Changes for the Better

MITSUBISHI ELECTRIC

SPLIT-TYPE, HEAT PUMP AIR CONDITIONERS

# OUTDOOR UNIT

# SERVICE MANUAL

HFC utilized R410A

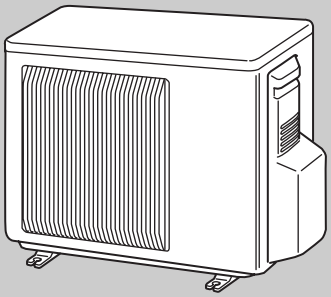
No. OB451

**Wireless type**
**Models**

**MUZ-A09NA**
**MUZ-A12NA**
**MUZ-A15NA**
**MUZ-A17NA**
**MUZ-A24NA**
**MUY-A15NA**
**MUY-A17NA**
**MUY-A24NA**

**MUZ-A09NA-U1**
**MUZ-A12NA-U1**
**MUZ-A15NA-U1**
**MUZ-A17NA-U1**
**MUZ-A24NA-U1**

**Indoor unit service manual**
**MSZ-A•NA Series (OB450)**



**MUZ-A09NA MUY-A15NA**
**MUZ-A12NA MUY-A17NA**
**MUZ-A15NA**

## CONTENTS



**NOTE:**
This service manual describes technical data of the outdoor units.
RoHS compliant products have <G> mark on the spec name plate.
For servicing of RoHS compliant products, refer to the PARTS LIST (RoHS compliant).

Mr.SLIM™

# 1 TECHNICAL CHANGES

**MUZ09UN → MUZ-A09NA**
**MUZ12UN → MUZ-A12NA**
**MUH15TN → MUZ-A15NA**
**MUH17TN → MUZ-A17NA**
**MUH24WN → MUZ-A24NA**
**MU15TN → MUY-A15NA**
**MU17TN → MUY-A17NA**
**MU24WN → MUY-A24NA**

1. Outdoor unit model has been changed.
2. Control method between indoor and outdoor unit has been changed.
3. Refrigerant has been changed. (R22 → R410A)
4. Fan motor has been changed. (AC → DC)
5. Compressor has been changed. (AC → DC)

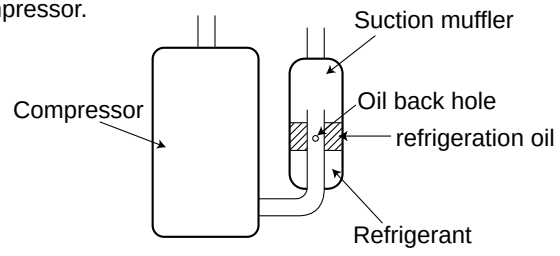
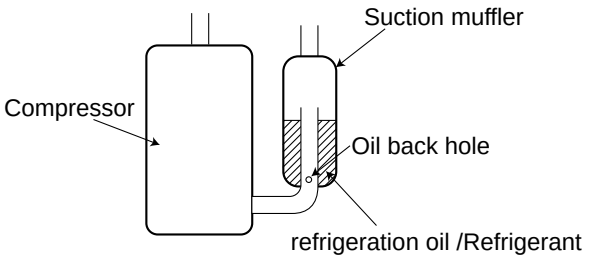
**INFORMATION FOR THE AIR CONDITIONER WITH R410A REFRIGERANT**

- This room air conditioner adopts HFC refrigerant (R410A) which never destroys the ozone layer.
- Pay particular attention to the following points, though the basic installation procedure is same as that for R22 air conditioners.

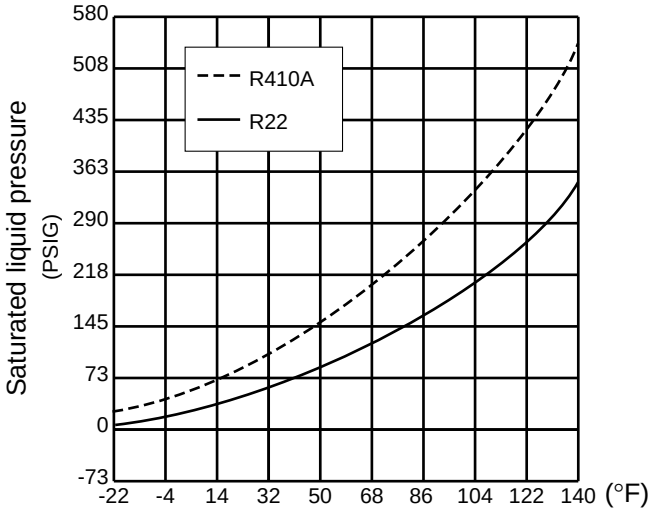
① As R410A has working pressure approximate 1.6 times as high as that of R22, some special tools and piping parts/ materials are required. Refer to the table below.
② Take sufficient care not to allow water and other contaminations to enter the R410A refrigerant during storage and installation, since it is more susceptible to contaminations than R22.
③ For refrigerant piping, use clean, pressure-proof parts/materials specifically designed for R410A. (Refer to 2. Refrigerant piping.)
④ Composition change may occur in R410A since it is a mixed refrigerant. When charging, charge liquid refrigerant to prevent composition change.

| | | New refrigerant | Previous refrigerant |
|---|---|---|---|
| Refrigerant | Refrigerant | R410A | R22 |
| | Composition (Ratio) | HFC-32: HFC-125 (50%:50%) | R22 (100%) |
| | Refrigerant handling | Pseudo-azeotropic refrigerant | Single refrigerant |
| | Chlorine | Not included | Included |
| | Safety group (ASHRAE) | A1/A1 | A1 |
| | Molecular weight | 72.6 | 86.5 |
| | Boiling point (°F) | -60.5 | -41.4 |
| | Steam pressure [77°F](PSIG) | 225.82 | 136.34 |
| | Saturated steam density [77°F](lb/ft$^3$) | 3.995 | 2.772 |
| | Combustibility | Non combustible | Non combustible |
| | ODP ※1 | 0 | 0.055 |
| | GWP ※2 | 1730 | 1700 |
| | Refrigerant charge method | From liquid phase in cylinder | Gas phase |
| | Additional charge on leakage | Possible | Possible |
| Refrigeration oil | Kind | Incompatible oil | Compatible oil |
| | Color | Non | Light yellow |
| | Smell | Non | Non |

※1 :Ozone Destruction Parameter : based on CFC-11
※2 :Global Warmth Parameter : based on $CO_2$

| | New Specification | Current Specification |
|---|---|---|
| Compressor | The incompatible refrigeration oil easily separates from refrigerant and is in the upper layer inside the suction muffler. Raising position of the oil back hole enables to back the refrigeration oil of the upper layer to flow back to the compressor.   | Since refrigerant and refrigeration oil are compatible each, refrigeration oil goes back to the compressor through the lower position oil back hole.   |

Conversion chart of refrigerant temperature and pressure




**1.Tools dedicated for the air conditioner with R410A refrigerant**

The following tools are required for R410A refrigerant. Some R22 tools can be substituted for R410A tools.

| R410A tools | Can R22 tools be used? | Description |
|---|---|---|
| Gauge manifold | No | R410A has high pressures beyond the measurement range of existing gauges. |
| Charge hose | No | Hose material have been changed to improve the pressure resistance. |
| Gas leak detector | No | Dedicated for HFC refrigerant. |
| Torque wrench | Yes | 1/4in. and 3/8in. |
| | No | 1/2in. and 5/8in. |
| Flare tool | Yes | Clamp bar hole has been enlarged to reinforce the spring strength in the tool. |
| Flare gauge | New | Provided for flaring work (to be used with R22 flare tool). |
| Vacuum pump adapter | New | Provided to prevent the back flow of oil. This adapter enables you to use vacuum pumps. |
| Electronic scale for refrigerant charging | New | It is difficult to measure R410A with a charging cylinder because the refrigerant bubbles due to high pressure and high-speed vaporization |

No : Not Substitutable for R410A  Yes : Substitutable for R410A

## 2.Refrigerant piping

① Specifications

Use the copper or copper-alloy seamless pipes for refrigerant that meet the following specifications.

| Outside diameter(in) | Wall thickness (in) | Insulation material |
|---|---|---|
| 1/4 | 0.0315 | Heat resisting foam plastic<br>Specific gravity 0.045 Thickness 0.315 in |
| 3/8 | 0.0315 | |
| 1/2 | 0.0315 | |
| 5/8 | 0.0394 | |

② Flaring work and flare nut

Flaring work for R410A pipe differs from that for R22 pipe.

For details of flaring work, refer to Installation manual “FLARING WORK”.

| Pipe diameter | Dimension of flare nut mm(in) | |
|---|---|---|
| inch | R410A | R22 |
| 1/4 | 17 (11/16) | 17 (11/16) |
| 3/8 | 22 (7/8) | 22 (7/8) |
| 1/2 | 26 (1-1/32) | 24 (15/16) |
| 5/8 | 29 (1-5/32) | 27 (1-1/16) |

## 3.Refrigerant oil

Apply the special refrigeration oil (accessories: packed with indoor unit) to the flare and the union seat surfaces.

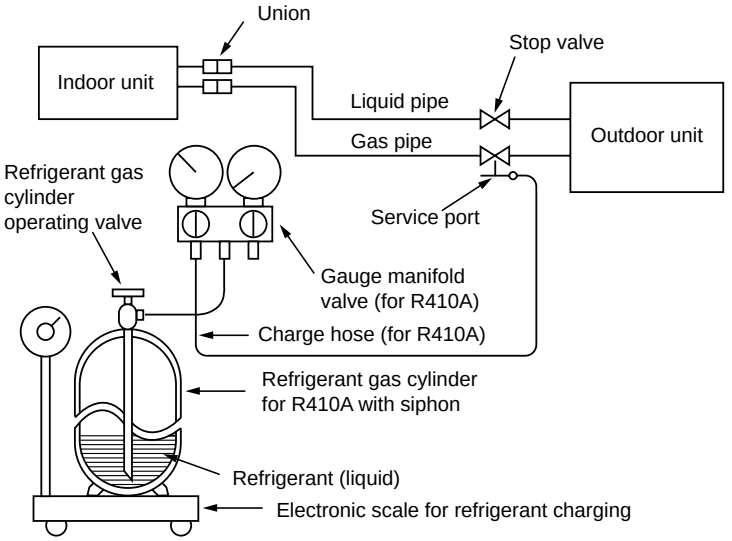
## 4.Air purge

- Do not discharge the refrigerant into the atmosphere.
  Take care not to discharge refrigerant into the atmosphere during installation, reinstallation, or repairs to the refrigerant circuit.
- Use the vacuum pump for air purging for the purpose of environmental protection.

## 5.Additional charge

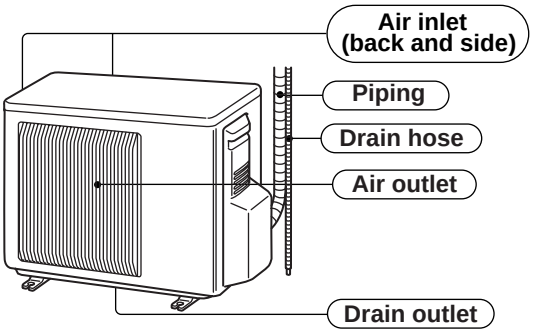
For additional charging, charge the refrigerant from liquid phase of the gas cylinder.

If the refrigerant is charged from the gas phase, composition change may occur in the refrigerant inside the cylinder and the outdoor unit. In this case, ability of the refrigeration cycle decreases or normal operation can be impossible. However, charging the liquid refrigerant all at once may cause the compressor to be locked. Thus, charge the refrigerant slowly.

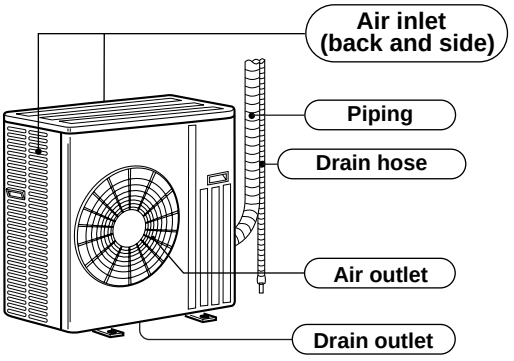


# 2 PART NAMES AND FUNCTIONS

**MUZ-A09NA MUZ-A15NA MUY-A15NA**
**MUZ-A12NA MUZ-A17NA MUY-A17NA**




**MUZ-A24NA**
**MUY-A24NA**



# 3 SPECIFICATION

| Item \ Model | | | MSZ-A09NA | MSZ-A12NA |
|---|---|---|---|---|
| Capacity Rated(Minimum~Maximum) | Cooling ※1 | Btu/h | 9,000 (5,500~9,000) | 12,000 (5,700~12,000) |
| | Heating 47 ※1 | Btu/h | 10,900 (5,200~12,600) | 13,600 (5,200~13,600) |
| Capacity Rated | Heating 17 ※2 | Btu/h | 7,700 | 8,300 |
| Power consumption Rated(Minimum~Maximum) | Cooling ※1 | W | 690 (390~690) | 1,170 (395~1,170) |
| | Heating 47 ※1 | W | 860 (350~1,100) | 1,160 (350~1,160) |
| Power consumption Rated | Heating 17 ※2 | W | 880 | 930 |
| EER ※1 [SEER] ※3 | Cooling | | 13.0 [17.0] | 10.3 [17.0] |
| HSPF IV(V) ※4 | Heating | | 8.2 (6.7) | 8.2 (6.7) |
| COP | Heating ※1 | | 3.71 | 3.44 |
| OUTDOOR UNIT MODEL | | | **MUZ-A09NA** | **MUZ-A12NA** |
| External finish | | | Munsell 3Y 7.8/1.1 | |
| Power supply | | V, phase, Hz | 208/230, 1, 60 | |
| Max. fuse size (time delay) | | A | 15 | |
| Min. circuit ampacity | | A | 12 | |
| Fan motor | | F.L.A | 0.52 | |
| Compressor | Model | | KNB092FPAH | |
| | Winding resistance (at 68˚F) Ω | | 0.49 | |
| | | R.L.A | 7.8 | |
| | | L.R.A | 9.2 | |
| Refrigerant control | | | Liner expansion valve | |
| Sound level | | ※1 dB(A) | 48 | |
| Defrost method | | | Reverse cycle | |
| Dimensions | W | in. | 31-1/2 | |
| | D | in. | 11-1/4 | |
| | H | in. | 21-5/8 | |
| Weight | | lb. | 82 | |
| REMOTE CONTROLLER | | | Wireless type | |
| Control voltage (by built-in transformer) | | | 12-24V DC | |
| REFRIGERANT PIPING | | | Not supplied | |
| Refrigerant pipe size (Min. wall thickness) | Liquid | in. | 1/4 (0.0315) | |
| | Gas | in. | 3/8 (0.0315) | |
| Connection method | Indoor | | Flared | |
| | Outdoor | | Flared | |
| Between the indoor & outdoor units | Height difference | ft. | 40 | |
| | Piping length | ft. | 65 | |
| Refrigerant charge (R410A) | | | 2lb.5oz. | |
| Refrigerating oil (Model) | | cc. | 320 (NE022) | |

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

※1 : Rating conditions (cooling) — Indoor : 80˚FDB, 67˚FWB, Outdoor : 95˚FDB, (75˚FWB) Rated frequency: A09:50Hz A12:76Hz
(heating) — Indoor : 70˚FDB, 60˚FWB, Outdoor : 47˚FDB, 43˚FWB Rated frequency: A09:61Hz A12:76Hz

※2 : (heating) — Indoor : 70˚FDB, 60˚FWB, Outdoor : 17˚FDB, 15˚FWB Maximum frequency: A09:71Hz A12:76Hz

| Item \ Model | | | MSZ-A15NA | MSY-A15NA | MSZ-A17NA | MSY-A17NA |
|---|---|---|---|---|---|---|
| Capacity | Cooling ※1 | Btu/h | 15,000 (3,100~15,000) | 15,000 (3,100~15,000) | 16,200 (3,100~16,200) | 16,200 (3,100~16,200) |
| Rated(Minimum~Maximum) | Heating 47 ※1 | Btu/h | 18,000 (3,400~20,900) | – | 20,100 (3,400~20,900) | – |
| Capacity Rated | Heating 17 ※2 | Btu/h | 13,000 | – | 13,000 | – |
| Power consumption | Cooling ※1 | W | 1,690 (210~1,690) | 1,690 (210~1,690) | 2,070 (210~2,070) | 2,070 (210~2,070) |
| Rated(Minimum~Maximum) | Heating 47 ※1 | W | 1,790 (250~2,330) | – | 2,150 (250~2,330) | – |
| Power consumption Rated | Heating 17 ※2 | W | 1,740 | – | 1,740 | – |
| EER ※1 [SEER] ※3 | Cooling | | 8.9 [16.0] | 8.9 [16.0] | 7.8 [16.0] | 7.8 [16.0] |
| HSPF IV(V) ※4 | Heating | | 8.2 (6.7) | – | 8.2 (6.7) | – |
| COP | Heating ※1 | | 2.95 | – | 2.74 | – |
| OUTDOOR UNIT MODEL | | | **MUZ-A15NA** | **MUY-A15NA** | **MUZ-A17NA** | **MUY-A17NA** |
| External finish | | | Munsell 3Y 7.8/1.1 | | | |
| Power supply | | V, phase, Hz | 208/230, 1, 60 | | | |
| Max. fuse size (time delay) | | A | 15 | | | |
| Min. circuit ampacity | | A | 14 | | | |
| Fan motor | | F.L.A | 0.52 | | | |
| Compressor | Model | | SNB130FPDH | | | |
| | Winding resistance (at 68°F) Ω | | 0.45 | | | |
| | | R.L.A | 10.1 | | | |
| | | L.R.A | 12.0 | | | |
| Refrigerant control | | | Liner expansion valve | | | |
| Sound level ※1 ※1 dB(A) | Cooling | | 50 | 50 | 52 | 52 |
| | Heating | | 51 | — | 53 | — |
| Defrost method | | | Reverse cycle | | | |
| Dimensions | W | in. | 31-1/2 | | | |
| | D | in. | 11-1/4 | | | |
| | H | in. | 21-5/8 | | | |
| Weight | | lb. | 88 | | | |
| REMOTE CONTROLLER | | | Wireless type | | | |
| Control voltage (by built-in transformer) | | | 12-24V DC | | | |
| REFRIGERANT PIPING | | | Not supplied | | | |
| Refrigerant pipe size | Liquid | in. | 1/4 (0.0315) | | | |
| (Min. wall thickness) | Gas | in. | 1/2 (0.0315) | | | |
| Connection method | Indoor | | Flared | | | |
| | Outdoor | | Flared | | | |
| Between the indoor | Height difference | ft. | 40 | | | |
| & outdoor units | Piping length | ft. | 65 | | | |
| Refrigerant charge (R410A) | | | 2lb.7oz. | | | |
| Refrigerating oil (Model) | | cc. | 450 (NE022) | | | |

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

※1 : Rating conditions (cooling) — Indoor : 80˚FDB, 67˚FWB, Outdoor : 95˚FDB, (75˚FWB) Rated frequency: A15:77Hz A17:89Hz
(heating) — Indoor : 70˚FDB, 60˚FWB, Outdoor : 47˚FDB, 43˚FWB Rated frequency: A15:78Hz A17:88Hz

※2 : (heating) — Indoor : 70˚FDB, 60˚FWB, Outdoor : 17˚FDB, 15˚FWB Maximum frequency: A15:93Hz A17:93Hz

| Item / Model | | | MSZ-A24NA | MSY-A24NA |
|---|---|---|---|---|
| Capacity Rated(Minimum~Maximum) | Cooling ※1 | Btu/h | 22,000 (4,400~22,000) | 22,000 (4,400~22,000) |
| | Heating 47 ※1 | Btu/h | 23,200 (3,600~24,400) | — |
| Capacity Rated | Heating 17 ※2 | Btu/h | 15,200 | — |
| Power consumption Rated(Minimum~Maximum) | Cooling ※1 | W | 2,880 (290~2,880) | 2,880 (290~2,880) |
| | Heating 47 ※1 | W | 2,350 (260~2,570) | — |
| Power consumption Rated | Heating 17 ※2 | W | 1,960 | — |
| EER ※1 [SEER] ※3 | Cooling | | 7.6 [16.0] | 7.6 [16.0] |
| HSPF IV(V) ※4 | Heating | | 8.2 (6.7) | — |
| COP | Heating ※1 | | 2.89 | — |
| OUTDOOR UNIT MODEL | | | **MUZ-A24NA** | **MUY-A24NA** |
| External finish | | | Munsell 3Y 7.8 1.1 | |
| Power supply | | V, phase, Hz | 208/230, 1, 60 | |
| Max. fuse size (time delay) | | A | 20 | |
| Min. circuit ampacity | | A | 17 | |
| Fan motor | | F.L.A | 0.93 | |
| Compressor | Model | | SNB130FPDH | |
| | Winding resistance (at 68˚F) Ω | | 0.45 | |
| | | R.L.A | 10.1 | |
| | | L.R.A | 16.0 | |
| Refrigerant control | | | Liner expansion valve | |
| Sound level ※1 | | dB(A) | 55 | |
| Defrost method | | | Reverse cycle | |
| Dimensions | W | in. | 33-1/16 | |
| | D | in. | 13 | |
| | H | in. | 33-7/16 | |
| Weight | | lb. | 128 | |
| REMOTE CONTROLLER | | | Wireless type | |
| Control voltage (by built-in transformer) | | | 12-24VDC | |
| REFRIGERANT PIPING | | | Not supplied | |
| Refrigerant pipe size (Min. wall thickness) | Liquid | in. | 1/4 (0.0315) | |
| | Gas | in. | 5/8 (0.0394) | |
| Connection method | Indoor | | Flared | |
| | Outdoor | | Flared | |
| Between the indoor & outdoor units | Height difference | ft. | 50 | |
| | Piping length | ft. | 100 | |
| Refrigerant charge (R410A) | | | 4lb. | |
| Refrigerating oil (Model) | | cc. | 450 (NE022) | |

NOTE : Test conditions are based on ARI 210/240.
※1 : Rating conditions (cooling) — Indoor : 80˚FDB, 67˚FWB, Outdoor : 95˚FDB, (75˚FWB) Rated frequency: 110Hz
(heating) — Indoor : 70˚FDB, 60˚FWB, Outdoor : 47˚FDB, 43˚FWB Rated frequency: 101Hz
※2 : (heating) — Indoor : 70˚FDB, 60˚FWB, Outdoor : 17˚FDB, 15˚FWB Maximum frequency: 108Hz

## Test condition

※3, ※4

(Unit : [˚F])

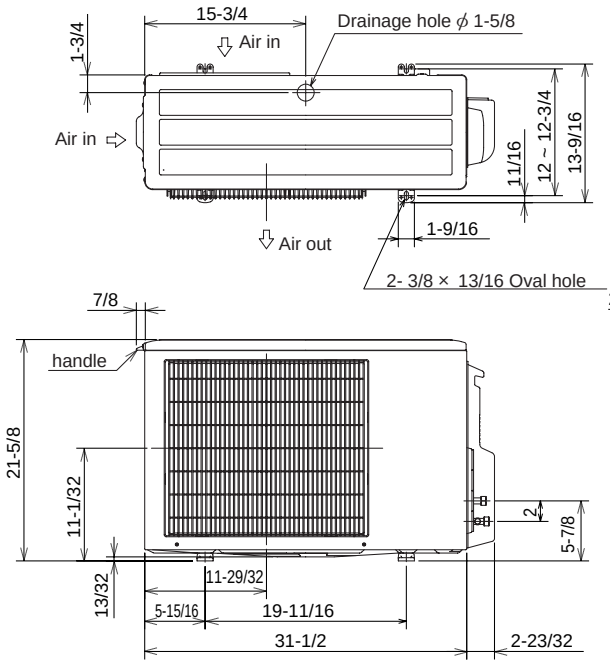
| | Mode | Test | Indoor air condition | | Outdoor air condition | |
|---|---|---|---|---|---|---|
| | | | Dry bulb | Wet bulb | Dry bulb | Wet bulb |
| ARI | SEER (Cooling) | "A" Cooling Steady State at rated compressor Speed | 80 | 67 | 95 | (75) |
| | | "B-2" Cooling Steady State at rated compressor Speed | 80 | 67 | 82 | (65) |
| | | "B-1" Cooling Steady State at minimum compressor Speed | 80 | 67 | 82 | (65) |
| | | Low ambient Cooling Steady State at minimum compressor Speed | 80 | 67 | 67 | (53.5) |
| | | Intermediate Cooling Steady State At Intermediate compressor Speed※5 | 80 | 67 | 87 | (69) |
| | HSPF (Heating) | Standard Rating-Heating at rated compressor Speed | 70 | 60 | 47 | 43 |
| | | Low temperature Heating at rated compressor Speed | 70 | 60 | 17 | 15 |
| | | Max temperature Heating at minimum compressor Speed | 70 | 60 | 62 | 56.5 |
| | | High temperature Heating at minimum compressor Speed | 70 | 60 | 47 | 43 |
| | | Frost Accumulation at rated compressor Speed | 70 | 60 | 35 | 33 |
| | | Frost Accumulation at Intermediate compressor Speed※5 | 70 | 60 | 35 | 33 |

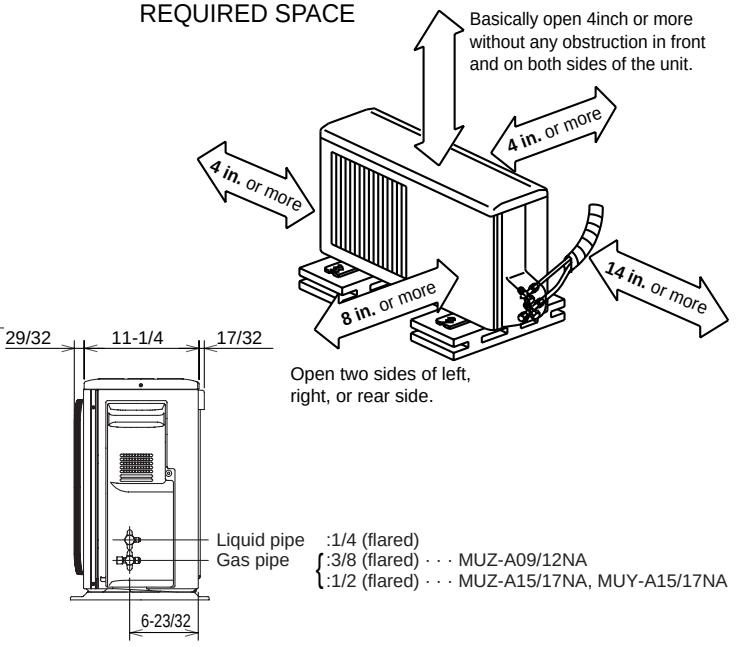
※5 : At Intermediate compressor Speed
=("Cooling rated compressor speed" - "minimum compressor speed") / 3 + "minimum compressor speed".

# 4 OUTLINES AND DIMENSIONS

**MUZ-A09NA MUZ-A12NA MUZ-A15NA**
**MUZ-A17NA MUY-A15NA MUY-A17NA**

**Unit: inch**



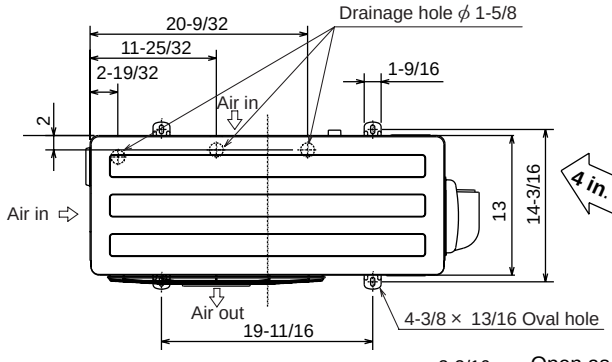



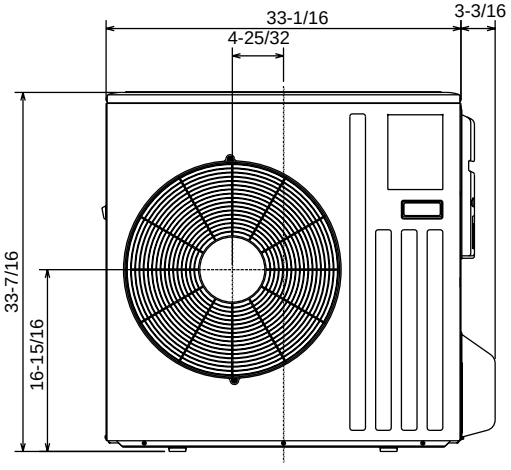


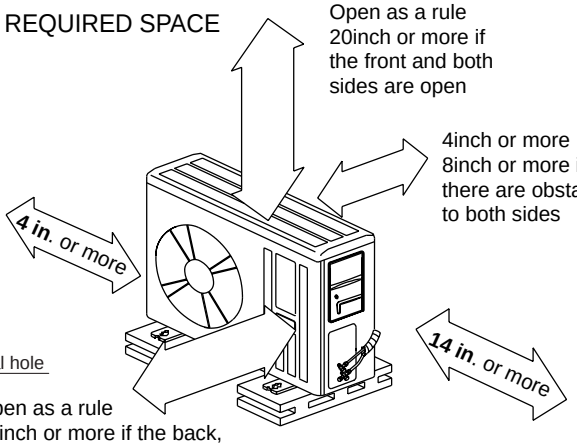


Liquid pipe :1/4 (flared)
Gas pipe :3/8 (flared) · · · MUZ-A09/12NA
:1/2 (flared) · · · MUZ-A15/17NA, MUY-A15/17NA

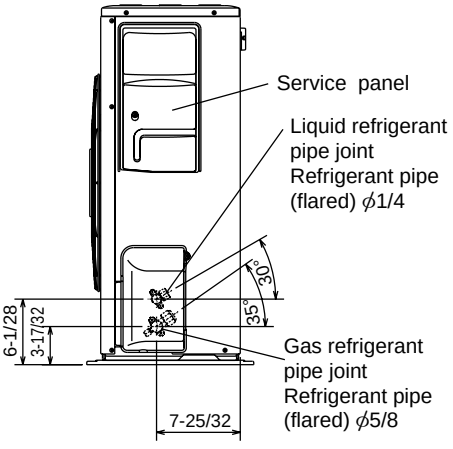
**MUZ-A24NA MUY-A24NA**



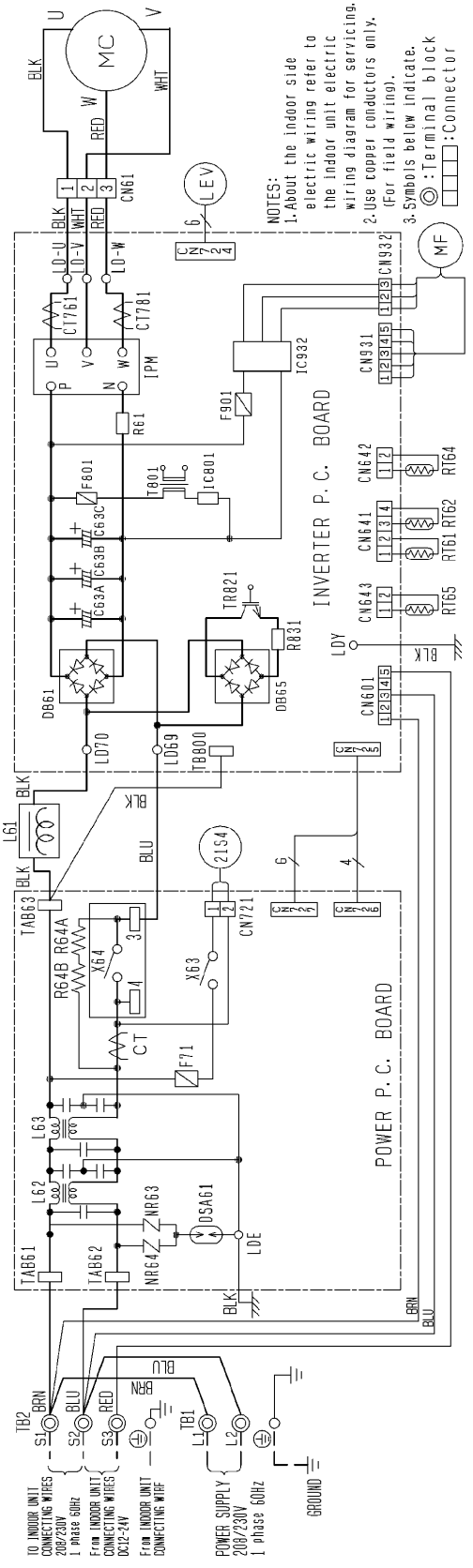




Open as a rule
20inch or more if the back, both sides and top are open



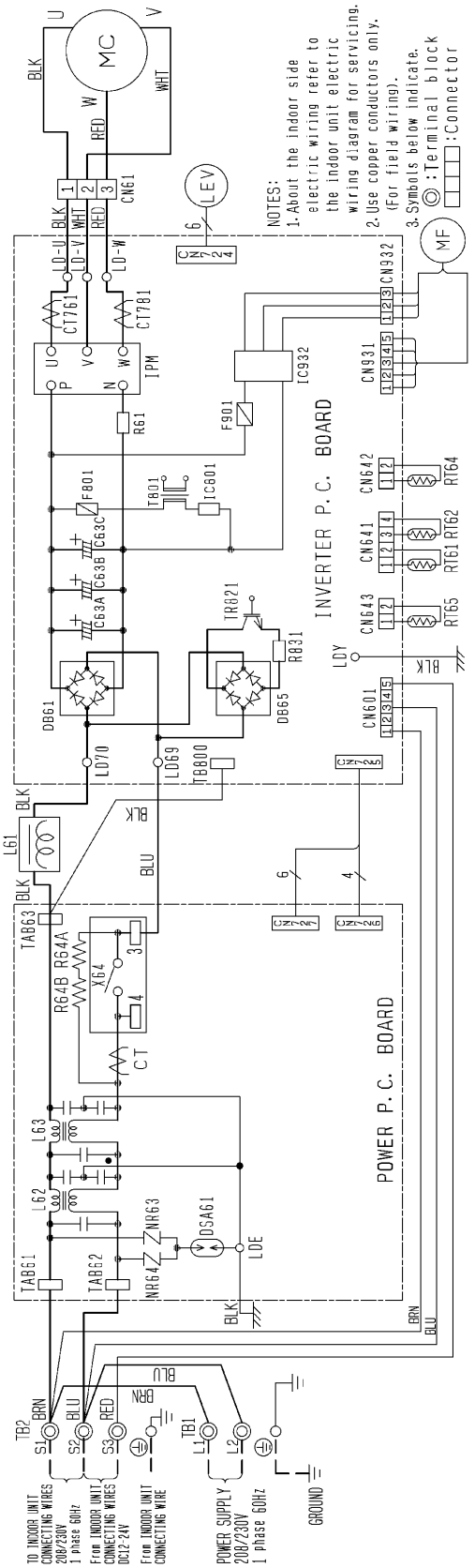
# 5 WIRING DIAGRAM

## MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA



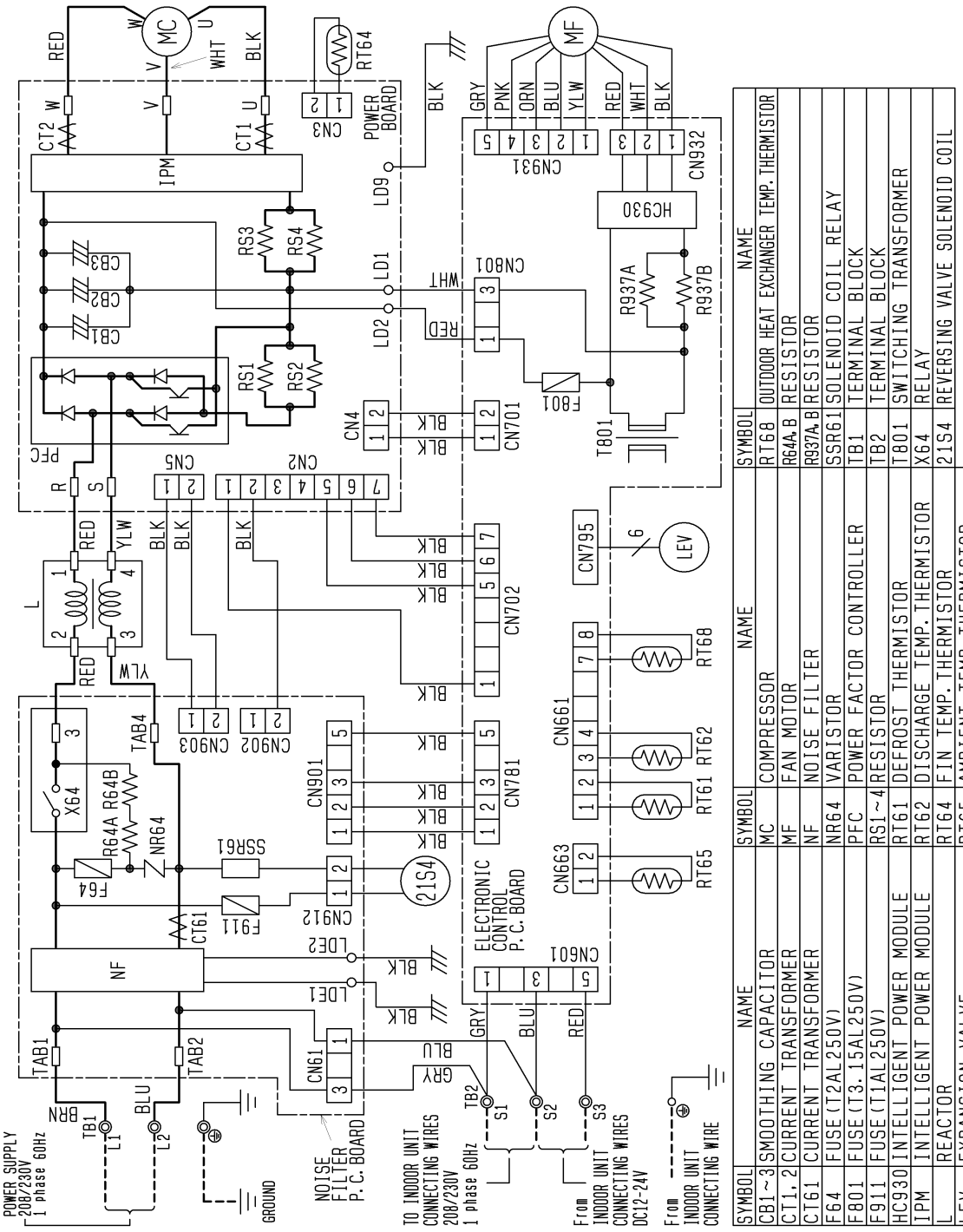

| SYMBOL | NAME | SYMBOL | NAME | SYMBOL | NAME |
|---|---|---|---|---|---|
| CT, CT761, CT781 | CURRENT TRANSFORMER | L61 | REACTOR | R61, R831 | CURRENT-DETECTING RESISTOR |
| C63A, C63B, C63C | SMOOTHING CAPACITOR | L62, L63 | CMC COIL | R64A, R64B | CURRENT-LIMITING RESISTOR |
| DB61, DB65 | DIODE MODULE | MC | COMPRESSOR | TB1, TB2 | TERMINAL BLOCK |
| DSA61 | SURGE ABSORBER | MF | FAN MOTOR | TR821 | SWITCHING POWER TRANSISTOR |
| F71 | FUSE (T3.15AL250V) | NR63, NR64 | VARISTOR | T801 | SWITCHING TRANSFORMER |
| F801, F901 | FUSE (T3.15AL250V) | RT61 | DEFROST THERMISTOR | X63, X64 | RELAY |
| IC801 | INTELLIGENT POWER DEVICE | RT62 | DISCHARGE TEMP.THERMISTOR | 21S4 | REVERSING VALVE COIL |
| IPM, IC932 | INTELLIGENT POWER MODULE | RT64 | FIN TEMP.THERMISTOR | | |
| LEV | EXPANSION VALVE COIL | RT65 | AMBIENT TEMP.THERMISTOR | | |

