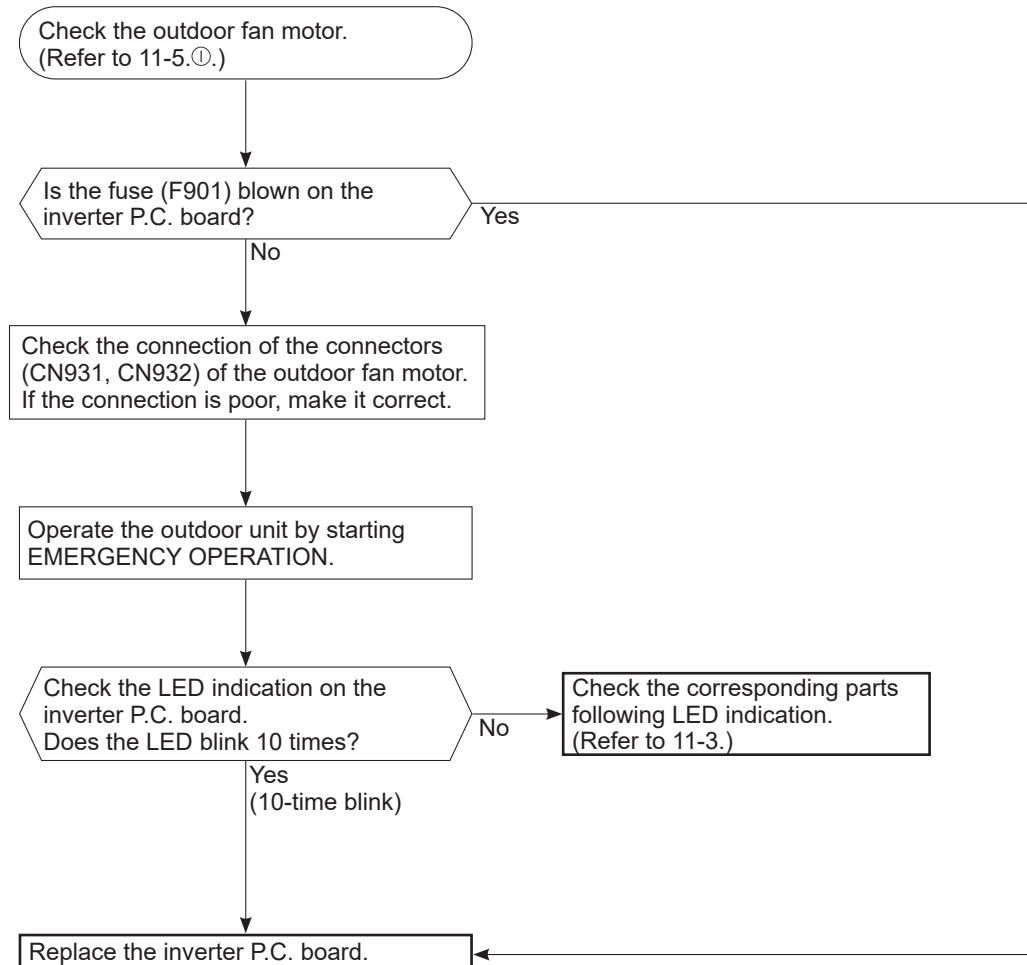
Replace the LEV coil.

NOTE: After check of LEV, take the following steps.

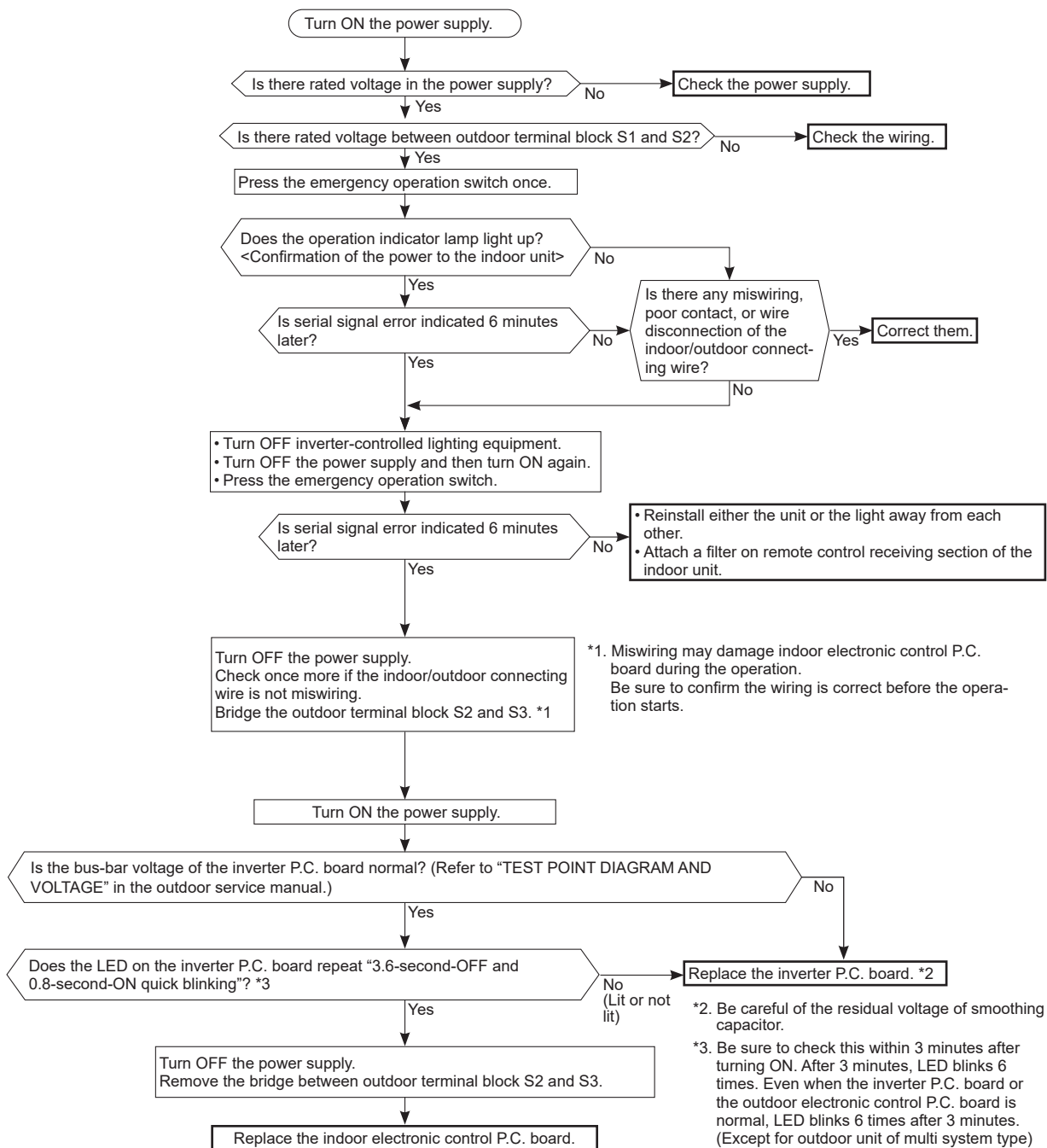
1. Turn OFF the power supply and turn it ON again.
2. Press RESET button on the remote controller.

*1. Regardless of normal or abnormal condition, a short beep is emitted once the signal is received.

L Check of inverter P.C. board



M How to check miswiring and serial signal error



N Check of defrost heater

Check the following points before checking electric continuity.

1. Does the resistance of ambient temperature thermistor have the characteristics? Refer to 11-6.1.
2. Is the resistance of defrost heater normal? Refer to 11-4.
3. Does the heater protector remain conducted (not open)?
4. Are both ambient temperature thermistor and circuit of defrost heater securely connected to connectors?

In HEAT mode, for more than 5 minutes, let the ambient temperature thermistor continue to read 32°F (0°C) or below, and let the defrost thermistor continue to read 30°F (-1°C) or below.

NOTE: In case both thermistors are more than the above temperature, cool them with cold water etc.

Is there 115 V AC between CN601 ① and ② on the inverter P.C. board? Refer to 11-6.1.

Yes

Not the problem of the inverter P.C. board.

No

Replace the inverter P.C. board.

O Check of outdoor refrigerant circuit

Has the operation stopped during pump down?

Yes

The operation has stopped to prevent the diesel explosion caused by air trapped in the refrigerant circuit. Close the stop valve, and disconnect the power plug or turn the breaker OFF.

CAUTION : Do not start the operation again to prevent hazards.

No

Was the operation started with the stop valve closed, and was it opened during operation?

Yes

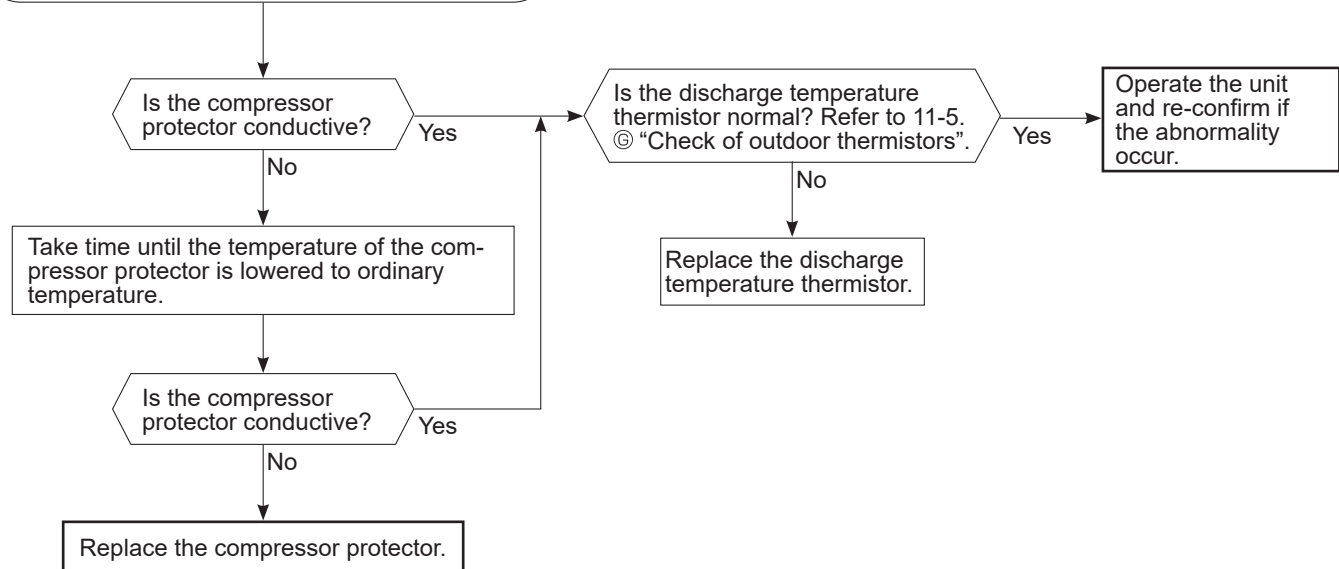
The unit occasionally stops when the stop valve is opened or closed during operation. Open the stop valve and start the cooling operation again.

No

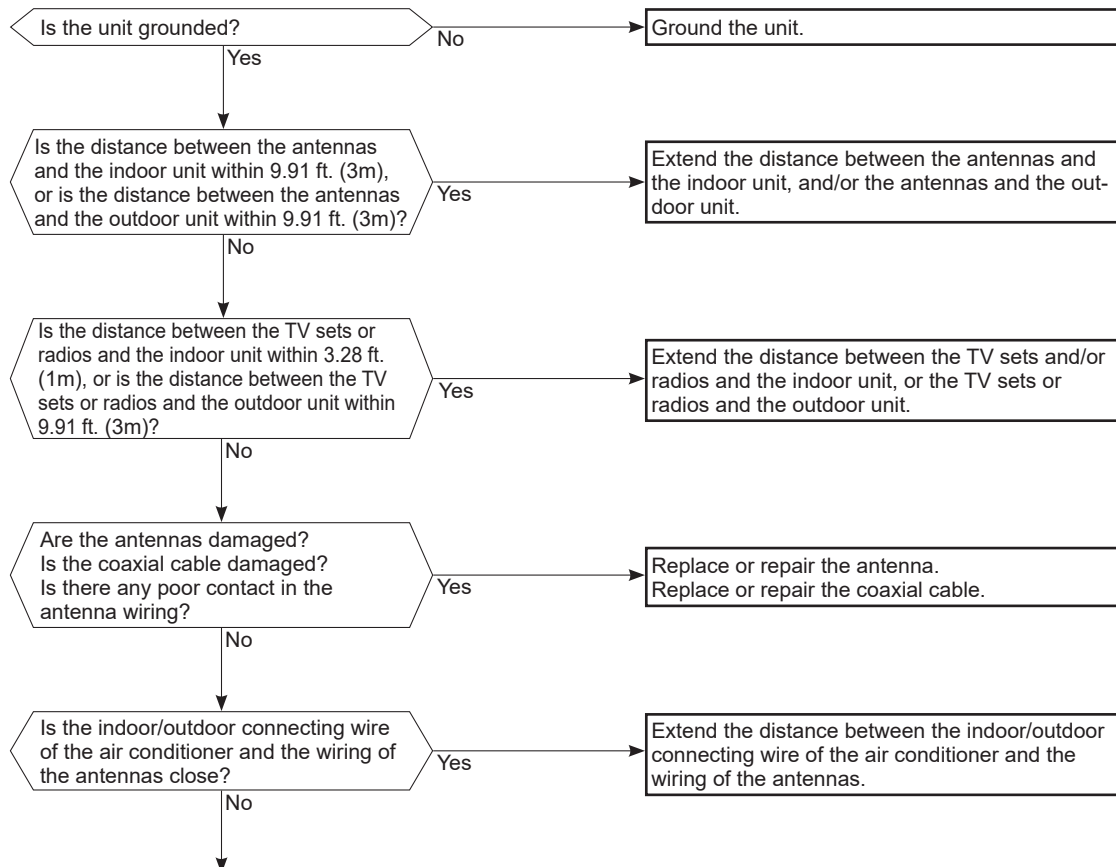
The refrigerant gas amount may be 60% or less than the normal amount. Identify where the gas is leaking from, and fix the leak.

