

# OUTDOOR UNIT

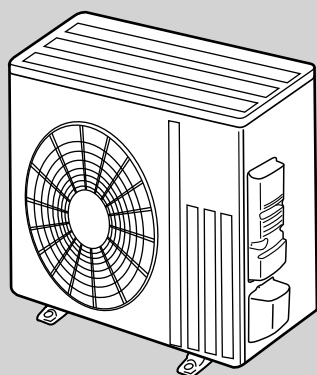
# SERVICE MANUAL


**No. OBH733  
REVISED EDITION-D**

## Models

**MUZ-GL09NA - **U1** MUZ-GL09NAH - **U1** MUY-GL09NA - **U1****  
**MUZ-GL09NA - **U8** MUZ-GL09NAH - **U8****  
**MUZ-GL12NA - **U1** MUZ-GL12NAH - **U1** MUY-GL12NA - **U1****  
**MUZ-GL15NA - **U1** MUZ-GL15NAH - **U1** MUY-GL15NA - **U1****  
**MUZ-GL18NA - **U1** MUZ-GL18NAH - **U1** MUY-GL18NA - **U1****  
**MUZ-GL24NA - **U1** MUZ-GL24NAH - **U1** MUY-GL24NA - **U1****

Indoor unit service manual  
MSZ-GL•NA, MSY-GL•NA Series (OBH732)



**MUZ-GL18/24NA**  
**MUZ-GL18/24NAH**  
**MUY-GL18/24NA**

## CONTENTS

|                                     |    |
|-------------------------------------|----|
| 1. TECHNICAL CHANGES .....          | 2  |
| 2. PART NAMES AND FUNCTIONS.....    | 3  |
| 3. SPECIFICATION.....               | 4  |
| 4. OUTLINES AND DIMENSIONS .....    | 7  |
| 5. WIRING DIAGRAM.....              | 9  |
| 6. REFRIGERANT SYSTEM DIAGRAM ..... | 21 |
| 7. DATA.....                        | 25 |
| 8. ACTUATOR CONTROL.....            | 39 |
| 9. SERVICE FUNCTIONS .....          | 40 |
| 10. TROUBLESHOOTING.....            | 41 |
| 11. DISASSEMBLY INSTRUCTIONS.....   | 64 |

**PARTS CATALOG (OBB733)**
**NOTE:**

RoHS compliant products have &lt;G&gt; mark on the spec name plate.

## Use the specified refrigerant only

### Never use any refrigerant other than that specified.

Doing so may cause a burst, an explosion, or fire when the unit is being used, serviced, or disposed of.

Correct refrigerant is specified in the manuals and on the spec labels provided with our products.

We will not be held responsible for mechanical failure, system malfunction, unit breakdown or accidents caused by failure to follow the instructions.

### Revision A:

- MUZ-GL12/15NA-[U1], MUZ-GL12/15NAH-[U1] and MUY-GL09/12/15NA-[U1] have been added.

### Revision B:

- MUZ-GL09NA-[U8] and MUZ-GL09NAH-[U8] have been added.

### Revision C:

- MUZ-GL09NA-[U1] and MUZ-GL09NAH-[U1] have been added.

### Revision D:

- MUZ-GL24NAH-[U1] has been added.

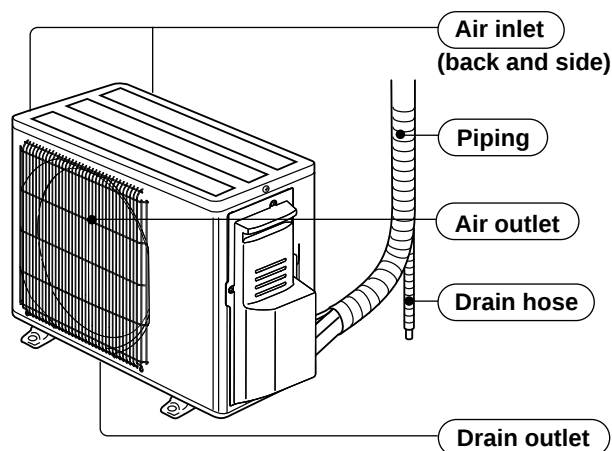
## 1

## TECHNICAL CHANGES

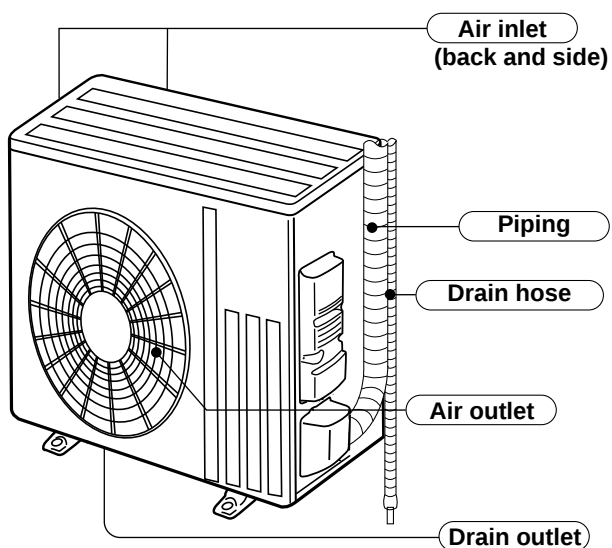
|                   |                    |                   |
|-------------------|--------------------|-------------------|
| MUZ-GL09NA - [U1] | MUZ-GL09NAH - [U1] | MUY-GL09NA - [U1] |
| MUZ-GL09NA - [U8] | MUZ-GL09NAH - [U8] |                   |
| MUZ-GL12NA - [U1] | MUZ-GL12NAH - [U1] | MUY-GL12NA - [U1] |
| MUZ-GL15NA - [U1] | MUZ-GL15NAH - [U1] | MUY-GL15NA - [U1] |
| MUZ-GL18NA - [U1] | MUZ-GL18NAH - [U1] | MUY-GL18NA - [U1] |
| MUZ-GL24NA - [U1] | MUZ-GL24NAH - [U1] | MUY-GL24NA - [U1] |

1. New model

MUZ-GL09NA MUZ-GL09NAH MUY-GL09NA  
MUZ-GL12NA MUZ-GL12NAH MUY-GL12NA  
MUZ-GL15NA MUZ-GL15NAH MUY-GL15NA



MUZ-GL18NA MUZ-GL18NAH MUY-GL18NA  
MUZ-GL24NA MUZ-GL24NAH MUY-GL24NA



| Outdoor unit model                             |                         |                    | MUZ-<br>GL09NA- <small>U1</small><br>MUZ-<br>GL09NAH- <small>U1</small> | MUZ-<br>GL09NA- <small>U8</small><br>MUZ-<br>GL09NAH- <small>U8</small> | MUY-<br>GL09NA     | MUZ-<br>GL12NA<br>MUZ-<br>GL12NAH | MUY-<br>GL12NA |
|------------------------------------------------|-------------------------|--------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------|--------------------|-----------------------------------|----------------|
| Capacity<br>Rated (Minimum~Maximum)            | Cooling ※1              | Btu/h              | 9,000 (3,600 - 12,200)                                                  |                                                                         |                    | 12,000 (1,500 - 13,600)           |                |
|                                                | Heating 47 ※1 (MUZ)     | Btu/h              | 10,900<br>(4,500 - 15,900)                                              | 10,900<br>(4,500 - 14,100)                                              | —                  | 14,400<br>(2,000 - 18,100)        | —              |
| Capacity<br>Rated (Maximum)                    | Heating 17 ※2 (MUZ)     | Btu/h              | 6,700<br>(10,200)                                                       | 7,000<br>(9,400)                                                        | —                  | 9,200<br>(12,000)                 | —              |
| Power consumption<br>Rated (Minimum~Maximum)   | Cooling ※1              | W                  | 585 (240 - 1,050)                                                       |                                                                         |                    | 920 (100 - 1,300)                 |                |
|                                                | Heating 47 ※1 (MUZ)     | W                  | 720<br>(230 - 1,250)                                                    | 720<br>(230 - 1,070)                                                    | —                  | 1,100<br>(110 - 1,620)            | —              |
| Power consumption<br>Rated (Maximum)           | Heating 17 ※2 (MUZ)     | W                  | 630<br>(1,060)                                                          | 620<br>(790)                                                            | —                  | 870<br>(1,240)                    | —              |
| EER ※1 [SEER] ※3                               | Cooling                 |                    | 15.4 [24.6]                                                             |                                                                         |                    | 13.0 [23.1]                       |                |
| HSPF IV ※4                                     | Heating (MUZ)           |                    | NA: 12.8                                                                |                                                                         |                    | NA: 12.5                          | —              |
|                                                |                         |                    | NAH: 11.8                                                               |                                                                         |                    | NAH: 11.5                         | —              |
| COP                                            | Heating ※1 (MUZ)        |                    | 4.44                                                                    |                                                                         |                    | 3.84                              | —              |
| Power factor                                   | Cooling (208/230)       | %                  | 86/86                                                                   | 92/92                                                                   | 87/87              | 95/95                             |                |
|                                                | Heating (MUZ) (208/230) | %                  | 90/90                                                                   | 95/95                                                                   | —                  | 96/96                             |                |
| Power supply                                   | V , phase , Hz          |                    | 208/230, 1 , 60                                                         |                                                                         |                    |                                   |                |
| Max. fuse size (time delay)                    |                         | A                  | 15                                                                      |                                                                         |                    |                                   |                |
| Min. circuit ampacity                          |                         | A                  | 9                                                                       |                                                                         | 7                  | 9                                 | 7              |
| Fan motor                                      | F.L.A                   | A                  | 0.50                                                                    |                                                                         |                    |                                   |                |
| Compressor                                     | Model                   |                    | KNB073FRVMC                                                             | SNB092FQAMT                                                             | KNB073FRVMC        | SNB092FQAMT                       |                |
|                                                | R.L.A                   | A                  | 6.2                                                                     |                                                                         | 4.9                | 6.6                               | 4.9            |
|                                                | L.R.A                   | A                  | 7.7                                                                     |                                                                         | 6.1                | 8.2                               | 6.1            |
|                                                | Refrigeration oil       | fl oz. (L) (Model) | 9.1 (0.27)/(FV50S)                                                      | 11.8 (0.35)/(FV50S)                                                     | 9.1 (0.27)/(FV50S) | 11.8 (0.35)/(FV50S)               |                |
| Refrigerant control                            |                         |                    | Linear expansion valve                                                  |                                                                         |                    |                                   |                |
| Sound level ※1                                 | Cooling                 | dB(A)              | 48                                                                      |                                                                         |                    | 49                                | 49             |
|                                                | Heating (MUZ)           | dB(A)              | 50                                                                      |                                                                         | —                  | 51                                | —              |
| Airflow<br>High - Med. - Low                   | Cooling                 | CFM                | 1,102 - 639                                                             |                                                                         |                    |                                   |                |
|                                                | Heating (MUZ)           | CFM                | 1,186 - 1,116 - 1,045                                                   |                                                                         | —                  | 1,186 - 1,116 - 1,045             | —              |
| Fan speed<br>High - Med. - Low                 | Cooling                 | rpm                | 810 - 490                                                               |                                                                         |                    |                                   |                |
|                                                | Heating (MUZ)           | rpm                | 870 - 820 - 770                                                         |                                                                         | —                  | 870 - 820 - 770                   | —              |
| Defrost method                                 |                         |                    | Reverse cycle                                                           |                                                                         |                    |                                   |                |
| Dimensions                                     | W                       | in.                | 31-1/2                                                                  |                                                                         |                    |                                   |                |
|                                                | D                       | in.                | 11-1/4                                                                  |                                                                         |                    |                                   |                |
|                                                | H                       | in.                | 21-5/8                                                                  |                                                                         |                    |                                   |                |
| Weight                                         |                         | lb.                | 81                                                                      |                                                                         |                    |                                   |                |
| External finish                                |                         |                    | Munsell 3Y 7.8/1.1                                                      |                                                                         |                    |                                   |                |
| Remote controller                              |                         |                    | Wireless type                                                           |                                                                         |                    |                                   |                |
| Control voltage (by built-in transformer)      |                         | VDC                | 12 - 24                                                                 |                                                                         |                    |                                   |                |
| Refrigerant piping                             |                         |                    | Not supplied                                                            |                                                                         |                    |                                   |                |
| Refrigerant pipe size<br>(Min. wall thickness) | Liquid                  | in.                | 1/4 (0.0315)                                                            |                                                                         |                    |                                   |                |
|                                                | Gas                     | in.                | 3/8 (0.0315)                                                            |                                                                         |                    |                                   |                |
| Connection method                              | Indoor                  |                    | Flared                                                                  |                                                                         |                    |                                   |                |
|                                                | Outdoor                 |                    | Flared                                                                  |                                                                         |                    |                                   |                |
| Between the indoor<br>& outdoor units          | Height difference       | ft.                | 40                                                                      |                                                                         |                    |                                   |                |
|                                                | Piping length           | ft.                | 65                                                                      |                                                                         |                    |                                   |                |
| Refrigerant charge (R410A)                     |                         |                    | 2 lb. 5 oz.                                                             |                                                                         | 2 lb. 9 oz.        |                                   |                |

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

\*1: Rating conditions (Cooling) — Indoor: 80°FDB, 67°FWB, Outdoor: 95°FDB, (75°FWB)

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

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

\*3: Test condition (Refer to page 6.)

\*4: Test condition (Refer to page 6.)

| Outdoor unit model                             |                         |                    | MUZ-GL15NA<br>MUZ-GL15NAH  | MUY-GL15NA | MUZ-GL18NA<br>MUZ-GL18NAH  | MUY-GL18NA          | MUZ-GL24NA<br>MUZ-GL24NAH  | MUY-GL24NA |
|------------------------------------------------|-------------------------|--------------------|----------------------------|------------|----------------------------|---------------------|----------------------------|------------|
| Capacity<br>Rated (Minimum~Maximum)            | Cooling ※1              | Btu/h              | 14,000 (3,100 - 18,200)    |            | 18,000 (5,800 ~ 22,000)    |                     | 22,500 (8,200 ~ 31,400)    |            |
|                                                | Heating 47 ※1 (MUZ)     | Btu/h              | 18,000<br>(4,800 - 20,900) | -          | 21,600<br>(5,400 ~ 25,000) | -                   | 27,600<br>(7,500 ~ 36,900) | -          |
| Capacity<br>Rated (Maximum)                    | Heating 17 ※2 (MUZ)     | Btu/h              | 12,200<br>(16,400)         | -          | 13,800 (18,200)            | -                   | 16,000 (24,600)            | -          |
| Power consumption<br>Rated (Minimum~Maximum)   | Cooling ※1              | W                  | 1,080 (210 - 2,000)        |            | 1,295 (285 ~ 2,105)        |                     | 1,742 (560 ~ 3,522)        |            |
|                                                | Heating 47 ※1 (MUZ)     | W                  | 1,600<br>(2,010)           | -          | 1,635 (275 ~ 2,455)        |                     | 2,282 (508 ~ 3,592)        |            |
| Power consumption<br>Rated (Maximum)           | Heating 17 ※2 (MUZ)     | W                  | 1,190<br>(1,850)           | -          | 1,435<br>(2,105)           | -                   | 1,712<br>(3,232)           | -          |
| EER ※1 [SEER] ※3                               | Cooling                 |                    | 13.0 [21.6]                |            | 13.4 [20.5]                |                     | 12.5 [20.5]                |            |
| HSPF IV ※4                                     | Heating (MUZ)           |                    | NA: 11.7                   | -          | NA: 11.2                   | -                   | NA: 10.0                   | -          |
|                                                |                         |                    | NAH: 10.8                  | -          | NAH: 10.2                  | -                   | NAH: 10.0                  | -          |
| COP                                            | Heating ※1 (MUZ)        |                    | 3.30                       | -          | 3.77                       | -                   | 3.46                       | -          |
| Power factor                                   | Cooling (208/230)       | %                  | 97/97                      |            | 99/99                      |                     | 99/99                      |            |
|                                                | Heating (MUZ) (208/230) | %                  | 98/98                      |            | 99/99                      | -                   | 99/99                      | -          |
| Power supply                                   | V , phase , Hz          |                    | 208/230, 1 , 60            |            |                            |                     |                            |            |
| Max. fuse size (time delay)                    |                         | A                  | 15                         |            |                            |                     | 20                         |            |
| Min. circuit ampacity                          |                         | A                  | 10                         | 9          | 14                         |                     | 17.1                       |            |
| Fan motor                                      |                         | F.L.A              | 0.50                       |            | 0.93                       |                     | 0.93                       |            |
| Compressor                                     | Model                   |                    | SNB130FQBMT                |            | SNB130FQBMT                |                     | SNB172FQKMT                |            |
|                                                | R.L.A                   | A                  | 7.4                        | 6.8        | 10                         |                     | 12.9                       |            |
|                                                | L.R.A                   | A                  | 9.3                        | 8.5        | 12.5                       |                     | 16.1                       |            |
|                                                | Refrigeration oil       | fl oz. (L) (Model) | 11.8 (0.35)/(FV50S)        |            | 11.8 (0.35)/(FV50S)        | 11.8 (0.35)/(FV50S) | 13.5 (0.40)/(FV50S)        |            |
| Refrigerant control                            |                         |                    | Linear expansion valve     |            |                            |                     |                            |            |
| Sound level ※1                                 | Cooling                 | dB(A)              | 49                         | 49         | 54                         |                     | 55                         |            |
|                                                | Heating (MUZ)           | dB(A)              | 51                         | -          | 55                         | -                   | 55                         | -          |
| Airflow<br>High - Med. - Low                   | COOL                    | CFM                | 1,102-639                  |            | 1,742 - 922                |                     | 2,016 - 1,769 - 890        |            |
|                                                | HEAT                    | CFM                | 1,186 - 1,045 - 1,045      | -          | 1,691 - 1,691 - 1,372      | -                   | 1,701 - 1,701 - 1,341      | -          |
| Fan speed<br>High - Med. - Low                 | Cooling                 | rpm                | 810 - 490                  |            | 840 - 450                  |                     | 950 - 840 - 450            |            |
|                                                | Heating (MUZ)           | rpm                | 870 - 770 - 770            | -          | 810 - 810 - 650            | -                   | 810 - 810 - 650            | -          |
| Defrost method                                 |                         |                    | Reverse cycle              |            |                            |                     |                            |            |
| Dimensions                                     | W                       | in.                | 31-1/2                     |            | 33-1/16                    |                     |                            |            |
|                                                | D                       | in.                | 11-1/4                     |            | 13                         |                     |                            |            |
|                                                | H                       | in.                | 21-5/8                     |            | 34-5/8                     |                     |                            |            |
| Weight                                         |                         | lb.                | 81                         |            | 121                        |                     | 119                        |            |
| External finish                                |                         |                    | Munsell 3Y 7.8/1.1         |            |                            |                     |                            |            |
| Remote controller                              |                         |                    | Wireless type              |            |                            |                     |                            |            |
| Control voltage (by built-in transformer)      |                         | VDC                | 12 - 24                    |            |                            |                     |                            |            |
| Refrigerant piping                             |                         |                    | Not supplied               |            |                            |                     |                            |            |
| Refrigerant pipe size<br>(Min. wall thickness) | Liquid                  | in.                | 1/4 (0.0315)               |            |                            |                     | 3/8 (0.0315)               |            |
|                                                | Gas                     | in.                | 1/2 (0.0315)               |            |                            |                     | 5/8 (0.0315)               |            |
| Connection method                              | Indoor                  |                    | Flared                     |            |                            |                     |                            |            |
|                                                | Outdoor                 |                    | Flared                     |            |                            |                     |                            |            |
| Between the indoor<br>& outdoor units          | Height difference       | ft.                | 40                         |            |                            | 50                  |                            |            |
|                                                | Piping length           | ft.                | 65                         |            |                            | 100                 |                            |            |
| Refrigerant charge (R410A)                     |                         |                    | 2 lb. 9 oz.                |            | 3 lb. 9 oz.                |                     | 4 lb. 3 oz.                |            |

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

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

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

## Test condition

\*3,\*4

| ARI | Mode              | Test                                                           | Indoor air condition (°F) |          | Outdoor air condition (°F) |          |
|-----|-------------------|----------------------------------------------------------------|---------------------------|----------|----------------------------|----------|
|     |                   |                                                                | Dry bulb                  | Wet bulb | Dry bulb                   | Wet bulb |
|     | SEER<br>(Cooling) | "A-2" 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)     |
|     |                   | "F-1" Cooling Steady State at minimum compressor Speed         | 80                        | 67       | 67                         | (53.5)   |
|     |                   | "E-V" Cooling Steady State at Intermediate compressor Speed *5 | 80                        | 67       | 87                         | (69)     |
|     | HSPF<br>(Heating) | "H1-2" Heating Steady State at rated compressor Speed          | 70                        | 60       | 47                         | 43       |
|     |                   | "H3-2" Heating at rated compressor Speed                       | 70                        | 60       | 17                         | 15       |
|     |                   | "H0-1" Heating Steady State at minimum compressor Speed        | 70                        | 60       | 62                         | 56.5     |
|     |                   | "H1-1" Heating Steady State at minimum compressor Speed        | 70                        | 60       | 47                         | 43       |
|     |                   | "H2-V" Heating at Intermediate compressor Speed *5             | 70                        | 60       | 35                         | 33       |

### NOTE:

\*5: At Intermediate compressor Speed

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

## OPERATING RANGE

### (1) POWER SUPPLY

|              | Rated voltage                 | Guaranteed voltage (V)                 |
|--------------|-------------------------------|----------------------------------------|
| Outdoor unit | 208/230 V<br>1 phase<br>60 Hz | <div> Min. 187 208 230 Max. 253 </div> |

### (2) OPERATION

| Mode    | Condition            | Intake air temperature (°F) |    |         |    |
|---------|----------------------|-----------------------------|----|---------|----|
|         |                      | Indoor                      |    | Outdoor |    |
|         |                      | DB                          | WB | DB      | WB |
| Cooling | Standard temperature | 80                          | 67 | 95      | —  |
|         | Maximum temperature  | 90                          | 73 | 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 | -4      | -5 |