## MUY-A15NA MUY-A17NA




| SYMBOL | NAME | SYMBOL | NAME | SYMBOL | NAME |
|---|---|---|---|---|---|
| CT, CT751, CT781 | CURRENT TRANSFORMER | L61 | REACTOR | RT65 | AMBIENT TEMP. THERMISTOR |
| C63A, C63B, C63C | SMOOTHING CAPACITOR | L62, L63 | CMC COIL | R61, R831 | CURRENT-DETECTING RESISTOR |
| DB61, DB65 | DIODE MODULE | MC | COMPRESSOR | R64A, R64B | CURRENT-LIMITING RESISTOR |
| DSA61 | SURGE ABSORBER | MF | FAN MOTOR | TB1, TB2 | TERMINAL BLOCK |
| F801, F901 | FUSE (T3.15AL250V) | NR63, NR64 | VARISTOR | TR821 | SWITCHING POWER TRANSISTOR |
| IC801 | INTELLIGENT POWER DEVICE | RT61 | DEFROST THERMISTOR | T801 | SWITCHING TRANSFORMER |
| IPM, IC932 | INTELLIGENT POWER MODULE | RT62 | DISCHARGE TEMP. THERMISTOR | X64 | RELAY |
| LEV | EXPANSION VALVE COIL | RT64 | FIN TEMP. THERMISTOR | | |

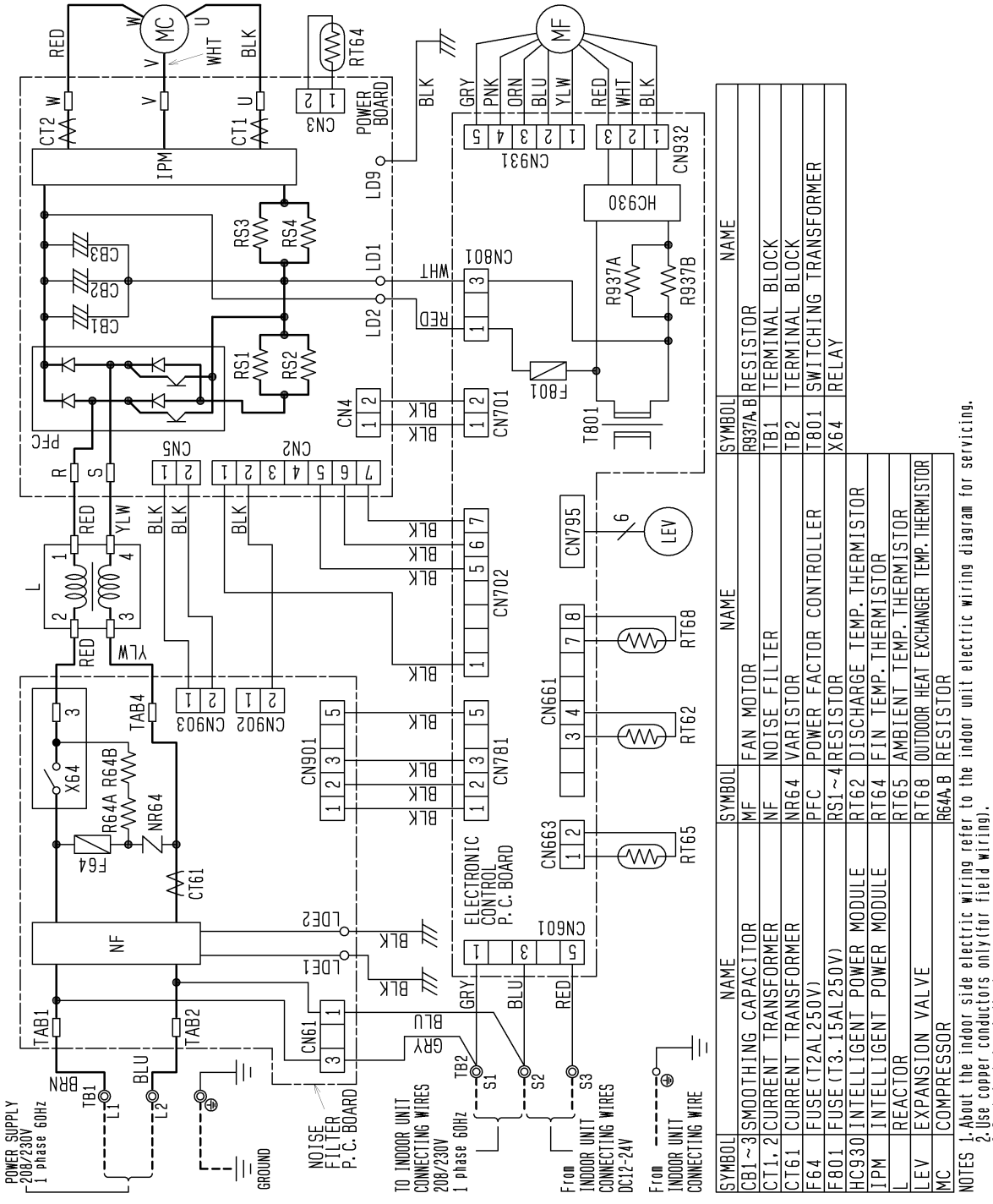
## MUZ-A24NA




| SYMBOL | NAME | SYMBOL | NAME | SYMBOL | NAME |
|---|---|---|---|---|---|
| CB1~3 | SMOOTHING CAPACITOR | MC | COMPRESSOR | RT68 | OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR |
| CT1, 2 | CURRENT TRANSFORMER | MF | FAN MOTOR | R64A, B | RESISTOR |
| CT61 | CURRENT TRANSFORMER | NF | NOISE FILTER | R937A, B | RESISTOR |
| F64 | FUSE(T2AL250V) | NR64 | VARISTOR | SSR61 | SOLENOID COIL RELAY |
| F801 | FUSE(T3.15AL250V) | PFC | POWER FACTOR CONTROLLER | TB1 | TERMINAL BLOCK |
| F911 | FUSE(T1AL250V) | RS1~4 | RESISTOR | TB2 | TERMINAL BLOCK |
| HC930 | INTELLIGENT POWER MODULE | RT61 | DEFROST THERMISTOR | TB01 | SWITCHING TRANSFORMER |
| IPM | INTELLIGENT POWER MODULE | RT62 | DISCHARGE TEMP. THERMISTOR | X64 | RELAY |
| L | REACTOR | RT64 | FIN TEMP. THERMISTOR | 21S4 | REVERSING VALVE SOLENOID COIL |
| LEV | EXPANSION VALVE | RT65 | AMBIENT TEMP. THERMISTOR | | |

NOTES 1. About the indoor side electric wiring refer to the indoor unit electric wiring diagram for servicing.
2. Use copper conductors only(for field wiring).
3. Symbols below indicate.
◎:Terminal block □□□:Connector

## MUY-A24NA



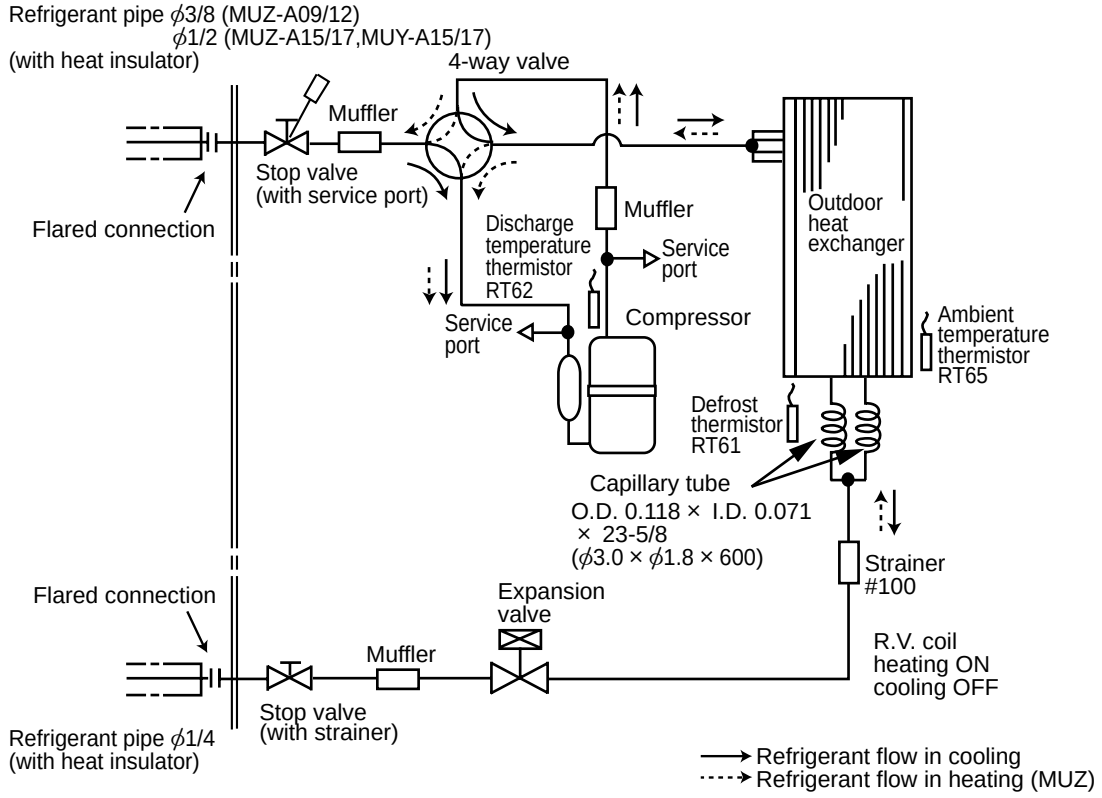

| SYMBOL | NAME | SYMBOL | NAME | SYMBOL | NAME |
|---|---|---|---|---|---|
| CB1~3 | SMOOTHING CAPACITOR | MF | FAN MOTOR | R937A,B | RESISTOR |
| CT1,2 | CURRENT TRANSFORMER | NF | NOISE FILTER | TB1 | TERMINAL BLOCK |
| CT61 | CURRENT TRANSFORMER | NR64 | VARISTOR | TB2 | TERMINAL BLOCK |
| F64 | FUSE(T2AL250V) | PFC | POWER FACTOR CONTROLLER | T801 | SWITCHING TRANSFORMER |
| F801 | FUSE(T3.15AL250V) | RS1~4 | RESISTOR | X64 | RELAY |
| HC930 | INTELLIGENT POWER MODULE | RT62 | DISCHARGE TEMP. THERMISTOR | | |
| IPM | INTELLIGENT POWER MODULE | RT64 | FIN TEMP.THERMISTOR | | |
| L | REACTOR | RT65 | AMBIENT TEMP.THERMISTOR | | |
| LEV | EXPANSION VALVE | RT68 | OUTDOOR HEAT EXCHANGER TEMP.THERMISTOR | | |
| MC | COMPRESSOR | R64A,B | RESISTOR | | |

NOTES 1. About the indoor side electric wiring refer to the indoor unit electric wiring diagram for servicing.
2. Use copper conductors only(for field wiring).
3. Symbols below indicate,
◎:Terminal block □□□:Connector

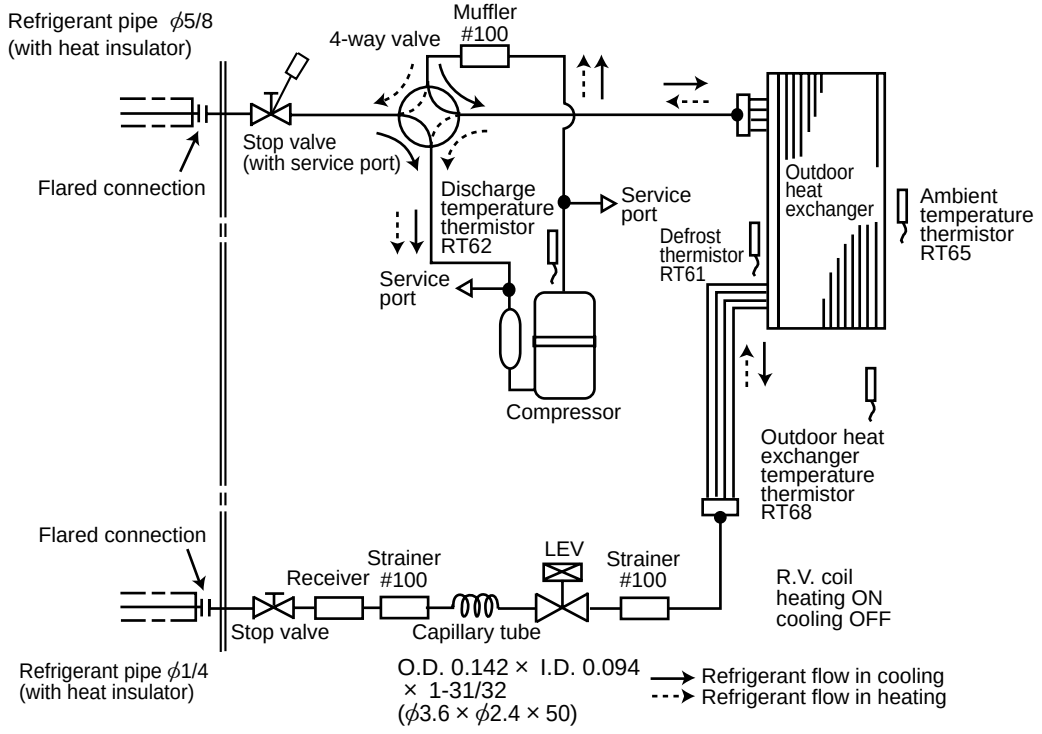
# 6 REFRIGERANT SYSTEM DIAGRAM

## MUZ-A09NA MUZ-A15NA MUY-A15NA
## MUZ-A12NA MUZ-A17NA MUY-A17NA

**Unit:inch**

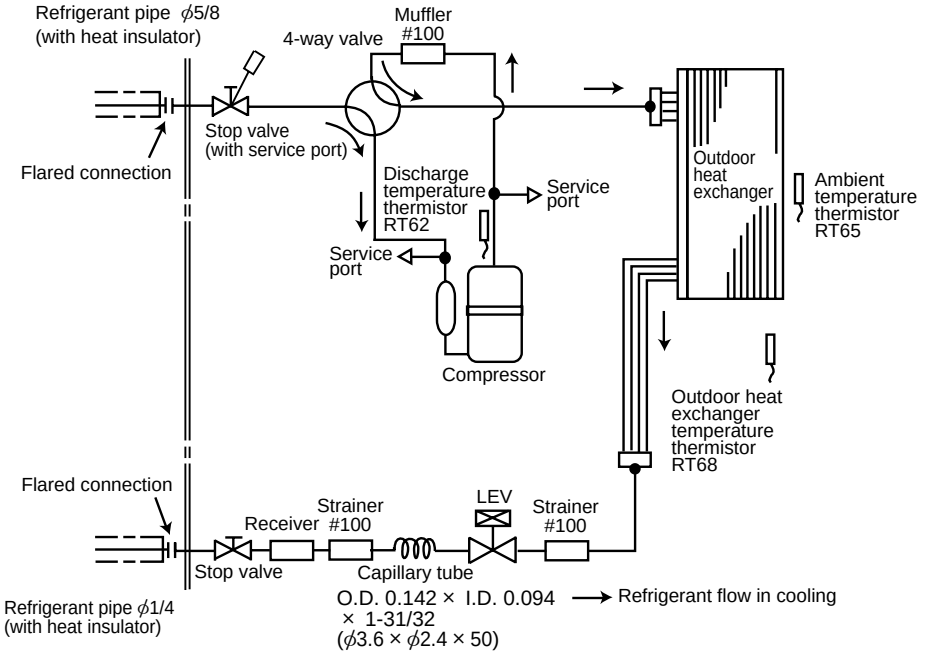



## MUZ-A24NA



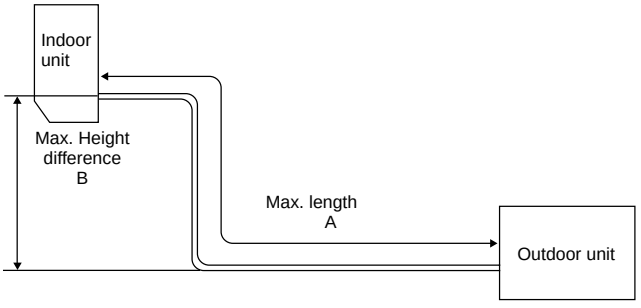
## MUY-A24NA

**Unit:inch**




## MAX. REFRIGERANT PIPING LENGTH and MAX. HEIGHT DIFFERENCE

| Model | Refrigerant piping : ft | | Piping size O.D : in | |
|---|---|---|---|---|
| | Max. length<br>A | Max. Height difference<br>B | Gas | Liquid |
| **MUZ-A09NA**<br>**MUZ-A12NA** | 65 | 40 | 3/8 | 1/4 |
| **MUZ-A15NA**<br>**MUY-A15NA** | | | 1/2 | 1/4 |
| **MUZ-A17NA**<br>**MUY-A17NA** | | | | |
| **MUZ-A24NA**<br>**MUY-A24NA** | 100 | 50 | 5/8 | 1/4 |




## ADDITIONAL REFRIGERANT CHARGE (R410A:oz.)

Refrigerant piping exceeding 25ft. requires additional refrigterant charge according to the calculation.

| Model | Outdoor unit precharged | Refrigerant piping length (one way) : ft | | | | | |
|---|---|---|---|---|---|---|---|
| | | 25 | 30 | 40 | 50 | 60 | 65 |
| **MUZ-A09NA**<br>**MUZ-A12NA** | 2lb.5oz. | 0 | 1.62 | 4.86 | 8.10 | 11.34 | 12.96 |
| **MUZ-A15NA**<br>**MUY-A15NA**<br>**MUZ-A17NA**<br>**MUY-A17NA** | 2lb.7oz. | | | | | | |

Calculation : Xoz. = 1.62/ 5oz./ ft × (Refrigerant piping length (ft)-25)

| Model | Outdoor unit precharged | Refrigerant piping length (one way) : ft | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| **MUZ-A24NA MUY-A24NA** | 4lb. | 0 | 1.08 | 3.24 | 5.40 | 7.56 | 9.72 | 11.88 | 14.04 | 16.20 |

Calculation : Xoz. = 1.08/ 5oz./ ft × (Refrigerant piping length (ft)-25)

NOTE : Refrigerant piping exceeding 25ft. requies additional refrigerant charge according to the calculation.

# 7 DATA

## MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA MUZ-A24NA MUY-A15NA MUY-A17NA MUY-A24NA

### 7-1. PERFORMANCE DATA

#### 1) COOLING CAPACITY

| Model | Indoor air IWB (˚F) | Outdoor intake air DB temperature(˚F) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 75 | | | 85 | | | 95 | | | 105 | | | 115 | | |
| | | TC | SHC | TPC | TC | SHC | TPC | TC | SHC | TPC | TC | SHC | TPC | TC | SHC | TPC |
| MSZ-A09NA | 71 | 11.0 | 6.4 | 0.61 | 10.3 | 5.9 | 0.67 | 9.7 | 5.6 | 0.72 | 9.0 | 5.2 | 0.76 | 8.3 | 4.8 | 0.79 |
| | 67 | 10.4 | 7.4 | 0.58 | 9.7 | 6.9 | 0.64 | 9.0 | 6.4 | 0.69 | 8.4 | 5.9 | 0.73 | 7.7 | 5.5 | 0.77 |
| | 63 | 9.8 | 8.3 | 0.55 | 9.1 | 7.7 | 0.61 | 8.5 | 7.1 | 0.66 | 7.7 | 6.5 | 0.70 | 7.0 | 5.9 | 0.73 |
| MSZ-A12NA | 71 | 14.7 | 8.5 | 1.04 | 13.7 | 7.9 | 1.14 | 12.9 | 7.4 | 1.23 | 12.0 | 6.9 | 1.29 | 11.0 | 6.4 | 1.35 |
| | 67 | 13.9 | 9.9 | 0.98 | 13.0 | 9.2 | 1.08 | 12.0 | 8.5 | 1.17 | 11.2 | 7.9 | 1.24 | 10.3 | 7.3 | 1.30 |
| | 63 | 13.1 | 11.0 | 0.94 | 12.1 | 10.2 | 1.04 | 11.3 | 9.5 | 1.12 | 10.3 | 8.7 | 1.19 | 9.4 | 7.9 | 1.24 |
| MSZ-A15NA MSY-A15NA | 71 | 18.4 | 9.5 | 1.50 | 17.2 | 8.9 | 1.65 | 16.1 | 8.3 | 1.77 | 15.0 | 7.8 | 1.87 | 13.8 | 7.1 | 1.94 |
| | 67 | 17.4 | 11.3 | 1.42 | 16.2 | 10.5 | 1.56 | 15.0 | 9.8 | 1.69 | 14.0 | 9.1 | 1.79 | 12.8 | 8.3 | 1.88 |
| | 63 | 16.4 | 12.8 | 1.35 | 15.2 | 11.9 | 1.50 | 14.1 | 11.0 | 1.61 | 12.8 | 10.0 | 1.72 | 11.7 | 9.2 | 1.79 |
| MSZ-A17NA MSY-A17NA | 71 | 19.8 | 10.3 | 1.84 | 18.5 | 9.6 | 2.02 | 17.4 | 9.0 | 2.17 | 16.2 | 8.4 | 2.29 | 14.9 | 7.7 | 2.38 |
| | 67 | 18.8 | 12.2 | 1.74 | 17.5 | 11.4 | 1.91 | 16.2 | 10.5 | 2.07 | 15.1 | 9.8 | 2.19 | 13.9 | 9.0 | 2.30 |
| | 63 | 17.7 | 13.8 | 1.66 | 16.4 | 12.8 | 1.83 | 15.2 | 11.9 | 1.98 | 13.9 | 10.8 | 2.11 | 12.6 | 9.9 | 2.19 |
| MSZ-A24NA MSY-A24NA | 71 | 27.0 | 13.4 | 2.56 | 25.2 | 12.5 | 2.81 | 23.7 | 11.7 | 3.02 | 22.0 | 10.9 | 3.18 | 20.2 | 10.1 | 3.31 |
| | 67 | 25.5 | 16.1 | 2.42 | 23.8 | 15.0 | 2.66 | 22.0 | 13.9 | 2.88 | 20.5 | 12.9 | 3.05 | 18.8 | 11.9 | 3.20 |
| | 63 | 24.0 | 18.3 | 2.30 | 22.2 | 17.0 | 2.55 | 20.7 | 15.8 | 2.75 | 18.8 | 14.4 | 2.94 | 17.2 | 13.1 | 3.05 |

NOTE 1. IWB : Intake air wet-bulb temperature
TC : Total Capacity (x10$^3$ Btu/h), SHC : Sensible Heat Capacity (x10$^3$ Btu/h)
TPC : Total Power Consumption (kW)
2. SHC is based on 80˚F of indoor intake air DB temperature.

#### 2) COOLING CAPACITY CORRECTIONS

| Refrigerant piping length (one way : ft.) | | | | |
|---|---|---|---|---|
| Model | 25 (std.) | 40 | 65 | 100 |
| MSZ-A09/12/15/17NA MSY-A15/17NA | 1.0 | 0.954 | 0.878 | |
| MSZ-A24NA MSY-A24NA | 1.0 | 0.95 | 0.878 | 0.713 |

### 3) HEATING CAPACITY

| Model | Indoor air | Outdoor intake air WB temperature(˚F) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | IDB (˚F) | 15 | | 25 | | 35 | | 43 | | 45 | | 55 | |
| | | TC | TPC | TC | TPC | TC | TPC | TC | TPC | TC | TPC | TC | TPC |
| MSZ-A09NA | 75 | 6.3 | 0.64 | 7.9 | 0.75 | 9.4 | 0.84 | 10.6 | 0.88 | 11.0 | 0.89 | 12.4 | 0.93 |
| | 70 | 6.7 | 0.62 | 8.2 | 0.74 | 9.6 | 0.82 | 10.9 | 0.86 | 11.2 | 0.88 | 12.7 | 0.91 |
| | 65 | 6.9 | 0.59 | 8.6 | 0.71 | 10.0 | 0.80 | 11.2 | 0.84 | 11.6 | 0.85 | 13.0 | 0.89 |
| MSZ-A12NA | 75 | 7.9 | 0.86 | 9.9 | 1.02 | 11.8 | 1.13 | 13.3 | 1.19 | 13.7 | 1.21 | 15.5 | 1.25 |
| | 70 | 8.4 | 0.84 | 10.2 | 0.99 | 12.0 | 1.10 | 13.6 | 1.16 | 14.0 | 1.18 | 15.8 | 1.23 |
| | 65 | 8.6 | 0.80 | 10.7 | 0.96 | 12.4 | 1.07 | 14.0 | 1.13 | 14.4 | 1.15 | 16.2 | 1.21 |
| MSZ-A15NA | 75 | 10.4 | 1.33 | 13.1 | 1.57 | 15.6 | 1.75 | 17.6 | 1.83 | 18.1 | 1.86 | 20.5 | 1.93 |
| | 70 | 11.1 | 1.29 | 13.5 | 1.53 | 15.9 | 1.70 | 18.0 | 1.79 | 18.5 | 1.83 | 21.0 | 1.90 |
| | 65 | 11.3 | 1.24 | 14.1 | 1.48 | 16.5 | 1.66 | 18.5 | 1.75 | 19.1 | 1.77 | 21.4 | 1.86 |
| MSZ-A17NA | 75 | 11.7 | 1.60 | 14.6 | 1.88 | 17.4 | 2.10 | 19.6 | 2.20 | 20.2 | 2.24 | 22.9 | 2.32 |
| | 70 | 12.4 | 1.55 | 15.1 | 1.84 | 17.8 | 2.04 | 20.1 | 2.15 | 20.7 | 2.19 | 23.4 | 2.28 |
| | 65 | 12.7 | 1.48 | 15.8 | 1.77 | 18.4 | 1.99 | 20.7 | 2.10 | 21.3 | 2.13 | 23.9 | 2.24 |
| MSZ-A24NA | 75 | 13.5 | 1.75 | 16.8 | 2.06 | 20.1 | 2.29 | 22.6 | 2.41 | 23.3 | 2.44 | 26.4 | 2.54 |
| | 70 | 14.3 | 1.69 | 17.4 | 2.01 | 20.5 | 2.23 | 23.2 | 2.35 | 23.9 | 2.40 | 27.0 | 2.49 |
| | 65 | 14.6 | 1.62 | 18.2 | 1.94 | 21.2 | 2.17 | 23.9 | 2.29 | 24.6 | 2.33 | 27.6 | 2.44 |

NOTE: 1. IDB : Intake air dry-bulb temperature
TC : Total Capacity (x$10^3$ Btu/h)
TPC : Total Power Consumption (kW)
2. Above data is for heating operation without any frost.

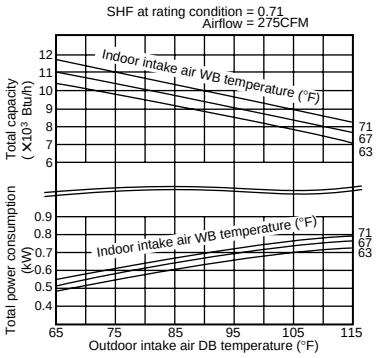
How to operate with fixed operational frequency of the compressor.

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 up.
   The operational frequency of the compressor.
3. The fan speed of the indoor unit is High.
4. This operation continues for 30minutes.
5. In order to release this operation, press the EMERGENCY OPERATION switch twice or once, or press any button on the remote controller.

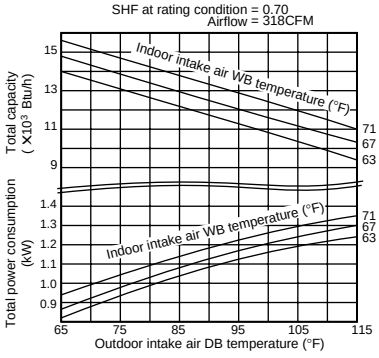
## 7-2. PERFORMANCE CURVE

### Cooling

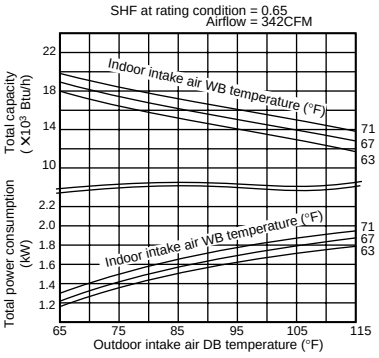
#### MSZ-A09NA




#### MSZ-A12NA




#### MSZ-A15NA MSY-A15NA

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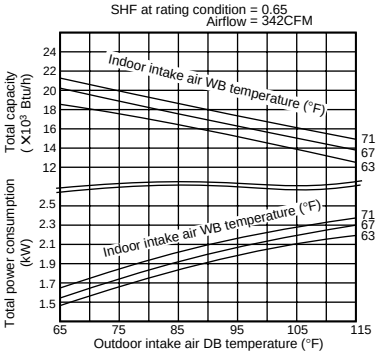


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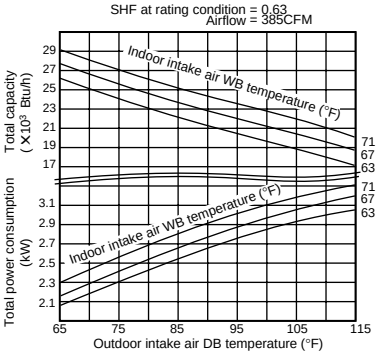
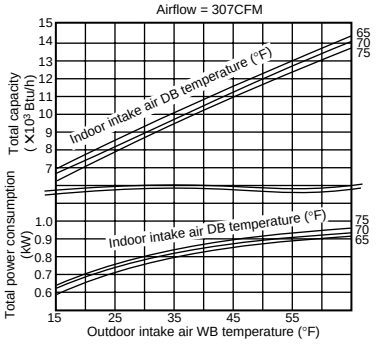



### Heating

#### MSZ-A09NA

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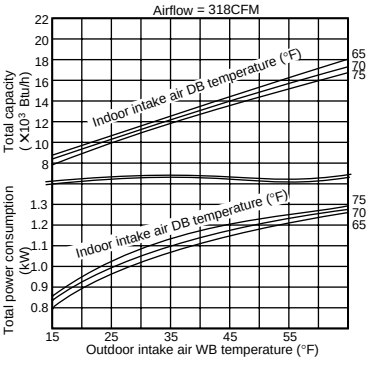


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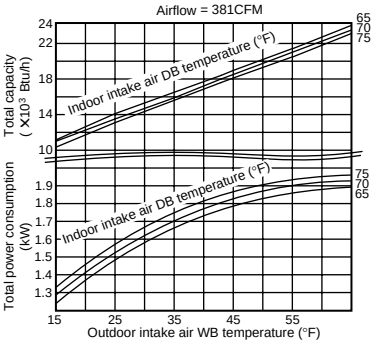


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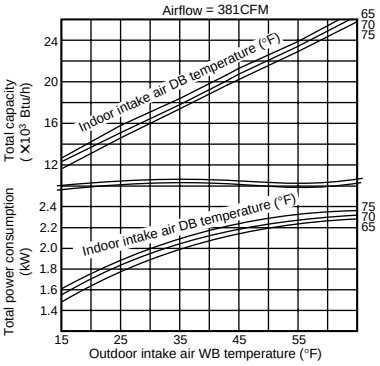


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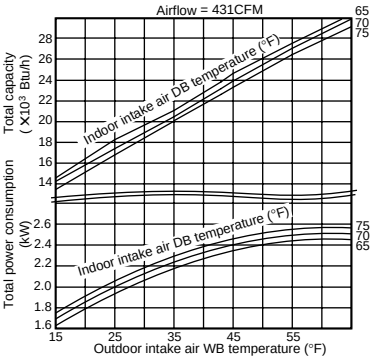


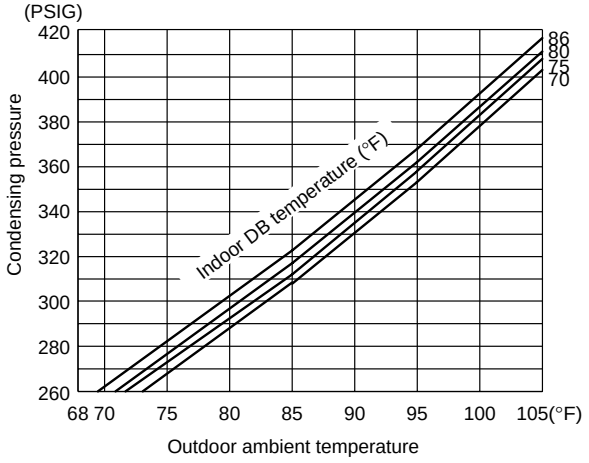

This value of frequency is not the same as the actual frequency in operating. Refer to 7-6 and 7-7 for the relationships between frequency and capacity.