P Check of compressor protector

Disconnect the connector of compressor protector in the inverter P.C. board, and check the conduction of compressor protector.



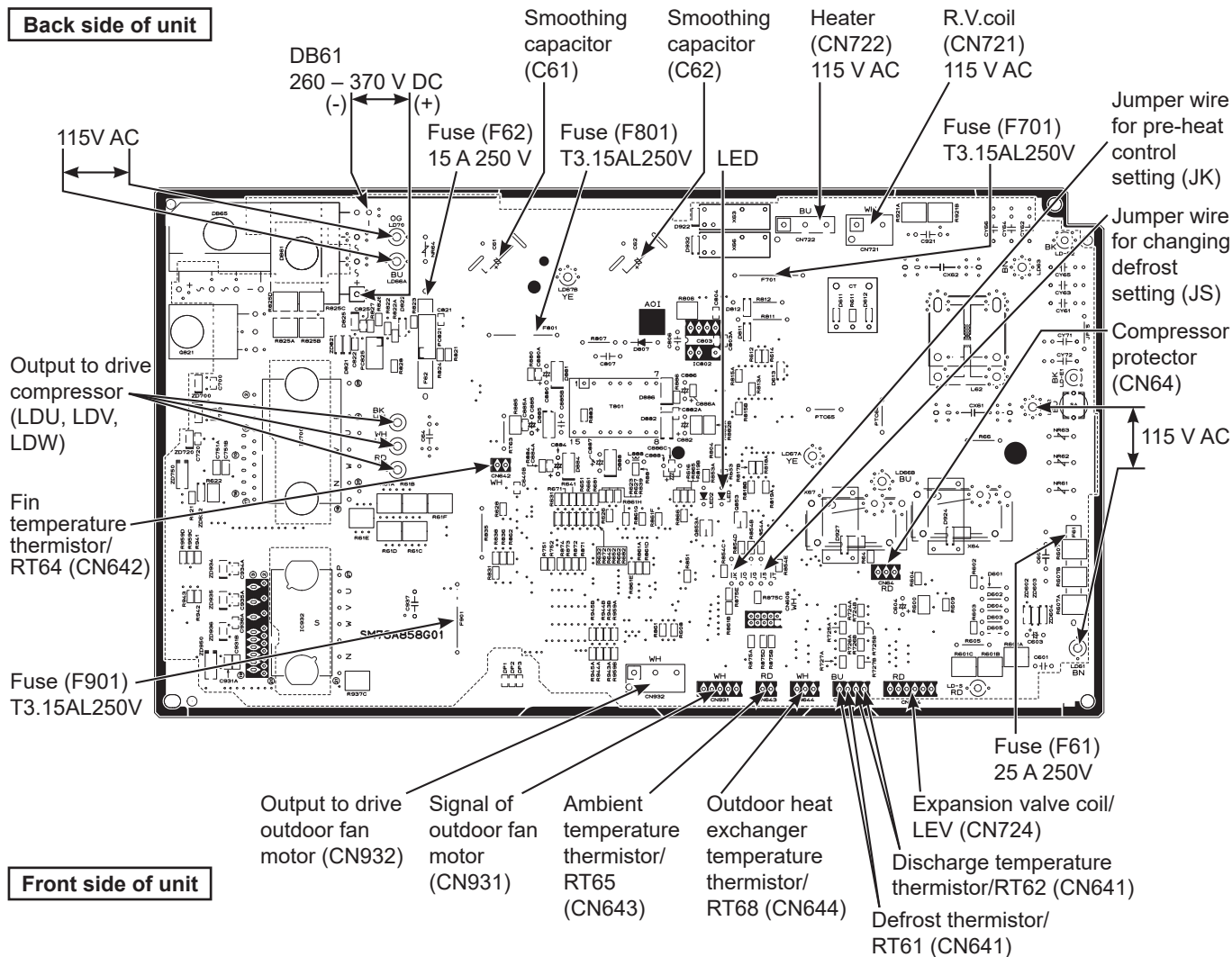
Q Electromagnetic noise enters into TV sets or radios



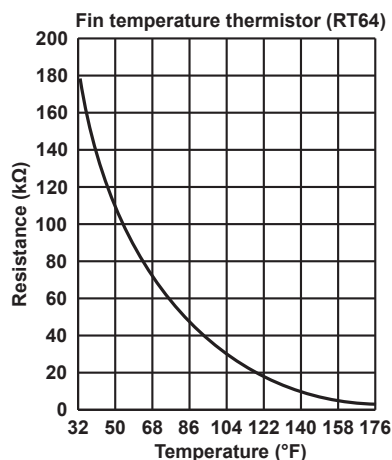
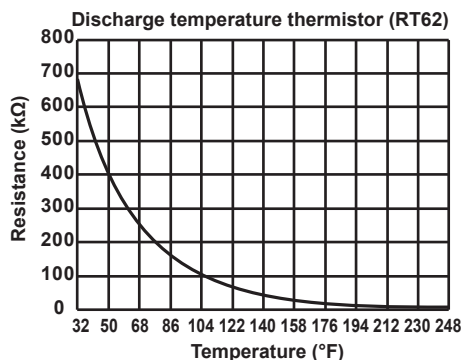
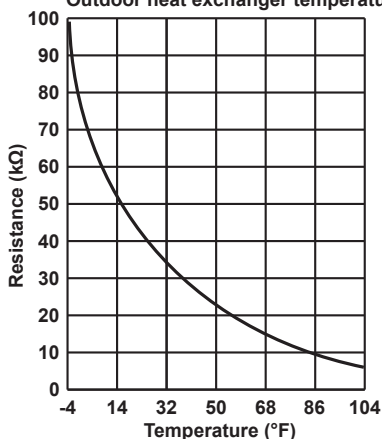
11-6. TEST POINT DIAGRAM AND VOLTAGE

1. Inverter P.C. board

MUZ-JX09WL MUZ-JX12WL
MUZ-JX09WLH MUZ-JX12WLH



Defrost thermistor (RT61)
Ambient temperature thermistor (RT65)
Outdoor heat exchanger temperature thermistor (RT68)



<Detaching method of the terminal with locking mechanism>

The terminal which has the locking mechanism can be detached as shown below.

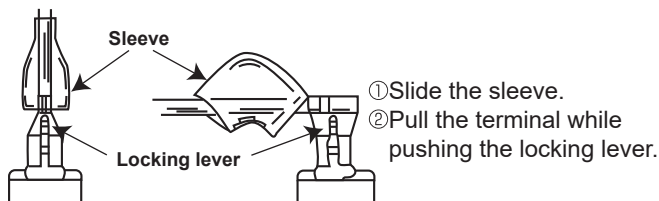
There are 2 types of the terminal with locking mechanism.

The terminal without locking mechanism can be detached by pulling it out.

Check the shape of the terminal before detaching.

(1) Slide the sleeve and check if there is a locking lever or not.

(2) The terminal with the connector shown below has the locking mechanism.



12-1. MUZ-JX09WL MUZ-JX12WL MUZ-JX09WLH MUZ-JX12WLH

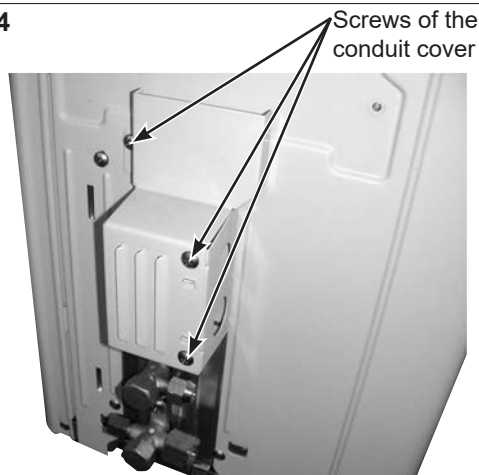
NOTE: Turn OFF the power supply before disassembly.

→ : Indicates the visible parts in the photos/figures.
---→ : Indicates the invisible parts in the photos/figures.

OPERATING PROCEDURE	PHOTOS/FIGURES
1. Removing the cabinet (1) Remove the screws fixing the service panel. (2) Pull down the service panel and remove it. (3) Remove the screws fixing the conduit cover. (Photo 4) (4) Remove the conduit cover. (5) Remove the screw fixing the conduit plate. (Photo 5) (6) Remove the conduit plate. (7) Disconnect the power supply wire and indoor/outdoor connecting wire. (8) Remove the screws fixing the top panel. (9) Remove the top panel. (10) Remove the screws fixing the cabinet. (11) Remove the cabinet. (12) Remove the screws fixing the back panel. (Photo 5, 6) (13) Remove the back panel. NOTE: If the red labels have been removed during the operation, put them back in the original position after the operation. Red labels indicate the use of flammable refrigerants. (Figure 1)	Photo 1 Screws of the top panel Back panel Screws of the service panel Service panel Screws of the cabinet
Photo 2 Screws of the top panel Screws of the cabinet	Photo 3 Screws of the terminal block support and the back panel Screw of the cabinet Screws of the cabinet Hooks Direction to remove Figure 1 Red label

OPERATING PROCEDURE

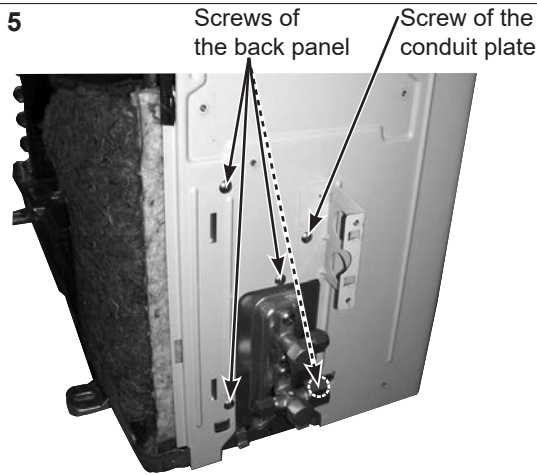
Photo 4



Screws of the conduit cover

PHOTOS/FIGURES

Photo 5



Screws of the back panel

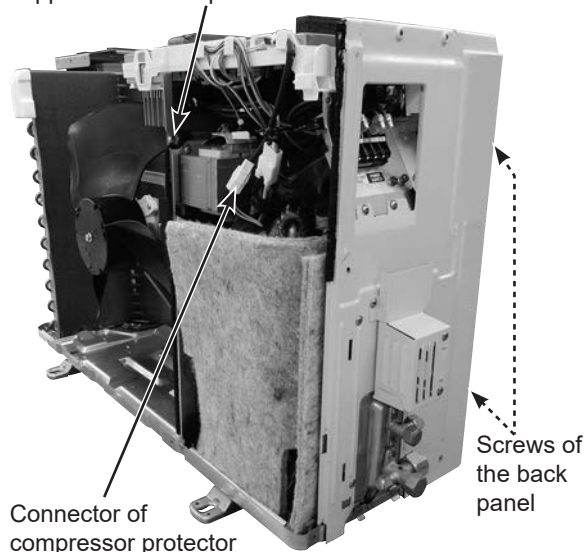
Screw of the conduit plate

2. Removing the inverter assembly, inverter P.C. board

- (1) Remove the top panel, cabinet and service panel. (Refer to section 1.)
- (2) Disconnect the lead wire to the reactor and the following connectors:
 <Inverter P.C. board>
 CN721 (R.V. coil)
 CN931, CN932 (Fan motor)
 CN641 (Defrost thermistor and discharge temperature thermistor)
 CN643 (Ambient temperature thermistor)
 CN644 (Outdoor heat exchanger temperature thermistor)
 CN724 (Expansion valve coil)
 CN64 (Compressor protector)
- (3) Remove the compressor connector (CN61).
- (4) Remove the screws fixing the heat sink support and the separator.
- (5) Remove the fixing screws of the terminal block support and the back panel.
- (6) Remove the inverter assembly.
- (7) Remove the screws of the ground wires and the terminal block support. (Photo 8)
- (8) Remove the heat sink support from the P.C. board support.
- (9) Remove the inverter P.C. board from the P.C. board support.