# 4

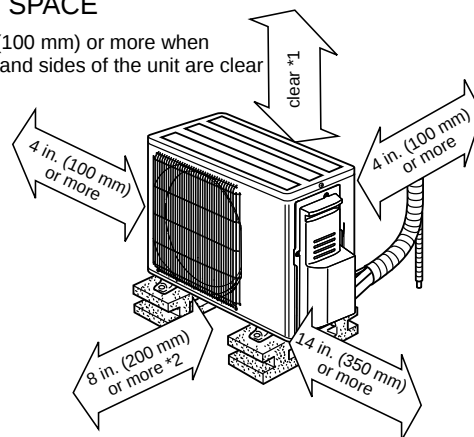
## OUTLINES AND DIMENSIONS

Unit: inch

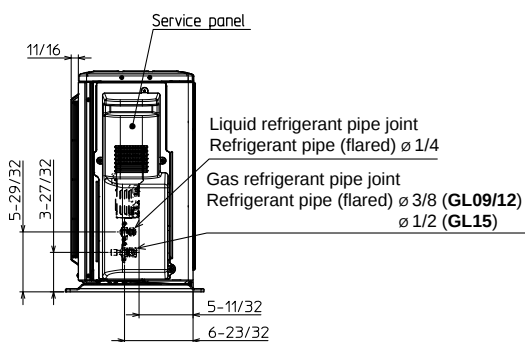
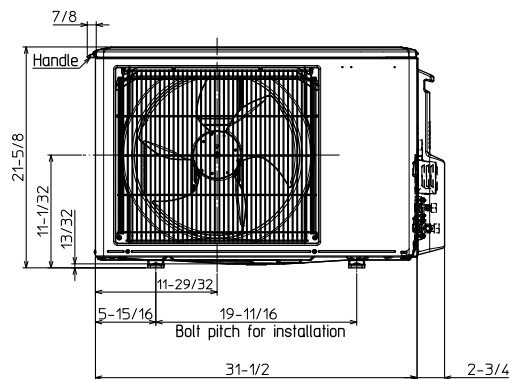
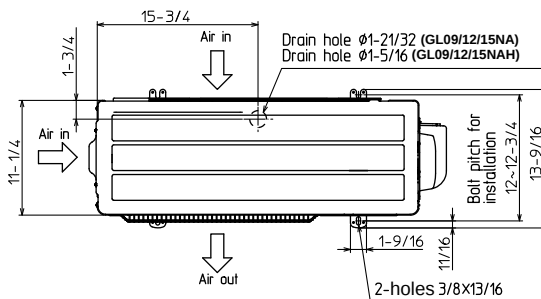
MUZ-GL09NA MUZ-GL09NAH MUY-GL09NA  
 MUZ-GL12NA MUZ-GL12NAH MUY-GL12NA  
 MUZ-GL15NA MUZ-GL15NAH MUY-GL15NA

### REQUIRED SPACE

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



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

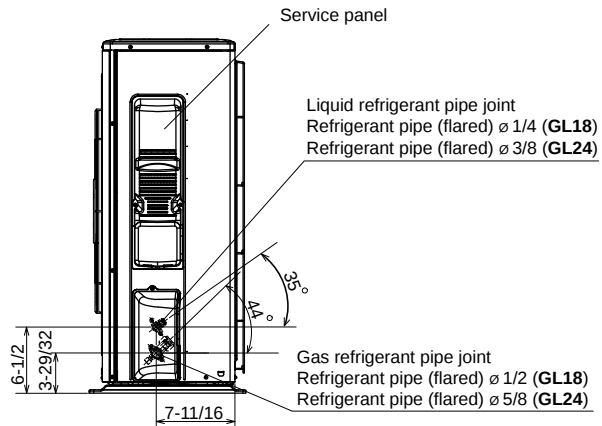
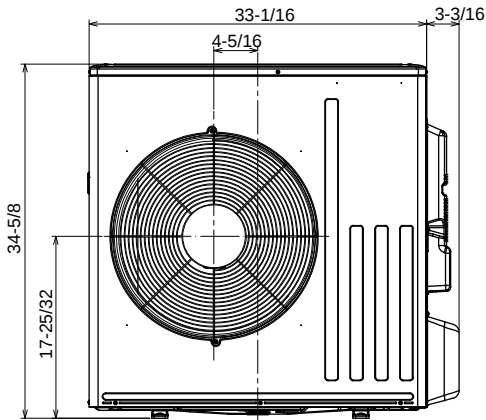
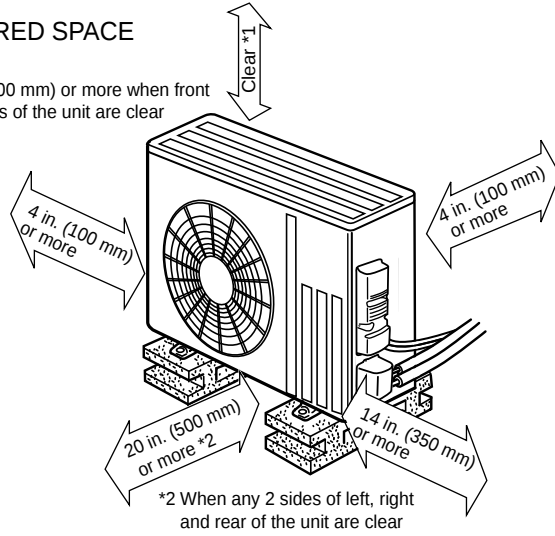
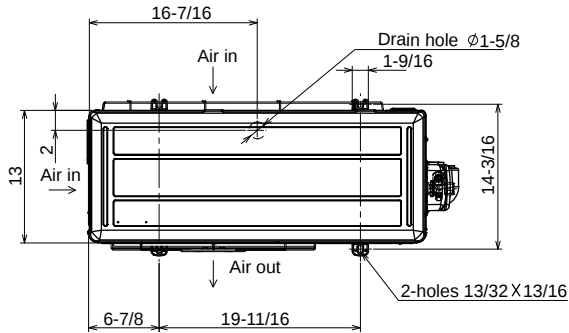


MUZ-GL18NA MUZ-GL18NAH MUY-GL18NA  
 MUZ-GL24NA MUZ-GL24NAH MUY-GL24NA

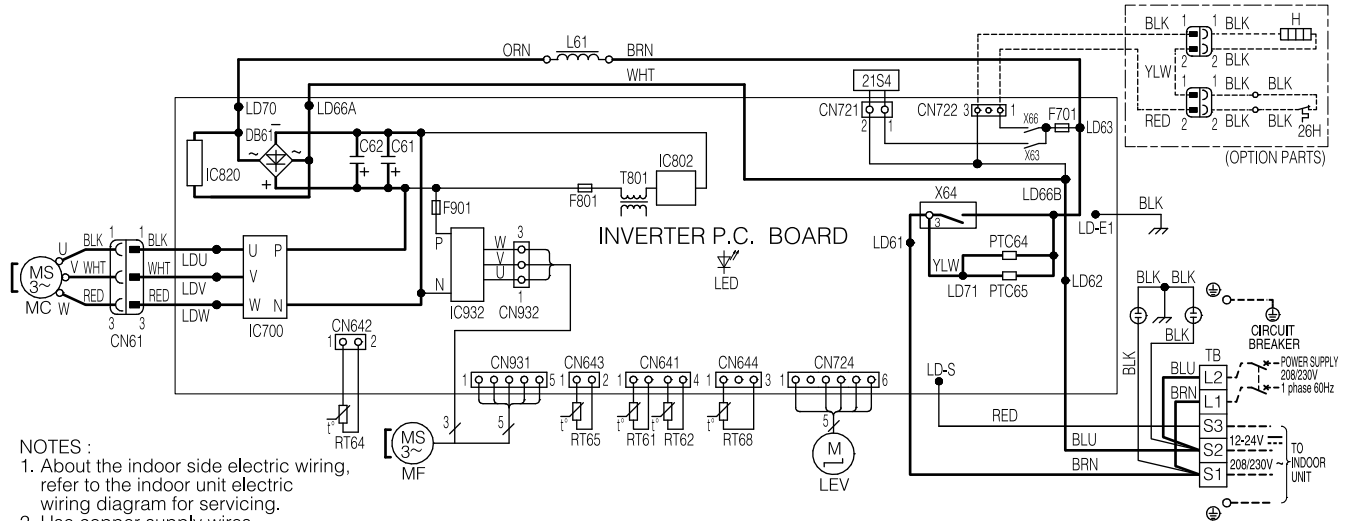
Unit: inch

# REQUIRED SPACE

\*1 20 in. (500 mm) or more when front and sides of the unit are clear

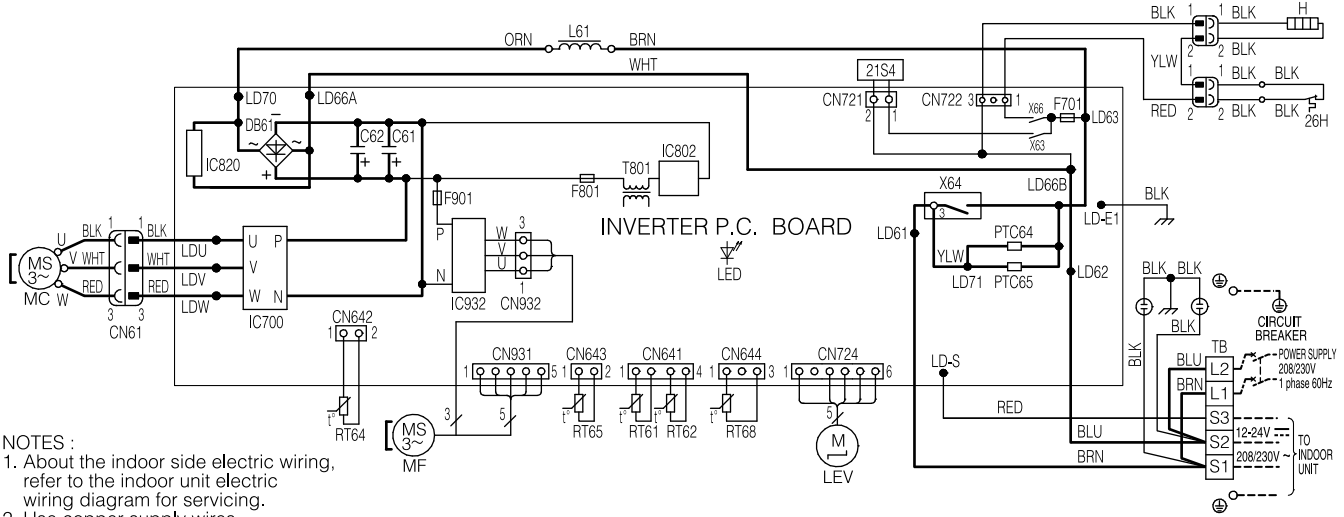


## MUZ-GL09NA MUZ-GL12NA



| SYMBOL              | NAME                         | SYMBOL       | NAME                       | SYMBOL        | NAME                                    |
|---------------------|------------------------------|--------------|----------------------------|---------------|-----------------------------------------|
| C61, C62            | SMOOTHING CAPACITOR          | L61          | REACTOR                    | RT68          | OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR |
| DB61                | DIODE MODULE                 | MC           | COMPRESSOR                 | TB            | TERMINAL BLOCK                          |
| F701, F801, F901    | FUSE (T3, 15AL250V)          | MF           | FAN MOTOR                  | T801          | TRANSFORMER                             |
| H                   | DEFROST HEATER(OPTION PARTS) | PTC64, PTC65 | CIRCUIT PROTECTION         | X63, X64, X66 | RELAY                                   |
| IC700, IC820, IC932 | POWER MODULE                 | RT61         | DEFROST THERMISTOR         | 21S4          | REVERSING VALVE COIL                    |
| IC802               | POWER DEVICE                 | RT62         | DISCHARGE TEMP. THERMISTOR | 26H           | HEATER PROTECTOR(OPTION PARTS)          |
| LED                 | LED                          | RT64         | FIN TEMP. THERMISTOR       |               |                                         |
| LEV                 | EXPANSION VALVE COIL         | RT65         | AMBIENT TEMP. THERMISTOR   |               |                                         |

## MUZ-GL09NAH MUZ-GL12NAH



### NOTES :

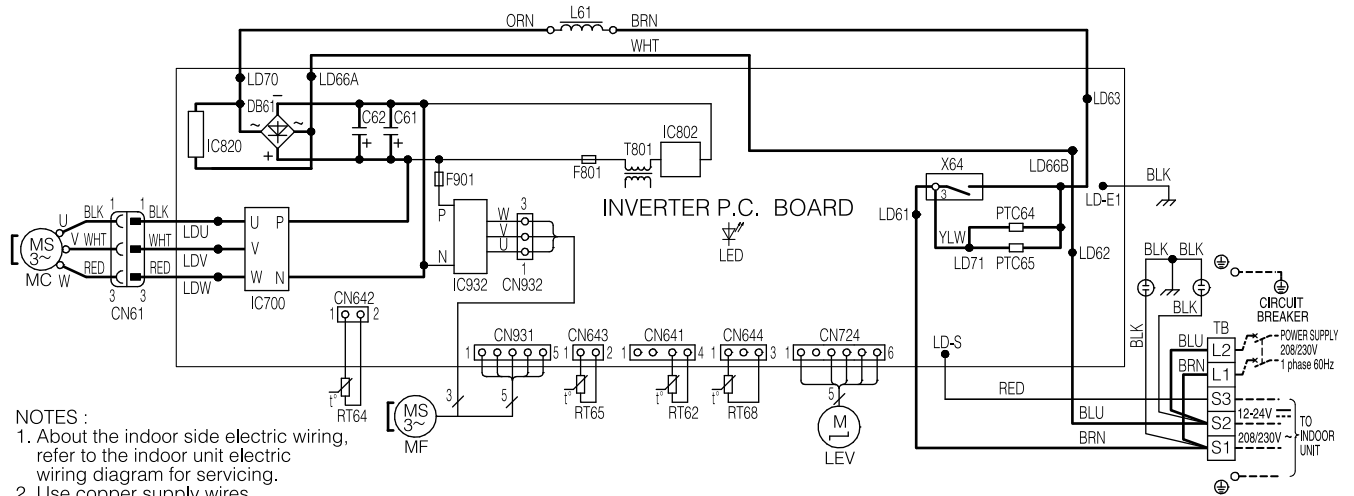
1. About the indoor side electric wiring, refer to the indoor unit electric wiring diagram for servicing.
2. Use copper supply wires.
3. Symbols indicate,   :Terminal block  
  :Connector

### REMARQUES :

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

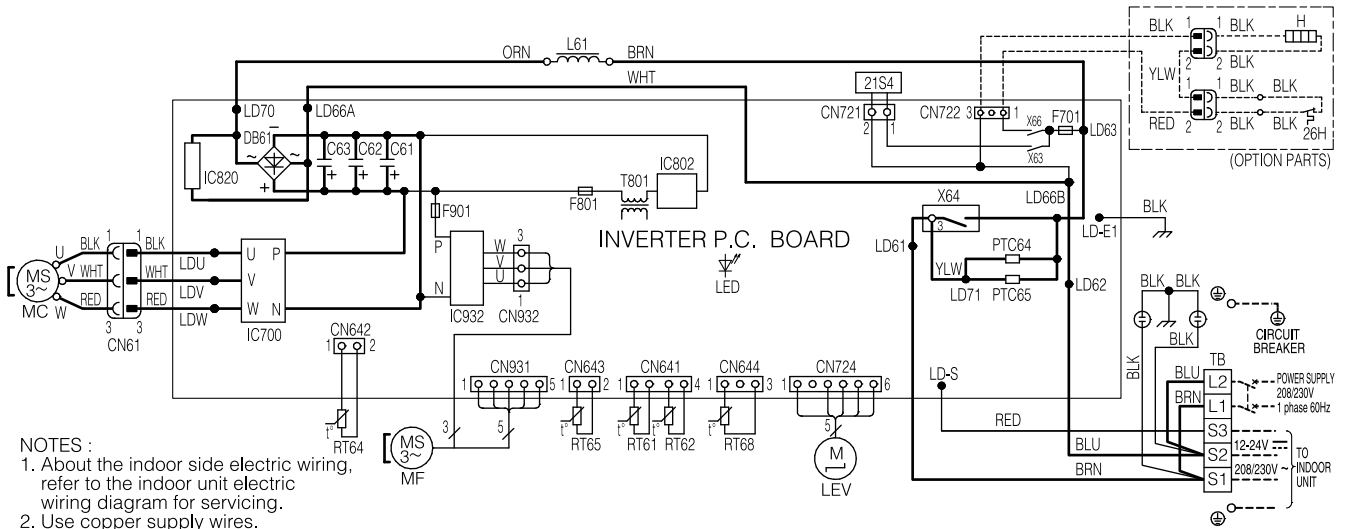
| SYMBOL            | NAME                 | SYMBOL       | NAME                       | SYMBOL        | NAME                                    |
|-------------------|----------------------|--------------|----------------------------|---------------|-----------------------------------------|
| C61,C62           | SMOOTHING CAPACITOR  | L61          | REACTOR                    | RT68          | OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR |
| DB61              | DIODE MODULE         | MC           | COMPRESSOR                 |               |                                         |
| F701,F801,F901    | FUSE (T3. 15AL250V)  | MF           | FAN MOTOR                  | TB            | TERMINAL BLOCK                          |
| H                 | DEFROST HEATER       | PTC64, PTC65 | CIRCUIT PROTECTION         | T801          | TRANSFORMER                             |
| IC700,IC820,IC932 | POWER MODULE         | RT61         | DEFROST THERMISTOR         | X63, X64, X66 | RELAY                                   |
| IC802             | POWER DEVICE         | RT62         | DISCHARGE TEMP. THERMISTOR | 21S4          | REVERSING VALVE COIL                    |
| LED               | LED                  | RT64         | FIN TEMP. THERMISTOR       | 26H           | HEATER PROTECTOR                        |
| LEV               | EXPANSION VALVE COIL | RT65         | AMBIENT TEMP. THERMISTOR   |               |                                         |

## MUY-GL09NA MUY-GL12NA



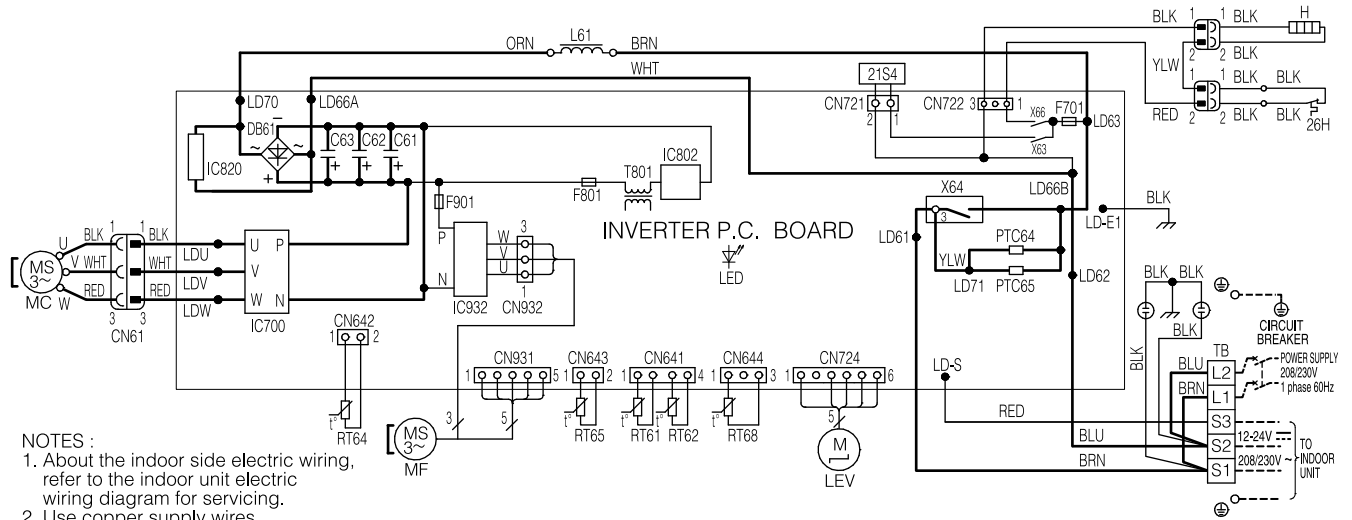
| SYMBOL            | NAME                 | SYMBOL       | NAME                       | SYMBOL | NAME                                    |
|-------------------|----------------------|--------------|----------------------------|--------|-----------------------------------------|
| C61,C62           | SMOOTHING CAPACITOR  | L61          | REACTOR                    | RT68   | OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR |
| DB61              | DIODE MODULE         | MC           | COMPRESSOR                 | TB     | TERMINAL BLOCK                          |
| F801,F901         | FUSE (T3. 15AL250V)  | MF           | FAN MOTOR                  | T801   | TRANSFORMER                             |
| IC700,IC820,IC932 | POWER MODULE         | PTC64, PTC65 | CIRCUIT PROTECTION         | X64    | RELAY                                   |
| IC802             | POWER DEVICE         | RT62         | DISCHARGE TEMP. THERMISTOR |        |                                         |
| LED               | LED                  | RT64         | FIN TEMP. THERMISTOR       |        |                                         |
| LEV               | EXPANSION VALVE COIL | RT65         | AMBIENT TEMP. THERMISTOR   |        |                                         |

## MUZ-GL15NA



| SYMBOL            | NAME                 | SYMBOL       | NAME                       | SYMBOL        | NAME                                    |
|-------------------|----------------------|--------------|----------------------------|---------------|-----------------------------------------|
| C61,C62,C63       | SMOOTHING CAPACITOR  | L61          | REACTOR                    | RT68          | OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR |
| DB61              | DIODE MODULE         | MC           | COMPRESSOR                 | TB            | TERMINAL BLOCK                          |
| F701,F801,F901    | FUSE (T3. 15AL250V)  | MF           | FAN MOTOR                  | T801          | TRANSFORMER                             |
| H                 | DEFROST HEATER       | PTC64, PTC65 | CIRCUIT PROTECTION         | X63, X64, X66 | RELAY                                   |
| IC700,IC820,IC932 | POWER MODULE         | RT61         | DEFROST THERMISTOR         | 21S4          | REVERSING VALVE COIL                    |
| IC802             | POWER DEVICE         | RT62         | DISCHARGE TEMP. THERMISTOR | 26H           | HEATER PROTECTOR                        |
| LED               | LED                  | RT64         | FIN TEMP. THERMISTOR       |               |                                         |
| LEV               | EXPANSION VALVE COIL | RT65         | AMBIENT TEMP. THERMISTOR   |               |                                         |

## MUZ-GL15NAH



### NOTES :

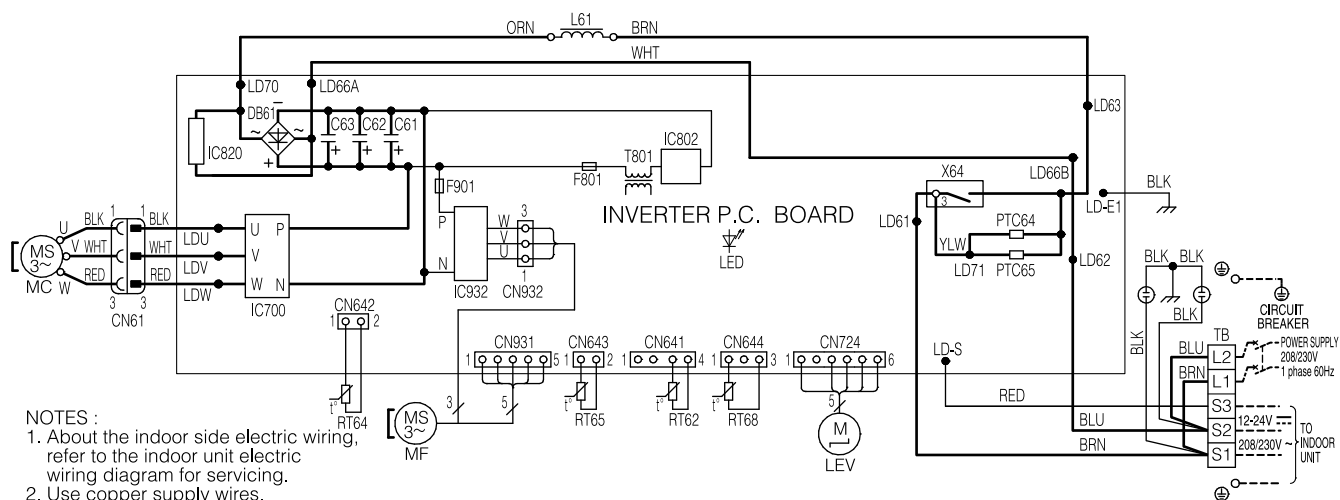
1. About the indoor side electric wiring, refer to the indoor unit electric wiring diagram for servicing.
2. Use copper supply wires.
3. Symbols indicate, :Terminal block  
 :Connector