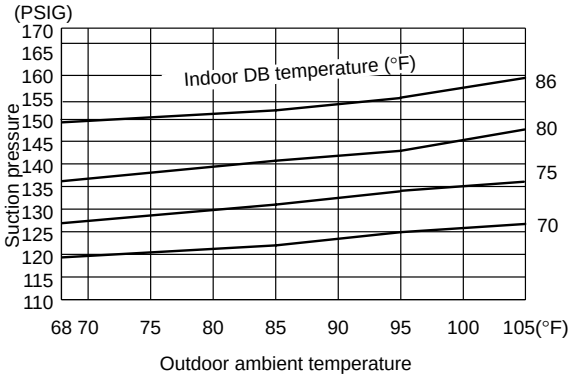
## 7-3. Condensing pressure

### Cooling

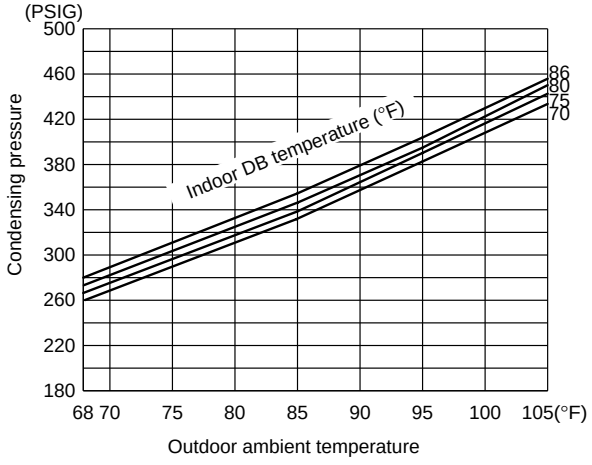
Data is based on the condition of indoor humidity 50%.
Air flow should be set to High speed.

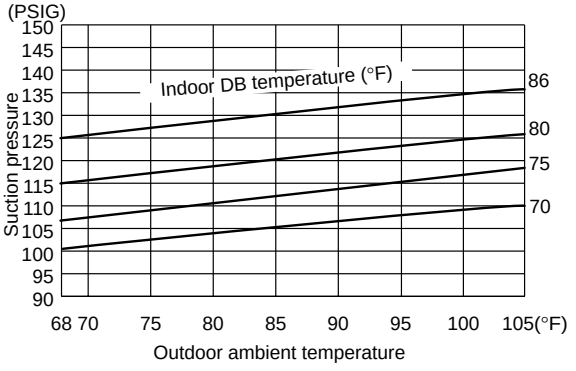
**MSZ-A09NA**



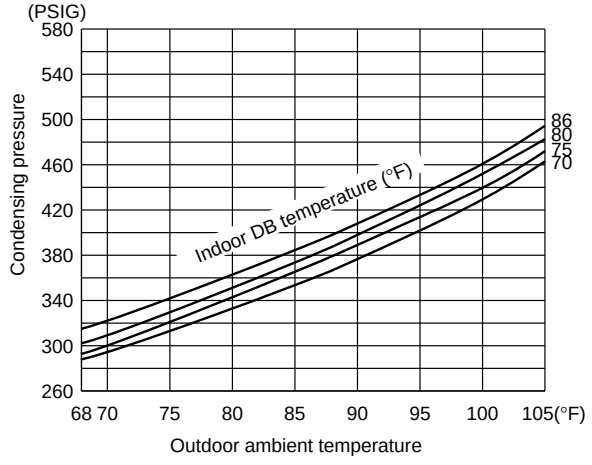



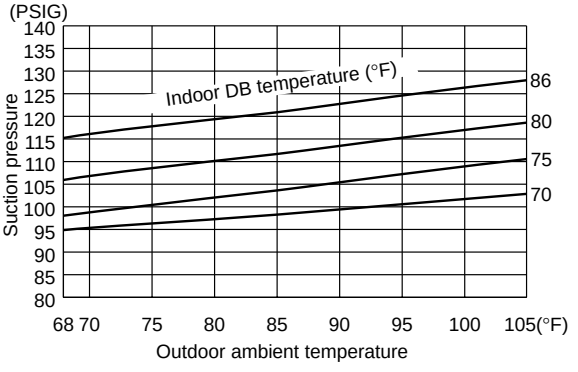

**MSZ-A12NA**



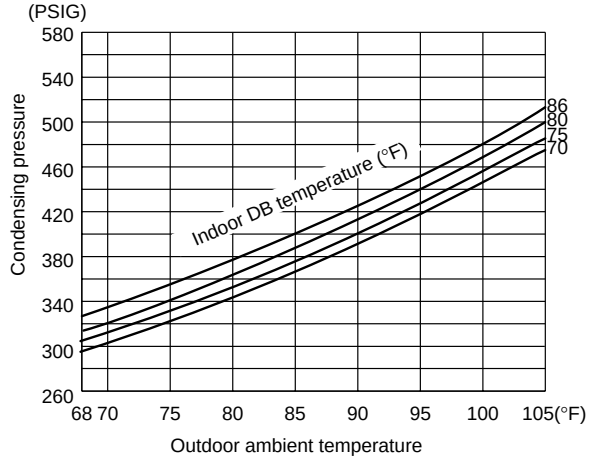



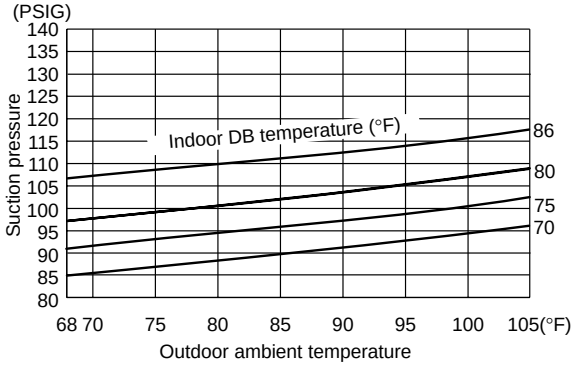

**MSZ-A15NA**
**MSY-A15NA**



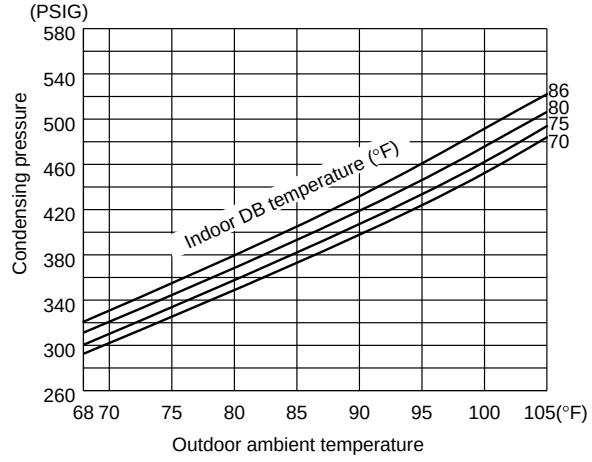



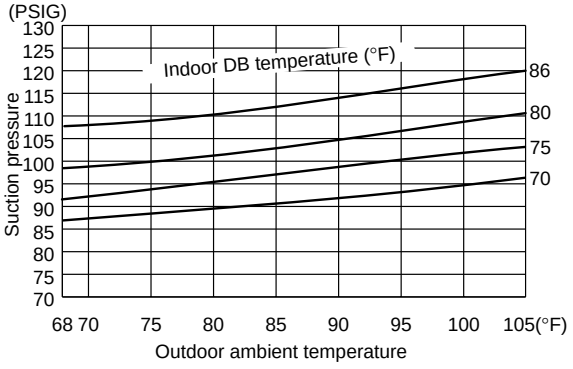
**MSZ-A17NA**
**MSY-A17NA**




**MSZ-A24NA**
**MSY-A24NA**

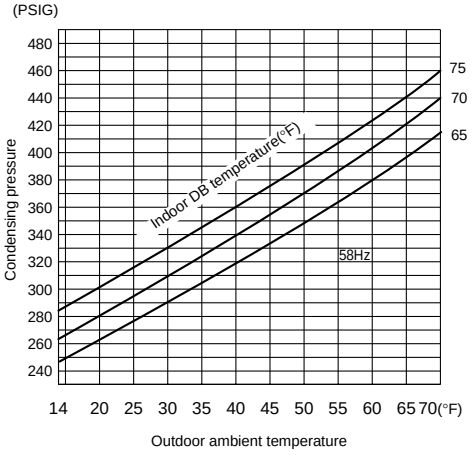


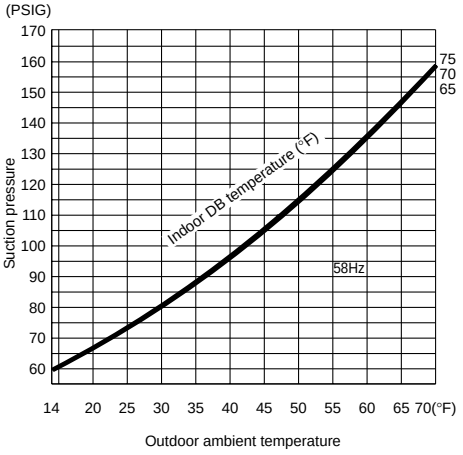



**Heating**

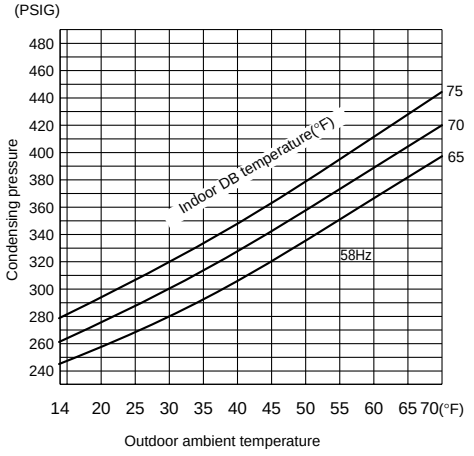
Data is based on the condition of outdoor humidity 75%.
Air flow should be set to High speed.
Data is for heating operation without any frost.

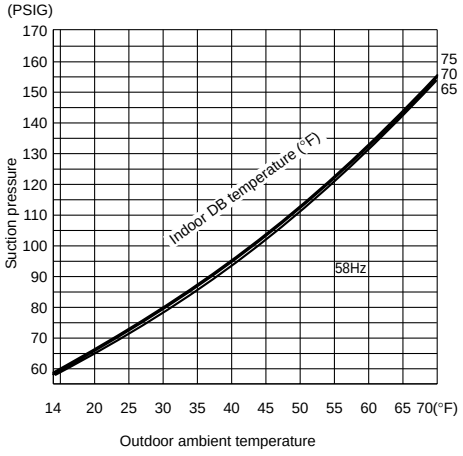
**MSZ-A09NA**



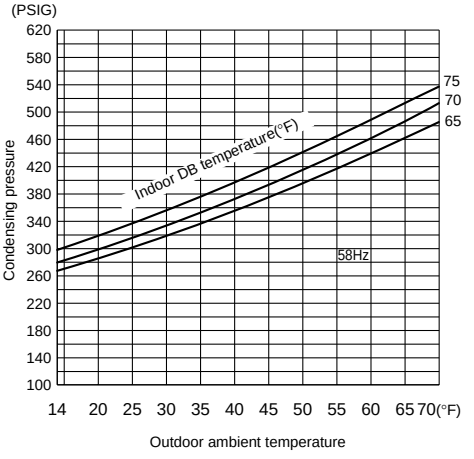



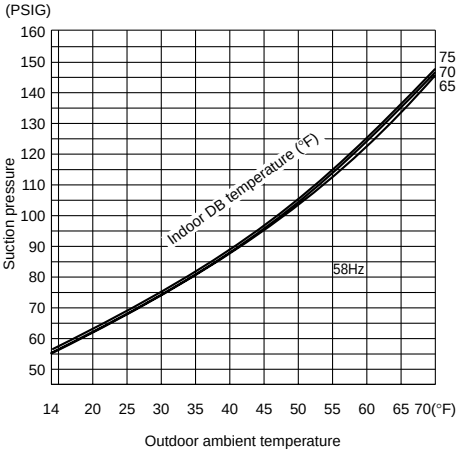

**MSZ-A12NA**



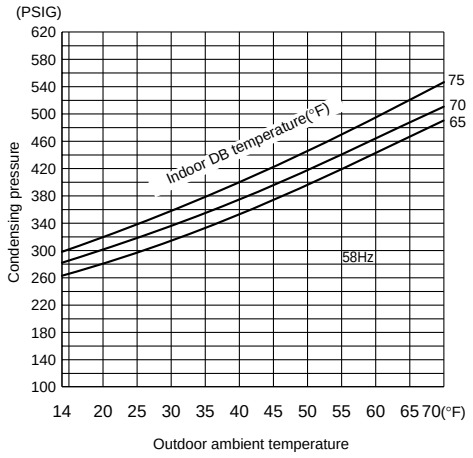



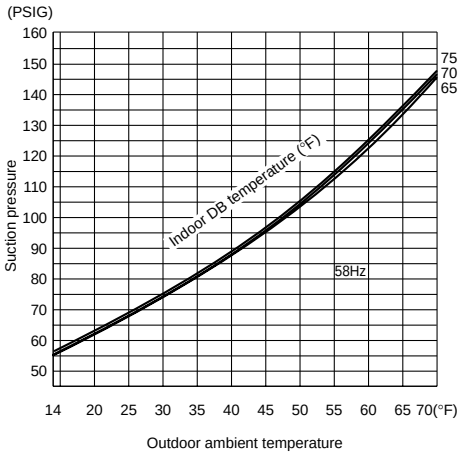

**MSZ-A15NA**



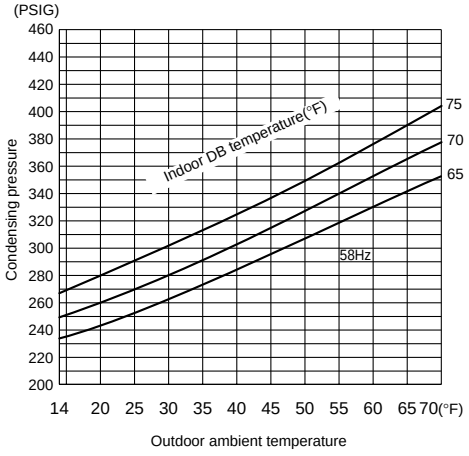



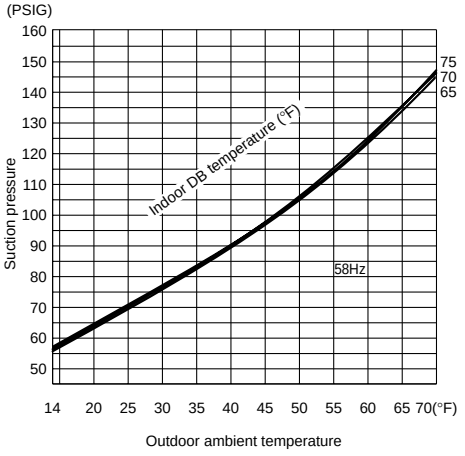
## MSZ-A17NA




## MSZ-A24NA



## 7-4. STANDARD OPERATION DATA

| Model | | | | MSZ-A09NA | | MSZ-A12NA | |
|---|---|---|---|---|---|---|---|
| Item | | | Unit | Cooling | Heating | Cooling | Heating |
| Total | Capacity | | Btu / h | 9,000 | 10,900 | 12,000 | 13,600 |
| | SHF | | — | 0.71 | – | 0.70 | – |
| | Input | | kW | 0.690 | 0.860 | 1,170 | 1,160 |
| | Rated frequency | | Hz | 50 | 61 | 76 | 76 |
| Electrical circuit | Indoor unit | | | MSZ-A09NA | | MSZ-A12NA | |
| | Power supply (V, phase, Hz) | | | 208/230, 1, 60 | | 208/230, 1, 60 | |
| | Input | | kW | 0.016 | | 0.021 | |
| | Fan motor current | | A | 0.18 / 0.16 | | 0.23 / 0.21 | |
| | Aux. heater current | | A | – | | – | |
| | Outdoor unit | | | MUZ-A09NA | | MUZ-A12NA | |
| | Power supply (V, phase, Hz) | | | 208/230, 1, 60 | | 208/230, 1, 60 | |
| | Input | | kW | 0.674 | 0.844 | 1.149 | 1.139 |
| | Comp. current | | A | 2.80 / 2.53 | 3.63 / 3.28 | 5.08 / 4.59 | 5.03 / 4.54 |
| | Fan motor current | | A | 0.37 / 0.34 | | 0.37 / 0.34 | |
| Refrigerant circuit | Condensing pressure | | PSIG | 363 | 368 | 395 | 393 |
| | Suction pressure | | PSIG | 144 | 109 | 124 | 103 |
| | Discharge temperature | | ˚F | 145 | 153 | 169 | 164 |
| | Condensing temperature | | ˚F | 107 | 108 | 112 | 113 |
| | Suction temperature | | ˚F | 55 | 37 | 54 | 35 |
| | Comp. shell bottom temp | | ˚F | 140 | 147 | 163 | 158 |
| | Ref. pipe length | | ft. | 25 | | 25 | |
| | Refrigerant charge (R410A) | | — | 2lb.5oz. | | 2lb.5oz. | |
| Indoor unit | Intake air temperature | DB | ˚F | 80 | 70 | 80 | 70 |
| | | WB | ˚F | 67 | 60 | 67 | 60 |
| | Discharge air temperature | DB | ˚F | 57 | 105 | 56 | 108 |
| | | WB | ˚F | 56 | 71 | 54 | 72 |
| | Fan speed (High) | | rpm | 1,080 | 1,080 | 1,220 | 1,220 |
| | Airflow (High) | | CFM | 275 (Wet) | 307 | 318 (Wet) | 353 |
| Outdoor unit | Intake air temperature | DB | ˚F | 95 | 47 | 95 | 47 |
| | | WB | ˚F | – | 43 | – | 43 |
| | Fan speed | | rpm | 840 | 840 | 840 | 840 |
| | Airflow | | CFM | 1,094 | 1,094 | 1,094 | 1,094 |

| Model | | | | MSZ-A15NA MSY-A15NA | MSZ-A15NA | MSZ-A17NA MSY-A17NA | MSZ-A17NA |
|---|---|---|---|---|---|---|---|
| Item | | | Unit | Cooling | Heating | Cooling | Heating |
| Total | Capacity | | Btu / h | 15,000 | 18,000 | 16,200 | 20,100 |
| | SHF | | — | 0.65 | – | 0.65 | – |
| | Input | | kW | 1.69 | 1.79 | 2.07 | 2.15 |
| | Rated frequency | | Hz | 77 | 78 | 89 | 88 |
| Electrical circuit | Indoor unit | | | MSZ-A15NA, MSY-A15NA | | MSZ-A17NA, MSY-A17NA | |
| | Power supply (V, phase, Hz) | | | 208/230, 1, 60 | | 208/230, 1, 60 | |
| | Input | | kW | 0.030 | | 0.030 | |
| | Fan motor current | | A | 0.31 / 0.28 | | 0.31 / 0.28 | |
| | Aux. heater current | | A | – | | – | |
| | Outdoor unit | | | MUZ-A15NA MUY-A15NA | MUZ-A15NA | MUZ-A17NA MUY-A17NA | MUZ-A17NA |
| | Power supply (V, phase, Hz) | | | 208/230, 1, 60 | | 208/230, 1, 60 | |
| | Input | | kW | 1.660 | 1.760 | 2.040 | 2.120 |
| | Comp. current | | A | 7.56 / 6.84 | 8.14 / 7.36 | 9.43 / 8.52 | 9.93 / 8.98 |
| | Fan motor current | | A | 0.42 / 0.38 | | 0.42 / 0.38 | |
| Refrigerant circuit | Condensing pressure | | PSIG | 425 | 458 | 442 | 493 |
| | Suction pressure | | PSIG | 115 | 95 | 106 | 92 |
| | Discharge temperature | | ˚F | 182 | 180 | 189 | 194 |
| | Condensing temperature | | ˚F | 117 | 125 | 120 | 130 |
| | Suction temperature | | ˚F | 47 | 30 | 40 | 28 |
| | Comp. shell bottom temp | | ˚F | 161 | 153 | 167 | 167 |
| | Ref. pipe length | | ft. | 25 | | 25 | |
| | Refrigerant charge (R410A) | | — | 2lb.7oz. | | 2lb.7oz. | |
| Indoor unit | Intake air temperature | DB | ˚F | 80 | 70 | 80 | 70 |
| | | WB | ˚F | 67 | 60 | 67 | 60 |
| | Discharge air temperature | DB | ˚F | 53 | 116 | 52 | 120 |
| | | WB | ˚F | 52 | 74 | 51 | 75 |
| | Fan speed (High) | | rpm | 1,300 | 1,300 | 1,300 | 1,300 |
| | Airflow (High) | | CFM | 342 (Wet) | 381 | 342 (Wet) | 381 |
| Outdoor unit | Intake air temperature | DB | ˚F | 95 | 47 | 95 | 47 |
| | | WB | ˚F | – | 43 | – | 43 |
| | Fan speed | | rpm | 950 | 950 | 950 | 950 |
| | Airflow | | CFM | 1,249 | 1,249 | 1,249 | 1,249 |

| Model | | | | MSZ-A24NA<br>MSY-A24NA | MSZ-A24NA |
|---|---|---|---|---|---|
| Item | | | Unit | Cooling | Heating |
| Total | Capacity | | Btu / h | 22,000 | 23,200 |
| | SHF | | — | 0.63 | – |
| | Input | | kW | 2.88 | 2.35 |
| | Rated frequency | | Hz | 110 | 101 |
| Electrical circuit | Indoor unit | | | MSZ-A24NA , MSY-A24NA | |
| | Power supply (V, phase, Hz) | | | 208/230, 1, 60 | |
| | Input | | kW | 0.053 | |
| | Fan motor current | | A | 0.52 / 0.47 | |
| | Aux. heater current | | A | – | |
| | Outdoor unit | | | MUZ-A24NA<br>MUY-A24NA | MUZ-A24NA |
| | Power supply (V, phase, Hz) | | | 208/230, 1, 60 | |
| | Input | | kW | 2.827 | 2.297 |
| | Comp. current | | A | 12.81 / 11.59 | 11.10 / 10.04 |
| | Fan motor current | | A | 0.80 / 0.72 | |
| Refrigerant circuit | Condensing pressure | | PSIG | 447 | 401 |
| | Suction pressure | | PSIG | 107 | 92 |
| | Discharge temperature | | ˚F | 181 | 170 |
| | Condensing temperature | | ˚F | 121 | 115 |
| | Suction temperature | | ˚F | 37 | 29 |
| | Comp. shell bottom temp | | ˚F | 161 | 148 |
| | Ref. pipe length | | ft. | 25 | |
| | Refrigerant charge (R410A) | | — | 4lb. | |
| Indoor unit | Intake air temperature | DB | ˚F | 80 | 70 |
| | | WB | ˚F | 67 | 60 |
| | Discharge air temperature | DB | ˚F | 56 | 108 |
| | | WB | ˚F | 55 | 72 |
| | Fan speed (High) | | rpm | 1,310 | 1,310 |
| | Airflow (High) | | CFM | 385 (Wet) | 431 |
| Outdoor unit | Intake air temperature | DB | ˚F | 95 | 47 |
| | | WB | ˚F | – | 43 |
| | Fan speed | | rpm | 800 | 800 |
| | Airflow | | CFM | 1,729 | 1,729 |

## 7-5. OPERATING RANGE

(1) POWER SUPPLY

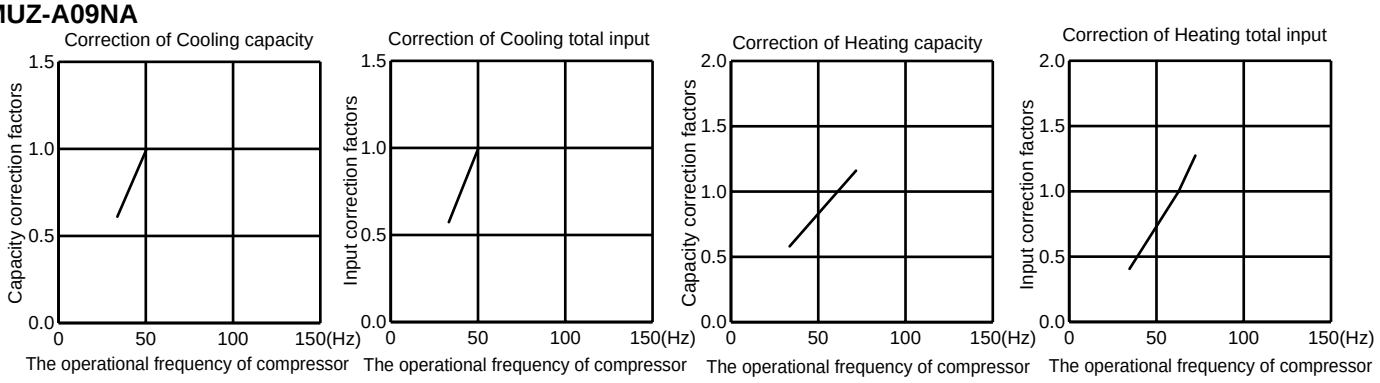
| | Rated voltage | Guaranteed Voltage |
|---|---|---|
| Outdoor unit | 208/230V 1phase 60Hz | Min. 198V 208V 230V Max. 253V |

(2) OPERATION

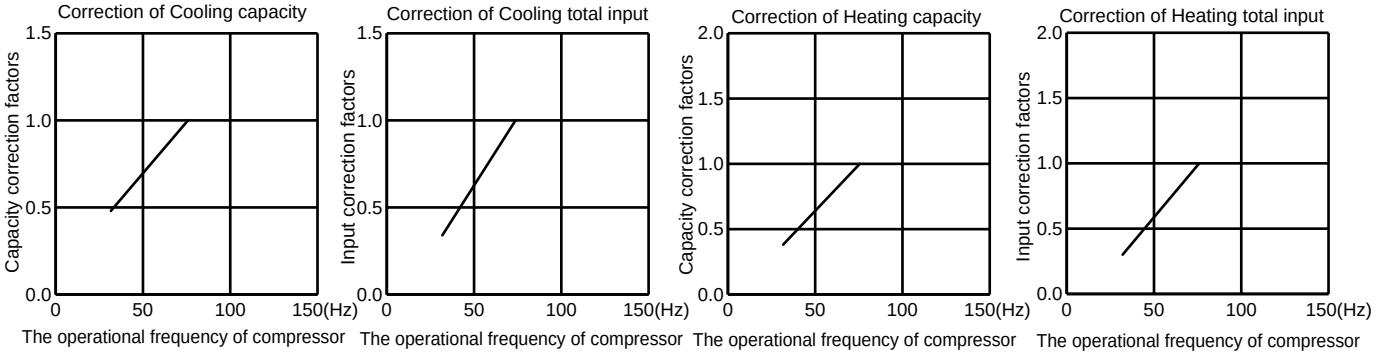
| Function | Intake air temperature / Condition | Indoor | | Outdoor | |
|---|---|---|---|---|---|
| | | DB (˚F) | WB (˚F) | DB (˚F) | WB (˚F) |
| Cooling | Standard temperature | 80 | 67 | 95 | — |
| | Maximum temperature | 95 | 71 | 115 | — |
| | Minimum temperature | 67 | 57 | 14 | — |
| | Maximum humidity | 78% | | — | |
| Heating | Standard temperature | 70 | 60 | 47 | 43 |
| | Maximum temperature | 80 | 67 | 75 | 65 |
| | Minimum temperature | 70 | 60 | 14 | 13 |

## 7-6. Capacity and input correction by inverter output frequency

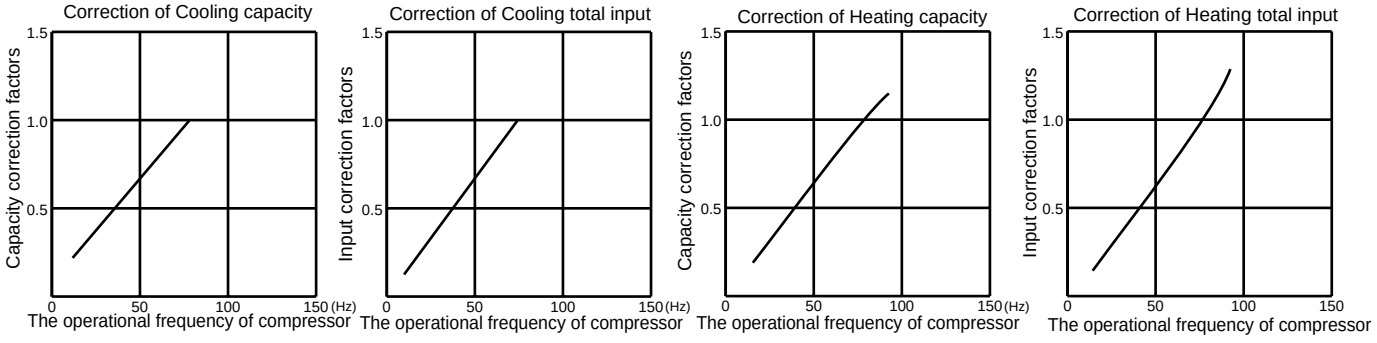
### MUZ-A09NA




### MUZ-A12NA

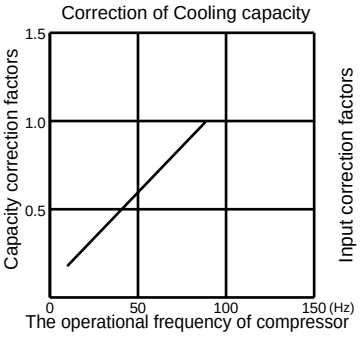


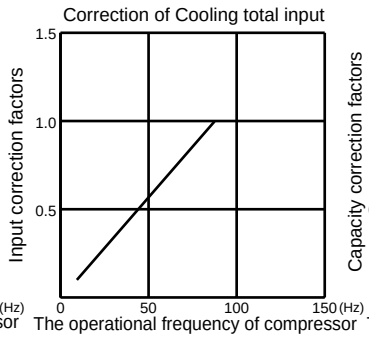

### MUZ-A15NA
### MUY-A15NA



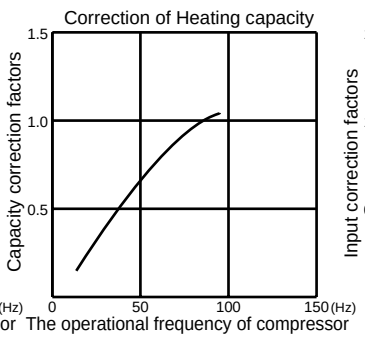

### MUZ-A15NA

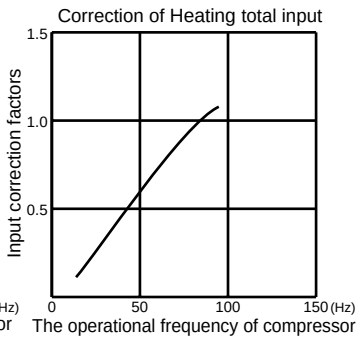
**MUZ-A17NA**
**MUY-A17NA**



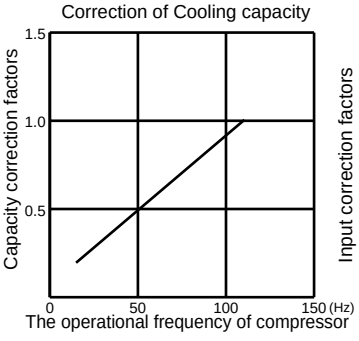



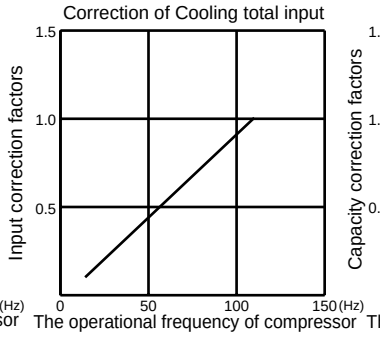

**MUZ-A17NA**



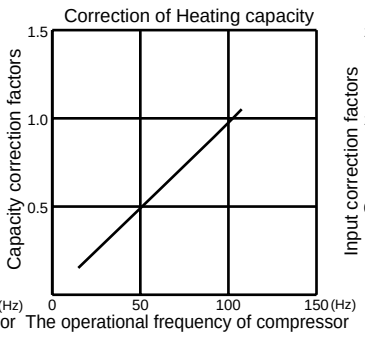



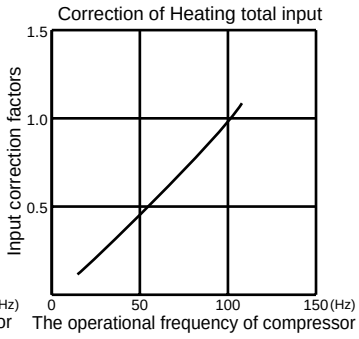

**MUZ-A24NA**
**MUY-A24NA**




**MUZ-A24NA**




## 7-7. TEST RUN OPERATION (How to operate fixed-frequency operation)

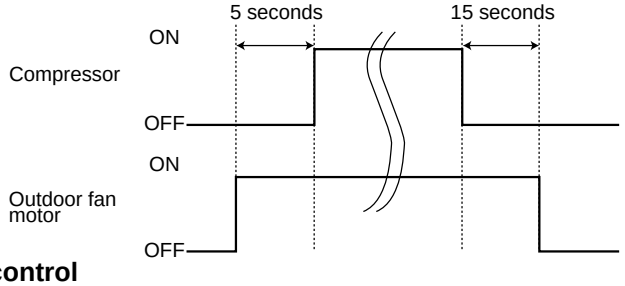
1. Press EMERGENCY OPERATION switch to COOL or HEAT mode (COOL : Press once, HEAT : Press twice).
2. Test run operation starts and continues to operate for 30 minutes.
3. Compressor operates at rated frequency in COOL mode or 58Hz in HEAT mode.
4. Indoor fan operates at High speed.
5. After 30 minutes,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

# 8 ACTUATOR CONTROL

## MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA MUZ-A24NA MUY-A15NA MUY-A17NA MUY-A24NA

### 8-1. 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.

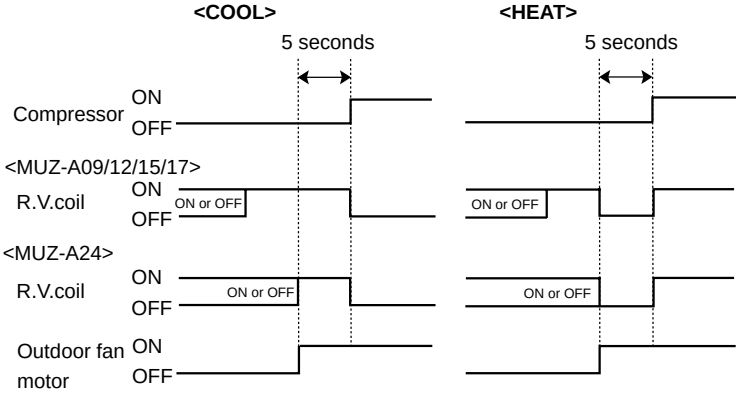



### 8-2. R.V. coil control

**<MUZ-A09/12/15/17/24>**

Heating · · · · · · · · · · · · · · · · · ON
Cooling · · · · · · · · · · · · · · · · · OFF
Dry · · · · · · · · · · · · · · · · · · · OFF

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




### 8-3. Relation between main sensor and actuator

**<MUZ-A09/12/15/17>**

| Sensor | Purpose | Actuator | | | | |
|---|---|---|---|---|---|---|
| | | Compressor | LEV | Outdoor fan motor | R.V. coil | Indoor fan motor |
| Discharge temperature thermistor | Protection | ○ | ○ | | | |
| Indoor coil temperature thermistor | Cooling : Coil frost prevention | ○ | | | | |
| | Heating : High pressure protection | ○ | ○ | | | |
| Defrost thermistor | Cooling : High pressure protection | ○ | ○ | | | |
| | Heating : Defrosting | ○ | ○ | ○ | ○ | ○ |
| Fin temperature thermistor | Protection | ○ | | ○ | | |
| Ambient temperature thermistor | Cooling : Low ambient temperature operation | ○ | ○ | ○ | | |

**<MUZ-A24>**

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

# 9 SERVICE FUNCTIONS

## MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA

### CHANGE IN DEFROST SETTING

<JS> When the JS wire of the outdoor Inverter P.C. board is cut/ soldered, the defrost finish temperature is changed. (Refer to 10-6.1.)

| Jumper wire | | Defrost finish temperature | |
|---|---|---|---|
| | | MUZ-A09/12NA | MUZ-A15/17NA |
| JS | soldered (Initial setting) | 50°F (10°C) | 41°F (5°C) |
| | none (cut) | 55°F (13°C) | 46°F (8°C) |

# 10 TROUBLESHOOTING

## MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA MUZ-A24NA MUY-A15NA MUY-A17NA MUY-A24NA

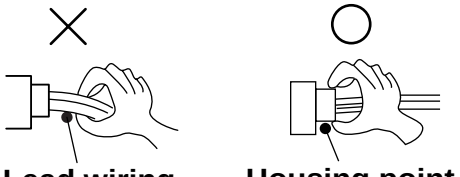
### 10-1. Cautions on troubleshooting

**1. Before troubleshooting, check the following:**

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

**2. Take care the following during servicing.**

1) Before servicing the air conditioner, be sure to turn OFF the main unit first with the remote controller, and 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 to 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 housing of the connector. DO NOT pull the lead wires.