Photo 6

Screw of the heat sink support and the separator



Connector of compressor protector

Screws of the back panel

Photo 7 (WLH only)

Lead wires of the defrost heater and the heater protector

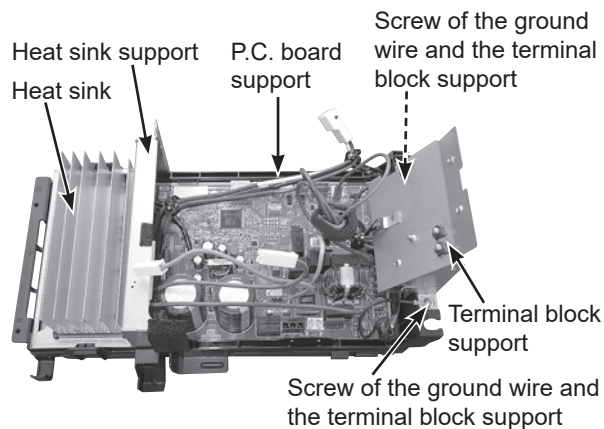


OPERATING PROCEDURE

* Connection procedure when attaching the inverter P.C. board (Photo 9)

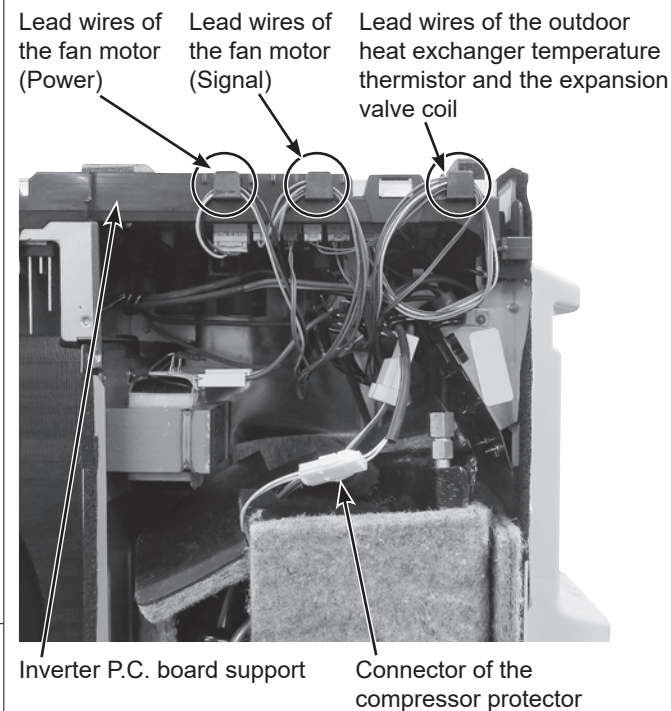
1. Connect the lead wires of the fan motor (Power) to the connector on the inverter P.C. board. Pull the lead wires toward you and put them on the left hook on the P.C. board support.
2. Connect the lead wires of the fan motor (Signal) to the connector on the inverter P.C. board. Pull the lead wires toward you and put them on the middle of the hook on the P.C. board support.
3. Connect the lead wires of the outdoor heat exchanger temperature thermistor to the connector on the inverter P.C. board. Pull the lead wires toward you and put them on the right hook on the P.C. board support.
4. Connect the lead wires of the expansion valve coil to the connector on the inverter P.C. board. Pull the lead wires toward you and put them on the right hook on the P.C. board support [so that the compressor protector lead wires are bundled up as shown in Photo 9 (**MUZ-JX12 only**)].
5. Put the lead wires of the defrost heater and the heater protector on the hook. (Photo 7) (**WLH only**)

Photo 8 (Inverter assembly)

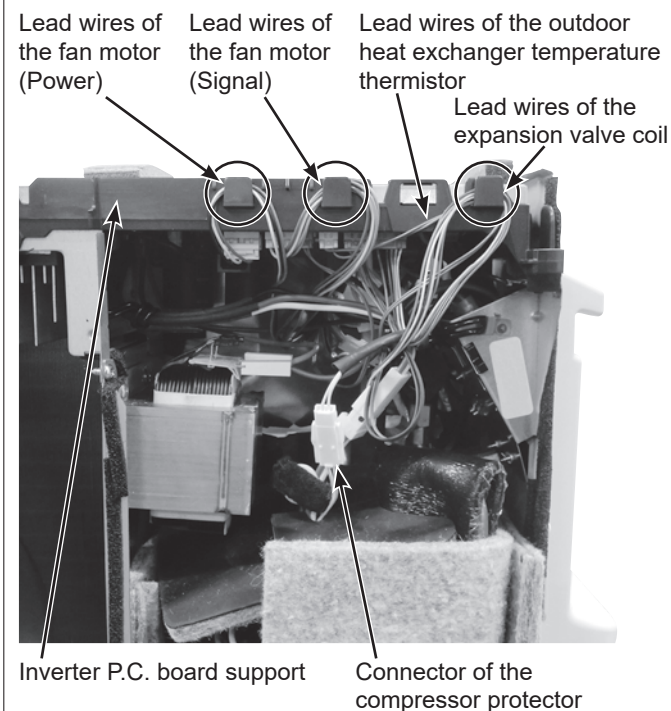


PHOTOS/FIGURES

Photo 9
MUZ-JX09WL
MUZ-JX09WLH



MUZ-JX12WL
MUZ-JX12WLH



OPERATING PROCEDURE

3. Removing R.V. coil

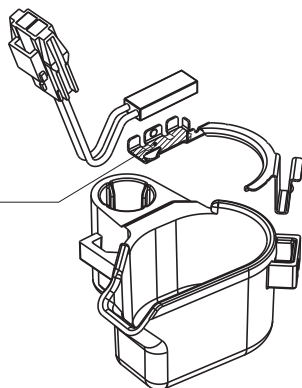
- (1) Remove the cabinet and panels. (Refer to section 1.)
- (2) Disconnect the following connectors:
<Inverter P.C. board>
CN721 (R.V. coil)
- (3) Remove the R.V. coil.

4. Removing the discharge temperature thermistor, defrost thermistor, outdoor heat exchanger temperature thermistor and ambient temperature thermistor

- (1) Remove the top panel, cabinet and service panel. (Refer to section 1.)
- (2) Disconnect the lead wire to the reactor and the following connectors:
<Inverter P.C. board>
CN641 (Defrost thermistor and discharge temperature thermistor)
CN643 (Ambient temperature thermistor)
CN644 (Outdoor heat exchanger temperature thermistor)
- (3) Pull out the discharge temperature thermistor from its holder.
- (4) Pull out the defrost thermistor from its holder.
- (5) Pull out the outdoor heat exchanger temperature thermistor from its holder.
- (6) Pull out the ambient temperature thermistor from its holder.

Figure 2

Attach the compressor protector to the protector holder with the surface on which the model name is printed facing the area hatched in the figure.



PHOTOS/FIGURES

Photo 10

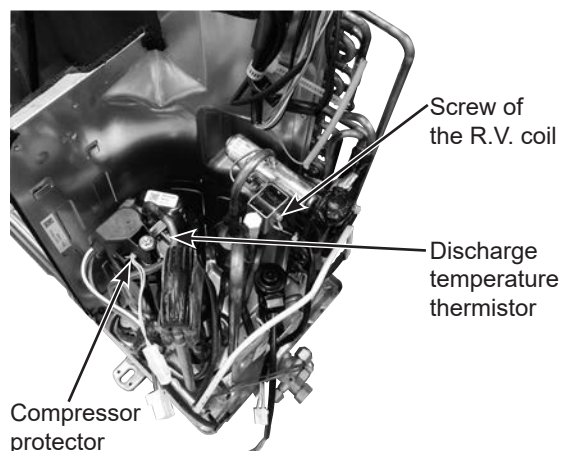
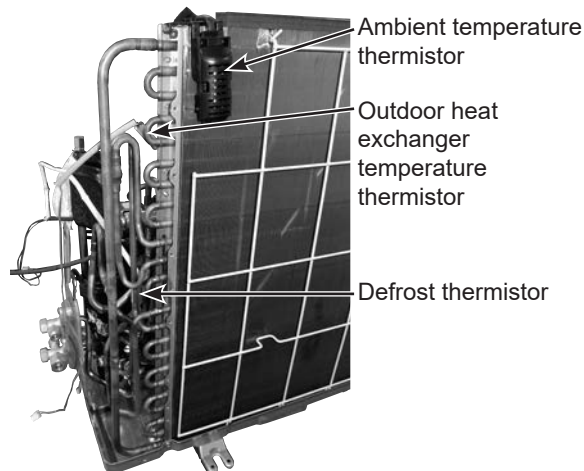
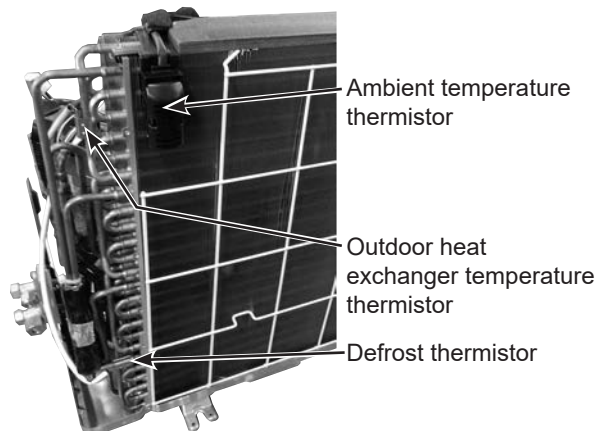


Photo 11

**MUZ-JX09WL
MUZ-JX09WLH**



**MUZ-JX12WL
MUZ-JX12WLH**



OPERATING PROCEDURE

5. Removing outdoor fan motor

- (1) Remove the top panel, cabinet and service panel.
(Refer to section 1.)
- (2) Disconnect the following connectors:
<Inverter P.C. board>
CN931, CN932 (Fan motor)
- (3) Remove the propeller fan nut.
- (4) Remove the propeller fan.
- (5) Remove the screws fixing the fan motor.
- (6) Remove the fan motor.

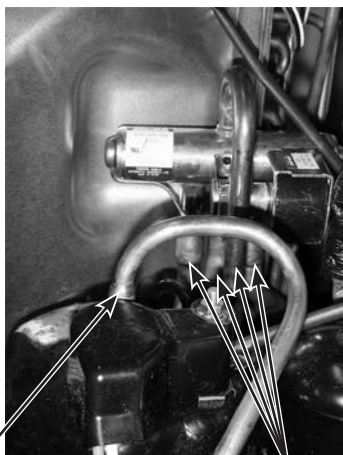
NOTE: The propeller fan nut is a reverse thread.

6. Removing the compressor and 4-way valve

- (1) Remove the cabinet and panels. (Refer to section 1.)
- (2) Remove the inverter assembly. (Refer to section 2.)
- (3) Remove the screws fixing the reactor.
- (4) Remove the reactor.
- (5) Remove the soundproof felt.
- (6) Recover gas from the refrigerant circuit.
NOTE: Recover gas from the pipes until the pressure gauge shows 0 psig.
- (7) Detach the brazed part of the suction and the discharge pipe connected with compressor.
- (8) Remove the nuts fixing the compressor.
- (9) Remove the compressor.
- (10) Detach the brazed part of pipes connected with 4-way valve.

NOTE: If the red labels have been removed during the operation, put them back in the original position after the operation. Red labels indicate the use of flammable refrigerants. (Figure 3)

Photo 14



Discharge pipe
brazed part

Brazed parts of
4-way valve

PHOTOS/FIGURES

Photo 12

Screws of the outdoor fan motor

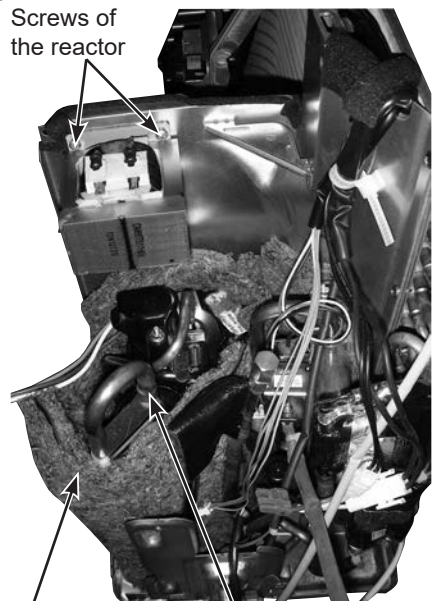


Propeller fan

Propeller fan nut

Photo 13

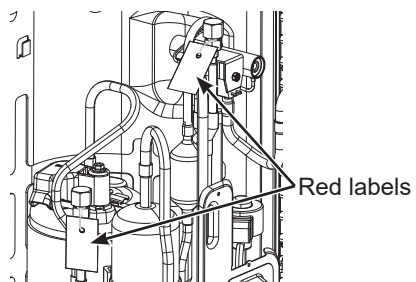
Screws of
the reactor



Soundproof felt

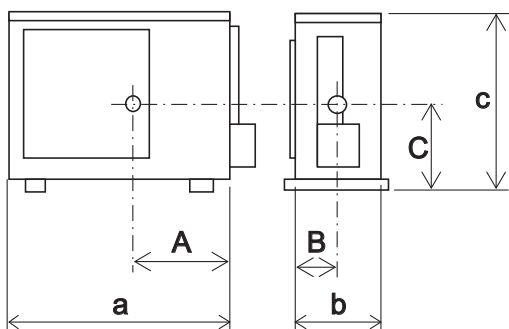
Suction pipe brazed part

Figure 3



Red labels

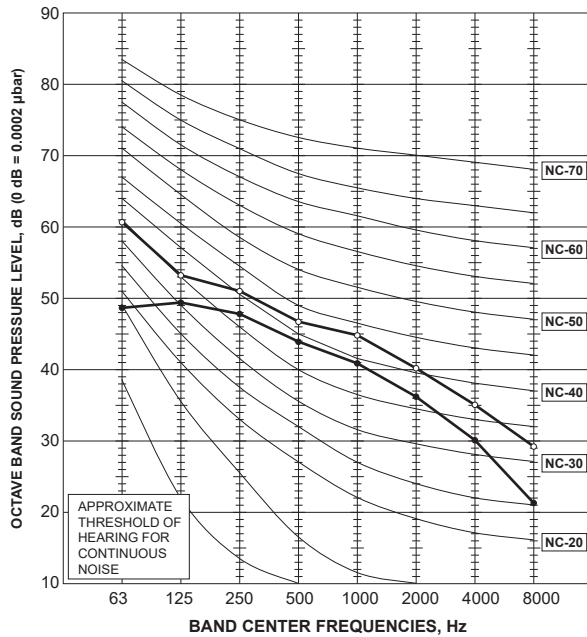
Unit: inch (mm)