### REMARQUES :

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

| SYMBOL            | NAME                 | SYMBOL       | NAME                       | SYMBOL        | NAME                                    |
|-------------------|----------------------|--------------|----------------------------|---------------|-----------------------------------------|
| C61,C62,C63       | SMOOTHING CAPACITOR  | L61          | REACTOR                    | RT68          | OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR |
| DB61              | DIODE MODULE         | MC           | COMPRESSOR                 |               |                                         |
| F701,F801,F901    | FUSE (T3. 15A/250V)  | MF           | FAN MOTOR                  | TB            | TERMINAL BLOCK                          |
| H                 | DEFROST HEATER       | PTC64, PTC65 | CIRCUIT PROTECTION         | T801          | TRANSFORMER                             |
| IC700,IC820,IC932 | POWER MODULE         | RT61         | DEFROST THERMISTOR         | X63, X64, X66 | RELAY                                   |
| IC802             | POWER DEVICE         | RT62         | DISCHARGE TEMP. THERMISTOR | 21S4          | REVERSING VALVE COIL                    |
| LED               | LED                  | RT64         | FIN TEMP. THERMISTOR       | 26H           | HEATER PROTECTOR                        |
| LEV               | EXPANSION VALVE COIL | RT65         | AMBIENT TEMP. THERMISTOR   |               |                                         |

**MUY-GL15NA**



NOTES :

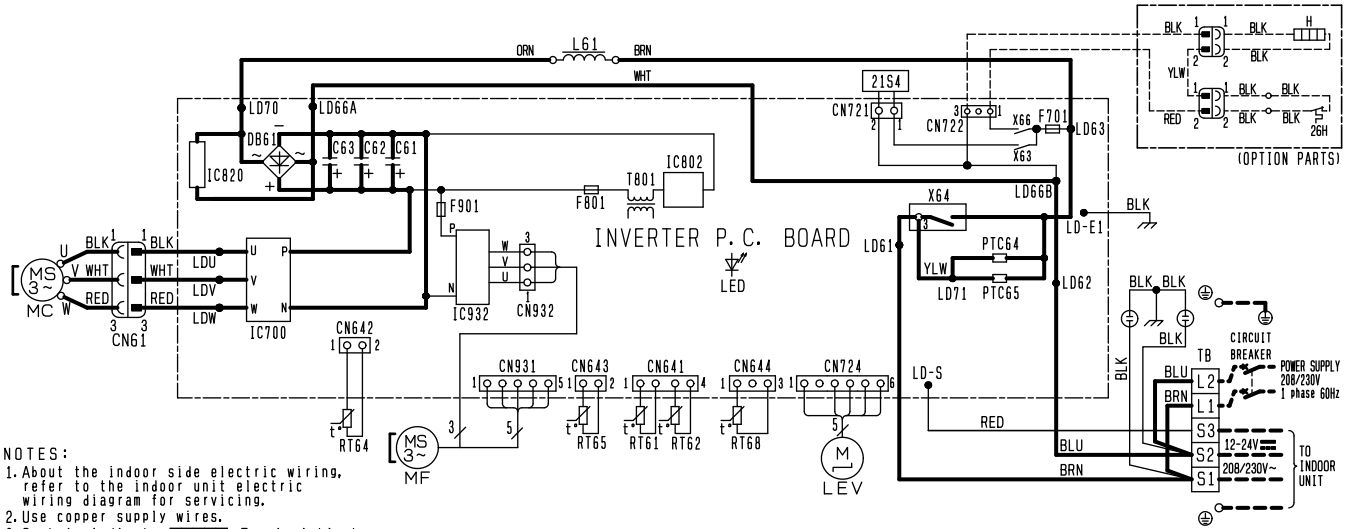
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2. Use copper supply wires.
3. Symbols indicate,  :Terminal block  
 :Connector

REMARQUES :

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

| SYMBOL            | NAME                 | SYMBOL       | NAME                       | SYMBOL | NAME                                       |
|-------------------|----------------------|--------------|----------------------------|--------|--------------------------------------------|
| C61,C62,C63       | SMOOTHING CAPACITOR  | L61          | REACTOR                    | RT68   | OUTDOOR HEAT EXCHANGER<br>TEMP. THERMISTOR |
| DB61              | DIODE MODULE         | MC           | COMPRESSOR                 |        |                                            |
| F801,F901         | FUSE (T3, 15AL250V)  | MF           | FAN MOTOR                  | TB     | TERMINAL BLOCK                             |
| IC700,IC820,IC932 | POWER MODULE         | PTC64, PTC65 | CIRCUIT PROTECTION         | T801   | TRANSFORMER                                |
| IC802             | POWER DEVICE         | RT62         | DISCHARGE TEMP. THERMISTOR | X64    | RELAY                                      |
| LED               | LED                  | RT64         | FIN TEMP. THERMISTOR       |        |                                            |
| LEV               | EXPANSION VALVE COIL | RT65         | AMBIENT TEMP. THERMISTOR   |        |                                            |

## MUZ-GL18NA

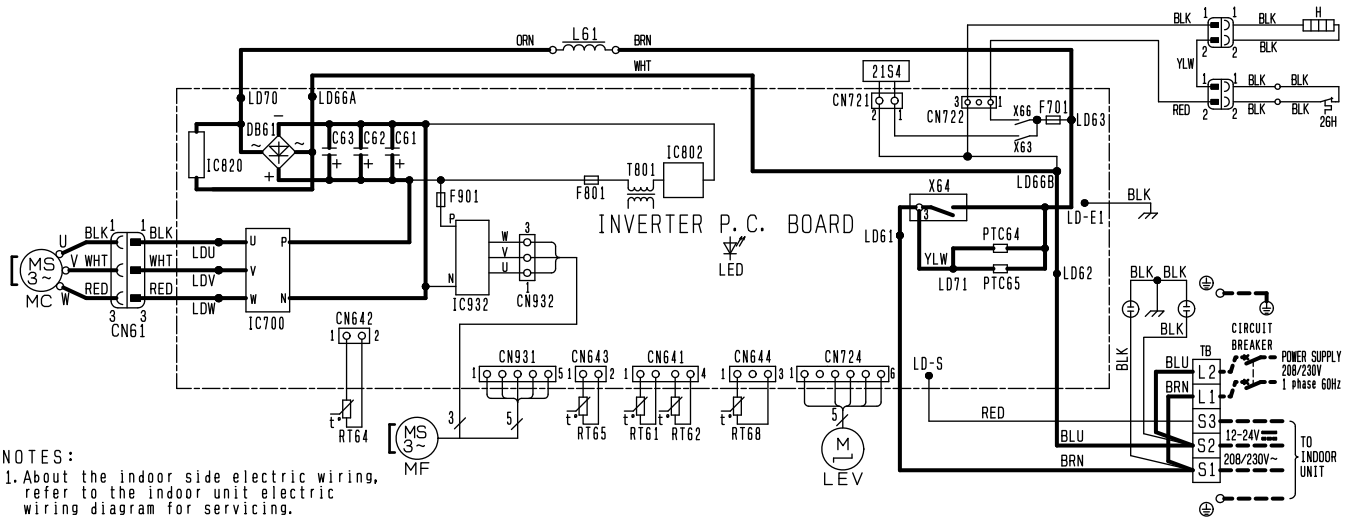


REMARQUES:

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

| SYMBOL              | NAME                          | SYMBOL       | NAME                       | SYMBOL        | NAME                                     |
|---------------------|-------------------------------|--------------|----------------------------|---------------|------------------------------------------|
| C61, C62, C63       | SMOOTHING CAPACITOR           | L61          | REACTOR                    | RT68          | OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR. |
| DB61                | DIODE MODULE                  | MC           | COMPRESSOR                 | TB            | TERMINAL BLOCK                           |
| F701, F801, F901    | FUSE (T3. 15A/250V)           | MF           | FAN MOTOR                  | T801          | TRANSFORMER                              |
| H                   | DEFROST HEATER (OPTION PARTS) | PTC64, PTC65 | CIRCUIT PROTECTION         | X63, X64, X66 | RELAY                                    |
| IC700, IC820, IC932 | POWER MODULE                  | RT61         | DEFROST THERMISTOR         | 21S4          | REVERSING VALVE COIL                     |
| IC802               | POWER DEVICE                  | RT62         | DISCHARGE TEMP. THERMISTOR | 26H           | HEATER PROTECTOR (OPTION PARTS)          |
| LED                 | LED                           | RT64         | FIN TEMP. THERMISTOR       |               |                                          |
| LEV                 | EXPANSION VALVE COIL          | RT65         | AMBIENT TEMP. THERMISTOR   |               |                                          |

## MUZ-GL18NAH



### NOTES:

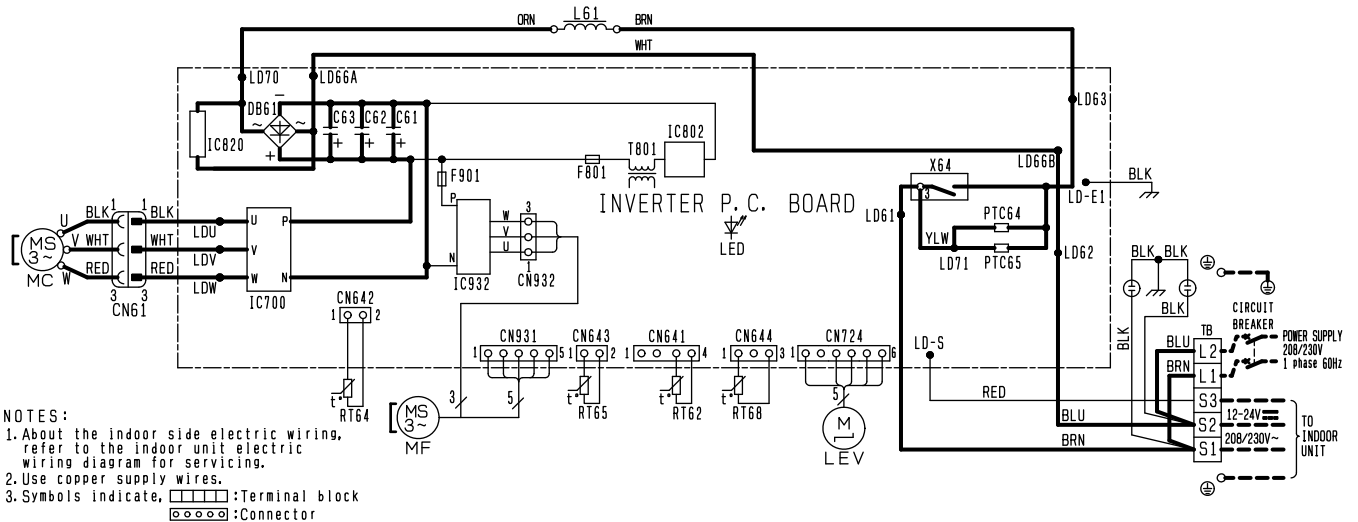
1. About the indoor side electric wiring, refer to the indoor unit electric wiring diagram for servicing.
2. Use copper supply wires.
3. Symbols indicate, □:Terminal block  
○:Connector

### REMARQUES:

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2. Utiliser des fils d'alimentation en cuivre.
3. Les symboles ont les significations suivantes, □:Borne  
○:Connecteur

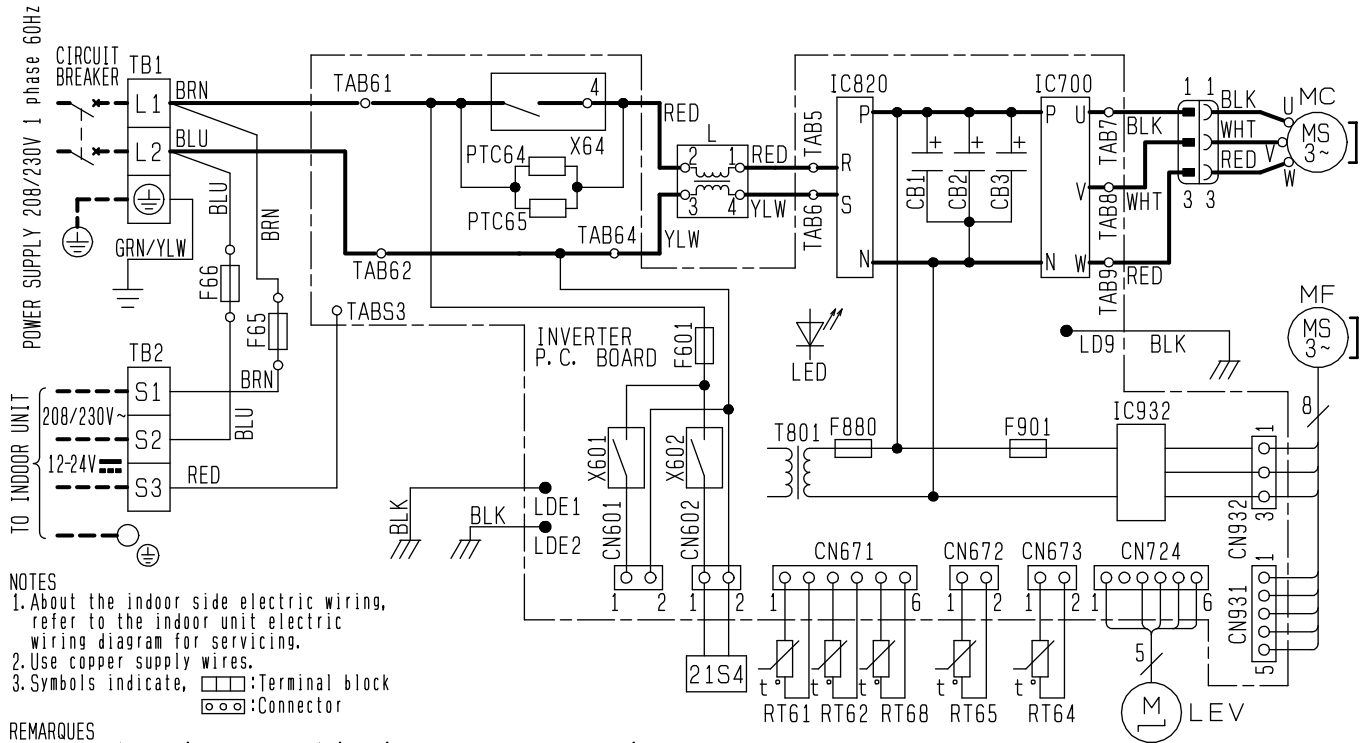
| SYMBOL              | NAME                 | SYMBOL       | NAME                       | SYMBOL        | NAME                                     |
|---------------------|----------------------|--------------|----------------------------|---------------|------------------------------------------|
| C61, C62, C63       | SMOOTHING CAPACITOR  | L61          | REACTOR                    | RT68          | OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR. |
| DB61                | DIODE MODULE         | MC           | COMPRESSOR                 | TB            | TERMINAL BLOCK                           |
| F701, F801, F901    | FUSE (T3, 15A/250V)  | MF           | FAN MOTOR                  | T801          | TRANSFORMER                              |
| H                   | DEFROST HEATER       | PTC64, PTC65 | CIRCUIT PROTECTION         | X63, X64, X66 | RELAY                                    |
| IC700, IC820, IC932 | POWER MODULE         | RT61         | DEFROST THERMISTOR         | 21S4          | REVERSING VALVE COIL                     |
| IC802               | POWER DEVICE         | RT62         | DISCHARGE TEMP. THERMISTOR | 26H           | HEATER PROTECTOR                         |
| LED                 | LED                  | RT64         | FIN TEMP. THERMISTOR       |               |                                          |
| LEV                 | EXPANSION VALVE COIL | RT65         | AMBIENT TEMP. THERMISTOR   |               |                                          |

## MUY-GL18NA



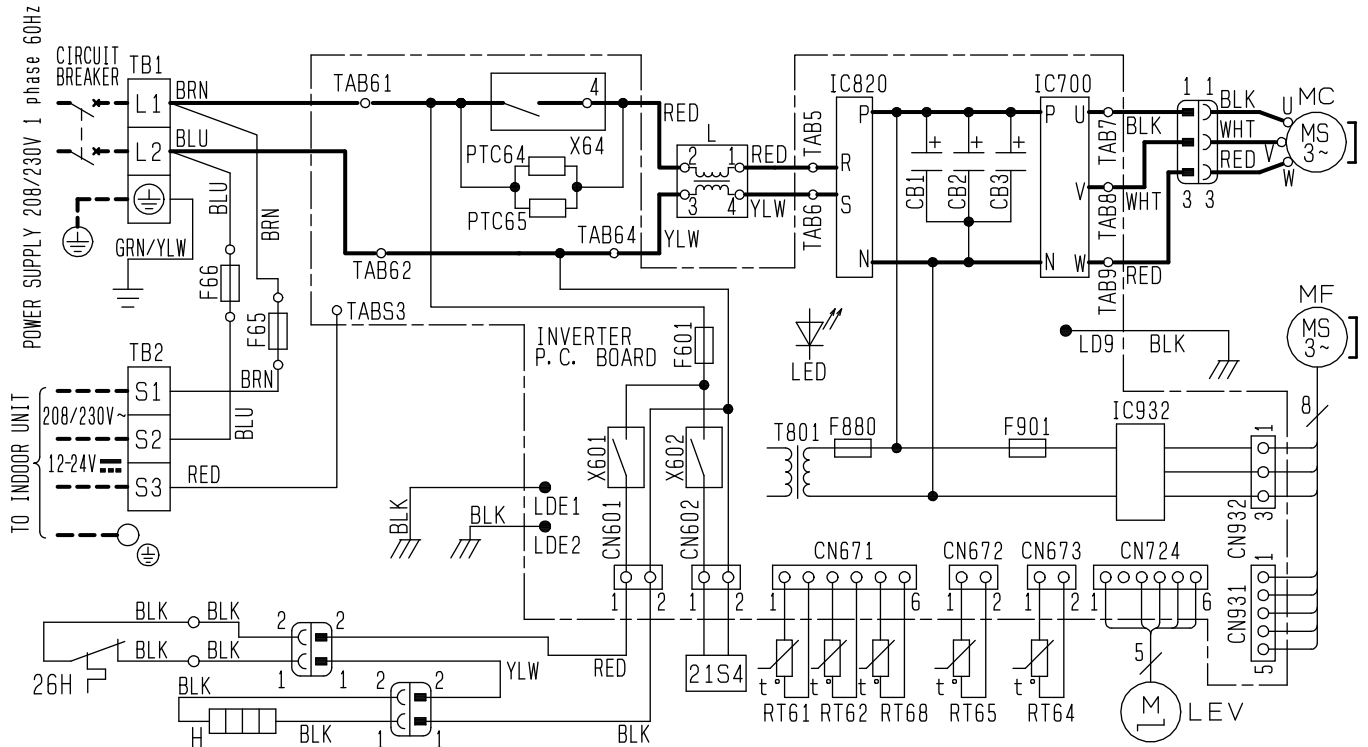
| SYMBOL              | NAME                 | SYMBOL       | NAME                       | SYMBOL | NAME                                     |
|---------------------|----------------------|--------------|----------------------------|--------|------------------------------------------|
| C61, C62, C63       | SMOOTHING CAPACITOR  | L61          | REACTOR                    | RT68   | OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR. |
| DB61                | DIODE MODULE         | MC           | COMPRESSOR                 |        |                                          |
| F801, F901          | FUSE (T3, 15A/250V)  | MF           | FAN MOTOR                  | TB     | TERMINAL BLOCK                           |
| IC700, IC820, IC932 | POWER MODULE         | PTC64, PTC65 | CIRCUIT PROTECTION         | T801   | TRANSFORMER                              |
| IC802               | POWER DEVICE         | RT62         | DISCHARGE TEMP. THERMISTOR | X64    | RELAY                                    |
| LED                 | LED                  | RT64         | FIN TEMP. THERMISTOR       |        |                                          |
| LEV                 | EXPANSION VALVE COIL | RT65         | AMBIENT TEMP. THERMISTOR   |        |                                          |

## MUZ-GL24NA



| SYMBOL   | NAME                | SYMBOL | NAME                       | SYMBOL   | NAME                                    |
|----------|---------------------|--------|----------------------------|----------|-----------------------------------------|
| CB1~3    | SMOOTHING CAPACITOR | LED    | LED                        | RT65     | AMBIENT TEMP. THERMISTOR                |
| F65, F66 | FUSE (T6. 3AL250V)  | LEV    | EXPANSION VALVE COIL       | RT68     | OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR |
| F601     | FUSE (T3. 15AL250V) | MC     | COMPRESSOR                 | TB1, TB2 | TERMINAL BLOCK                          |
| F880     | FUSE (T3. 15AL250V) | MF     | FAN MOTOR                  | T801     | TRANSFORMER                             |
| F901     | FUSE (T3. 15AL250V) | PTC64  | CIRCUIT PROTECTION         | X601     | RELAY                                   |
| IC700    | IGBT Module         | PTC65  | CIRCUIT PROTECTION         | X602     | RELAY                                   |
| IC820    | DIODE Module        | RT61   | DEFROST THERMISTOR         | X64      | RELAY                                   |
| IC932    | IGBT Module         | RT62   | DISCHARGE TEMP. THERMISTOR | 21S4     | REVERSING VALVE COIL                    |
| L        | REACTOR             | RT64   | FIN TEMP. THERMISTOR       |          |                                         |