**3. Troubleshooting procedure**

1) First, check if the OPERATION INDICATOR lamp on the indoor unit is flashing on and off to indicate an abnormality. To make sure, check how many times the abnormality indication is flashing on and off before starting service work.
2) Before servicing check that the connector and terminal are connected properly.
3) If the electronic control P.C. board is supposed to be defective, check the copper foil pattern for disconnection and the components for bursting and discoloration.
4) When troubleshooting, refer to 10-2. and 10-3.

## 10-2. Failure mode recall function

Outline of the function

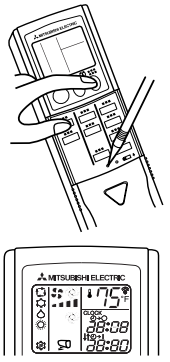
This air conditioner can memorize the abnormal condition which has occurred once.

Even though LED indication listed on the troubleshooting check table (10-3.) disappears, the memorized failure details can be recalled.

This mode is very useful when the unit needs to be repaired for the abnormality which doesn't recur.

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

**This figures show about MSZ-A09/12/15/17.**



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

Operational procedure

The cause of abnormality cannot be found because the abnormality doesn't recur.

Setting up the failure mode recall function

Turn ON the power supply.
<Preparation of the remote controller>
① While pressing both OPERATION SELECT button and TOO COOL button on the remote controller at the same time, press RESET button.
② First, release RESET button.
And release the other two buttons after all LCD except the set temperature in operation display section of the remote controller is displayed after 3 seconds.

Press OPERATE/STOP(ON/OFF) button of the remote controller (the set temperature is displayed) with the remote controller headed towards the indoor unit. ※1

Does the left lamp of OPERATION INDICATOR lamp on the indoor unit blink at the interval of 0.5 seconds?
Blinks: Either indoor or outdoor unit is abnormal.
Beep are emitted at the same timing as the blinking of the left lamp of OPERATION INDICATOR lamp. ※2

No (OFF)

Indoor unit is normal.
But the outdoor unit might be abnormal because there are some abnormalities that can't be recalled with this way.
Confirm if outdoor unit is abnormal according to the detailed outdoor unit failure mode recall function.(Refer to 10-2.2)

Yes (Blinks)

Judgment of indoor/outdoor abnormality

Before blinking, does the left lamp of OPERATION INDICATOR lamp stay ON for 3 seconds?
Stays ON for 3 seconds (without beep):
The outdoor unit is abnormal.

Yes

No

The indoor unit is abnormal.
Check the blinking pattern, and confirm the abnormal point with the indoor unit failure mode table (Refer to indoor unit service manual.)
Make sure to check at least two consecutive blinking cycles. ※2

The outdoor unit is abnormal.
Check the blinking pattern, and confirm the abnormal point with the outdoor unit failure mode table (Refer to 10-2.3).
Make sure to check at least two consecutive blinking cycles. ※3

Releasing the failure mode recall function

Release the failure mode recall function by the following procedures.
• Turn OFF the power supply and turn it ON again.
• Press RESET button of the remote controller.

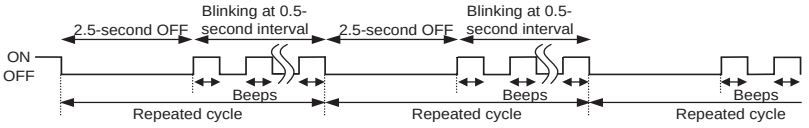
Repair the defective parts.

Deleting the abnormal memorized condition

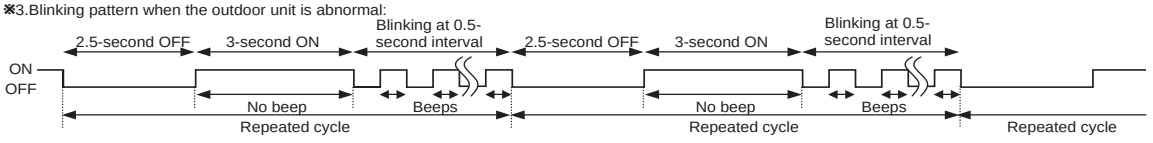
①After repairing the unit, recall the failure mode again according to "Setting up the failure mode recall function" mentioned above.
②Press OPERATE/STOP(ON/OFF) button of the remote controller (the set temperature is displayed) with the remote controller headed towards the indoor unit.
③Press EMERGENCY OPERATION switch so that the memorized abnormal condition is deleted.
④Release the failure mode recall function according to "Releasing the failure mode recall function" mentioned above.

Note1.Make sure to release the failure mode recall function once it's 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.

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




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



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

Operational procedure

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

↓

Confirm that the remote controller is in the failure mode recall function.

↓

With the remote controller headed towards the indoor unit, press TOO COOL or TOO WARM button to adjust the set temperature to 77ºF ※1

※1. Regardless of normal or abnormal, 2 short beeps are emitted as the signal is received.

↓

Does left lamp of OPERATION INDICATOR lamp on the indoor unit blink at the interval of 0.5 seconds?
Blinks: The outdoor unit is abnormal.
Beep are emitted at the same timing as the blinking of the left lamp of OPERATION INDICATOR lamp. ※2

No (OFF) → The outdoor unit is normal.

↓ Yes (Blinks)

The outdoor unit is abnormal.
Check the blinking pattern, and confirm the abnormal point with the outdoor unit failure mode table (Refer to 10-2.3.).
Make sure to check at least two consecutive blinking cycles. ※2

↓

Releasing the failure mode recall function

Release the failure mode recall function by the following procedures.
• Turn OFF the power supply and turn it ON again.
• Press RESET button of the remote controller.

Release the failure mode recall function according to the left mentioned procedure.

↓

Repair the defective parts.

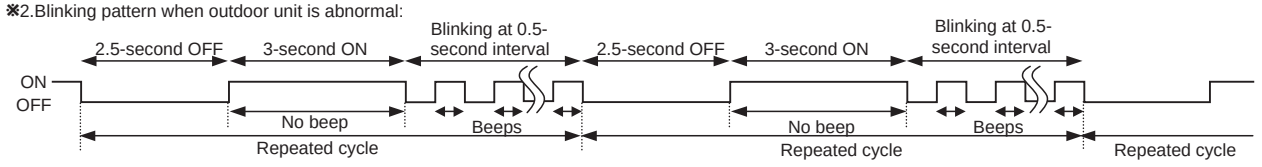
↓

Deleting the abnormal memorized condition

①After repairing the unit, recall the failure mode again according to "Setting up the failure mode recall function" mentioned above.
②Press OPERATE/STOP(ON/OFF) button of the remote controller (the set temperature is displayed) with the remote controller headed towards the indoor unit.
③Press EMERGENCY OPERATION switch so that the memorized abnormal condition is deleted.
④Release the failure mode recall function according to "Releasing the failure mode recall function" mentioned above.

Note1. Make sure to release the failure mode recall function once it's 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.

※2.Blinking pattern when outdoor unit is abnormal:



### 3. Outdoor unit failure mode table

## MUZ-A09/12/15/17NA MUY-A15/17NA

| The left lamp of OPERATION INDICATOR lamp(Indoor unit) | Abnormal point (Failure mode / protection) | LED indication (Outdoor P.C. board) | Condition | Correspondence | Indoor/outdoor unit failure mode recall function | Outdoor unit failure mode recall function |
|---|---|---|---|---|---|---|
| OFF | None (Normal) | ——— | ——— | ——— | ——— | ——— |
| 2-time flash 2.5 seconds OFF | Outdoor power system | ——— | When it consecutively occurs 3 times that the compressor stops for overcurrent protection within 1 minute after stat-up. | •Reconnect connectors.<br>•Refer to 10-5. Ⓐ"How to check inverter/ compressor".<br>•Check stop valve. | ○ | ○ |
| 3-time flash 2.5 seconds OFF | Discharge temperature thermistor | 1-time flash every 2.5 seconds | When thermistor shorts or opens during compressor running. | •Refer to 10-5.Ⓖ"Check of outdoor thermistors".<br>❋Defective outdoor thermistors can be identified by checking the blinking pattern of LED. | ○ | ○ |
| | Defrost thermistor (MUZ) | | | | | |
| | Fin temperature thermistor | 3-time flash 2.5 seconds OFF | | | | |
| | P.C. board temperature thermistor | 4-time flash 2.5 seconds OFF | | | | |
| | Ambient temperature thermistor | 2-time flash 2.5 seconds OFF | | | | |
| 4-time flash 2.5 seconds OFF | Overcurrent | 11-time flash 2.5 seconds OFF | When 24A(A09/12) / 26.5A(A15/17) current flow into intelligent power module. | •Reconnect compressor connector.<br>•Refer to 10-5.Ⓐ"How to check inverter/ compressor".<br>•Check stop valve. | ——— | ○ |
| | Compressor synchronous abnormality (Compressor start-up failure protection) | 12-time flash 2.5 seconds OFF | When waveform of compressor current is distorted. | •Reconnect compressor connector.<br>•Refer to 10-5.Ⓐ"How to check inverter/ compressor". | ——— | ○ |
| 5-time flash 2.5 seconds OFF | Discharge temperature | | When temperature of discharge temperature thermistor exceeds 241°F (116℃), compressor stops. Compressor can restart if discharge temperature thermistor reads 212°F (100℃) or less 3 minutes later. | •Check refrigerant circuit and refrigerant amount.<br>•Refer to 10-5.Ⓛ"Check of LEV". | ——— | ○ |
| 6-time flash 2.5 seconds OFF | High pressure | ——— | When temperature of indoor coil thermistor exceeds 158°F(70℃) in HEAT mode (MUZ).<br>When defrost thermistor exceeds 158°F (70℃) in COOL mode. | •Check refrigerant circuit and refrigerant amount.<br>•Check stop valve. | ——— | ○ |
| 7-time flash 2.5 seconds OFF | Fin temperature/ P.C. board temperature | 7-time flash 2.5 seconds OFF | When temperature of fin temperature thermistor on the inverter P.C. board exceeds 180°F(82℃)(A09/12)/188°F (86.5℃)(A15/17), or temperature of P.C. board temperature thermistor on the inverter P.C. board exceeds 176°F (80℃). | •Check around outdoor unit.<br>•Check outdoor unit air passage.<br>•Refer to 10-5.Ⓘ"Check of outdoor fan motor". | ——— | ○ |
| 8-time flash 2.5 seconds OFF | Outdoor fan motor | ——— | When outdoor fan has stopped 3 times in a row within 30 seconds after outdoor fan start-up. | •Refer to 10-5.Ⓘ"Check of outdoor fan motor".<br>Refer to 10-5.Ⓜ"Check of inverter P.C. board". | ——— | ○ |
| 9-time flash 2.5 seconds OFF | Nonvolatile memory data | 5-time flash 2.5 seconds OFF | When nonvolatile memory data cannot be read properly. | •Replace the inverter P.C. board. | ○ | ○ |
| 10-time flash 2.5 seconds OFF | Discharge temperature | ——— | When temperature of discharge temperature thermistor has been 122°F(50℃) or less for 20 minutes. | •Refer to 10-5.Ⓛ"Check of LEV".<br>•Check refrigerant circuit and refrigerant amount. | ——— | ○ |
| 11-time flash 2.5 seconds OFF | DC voltage | 8-time flash 2.5 seconds OFF | When DC voltage of inverter cannot be detected normally. | •Refer to 10-5.Ⓐ"How to check inverter/ compressor". | ——— | ○ |
| | Each phase current of compressor | 9-time flash 2.5 seconds OFF | When each phase current of compressor cannot be detected normally. | | | |
| 12-time flash 2.5 seconds OFF | Overcurrent<br>Compressor open-phase | 10-time flash 2.5 seconds OFF | When 24A(A09/12) / 26.5A(A15/17) current flow into intelligent power module (IPM).<br>When the open-phase operation of compressor is detected.<br>When the interphase short out occurs in the output of the intelligent power module (IPM).<br>When the compressor winding shorts out. | •Reconnect compressor connector.<br>•Refer to 10-5. Ⓐ"How to check inverter/ compressor". | ——— | ○ |
| 14-time flash 2.5 seconds OFF | Outdoor unit (Other abnormality) | ——— | When the inverter P.C. board is defective. | •Replace the inverter P.C. board. | ——— | ○ |

**NOTE** : Blinking patterns of this mode differ from the ones of Troubleshooting check table (10-3.).

## MUZ-A24NA MUY-A24NA

| The left lamp of OPERATION INDICATOR lamp(Indoor unit) | Abnormal point (Failure mode / protection) | LED indication (Outdoor P.C. board) LED 1 | LED 2 | Condition | Correspondence | Indoor/outdoor unit failure mode recall function |
|---|---|---|---|---|---|---|
| OFF | Non (Normal) | — | — | ——— | ——— | ——— |
| 2-time flash | Outdoor power system | Lighting | Lighting | When IPM protection stop or lock protection stop is continuously performed three times within 1 minute after the compressor gets started, or when converter protection stop or bus-bar voltage protection stop is continuously performed three times within 3 minutes after start-up. | • Check the connection of the compressor connecting wire.<br>• Refer to 10-5.Ⓐ "How to check inverter / compressor".<br>• Check the stop valve. | ○ |
| 3-time flash | Discharge temperature thermistor | Lighting | Once | When thermistor shorts or opens during compressor running. | • Refer to 10-5.Ⓖ "Check of outdoor thermistors". | ○ |
| | Defrost thermistor (MUZ) | Lighting | Once | | | |
| | Ambient temperature thermistor | Lighting | Twice | | | |
| | Fin temperature thermistor | Lighting | 3 times | | | |
| | P.C. board temperature thermistor | Lighting | 4 times | | • Replace the outdoor electronic control P.C. board. | |
| | Outdoor heat exchanger temperature thermistor | Lighting | 9 times | | • Refer to 10-5.Ⓖ "Check of outdoor thermistors". | |
| 4-time flash | Over current | Once | Goes out | When 28A current flow into intelligent power module. | • Reconnect compressor connector.<br>• Refer to 10-5.Ⓐ "How to check inverter/ compressor."<br>• Check the stop valve. | ——— |
| 5-time flash | Discharge temperature | Lighting | Lighting | When temperature of discharge temperature thermistor exceeds 241°F (116℃), compressor stops. Compressor can restart if discharge temperature thermistor reads 212°F (100℃) or less 3 minutes later. | •Check refrigerant circuit and refrigerant amount.<br>• Refer to 10-5.Ⓛ "Check of LEV". | ——— |
| 6-time flash | High pressure | Lighting | Lighting | When the outdoor heat exchanger temperature exceeds 158°F (70℃) during cooling or the indoor gas pipe temperature exceeds 158°F (70℃) during heating (MUZ). | •Check refrigerant circuit and refrigerant amount.<br>• Check the stop valve. | ——— |
| 7-time flash | Fin temperature | 3 times | Goes out | When the fin temperature exceeds 189°F (87℃) during operation. | • Check around outdoor unit.<br>• Check outdoor unit air passage.<br>• Refer to 10-5.Ⓘ "Check of outdoor fan motor". | ——— |
| | P.C. board temperature | 4 times | Goes out | When the P.C. board temperature exceeds 158°F (70℃) during operation. | | |
| 8-time flash | Outdoor fan motor | Lighting | Lighting | When failure occurs continuously three times within 30 seconds after the fan gets started. | • Refer to 10-5.Ⓘ "Check of outdoor fan motor". | ——— |
| 9-time flash | Nonvolatile memory data | Lighting | 5 times | When nonvolatile memory data cannot be read properly. | • Replace the outdoor electronic control P.C. board. | ○ |
| 10-time flash | Discharge temperature | Lighting | Lighting | When the frequency of the compressor is kept 80Hz or more and the discharge temperature is kept under 102°F (39℃) for more than 20 minutes. | •Check refrigerant circuit and refrigerant amount.<br>• Refer to 10-5.Ⓛ "Check of LEV". | ——— |

**NOTE** : Blinking patterns of this mode differ from the ones of Troubleshooting check table (10-3.).

| The left lamp of OPERATION INDICATOR lamp(Indoor unit) | Abnormal point (Failure mode / protection) | LED indication (Outdoor P.C. board) | | Condition | Correspondence | Indoor/outdoor unit failure mode recall function |
|---|---|---|---|---|---|---|
| | | LED 1 | LED 2 | | | |
| 11-time flash | Communication error between P.C. boards | Lighting | 6 times | Communication error occurs between the electronic control P.C. board and power board for more than 10 seconds. | • Check the connecting wire between outdoor electronic control P.C. board and power board. | ——— |
| | | | | When the communication between boards protection stop is continuously performed twice. | | ○ |
| | Current sensor | Lighting | 7 times | When a short or open circuit is detected in the current sensor during compressor operating. | • Replace the power board. | ——— |
| | | | | Current sensor protection stop is continuously performed twice. | | ○ |
| | Zero cross detecting circuit | 5 times | Goes out | When zero cross signal cannot be detected while the compressor is operating. | • Check the connecting wire among electronic control P.C. board, noise filter P.C. board and power board. | ——— |
| | | | | The protection stop of the zero cross detecting circuit is continuously performed 10 times. | | ○ |
| | Converter | 5 times | Goes out | When a failure is detected in the operation of the converter during operation. | • Replace the power board. | ——— |
| | Bus-bar voltage (1) | 5 times | Goes out | When the bus-bar voltage exceeds 400V or falls to 200V or below during compressor operating. | | |
| | Bus-bar voltage (2) ※Even if this protection stop is performed continuously three times, it does not mean the abnormality in outdoor power system. | 6 times | Goes out | When the bus-bar voltage exceeds 400V or falls to 50V or below during compressor operating. | | |

**NOTE** : Blinking patterns of this mode differ from the ones of Troubleshooting check table (10-3.).

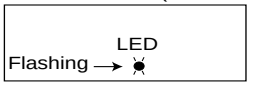
## 10-3. Troubleshooting check table

## MUZ-A09/12/15/17NA MUY-A15/17NA

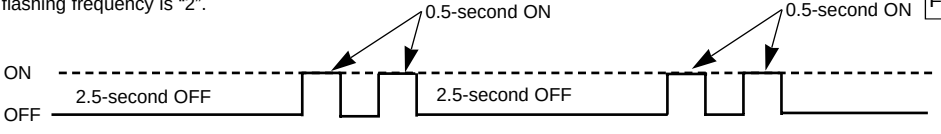
| No. | Symptom | LED indication | Abnormal point/ Condition | Condition | Correspondence |
|---|---|---|---|---|---|
| 1 | Outdoor unit does not operate. | 1-time flash every 2.5 seconds | Outdoor power system | When it consecutively occurs 3 times that the compressor stops for overcurrent protection within 1minute after start-up. | · Check stop valve.<br>· Reconnect connector of compressor.<br>· Refer to 10-5.Ⓐ "How to check inverter/ compressor". |
| 2 | | | Outdoor thermistors | When discharge temperature thermistor, fin temperature thermistor, defrost thermistor (MUZ), P.C. board temperature thermistor or ambient temperature thermistor shorts or opens during compressor running. | · Refer to 10-5.Ⓖ "Check of outdoor thermistors". |
| 3 | | | Outdoor control system | When nonvolatile memory data cannot be read properly. | Replace inverter P.C. board. |
| 4 | | 6-time flash 2.5 seconds OFF | serial signal | When the communication fails between the indoor and outdoor unit for 3 minutes. | Refer to 10-5.Ⓝ "How to check mis-wiring and serial signal error. |
| 5 | | 14-time flash 2.5 seconds OFF | Outdoor unit (Other abnormality) | When outdoor unit is defective. | Refer to 10-2.2. "Flow chart of the detailed outdoor unit failure mode recall function". |
| 6 | 'Outdoor unit stops and restarts 3 minutes later' is repeated. | 2-time flash 2.5 seconds OFF | Overcurrent protection | When 24A(A09/12) / 26.5A(A15/17) current flows into intelligent power module. | · Check stop valve.<br>· Reconnect connector of compressor.<br>· Refer to 10-5.Ⓐ "How to check inverter/compressor". |
| 7 | | 3-time flash 2.5 seconds OFF | Discharge temperature overheat protection | When temperature of discharge temperature thermistor exceeds 241°F(116℃) compressor stops. Compressor can restart if discharge temperature thermistor reads 212°F(100℃) or less 3 minutes later. | · Check refrigerant circuit and refrigerant amount.<br>· Refer to 10-5.Ⓛ "Check of LEV". |
| 8 | | 4-time flash 2.5 seconds OFF | Fin temperature /P.C. board temperature thermistor overheat protection | When temperature of fin temperature thermistor on the heat sink exceeds 180°F(82℃)( A09/12)/ 188°F(86.5℃) (A15/17) or temperature of P.C. board temperature thermistor on the inverter P.C. board exceeds 176°F(80℃). | · Check around outdoor unit.<br>· Check outdoor unit air passage.<br>· Refer to 10-5.Ⓘ "Check of outdoor fan motor". |
| 9 | | 5-time flash 2.5 seconds OFF | High pressure protection | When indoor coil thermistor exceeds 158°F(70℃) in HEAT mode (MUZ).<br>When the defrost thermistor exceeds 158°F(70℃) in COOL mode. | · Check refrigerant circuit and refrigerant amount.<br>· Check stop valve. |
| 10 | | 8-time flash 2.5 seconds OFF | Compressor synchronous abnormality | When the waveform of compressor current is distorted. | · Reconnect connector of compressor.<br>· Refer to 10-5.Ⓐ "How to check inverter/compressor". |
| 11 | | 10-time flash 2.5 seconds OFF | Outdoor fan motor | When outdoor fan has stopped 3 times in a row within 30 seconds after outdoor fan start-up. | · Refer to 10-5.Ⓘ "Check of outdoor fan motor.<br>· Refer to 10-5.Ⓜ "Check of inverter P.C. board. |
| 12 | | 12-time flash 2.5 seconds OFF | Each phase current of compressor | When each phase current of compressor cannot be detected normally | · Refer to 10-5.Ⓐ "How to check inverter/compressor". |
| 13 | | 13-time flash 2.5 seconds OFF | DC voltage | When DC voltage of inverter cannot be detected normally. | · Refer to 10-5.Ⓐ "How to check inverter/compressor". |
| 14 | Outdoor unit operates. | 1-time flash 2.5 seconds OFF | Frequency drop by current protection | When current from power outlet exceeds 9.2A(A09/12)/ 11.1A(A15/17), compressor frequency lowers. | The unit is normal, but check the following.<br>· Check if indoor filters are clogged.<br>· Check if refrigerant is short.<br>· Check if indoor/outdoor unit air circulation is short cycled. |
| 15 | | 3-time flash 2.5 seconds OFF | Frequency drop by high pressure protection | When temperature of indoor coil thermistor exceeds 131°F(55℃) in HEAT mode (MUZ), compressor frequency lowers. | |
| | | | Frequency drop by defrosting in COOL mode | When indoor coil thermistor reads 46°F(8℃) or less in COOL mode, compressor frequency lowers. | |
| 16 | | 4-time flash 2.5 seconds OFF | Frequency drop by discharge temperature protection | When temperature of discharge temperature thermistor exceeds 232°F(111℃), compressor frequency lowers. | · Check refrigerant circuit and refrigerant amount.<br>· Refer to 10-5.Ⓛ "Check of LEV".<br>· Refer to 10-5.Ⓖ "Check of outdoor thermistors". |
| 17 | Outdoor unit operates. | 7-time flash 2.5 seconds OFF | Low discharge temperature protection | When temperature of discharge temperature thermistor has been 122°F(50℃) or less for 20 minutes. | · Refer to 10-5.Ⓛ "Check of LEV".<br>· Check refrigerant circuit and refrigerant amount. |
| 18 | | 8-time flash 2.5 seconds OFF | PAM protection<br><br>PAM:<br>Pulse<br>Amplitude<br>Modulation | When the overcurrent flows into IGBT(Insulated Gate Bipolar transistor : TR821) or when the bus-bar voltage reaches 320V or more, PAM stops and restarts. | This is not malfunction.<br>PAM protection will be activated in the following cases;<br>①Instantaneous power voltage drop (Short time power failure)<br>②When the power supply voltage is high. |
| 19 | | 9-time flash 2.5 seconds OFF | Inverter check mode | When the connector of compressor is disconnected, inverter check mode starts. | Check if the connector of the compressor is correctly connected.<br>Refer to 10-5.Ⓐ "How to check inverter/ compressor". |

NOTE 1. The location of LED is illustrated at the right figure. Refer to 10-6.1.
2. LED is lighted during normal operation.

Inverter P.C. board (Parts side)




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

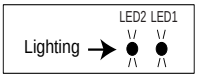


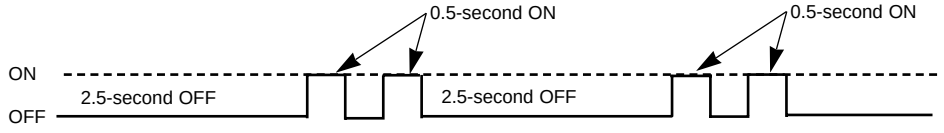
## MUZ-A24NA MUY-A24NA

| No. | Symptom | Indication | | Abnormal point / Condition | Condition | Correspondence |
|---|---|---|---|---|---|---|
| | | LED1(Red) | LED2(Yellow) | | | |
| 1 | Outdoor unit does not operate. | Lightning | Twice | Outdoor power system | When IPM protection stop or lock protection stop is continuously performed three times within 1 minute after the compressor gets started, or when converter protection stop or bus-bar voltage protection stop is continuously performed three times within 3 minutes after start-up. | • Check the connection of the compressor connecting wire.<br>• Refer to 10-5.Ⓐ "How to check inverter/compressor".<br>• Check the stop valve. |
| 2 | | Lightning | 3 times | Discharge temperature thermistor | When a short circuit is detected in the thermistor during operation, or when an open circuit is detected in the thermistor after 10 minutes of compressor start-up. | • Refer to 10-5.Ⓒ "Check of outdoor thermistor". |
| 3 | | Lightning | 4 times | Fin temperature thermistor | When a short or open circuit is detected in the thermistor during operation. | • Refer to 10-5.Ⓒ "Check of outdoor thermistor". |
| | | | | P.C board temperature thermistor | | • Replace the outdoor electronic control P.C. board. |
| 4 | | Lightning | 5 times | Ambient temperature thermistor | When a short or open circuit is detected in the thermistor during operation. | • Refer to 10-5.Ⓒ "Check of outdoor thermistor". |
| | | | | Outdoor heat exchanger temperature thermistor | When a short circuit is detected in the thermistor during operation, or when an open circuit is detected in the thermistor after 5 minutes (in cooling) and 10 minutes (in heating (MUZ)) of compressor start-up. | |
| | | | | Defrost thermistor (MUZ) | When a short circuit is detected in the thermistor during operation, or when an open circuit is detected in the thermistor after 5 minutes of compressor start-up. | |
| 5 | | Lightning | 6 times | Serial signal | When the communication fails between the indoor and outdoor unit for 3 minutes. | Refer to 10-5.Ⓝ "How to check mis-wiring and serial signal error. |
| 6 | | Lightning | 7 times | Nonvolatile memory data | When the nonvolatile memory data cannot be read properly. | • Replace the outdoor electronic control P.C. board. |
| 7 | | Lightning | 8 times | Current sensor | Current sensor protection stop is continuously performed twice. | • Replace the power board. |
| 8 | | Lightning | 11 times | Communication error between P.C. boards | When the communication protection stop between boards is continuously performed twice. | • Check the connecting wire between outdoor electronic control P.C. board and power board. |
| 9 | | Lightning | 12 times | Zero cross detecting circuit | The protection stop of the zero cross detecting circuit is continuously performed 10 times. | • Check the connecting wire among outdoor electronic control P.C. board, noise filter P.C. board and power board. |
| 10 | 'Outdoor unit stops and restarts 3 minutes later' is repeated. | Twice | Goes out | IPM protection | When over-current is detected after 30 minutes of compressor start-up. | • Reconnect compressor connector.<br>• Refer to 10-5.Ⓐ "How to check inverter/compressor".<br>• Check the stop valve.<br>• Check the power module (PAM module). |
| | | | | Lock protection | When over-current is detected within 30 minutes of compressor start-up | |
| 11 | | 3 times | Goes out | Discharge temperature protection | When temperature of discharge temperature thermistor exceeds 241°F (116℃), compressor stops. Compressor can restart if discharge temperature thermistor reads 212°F (100℃) or less 3 minutes later. | • Check the amount of gas and refrigerant circuit.<br>• Refer to 10-5.Ⓔ "Check of LEV". |
| 12 | | 4 times | Goes out | Fin temperature protection | When the fin temperature exceeds 189°F (87℃) during operation. | • Check refrigerant circuit and refrigerant amount.<br>• Refer to 10-5.Ⓛ "Check of LEV". |
| | | | | P.C. board temperature protection | When the P.C. board temperature exceeds 158°F (70℃) during operation. | |
| 13 | | 5 times | Goes out | High-pressure protection | When the outdoor heat exchanger temperature exceeds 158°F (70℃) during cooling or when indoor gas pipe temperature exceeds 158°F (70℃) during heating (MUZ). | • Check around of gas and the refrigerant circuit.<br>• Check of stop valve. |
| 14 | | 8 times | Goes out | Converter protection | When a failure is detected in the operation of the converter during operation. | • Replace the power board. |
| 15 | | 9 times | Goes out | Bus-bar voltage protection (1) | When the bus-bar voltage exceeds 400V or falls to 200V or below during compressor operating. | • Replace the power board. |
| | | | | Bus-bar voltage protection (2) | When the bus-bar voltage exceeds 400V or falls to 50V or below during compressor operating. | |
| 16 | | 13 times | Goes out | Outdoor fan motor | When failure occurs continuously three times within 30 seconds after the fan gets started. | • Refer to 10-5.Ⓘ "Check of outdoor fan motor". |
| 17 | | Lighting | 8 times | Current sensor protection | When a short or open circuit is detected in the current sensor during compressor operating. | • Replace the power board. |
| 18 | | Lighting | 11 times | Communication between P.C. boards protection | Communication error occurs between the outdoor electronic control P.C. board and power board for more than 10 seconds. | • Check the connecting wire between outdoor electronic control P.C. board and power board. |
| 19 | | Lighting | 12 times | Zero cross detecting circuit protection | When zero cross signal cannot be detected while the compressor is operating. | • Check the connecting wire among outdoor electronic control P.C. board, noise filter P.C. board and power board. |

NOTE 1. The location of LED is illustrated at the right figure. Refer to 10-6.3.
2. LED is lighted during normal operation.

Outdoor electronic control P.C. board(Parts side)



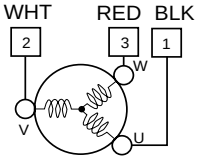
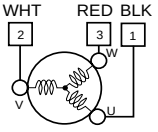
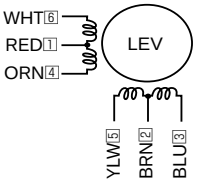




The flashing frequency shows the number of times the LED blinks after every 2.5-second OFF.
(Example) When the flashing frequency is “2”.