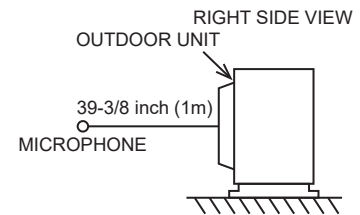
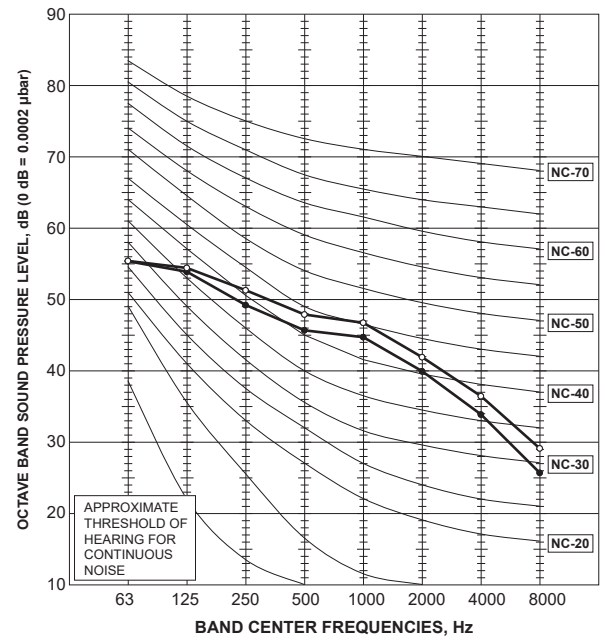
Model name	A	B	C	a	b	c
MUZ-JX09WL						
MUZ-JX12WL	11-1/16	5-9/16	9-1/2	31-1/2	11-1/4	21-5/8
MUZ-JX09WLH	(280)	(140)	(240)	(800)	(285)	(550)
MUZ-JX12WLH						

MUZ-JX09WL
MUZ-JX09WLH

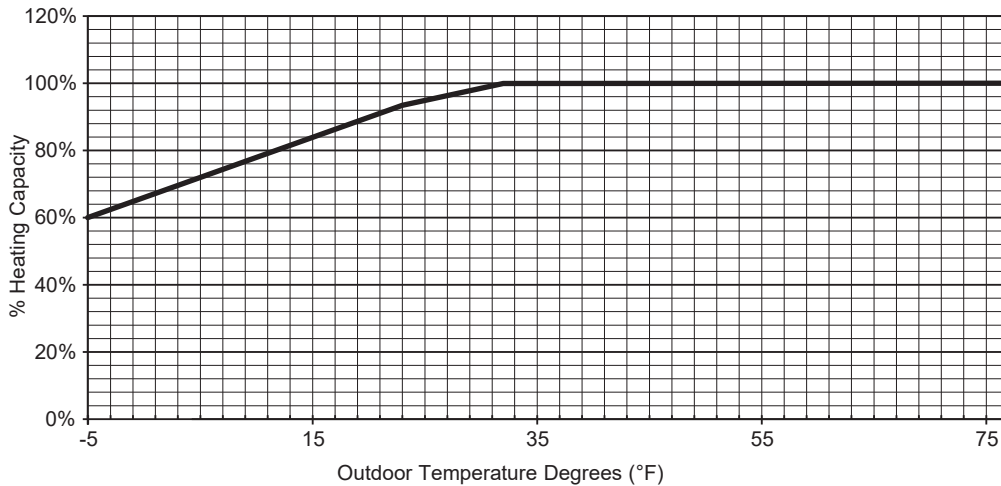
NOTCH	SPL(dB(A))	LINE
COOLING	46	●—●
HEATING	50	○—○


MUZ-JX12WL
MUZ-JX12WLH

NOTCH	SPL(dB(A))	LINE
COOLING	49	●—●
HEATING	51	○—○



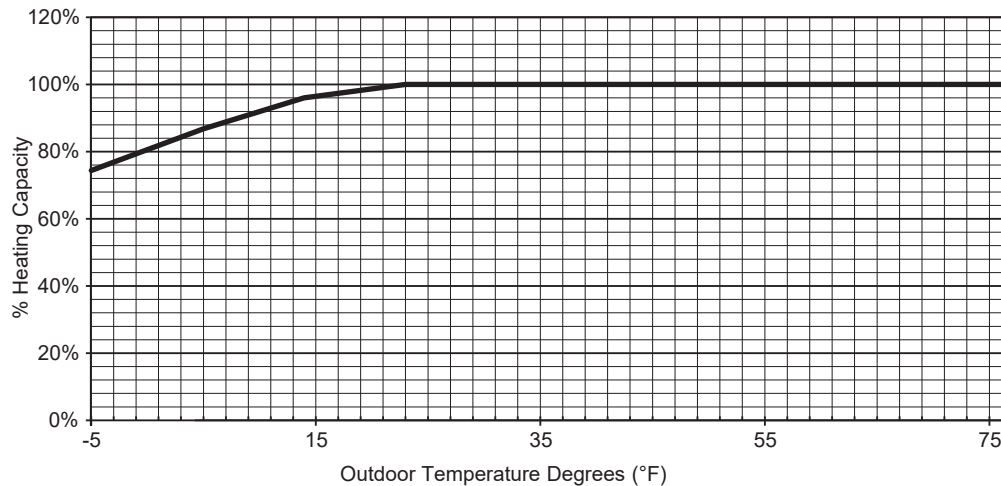
MUZ-JX09WL
MUZ-JX09WLH



HEATING CAPACITY

Outdoor Temperature Degrees (°F)	-5.0	5.0	14.0	23.0	32.0	41.0	50.0	69.8	75.0
% Heating Capacity	60%	71%	82%	93%	100%	100%	100%	100%	100%

MUZ-JX12WL
MUZ-JX12WLH



HEATING CAPACITY

Outdoor Temperature Degrees (°F)	-5.0	5.0	14.0	23.0	32.0	41.0	50.0	69.8	75.0
% Heating Capacity	75%	87%	96%	100%	100%	100%	100%	100%	100%

16-1. INVERTER COOLING CAPACITY

MUZ-JX09WL

MUZ-JX09WLH

CAPACITY (Btu/h): 9000 INPUT (W): 720 SHF: 0.78

INDOOR DB (°F)	INDOOR WB (°F)	OUTDOOR DB (°F)															
		70				77				81				86			
		CA	SHC	SHF	P.C.	CA	SHC	SHF	P.C.	CA	SHC	SHF	P.C.	CA	SHC	SHF	P.C.
70	64	10575	6345	0.60	576	10125	6075	0.60	605	9720	5832	0.60	634	9360	5616	0.60	662
70	68	11025	5292	0.48	605	10575	5076	0.48	641	10260	4925	0.48	655	9900	4752	0.48	684
72	64	10575	6768	0.64	576	10125	6480	0.64	605	9720	6221	0.64	634	9360	5990	0.64	662
72	68	11025	5733	0.52	605	10575	5499	0.52	641	10260	5335	0.52	655	9900	5148	0.52	684
72	72	11475	4590	0.40	626	11070	4428	0.40	666	10800	4320	0.40	684	10350	4140	0.40	713
73	64	10575	7191	0.68	576	10125	6885	0.68	605	9720	6610	0.68	634	9360	6365	0.68	662
73	68	11025	6174	0.56	605	10575	5922	0.56	641	10260	5746	0.56	655	9900	5544	0.56	684
73	72	11475	5049	0.44	626	11070	4871	0.44	666	10800	4752	0.44	684	10350	4554	0.44	713
75	64	10575	7614	0.72	576	10125	7290	0.72	605	9720	6998	0.72	634	9360	6739	0.72	662
75	68	11025	6615	0.60	605	10575	6345	0.60	641	10260	6156	0.60	655	9900	5940	0.60	684
75	72	11475	5508	0.48	626	11070	5314	0.48	666	10800	5184	0.48	684	10350	4968	0.48	713
75	75	12060	4342	0.36	655	11610	4180	0.36	691	11340	4082	0.36	713	10980	3953	0.36	749
77	64	10575	8037	0.76	576	10125	7695	0.76	605	9720	7387	0.76	634	9360	7114	0.76	662
77	68	11025	7056	0.64	605	10575	6768	0.64	641	10260	6566	0.64	655	9900	6336	0.64	684
77	72	11475	5967	0.52	626	11070	5756	0.52	666	10800	5616	0.52	684	10350	5382	0.52	713
77	75	12060	4824	0.40	655	11610	4644	0.40	691	11340	4536	0.40	713	10980	4392	0.40	749
79	64	10575	8460	0.80	576	10125	8100	0.80	605	9720	7776	0.80	634	9360	7488	0.80	662
79	68	11025	7497	0.68	605	10575	7191	0.68	641	10260	6977	0.68	655	9900	6732	0.68	684
79	72	11475	6426	0.56	626	11070	6199	0.56	666	10800	6048	0.56	684	10350	5796	0.56	713
79	75	12060	5306	0.44	655	11610	5108	0.44	691	11340	4990	0.44	713	10980	4831	0.44	749
79	79	12420	3974	0.32	691	12060	3859	0.32	727	11880	3802	0.32	749	11520	3686	0.32	770
81	64	10575	8883	0.84	576	10125	8505	0.84	605	9720	8165	0.84	634	9360	7862	0.84	662
81	68	11025	7938	0.72	605	10575	7614	0.72	641	10260	7387	0.72	655	9900	7128	0.72	684
81	72	11475	6885	0.60	626	11070	6642	0.60	666	10800	6480	0.60	684	10350	6210	0.60	713
81	75	12060	5789	0.48	655	11610	5573	0.48	691	11340	5443	0.48	713	10980	5270	0.48	749
81	79	12420	4471	0.36	691	12060	4342	0.36	727	11880	4277	0.36	749	11520	4147	0.36	770
82	64	10575	9306	0.88	576	10125	8910	0.88	605	9720	8554	0.88	634	9360	8237	0.88	662
82	68	11025	8379	0.76	605	10575	8037	0.76	641	10260	7798	0.76	655	9900	7524	0.76	684
82	72	11475	7344	0.64	626	11070	7085	0.64	666	10800	6912	0.64	684	10350	6624	0.64	713
82	75	12060	6271	0.52	655	11610	6037	0.52	691	11340	5897	0.52	713	10980	5710	0.52	749
82	79	12420	4968	0.40	691	12060	4824	0.40	727	11880	4752	0.40	749	11520	4608	0.40	770
84	64	10575	9729	0.92	576	10125	9315	0.92	605	9720	8942	0.92	634	9360	8611	0.92	662
84	68	11025	8820	0.80	605	10575	8460	0.80	641	10260	8208	0.80	655	9900	7920	0.80	684
84	72	11475	7803	0.68	626	11070	7528	0.68	666	10800	7344	0.68	684	10350	7038	0.68	713
84	75	12060	6754	0.56	655	11610	6502	0.56	691	11340	6350	0.56	713	10980	6149	0.56	749
84	79	12420	5465	0.44	691	12060	5306	0.44	727	11880	5227	0.44	749	11520	5069	0.44	770
86	64	10575	10152	0.96	576	10125	9720	0.96	605	9720	9331	0.96	634	9360	8986	0.96	662
86	68	11025	9261	0.84	605	10575	8883	0.84	641	10260	8618	0.84	655	9900	8316	0.84	684
86	72	11475	8262	0.72	626	11070	7970	0.72	666	10800	7776	0.72	684	10350	7452	0.72	713
86	75	12060	7236	0.60	655	11610	6966	0.60	691	11340	6804	0.60	713	10980	6588	0.60	749
86	79	12420	5962	0.48	691	12060	5789	0.48	727	11880	5702	0.48	749	11520	5530	0.48	770
88	64	10575	10575	1.00	576	10125	10125	1.00	605	9720	9720	1.00	634	9360	9360	1.00	662
88	68	11025	9702	0.88	605	10575	9306	0.88	641	10260	9029	0.88	655	9900	8712	0.88	684
88	72	11475	8721	0.76	626	11070	8413	0.76	666	10800	8208	0.76	684	10350	7866	0.76	713
88	75	12060	7718	0.64	655	11610	7430	0.64	691	11340	7258	0.64	713	10980	7027	0.64	749
88	79	12420	6458	0.52	691	12060	6271	0.52	727	11880	6178	0.52	749	11520	5990	0.52	770
90	64	10575	10575	1.00	576	10125	10125	1.00	605	9720	9720	1.00	634	9360	9360	1.00	662
90	68	11025	10143	0.92	605	10575	9729	0.92	641	10260	9439	0.92	655	9900	9108	0.92	684
90	72	11475	9180	0.80	626	11070	8856	0.80	666	10800	8640	0.80	684	10350	8280	0.80	713
90	75	12060	8201	0.68	655	11610	7895	0.68	691	11340	7711	0.68	713	10980	7466	0.68	749
90	79	12420	6955	0.56	691	12060	6754	0.56	727	11880	6653	0.56	749	11520	6451	0.56	770

NOTE CA: Capacity (Btu/h)

SHF: Sensible heat factor

DB: Dry-bulb temperature

SHC: Sensible heat capacity (Btu/h)

P.C.: Power consumption (W)