## MUZ-GL24NAH



### NOTES

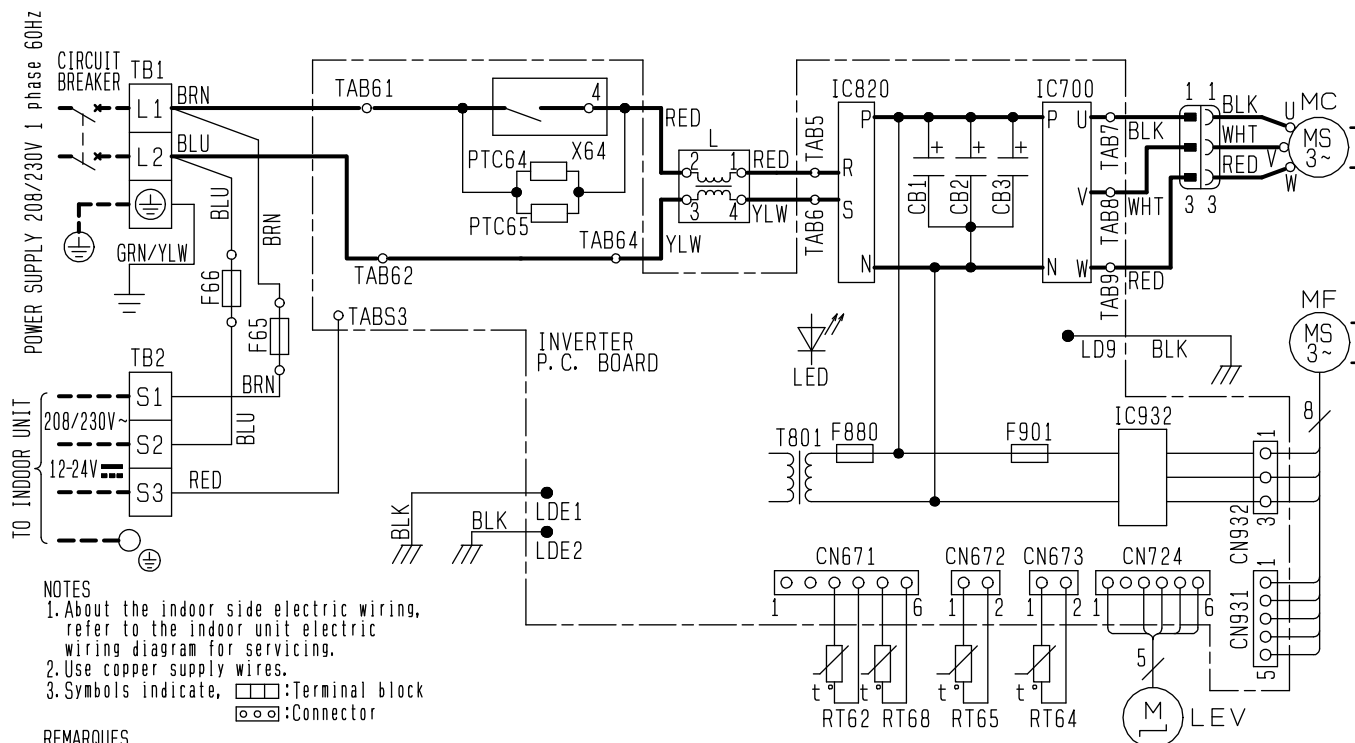
1. About the indoor side electric wiring, refer to the indoor unit electric wiring diagram for servicing.
2. Use copper supply wires.
3. Symbols indicate, :Terminal block :Connector

### REMARQUES

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

| SYMBOL   | NAME                | SYMBOL | NAME                       | SYMBOL   | NAME                                    |
|----------|---------------------|--------|----------------------------|----------|-----------------------------------------|
| CB1~3    | SMOOTHING CAPACITOR | LED    | LED                        | RT68     | OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR |
| F65, F66 | FUSE (T6. 3AL250V)  | LEV    | EXPANSION VALVE COIL       | TB1, TB2 | TERMINAL BLOCK                          |
| F601     | FUSE (T3. 15AL250V) | MC     | COMPRESSOR                 | T801     | TRANSFORMER                             |
| F880     | FUSE (T3. 15AL250V) | MF     | FAN MOTOR                  | X601     | RELAY                                   |
| F901     | FUSE (T3. 15AL250V) | PTC64  | CIRCUIT PROTECTION         | X602     | RELAY                                   |
| H        | DEFROST HEATER      | PTC65  | CIRCUIT PROTECTION         | X64      | RELAY                                   |
| IC700    | IGBT Module         | RT61   | DEFROST THERMISTOR         | X601     | RELAY                                   |
| IC820    | DIODE Module        | RT62   | DISCHARGE TEMP. THERMISTOR | 21S4     | REVERSING VALVE COIL                    |
| IC932    | IGBT Module         | RT64   | FIN TEMP. THERMISTOR       | 26H      | HEATER PROTECTOR                        |
| L        | REACTOR             | RT65   | AMBIENT TEMP. THERMISTOR   |          |                                         |

## MUY-GL24NA



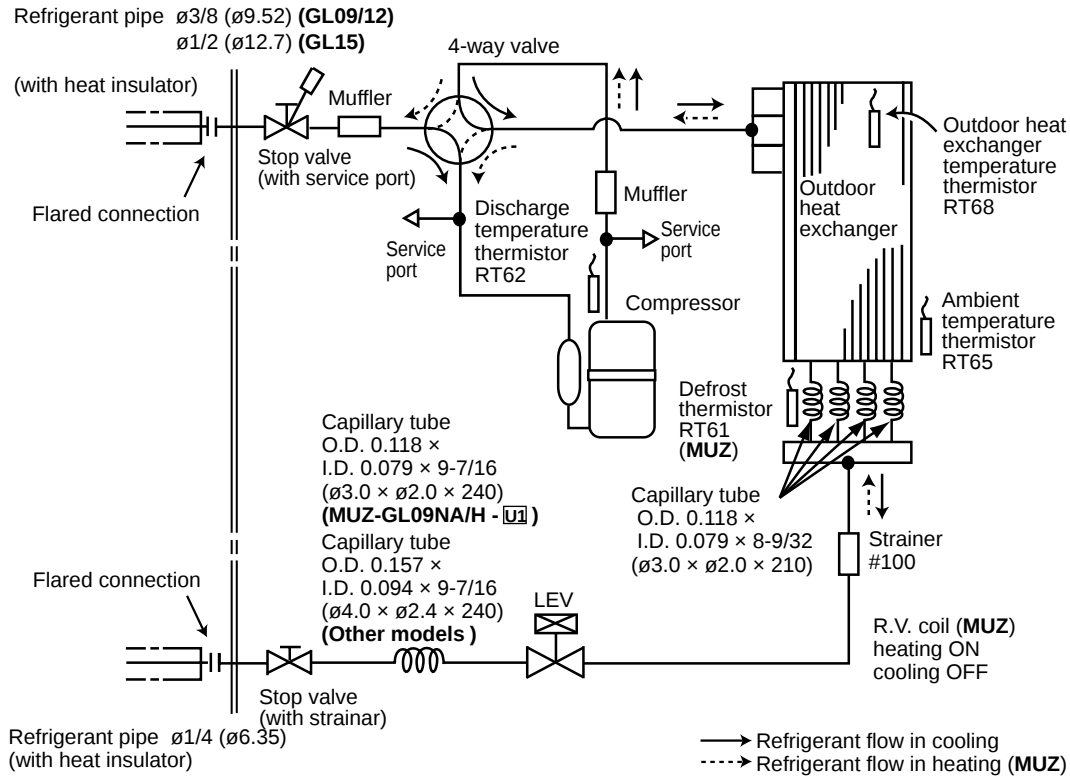
| SYMBOL   | NAME                | SYMBOL | NAME                       | SYMBOL   | NAME                                    |
|----------|---------------------|--------|----------------------------|----------|-----------------------------------------|
| CB1~3    | SMOOTHING CAPACITOR | LED    | LED                        | RT64     | FIN TEMP.THERMISTOR                     |
| F65, F66 | FUSE (T6. 3AL250V)  | LEV    | EXPANSION VALVE COIL       | RT65     | AMBIENT TEMP. THERMISTOR                |
| F880     | FUSE (T3. 15AL250V) | MC     | COMPRESSOR                 | RT68     | OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR |
| F901     | FUSE (T3. 15AL250V) | MF     | FAN MOTOR                  | TB1, TB2 | TERMINAL BLOCK                          |
| IC700    | IGBT Module         | PTC64  | CIRCUIT PROTECTION         | T801     | TRANSFORMER                             |
| IC820    | DIODE Module        | PTC65  | CIRCUIT PROTECTION         | X64      | RELAY                                   |
| IC932    | IGBT Module         | RT62   | DISCHARGE TEMP. THERMISTOR |          |                                         |
| L        | REACTOR             |        |                            |          |                                         |

# 6

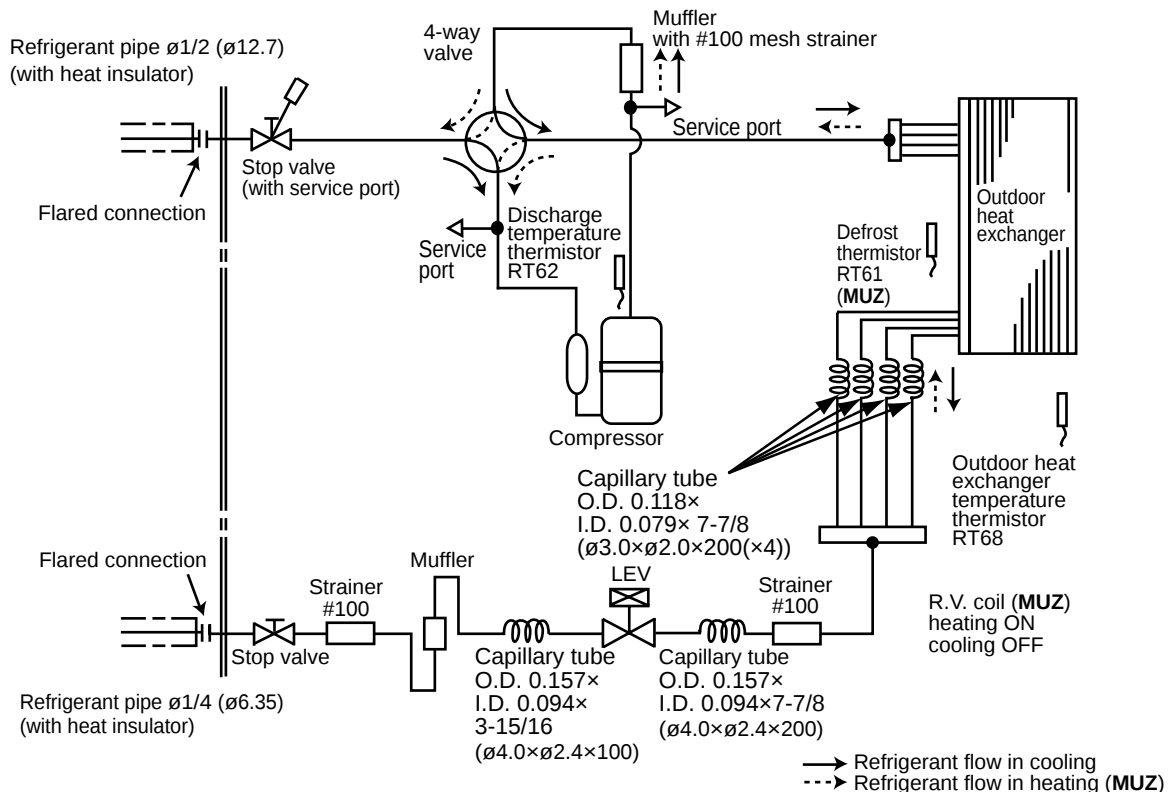
## REFRIGERANT SYSTEM DIAGRAM

MUZ-GL09NA MUZ-GL09NAH MUY-GL09NA  
 MUZ-GL12NA MUZ-GL12NAH MUY-GL12NA  
 MUZ-GL15NA MUZ-GL15NAH MUY-GL15NA

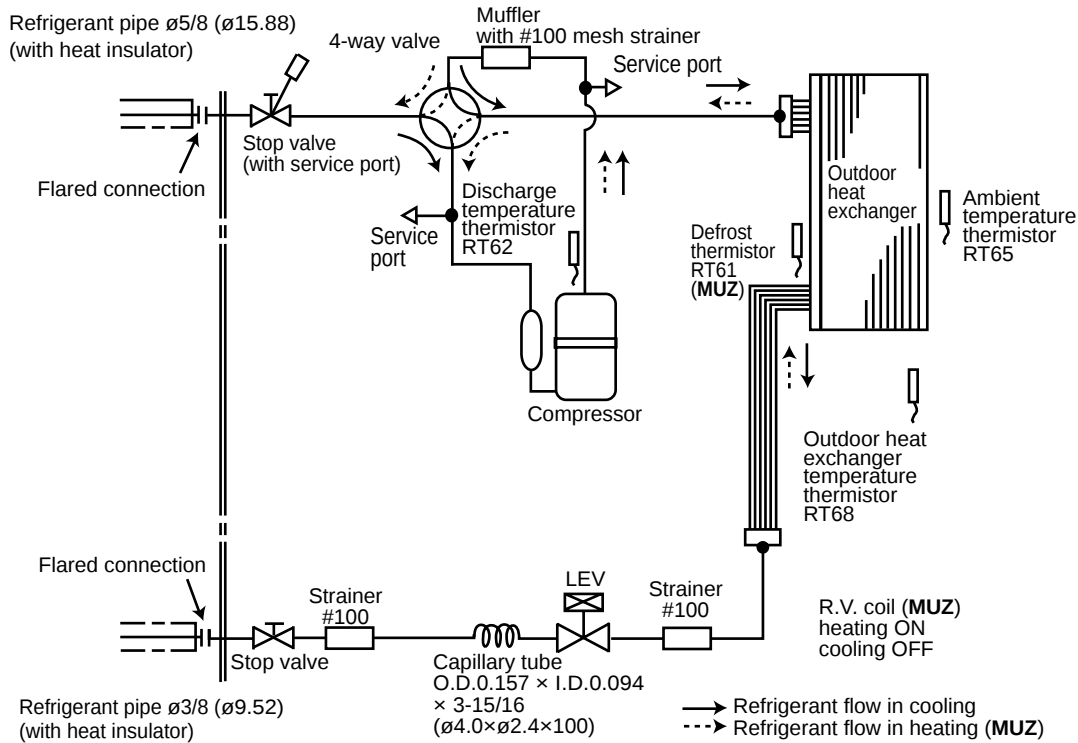
Unit: Inch (mm)



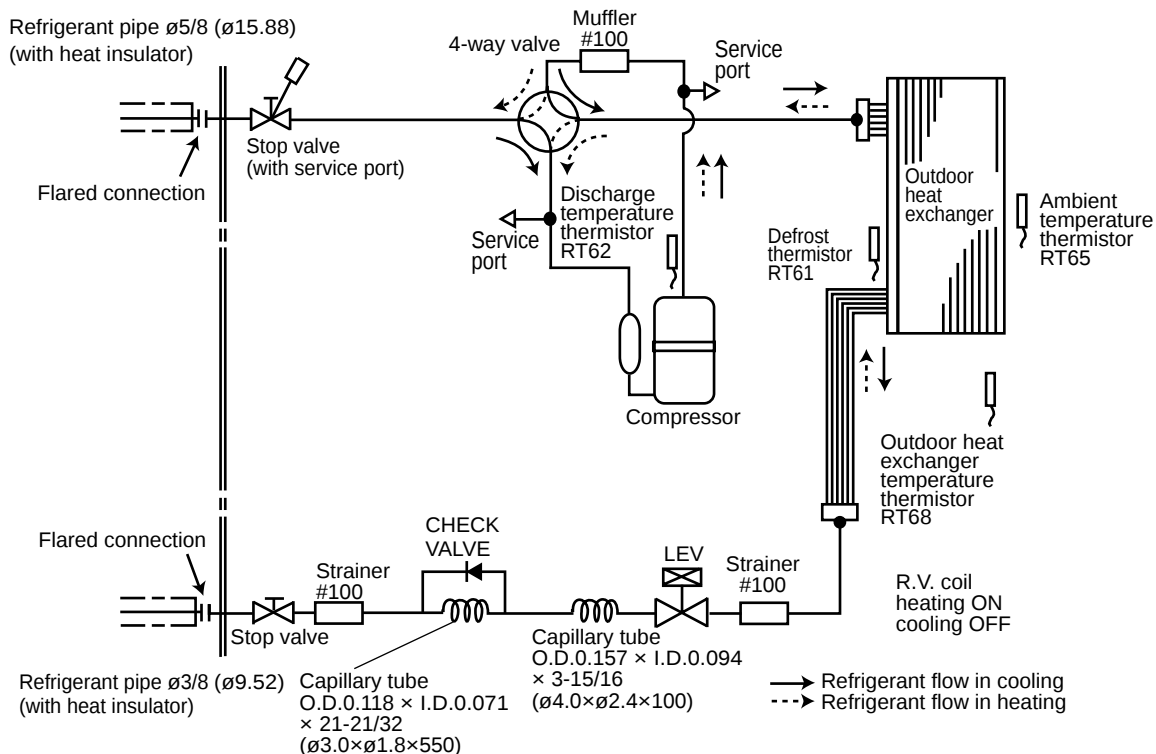
MUZ-GL18NA MUZ-GL18NAH MUY-GL18NA



## MUZ-GL24NA MUY-GL24NA

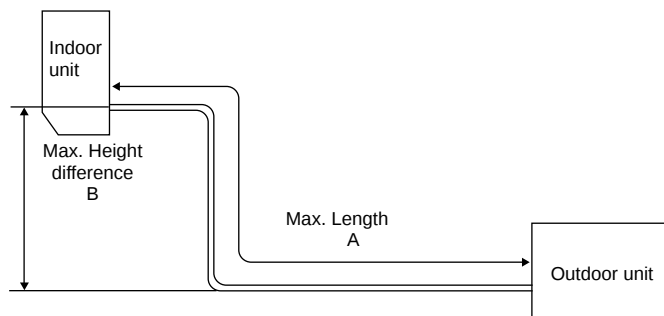


## MUZ-GL24NAH



## 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-GL09NA<br>MUZ-GL09NAH<br>MUY-GL09NA<br>MUZ-GL12NA<br>MUZ-GL12NAH<br>MUY-GL12NA | 65                      | 40                          | 3/8                  | 1/4    |
| MUZ-GL15NA<br>MUZ-GL15NAH<br>MUY-GL15NA                                            |                         |                             | 1/2                  |        |
| MUZ-GL18NA<br>MUZ-GL18NAH<br>MUY-GL18NA                                            | 100                     | 50                          | 5/8                  | 3/8    |
| MUZ-GL24NA<br>MUZ-GL24NAH<br>MUY-GL24NA                                            |                         |                             |                      |        |



## ADDITIONAL REFRIGERANT CHARGE (R410A: oz.)

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

| Model                                                                                                                                                 | Outdoor unit<br>precharged | Refrigerant piping length (one way): ft. |      |      |      |      |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------------------------------------|------|------|------|------|------|
|                                                                                                                                                       |                            | 25                                       | 30   | 40   | 50   | 60   | 65   |
| MUZ-GL09NA - <u>U1</u><br>MUZ-GL09NAH - <u>U1</u>                                                                                                     | 2 lb. 5 oz.                | 0                                        | 1.08 | 3.24 | 5.40 | 7.56 | 8.64 |
| MUZ-GL09NA - <u>U8</u><br>MUZ-GL09NAH - <u>U8</u><br>MUY-GL09NA<br>MUZ-GL12NA<br>MUZ-GL12NAH<br>MUY-GL12NA<br>MUZ-GL15NA<br>MUZ-GL15NAH<br>MUY-GL15NA | 2 lb. 9 oz.                |                                          |      |      |      |      |      |

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



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

| Model                                   | Outdoor unit<br>precharged | Refrigerant piping length (one way): ft. |      |      |      |      |      |       |       |       |
|-----------------------------------------|----------------------------|------------------------------------------|------|------|------|------|------|-------|-------|-------|
|                                         |                            | 25                                       | 30   | 40   | 50   | 60   | 70   | 80    | 90    | 100   |
| MUZ-GL18NA<br>MUZ-GL18NAH<br>MUY-GL18NA | 3 lb. 9 oz.                | 0                                        | 1.08 | 3.24 | 5.40 | 7.56 | 9.72 | 11.88 | 14.04 | 16.20 |

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

**NOTE:** Refrigerant piping exceeding 33 ft. requires additional refrigerant charge according to the calculation.

| Model                                   | Outdoor unit<br>precharged | Refrigerant piping length (one way): ft. |      |       |       |       |       |       |       |
|-----------------------------------------|----------------------------|------------------------------------------|------|-------|-------|-------|-------|-------|-------|
|                                         |                            | 33                                       | 40   | 50    | 60    | 70    | 80    | 90    | 100   |
| MUZ-GL24NA<br>MUZ-GL24NAH<br>MUY-GL24NA | 4 lb. 3 oz.                | 0                                        | 4.14 | 10.06 | 15.98 | 21.90 | 27.82 | 33.74 | 39.66 |

Calculation: X oz. = 2.96/5 oz./ft. × (Refrigerant piping length (ft.) - 33)

MUZ-GL09NA MUZ-GL09NAH MUY-GL09NA  
 MUZ-GL12NA MUZ-GL12NAH MUY-GL12NA  
 MUZ-GL15NA MUZ-GL15NAH MUY-GL15NA  
 MUZ-GL18NA MUZ-GL18NAH MUY-GL18NA  
 MUZ-GL24NA MUZ-GL24NAH MUY-GL24NA

## 7-1. PERFORMANCE DATA

### 1) COOLING CAPACITY

| Model       | Indoor air<br>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  |
| MUZ-GL09NA  | 71                     | 11.0                                   | 7.6  | 0.52 | 10.3 | 7.1  | 0.57 | 9.7  | 6.6  | 0.61 | 9.0  | 6.2  | 0.65 | 8.3  | 5.7  | 0.67 |
| MUZ-GL09NAH | 67                     | 10.4                                   | 8.6  | 0.49 | 9.7  | 8.0  | 0.54 | 9.0  | 7.4  | 0.59 | 8.4  | 6.9  | 0.62 | 7.7  | 6.3  | 0.65 |
| MUY-GL09NA  | 63                     | 9.8                                    | 9.4  | 0.47 | 9.1  | 8.7  | 0.52 | 8.5  | 8.1  | 0.56 | 7.7  | 7.3  | 0.60 | 7.0  | 6.7  | 0.62 |
| MUZ-GL12NA  | 71                     | 14.7                                   | 9.4  | 0.82 | 13.7 | 8.7  | 0.90 | 12.9 | 8.2  | 0.97 | 12.0 | 7.6  | 1.02 | 11.0 | 7.0  | 1.06 |
| MUZ-GL12NAH | 67                     | 13.9                                   | 10.7 | 0.77 | 13.0 | 10.0 | 0.85 | 12.0 | 9.2  | 0.92 | 11.2 | 8.6  | 0.98 | 10.3 | 7.9  | 1.02 |
| MUY-GL12NA  | 63                     | 13.1                                   | 11.8 | 0.74 | 12.1 | 10.9 | 0.81 | 11.3 | 10.2 | 0.88 | 10.3 | 9.3  | 0.94 | 9.4  | 8.5  | 0.98 |
| MUZ-GL15NA  | 71                     | 17.2                                   | 9.7  | 0.96 | 16.0 | 9.1  | 1.05 | 15.1 | 8.5  | 1.13 | 14.0 | 7.9  | 1.19 | 12.9 | 7.3  | 1.24 |
| MUZ-GL15NAH | 67                     | 16.2                                   | 11.4 | 0.91 | 15.1 | 10.6 | 1.00 | 14.0 | 9.8  | 1.08 | 13.0 | 9.1  | 1.14 | 12.0 | 8.4  | 1.20 |
| MUY-GL15NA  | 63                     | 15.3                                   | 12.7 | 0.86 | 14.1 | 11.8 | 0.96 | 13.2 | 11.0 | 1.03 | 12.0 | 10.0 | 1.10 | 10.9 | 9.1  | 1.14 |
| MUZ-GL18NA  | 71                     | 22.1                                   | 16.2 | 1.19 | 20.6 | 15.2 | 1.31 | 19.4 | 14.3 | 1.41 | 18.0 | 13.3 | 1.48 | 16.6 | 12.2 | 1.54 |
| MUZ-GL18NAH | 67                     | 20.9                                   | 18.2 | 1.13 | 19.4 | 16.9 | 1.24 | 18.0 | 15.7 | 1.34 | 16.7 | 14.6 | 1.42 | 15.4 | 13.4 | 1.49 |
| MUY-GL18NA  | 63                     | 19.6                                   | 19.7 | 1.07 | 18.2 | 18.2 | 1.19 | 16.9 | 17.0 | 1.28 | 15.4 | 15.4 | 1.37 | 14.0 | 14.1 | 1.42 |
| MUZ-GL24NA  | 71                     | 27.6                                   | 17.0 | 1.60 | 25.8 | 15.9 | 1.76 | 24.2 | 14.9 | 1.89 | 22.5 | 13.9 | 1.99 | 20.7 | 12.8 | 2.07 |
| MUZ-GL24NAH | 67                     | 26.1                                   | 19.6 | 1.51 | 24.3 | 18.2 | 1.67 | 22.5 | 16.9 | 1.80 | 20.9 | 15.7 | 1.91 | 19.2 | 14.4 | 2.00 |
| MUY-GL24NA  | 63                     | 24.5                                   | 21.7 | 1.44 | 22.7 | 20.1 | 1.59 | 21.2 | 18.7 | 1.72 | 19.2 | 17.0 | 1.84 | 17.6 | 15.5 | 1.91 |