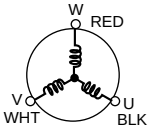
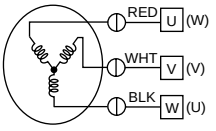
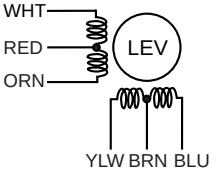
| No. | Symptom | Indication | | Abnormal point / Condition | Condition | Correspondence |
|---|---|---|---|---|---|---|
| | | LED1(Red) | LED2(Yellow) | | | |
| 20 | Outdoor unit operates. | Once | Lighting | Primary current protection | When the input current exceeds 15A. | These symptoms do not mean any abnormality of the product, but check the following points.<br>• Check if indoor filters are clogged.<br>• Check if refrigerant is short.<br>• Check if indoor/outdoor unit air circulation is short cycled. |
| | | | | Secondary current protection | When the current of the compressor exceeds 15A. | |
| 21 | | Twice | Lighting | High-pressure protection (MUZ) | When the indoor gas pipe temperature exceeds 113°F (45℃) during heating. | |
| | | | | Defrosting in cooling (MUZ) | When the indoor gas pipe temperature falls 37°F (3℃) or below during cooling. | |
| 22 | | 3 times | Lighting | Discharge temperature protection | When the discharge temperature exceeds 212°F (100℃) during operation. | • Check refrigerant circuit and refrigerant amount.<br>• Refer to 10-5.Ⓛ "Check of LEV".<br>• Refer to 10-5.Ⓞ "Check of outdoor thermistors". |
| 23 | | 4 times | Lighting | Low discharge temperature protection | When the frequency of the compressor is kept 80Hz or more and the discharge temperature is kept under 102°F (39℃) for more than 20 minutes. | • Refer to 10-5.Ⓛ "Check of LEV".<br>• Check refrigerant circuit and refrigerant amount. |
| 24 | | 5 times | Lighting | Cooling high-pressure protection | When the outdoor heat exchanger temperature exceeds 136°F (58℃) during operation. | This symptom does not mean any abnormality of the product, but check the following points.<br>• Check if indoor filters are clogged.<br>• Check if refrigerant is short.<br>• Check if indoor/outdoor unit air circulation is short cycled. |
| 25 | Outdoor unit operates | 9 times | Lighting | Inverter check mode | When the unit is operated with emergency operation switch. | – |
| 26 | | Lighting | Lighting | Normal | – | – |

### 10-4. Trouble criterion of main parts

## MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA MUY-A15NA MUY-A17NA

<table>
<tr><th>Part name</th><th>Check method and criterion</th><th>Figure</th></tr>
<tr><td>Defrost thermistor (RT61) (MUZ)<br>Ambient temperature thermistor (RT65)</td><td>Measure the resistance with a tester.<br><br>Refer to 10-6. "Test point diagram and voltage", 1. "Inverter P.C. board", the chart of thermistor.</td><td></td></tr>
<tr><td>Discharge temperature thermistor (RT62)<br>Fin temperature thermistor (RT64)</td><td>Measure the resistance with a tester.<br>Before measurement, hold the thermistor with your hands to warm it up.<br><br>Refer to 10-6. "Test point diagram and voltage", 1. "Inverter P.C. board", the chart of thermistor.</td><td></td></tr>
<tr><td>Compressor (MC)</td><td>Measure the resistance between the terminals with a tester.<br>(Part temperature 14°F ~ 104°F)
<table>
<tr><th></th><th colspan="2">Normal</th></tr>
<tr><th></th><th>MUZ-A09/12</th><th>MUZ-A15/17<br>MUY-A15/17</th></tr>
<tr><td>U-V<br>U-W<br>V-W</td><td>0.43 Ω ~ 0.53 Ω</td><td>0.39 Ω ~ 0.49 Ω</td></tr>
</table></td><td> 
</td></tr>
<tr><td>Outdoor fan motor (MF)</td><td>Measure the resistance between the terminals with a tester.<br>(Part temperature 14°F ~ 104°F)
<table>
<tr><th>Color of the lead wire</th><th>Normal</th></tr>
<tr><td>WHT – BLK</td><td>31 Ω ~ 41 Ω</td></tr>
<tr><td>BLK – RED</td><td>31 Ω ~ 41 Ω</td></tr>
<tr><td>RED – WHT</td><td>31 Ω ~ 41 Ω</td></tr>
</table></td><td> 
</td></tr>
<tr><td>R.V. coil (21S4)<br>(MUZ)</td><td>Measure the resistance between the terminals with a tester.<br>(Part temperature 14˚F ~ 104˚F)
<table>
<tr><th>Normal</th></tr>
<tr><td>1.20 kΩ ~ 1.55 kΩ</td></tr>
</table></td><td></td></tr>
<tr><td>Expansion valve coil (LEV)</td><td>Measure the resistance with a tester.<br>(Part temperature : 14˚F ~ 104˚F)
<table>
<tr><th>Color of the lead wire</th><th>Normal</th></tr>
<tr><td>WHT – RED</td><td rowspan="4">38 Ω ~ 50 Ω</td></tr>
<tr><td>RED – ORN</td></tr>
<tr><td>YLW – BRN</td></tr>
<tr><td>BRN – BLU</td></tr>
</table></td><td> 
</td></tr>
</table>

## MUZ-A24NA MUY-A24NA

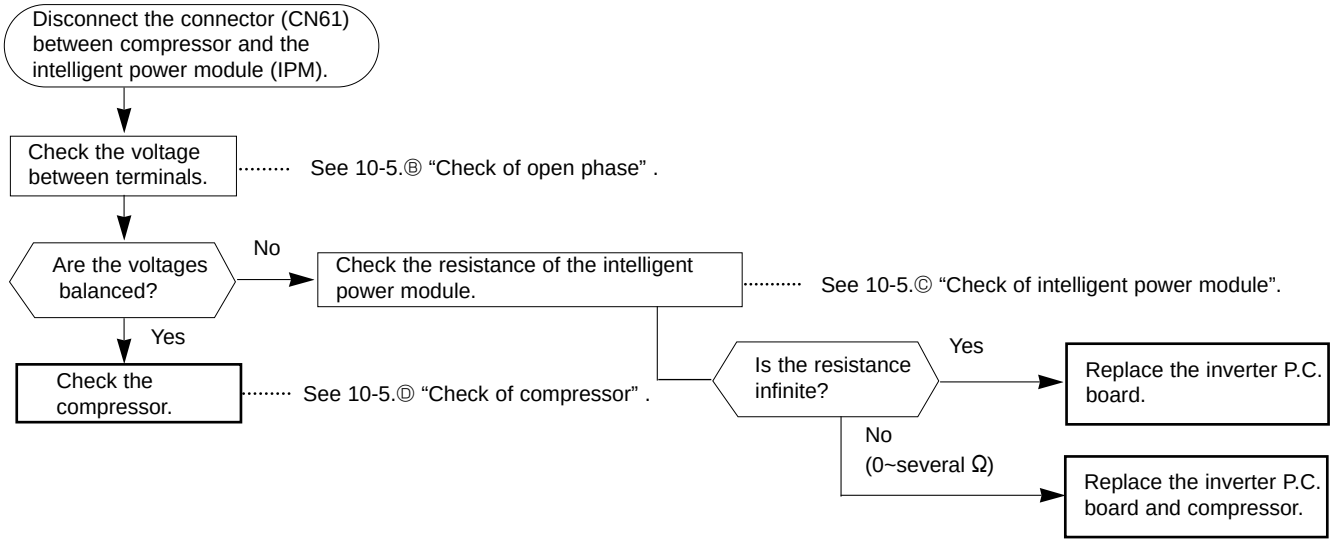
<table>
<tr><th>Part name</th><th>Check method and criterion</th><th>Figure</th></tr>
<tr><td>Defrost thermistor (RT61) (MUZ)<br>Ambient temperature thermistor (RT65)<br>Outdoor heat exchanger temperature thermistor (RT68)</td><td>Measure the resistance with a tester.<br><br>Refer to 10-6. “Test point diagram and voltage”,3. “Outdoor electronic control P.C. board”, the chart of thermistor.</td><td></td></tr>
<tr><td>Discharge temperature thermistor (RT62)<br>Fin temperature thermistor (RT64)</td><td>Measure the resistance with a tester.<br>Before measurement, hold the thermistor with your hands to warm it up.<br><br>Refer to 10-6. “Test point diagram and voltage”,3. “Outdoor electronic control P.C. board”, the chart of thermistor.</td><td></td></tr>
<tr><td>Compressor</td><td>Measure the resistance between terminals using a tester.<br>(Winding temperature : 14°F ~ 104°F)<br><table><tr><th>Normal</th></tr><tr><td>0.39Ω ~ 0.49Ω</td></tr></table></td><td> 
</td></tr>
<tr><td>Outdoor fan motor</td><td>Measure the resistance between lead wires using a tester.<br>(Part temperature : 14°F ~ 104°F)<br><table><tr><th>Color of lead wire</th><th>Normal</th></tr><tr><td>RED - BLK</td><td rowspan="3">13Ω ~ 16Ω</td></tr><tr><td>BLK - WHT</td></tr><tr><td>WHT - RED</td></tr></table></td><td> 
</td></tr>
<tr><td>R. V. coil<br>(MUZ)</td><td>Measure the resistance using a tester. (Part temperature : 14°F ~ 104°F)<br><table><tr><th>Normal</th></tr><tr><td>1.20kΩ ~ 1.55kΩ</td></tr></table></td><td></td></tr>
<tr><td>Linear expansion valve</td><td>Measure the resistance using a tester.(Part temperature : 14°F ~ 104°F)<br><table><tr><th>Color of lead wire</th><th>Normal</th></tr><tr><td>WHT - RED</td><td rowspan="4">38Ω ~ 50Ω</td></tr><tr><td>RED - ORN</td></tr><tr><td>YLW - BRN</td></tr><tr><td>BRN - BLU</td></tr></table></td><td> 
</td></tr>
</table>

## 10-5. Troubleshooting flow

**When OPERATION / INDICATOR lamp flashes 5-time.**
**Outdoor unit does not operate.**

### Ⓐ How to check inverter/ compressor

**MUZ-A09/12/15/17 MUY-A15/17**

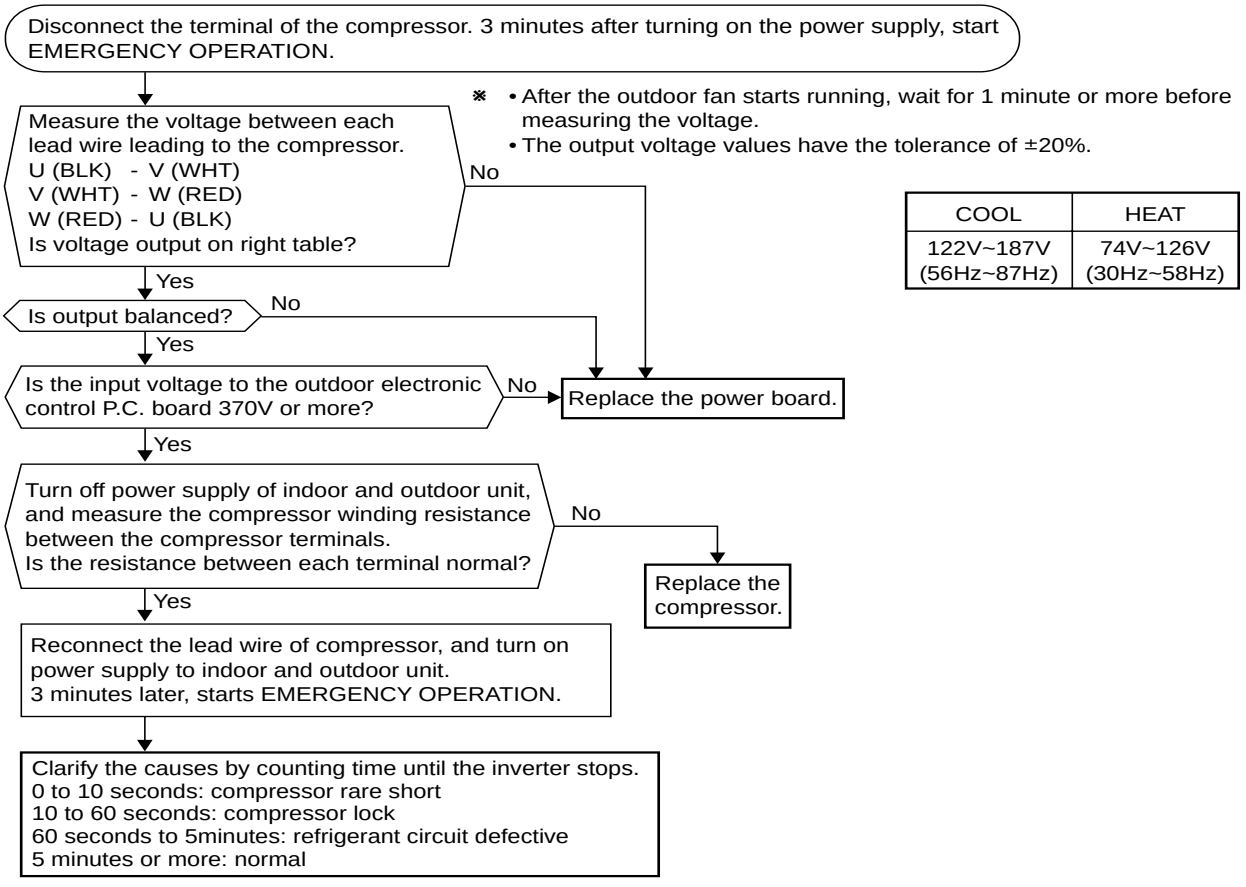



### Ⓐ How to check inverter/ compressor

**MUZ-A24 MUY-A24**

**LED display:**

| LED1 | LED2 |
|---|---|
| Lighting | Lighting |
| Lighting | Twice |
| Twice | Goes out |




| COOL | HEAT |
|---|---|
| 122V~187V (56Hz~87Hz) | 74V~126V (30Hz~58Hz) |

## Ⓑ Check of open phase

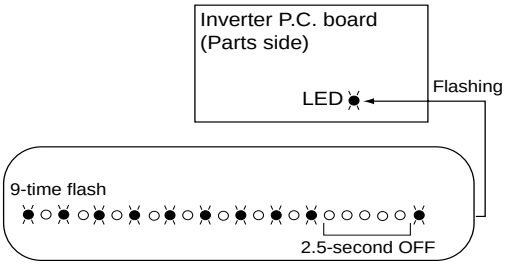
**MUZ-A09/12/15/17 MUY-A15/17**

●With the connector between the compressor and the intelligent power module disconnected, activate the inverter and check if the inverter is normal by measuring the balance of voltage between the terminals.

Output voltage 115V

<< Operation method>>
Start cooling or heating operation by pressing EMERGENCY OPERATION switch on the indoor unit. (TEST RUN OPERATION : Refer to 7-7.)
<<Measurement point>>
at 3 points
BLK (U)-WHT (V)
BLK (U)-RED (W)
WHT(V)-RED (W)

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



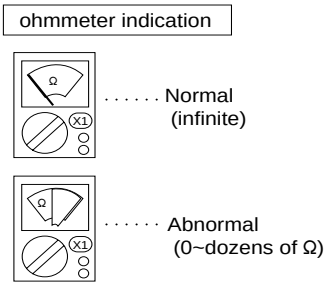

NOTE 1. Output voltage varies according to power supply voltage.
2. Measure the voltage by analog type tester.
3. During this check, LED of inverter P.C. board flashes 9 times.

## Ⓒ Check of intelligent power module

**MUZ-A09/12/15/17 MUY-A15/17**

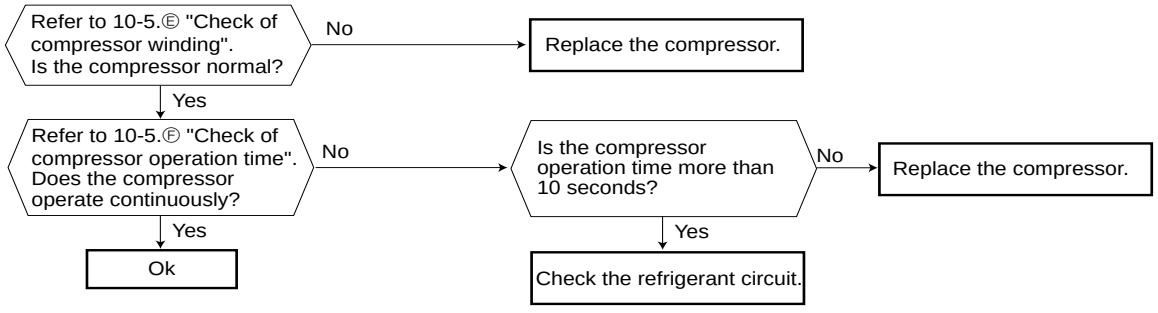
●Measure the resistance between the terminals on the intelligent power module.
<<Measurement point>>
at 6 points
BLK-WHT, WHT-BLK
BLK-RED, RED-BLK
WHT-RED, RED-WHT

<<Judgement>>
Infinite [Ω]·····Normal
0~dozens of ·····Abnormal (short)




## Ⓓ Check of compressor

**MUZ-A09/12/15/17 MUY-A15/17**




## Ⓔ Check of compressor winding

**MUZ-A09/12/15/17 MUY-A15/17**

● Disconnect the connector (CN61) between the compressor and intelligent power module, and measure the resistance between the compressor terminals.
<<Measurement point>>
at 3 points
BLK-WHT
BLK-RED
WHT-RED

※ Measure the resistance between the lead wires at 3 points.

<<Judgement>>
Refer to 10-4.
0[Ω] ·····Abnormal [short]
Infinite[Ω] ·····Abnormal [open]
NOTE 1. Be sure to zero the ohmmeter before measurement.
2. Winding resistance for each phase at 68°F (20℃).
Refer to "3.SPECIFICATION".

## Ⓕ Check of compressor operation time

**MUZ-A09/12/15/17 MUY-A15/17**

●Connect the compressor and activate the inverter. Then measure the time until the inverter stops due to over current.

<<Operation method>>

Start heating or cooling operation by pressing EMERGENCY OPERATION switch on the indoor unit.
(TEST RUN OPERATION : Refer to 7-7.)

<<Measurement>>

Measure the time from the start of outdoor fan running to the stop of compressor due to over current.

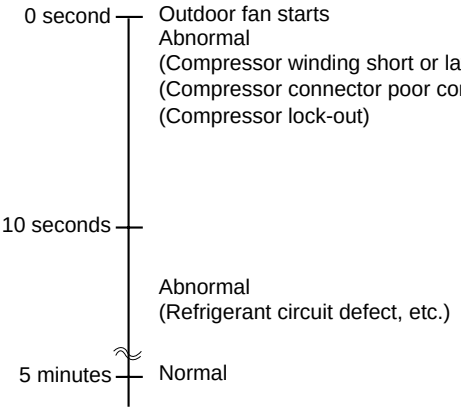
<<Judgement>>

For reference

0~10 seconds·····Abnormal (compressor short or poor contact)
(compressor lock-out)

10 seconds~5 minutes·····Abnormal (refrigerant circuit defect)

more than 5 minutes·····Normal




**When OPERATION INDICATOR lamp flashes 6-time.**
**The thermistors in the outdoor unit are abnormal.**

## Ⓖ Check of outdoor thermistors

**MUZ-A09/12/15/17 MUY-A15/17**

Disconnect the connectors CN641, CN642 and CN643 from the inverter P.C. board.
(Check the characteristics of each thermistor.)

Defrost thermistor RT61

Measure the resistance between CN641 ① and ②.

Discharge temperature thermistor RT62

Measure the resistance between CN641 ③ and ④.

Fin temperature thermistor RT64

Measure the resistance between CN642 ① and ②.

Ambient temperature thermistor RT65

Measure the resistance between CN643 ① and ②.

Is the resistance of thermistor normal? (Refer to 10-6.1.)

Yes

No

Replace the thermistor except RT64. In case that RT64 is abnormal, replace the inverter P.C. board, since RT64 is combined with the inverter P.C. board.

Reconnect the connectors CN641, CN642 and CN643. Turn ON the power supply and press EMERGENCY OPERATION switch.

Does the unit operate 10 minutes or more?

No

Replace the inverter P.C. board.

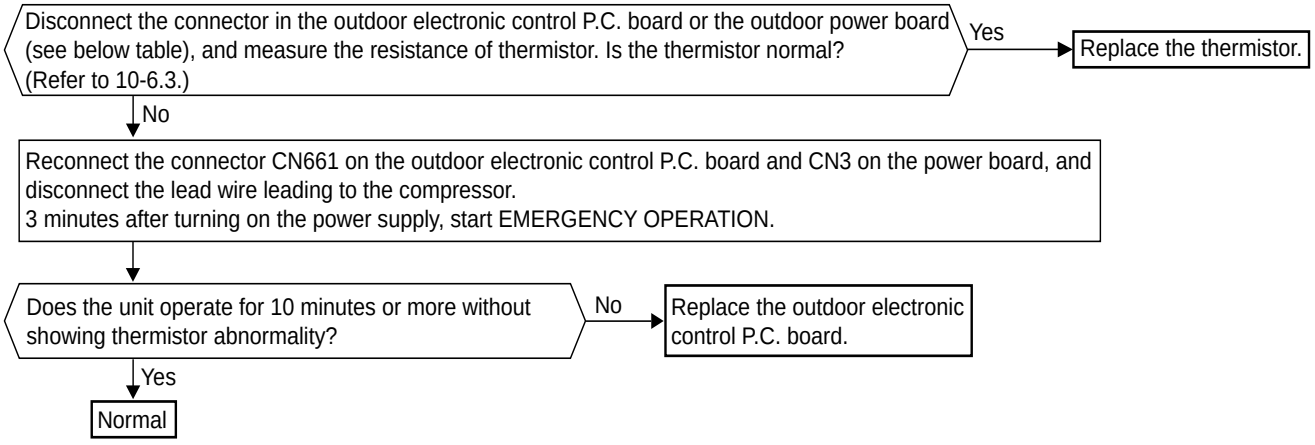
Yes

OK.
(Cause is poor contact.)

- **When OPERATION INDICATOR lamp flashes 6-time.**
- **When thermistor is abnormal.**

## Ⓖ Check of outdoor thermistors

**MUZ-A24 MUY-A24**



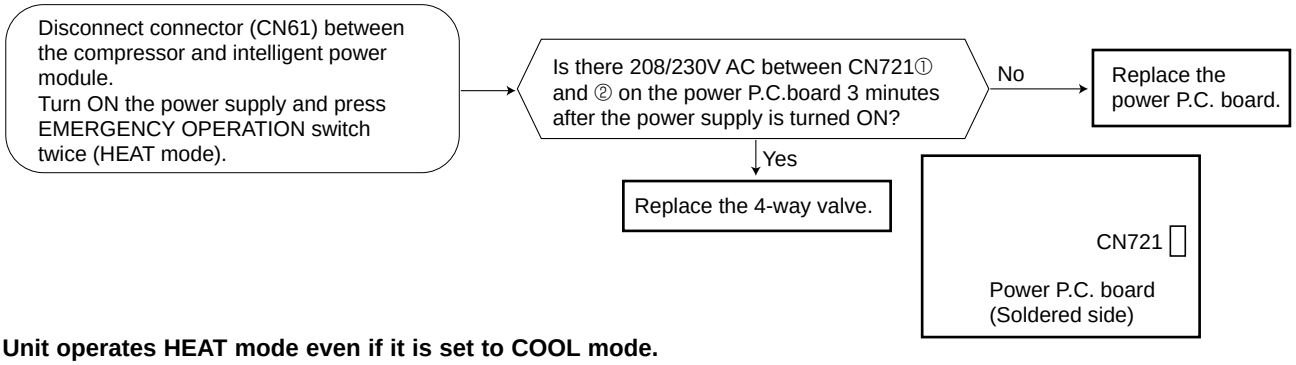

| Thermistor | Symbol | Connector, Pin No. | Board |
|---|---|---|---|
| Defrost **(MUZ)** | RT61 | Between CN661 pin1 and pin2 | The outdoor electronic control P.C. board |
| Discharge temperature | RT62 | Between CN661 pin3 and pin4 | |
| Outdoor heat exchanger temperature | RT68 | Between CN661 pin7 and pin8 | |
| Ambient temperature | RT65 | Between CN663 pin1 and pin2 | |
| Fin temperature | RT64 | Between CN3 pin1 and pin2 | The outdoor power board |

## Ⓗ Check of R.V. coil

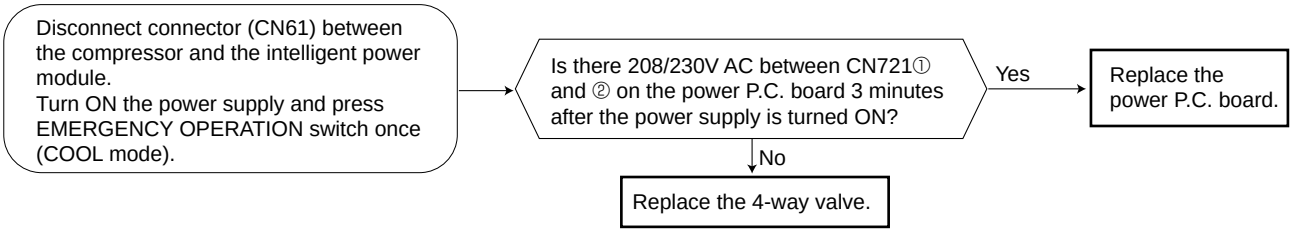
**MUZ-A09/12/15/17**

※ First of all, measure the resistance of R.V. coil to check if the coil is defective. Refer to 10-4.
※ In case CN721 is not connected or R.V. coil is open, voltage is generated between the terminal pins of the connector although any signal is not being transmitted to R.V. coil. Check if CN721 is connected.

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




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

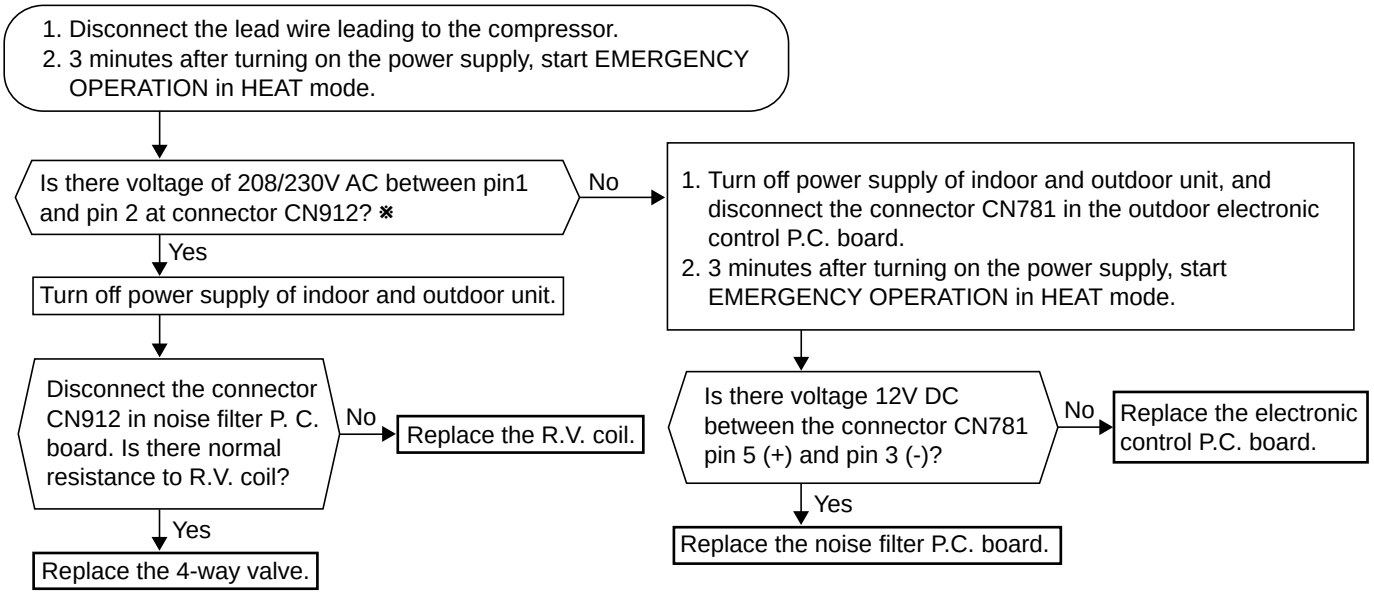


**The cooling operation or heating operation does not operate. (LED display: Both LED1 and LED2 lighting)**

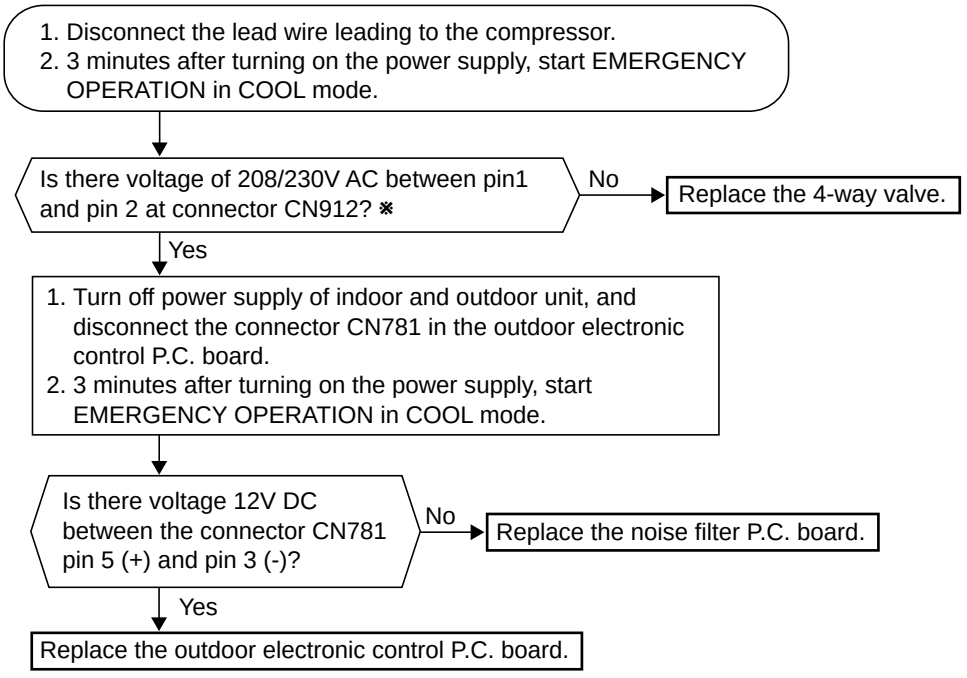
## Ⓗ Check of R.V. coil

### MUZ-A24

**• When heating operation does not work.**




**• When cooling operation does not work.**

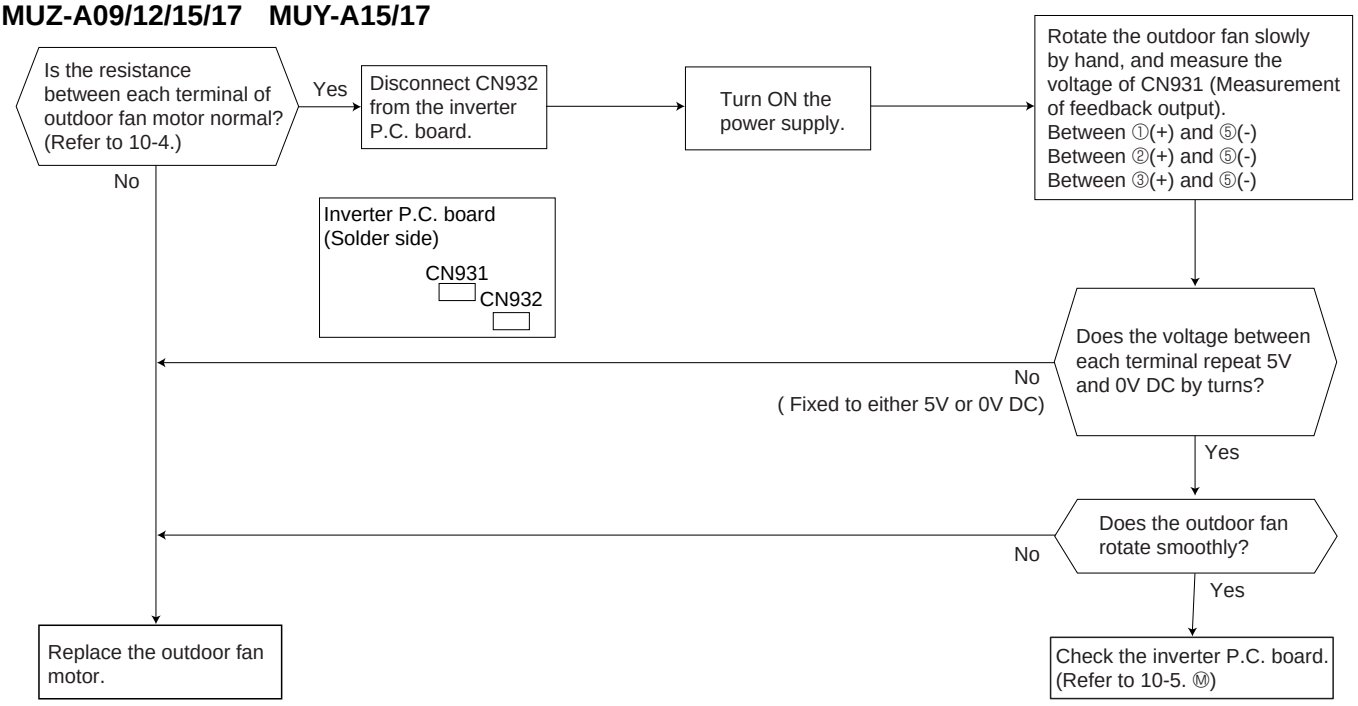



※ If the connector CN912 is not connected or R.V. coil is open, voltage occurs between terminals even when the control is OFF.

**Outdoor fan motor does not operate.**

## ⓘ Check of outdoor fan motor

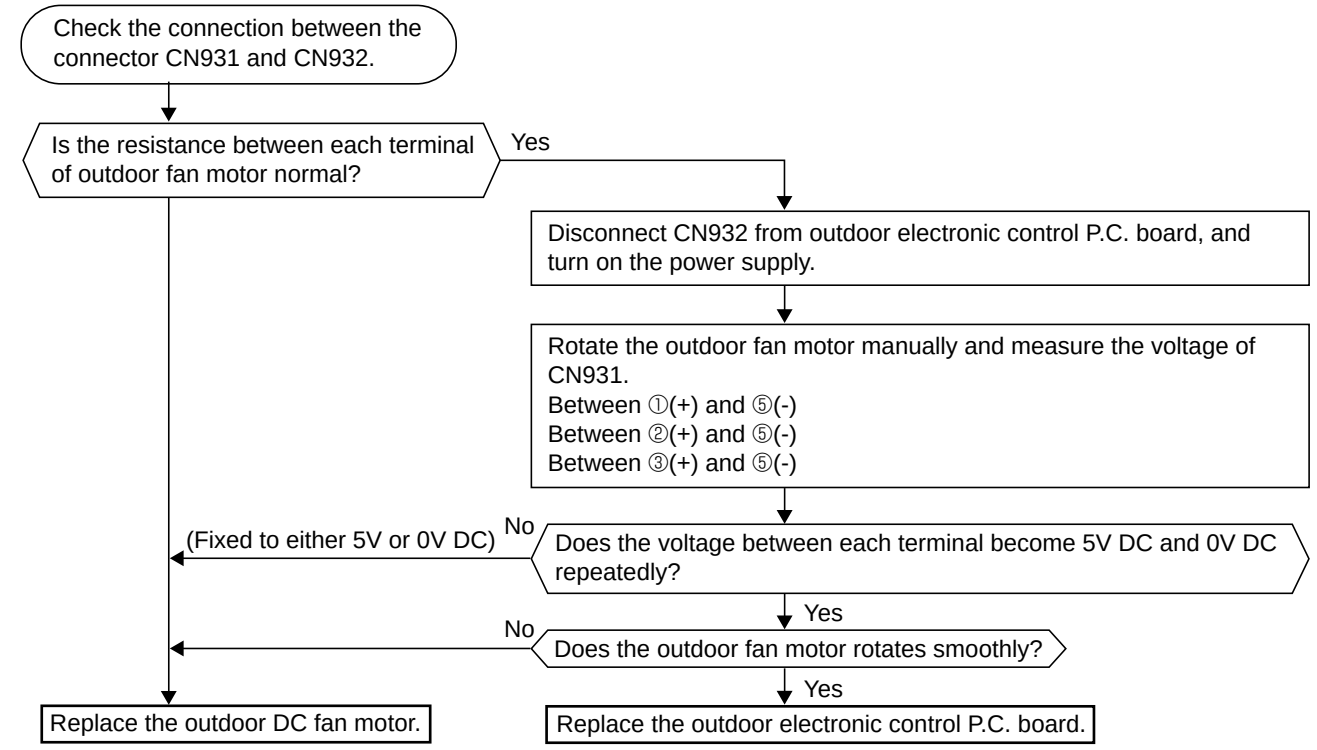
**MUZ-A09/12/15/17 MUY-A15/17**




**• Fan motor does not operate or stops operating shortly after starting the operation.**

## ⓘ Check of outdoor fan motor

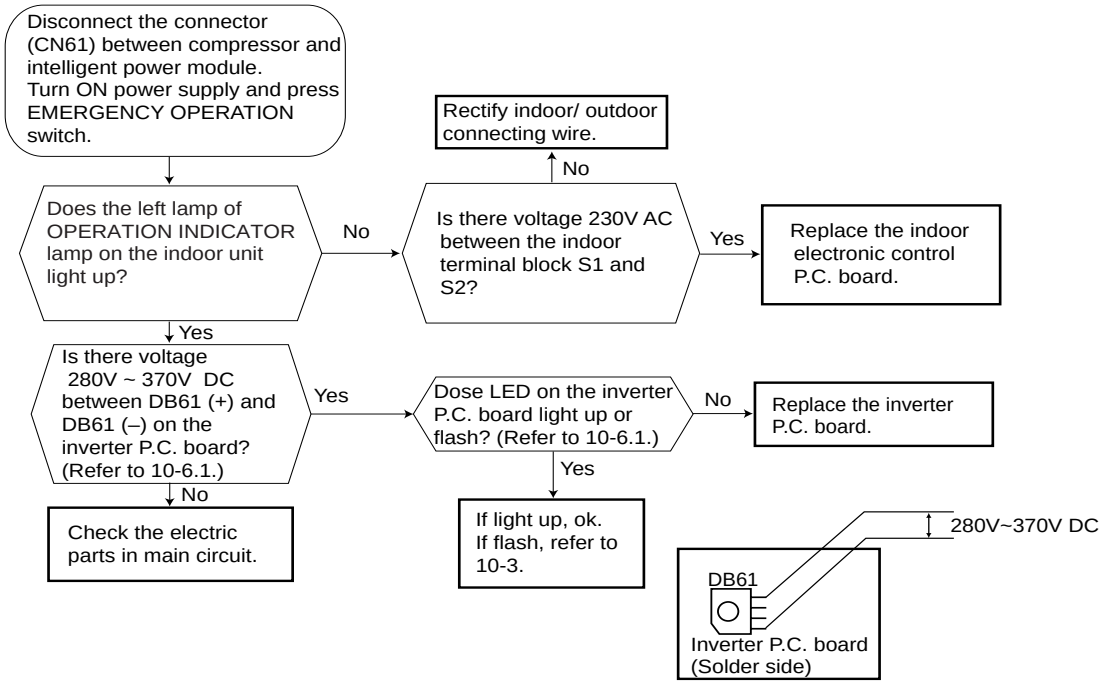
**MUZ-A24 MUY-A24**



**Inverter does not operate.**

## Ⓙ Check of power supply

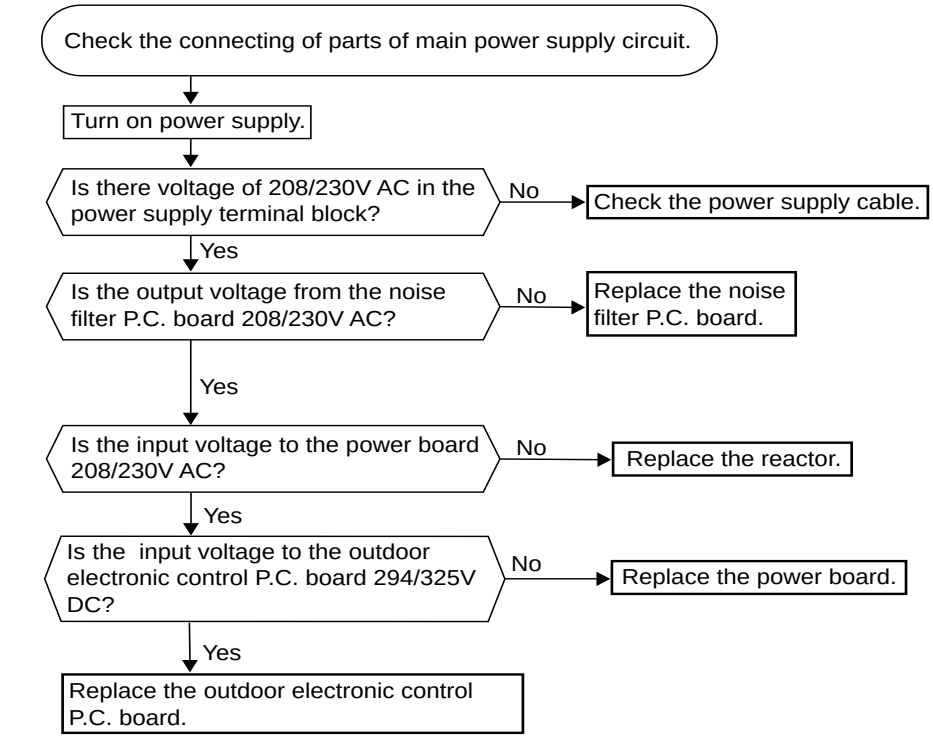
**MUZ-A09/12/15/17 MUY-A15/17**




**Outdoor unit does not operate. (LED display: display OFF)**

## Ⓙ Check of power supply

**MUZ-A24 MUY-A24**

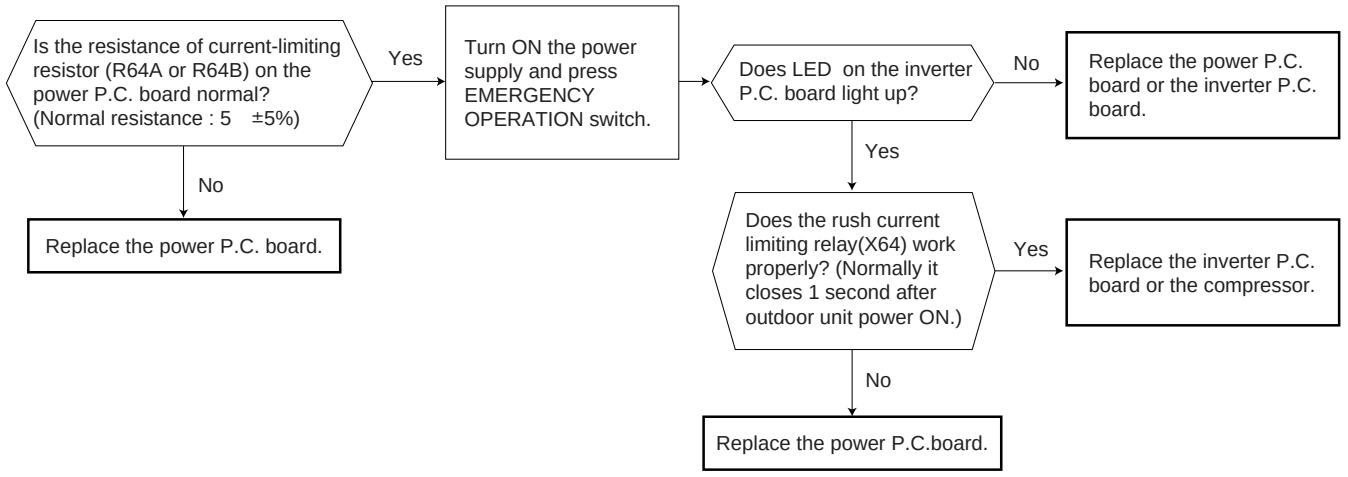


**Outdoor unit does not operate at all, or stops immediately due to overcurrent.**

## Ⓚ Check of current-limiting resistor

### MUZ-A09/12/15/17 MUY-A15/17

When the current-limiting resistor is open, the rush current limiting relay (X64) may not work properly.