WB: Wet-bulb temperature

MUZ-JX09WL
MUZ-JX09WLH

CAPACITY (Btu/h): 9000 INPUT (W): 720 SHF: 0.78

INDOOR DB (°F)	INDOOR WB (°F)	OUTDOOR DB (°F)											
		95				104				115			
		CA	SHC	SHF	P.C.	CA	SHC	SHF	P.C.	CA	SHC	SHF	P.C.
70	64	8820	5292	0.60	706	8100	4860	0.60	749	7470	4482	0.60	778
70	68	9270	4450	0.48	734	8640	4147	0.48	770	8010	3845	0.48	814
72	64	8820	5645	0.64	706	8100	5184	0.64	749	7470	4781	0.64	778
72	68	9270	4820	0.52	734	8640	4493	0.52	770	8010	4165	0.52	814
72	72	9810	3924	0.40	763	9180	3672	0.40	806	8550	3420	0.40	835
73	64	8820	5998	0.68	706	8100	5508	0.68	749	7470	5080	0.68	778
73	68	9270	5191	0.56	734	8640	4838	0.56	770	8010	4486	0.56	814
73	72	9810	4316	0.44	763	9180	4039	0.44	806	8550	3762	0.44	835
75	64	8820	6350	0.72	706	8100	5832	0.72	749	7470	5378	0.72	778
75	68	9270	5562	0.60	734	8640	5184	0.60	770	8010	4806	0.60	814
75	72	9810	4709	0.48	763	9180	4406	0.48	806	8550	4104	0.48	835
75	75	10350	3726	0.36	792	9720	3499	0.36	828	9180	3305	0.36	864
77	64	8820	6703	0.76	706	8100	6156	0.76	749	7470	5677	0.76	778
77	68	9270	5933	0.64	734	8640	5530	0.64	770	8010	5126	0.64	814
77	72	9810	5101	0.52	763	9180	4774	0.52	806	8550	4446	0.52	835
77	75	10350	4140	0.40	792	9720	3888	0.40	828	9180	3672	0.40	864
79	64	8820	7056	0.80	706	8100	6480	0.80	749	7470	5976	0.80	778
79	68	9270	6304	0.68	734	8640	5875	0.68	770	8010	5447	0.68	814
79	72	9810	5494	0.56	763	9180	5141	0.56	806	8550	4788	0.56	835
79	75	10350	4554	0.44	792	9720	4277	0.44	828	9180	4039	0.44	864
79	79	10890	3485	0.32	821	10260	3283	0.32	857	9630	3082	0.32	893
81	64	8820	7409	0.84	706	8100	6804	0.84	749	7470	6275	0.84	778
81	68	9270	6674	0.72	734	8640	6221	0.72	770	8010	5767	0.72	814
81	72	9810	5886	0.60	763	9180	5508	0.60	806	8550	5130	0.60	835
81	75	10350	4968	0.48	792	9720	4666	0.48	828	9180	4406	0.48	864
81	79	10890	3920	0.36	821	10260	3694	0.36	857	9630	3467	0.36	893
82	64	8820	7762	0.88	706	8100	7128	0.88	749	7470	6574	0.88	778
82	68	9270	7045	0.76	734	8640	6566	0.76	770	8010	6088	0.76	814
82	72	9810	6278	0.64	763	9180	5875	0.64	806	8550	5472	0.64	835
82	75	10350	5382	0.52	792	9720	5054	0.52	828	9180	4774	0.52	864
82	79	10890	4356	0.40	821	10260	4104	0.40	857	9630	3852	0.40	893
84	64	8820	8114	0.92	706	8100	7452	0.92	749	7470	6872	0.92	778
84	68	9270	7416	0.80	734	8640	6912	0.80	770	8010	6408	0.80	814
84	72	9810	6671	0.68	763	9180	6242	0.68	806	8550	5814	0.68	835
84	75	10350	5796	0.56	792	9720	5443	0.56	828	9180	5141	0.56	864
84	79	10890	4792	0.44	821	10260	4514	0.44	857	9630	4237	0.44	893
86	64	8820	8467	0.96	706	8100	7776	0.96	749	7470	7171	0.96	778
86	68	9270	7787	0.84	734	8640	7258	0.84	770	8010	6728	0.84	814
86	72	9810	7063	0.72	763	9180	6610	0.72	806	8550	6156	0.72	835
86	75	10350	6210	0.60	792	9720	5832	0.60	828	9180	5508	0.60	864
86	79	10890	5227	0.48	821	10260	4925	0.48	857	9630	4622	0.48	893
88	64	8820	8820	1.00	706	8100	8100	1.00	749	7470	7470	1.00	778
88	68	9270	8158	0.88	734	8640	7603	0.88	770	8010	7049	0.88	814
88	72	9810	7456	0.76	763	9180	6977	0.76	806	8550	6498	0.76	835
88	75	10350	6624	0.64	792	9720	6221	0.64	828	9180	5875	0.64	864
88	79	10890	5663	0.52	821	10260	5335	0.52	857	9630	5008	0.52	893
90	64	8820	8820	1.00	706	8100	8100	1.00	749	7470	7470	1.00	778
90	68	9270	8528	0.92	734	8640	7949	0.92	770	8010	7369	0.92	814
90	72	9810	7848	0.80	763	9180	7344	0.80	806	8550	6840	0.80	835
90	75	10350	7038	0.68	792	9720	6610	0.68	828	9180	6242	0.68	864
90	79	10890	6098	0.56	821	10260	5746	0.56	857	9630	5393	0.56	893

NOTE CA: Capacity (Btu/h) SHF: Sensible heat factor DB: Dry-bulb temperature
 SHC: Sensible heat capacity (Btu/h) P.C.: Power consumption (W) WB: Wet-bulb temperature

MUZ-JX12WL
MUZ-JX12WLH

CAPACITY (Btu/h): 12000 INPUT (W): 960 SHF: 0.82

INDOOR DB (°F)	INDOOR WB (°F)	OUTDOOR DB (°F)															
		70				77				81				86			
		CA	SHC	SHF	P.C.	CA	SHC	SHF	P.C.	CA	SHC	SHF	P.C.	CA	SHC	SHF	P.C.
70	64	14100	9024	0.64	768	13500	8640	0.64	806	12960	8294	0.64	845	12480	7987	0.64	883
70	68	14700	7644	0.52	806	14100	7332	0.52	854	13680	7114	0.52	874	13200	6864	0.52	912
72	64	14100	9588	0.68	768	13500	9180	0.68	806	12960	8813	0.68	845	12480	8486	0.68	883
72	68	14700	8232	0.56	806	14100	7896	0.56	854	13680	7661	0.56	874	13200	7392	0.56	912
72	72	15300	6732	0.44	835	14760	6494	0.44	888	14400	6336	0.44	912	13800	6072	0.44	950
73	64	14100	10152	0.72	768	13500	9720	0.72	806	12960	9331	0.72	845	12480	8986	0.72	883
73	68	14700	8820	0.60	806	14100	8460	0.60	854	13680	8208	0.60	874	13200	7920	0.60	912
73	72	15300	7344	0.48	835	14760	7085	0.48	888	14400	6912	0.48	912	13800	6624	0.48	950
75	64	14100	10716	0.76	768	13500	10260	0.76	806	12960	9850	0.76	845	12480	9485	0.76	883
75	68	14700	9408	0.64	806	14100	9024	0.64	854	13680	8755	0.64	874	13200	8448	0.64	912
75	72	15300	7956	0.52	835	14760	7675	0.52	888	14400	7488	0.52	912	13800	7176	0.52	950
75	75	16080	6432	0.40	874	15480	6192	0.40	922	15120	6048	0.40	950	14640	5856	0.40	998
77	64	14100	11280	0.80	768	13500	10800	0.80	806	12960	10368	0.80	845	12480	9984	0.80	883
77	68	14700	9996	0.68	806	14100	9588	0.68	854	13680	9302	0.68	874	13200	8976	0.68	912
77	72	15300	8568	0.56	835	14760	8266	0.56	888	14400	8064	0.56	912	13800	7728	0.56	950
77	75	16080	7075	0.44	874	15480	6811	0.44	922	15120	6653	0.44	950	14640	6442	0.44	998
79	64	14100	11844	0.84	768	13500	11340	0.84	806	12960	10886	0.84	845	12480	10483	0.84	883
79	68	14700	10584	0.72	806	14100	10152	0.72	854	13680	9850	0.72	874	13200	9504	0.72	912
79	72	15300	9180	0.60	835	14760	8856	0.60	888	14400	8640	0.60	912	13800	8280	0.60	950
79	75	16080	7718	0.48	874	15480	7430	0.48	922	15120	7258	0.48	950	14640	7027	0.48	998
79	79	16560	5962	0.36	922	16080	5789	0.36	970	15840	5702	0.36	998	15360	5530	0.36	1027
81	64	14100	12408	0.88	768	13500	11880	0.88	806	12960	11405	0.88	845	12480	10982	0.88	883
81	68	14700	11172	0.76	806	14100	10716	0.76	854	13680	10397	0.76	874	13200	10032	0.76	912
81	72	15300	9792	0.64	835	14760	9446	0.64	888	14400	9216	0.64	912	13800	8832	0.64	950
81	75	16080	8362	0.52	874	15480	8050	0.52	922	15120	7862	0.52	950	14640	7613	0.52	998
81	79	16560	6624	0.40	922	16080	6432	0.40	970	15840	6336	0.40	998	15360	6144	0.40	1027
82	64	14100	12972	0.92	768	13500	12420	0.92	806	12960	11923	0.92	845	12480	11482	0.92	883
82	68	14700	11760	0.80	806	14100	11280	0.80	854	13680	10944	0.80	874	13200	10560	0.80	912
82	72	15300	10404	0.68	835	14760	10037	0.68	888	14400	9792	0.68	912	13800	9384	0.68	950
82	75	16080	9005	0.56	874	15480	8669	0.56	922	15120	8467	0.56	950	14640	8198	0.56	998
82	79	16560	7286	0.44	922	16080	7075	0.44	970	15840	6970	0.44	998	15360	6758	0.44	1027
84	64	14100	13536	0.96	768	13500	12960	0.96	806	12960	12442	0.96	845	12480	11981	0.96	883
84	68	14700	12348	0.84	806	14100	11844	0.84	854	13680	11491	0.84	874	13200	11088	0.84	912
84	72	15300	11016	0.72	835	14760	10627	0.72	888	14400	10368	0.72	912	13800	9936	0.72	950
84	75	16080	9648	0.60	874	15480	9288	0.60	922	15120	9072	0.60	950	14640	8784	0.60	998
84	79	16560	7949	0.48	922	16080	7718	0.48	970	15840	7603	0.48	998	15360	7373	0.48	1027
86	64	14100	14100	1.00	768	13500	13500	1.00	806	12960	12960	1.00	845	12480	12480	1.00	883
86	68	14700	12936	0.88	806	14100	12408	0.88	854	13680	12038	0.88	874	13200	11616	0.88	912
86	72	15300	11628	0.76	835	14760	11218	0.76	888	14400	10944	0.76	912	13800	10488	0.76	950
86	75	16080	10291	0.64	874	15480	9907	0.64	922	15120	9677	0.64	950	14640	9370	0.64	998
86	79	16560	8611	0.52	922	16080	8362	0.52	970	15840	8237	0.52	998	15360	7987	0.52	1027
88	64	14100	14100	1.00	768	13500	13500	1.00	806	12960	12960	1.00	845	12480	12480	1.00	883
88	68	14700	13524	0.92	806	14100	12972	0.92	854	13680	12586	0.92	874	13200	12144	0.92	912
88	72	15300	12240	0.80	835	14760	11808	0.80	888	14400	11520	0.80	912	13800	11040	0.80	950
88	75	16080	10934	0.68	874	15480	10526	0.68	922	15120	10282	0.68	950	14640	9955	0.68	998
88	79	16560	9274	0.56	922	16080	9005	0.56	970	15840	8870	0.56	998	15360	8602	0.56	1027
90	64	14100	14100	1.00	768	13500	13500	1.00	806	12960	12960	1.00	845	12480	12480	1.00	883
90	68	14700	14112	0.96	806	14100	13536	0.96	854	13680	13133	0.96	874	13200	12672	0.96	912
90	72	15300	12852	0.84	835	14760	12398	0.84	888	14400	12096	0.84	912	13800	11592	0.84	950
90	75	16080	11578	0.72	874	15480	11146	0.72	922	15120	10886	0.72	950	14640	10541	0.72	998
90	79	16560	9936	0.60	922	16080	9648	0.60	970	15840	9504	0.60	998	15360	9216	0.60	1027

NOTE CA: Capacity (Btu/h) SHF: Sensible heat factor DB: Dry-bulb temperature
SHC: Sensible heat capacity (Btu/h) P.C.: Power consumption (W) WB: Wet-bulb temperature