NOTE: 1. IWB : Intake air wet-bulb temperature TC : Total Capacity ( $\times 10^3$  Btu/h)  
 SHC : Sensible Heat Capacity ( $\times 10^3$  Btu/h) 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.)                                                                                      |           |       |       |       |
|-------------------------------------------------------------------------------------------------------------------------------|-----------|-------|-------|-------|
|                                                                                                                               | 25 (std.) | 40    | 65    | 100   |
| MUZ-GL09NA<br>MUZ-GL09NAH<br>MUY-GL09NA<br>MUZ-GL12NA<br>MUZ-GL12NAH<br>MUY-GL12NA<br>MUZ-GL15NA<br>MUZ-GL15NAH<br>MUY-GL15NA | 1.0       | 0.954 | 0.878 | -     |
| MUZ-GL18NA<br>MUZ-GL18NAH<br>MUY-GL18NA<br>MUZ-GL24NA<br>MUZ-GL24NAH<br>MUY-GL24NA                                            | 1.0       | 0.954 | 0.878 | 0.771 |

### 3) HEATING CAPACITY (MUZ)

| Model       | Indoor air<br>IDB (°F) | Outdoor intake air WB temperature (°F) |      |      |      |      |      |      |      |      |      |      |      |      |      |
|-------------|------------------------|----------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|             |                        | 5                                      |      | 15   |      | 25   |      | 35   |      | 43   |      | 45   |      | 55   |      |
|             |                        | TC                                     | TPC  | TC   | TPC  | TC   | TPC  | TC   | TPC  | TC   | TPC  | TC   | TPC  | TC   | TPC  |
| MUZ-GL09NA  | 75                     | 4.8                                    | 0.42 | 6.3  | 0.54 | 7.9  | 0.63 | 9.4  | 0.70 | 10.6 | 0.74 | 11.0 | 0.75 | 12.4 | 0.78 |
|             | 70                     | 5.2                                    | 0.41 | 6.7  | 0.52 | 8.2  | 0.62 | 9.6  | 0.68 | 10.9 | 0.72 | 11.2 | 0.73 | 12.7 | 0.76 |
|             | 65                     | 5.5                                    | 0.39 | 6.9  | 0.50 | 8.6  | 0.59 | 10.0 | 0.67 | 11.2 | 0.70 | 11.6 | 0.71 | 13.0 | 0.75 |
| MUZ-GL12NA  | 75                     | 6.3                                    | 0.65 | 8.4  | 0.82 | 10.4 | 0.96 | 12.5 | 1.07 | 14.0 | 1.13 | 14.5 | 1.14 | 16.4 | 1.19 |
|             | 70                     | 6.8                                    | 0.62 | 8.9  | 0.79 | 10.8 | 0.94 | 12.7 | 1.05 | 14.4 | 1.10 | 14.8 | 1.12 | 16.8 | 1.17 |
|             | 65                     | 7.2                                    | 0.59 | 9.1  | 0.76 | 11.3 | 0.91 | 13.2 | 1.02 | 14.8 | 1.07 | 15.3 | 1.09 | 17.1 | 1.14 |
| MUZ-GL09NAH | 75                     | 4.8                                    | 0.55 | 6.3  | 0.67 | 7.9  | 0.76 | 9.4  | 0.70 | 10.6 | 0.74 | 11.0 | 0.75 | 12.4 | 0.78 |
|             | 70                     | 5.2                                    | 0.54 | 6.7  | 0.65 | 8.2  | 0.75 | 9.6  | 0.68 | 10.9 | 0.72 | 11.2 | 0.73 | 12.7 | 0.76 |
|             | 65                     | 5.5                                    | 0.52 | 6.9  | 0.63 | 8.6  | 0.72 | 10.0 | 0.67 | 11.2 | 0.70 | 11.6 | 0.71 | 13.0 | 0.75 |
| MUZ-GL12NAH | 75                     | 6.3                                    | 0.78 | 8.4  | 0.95 | 10.4 | 1.09 | 12.5 | 1.07 | 14.0 | 1.13 | 14.5 | 1.14 | 16.4 | 1.19 |
|             | 70                     | 6.8                                    | 0.75 | 8.9  | 0.92 | 10.8 | 1.07 | 12.7 | 1.05 | 14.4 | 1.10 | 14.8 | 1.12 | 16.8 | 1.17 |
|             | 65                     | 7.2                                    | 0.72 | 9.1  | 0.89 | 11.3 | 1.04 | 13.2 | 1.02 | 14.8 | 1.07 | 15.3 | 1.09 | 17.1 | 1.14 |
| MUZ-GL15NA  | 75                     | 7.9                                    | 0.94 | 10.4 | 1.19 | 13.1 | 1.40 | 15.6 | 1.56 | 17.6 | 1.64 | 18.1 | 1.66 | 20.5 | 1.73 |
|             | 70                     | 8.6                                    | 0.90 | 11.1 | 1.15 | 13.5 | 1.37 | 15.9 | 1.52 | 18.0 | 1.60 | 18.5 | 1.63 | 21.0 | 1.70 |
|             | 65                     | 9.0                                    | 0.86 | 11.3 | 1.10 | 14.1 | 1.32 | 16.5 | 1.48 | 18.5 | 1.56 | 19.1 | 1.58 | 21.4 | 1.66 |
| MUZ-GL15NAH | 75                     | 7.9                                    | 1.07 | 10.4 | 1.32 | 13.1 | 1.53 | 15.6 | 1.56 | 17.6 | 1.64 | 18.1 | 1.66 | 20.5 | 1.73 |
|             | 70                     | 8.6                                    | 1.03 | 11.1 | 1.28 | 13.5 | 1.50 | 15.9 | 1.52 | 18.0 | 1.60 | 18.5 | 1.63 | 21.0 | 1.70 |
|             | 65                     | 9.0                                    | 0.99 | 11.3 | 1.23 | 14.1 | 1.45 | 16.5 | 1.48 | 18.5 | 1.56 | 19.1 | 1.58 | 21.4 | 1.66 |
| MUZ-GL18NA  | 75                     | 9.5                                    | 0.99 | 12.5 | 1.25 | 15.7 | 1.47 | 18.7 | 1.64 | 21.1 | 1.72 | 21.7 | 1.75 | 24.6 | 1.81 |
|             | 70                     | 10.3                                   | 0.95 | 13.3 | 1.21 | 16.2 | 1.44 | 19.1 | 1.60 | 21.6 | 1.68 | 22.2 | 1.71 | 25.2 | 1.78 |
|             | 65                     | 10.8                                   | 0.91 | 13.6 | 1.16 | 17.0 | 1.39 | 19.8 | 1.55 | 22.2 | 1.64 | 22.9 | 1.66 | 25.7 | 1.75 |
| MUZ-GL18NAH | 75                     | 9.5                                    | 1.12 | 12.5 | 1.38 | 15.7 | 1.60 | 18.7 | 1.64 | 21.1 | 1.72 | 21.7 | 1.75 | 24.6 | 1.81 |
|             | 70                     | 10.3                                   | 1.08 | 13.3 | 1.34 | 16.2 | 1.57 | 19.1 | 1.60 | 21.6 | 1.68 | 22.2 | 1.71 | 25.2 | 1.78 |
|             | 65                     | 10.8                                   | 1.04 | 13.6 | 1.29 | 17.0 | 1.52 | 19.8 | 1.55 | 22.2 | 1.64 | 22.9 | 1.66 | 25.7 | 1.75 |
| MUZ-GL24NA  | 75                     | 12.1                                   | 1.38 | 16.0 | 1.74 | 20.0 | 2.05 | 23.9 | 2.28 | 26.9 | 2.40 | 27.7 | 2.43 | 31.5 | 2.53 |
|             | 70                     | 13.1                                   | 1.32 | 17.0 | 1.68 | 20.7 | 2.00 | 24.4 | 2.22 | 27.6 | 2.34 | 28.4 | 2.39 | 32.2 | 2.48 |
|             | 65                     | 13.8                                   | 1.26 | 17.4 | 1.61 | 21.7 | 1.93 | 25.3 | 2.16 | 28.4 | 2.28 | 29.3 | 2.32 | 32.8 | 2.43 |
| MUZ-GL24NAH | 75                     | 12.1                                   | 1.38 | 16.0 | 1.74 | 20.0 | 2.05 | 23.9 | 2.28 | 26.9 | 2.40 | 27.7 | 2.43 | 31.5 | 2.53 |
|             | 70                     | 13.1                                   | 1.32 | 17.0 | 1.68 | 20.7 | 2.00 | 24.4 | 2.22 | 27.6 | 2.34 | 28.4 | 2.39 | 32.2 | 2.48 |
|             | 65                     | 13.8                                   | 1.26 | 17.4 | 1.61 | 21.7 | 1.93 | 25.3 | 2.16 | 28.4 | 2.28 | 29.3 | 2.32 | 32.8 | 2.43 |

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

TC : Total Capacity (x10<sup>3</sup> Btu/h)

TPC : Total Power Consumption (kW)

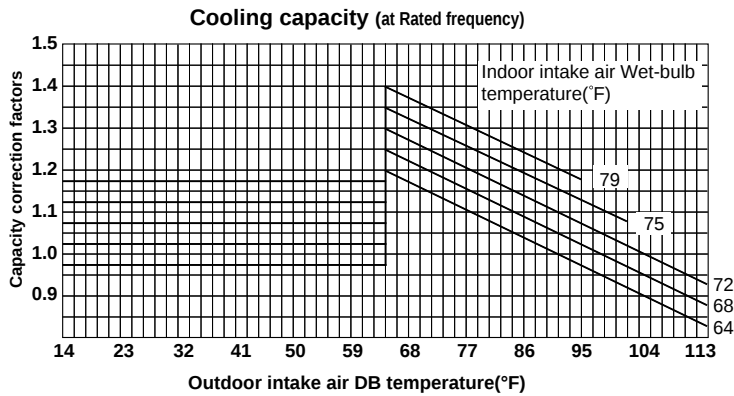
2. Above data is for heating operation without any frost.

How to operate with fixed operational frequency of the compressor.

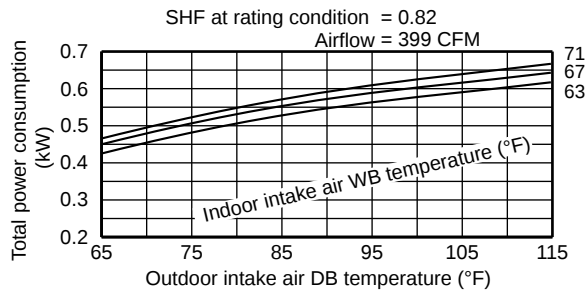
1. Press the EMERGENCY OPERATION switch on the front of the indoor unit, and select either EMERGENCY COOL mode or EMERGENCY HEAT mode before starting to operate the air conditioner.
2. The compressor starts with operational frequency.
3. The fan speed of the indoor unit is High.
4. This operation continues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

## 7-2. PERFORMANCE CURVE

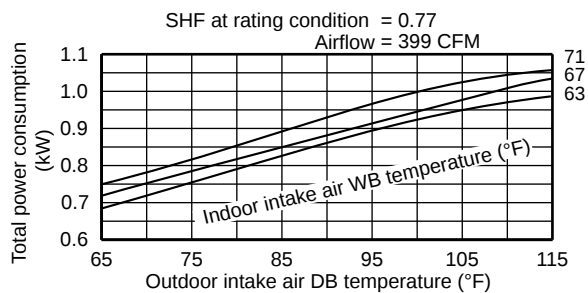
### Cooling



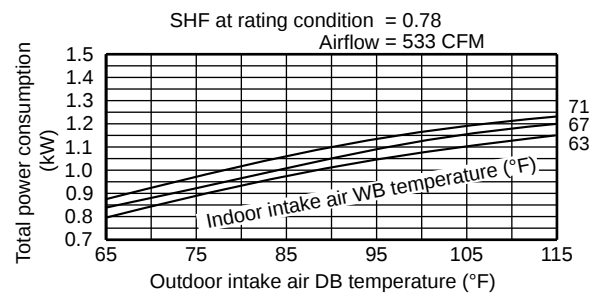
#### MUZ-GL09NA MUZ-GL09NAH MUY-GL09NA



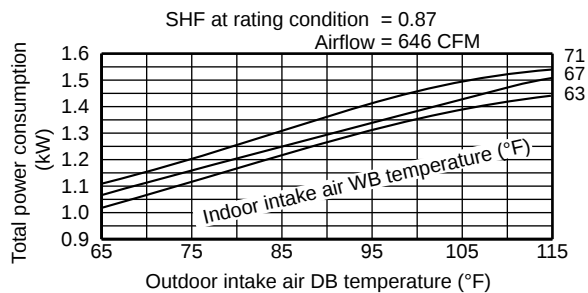
#### MUZ-GL12NA MUZ-GL12NAH MUY-GL12NA



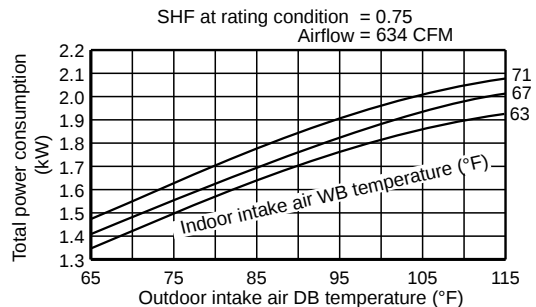
#### MUZ-GL15NA MUZ-GL15NAH MUY-GL15NA



#### MUZ-GL18NA MUZ-GL18NAH MUY-GL18NA

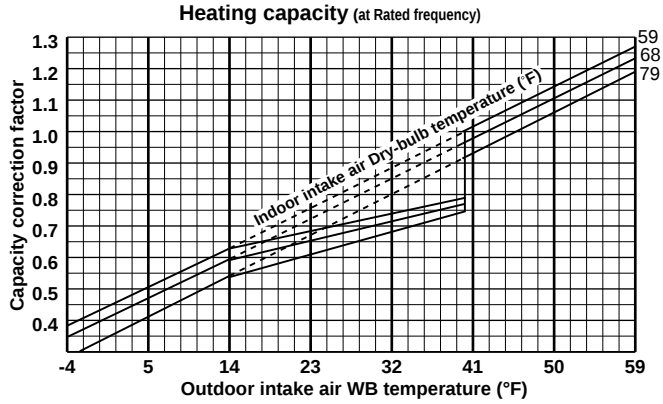


#### MUZ-GL24NA MUZ-GL24NAH MUY-GL24NA

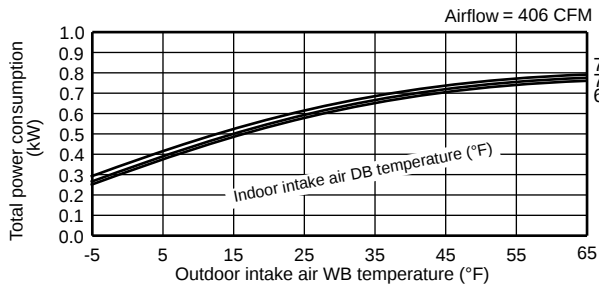


This value of frequency is not the same as the actual frequency in operating. Refer to 7-5 and 7-6 for the relationships between frequency and capacity.

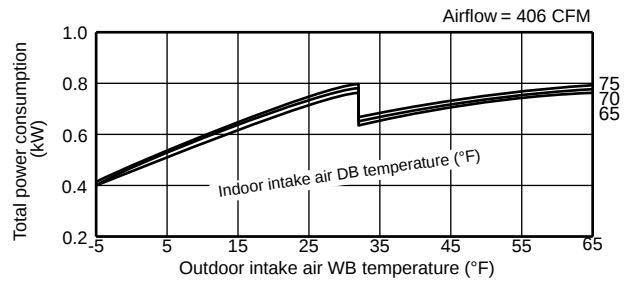
## Heating



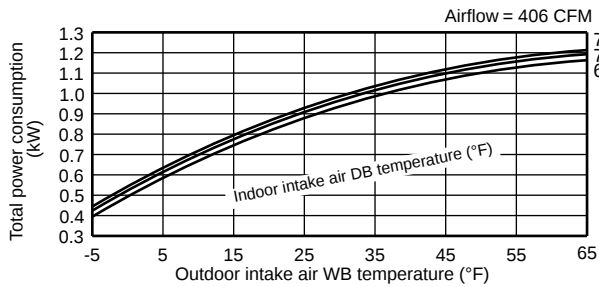
### MUZ-GL09NA



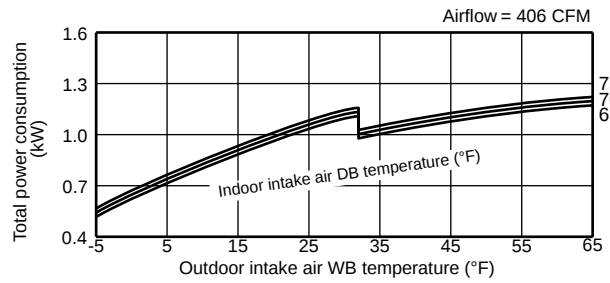
### MUZ-GL09NAH



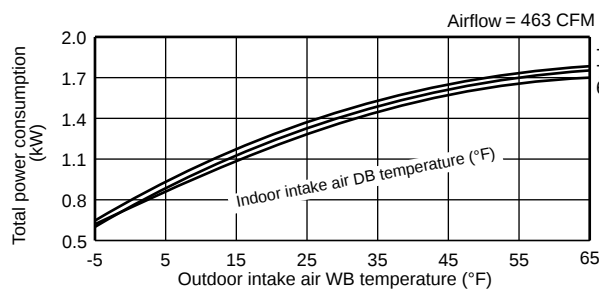
### MUZ-GL12NA



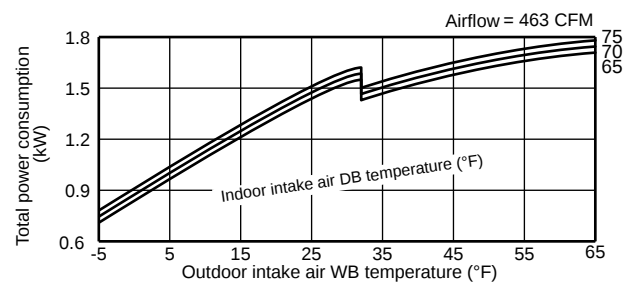
### MUZ-GL12NAH



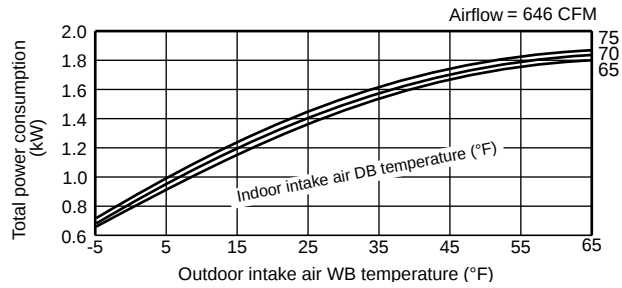
### MUZ-GL15NA



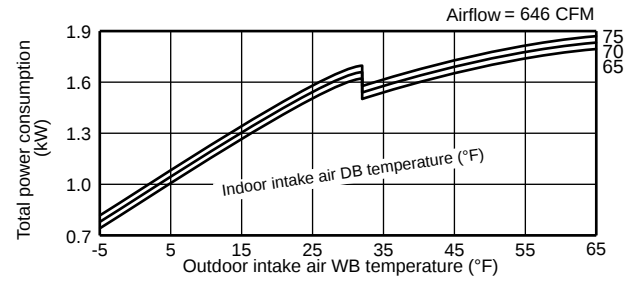
### MUZ-GL15NAH



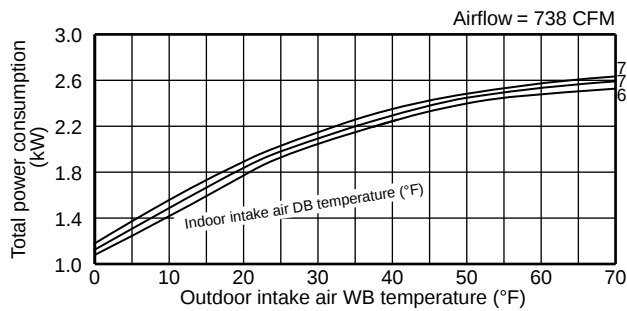
### MUZ-GL18NA



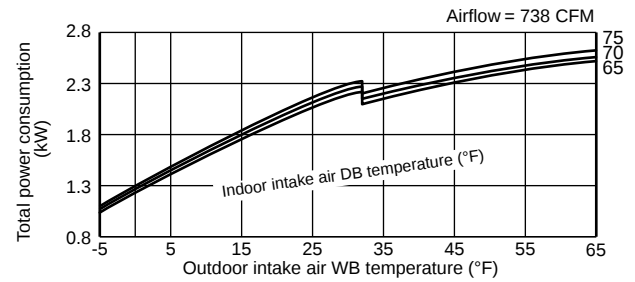
### MUZ-GL18NAH



### MUZ-GL24NA



### MUZ-GL24NAH



This value of frequency is not the same as the actual frequency in operating. Refer to 7-5 and 7-6 for the relationships between frequency and capacity.