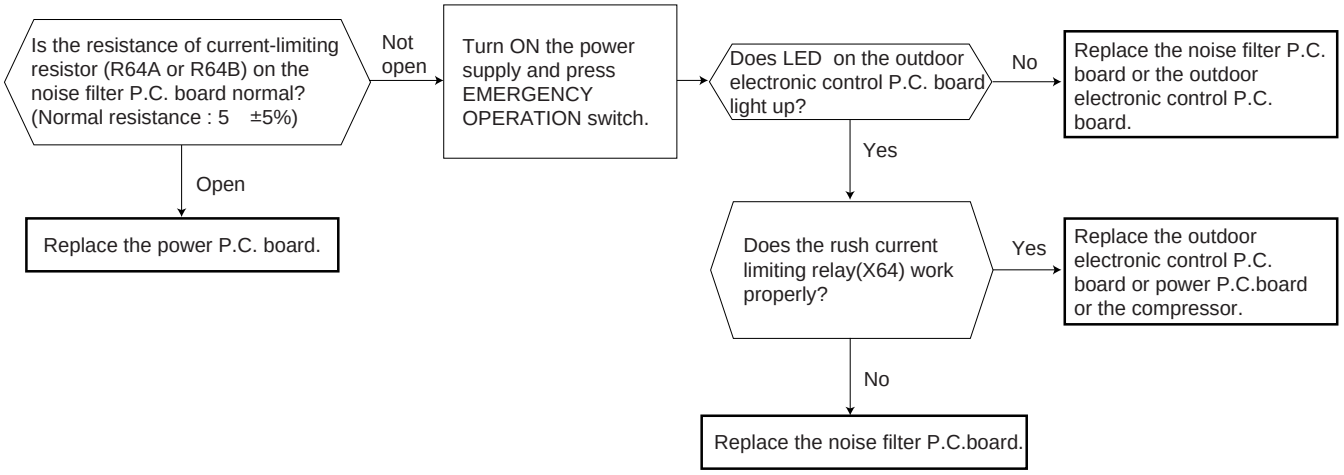

● Check other electric parts in the main circuit together in the case that the current-limiting resistor is defective.

**Outdoor unit does not operate at all, or stops immediately due to overcurrent.**

## Ⓚ Check of current-limiting resistor

### MUZ-A24 MUY-A24

When the current-limiting resistor is open, the rush current limiting relay (X64) may not work properly.




● Check other electric parts in the main circuit together in the case that the current-limiting resistor is defective.

**Heating/Cooling does not work sufficiently.**

## Ⓛ Check of LEV (Expansion valve)

**MUZ-A09/12/15/17 MUY-A15/17**

Turn ON the power supply.
<Preparation of the remote controller>
① While pressing both OPERATION SELECT button and TOO COOL button on the remote controller at the same time, press RESET button.
② First, release RESET button.
And release the other two buttons after all LCD in operation display section of the remote controller is displayed after 3 seconds.

↓

Press OPERATE/STOP(ON/OFF) 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 on touching it ?

Yes → Ok

No ↓

Is LEV properly fixed to the expansion valve?

No → Properly fix the LEV to the expansion valve.

Yes ↓

Does the resistance of LEV have the characteristics? (Refer to 10-4.)

Yes → Measure each voltage between connector pins of CN724 on the inverter P.C. board.
1.Pin③(-) — Pin①(+)
2.Pin④(-) — Pin①(+)
3.Pin⑤(-) — Pin①(+)
4.Pin⑥(-) — Pin①(+)
Is there about 3~5V AC between each?
NOTE: Measure the voltage by an analog tester.

No → Replace the inverter P.C. board.

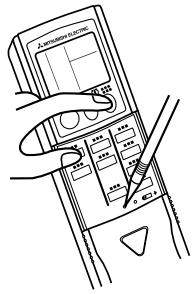
Yes ↓

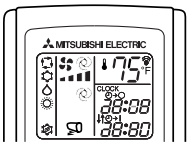
Replace the expansion valve.

No ↓

Replace the LEV.

**This figures show about MSZ-A09/12/15/17.**






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

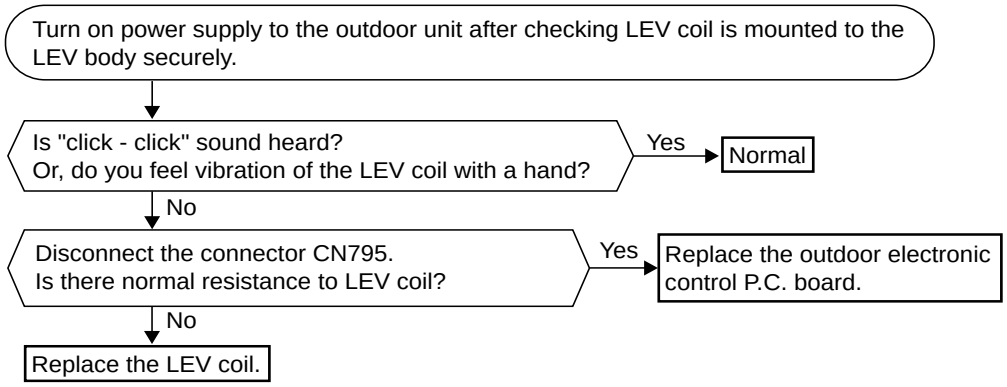
**• When cooling, heat exchanger of non-operating indoor unit frosts.**
**• When heating, non-operating indoor unit get warm.**

## Ⓛ Check of LEV

**MUZ-A24 MUY-A24**

**LED display:**

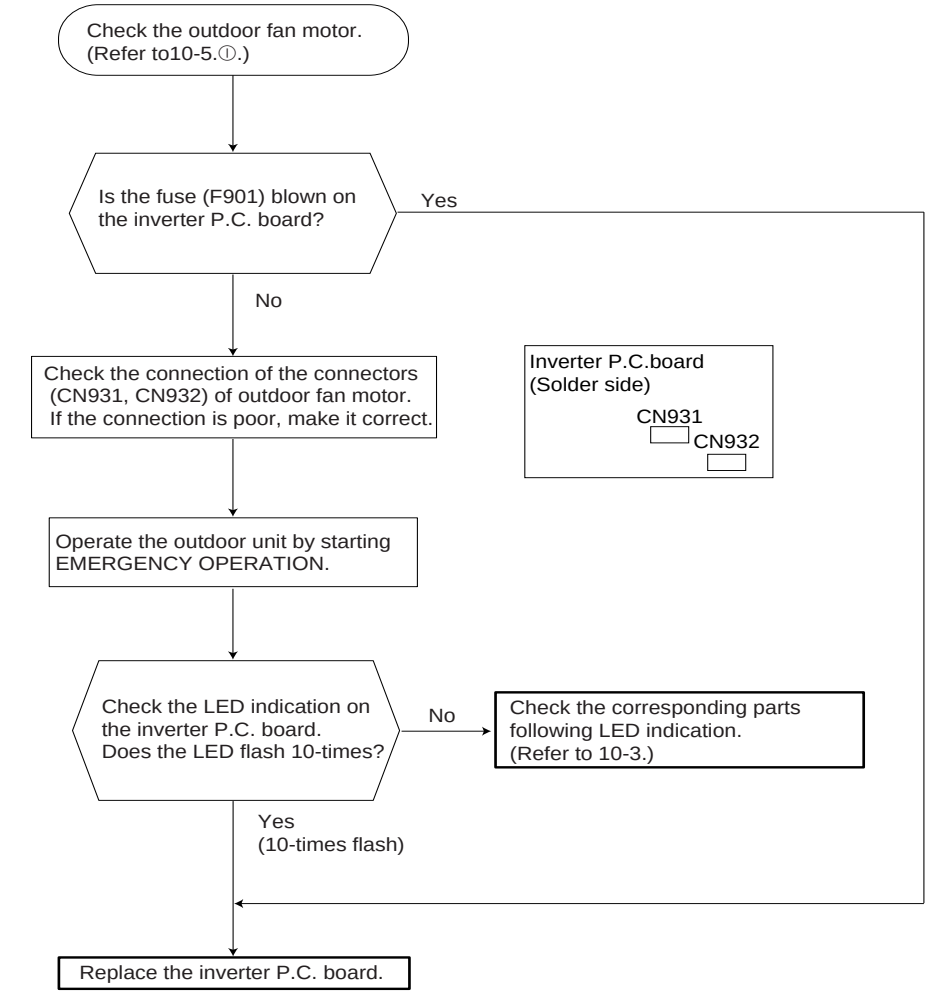
| LED1 | LED2 |
|---|---|
| Lighting | Lighting |
| 6 time | Goes out |




**Outdoor fan motor does not operate, or stops immediately after starting up.**

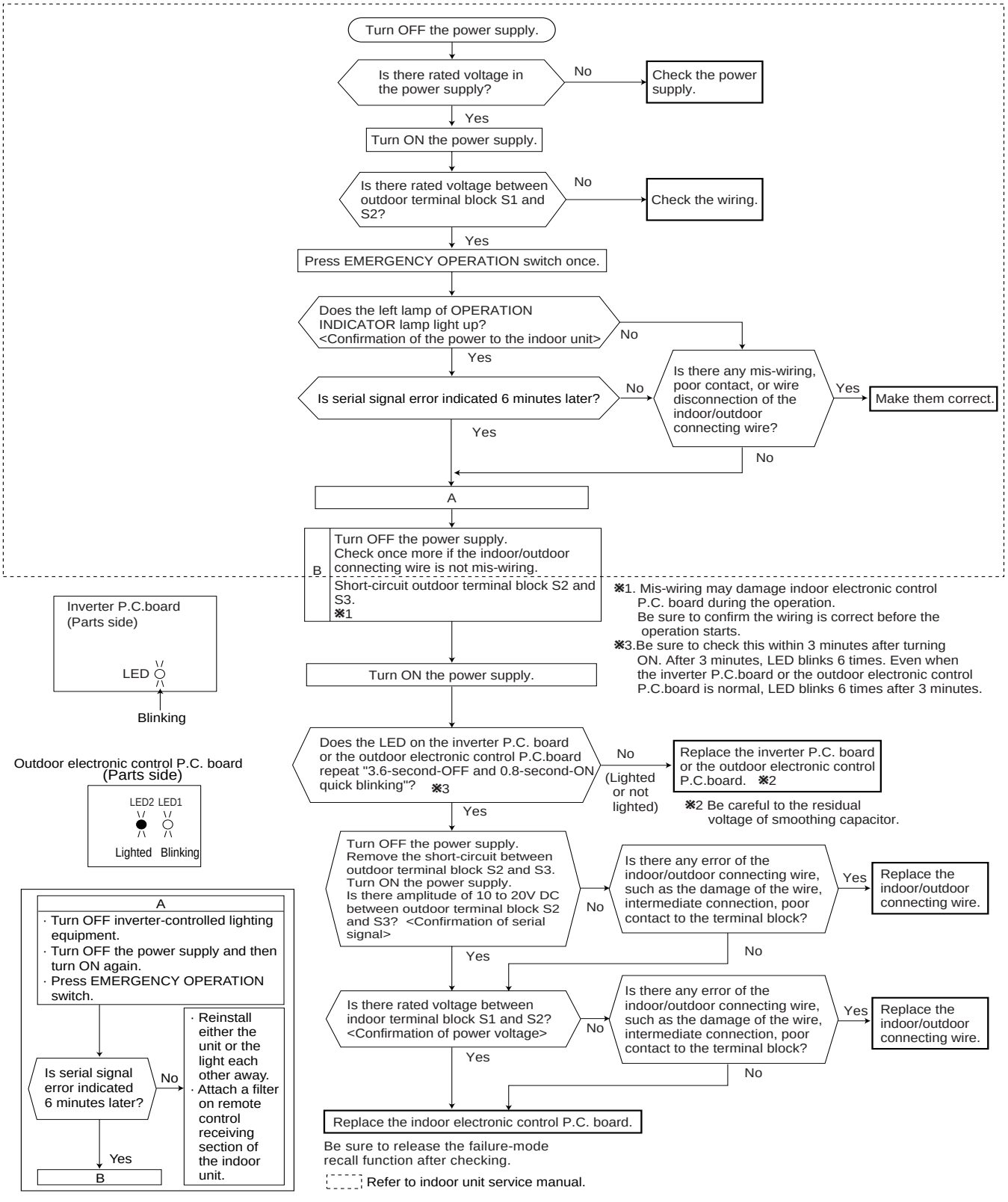
## Ⓜ Check of inverter P.C. board

**MUZ-A09/12/15/17 MUY-A15/17**

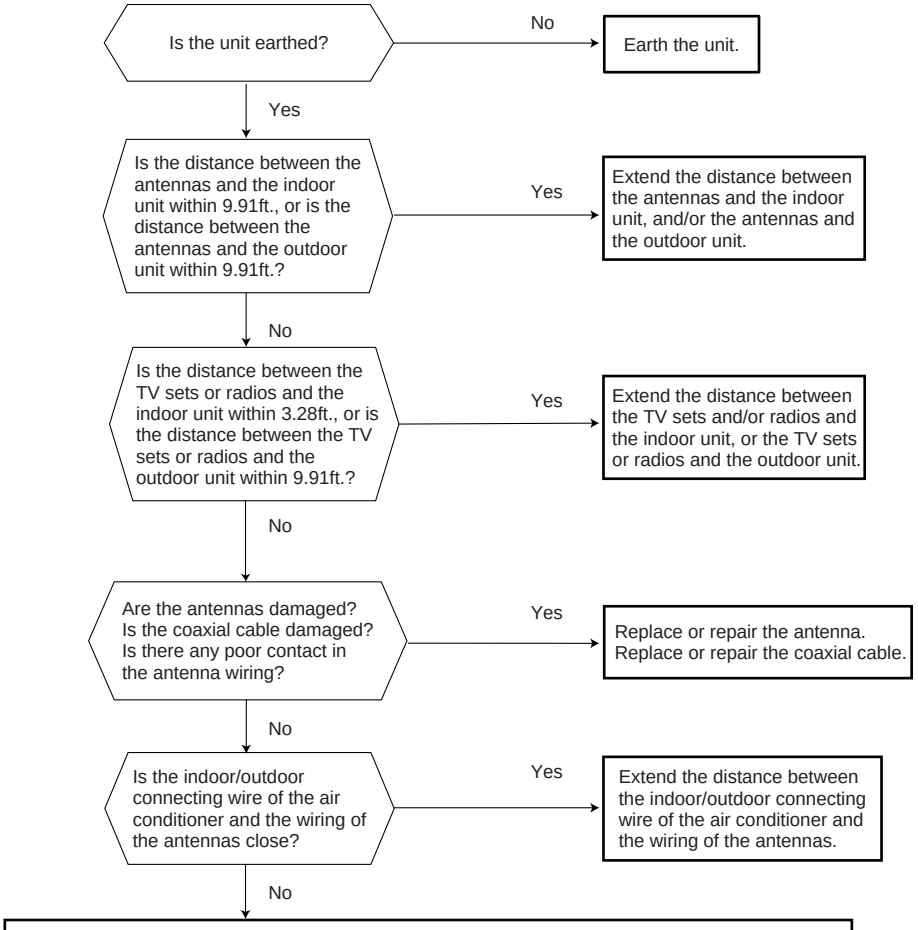


- **When unit cannot operate neither by the remote controller nor by EMERGENCY OPERATION switch. Indoor unit does not operate.**
- **When OPERATION INDICATOR lamp flashes ON and OFF in every 0.5-second. Outdoor unit doesn't operate.**

## Ⓝ How to check mis-wiring and serial signal error (when outdoor unit does not work)



## Ⓞ Electromagnetic noise enters into TV sets or radios




Even if all of the above conditions is fulfilled, the electromagnetic noise may enter, depending on the electric field strength or the installation condition (combination of specific conditions such as antennas or wiring).
Check the followings before asking for service.

1. Devices affected by the electromagnetic noise
   TV sets, radios (FM/AM broadcast, shortwave)
2. Channel, frequency, broadcast station affected by the electromagnetic noise
3. Channel, frequency, broadcast station unaffected by the electromagnetic noise
4. Layout of ;
   indoor/outdoor unit of the air conditioner, indoor/outdoor wiring, grounding wire, antennas, wiring from antennas, receiver
5. Electric field intensity of the broadcast station affected by the electromagnetic noise
6. Presence or absence of amplifier such as booster
7. Operation condition of air conditioner when the electromagnetic noise enters in.
   1) Turn OFF the power supply once, and then turn ON the power supply. In this situation check for the electromagnetic noise.
   2) Within 3 minutes after turning ON the power supply, press OPERATE/STOP (ON/OFF) button on the remote controller for power ON, and check for the electromagnetic noise.
   3) After a short time (3 minutes later after turning ON), the outdoor unit starts running. During operation, check for the electromagnetic noise.
   4) Press OPERATE/STOP (ON/OFF) button on the remote controller for power OFF, when the outdoor unit stops but the indoor/outdoor communication still runs on. In this situation check for the electromagnetic noise.

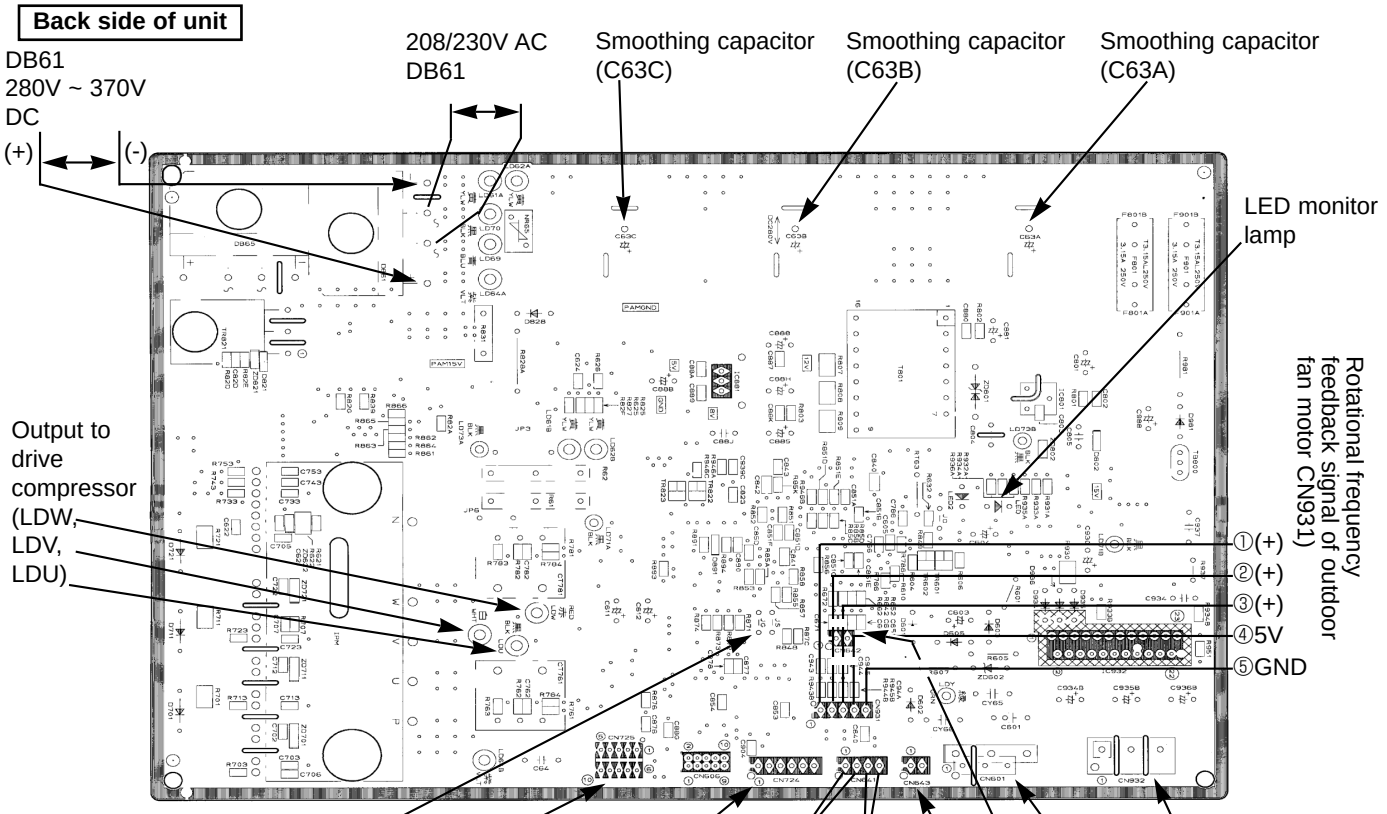
After checking the above, consult the service representative.