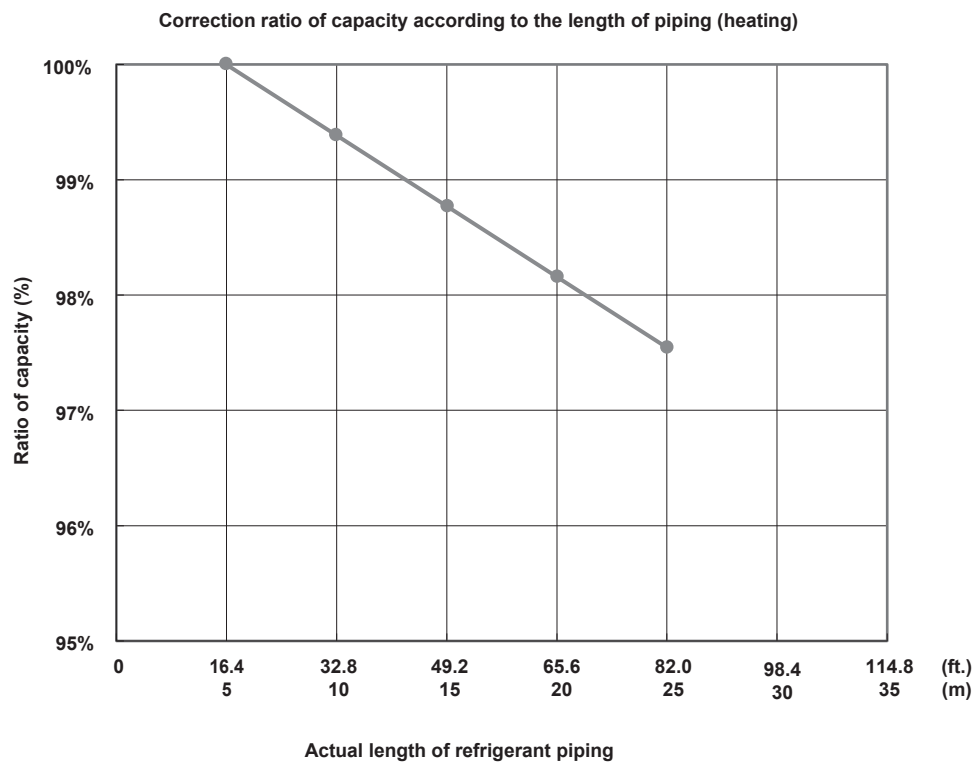
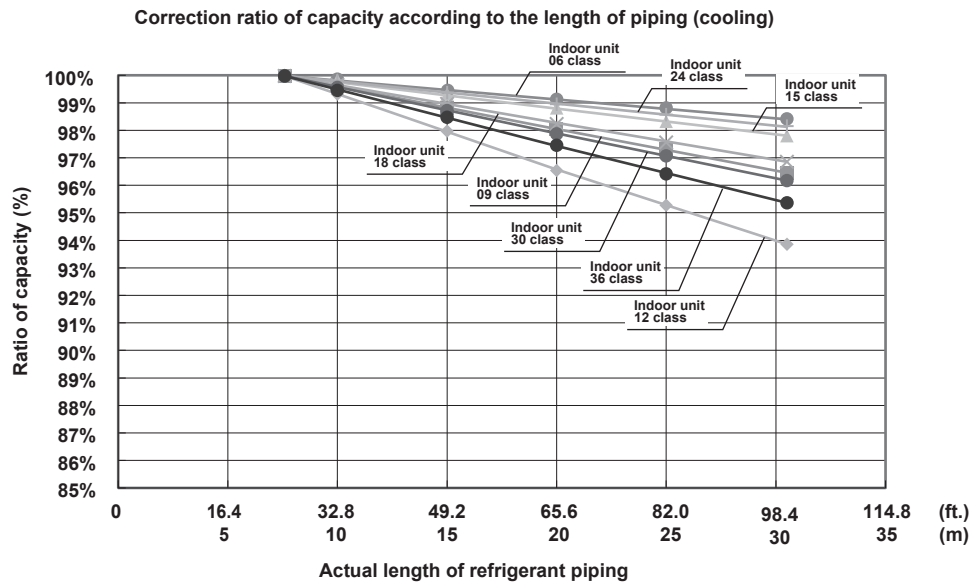
MUZ-JX12WL

MUZ-JX12WLH

CAPACITY (Btu/h): 12000 INPUT (W): 960 SHF: 0.82

INDOOR DB (°F)	INDOOR WB (°F)	OUTDOOR DB (°F)											
		95				104				115			
		CA	SHC	SHF	P.C.	CA	SHC	SHF	P.C.	CA	SHC	SHF	P.C.
70	64	11760	7526	0.64	941	10800	6912	0.64	998	9960	6374	0.64	1037
70	68	12360	6427	0.52	979	11520	5990	0.52	1027	10680	5554	0.52	1085
72	64	11760	7997	0.68	941	10800	7344	0.68	998	9960	6773	0.68	1037
72	68	12360	6922	0.56	979	11520	6451	0.56	1027	10680	5981	0.56	1085
72	72	13080	5755	0.44	1018	12240	5386	0.44	1075	11400	5016	0.44	1114
73	64	11760	8467	0.72	941	10800	7776	0.72	998	9960	7171	0.72	1037
73	68	12360	7416	0.60	979	11520	6912	0.60	1027	10680	6408	0.60	1085
73	72	13080	6278	0.48	1018	12240	5875	0.48	1075	11400	5472	0.48	1114
75	64	11760	8938	0.76	941	10800	8208	0.76	998	9960	7570	0.76	1037
75	68	12360	7910	0.64	979	11520	7373	0.64	1027	10680	6835	0.64	1085
75	72	13080	6802	0.52	1018	12240	6365	0.52	1075	11400	5928	0.52	1114
75	75	13800	5520	0.40	1056	12960	5184	0.40	1104	12240	4896	0.40	1152
77	64	11760	9408	0.80	941	10800	8640	0.80	998	9960	7968	0.8	1037
77	68	12360	8405	0.68	979	11520	7834	0.68	1027	10680	7262	0.68	1085
77	72	13080	7325	0.56	1018	12240	6854	0.56	1075	11400	6384	0.56	1114
77	75	13800	6072	0.44	1056	12960	5702	0.44	1104	12240	5386	0.44	1152
79	64	11760	9878	0.84	941	10800	9072	0.84	998	9960	8366	0.84	1037
79	68	12360	8899	0.72	979	11520	8294	0.72	1027	10680	7690	0.72	1085
79	72	13080	7848	0.60	1018	12240	7344	0.60	1075	11400	6840	0.60	1114
79	75	13800	6624	0.48	1056	12960	6221	0.48	1104	12240	5875	0.48	1152
79	79	14520	5227	0.36	1094	13680	4925	0.36	1142	12840	4622	0.36	1190
81	64	11760	10349	0.88	941	10800	9504	0.88	998	9960	8765	0.88	1037
81	68	12360	9394	0.76	979	11520	8755	0.76	1027	10680	8117	0.76	1085
81	72	13080	8371	0.64	1018	12240	7834	0.64	1075	11400	7296	0.64	1114
81	75	13800	7176	0.52	1056	12960	6739	0.52	1104	12240	6365	0.52	1152
81	79	14520	5808	0.40	1094	13680	5472	0.40	1142	12840	5136	0.40	1190
82	64	11760	10819	0.92	941	10800	9936	0.92	998	9960	9163	0.92	1037
82	68	12360	9888	0.80	979	11520	9216	0.80	1027	10680	8544	0.80	1085
82	72	13080	8894	0.68	1018	12240	8323	0.68	1075	11400	7752	0.68	1114
82	75	13800	7728	0.56	1056	12960	7258	0.56	1104	12240	6854	0.56	1152
82	79	14520	6389	0.44	1094	13680	6019	0.44	1142	12840	5650	0.44	1190
84	64	11760	11290	0.96	941	10800	10368	0.96	998	9960	9562	0.96	1037
84	68	12360	10382	0.84	979	11520	9677	0.84	1027	10680	8971	0.84	1085
84	72	13080	9418	0.72	1018	12240	8813	0.72	1075	11400	8208	0.72	1114
84	75	13800	8280	0.60	1056	12960	7776	0.60	1104	12240	7344	0.60	1152
84	79	14520	6970	0.48	1094	13680	6566	0.48	1142	12840	6163	0.48	1190
86	64	11760	11760	1.00	941	10800	10800	1.00	998	9960	9960	1.00	1037
86	68	12360	10877	0.88	979	11520	10138	0.88	1027	10680	9398	0.88	1085
86	72	13080	9941	0.76	1018	12240	9302	0.76	1075	11400	8664	0.76	1114
86	75	13800	8832	0.64	1056	12960	8294	0.64	1104	12240	7834	0.64	1152
86	79	14520	7550	0.52	1094	13680	7114	0.52	1142	12840	6677	0.52	1190
88	64	11760	11760	1.00	941	10800	10800	1.00	998	9960	9960	1.00	1037
88	68	12360	11371	0.92	979	11520	10598	0.92	1027	10680	9826	0.92	1085
88	72	13080	10464	0.80	1018	12240	9792	0.80	1075	11400	9120	0.80	1114
88	75	13800	9384	0.68	1056	12960	8813	0.68	1104	12240	8323	0.68	1152
88	79	14520	8131	0.56	1094	13680	7661	0.56	1142	12840	7190	0.56	1190
90	64	11760	11760	1.00	941	10800	10800	1.00	998	9960	9960	1.00	1037
90	68	12360	11866	0.96	979	11520	11059	0.96	1027	10680	10253	0.96	1085
90	72	13080	10987	0.84	1018	12240	10282	0.84	1075	11400	9576	0.84	1114
90	75	13800	9936	0.72	1056	12960	9331	0.72	1104	12240	8813	0.72	1152
90	79	14520	8712	0.60	1094	13680	8208	0.60	1142	12840	7704	0.60	1190

NOTE CA: Capacity (Btu/h) SHF: Sensible heat factor DB: Dry-bulb temperature
 SHC: Sensible heat capacity (Btu/h) P.C.: Power consumption (W) WB: Wet-bulb temperature



The length intended for the capacity calculation, which counts the length of refrigerant piping and the number of bends, is called actual length.

Length of refrigerant piping (ft.) + (Number of bends × 0.984 ft.) = Actual length of refrigerant piping (ft.)
 [Length of refrigerant piping (m) + (Number of bends × 0.3 m) = Actual length of refrigerant piping (m)]

MUZ-JX09WL
MUZ-JX09WLH

Rated

Q(Btu/h): 9000

W: 720

1) COOLING

Indoor W.B. Outdoor D.B. (°F) (°C)			71°F / 21.7°C						67°F / 19.4°C						63°F / 17.2°C					
			Max.	Rated	75%	50%	25%	Min.	Max.	Rated	75%	50%	25%	Min.	Max.	Rated	75%	50%	25%	Min.
115	46.1	Q(Btu/h)	9940	8280	7560	5080	2720	3250	9410	7700	7160	4810	2570	3080	8840	7020	6720	4520	2410	2890
		W	1300	830	930	570	200	280	1220	800	880	530	190	270	1170	760	840	500	190	260
110	43.3	Q(Btu/h)	10370	8640	7890	5320	2830	3400	9820	8040	7470	5030	2680	3220	9230	7360	7020	4730	2520	3020
		W	1280	820	910	560	200	270	1200	780	860	520	190	260	1150	750	820	490	190	250
105	40.6	Q(Btu/h)	10810	9000	8210	5540	2950	3530	10230	8370	7780	5240	2790	3350	9610	7700	7310	4930	2620	3140
		W	1250	800	890	550	190	260	1170	760	840	510	180	250	1120	730	800	480	180	240
100	37.8	Q(Btu/h)	11220	9340	8530	5750	3070	3670	10620	8690	8080	5440	2900	3480	9980	8080	7590	5120	2730	3260
		W	1210	780	870	540	190	260	1140	740	820	500	180	250	1090	710	780	480	180	240
95	35.0	Q(Btu/h)	11620	9680	8840	5950	3170	3800	11000	9000	8370	5630	3000	3600	10340	8460	7860	5290	2820	3380
		W	1170	760	840	520	180	250	1100	720	790	480	170	240	1050	690	750	460	170	230
90	32.2	Q(Btu/h)	12090	10000	9190	6190	3300	3960	11440	9360	8710	5860	3120	3750	10750	8780	8180	5510	2930	3520
		W	1130	730	810	490	180	240	1060	700	760	460	170	230	1010	670	730	440	170	220
85	29.4	Q(Btu/h)	12550	10310	9540	6420	3430	4100	11880	9720	9040	6080	3240	3890	11160	9090	8490	5720	3040	3650
		W	1090	700	770	470	170	230	1020	670	730	440	160	220	980	640	700	420	160	210
80	26.7	Q(Btu/h)	13020	10670	9900	6670	3550	4260	12320	10080	9380	6310	3360	4040	11580	9450	8810	5930	3160	3790
		W	1030	670	740	450	160	220	970	640	700	420	150	210	930	610	670	400	150	200
75	23.9	Q(Btu/h)	13480	11030	10250	6900	3680	4410	12760	10440	9710	6530	3480	4180	11990	9810	9120	6140	3270	3920
		W	980	640	700	430	150	210	920	600	660	400	140	200	880	580	630	380	140	190
70	21.1	Q(Btu/h)	13940	11410	10600	7140	3810	4560	13200	10800	10040	6760	3600	4320	12400	10150	9430	6360	3380	4050
		W	940	610	670	410	150	200	880	570	630	380	140	190	840	550	600	360	140	180
65	18.3	Q(Btu/h)	11910	9750	9000	5950	3050	3710	11280	9230	8520	5630	2880	3510	10600	8670	8000	5300	2700	3290
		W	1200	780	900	620	320	380	1120	730	850	570	300	360	1070	700	810	540	300	340
60	15.6	Q(Btu/h)	11910	9750	9000	5950	3050	3710	11280	9230	8520	5630	2880	3510	10600	8670	8000	5300	2700	3290
		W	1200	780	900	620	320	380	1120	730	850	570	300	360	1070	700	810	540	300	340
55	12.8	Q(Btu/h)	11910	9750	9000	5950	3050	3710	11280	9230	8520	5630	2880	3510	10600	8670	8000	5300	2700	3290
		W	1200	780	900	620	320	380	1120	730	850	570	300	360	1070	700	810	540	300	340
50	10.0	Q(Btu/h)	11910	9750	9000	5950	3050	3710	11280	9230	8520	5630	2880	3510	10600	8670	8000	5300	2700	3290
		W	1200	780	900	620	320	380	1120	730	850	570	300	360	1070	700	810	540	300	340
45	7.2	Q(Btu/h)	11910	9750	9000	5950	3050	3710	11280	9230	8520	5630	2880	3510	10600	8670	8000	5300	2700	3290
		W	1200	780	900	620	320	380	1120	730	850	570	300	360	1070	700	810	540	300	340
40	4.4	Q(Btu/h)	11910	9750	9000	5950	3050	3710	11280	9230	8520	5630	2880	3510	10600	8670	8000	5300	2700	3290
		W	1200	780	900	620	320	380	1120	730	850	570	300	360	1070	700	810	540	300	340
35	1.7	Q(Btu/h)	11910	9750	9000	5950	3050	3710	11280	9230	8520	5630	2880	3510	10600	8670	8000	5300	2700	3290
		W	1200	780	900	620	320	380	1120	730	850	570	300	360	1070	700	810	540	300	340
30	-1.1	Q(Btu/h)	11910	9750	9000	5950	3050	3710	11280	9230	8520	5630	2880	3510	10600	8670	8000	5300	2700	3290
		W	1200	780	900	620	320	380	1120	730	850	570	300	360	1070	700	810	540	300	340
25	-3.9	Q(Btu/h)	11910	9750	9000	5950	3050	3710	11280	9230	8520	5630	2880	3510	10600	8670	8000	5300	2700	3290
		W	1200	780	900	620	320	380	1120	730	850	570	300	360	1070	700	810	540	300	340
20	-6.7	Q(Btu/h)	11910	9750	9000	5950	3050	3710	11280	9230	8520	5630	2880	3510	10600	8670	8000	5300	2700	3290
		W	1200	780	900	620	320	380	1120	730	850	570	300	360	1070	700	810	540	300	340
15	-9.4	Q(Btu/h)	11910	9750	9000	5950	3050	3710	11280	9230	8520	5630	2880	3510	10600	8670	8000	5300	2700	3290
		W	1200	780	900	620	320	380	1120	730	850	570	300	360	1070	700	810	540	300	340

* It may not reach the above capacities in low ambient temperatures.