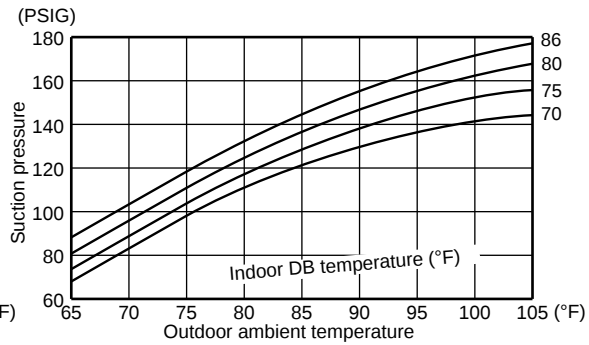
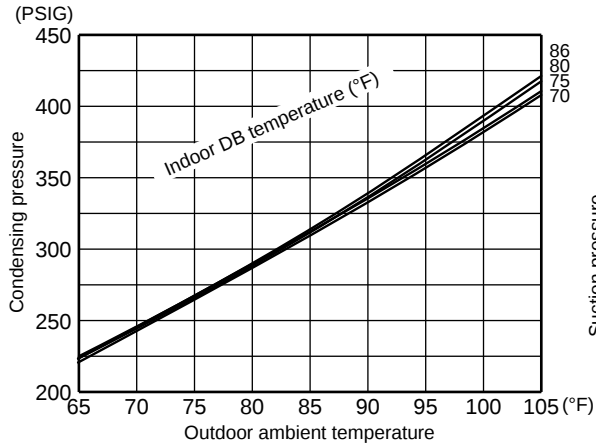
### 7-3. CONDENSING PRESSURE

#### Cooling

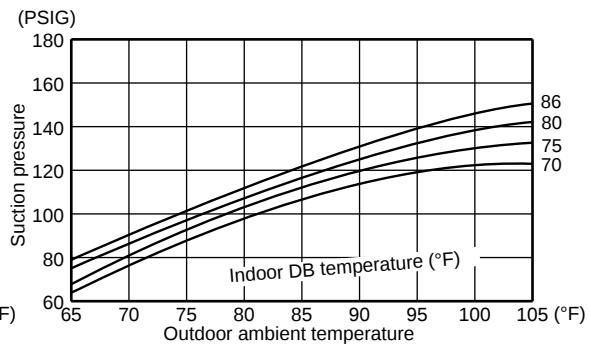
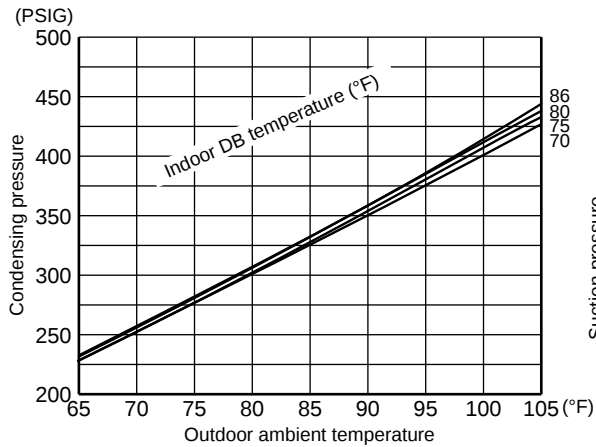
Data are based on the condition of indoor humidity 50 %.

Air flow should be set to High speed.

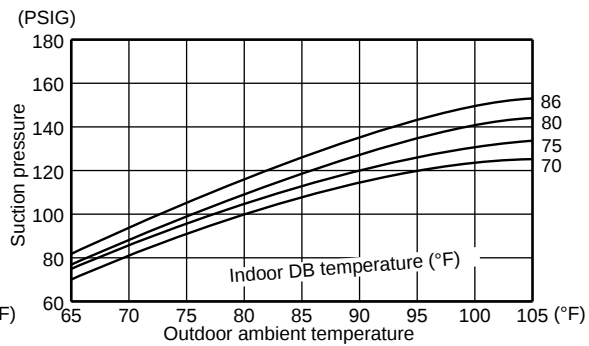
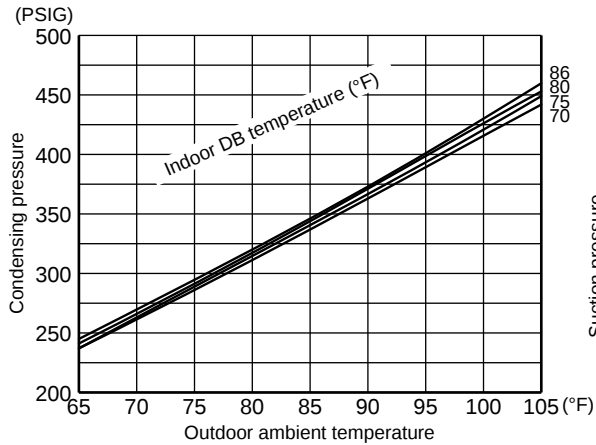
#### MUZ-GL09NA MUZ-GL09NAH MUY-GL09NA



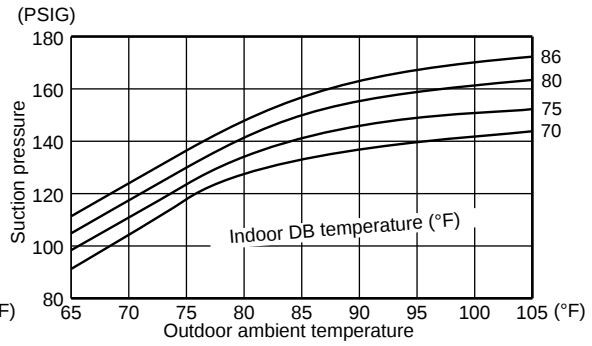
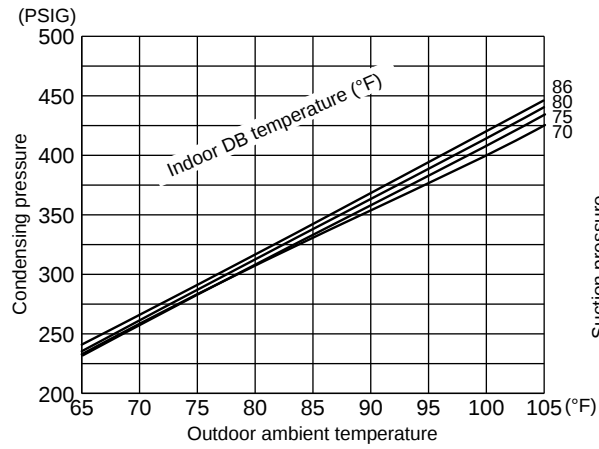
#### MUZ-GL12NA MUZ-GL12NAH MUY-GL12NA



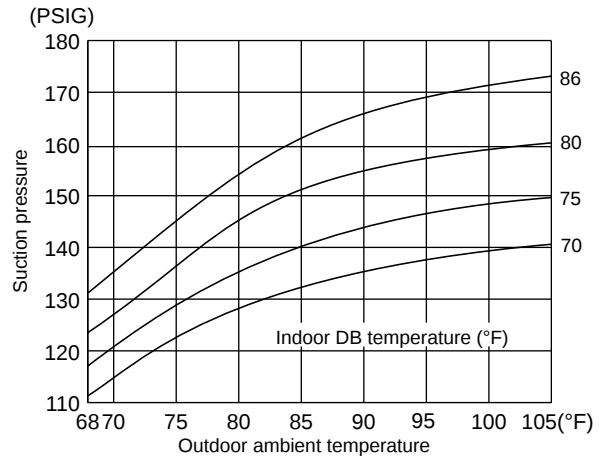
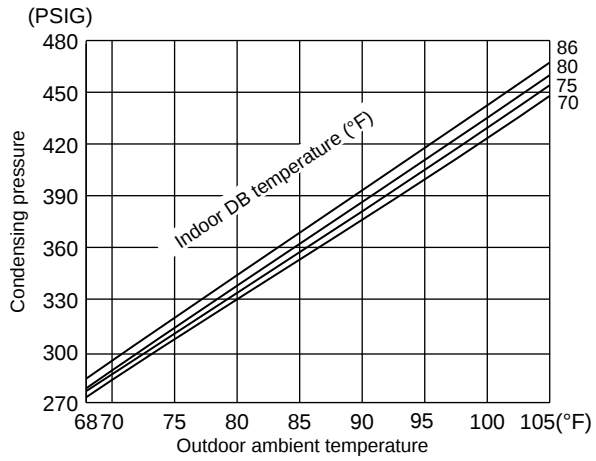
#### MUZ-GL15NA MUZ-GL15NAH MUY-GL15NA



**MUZ-GL18NA MUZ-GL18NAH MUY-GL18NA**



**MUZ-GL24NA MUZ-GL24NAH MUY-GL24NA**



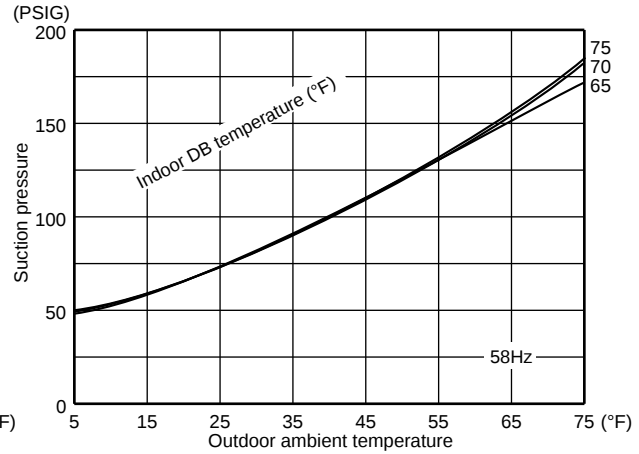
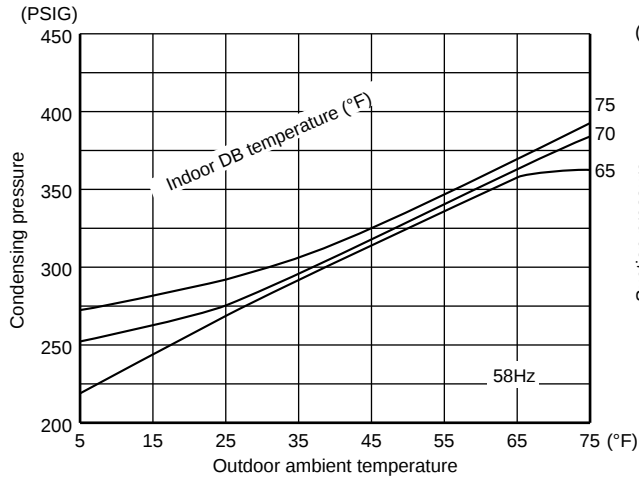
## Heating

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

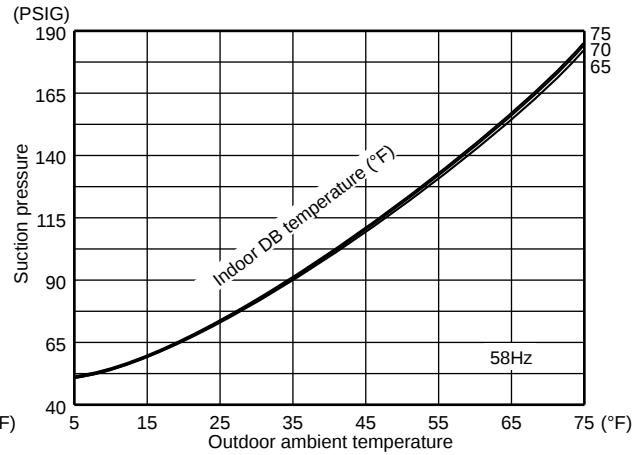
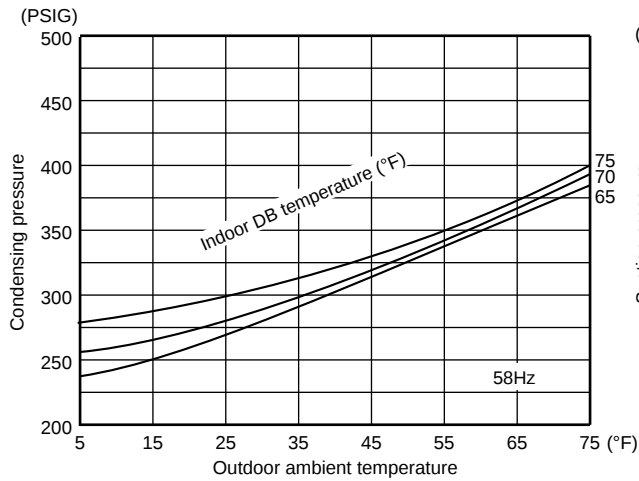
Air flow should be set to High speed.

Data are for heating operation without any frost.

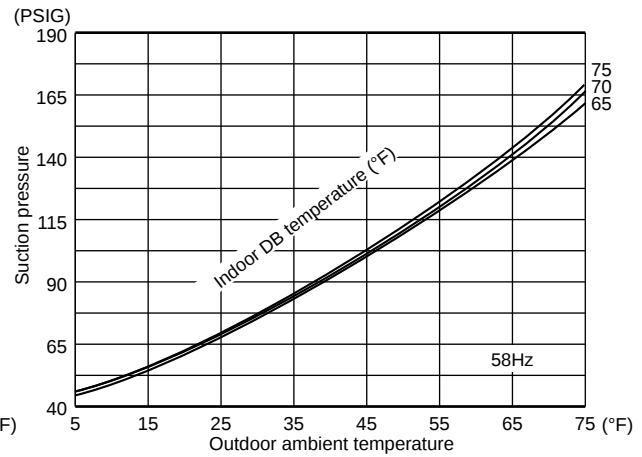
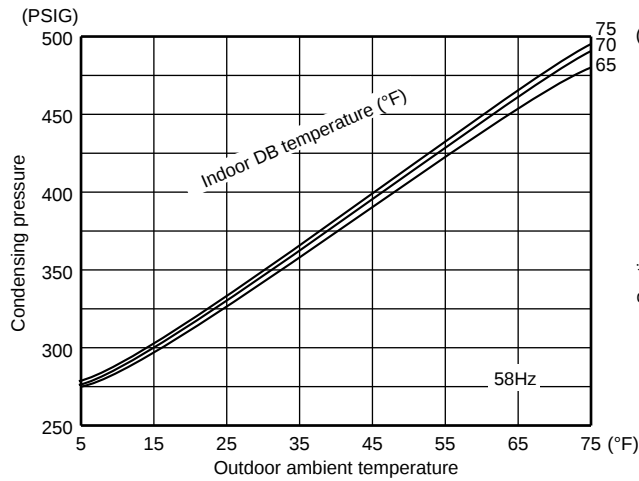
### MUZ-GL09NA - U1 MUZ-GL09NAH - U1



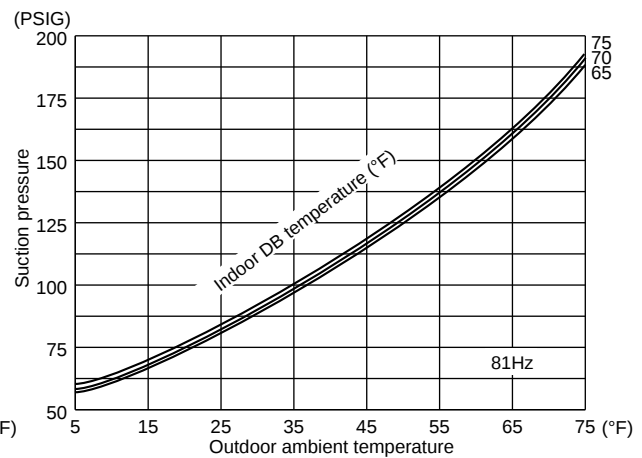
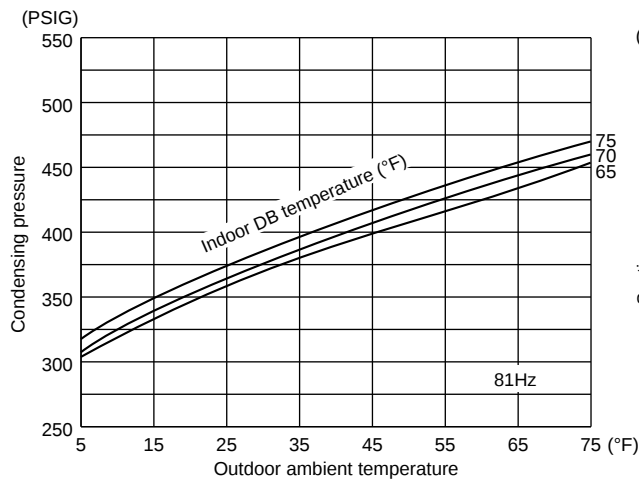
### MUZ-GL09NA - U8 MUZ-GL09NAH - U8 MUZ-GL12NA MUZ-GL12NAH



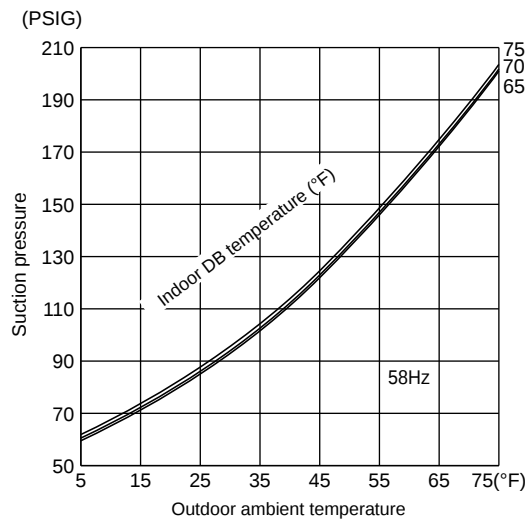
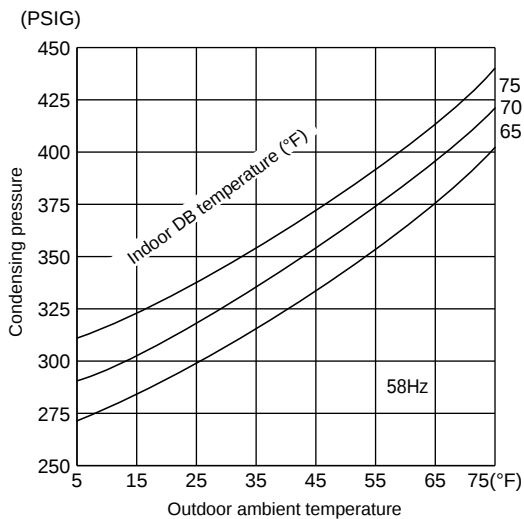
## MUZ-GL15NA MUZ-GL15NAH



## MUZ-GL18NA MUZ-GL18NAH



## MUZ-GL24NA MUZ-GL24NAH



#### 7-4. STANDARD OPERATION DATA

| Model                          |                           |                     |                    | MSZ-GL09NA - [U1]                       |            | MSZ-GL09NA - [U8]                       |           | MSY-GL09NA |
|--------------------------------|---------------------------|---------------------|--------------------|-----------------------------------------|------------|-----------------------------------------|-----------|------------|
| Item                           |                           |                     | Unit               | Cooling                                 | Heating    | Cooling                                 | Heating   | Cooling    |
| Total                          | Capacity                  |                     | Btu/h              | 9,000                                   | 10,900     | 9,000                                   | 10,900    | 9,000      |
|                                | SHF                       |                     | —                  | 0.82                                    | —          | 0.82                                    | —         | 0.82       |
|                                | Input                     |                     | kW                 | 0.585                                   | 0.72       | 0.585                                   | 0.72      | 0.585      |
|                                | Rated frequency           |                     | Hz                 | 59                                      | 73         | 48                                      | 59        | 59.5       |
| Electrical circuit             | Indoor unit               |                     |                    | MSZ-GL09NA                              |            | MSZ-GL09NA                              |           | MSY-GL09NA |
|                                | Power supply              |                     | V,<br>phase,<br>Hz | 208/230, 1, 60                          |            |                                         |           |            |
|                                | Input                     |                     | kW                 | 0.022                                   | 0.023      | 0.022                                   | 0.023     | 0.022      |
|                                | Fan motor current         |                     | A                  | 0.24/0.22                               | 0.25/0.23  | 0.24/0.22                               | 0.25/0.23 | 0.24/0.22  |
|                                | Outdoor unit              |                     |                    | MUZ-GL09NA - [U1]<br>MUZ-GL09NAH - [U1] |            | MUZ-GL09NA - [U8]<br>MUZ-GL09NAH - [U8] |           | MUY-GL09NA |
|                                | Power supply              |                     | V,<br>phase,<br>Hz | 208/230, 1, 60                          |            |                                         |           |            |
|                                | Input                     |                     | kW                 | 0.563                                   | 0.697      | 0.563                                   | 0.697     | 0.563      |
|                                | Comp. current             |                     | A                  | 2.67/2.41                               | 3.25/2.94  | 2.45/2.21                               | 3.05/2.76 | 2.63/2.37  |
|                                | Fan motor current         |                     | A                  | 0.36/0.33                               | 0.34/0.31  | 0.36/0.33                               | 0.34/0.31 | 0.36/0.33  |
|                                | Refrigerant circuit       | Condensing pressure |                    | PSIG                                    | 357        | 345                                     | 358       | 349        |
| Suction pressure               |                           | PSIG                | 151                | 107                                     | 149        | 108                                     | 149       |            |
| Discharge temperature          |                           | °F                  | 146                | 156                                     | 148        | 155                                     | 154       |            |
| Condensing temperature         |                           | °F                  | 108                | 102                                     | 108        | 104                                     | 108       |            |
| Suction temperature            |                           | °F                  | 61                 | 44                                      | 63         | 44                                      | 66        |            |
| Comp. shell bottom temperature |                           | °F                  | 144                | 154                                     | 140        | 144                                     | 152       |            |
| Ref. pipe length               |                           | ft.                 | 25                 |                                         |            |                                         |           |            |
| Refrigerant charge (R410A)     |                           |                     | 2 lb 5 oz.         |                                         | 2 lb 9 oz. |                                         |           |            |
| Indoor unit                    | Intake air temperature    | DB                  | °F                 | 80                                      | 70         | 80                                      | 70        | 80         |
|                                |                           | WB                  | °F                 | 67                                      | 60         | 67                                      | 60        | 67         |
|                                | Discharge air temperature | DB                  | °F                 | 59                                      | 99         | 59                                      | 99        | 59         |
|                                |                           | WB                  | °F                 | 56                                      | —          | 56                                      | —         | 56         |
|                                | Fan speed (High)          |                     | rpm                | 1,020                                   | 1,040      | 1,020                                   | 1,040     | 1,020      |
|                                | Airflow (High)            |                     | CFM                | 367 (Wet)                               | 413        | 367 (Wet)                               | 413       | 367 (Wet)  |
| Outdoor unit                   | Intake air temperature    | DB                  | °F                 | 95                                      | 47         | 95                                      | 47        | 95         |
|                                |                           | WB                  | °F                 | —                                       | —          | —                                       | —         | —          |
|                                | Fan speed                 |                     | rpm                | 900                                     | 860        | 900                                     | 860       | 900        |
|                                | Airflow                   |                     | CFM                | 1,229                                   | 1,172      | 1,229                                   | 1,172     | 1,229      |