## 10-6. Test point diagram and voltage

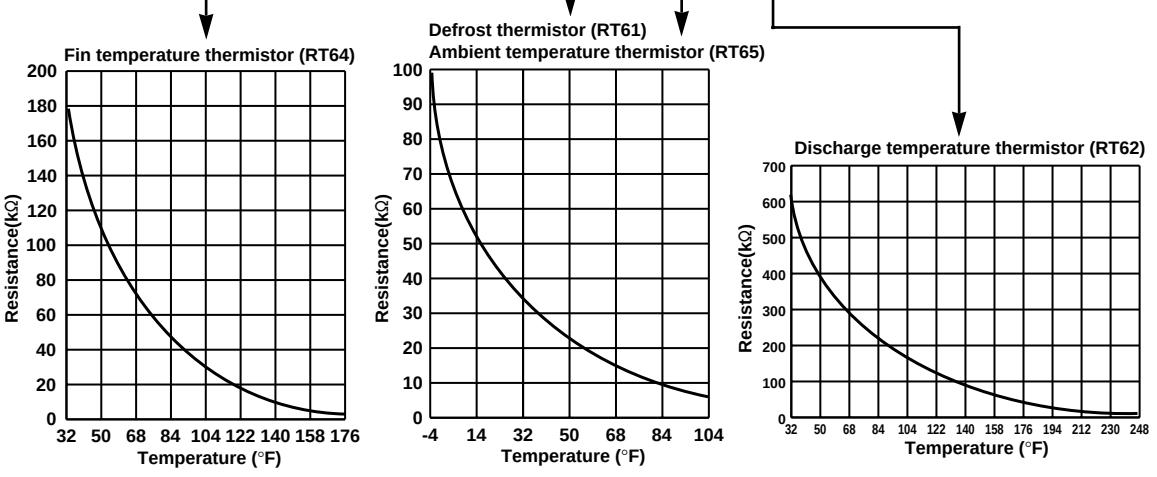
### 1. Inverter P.C. board

**MUZ-A09NA MUZ-A12NA MUZ-A15NA**
**MUZ-A17NA MUY-A15NA MUY-A17NA**

**Back side of unit**

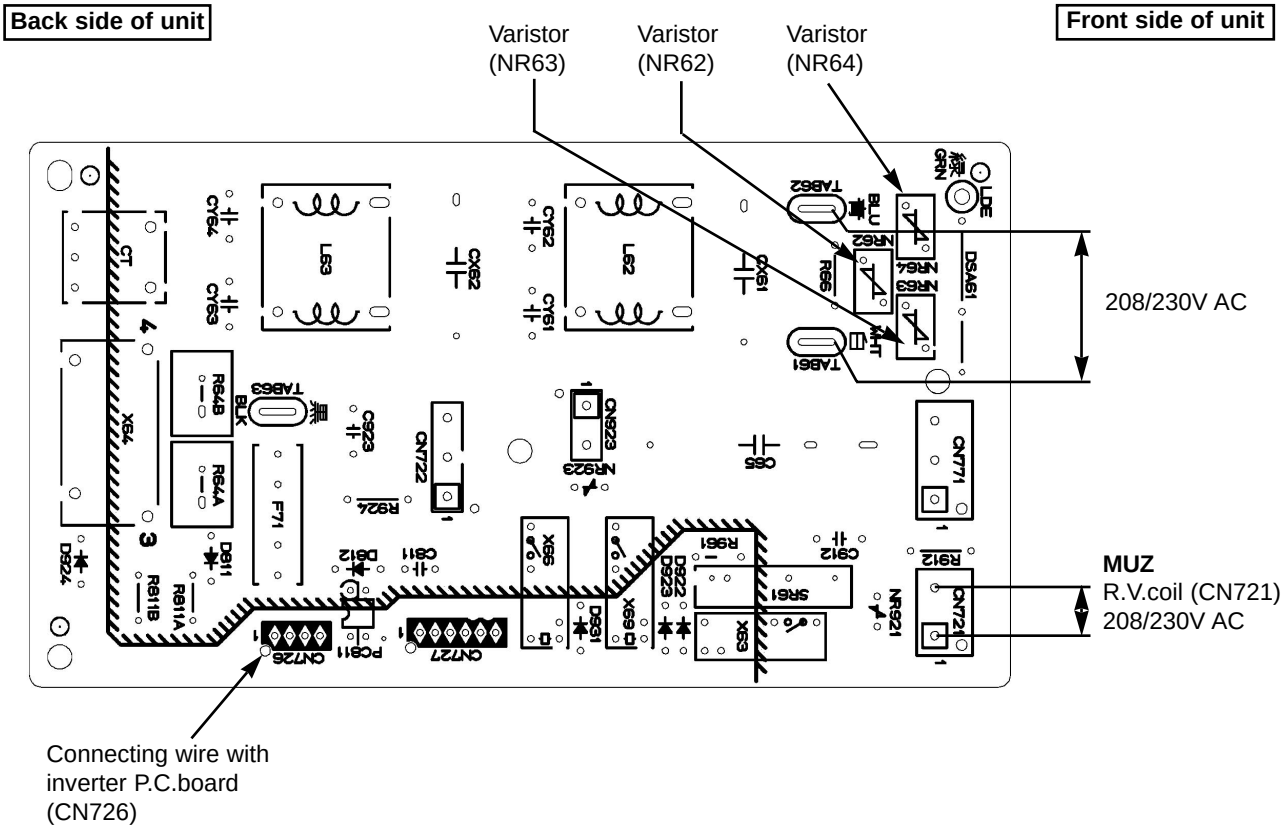



**Front side of unit**

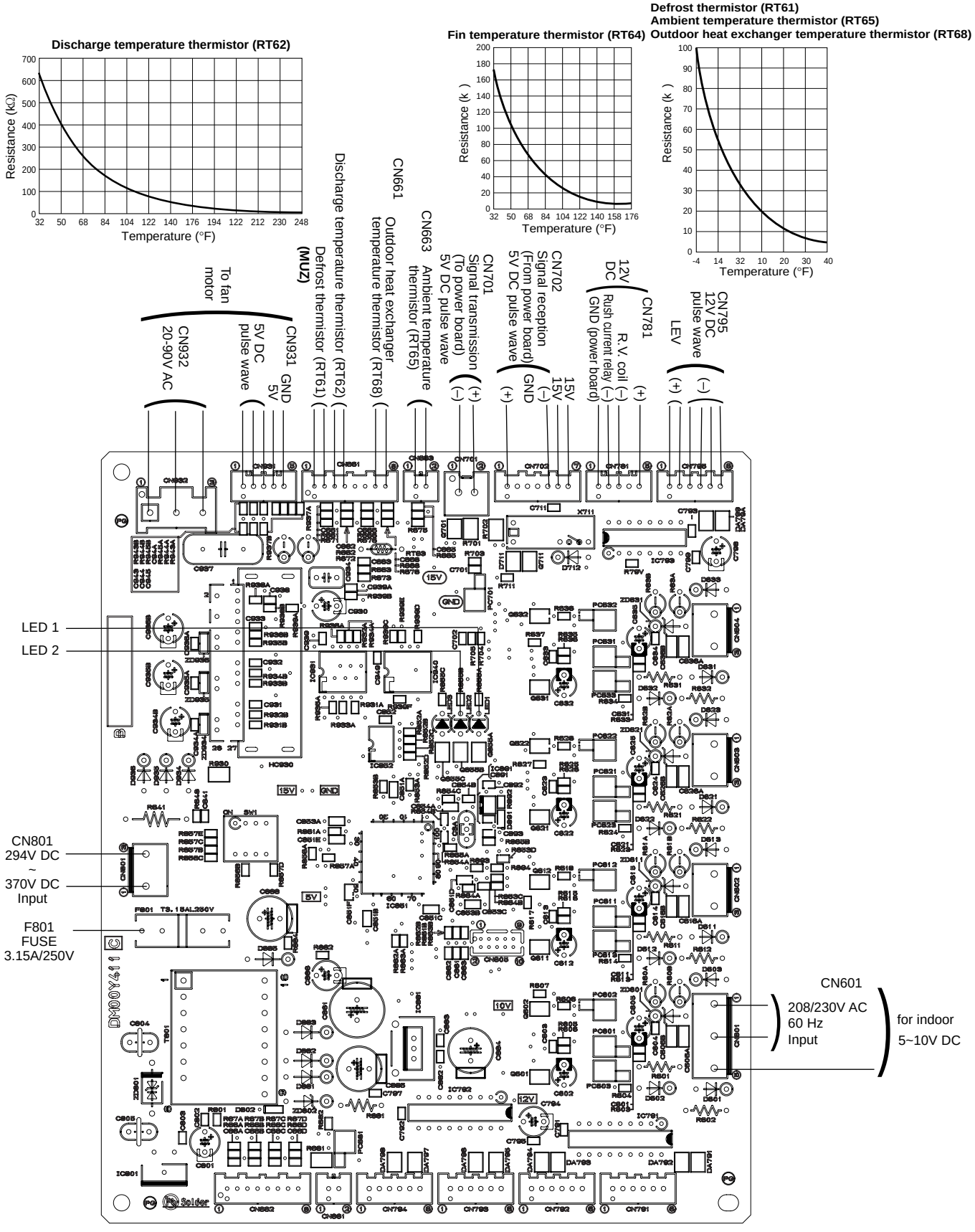


**2. Power P.C. board**

**MUZ-A09NA MUZ-A12NA MUZ-A15NA**
**MUZ-A17NA MUY-A15NA MUY-A17NA**

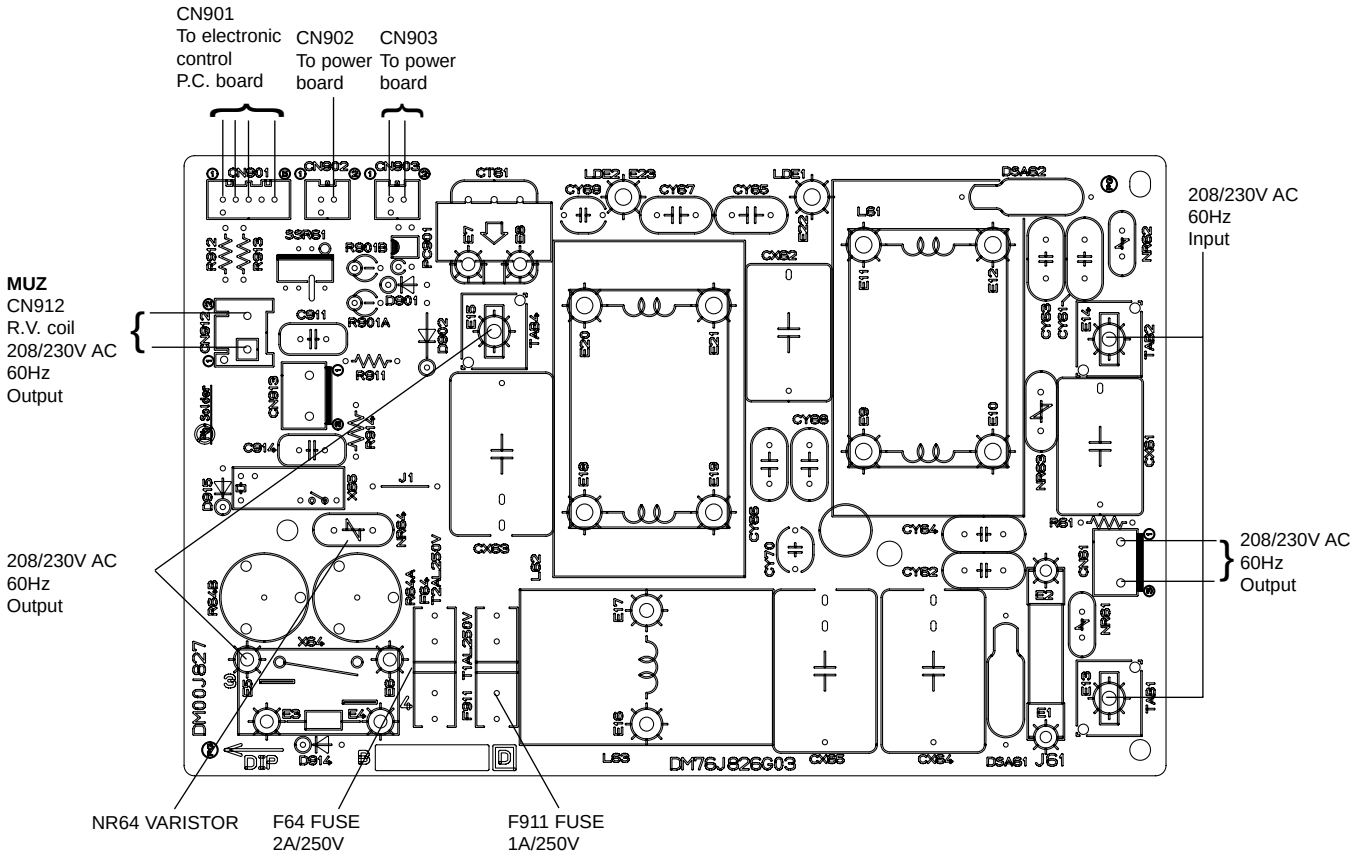


## 3. Outdoor electronic control P.C. board
## MUZ-A24NA MUY-A24NA



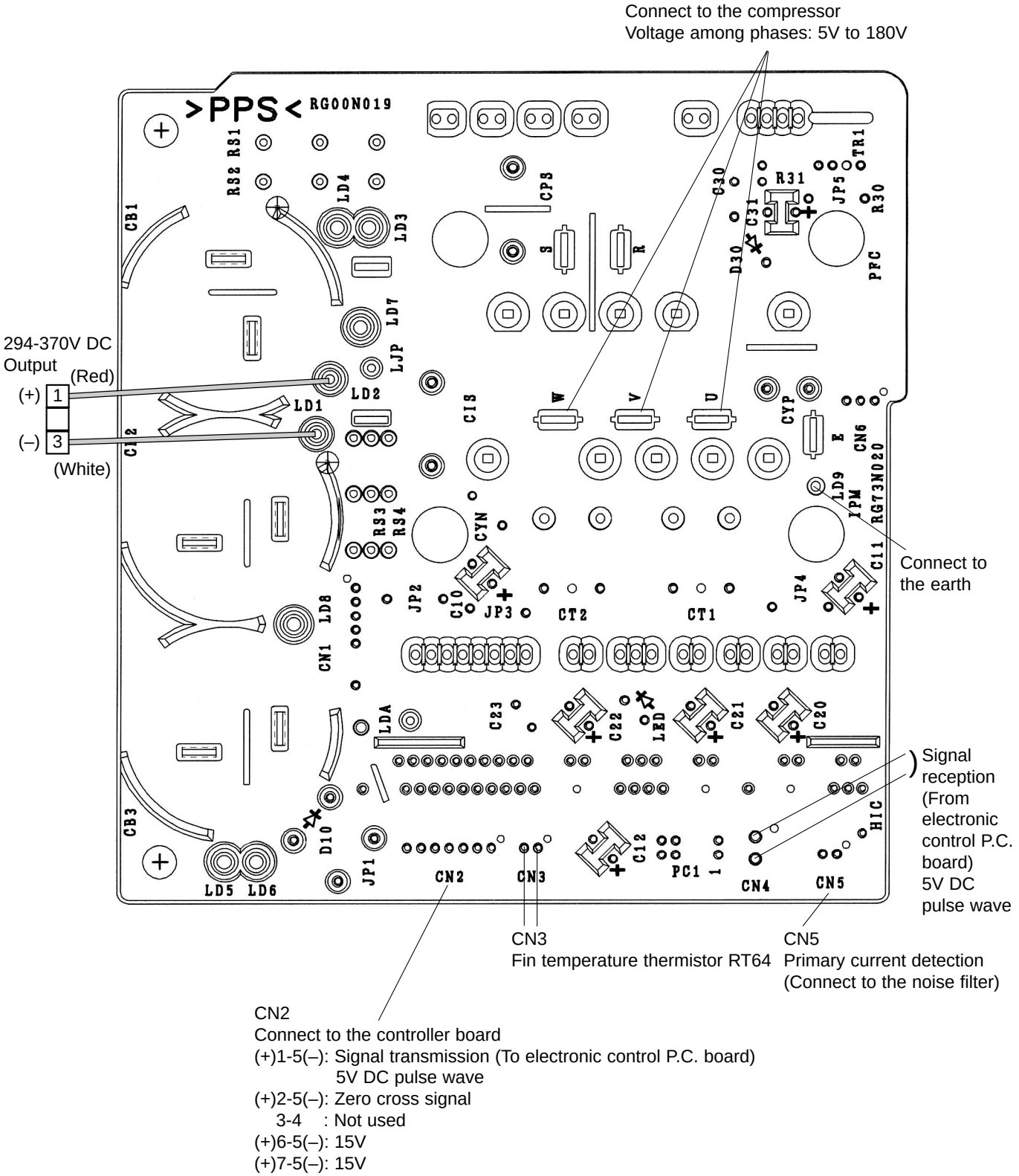
## 4. Noise filter P.C. board

## MUZ-A24NA MUY-A24NA



**5. Outdoor power board**

**MUZ-A24NA MUY-A24NA**

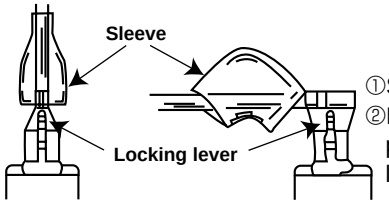


# 11 DISASSEMBLY INSTRUCTIONS

<"Terminal with locking mechanism" Detaching points>

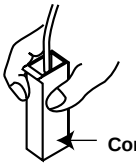
The terminal which has the locking mechanism can be detached as shown below.
There are two types ( Refer to (1) and (2)) of the terminal with locking mechanism.
The terminal without locking mechanism can be detached by pulling it out.
Check the shape of the terminal before detaching.

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




①Slide the sleeve.
②Pull the terminal while pushing the locking lever.

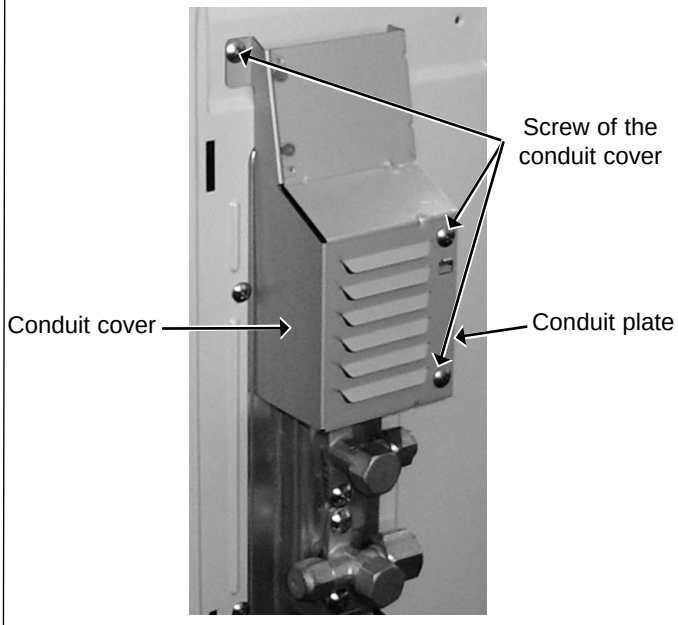
(2) The terminal with this connector has the locking mechanism.

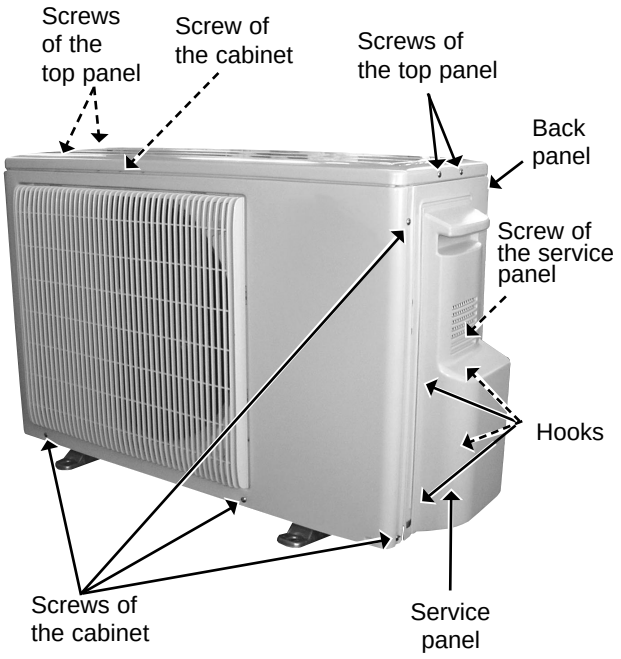



①Hold the sleeve, and pull out the terminal slowly.

## 11-1. MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA MUY-A15NA MUY-A17NA

| OPERATING PROCEDURE | PHOTOS |
|---|---|
| **1. Removing the cabinet.**<br>(1) Remove the screw fixing the service panel. (See Photo 1.)<br>(2) Pull down the service panel and remove it. (See Photo 1.)<br>(3) Remove the screws fixing the conduit cover. (See Photo 2.)<br>(4) Remove the conduit cover. (See Photo 2.)<br>(5) Disconnect the power supply wire and indoor/outdoor connecting wire.<br>(6) Remove the screws fixing the top panel. (See Photo 1.)<br>(7) Remove the top panel. (See Photo 1.)<br>(8) Remove the screws fixing the cabinet.<br>(9) Remove the cabinet.<br>(10) Remove the screws fixing the back panel.<br>(11) Remove the back panel.<br>**Photo 2** | **Photo 1** |



## OPERATING PROCEDURE

**2. Removing the inverter assembly, inverter P.C. board and power P.C. board**

(1) Remove the top panel, cabinet and service panel. (Refer to 1.)
(2) Disconnect the power supply and indoor/outdoor connecting wire and remove the back panel. (Refer to 1.)
(3) Disconnect the ground wires(See Photo 3.), the lead wire to the reactor and the following connectors;
<Power P.C. board>
CN721 (4-way valve coil)
<Inverter P.C. board>
CN931,CN932 (Fan motor)
CN641 (Defrost thermistor and discharge temperature thermistor)
CN643 (Ambient temperature thermistor)
CN724 (LEV)
(4) Remove the compressor connector (CN61).
(5) Remove the screws fixing the relay panel. (See Photo 3.)
(6) Remove the inverter assembly. (See Photo 3.)
(7) Disconnect all connectors and lead wires on the inverter P.C. board. (See Photo 4.)
(8) Remove the inverter P.C. board from the inverter assembly.
(9) Remove the screw fixing the power P.C. board. (See Photo 4.)
(10) Disconnect all connectors and lead wires on the power P.C. board.
(11) Remove the power P.C. board from the inverter assembly.

**3. Removing R.V. coil (MUZ)**

(1) Remove the top panel, cabinet and service panel. (Refer to 1.)
(2) Disconnect the power supply and indoor/outdoor connecting wire and remove the back panel. (Refer to 1.)
(3) Remove the inverter assembly. (Refer to 2.)
(4) Remove the R.V. coil. (See Photo 6.)

**4. Removing the discharge temperature thermistor and defrost thermistor**

(1) Remove the top panel, cabinet and service panel. (Refer to 1.)
(2) Disconnect the power supply and indoor/outdoor connecting wire and remove the back panel. (Refer to 1.)
(3) Remove the inverter assembly. (Refer to 2.)
(4) Pull out the discharge temperature thermistor from its holder. (See Photo 5.)
(5) Pull out the defrost thermistor from its holder. (See Photo 5.)

## PHOTOS

**Photo 3**

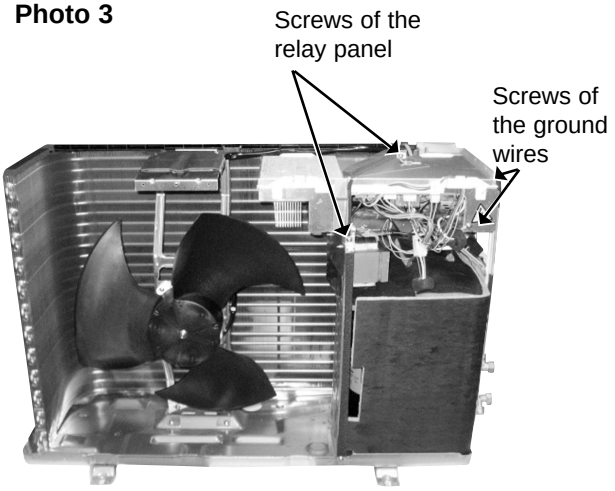



**Photo 4**

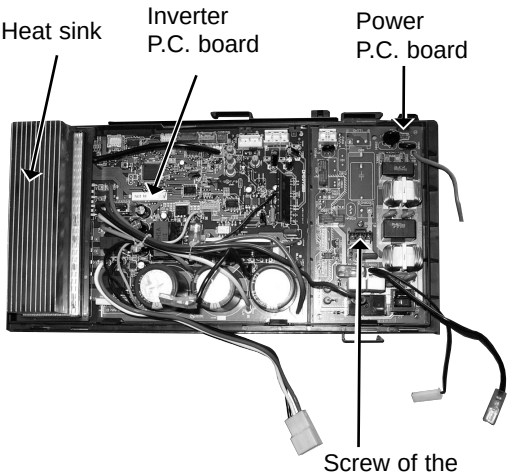
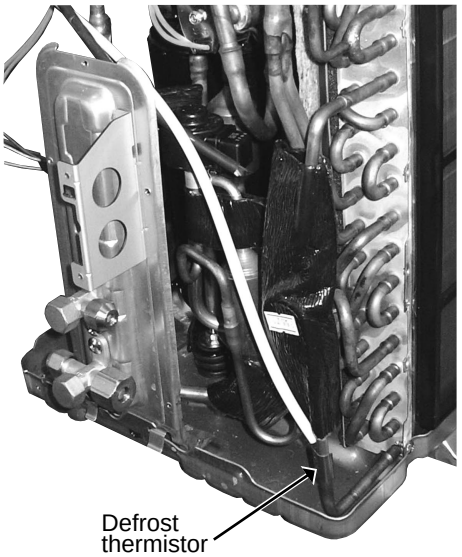
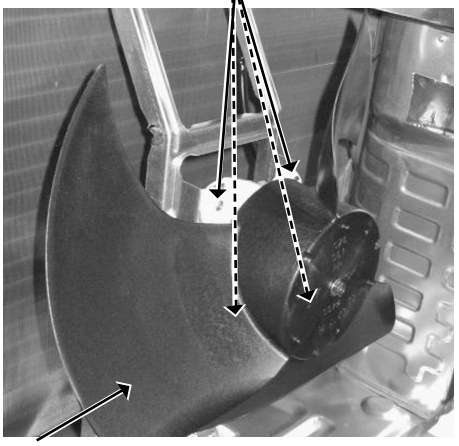
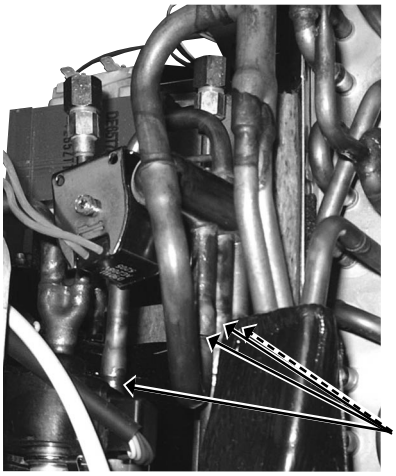
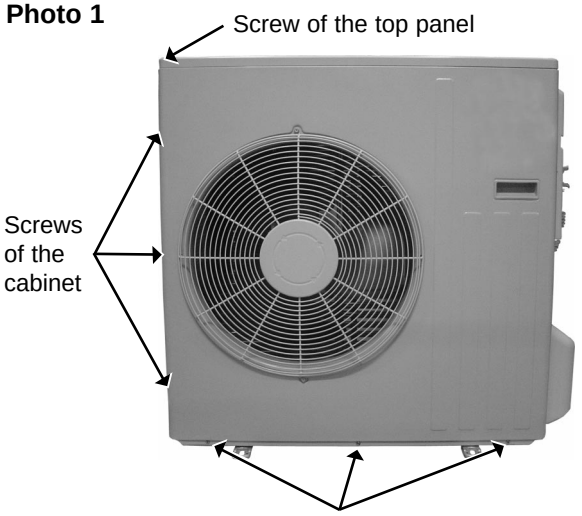
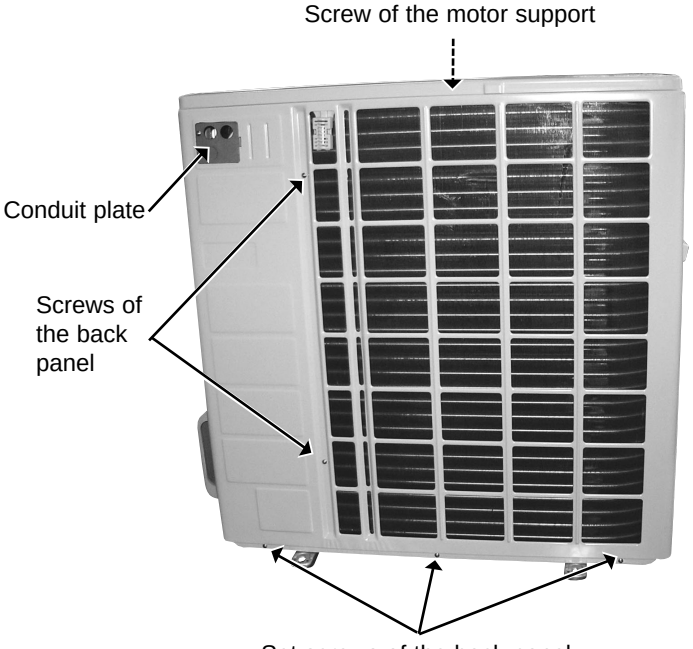
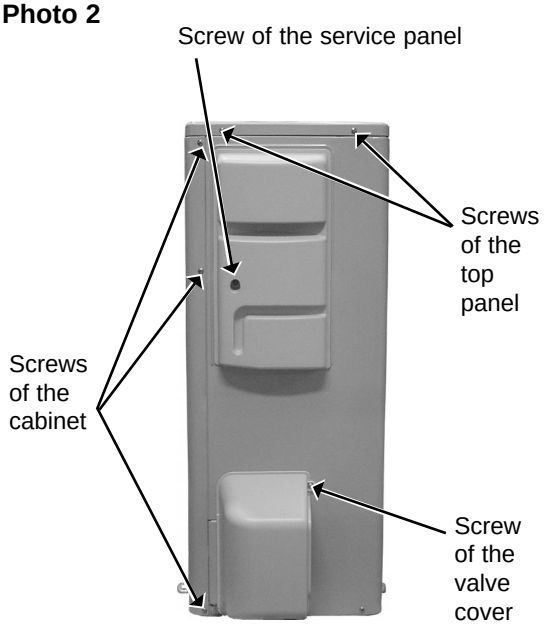
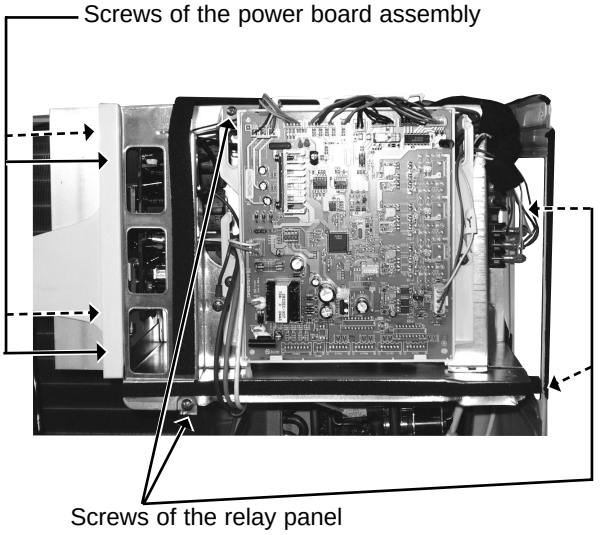


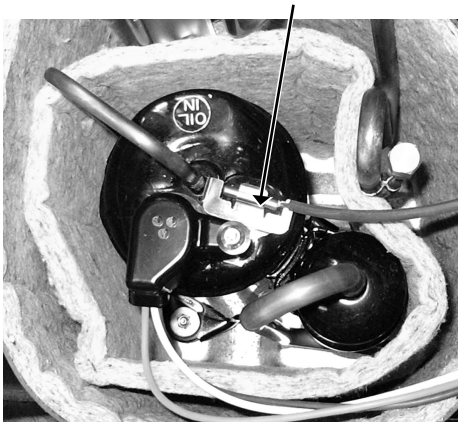
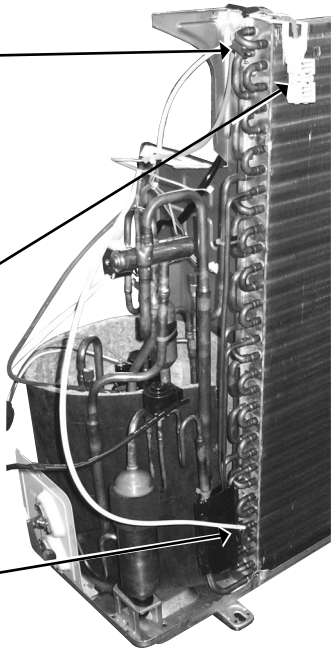
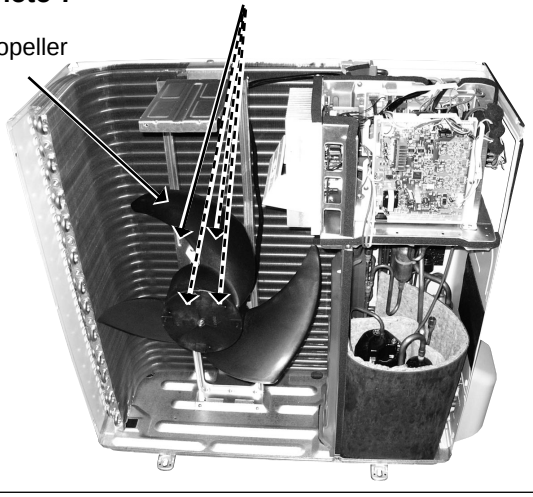

**Photo 5**

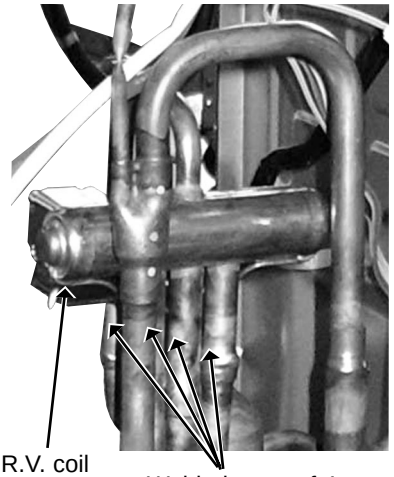
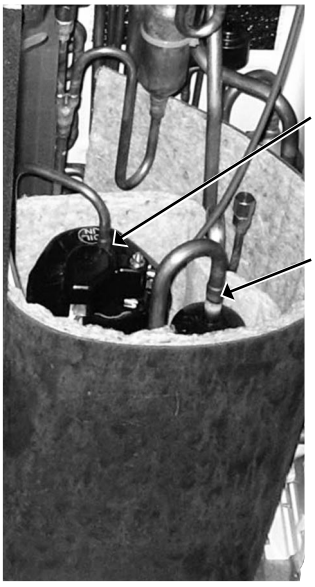
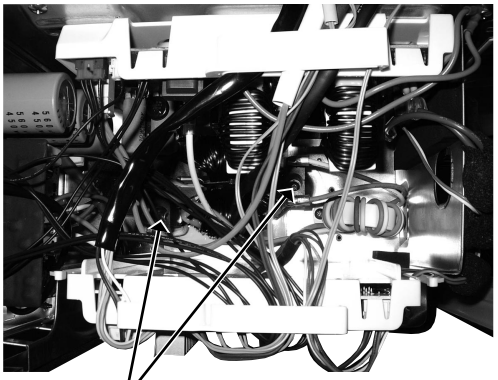
| OPERATING PROCEDURE | PHOTOS |
|---|---|
| **5. Removing outdoor fan motor**<br>(1) Remove the top panel, cabinet and service panel. (Refer to 1.)<br>(2) Disconnect the power supply and indoor/outdoor connecting wire and remove the back panel. (Refer to 1.)<br>(3) Disconnect the connectors for outdoor fan motor.<br>(4) Remove the propeller nut.<br>(5) Remove the propeller.<br>(6) Remove the screws fixing the fan motor. (See Photo 7.)<br>(7) Remove the fan motor. | **Photo 6**<br>  <br>Defrost thermistor |
| **6. Removing the compressor and 4-way valve**<br>(1) Remove the top panel, cabinet and service panel. (Refer to 1.)<br>(2) Disconnect the power supply and indoor/outdoor connecting wire and remove the back panel. (Refer to 1.)<br>(3) Remove the inverter assembly. (Refer to 2.)<br>(4) Recover gas from the refrigerant circuit.<br>**NOTE:** Recover gas from the pipes until the pressure gauge shows 0 PSIG.<br>(5) Detach the welded part of the suction and the discharge pipe connected with compressor.<br>(6) Remove the nuts of compressor legs.<br>(7) Remove the compressor.<br>(8) Detach the welded part of pipes connected with 4-way valve. (See Photo 8.) | **Photo 7**<br>Screws of the outdoor fan motor<br>  <br>Propeller<br>**Photo 8**<br>  <br>Welded parts of 4-way valve |

## 11-2. MUZ-A24NA
## MUY-A24NA

| OPERATING PROCEDURE | PHOTOS |
|---|---|
| **1. Removing the cabinet**<br>(1) Remove the screws of the service panel.<br>(2) Remove the screws of the top panel.<br>(3) Remove the screw of the valve cover.<br>(4) Remove the service panel.<br>(5) Remove the top panel.<br>(6) Remove the valve cover.<br>(7) Remove the screws of the cabinet.<br>(8) Remove the cabinet.<br>(9) Remove the screws of the back panel.<br>(10) Remove the back panel. | **Photo 1**<br>  <br> |
| **Photo 3**<br>  <br> | **Photo 2**<br>  <br> |

| OPERATING PROCEDURE | PHOTOS |
|---|---|
| **2. Removing the inverter assembly, inverter P.C. board and power board**<br>(1) Remove the top panel, cabinet and service panel. (Refer to 1.)<br>(2) Remove the back panel.(Refer to 1.)<br>(3) Disconnect the following connectors;<br><Electronic control P.C. board><br>CN931 and CN932 (Fan motor)<br>CN795 (LEV)<br>CN661 (Discharge temperature thermistor, defrost thermistor (MUZ) and outdoor heat exchanger temperature thermistor)<br><Noise filter P.C. board><br>CN912 (4-way valve) (MUZ)<br>(4) Remove the compressor connector.<br>(5) Remove the screws fixing the relay panel.<br>(6) Remove the inverter assembly.<br>(7) Disconnect all connectors and lead wires on the electronic control P.C. board.<br>(8) Remove the electronic control P.C. board from the inverter assembly.<br>(9) Remove the screws fixing the power board assembly.<br>(10) Disconnect all connectors and lead wires on the power board.<br>(11) Remove the power board from the inverter assembly.<br>(12) Disconnect all connectors and lead wires on the noise filter P.C. board.<br>(13) Remove the noise filter P.C. board from the inverter assembly. | **Photo 4**<br>  <br> |
| **3. Removing R.V. coil (MUZ)**<br>(1) Remove the top panel, cabinet and service panel.<br>(2) Remove the back panel. (Refer to 1.)<br>(3) Remove the inverter assembly. (Refer to 2.)<br>(4) Remove the R.V. coil. (Photo 8) | |

| OPERATING PROCEDURE | PHOTOS |
|---|---|
| **4. Removing the defrost thermistor (MUZ), discharge temperature thermistor, outdoor heat exchanger temperature thermistor and ambient temperature thermistor**<br>(1) Remove the top panel, cabinet and service panel. (Refer to 1.)<br>(2) Remove the back panel. (Refer to 1.)<br>(3) Remove the inverter assembly. (Refer to 2.)<br>(4) Pull out the defrost thermistor from its holder. (Photo 6) (MUZ)<br>(5) Pull out the discharge temperature thermistor from its holder. (Photo 5)<br>(6) Pull out the outdoor heat exchanger temperature thermistor from its holder. (Photo 6)<br>(7) Pull out the ambient temperature thermistor from its holder. (Photo 6) | **Photo 5** Discharge temperature thermistor<br>  <br>**Photo 6**<br>Outdoor heat exchanger temperature thermistor<br>Ambient temperature thermistor<br>Defrost thermistor (for MUZ)<br>  |
| **5. Removing outdoor fan motor**<br>(1) Remove the top panel, cabinet and service panel. (Refer to 1.)<br>(2) Remove the back panel. (Refer to 1.)<br>(3) Remove the inverter assembly. (Refer to 2.)<br>(4) Remove the propeller.<br>(5) Remove the screws fixing the fan motor.<br>(6) Remove the fan motor. | **Photo 7** Screws of the outdoor fan motor<br>Propeller<br>  |

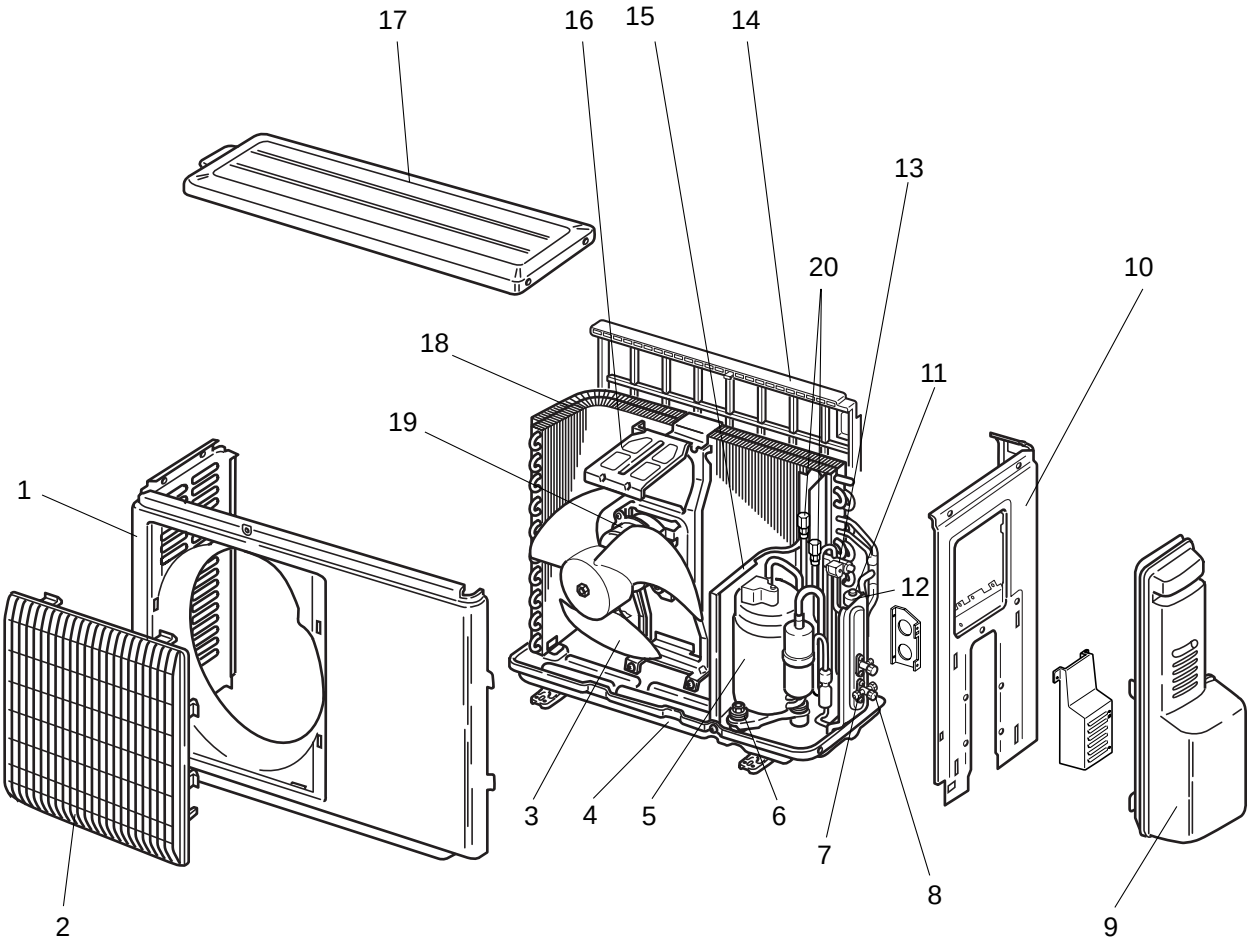
| OPERATING PROCEDURE | PHOTOS |
|---|---|
| **6. Removing the compressor and 4-way valve**<br>(1) Remove the top panel, cabinet and service panel. (Refer to 1.)<br>(2) Remove the back panel. (Refer to 1.)<br>(3) Remove the inverter assembly. (Refer to 2.)<br>(4) Recover gas from the refrigerant circuit.<br>**NOTE:** Recover gas from the pipes until the pressure gauge shows 0 PSIG.<br>(5) Detach the welded part of the suction and the discharge pipe connected with compressor. (Photo 9)<br>(6) Remove the compressor nuts.<br>(7) Remove the compressor.<br>(8) Detach the welded part of 4-way valve and pipe. (Photo 8) | **Photo 8**<br>  <br>R.V. coil (for MUZ)<br>Welded parts of 4-way valve<br>**Photo 9**<br>  <br>Welded part of the discharge pipe<br>Welded part of the suction pipe |
| **7. Removing the reactor**<br>(1) Remove the top panel. (Refer to 1.)<br>(2) Disconnect the reactor lead wire.<br>(3) Remove the screws of the reactor, and remove the reactor. | **Photo 10**<br>  <br>Screws of the reactor |