MUZ-JX09WL

2) HEATING

Rated

Q(Btu/h): 10900

W: 900

Indoor D.B. Outdoor W.B. (°F) (°C)			78.8°F / 26.0°C							70°F / 21.1°C							59°F / 15.0°C						
			Max.	Rated	75%	50%	25%	Min.		Max.	Rated	75%	50%	25%	Min.		Max.	Rated	75%	50%	25%	Min.	
65	18.3	Q(Btu/h)	16240	13620	12150	8190	4090	4240		16900	14170	12640	8520	4260	4410		17560	14720	13130	8850	4430	4580	
		W	1590	1020	1190	800	400	410		1510	970	1130	760	380	390		1430	920	1070	720	360	370	
60	15.6	Q(Btu/h)	15370	12880	11490	7750	3880	4020		16030	13440	11990	8090	4050	4190		16690	14000	12490	8430	4220	4360	
		W	1580	1010	1180	800	400	410		1500	960	1120	760	380	390		1420	910	1060	720	360	370	
55	12.8	Q(Btu/h)	14470	12130	10820	7300	3650	3770		15150	12700	11330	7640	3820	3950		15830	13270	11840	7980	3990	4130	
		W	1560	1000	1170	790	390	400		1480	950	1110	750	370	380		1400	900	1050	710	350	360	
50	10.0	Q(Btu/h)	13580	11390	10170	6850	3430	3540		14270	11970	10680	7200	3600	3720		14960	12550	11190	7550	3770	3900	
		W	1540	990	1150	770	390	400		1460	940	1090	730	370	380		1380	890	1030	690	350	360	
45	7.2	Q(Btu/h)	12700	10650	9490	6400	3200	3310		13390	11230	10010	6750	3370	3490		14080	11810	10530	7100	3540	3670	
		W	1510	970	1130	760	380	390		1430	920	1070	720	360	370		1350	870	1010	680	340	350	
43	6.1	Q(Btu/h)	12310	10320	9200	6210	3110	3210		13000	10900	9720	6560	3280	3390		13690	11480	10240	6910	3450	3570	
		W	1470	950	1110	750	370	380		1400	900	1050	710	350	360		1330	850	990	670	330	340	
40	4.4	Q(Btu/h)	11580	9860	8660	5850	2930	3030		12260	10440	9170	6190	3100	3210		12940	11020	9680	6530	3270	3390	
		W	1440	940	1090	740	370	380		1370	890	1030	700	350	360		1300	840	970	660	330	340	
35	1.7	Q(Btu/h)	10840	9080	8110	5470	2740	2830		11510	9650	8610	5810	2910	3010		12180	10220	9110	6150	3080	3190	
		W	1400	910	1040	700	350	360		1330	860	990	660	330	340		1260	810	940	620	310	320	
30	-1.1	Q(Btu/h)	9740	8360	7290	4920	2460	2540		10390	8920	7780	5250	2620	2710		11040	9480	8270	5580	2780	2880	
		W	1380	860	1020	700	350	360		1310	820	970	660	330	340		1240	780	920	620	310	320	
25	-3.9	Q(Btu/h)	8650	7630	6470	4360	2170	2250		9270	8180	6930	4670	2330	2410		9890	8730	7390	4980	2490	2570	
		W	1360	810	1020	700	350	360		1290	770	970	660	330	340		1220	730	920	620	310	320	
20	-6.7	Q(Btu/h)	7640	6900	5710	3850	1920	1980		8240	7440	6160	4150	2070	2140		8840	7980	6610	4450	2220	2300	
		W	1330	750	990	660	340	350		1260	710	940	630	320	330		1190	670	890	600	300	310	
15	-9.4	Q(Btu/h)	6620	6160	4940	3340	1670	1730		7200	6700	5380	3630	1820	1880		7780	7240	5820	3920	1970	2030	
		W	1300	680	970	650	330	340		1230	650	920	620	310	320		1160	620	870	590	290	300	
10	-12.2	Q(Btu/h)	6760	5390	5050	3410	1710	1760		7450	5940	5570	3760	1880	1940		8140	6490	6090	4110	2050	2120	
		W	1310	610	980	660	340	350		1240	580	930	630	320	330		1170	550	880	600	300	310	
5	-15.0	Q(Btu/h)	6860	4610	5130	3460	1730	1790		7700	5180	5760	3880	1940	2010		8540	5750	6390	4300	2150	2230	
		W	1320	540	980	660	340	350		1250	510	930	630	320	330		1180	480	880	600	300	310	
0	-17.8	Q(Btu/h)	6270	4440	4690	3160	1580	1630		7220	5110	5400	3640	1820	1880		8170	5780	6110	4120	2060	2130	
		W	1330	770	990	660	340	350		1260	730	940	630	320	330		1190	690	890	600	300	310	
-4	-20.0	Q(Btu/h)	5690	4260	4260	2870	1440	1490		6740	5040	5050	3400	1700	1760		7790	5820	5840	3930	1960	2030	
		W	1330	990	990	660	340	350		1260	940	940	630	320	330		1190	890	890	600	300	310	

* Above data is for heating operation without any frost.

MUZ-JX09WLH

Rated

Q(Btu/h): 10900

W: 900

2) HEATING

Indoor D.B.		78.8°F / 26.0°C							70°F / 21.1°C							59°F / 15.0°C						
Outdoor W.B.		Max.	Rated	75%	50%	25%	Min.		Max.	Rated	75%	50%	25%	Min.		Max.	Rated	75%	50%	25%	Min.	
(°F)	(°C)																					
65	18.3	Q(Btu/h)	16240	13620	12150	8190	4090	4240	16900	14170	12640	8520	4260	4410		17560	14720	13130	8850	4430	4580	
		W	1590	1020	1190	800	400	410	1510	970	1130	760	380	390		1430	920	1070	720	360	370	
60	15.6	Q(Btu/h)	15370	12880	11490	7750	3880	4020	16030	13440	11990	8090	4050	4190		16690	14000	12490	8430	4220	4360	
		W	1580	1010	1180	800	400	410	1500	960	1120	760	380	390		1420	910	1060	720	360	370	
55	12.8	Q(Btu/h)	14470	12130	10820	7300	3650	3770	15150	12700	11330	7640	3820	3950		15830	13270	11840	7980	3990	4130	
		W	1560	1000	1170	790	390	400	1480	950	1110	750	370	380		1400	900	1050	710	350	360	
50	10.0	Q(Btu/h)	13580	11390	10170	6850	3430	3540	14270	11970	10680	7200	3600	3720		14960	12550	11190	7550	3770	3900	
		W	1540	990	1150	770	390	400	1460	940	1090	730	370	380		1380	890	1030	690	350	360	
45	7.2	Q(Btu/h)	12700	10650	9490	6400	3200	3310	13390	11230	10010	6750	3370	3490		14080	11810	10530	7100	3540	3670	
		W	1510	970	1130	760	380	390	1430	920	1070	720	360	370		1350	870	1010	680	340	350	
43	6.1	Q(Btu/h)	12310	10320	9200	6210	3110	3210	13000	10900	9720	6560	3280	3390		13690	11480	10240	6910	3450	3570	
		W	1470	950	1110	750	370	380	1400	900	1050	710	350	360		1330	850	990	670	330	340	
40	4.4	Q(Btu/h)	11580	9860	8660	5850	2930	3030	12260	10440	9170	6190	3100	3210		12940	11020	9680	6530	3270	3390	
		W	1440	940	1090	740	370	380	1370	890	1030	700	350	360		1300	840	970	660	330	340	
35	1.7	Q(Btu/h)	10840	9080	8110	5470	2740	2830	11510	9650	8610	5810	2910	3010		12180	10220	9110	6150	3080	3190	
		W	1400	910	1040	700	350	360	1330	860	990	660	330	340		1260	810	940	620	310	320	
30	-1.1	Q(Btu/h)	9740	8360	7290	4920	2460	2540	10390	8920	7780	5250	2620	2710		11040	9480	8270	5580	2780	2880	
		W	1510	990	1150	830	480	490	1440	950	1100	790	460	470		1370	910	1050	750	440	450	
25	-3.9	Q(Btu/h)	8650	7630	6470	4360	2170	2250	9270	8180	6930	4670	2330	2410		9890	8730	7390	4980	2490	2570	
		W	1490	940	1150	830	480	490	1420	900	1100	790	460	470		1350	860	1050	750	440	450	
20	-6.7	Q(Btu/h)	7640	6900	5710	3850	1920	1980	8240	7440	6160	4150	2070	2140		8840	7980	6610	4450	2220	2300	
		W	1460	880	1120	790	470	480	1390	840	1070	760	450	460		1320	800	1020	730	430	440	
15	-9.4	Q(Btu/h)	6620	6160	4940	3340	1670	1730	7200	6700	5380	3630	1820	1880		7780	7240	5820	3920	1970	2030	
		W	1430	810	1100	780	460	470	1360	780	1050	750	440	450		1290	750	1000	720	420	430	
10	-12.2	Q(Btu/h)	6760	5390	5050	3410	1710	1760	7450	5940	5570	3760	1880	1940		8140	6490	6090	4110	2050	2120	
		W	1440	740	1110	790	470	480	1370	710	1060	760	450	460		1300	680	1010	730	430	440	
5	-15.0	Q(Btu/h)	6860	4610	5130	3460	1730	1790	7700	5180	5760	3880	1940	2010		8540	5750	6390	4300	2150	2230	
		W	1450	670	1110	790	470	480	1380	640	1060	760	450	460		1310	610	1010	730	430	440	
0	-17.8	Q(Btu/h)	6270	4440	4690	3160	1580	1630	7220	5110	5400	3640	1820	1880		8170	5780	6110	4120	2060	2130	
		W	1460	900	1120	790	470	480	1390	860	1070	760	450	460		1320	820	1020	730	430	440	
-4	-20.0	Q(Btu/h)	5690	4260	4260	2870	1440	1490	6740	5040	5050	3400	1700	1760		7790	5820	5840	3930	1960	2030	
		W	1460	1120	1120	790	470	480	1390	1070	1070	760	450	460		1320	1020	1020	730	430	440	

* Above data is for heating operation without any frost.