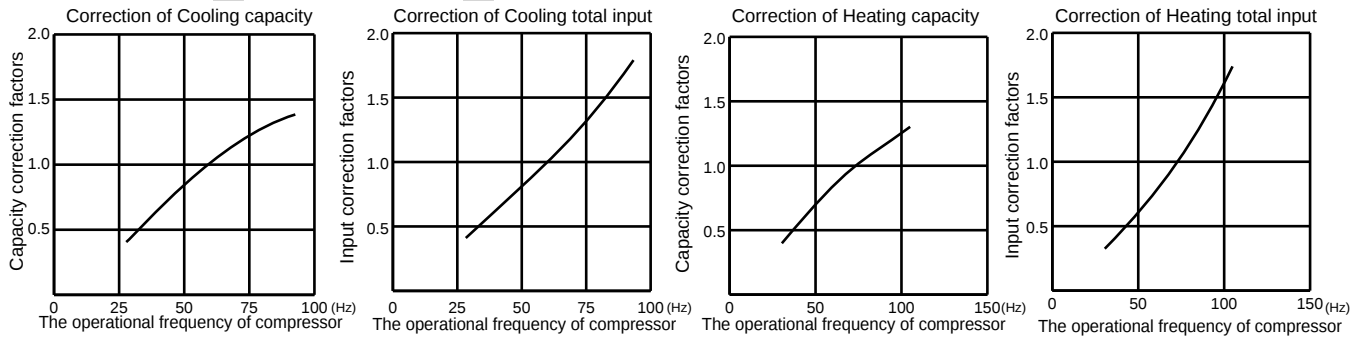
| Model                          |                           |                     | MSZ-GL12NA<br>MSY-GL12NA                |           | MSZ-GL15NA<br>MSY-GL15NA                |           |       |
|--------------------------------|---------------------------|---------------------|-----------------------------------------|-----------|-----------------------------------------|-----------|-------|
| Item                           |                           | Unit                | Cooling                                 | Heating   | Cooling                                 | Heating   |       |
| Total                          | Capacity                  | Btu/h               | 12,000                                  | 14,400    | 14,000                                  | 18,000    |       |
|                                | SHF                       | —                   | 0.77                                    | —         | 0.78                                    | —         |       |
|                                | Input                     | kW                  | 0.920                                   | 1.10      | 1.080                                   | 1.60      |       |
|                                | Rated frequency           | Hz                  | 70                                      | 77        | 56.5                                    | 74        |       |
| Electrical circuit             | Indoor unit               |                     | MSZ-GL12NA<br>MSY-GL12NA                |           | MSZ-GL15NA<br>MSY-GL15NA                |           |       |
|                                | Power supply              | V,<br>phase,<br>Hz  | 208/230, 1, 60                          |           |                                         |           |       |
|                                | Input                     | kW                  | 0.022                                   | 0.023     | 0.043                                   | 0.030     |       |
|                                | Fan motor current         | A                   | 0.24/0.22                               | 0.25/0.23 | 0.43/0.39                               | 0.34/0.31 |       |
|                                | Outdoor unit              |                     | MUZ-GL12NA<br>MUZ-GL12NAH<br>MUY-GL12NA |           | MUZ-GL15NA<br>MUZ-GL15NAH<br>MUY-GL15NA |           |       |
|                                | Power supply              | V,<br>phase,<br>Hz  | 208/230, 1, 60                          |           |                                         |           |       |
|                                | Input                     | kW                  | 0.898                                   | 1.077     | 1.037                                   | 1.570     |       |
|                                | Comp. current             | A                   | 4.01/3.62                               | 4.86/4.39 | 4.51/4.08                               | 7.11/6.43 |       |
|                                | Fan motor current         | A                   | 0.41/0.37                               | 0.40/0.36 | 0.41/0.37                               | 0.40/0.36 |       |
|                                | Refrigerant circuit       | Condensing pressure | PSIG                                    | 380       | 402                                     | 396       | 427   |
| Suction pressure               |                           | PSIG                | 133                                     | 106       | 138                                     | 98        |       |
| Discharge temperature          |                           | °F                  | 166                                     | 167       | 168                                     | 178       |       |
| Condensing temperature         |                           | °F                  | 112                                     | 115       | 115                                     | 120       |       |
| Suction temperature            |                           | °F                  | 60                                      | 35        | 61                                      | 31        |       |
| Comp. shell bottom temperature |                           | °F                  | 152                                     | 150       | 152                                     | 158       |       |
| Ref. pipe length               |                           | ft.                 | 25                                      |           |                                         |           |       |
| Refrigerant charge (R410A)     |                           | 2 lb 9 oz.          |                                         |           |                                         |           |       |
| Indoor unit                    | Intake air temperature    | DB                  | °F                                      | 80        | 70                                      | 80        | 70    |
|                                |                           | WB                  | °F                                      | 67        | 60                                      | 67        | 60    |
|                                | Discharge air temperature | DB                  | °F                                      | 57        | 110                                     | 58        | 114   |
|                                |                           | WB                  | °F                                      | 55        | —                                       | 56        | —     |
|                                | Fan speed (High)          |                     | rpm                                     | 1,020     | 1,040                                   | 1,280     | 1,140 |
|                                | Airflow (High)            |                     | CFM                                     | 367 (Wet) | 413                                     | 498 (Wet) | 463   |
| Outdoor unit                   | Intake air temperature    | DB                  | °F                                      | 95        | 47                                      | 95        | 47    |
|                                |                           | WB                  | °F                                      | —         | 43                                      | —         | 43    |
|                                | Fan speed                 |                     | rpm                                     | 900       | 860                                     | 910       | 900   |
|                                | Airflow                   |                     | CFM                                     | 1,229     | 1,172                                   | 1,243     | 1,229 |



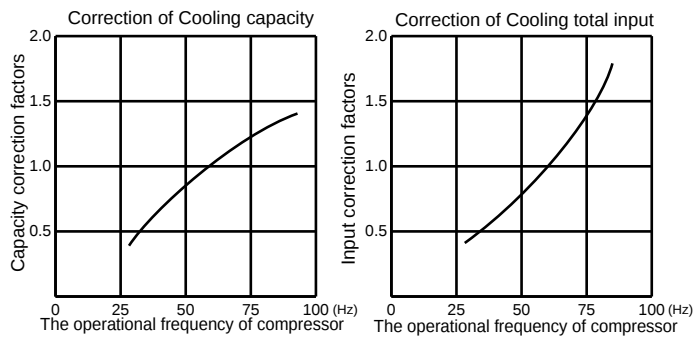
| Model                          |                           |                     | MSZ-GL18NA<br>MSY-GL18NA                |            | MSZ-GL24NA<br>MSY-GL24NA                |           |
|--------------------------------|---------------------------|---------------------|-----------------------------------------|------------|-----------------------------------------|-----------|
| Item                           |                           | Unit                | Cooling                                 | Heating    | Cooling                                 | Heating   |
| Total                          | Capacity                  | Btu/h               | 18,000                                  | 21,600     | 22,500                                  | 27,600    |
|                                | SHF                       | —                   | 0.87                                    | —          | 0.75                                    | —         |
|                                | Input                     | kW                  | 1.34                                    | 1.68       | 1.80                                    | 2.34      |
|                                | Rated frequency           | Hz                  | 69                                      | 81         | 67.5                                    | 82.0      |
| Electrical circuit             | Indoor unit               |                     | MSZ-GL18NA<br>MSY-GL18NA                |            | MSZ-GL24NA<br>MSY-GL24NA                |           |
|                                | Power supply              | V,<br>phase,<br>Hz  | 208/230, 1, 60                          |            |                                         |           |
|                                | Input                     | kW                  | 0.045                                   |            | 0.058                                   |           |
|                                | Fan motor current         | A                   | 0.46/0.42                               |            | 0.56/0.51                               |           |
|                                | Outdoor unit              |                     | MUZ-GL18NA<br>MUZ-GL18NAH<br>MUY-GL18NA |            | MUZ-GL24NA<br>MUZ-GL24NAH<br>MUY-GL24NA |           |
|                                | Power supply              | V,<br>phase,<br>Hz  | 208/230, 1, 60                          |            |                                         |           |
|                                | Input                     | kW                  | 1.295                                   | 1.635      | 1.742                                   | 2.282     |
|                                | Comp. current             | A                   | 5.01/4.53                               | 6.67/6.03  | 7.01/6.34                               | 9.59/8.67 |
|                                | Fan motor current         | A                   | 1.05/0.95                               | 1.05/0.95  | 1.16/1.05                               | 1.13/1.02 |
|                                | Refrigerant circuit       | Condensing pressure | PSIG                                    | 377        | 391                                     | 395       |
| Suction pressure               |                           | PSIG                | 144                                     | 103        | 141                                     | 102       |
| Discharge temperature          |                           | °F                  | 149                                     | 178        | 158                                     | 171       |
| Condensing temperature         |                           | °F                  | 111                                     | 111        | 115                                     | 115       |
| Suction temperature            |                           | °F                  | 51                                      | 43         | 52                                      | 33        |
| Comp. shell bottom temperature |                           | °F                  | 134                                     | 160        | 140                                     | 148       |
| Ref. pipe length               |                           | ft.                 | 25                                      |            |                                         |           |
| Refrigerant charge (R410A)     |                           | 3 lb 9 oz.          |                                         | 4 lb 3 oz. |                                         |           |
| Indoor unit                    | Intake air temperature    | DB                  | °F                                      | 80         | 70                                      | 80        |
|                                |                           | WB                  | °F                                      | 67         | 60                                      | 67        |
|                                | Discharge air temperature | DB                  | °F                                      | 52         | 111                                     | 56        |
|                                |                           | WB                  | °F                                      | 51         | —                                       | 53        |
|                                | Fan speed (High)          | rpm                 | 1,170                                   | 1,170      | 1,300                                   | 1,300     |
|                                | Airflow (High)            | CFM                 | 581 (Wet)                               | 646        | 634 (Wet)                               | 738       |
| Outdoor unit                   | Intake air temperature    | DB                  | °F                                      | 95         | 47                                      | 47        |
|                                |                           | WB                  | °F                                      | —          | 43                                      | —         |
|                                | Fan speed                 | rpm                 | 810                                     | 810        | 840                                     | 810       |
|                                | Airflow                   | CFM                 | 1,691                                   | 1,691      | 1,769                                   | 1,701     |

## 7-5. CAPACITY AND INPUT CORRECTION BY INVERTER OUTPUT FREQUENCY

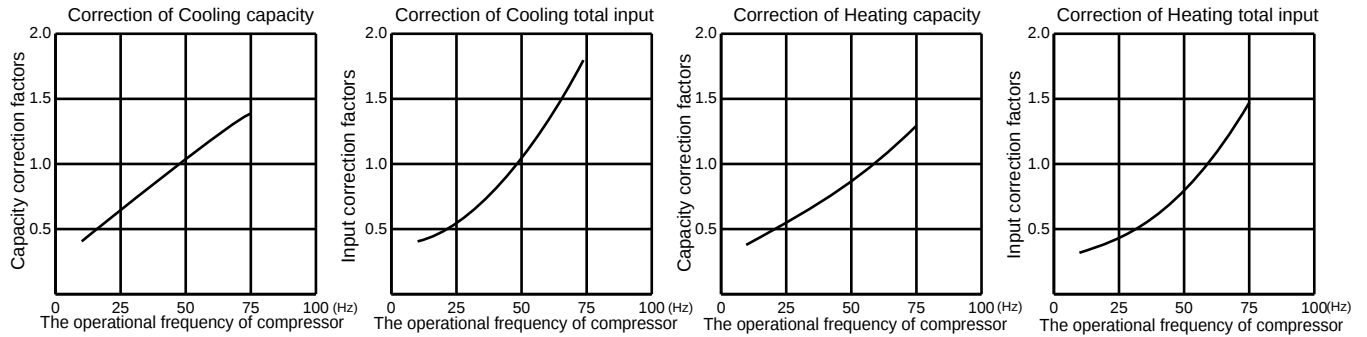
### MUZ-GL09NA - U1 MUZ-GL09NAH - U1



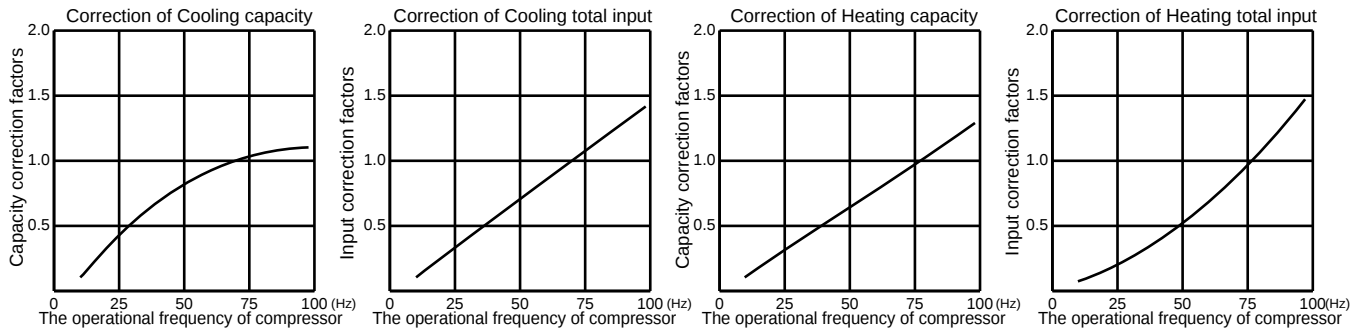
### MUY-GL09NA



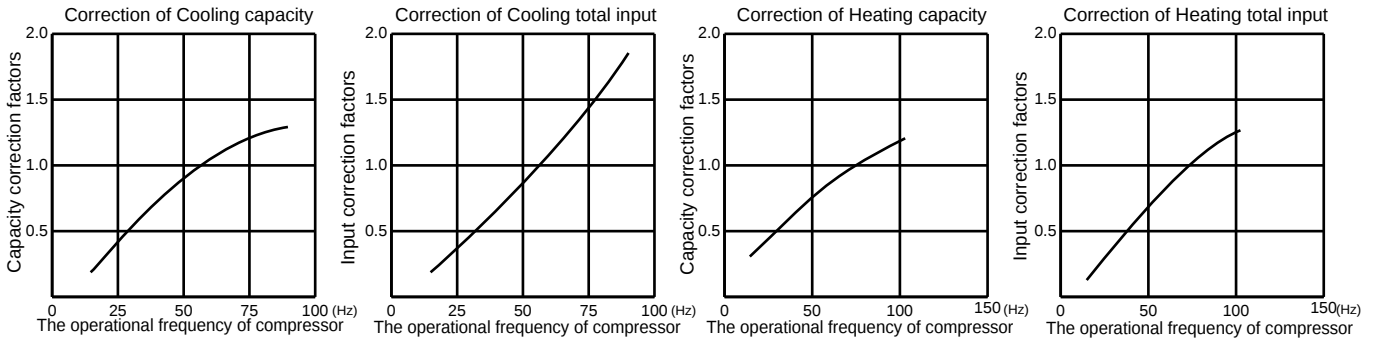
### MUZ-GL09NA - U8 MUZ-GL09NAH - U8



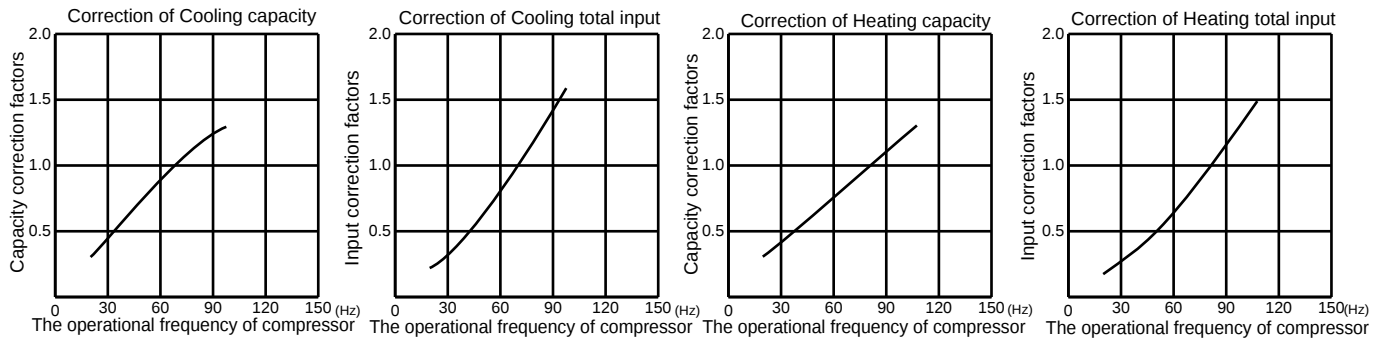
### MUZ-GL12NA MUZ-GL12NAH MUY-GL12NA



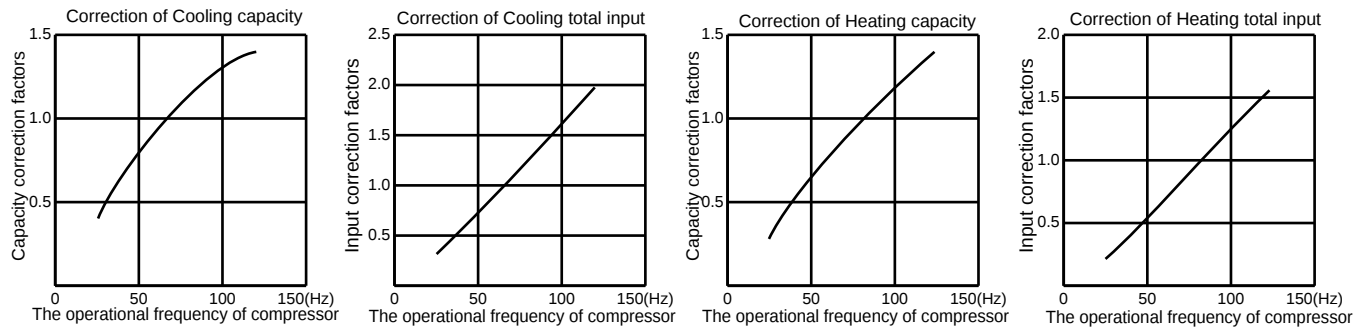
## MUZ-GL15NA MUZ-GL15NAH MUY-GL15NA



## MUZ-GL18NA MUZ-GL18NAH MUY-GL18NA



## MUZ-GL24NA MUZ-GL24NAH MUY-GL24NA



### 7-6. HOW TO OPERATE FIXED-FREQUENCY OPERATION (Test run operation)

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

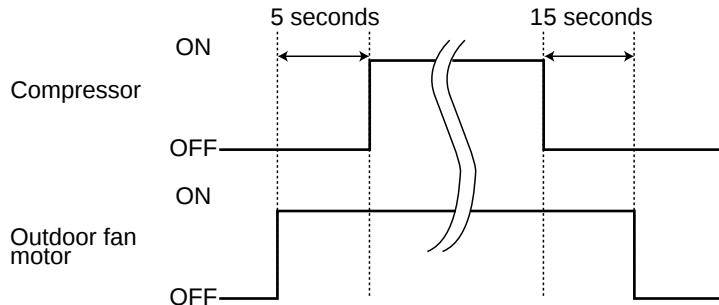
MUZ-GL09NA MUZ-GL09NAH MUY-GL09NA  
 MUZ-GL12NA MUZ-GL12NAH MUY-GL12NA  
 MUZ-GL15NA MUZ-GL15NAH MUY-GL15NA  
 MUZ-GL18NA MUZ-GL18NAH MUY-GL18NA  
 MUZ-GL24NA MUZ-GL24NAH MUY-GL24NA

### 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.

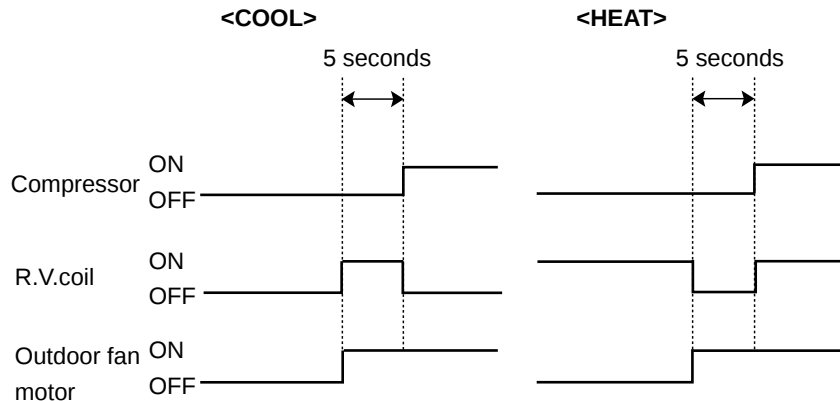
[OFF] The fan motor turns OFF 15 seconds after the compressor has stopped running.



### 8-2. R.V. COIL CONTROL (MUZ)

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

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

\*. MUZ-GL•NAH only.

MUZ-GL09NA MUZ-GL09NAH MUY-GL09NA  
 MUZ-GL12NA MUZ-GL12NAH MUY-GL12NA  
 MUZ-GL15NA MUZ-GL15NAH MUY-GL15NA  
 MUZ-GL18NA MUZ-GL18NAH MUY-GL18NA  
 MUZ-GL24NA MUZ-GL24NAH MUY-GL24NA

### 9-1. CHANGE IN DEFROST SETTING (MUZ)

#### Changing defrost finish temperature

<JS> To change the defrost finish temperature, cut/solder the JS wire of the outdoor inverter P.C. board (Refer to 10-6.1.).

| Jumper |                               | Defrost finish temperature            |                                 |
|--------|-------------------------------|---------------------------------------|---------------------------------|
|        |                               | MUZ-GL09/12/15NA<br>MUZ-GL09/12/15NAH | MUZ-GL18/24NA<br>MUZ-GL18/24NAH |
| JS     | Soldered<br>(Initial setting) | 41°F (5°C)                            | 50°F (10°C)                     |
|        | None<br>(Cut)                 | 50°F (10°C)                           | 64°F (18°C)                     |

### 9-2. PRE-HEAT CONTROL SETTING (MUZ)

#### MUZ-GL09/12/15/18

When moisture gets into the refrigerant cycle, it may interfere with the start-up of the compressor at low outside temperature. The pre-heat control prevents this interference. The pre-heat control turns ON when the discharge temperature thermistor is 68°F (20°C) or below. When the pre-heat control turns ON, the compressor is energized. (About 50 W)

#### MUZ-GL24

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

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

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

#### Pre-heat control setting

<JK>

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

OFF: To deactivate the pre-heat control, solder JK wire of the inverter P.C. board.  
(Refer to 10-6.1)

| Jumper |          | Pre-heat control setting                    |                                |
|--------|----------|---------------------------------------------|--------------------------------|
|        |          | MUZ-GL09/12/15/18NA<br>MUZ-GL09/12/15/18NAH | MUZ-GL24NA<br>MUZ-GL24NAH      |
| JK     | Soldered | Deactivated<br>(Factory setting)            | Deactivated                    |
|        | Cut      | Activated                                   | Activated<br>(Factory setting) |

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

MUZ-GL09NA MUZ-GL09NAH MUY-GL09NA  
 MUZ-GL12NA MUZ-GL12NAH MUY-GL12NA  
 MUZ-GL15NA MUZ-GL15NAH MUY-GL15NA  
 MUZ-GL18NA MUZ-GL18NAH MUY-GL18NA  
 MUZ-GL24NA MUZ-GL24NAH MUY-GL24NA

### 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 miswiring.

#### 2. Take care of the following during servicing

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

<Incorrect>



Lead wiring

<Correct>



Connector housing

#### 3. Troubleshooting procedure

- 1) Check if the OPERATION INDICATOR lamp on the indoor unit is flashing on and off to indicate an abnormality. To make sure, check how many times the OPERATION INDICATOR lamp is flashing on and off before starting service work. (See the service manual of the indoor unit for a description of those failure codes.)
- 2) Before servicing, check that the connector and terminal are connected properly.
- 3) When the electronic control P.C. board seems to be defective, check the copper foil pattern for disconnection and the components for bursting and discoloration.
- 4) Refer to 10-2 and 10-3.