# 12 PARTS LIST

## 12-1. PARTS LIST (non-RoHS compliant)

**MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA**
**MUY-A15NA MUY-A17NA**

### 1. OUTDOOR UNIT STRUCTURAL PARTS AND FUNCTIONAL PARTS



## MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA
## MUY-A15NA MUY-A17NA

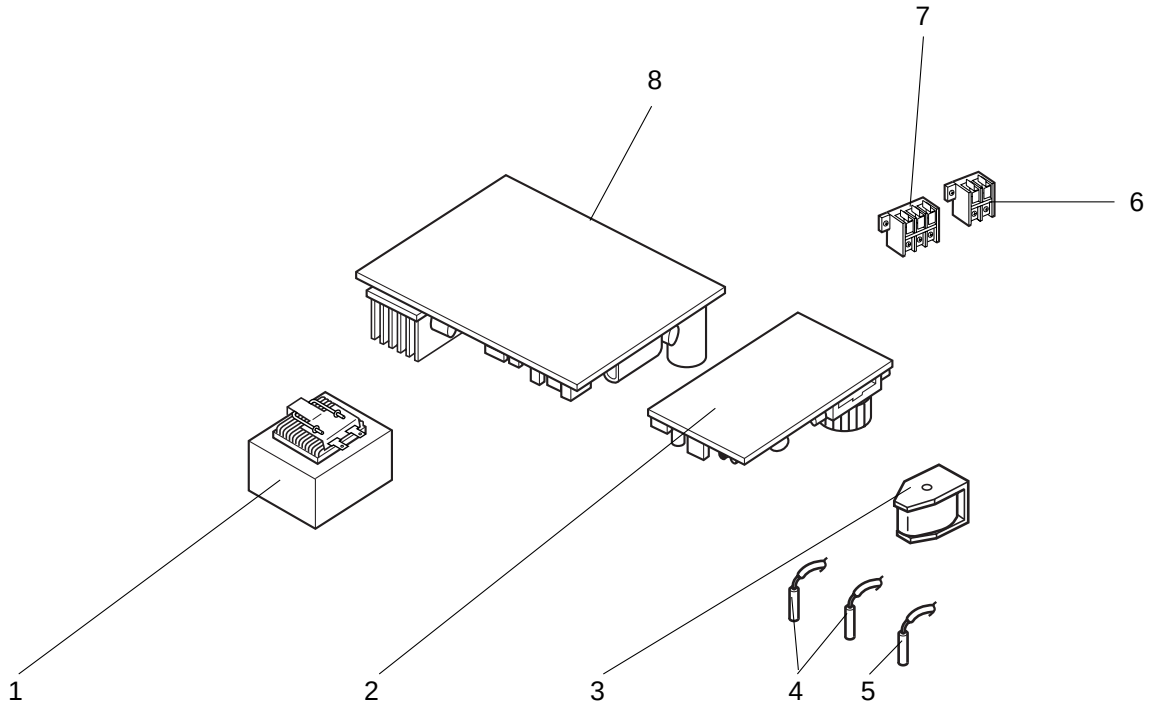
# 1. OUTDOOR UNIT STRUCTURAL PARTS AND FUNCTIONAL PARTS

Part numbers that are circled are not shown in the illustration.

| No. | Part No. | Part Name | Symbol in Wiring Diagram | Q'ty/unit | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | MUZ- | | | | MUY- | | |
| | | | | A09NA | A12NA | A15NA | A17NA | A15NA | A17NA | |
| 1 | E02 927 232 | CABINET | | 1 | 1 | 1 | 1 | 1 | 1 | |
| 2 | E02 927 521 | GRILLE | | 1 | 1 | 1 | 1 | 1 | 1 | |
| 3 | E02 927 501 | PROPELLER | | 1 | 1 | 1 | 1 | 1 | 1 | |
| 4 | E02 927 290 | BASE | | 1 | 1 | 1 | 1 | 1 | 1 | |
| 5 | E02 A54 900 | COMPRESSOR | MC | 1 | 1 | | | | | KNB092FPAH |
| | E02 A56 900 | COMPRESSOR | MC | | | 1 | 1 | 1 | 1 | SNB130FPDH |
| 6 | E02 065 506 | COMPRESSOR RUBBER SET | | 3 | 3 | 3 | 3 | 3 | 3 | 3RUBBERS/SET |
| 7 | E02 A54 661 | STOP VALVE (GAS) | | 1 | 1 | | | | | |
| | E02 A56 661 | STOP VALVE (GAS) | | | | 1 | 1 | 1 | 1 | |
| 8 | E02 927 662 | STOP VALVE (LIQUID) | | 1 | 1 | 1 | 1 | 1 | 1 | |
| 9 | E02 A49 245 | SERVICE PANEL | | 1 | 1 | 1 | 1 | 1 | 1 | |
| 10 | E02 A54 233 | BACK PANEL | | 1 | 1 | 1 | 1 | 1 | 1 | |
| 11 | E02 A54 640 | EXPANSION VALVE | | 1 | 1 | 1 | 1 | 1 | 1 | |
| 12 | E02 927 493 | EXPANSION VALVE COIL | LEV | 1 | 1 | 1 | 1 | 1 | 1 | |
| 13 | E02 A56 961 | 4-WAY VALVE | | | | 1 | 1 | 1 | 1 | |
| | E02 A54 961 | 4-WAY VALVE | | 1 | 1 | | | | | |
| 14 | E02 929 523 | CONDENSER NET | | 1 | 1 | 1 | 1 | 1 | 1 | |
| 15 | E02 A54 293 | SEPARATOR | | 1 | 1 | 1 | 1 | 1 | 1 | |
| 16 | E02 929 515 | MOTOR SUPPORT | | 1 | 1 | 1 | 1 | 1 | 1 | |
| 17 | E02 927 297 | TOP PANEL | | 1 | 1 | 1 | 1 | 1 | 1 | |
| 18 | E02 A54 630 | OUTDOOR HEAT EXCHANGER | | 1 | 1 | | | | | |
| | E02 A56 630 | OUTDOOR HEAT EXCHANGER | | | | 1 | 1 | | | |
| | E02 A51 630 | OUTDOOR HEAT EXCHANGER | | | | | | 1 | 1 | |
| 19 | E02 A54 301 | OUTDOOR FAN MOTOR | MF | 1 | 1 | 1 | 1 | 1 | 1 | RC0J50- □□ |
| 20 | E02 A49 641 | SERVICE PORT | | 2 | 2 | 2 | 2 | 2 | 2 | 1pc/SET |
| ㉑ | E02 735 936 | CAPILLARY TUBE | | 2 | 2 | 2 | 2 | 2 | 2 | O.D. 0.118 × I.D. 0.071 × 23-5/8 |

**MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA**
**MUY-A15NA MUY-A17NA**

## 2. OUTDOOR UNIT ELECTRICAL PARTS



## MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA
## MUY-A15NA MUY-A17NA

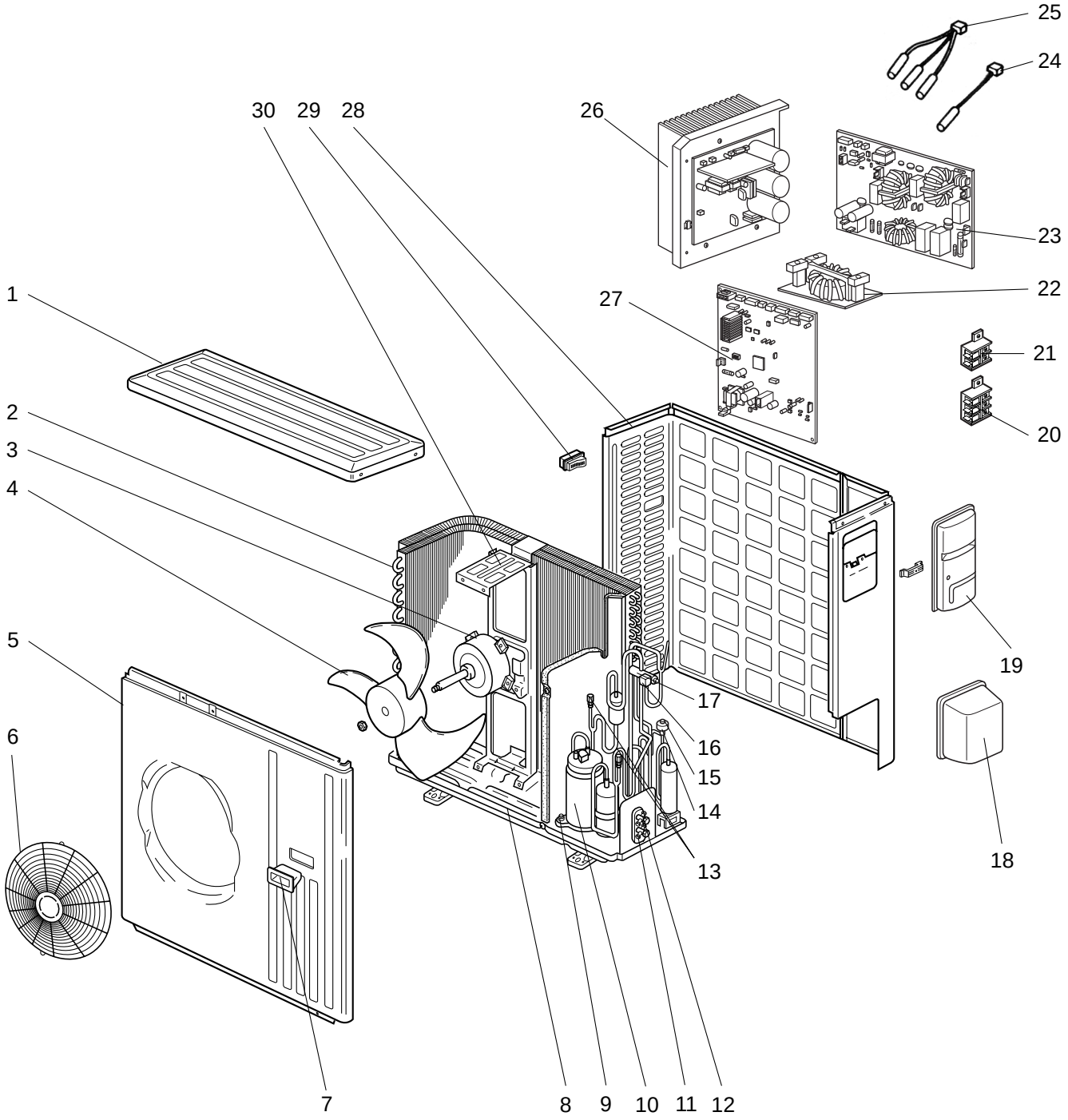
## 2. OUTDOOR UNIT ELECTRICAL PARTS

Part numbers that are circled are not shown in the illustration.

| No. | Part No. | Part Name | Symbol in Wiring Diagram | Q'ty/unit | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | MUZ- | | | | MUY- | | |
| | | | | A09NA | A12NA | A15NA | A17NA | A15NA | A17NA | |
| 1 | E02 838 337 | REACTOR | L61 | 1 | 1 | 1 | 1 | 1 | 1 | |
| 2 | E02 A54 444 | POWER P.C. BOARD | | 1 | 1 | 1 | 1 | 1 | 1 | |
| 3 | E02 A54 490 | R.V. COIL | 21S4 | 1 | 1 | 1 | 1 | | | |
| 4 | E02 927 306 | THERMISTOR SET | RT61,RT62 | 1 | 1 | 1 | 1 | 1 | 1 | DEFROST, DISCHARGE |
| 5 | E02 927 308 | AMBIENT TEMPERATURE THERMISTOR | RT65 | 1 | 1 | 1 | 1 | 1 | 1 | |
| 6 | E02 A54 374 | TERMINAL BLOCK | TB1 | 1 | 1 | 1 | 1 | 1 | 1 | 2P |
| 7 | E02 A55 374 | TERMINAL BLOCK | TB2 | 1 | 1 | 1 | 1 | 1 | 1 | 3P |
| 8 | E02 A54 451 | INVERTER P.C. BOARD | | 1 | | | | | | Including heat sink and RT64 |
| | E02 A55 451 | INVERTER P.C. BOARD | | | 1 | | | | | Including heat sink and RT64 |
| | E02 A56 451 | INVERTER P.C. BOARD | | | | 1 | | 1 | | Including heat sink and RT64 |
| | E02 A57 451 | INVERTER P.C. BOARD | | | | | 1 | | 1 | Including heat sink and RT64 |

## MUZ-A24NA MUY-A24NA

## 3. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS



## MUY-A24NA MUY-A24NA
## 3. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS

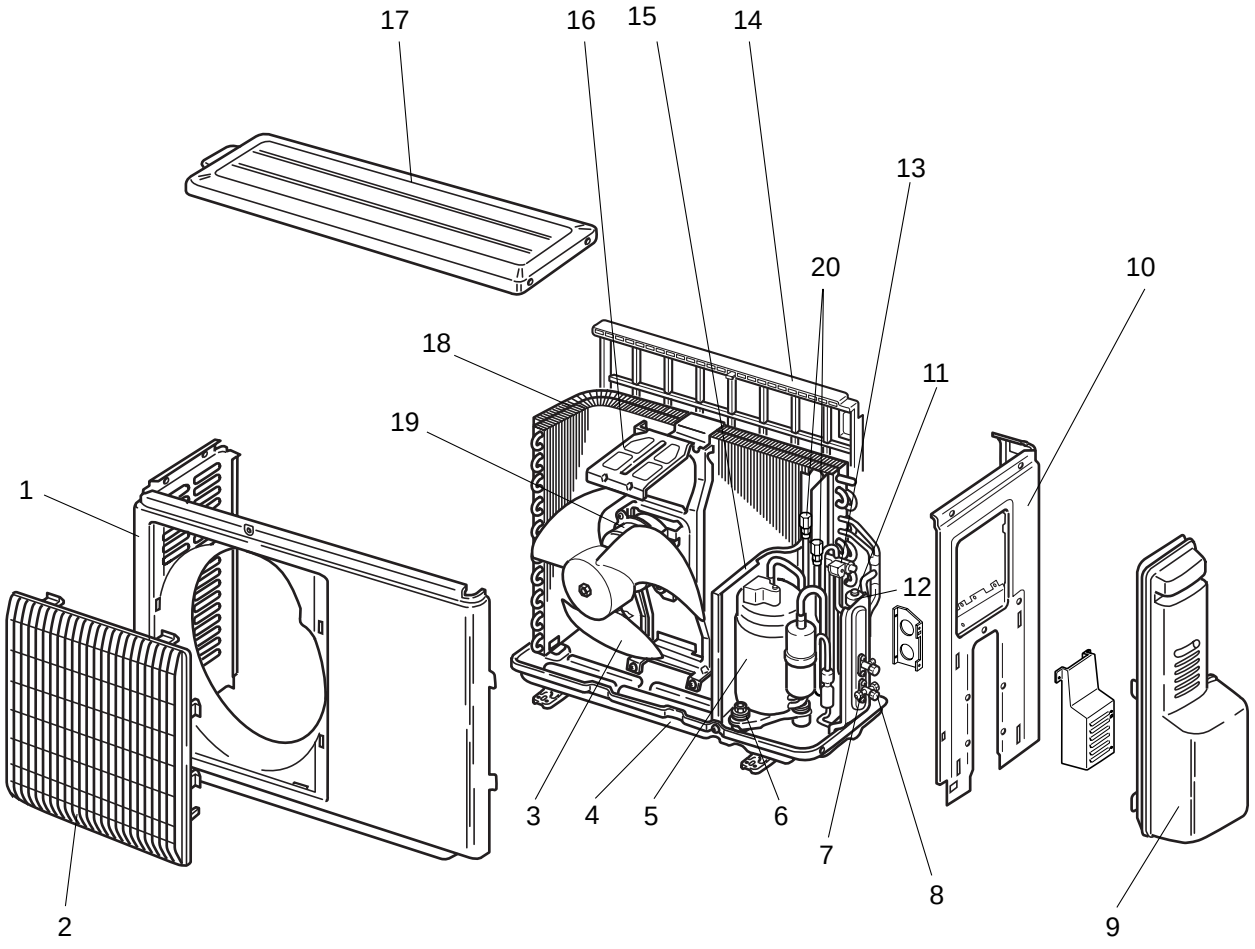
Part numbers that are circled are not shown in the illustration.

| No. | Part No. | Part Name | Symbol in Wiring Diagram | Q'ty/unit | | Remarks |
|---|---|---|---|---|---|---|
| | | | | MUZ-A24NA | MUY-A24NA | |
| 1 | E02 819 297 | TOP PANEL | | 1 | 1 | |
| 2 | E02 A53 630 | OUTDOOR HEAT EXCHANGER | | | 1 | |
| | E02 A58 630 | OUTDOOR HEAT EXCHANGER | | 1 | | |
| 3 | E02 A58 301 | OUTDOOR FAN MOTOR | MF | 1 | 1 | RC0J60-□□ |
| 4 | E02 851 501 | PROPELLER | | 1 | 1 | |
| 5 | E02 819 232 | CABINET | | 1 | 1 | |
| 6 | E02 819 521 | FAN GUARD | | 1 | 1 | |
| 7 | E02 819 009 | HANDLE | | 1 | 1 | |
| 8 | E02 851 290 | BASE | | 1 | 1 | |
| 9 | E02 065 506 | COMPRESSOR RUBBER SET | | 3 | 3 | 3RUBBERS/SET |
| 10 | E02 A56 900 | COMPRESSOR | MC | 1 | 1 | SNB130FPDH |
| 11 | E02 A58 661 | STOP VALVE(GAS) | | 1 | 1 | $\phi$5/8 |
| 12 | E02 821 662 | STOP VALVE(LIQUID) | | 1 | 1 | $\phi$1/4 |
| 13 | E02 A49 641 | SERVICE PORT | | 2 | 2 | 1PC/SET |
| 14 | E02 851 493 | EXPANSION VALVE COIL | LEV | 1 | 1 | |
| 15 | E02 851 640 | EXPANSION VALVE | | 1 | 1 | |
| 16 | E02 A58 490 | R.V. COIL | 21S4 | 1 | | |
| 17 | E02 A56 961 | 4-WAY VALVE | | 1 | 1 | |
| 18 | E02 819 650 | VALVE COVER | | 1 | 1 | |
| 19 | E02 819 245 | SERVICE PANEL | | 1 | 1 | |
| 20 | E02 935 374 | TERMINAL BLOCK | TB2 | 1 | 1 | 3P |
| 21 | E02 A53 374 | TERMINAL BLOCK | TB1 | 1 | 1 | 2P |
| 22 | E02 851 337 | REACTOR | L | 1 | 1 | |
| 23 | E02 A58 444 | NOISE FILTER P.C. BOARD | | 1 | | |
| | E02 A53 444 | NOISE FILTER P.C. BOARD | | | 1 | |
| 24 | E02 935 309 | AMBIENT TEMPERATURE THERMISTOR | RT65 | 1 | 1 | |
| 25 | E02 851 308 | THERMISTOR SET | RT61,RT62,RT68 | 1 | | DEFROST, DISCHARGE OUTDOOR HEAT EXCHANGER |
| | E02 A53 308 | THERMISTOR SET | RT62,RT68 | | 1 | DISCHARGE OUTDOOR HEAT EXCHANGER |
| 26 | E02 A58 440 | POWER BOARD | | 1 | 1 | Including heat sink and RT64 |
| 27 | E02 A58 450 | OUTDOOR ELECTRONIC CONTROL P.C. BOARD | | 1 | | |
| | E02 A53 450 | OUTDOOR ELECTRONIC CONTROL P.C. BOARD | | | 1 | |
| 28 | E02 A58 233 | BACK PANEL(OUT) | | 1 | 1 | |
| 29 | E02 817 009 | HANDLE | | 1 | 1 | |
| 30 | E02 851 515 | MOTOR SUPPORT | | 1 | 1 | |
| ㉛ | E02 851 936 | CAPILLARY TUBE(TAPER PIPE) | | 1 | 1 | O.D. 0.142 × I.D. 0.094 × 1-31/32 |

## 12-2. RoHS PARTS LIST (RoHS compliant)

**MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA**
**MUY-A15NA MUY-A17NA**

## 1. OUTDOOR UNIT STRUCTURAL PARTS AND FUNCTIONAL PARTS



## MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA
## MUY-A15NA MUY-A17NA

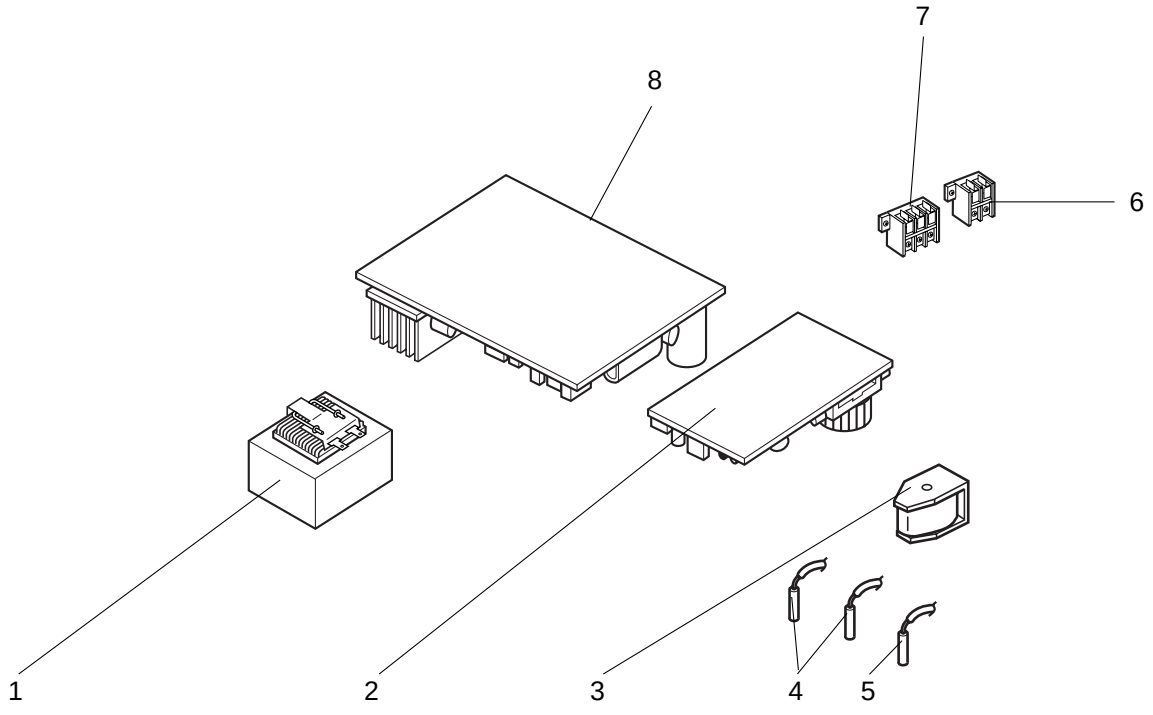
# 1. OUTDOOR UNIT STRUCTURAL PARTS AND FUNCTIONAL PARTS

Part numbers that are circled are not shown in the illustration.

| No. | RoHS | Part No. | Part Name | Symbol in Wiring Diagram | Q'ty/unit | | | | | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MUZ-A | | | | | | | | MUY-A | | |
| | | | | | 09NA | | 12NA | | 15NA | | 17NA | | 15NA | 17NA | |
| | | | | | | -U1 | | -U1 | | -U1 | | -U1 | | | |
| 1 | G | E12 927 232 | CABINET | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| 2 | G | E12 927 521 | GRILLE | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| 3 | G | E12 927 501 | PROPELLER | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| 4 | G | E12 927 290 | BASE | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| 5 | G | E12 A54 900 | COMPRESSOR | MC | 1 | 1 | 1 | 1 | | | | | | | KNB092FPAH |
| | G | E12 A56 900 | COMPRESSOR | MC | | | | | 1 | 1 | 1 | 1 | 1 | 1 | SNB130FPDH |
| 6 | G | E12 065 506 | COMPRESSOR RUBBER SET | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3RUBBERS/SET |
| 7 | G | E12 A54 661 | STOP VALVE (GAS) | | 1 | 1 | 1 | 1 | | | | | | | $\phi$3/8 |
| | G | E12 A56 661 | STOP VALVE (GAS) | | | | | | 1 | 1 | 1 | 1 | 1 | 1 | $\phi$1/2 |
| 8 | G | E12 927 662 | STOP VALVE (LIQUID) | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | $\phi$1/4 |
| 9 | G | E12 A49 245 | SERVICE PANEL | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| 10 | G | E12 A54 233 | BACK PANEL | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| 11 | G | E12 A54 640 | EXPANSION VALVE | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| 12 | G | E12 927 493 | EXPANSION VALVE COIL | LEV | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| 13 | G | E12 A56 961 | 4-WAY VALVE | | | | | | 1 | 1 | 1 | 1 | 1 | 1 | |
| | G | E12 A54 961 | 4-WAY VALVE | | 1 | 1 | 1 | 1 | | | | | | | |
| 14 | G | E12 929 523 | CONDENSER NET | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| 15 | G | E12 A54 293 | SEPARATOR | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| 16 | G | E12 929 515 | MOTOR SUPPORT | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| 17 | G | E12 927 297 | TOP PANEL | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| 18 | G | E12 A54 630 | OUTDOOR HEAT EXCHANGER | | 1 | 1 | 1 | 1 | | | | | | | |
| | G | E12 A56 630 | OUTDOOR HEAT EXCHANGER | | | | | | 1 | 1 | 1 | 1 | | | |
| | G | E12 A51 630 | OUTDOOR HEAT EXCHANGER | | | | | | | | | | 1 | 1 | |
| 19 | G | E12 A54 301 | OUTDOOR FAN MOTOR | MF | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | RC0J50-□□ |
| 20 | G | E12 A49 641 | SERVICE PORT | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1pc/SET |
| ㉑ | G | E12 735 936 | CAPILLARY TUBE | | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | O.D. 0.118 × I.D. 0.071 × 23-5/8 |

**MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA**
**MUY-A15NA MUY-A17NA**

## 2. OUTDOOR UNIT ELECTRICAL PARTS



## MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA
## MUY-A15NA MUY-A17NA

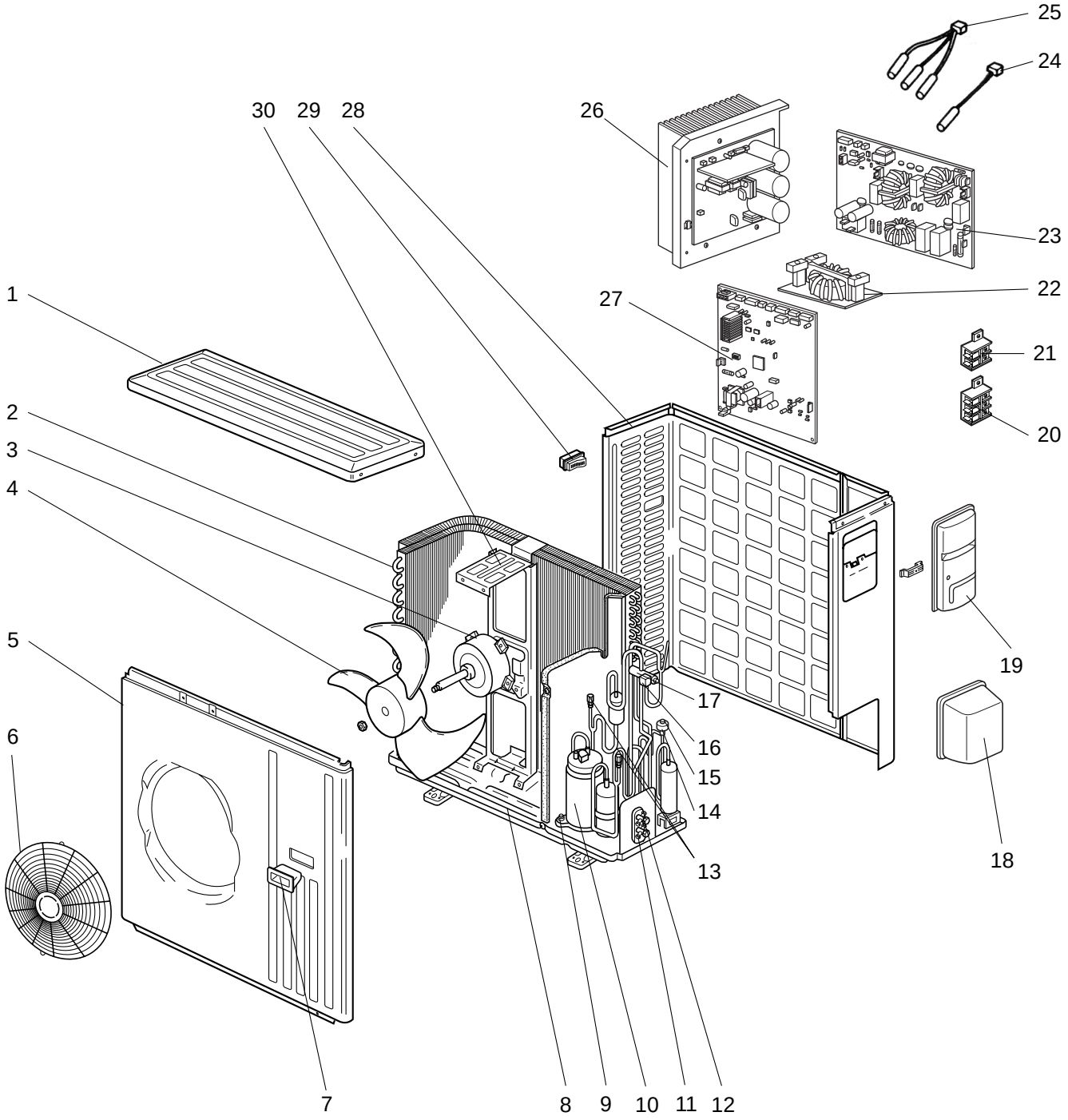
## 2. OUTDOOR UNIT ELECTRICAL PARTS

Part numbers that are circled are not shown in the illustration.

| No. | RoHS | Part No. | Part Name | Symbol in Wiring Diagram | Q'ty/unit | | | | | | | | | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MUZ-A | | | | | | | | MUY-A | | |
| | | | | | 09NA | | 12NA | | 15NA | | 17NA | | 15NA | 17NA | |
| | | | | | | -U1 | | -U1 | | -U1 | | -U1 | | | |
| 1 | G | E12 838 337 | REACTOR | L61 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| 2 | G | E12 A54 444 | POWER P.C. BOARD | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| 3 | G | E12 A54 490 | R.V. COIL | 21S4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| 4 | G | E12 927 306 | THERMISTOR SET | RT61,RT62 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | DEFROST, DISCHARGE |
| 5 | G | E12 927 308 | AMBIENT TEMPERATURE THERMISTOR | RT65 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| 6 | G | E12 A54 374 | TERMINAL BLOCK | TB1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2P |
| 7 | G | E12 A55 374 | TERMINAL BLOCK | TB2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 3P |
| 8 | G | E12 A54 451 | INVERTER P.C. BOARD | | 1 | | | | | | | | | | Including heat sink and RT64 |
| | G | E12 A55 451 | INVERTER P.C. BOARD | | | | 1 | | | | | | | | |
| | G | E12 A56 451 | INVERTER P.C. BOARD | | | | | | 1 | | | | 1 | | |
| | G | E12 A57 451 | INVERTER P.C. BOARD | | | | | | | | 1 | | | 1 | |
| | G | E12 B09 451 | INVERTER P.C. BOARD | | | 1 | | | | | | | | | |
| | G | E12 B10 451 | INVERTER P.C. BOARD | | | | | 1 | | | | | | | |
| | G | E12 B11 451 | INVERTER P.C. BOARD | | | | | | | 1 | | | | | |
| | G | E12 B12 451 | INVERTER P.C. BOARD | | | | | | | | | 1 | | | |

## MUZ-A24NA MUY-A24NA

## 3. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS



## MUY-A24NA MUY-A24NA
## 3. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS

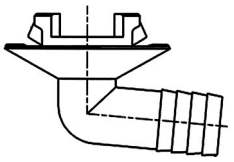
Part numbers that are circled are not shown in the illustration.

| No. | RoHS | Part No. | Part Name | Symbol in Wiring Diagram | Q'ty/unit | | | Remarks |
|---|---|---|---|---|---|---|---|---|
| | | | | | MUZ-A24NA | | MUY-A24NA | |
| | | | | | | -U1 | | |
| 1 | G | E12 819 297 | TOP PANEL | | 1 | 1 | 1 | |
| 2 | G | E12 A53 630 | OUTDOOR HEAT EXCHANGER | | | | 1 | |
| | G | E12 A58 630 | OUTDOOR HEAT EXCHANGER | | 1 | 1 | | |
| 3 | G | E12 A58 301 | OUTDOOR FAN MOTOR | MF | 1 | 1 | 1 | RC0J60-□□ |
| 4 | G | E12 851 501 | PROPELLER | | 1 | 1 | 1 | |
| 5 | G | E12 819 232 | CABINET | | 1 | 1 | 1 | |
| 6 | G | E12 819 521 | FAN GUARD | | 1 | 1 | 1 | |
| 7 | G | E12 819 009 | HANDLE | | 1 | 1 | 1 | |
| 8 | G | E12 851 290 | BASE | | 1 | 1 | 1 | |
| 9 | G | E12 065 506 | COMPRESSOR RUBBER SET | | 3 | 3 | 3 | 3RUBBERS/SET |
| 10 | G | E12 A56 900 | COMPRESSOR | MC | 1 | 1 | 1 | SNB130FPDH |
| 11 | G | E12 A58 661 | STOP VALVE(GAS) | | 1 | 1 | 1 | $\phi$5/8 |
| 12 | G | E12 821 662 | STOP VALVE(LIQUID) | | 1 | 1 | 1 | $\phi$1/4 |
| 13 | G | E12 A49 641 | SERVICE PORT | | 2 | 2 | 2 | 1PC/SET |
| 14 | G | E12 851 493 | EXPANSION VALVE COIL | LEV | 1 | 1 | 1 | |
| 15 | G | E12 851 640 | EXPANSION VALVE | | 1 | 1 | 1 | |
| 16 | G | E12 A58 490 | R.V. COIL | 21S4 | 1 | 1 | | |
| 17 | G | E12 A56 961 | 4-WAY VALVE | | 1 | 1 | 1 | |
| 18 | G | E12 819 650 | VALVE COVER | | 1 | 1 | 1 | |
| 19 | G | E12 819 245 | SERVICE PANEL | | 1 | 1 | 1 | |
| 20 | G | E12 935 374 | TERMINAL BLOCK | TB2 | 1 | 1 | 1 | 3P |
| 21 | G | E12 A53 374 | TERMINAL BLOCK | TB1 | 1 | 1 | 1 | 2P |
| 22 | G | E12 851 337 | REACTOR | L | 1 | 1 | 1 | |
| 23 | G | E12 A58 444 | NOISE FILTER P.C. BOARD | | 1 | 1 | | |
| | G | E12 A53 444 | NOISE FILTER P.C. BOARD | | | | 1 | |
| 24 | G | E12 935 309 | AMBIENT TEMPERATURE THERMISTOR | RT65 | 1 | 1 | 1 | |
| 25 | G | E12 851 308 | THERMISTOR SET | RT61,RT62,RT68 | 1 | 1 | | DEFROST, DISCHARGE OUTDOOR HEAT EXCHANGER |
| | G | E12 A53 308 | THERMISTOR SET | RT62,RT68 | | | 1 | DISCHARGE OUTDOOR HEAT EXCHANGER |
| 26 | G | E12 A58 440 | POWER BOARD | | 1 | 1 | 1 | Including heat sink and RT64 |
| 27 | G | E12 A58 450 | OUTDOOR ELECTRONIC CONTROL P.C. BOARD | | 1 | | | |
| | G | E12 A53 450 | OUTDOOR ELECTRONIC CONTROL P.C. BOARD | | | | 1 | |
| | G | E12 B13 450 | OUTDOOR ELECTRONIC CONTROL P.C. BOARD | | | 1 | | |
| 28 | G | E12 A58 233 | BACK PANEL(OUT) | | 1 | 1 | 1 | |
| 29 | G | E12 817 009 | HANDLE | | 1 | 1 | 1 | |
| 30 | G | E12 851 515 | MOTOR SUPPORT | | 1 | 1 | 1 | |
| ㉛ | G | E12 851 936 | CAPILLARY TUBE(TAPER PIPE) | | 1 | 1 | 1 | O.D. 0.142 × I.D. 0.094 × 1-31/32 |

# 13 OPTIONAL PARTS

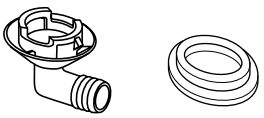
## 13-1. DRAIN SOCKET

| Model | Parts No. |
|---|---|
| MUZ-A09/12/15/17NA<br>MUY-A15/17NA | MAC-851DS |



## 13-2. DRAIN SOCKET ASSEMBLY

| Model | Parts No. |
|---|---|
| MUZ-A24NA<br>MUY-A24NA | MAC-811DS |



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