MUZ-JX12WL MUZ-JX12WLH

Rated
Q(Btu/h): 12000
W: 960

1) COOLING

Indoor W.B. Outdoor D.B. (°F) (°C)			71°F / 21.7°C						67°F / 19.4°C						63°F / 17.2°C					
			Max.	Rated	75%	50%	25%	Min.	Max.	Rated	75%	50%	25%	Min.	Max.	Rated	75%	50%	25%	Min.
115	46.1	Q(Btu/h)	12110	11040	9590	6940	4430	3250	11460	10260	9080	6570	4200	3080	10770	9360	8530	6170	3940	2890
		W	1680	1100	1280	860	460	270	1590	1070	1210	810	430	260	1510	1020	1140	770	400	250
110	43.3	Q(Btu/h)	12640	11520	10010	7240	4630	3400	11960	10710	9480	6860	4390	3220	11240	9810	8910	6440	4120	3020
		W	1650	1080	1250	840	450	260	1560	1050	1190	790	420	250	1480	1000	1130	750	390	240
105	40.6	Q(Btu/h)	13170	12000	10430	7540	4820	3530	12460	11160	9880	7140	4570	3350	11710	10260	9290	6710	4290	3140
		W	1610	1060	1220	820	430	250	1520	1020	1160	770	410	240	1440	980	1100	730	390	230
100	37.8	Q(Btu/h)	13660	12450	10820	7830	5000	3670	12930	11580	10250	7410	4740	3480	12160	10770	9630	6960	4450	3260
		W	1570	1040	1190	800	420	250	1480	990	1130	750	400	240	1410	950	1070	710	380	230
95	35.0	Q(Btu/h)	14160	12900	11210	8110	5180	3800	13400	12000	10620	7680	4910	3600	12600	11280	9980	7210	4610	3380
		W	1510	1010	1150	780	410	240	1430	960	1090	730	390	230	1360	920	1030	690	370	220
90	32.2	Q(Btu/h)	14730	13320	11670	8440	5390	3960	13940	12480	11050	7990	5110	3750	13110	11700	10390	7510	4800	3520
		W	1460	980	1110	760	400	230	1380	930	1050	710	380	220	1310	890	990	680	360	210
85	29.4	Q(Btu/h)	15290	13740	12110	8760	5590	4100	14470	12960	11470	8290	5300	3890	13600	12120	10780	7790	4970	3650
		W	1400	940	1060	720	380	220	1320	890	1010	680	360	210	1250	850	960	650	340	200
80	26.7	Q(Btu/h)	15860	14220	12570	9080	5800	4260	15010	13440	11900	8600	5500	4040	14110	12600	11190	8080	5160	3790
		W	1330	900	1020	690	370	210	1260	850	970	650	350	200	1200	810	920	620	330	190
75	23.9	Q(Btu/h)	16420	14700	13010	9410	6010	4410	15540	13920	12320	8910	5700	4180	14610	13080	11580	8370	5350	3920
		W	1270	850	970	650	350	200	1200	810	920	610	330	190	1140	770	870	580	310	180
70	21.1	Q(Btu/h)	16990	15210	13450	9740	6210	4560	16080	14400	12740	9220	5890	4320	15120	13530	11970	8660	5530	4050
		W	1210	810	920	620	330	190	1140	770	870	580	310	180	1080	730	820	550	290	170
65	18.3	Q(Btu/h)	14520	12990	10990	7270	3730	2080	13740	12300	10410	6880	3540	1970	12920	11560	9780	6460	3320	1850
		W	1410	940	1070	730	370	210	1330	890	1010	680	350	200	1260	840	950	640	330	190
60	15.6	Q(Btu/h)	14520	12990	10990	7270	3730	2080	13740	12300	10410	6880	3540	1970	12920	11560	9780	6460	3320	1850
		W	1410	940	1070	730	370	210	1330	890	1010	680	350	200	1260	840	950	640	330	190
55	12.8	Q(Btu/h)	14520	12990	10990	7270	3730	2080	13740	12300	10410	6880	3540	1970	12920	11560	9780	6460	3320	1850
		W	1410	940	1070	730	370	210	1330	890	1010	680	350	200	1260	840	950	640	330	190
50	10.0	Q(Btu/h)	14520	12990	10990	7270	3730	2080	13740	12300	10410	6880	3540	1970	12920	11560	9780	6460	3320	1850
		W	1410	940	1070	730	370	210	1330	890	1010	680	350	200	1260	840	950	640	330	190
45	7.2	Q(Btu/h)	14520	12990	10990	7270	3730	2080	13740	12300	10410	6880	3540	1970	12920	11560	9780	6460	3320	1850
		W	1410	940	1070	730	370	210	1330	890	1010	680	350	200	1260	840	950	640	330	190
40	4.4	Q(Btu/h)	14520	12990	10990	7270	3730	2080	13740	12300	10410	6880	3540	1970	12920	11560	9780	6460	3320	1850
		W	1410	940	1070	730	370	210	1330	890	1010	680	350	200	1260	840	950	640	330	190
35	1.7	Q(Btu/h)	14520	12990	10990	7270	3730	2080	13740	12300	10410	6880	3540	1970	12920	11560	9780	6460	3320	1850
		W	1410	940	1070	730	370	210	1330	890	1010	680	350	200	1260	840	950	640	330	190
30	-1.1	Q(Btu/h)	14520	12990	10990	7270	3730	2080	13740	12300	10410	6880	3540	1970	12920	11560	9780	6460	3320	1850
		W	1410	940	1070	730	370	210	1330	890	1010	680	350	200	1260	840	950	640	330	190
25	-3.9	Q(Btu/h)	14520	12990	10990	7270	3730	2080	13740	12300	10410	6880	3540	1970	12920	11560	9780	6460	3320	1850
		W	1410	940	1070	730	370	210	1330	890	1010	680	350	200	1260	840	950	640	330	190
20	-6.7	Q(Btu/h)	14520	12990	10990	7270	3730	2080	13740	12300	10410	6880	3540	1970	12920	11560	9780	6460	3320	1850
		W	1410	940	1070	730	370	210	1330	890	1010	680	350	200	1260	840	950	640	330	190
15	-9.4	Q(Btu/h)	14520	12990	10990	7270	3730	2080	13740	12300	10410	6880	3540	1970	12920	11560	9780	6460	3320	1850
		W	1410	940	1070	730	370	210	1330	890	1010	680	350	200	1260	840	950	640	330	190

* It may not reach the above capacities in low ambient temperatures.

MUZ-JX12WL

2) HEATING

Rated

Q(Btu/h): 12200

W: 990

Indoor D.B. Outdoor W.B. (°F) (°C)			78.8°F / 26.0°C							70°F / 21.1°C							59°F / 15.0°C						
			Max.	Rated	75%	50%	25%	Min.		Max.	Rated	75%	50%	25%	Min.		Max.	Rated	75%	50%	25%	Min.	
65	18.3	Q(Btu/h)	19360	15240	14520	9680	4830	3680		20150	15860	15110	10070	5030	3830		20940	16480	15700	10460	5230	3980	
		W	2430	1130	1820	1210	600	450		2310	1070	1730	1150	570	430		2190	1010	1640	1090	540	410	
60	15.6	Q(Btu/h)	18320	14420	13740	9150	4570	3480		19110	15040	14330	9550	4770	3630		19900	15660	14920	9950	4970	3780	
		W	2410	1120	1800	1200	600	450		2290	1060	1710	1140	570	430		2170	1000	1620	1080	540	410	
55	12.8	Q(Btu/h)	17250	13580	12940	8630	4320	3290		18060	14210	13550	9030	4520	3440		18870	14840	14160	9430	4720	3590	
		W	2390	1110	1790	1190	590	450		2270	1050	1700	1130	560	430		2150	990	1610	1070	530	410	
50	10.0	Q(Btu/h)	16200	12740	12150	8100	4050	3090		17020	13390	12770	8510	4260	3250		17840	14040	13390	8920	4470	3410	
		W	2350	1090	1760	1180	590	450		2230	1030	1670	1120	560	430		2110	970	1580	1060	530	410	
45	7.2	Q(Btu/h)	15140	11920	11360	7580	3790	2890		15970	12570	11980	7990	4000	3050		16800	13220	12600	8400	4210	3210	
		W	2300	1060	1730	1150	570	430		2180	1010	1640	1090	540	410		2060	960	1550	1030	510	390	
43	6.1	Q(Btu/h)	14680	11550	11000	7330	3660	2790		15500	12200	11620	7740	3870	2950		16320	12850	12240	8150	4080	3110	
		W	2250	1040	1700	1140	570	430		2140	990	1610	1080	540	410		2030	940	1520	1020	510	390	
40	4.4	Q(Btu/h)	13800	11050	10350	6900	3450	2630		14610	11690	10950	7300	3650	2780		15420	12330	11550	7700	3850	2930	
		W	2200	1030	1650	1110	560	420		2090	980	1570	1050	530	400		1980	930	1490	990	500	380	
35	1.7	Q(Btu/h)	12920	10170	9690	6460	3230	2460		13720	10800	10290	6860	3430	2610		14520	11430	10890	7260	3630	2760	
		W	2140	990	1600	1070	540	410		2030	940	1520	1020	510	390		1920	890	1440	970	480	370	
30	-1.1	Q(Btu/h)	11740	9360	8800	5870	2930	2230		12520	9980	9390	6260	3130	2380		13300	10600	9980	6650	3330	2530	
		W	2040	950	1540	1020	520	390		1940	900	1460	970	490	370		1840	850	1380	920	460	350	
25	-3.9	Q(Btu/h)	10560	8540	7920	5280	2640	2020		11320	9150	8490	5660	2830	2160		12080	9760	9060	6040	3020	2300	
		W	1940	900	1440	970	480	370		1840	850	1370	920	460	350		1740	800	1300	870	440	330	
20	-6.7	Q(Btu/h)	9420	7720	7060	4710	2350	1800		10160	8330	7620	5080	2540	1940		10900	8940	8180	5450	2730	2080	
		W	1850	820	1390	930	460	360		1760	780	1320	880	440	340		1670	740	1250	830	420	320	
15	-9.4	Q(Btu/h)	8270	6890	6200	4130	2070	1570		9000	7500	6750	4500	2250	1710		9730	8110	7300	4870	2430	1850	
		W	1760	750	1320	870	430	330		1670	710	1250	830	410	310		1580	670	1180	790	390	290	
10	-12.2	Q(Btu/h)	7980	6030	5990	3990	2000	1520		8800	6650	6600	4400	2200	1680		9620	7270	7210	4810	2400	1840	
		W	1620	670	1220	810	400	310		1540	640	1160	770	380	290		1460	610	1100	730	360	270	
5	-15.0	Q(Btu/h)	7660	5170	5740	3830	1910	1460		8600	5800	6450	4300	2150	1640		9540	6430	7160	4770	2390	1820	
		W	1470	590	1110	740	370	280		1400	560	1050	700	350	270		1330	530	990	660	330	260	
0	-17.8	Q(Btu/h)	7330	4570	5500	3670	1830	1400		8450	5270	6340	4230	2110	1610		9570	5970	7180	4790	2390	1820	
		W	1460	710	1100	740	370	280		1390	670	1040	700	350	270		1320	630	980	660	330	260	
-4	-20.0	Q(Btu/h)	7010	4000	5250	3500	1760	1330		8300	4740	6220	4150	2080	1580		9590	5480	7190	4800	2400	1830	
		W	1440	820	1070	720	360	270		1370	780	1020	680	340	260		1300	740	970	640	320	250	

* Above data is for heating operation without any frost.

MUZ-JX12WLH

2) HEATING

Rated

Q(Btu/h): 12200

W: 990

Indoor D.B. Outdoor W.B. (°F) (°C)			78.8°F / 26.0°C						70°F / 21.1°C						59°F / 15.0°C					
			Max.	Rated	75%	50%	25%	Min.	Max.	Rated	75%	50%	25%	Min.	Max.	Rated	75%	50%	25%	Min.
65	18.3	Q(Btu/h)	19360	15240	14520	9680	4830	3680	20150	15860	15110	10070	5030	3830	20940	16480	15700	10460	5230	3980
		W	2430	1130	1820	1210	600	450	2310	1070	1730	1150	570	430	2190	1010	1640	1090	540	410
60	15.6	Q(Btu/h)	18320	14420	13740	9150	4570	3480	19110	15040	14330	9550	4770	3630	19900	15660	14920	9950	4970	3780
		W	2410	1120	1800	1200	600	450	2290	1060	1710	1140	570	430	2170	1000	1620	1080	540	410
55	12.8	Q(Btu/h)	17250	13580	12940	8630	4320	3290	18060	14210	13550	9030	4520	3440	18870	14840	14160	9430	4720	3590
		W	2390	1110	1790	1190	590	450	2270	1050	1700	1130	560	430	2150	990	1610	1070	530	410
50	10.0	Q(Btu/h)	16200	12740	12150	8100	4050	3090	17020	13390	12770	8510	4260	3250	17840	14040	13390	8920	4470	3410
		W	2350	1090	1760	1180	590	450	2230	1030	1670	1120	560	430	2110	970	1580	1060	530	410
45	7.2	Q(Btu/h)	15140	11920	11360	7580	3790	2890	15970	12570	11980	7990	4000	3050	16800	13220	12600	8400	4210	3210
		W	2300	1060	1730	1150	570	430	2180	1010	1640	1090	540	410	2060	960	1550	1030	510	390
43	6.1	Q(Btu/h)	14680	11550	11000	7330	3660	2790	15500	12200	11620	7740	3870	2950	16320	12850	12240	8150	4080	3110
		W	2250	1040	1700	1140	570	430	2140	990	1610	1080	540	410	2030	940	1520	1020	510	390
40	4.4	Q(Btu/h)	13800	11050	10350	6900	3450	2630	14610	11690	10950	7300	3650	2780	15420	12330	11550	7700	3850	2930
		W	2200	1030	1650	1110	560	420	2090	980	1570	1050	530	400	1980	930	1490	990	500	380
35	1.7	Q(Btu/h)	12920	10170	9690	6460	3230	2460	13720	10800	10290	6860	3430	2610	14520	11430	10890	7260	3630	2760
		W	2140	990	1600	1070	540	410	2030	940	1520	1020	510	390	1920	890	1440	970	480	370
30	-1.1	Q(Btu/h)	11740	9360	8800	5870	2930	2230	12520	9980	9390	6260	3130	2380	13300	10600	9980	6650	3330	2530
		W	2170	1080	1670	1150	650	520	2070	1030	1590	1100	620	500	1970	980	1510	1050	590	480
25	-3.9	Q(Btu/h)	10560	8540	7920	5280	2640	2020	11320	9150	8490	5660	2830	2160	12080	9760	9060	6040	3020	2300
		W	2070	1030	1570	1100	610	500	1970	980	1500	1050	590	480	1870	930	1430	1000	570	460
20	-6.7	Q(Btu/h)	9420	7720	7060	4710	2350	1800	10160	8330	7620	5080	2540	1940	10900	8940	8180	5450	2730	2080
		W	1980	950	1520	1060	590	490	1890	910	1450	1010	570	470	1800	870	1380	960	550	450
15	-9.4	Q(Btu/h)	8270	6890	6200	4130	2070	1570	9000	7500	6750	4500	2250	1710	9730	8110	7300	4870	2430	1850
		W	1890	880	1450	1000	560	460	1800	840	1380	960	540	440	1710	800	1310	920	520	420
10	-12.2	Q(Btu/h)	7980	6030	5990	3990	2000	1520	8800	6650	6600	4400	2200	1680	9620	7270	7210	4810	2400	1840
		W	1750	800	1350	940	530	440	1670	770	1290	900	510	420	1590	740	1230	860	490	400
5	-15.0	Q(Btu/h)	7660	5170	5740	3830	1910	1460	8600	5800	6450	4300	2150	1640	9540	6430	7160	4770	2390	1820
		W	1600	720	1240	870	500	410	1530	690	1180	830	480	400	1460	660	1120	790	460	390
0	-17.8	Q(Btu/h)	7330	4570	5500	3670	1830	1400	8450	5270	6340	4230	2110	1610	9570	5970	7180	4790	2390	1820
		W	1590	840	1230	870	500	410	1520	800	1170	830	480	400	1450	760	1110	790	460	390
-4	-20.0	Q(Btu/h)	7010	4000	5250	3500	1760	1330	8300	4740	6220	4150	2080	1580	9590	5480	7190	4800	2400	1830
		W	1570	950	1200	850	490	400	1500	910	1150	810	470	390	1430	870	1100	770	450	380

* Above data is for heating operation without any frost.

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