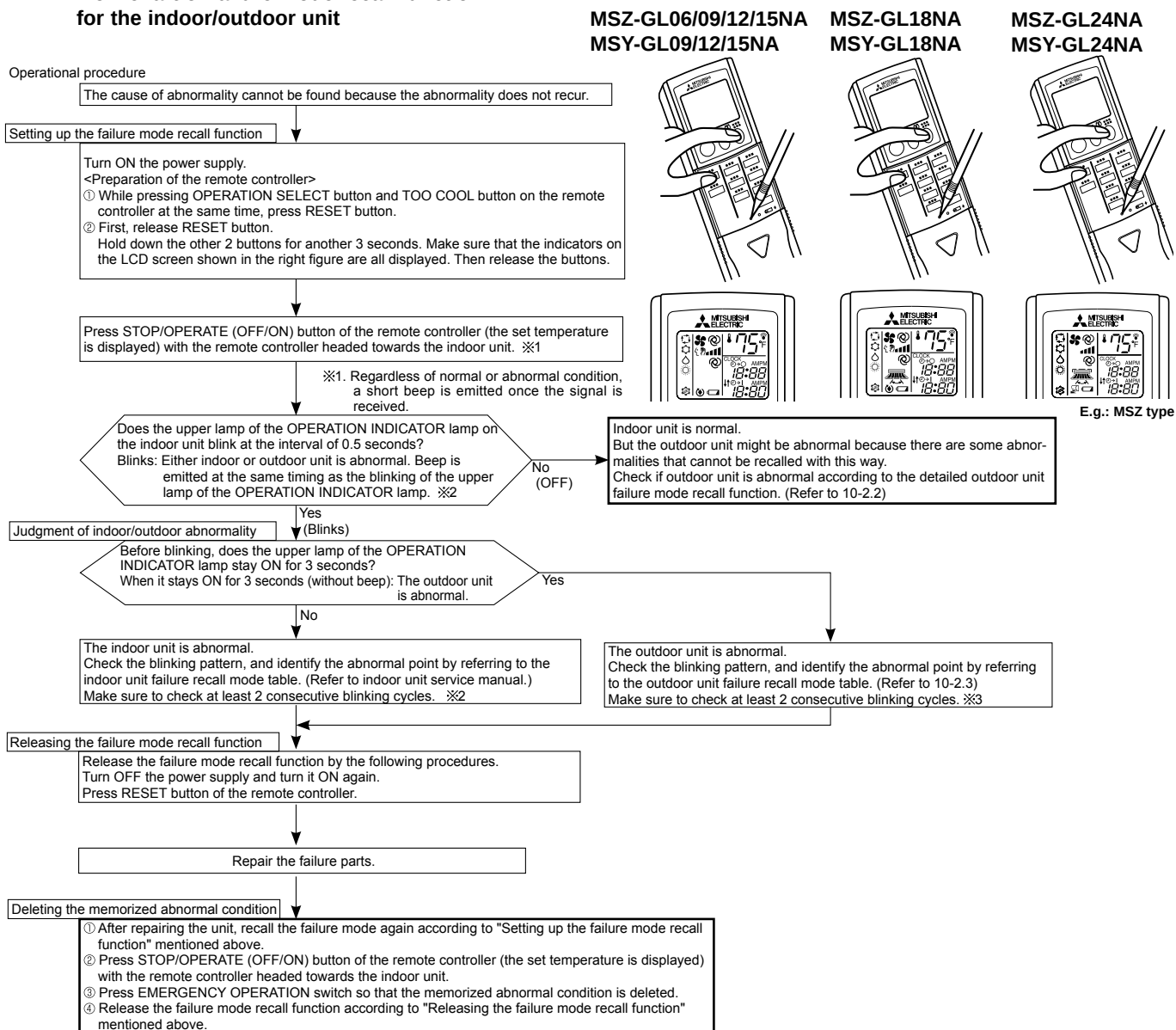
## 10-2. FAILURE MODE RECALL FUNCTION

Outline of the function

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

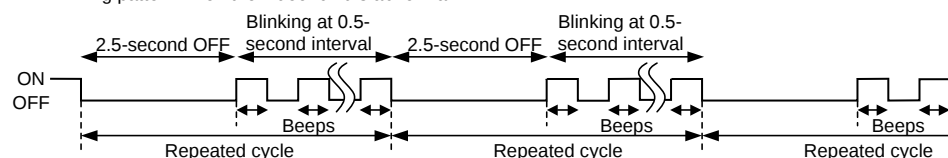
Even though LED indication listed on the troubleshooting check table (10-3.) disappears, the memorized failure details can be recalled.

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

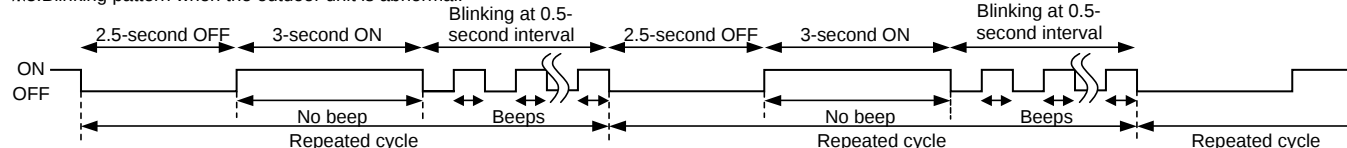


**NOTE:** 1. Make sure to release the failure mode recall function after it is set up, otherwise the unit cannot operate properly.  
2. If the abnormal condition is not deleted from the memory, the last abnormal condition is kept memorized.

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

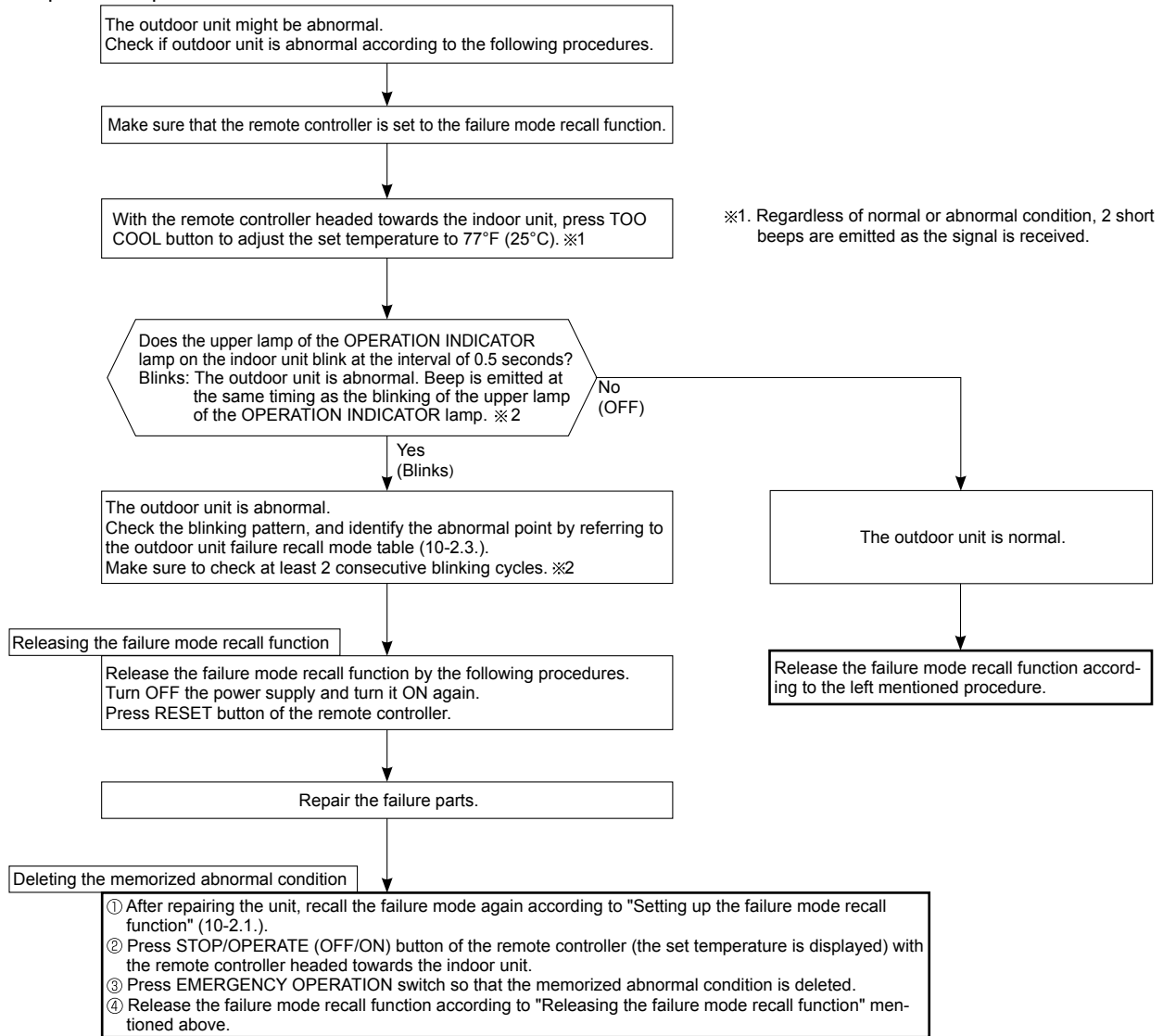


※3. Blinking pattern when the outdoor unit is abnormal:



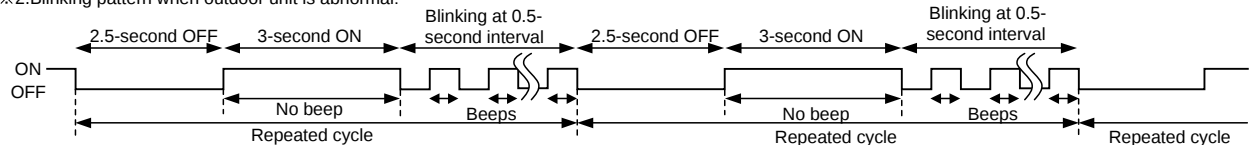
## 2. Flow chart of the detailed outdoor unit failure mode recall function

### Operational procedure



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

※2. Blinking pattern when outdoor unit is abnormal:



**NOTE:** Blinking patterns of this mode differ from the ones of TROUBLESHOOTING CHECK TABLE (10-3.).

### 3. Outdoor unit failure recall mode table

| The upper lamp of the OPERATION INDICATOR lamp (Indoor unit) | Abnormal point (Failure mode/protection)                                                             | LED indication (Outdoor P.C. board) | Condition                                                                                                                                                                                                                                                                                                                                                                                         | Remedy                                                                                                                                     | Indoor/outdoor unit failure mode recall function | Outdoor unit failure mode recall function |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-------------------------------------------|
| OFF                                                          | None (Normal)                                                                                        | —                                   | —                                                                                                                                                                                                                                                                                                                                                                                                 | —                                                                                                                                          | —                                                | —                                         |
| 1-time flash<br>2.5 seconds<br>OFF                           | Indoor/outdoor communication, receiving error                                                        | —                                   | Any signals from the inverter P.C. board cannot be received normally for 3 minutes.                                                                                                                                                                                                                                                                                                               | •Refer to 10-5. ㉔ How to check miswiring and serial signal error.                                                                          | ○                                                | ○                                         |
|                                                              | Indoor/outdoor communication, receiving error                                                        | —                                   | Although the inverter P.C. board sends signal "0", signal "1" has been received 30 consecutive times.                                                                                                                                                                                                                                                                                             | •Refer to 10-5. ㉔ How to check miswiring and serial signal error.                                                                          |                                                  |                                           |
| 2-time flash<br>2.5 seconds<br>OFF                           | Outdoor power system                                                                                 | —                                   | Overcurrent protection cut-out operates 3 consecutive times within 1 minute after the compressor gets started.                                                                                                                                                                                                                                                                                    | •Reconnect connectors.<br>•Refer to 10-5. ㉔ "How to check inverter/compressor".<br>•Check stop valve.                                      | ○                                                | ○                                         |
| 3-time flash<br>2.5 seconds<br>OFF                           | Discharge temperature thermistor                                                                     | 1-time flash every 2.5 seconds      | Thermistor shorts or opens during compressor running.                                                                                                                                                                                                                                                                                                                                             | •Refer to 10-5. ㉔ "Check of outdoor thermistors". Defective outdoor thermistors can be identified by checking the blinking pattern of LED. | ○                                                | ○                                         |
|                                                              | Defrost thermistor                                                                                   |                                     |                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                            |                                                  |                                           |
|                                                              | 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        |                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                            |                                                  |                                           |
|                                                              | Outdoor heat exchanger temperature thermistor                                                        | —                                   |                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                            |                                                  |                                           |
| 4-time flash<br>2.5 seconds<br>OFF                           | Overcurrent                                                                                          | 11-time flash 2.5 seconds OFF       | Large current flows into the power module (IC700) (MUZ-GL09/12/15/18, MUY-GL09/12/15/18)/ IGBT module (IC700) (MUZ-GL24, MUY-GL24).                                                                                                                                                                                                                                                               | •Reconnect compressor connector.<br>•Refer to 10-5. ㉔ "How to check inverter/compressor".<br>•Check stop valve.                            | —                                                | ○                                         |
|                                                              | Compressor synchronous abnormality (Compressor start-up failure protection)                          | 12-time flash 2.5 seconds OFF       | Waveform of compressor current is distorted.                                                                                                                                                                                                                                                                                                                                                      | •Reconnect compressor connector.<br>•Refer to 10-5. ㉔ "How to check inverter/compressor".                                                  | —                                                | ○                                         |
| 5-time flash<br>2.5 seconds<br>OFF                           | Discharge temperature                                                                                | —                                   | Temperature of discharge temperature thermistor exceeds 241°F (116°C), compressor stops. Compressor can restart if discharge temperature thermistor reads 212°F (100°C) or less 3 minutes later.                                                                                                                                                                                                  | •Check refrigerant circuit and refrigerant amount.<br>•Refer to 10-5. ㉔ "Check of LEV".                                                    | —                                                | ○                                         |
| 6-time flash<br>2.5 seconds<br>OFF                           | High pressure                                                                                        | —                                   | Temperature indoor coil thermistor exceeds 158°F (70°C) in HEAT mode. Temperature defrost thermistor exceeds 158°F (70°C) in COOL mode.                                                                                                                                                                                                                                                           | •Check refrigerant circuit and refrigerant amount.<br>•Check stop valve.                                                                   | —                                                | ○                                         |
| 7-time flash<br>2.5 seconds<br>OFF                           | Fin temperature/ P.C. board temperature                                                              | 7-time flash 2.5 seconds OFF        | Temperature of the fin temperature thermistor on the inverter P.C. board exceeds 167 - 187°F (75 - 86°C) (MUZ-GL09/12/15/18, MUY-GL09/12/15/18)/167 - 176°F (75 - 80°C) (MUZ-GL24, MUY-GL24), or temperature of P.C. board temperature thermistor on the inverter P.C. board exceeds 162 - 185°F (72 - 85°C) (MUZ-GL09/12/15/18, MUY-GL09/12/15/18)/158 - 167°F (70 - 75°C) (MUZ-GL24, MUY-GL24). | •Check around outdoor unit.<br>•Check outdoor unit air passage.<br>•Refer to 10-5. ㉔ "Check of outdoor fan motor".                         | —                                                | ○                                         |
| 8-time flash<br>2.5 seconds<br>OFF                           | Outdoor fan motor                                                                                    | —                                   | Outdoor fan has stopped 3 times in a row within 30 seconds after outdoor fan start-up.                                                                                                                                                                                                                                                                                                            | •Refer to 10-5. ㉔ "Check of outdoor fan motor". Refer to 10-5. ㉔ "Check of inverter P.C. board".                                           | —                                                | ○                                         |
| 9-time flash<br>2.5 seconds<br>OFF                           | Non-volatile memory data                                                                             | 5-time flash 2.5 seconds OFF        | Non-volatile memory data cannot be read properly.                                                                                                                                                                                                                                                                                                                                                 | •Replace the inverter P.C. board.                                                                                                          | ○                                                | ○                                         |
|                                                              | Power module (IC700) (MUZ-GL09/12/15/18, MUY-GL09/12/15/18) IGBT module (IC700) (MUZ-GL24, MUY-GL24) | 6-time flash 2.5 seconds OFF        | The interface short circuit occurs in the output of the power module (IC700) (MUZ-GL09/12/15/18, MUY-GL09/12/15/18)/IGBT module (IC700) (MUZ-GL24, MUY-GL24). The compressor winding shorts circuit.                                                                                                                                                                                              | •Refer to 10-5. ㉔ "How to check inverter/compressor".                                                                                      |                                                  |                                           |

**NOTE:** Blinking patterns of this mode differ from the ones of TROUBLESHOOTING CHECK TABLE (10-3.).

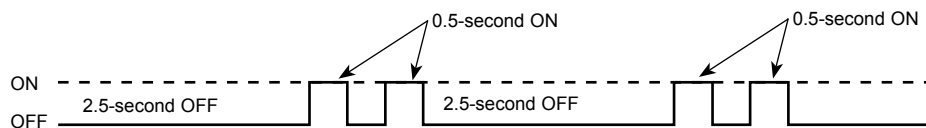
| The upper lamp of the OPERATION INDICATOR lamp (Indoor unit) | Abnormal point (Failure mode/protection) | LED indication (Outdoor P.C. board) | Condition                                                                                                                                                                       | Remedy                                                                                                                                  | Indoor/outdoor unit failure mode recall function | Outdoor unit failure mode recall function |
|--------------------------------------------------------------|------------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-------------------------------------------|
| 10-time flash<br>2.5 seconds<br>OFF                          | Discharge temperature                    | —                                   | Temperature of discharge temperature thermistor has been 122°F (50°C) or less for 20 minutes.                                                                                   | •Refer to 10-5.Ⓒ"Check of LEV".<br>•Check refrigerant circuit and refrigerant amount.                                                   | —                                                | ○                                         |
| 11-time flash<br>2.5 seconds<br>OFF                          | DC voltage                               | 8-time flash<br>2.5 seconds OFF     | 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<br>2.5 seconds OFF     | Each phase current of compressor cannot be detected normally.                                                                                                                   |                                                                                                                                         |                                                  |                                           |
| 14-time flash<br>or more<br>2.5 seconds<br>OFF               | Stop valve (Closed valve)                | 14-time flash<br>2.5 seconds OFF    | Closed valve is detected by compressor current.                                                                                                                                 | •Check stop valve.                                                                                                                      | ○                                                | ○                                         |
|                                                              | 4-way valve/<br>Pipe temperature         | 16-time flash<br>2.5 seconds OFF    | The 4-way valve does not work properly.<br>The indoor coil thermistor detects an abnormal temperature.                                                                          | •Check the 4-way valve.<br>•Replace the inverter P.C. board.                                                                            |                                                  |                                           |
|                                                              | Outdoor refrigerant system abnormality   | 1-time flash<br>2.5 seconds OFF     | A closed valve and air trapped in the refrigerant circuit are detected based on the temperature sensed by the indoor and outdoor thermistors and the current of the compressor. | •Check for a gas leak in a connecting piping etc.<br>•Check the stop valve.<br>•Refer to 10-5.Ⓓ "Check of outdoor refrigerant circuit". | ○                                                | ○                                         |

### 10-3. TROUBLESHOOTING CHECK TABLE

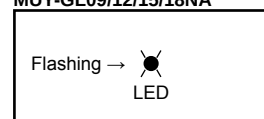
| No. | Symptom                                                        | LED indication                 | Abnormal point/<br>Condition                                           | Condition                                                                                                                                                                                                                                                                                                                                                                              | Remedy                                                                                                                                                                                                                                      |
|-----|----------------------------------------------------------------|--------------------------------|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Outdoor unit does not operate.                                 | 1-time flash every 2.5 seconds | Outdoor power system                                                   | Overcurrent protection cut-out operates 3 consecutive times within 1 minute after the compressor gets started.                                                                                                                                                                                                                                                                         | •Reconnect connector of compressor.<br>•Refer to 10-5.④ "How to check inverter/compressor".<br>•Check stop valve.                                                                                                                           |
| 2   |                                                                |                                | Outdoor thermistors                                                    | Discharge temperature thermistor, fin temperature thermistor, defrost thermistor, P.C. board temperature thermistor, outdoor heat exchanger temperature thermistor or ambient temperature thermistor shorts or opens during compressor running.                                                                                                                                        | •Refer to 10-5.⑤ "Check of outdoor thermistors".                                                                                                                                                                                            |
| 3   |                                                                |                                | Outdoor control system                                                 | Nonvolatile memory data cannot be read properly.<br><br>(The upper lamp of the OPERATION INDICATOR lamp on the indoor unit lights up or flashes 7-time.)                                                                                                                                                                                                                               | •Replace inverter P.C. board.                                                                                                                                                                                                               |
| 4   |                                                                | 6-time flash 2.5 seconds OFF   | Serial signal                                                          | The communication fails between the indoor and outdoor unit for 3 minutes.                                                                                                                                                                                                                                                                                                             | •Refer to 10-5.⑥ "How to check miswiring and serial signal error."                                                                                                                                                                          |
| 5   |                                                                | 11-time flash 2.5 seconds OFF  | Stop valve/<br>Closed valve                                            | Closed valve is detected by compressor current.                                                                                                                                                                                                                                                                                                                                        | •Check stop valve.                                                                                                                                                                                                                          |
| 6   |                                                                | 16-time flash 2.5 seconds OFF  | 4-way valve/<br>Pipe temperature                                       | The 4-way valve does not work properly.<br>The indoor coil thermistor detects an abnormal temperature.                                                                                                                                                                                                                                                                                 | •Refer to 10-5.⑦ "Check of R.V. coil".<br>•Replace the inverter P.C. board.                                                                                                                                                                 |
| 7   |                                                                | 17-time flash 2.5 seconds OFF  | Outdoor refrigerant system abnormality                                 | A closed valve and air trapped in the refrigerant circuit are detected based on the temperature sensed by the indoor and outdoor thermistors and the current of the compressor.                                                                                                                                                                                                        | •Check for a gas leak in a connecting piping etc.<br>•Check the stop valve.<br>•Refer to 10-5.⑧ "Check of outdoor refrigerant circuit".                                                                                                     |
| 8   | 'Outdoor unit stops and restarts 3 minutes later' is repeated. | 2-time flash 2.5 seconds OFF   | Overcurrent protection                                                 | Large current flows into the power module (IC700) (MUZ-GL09/12/15/18, MUY-GL09/12/15/18) IGBT module (IC700) (MUZ-GL24, MUY-GL24).                                                                                                                                                                                                                                                     | •Reconnect connector of compressor.<br>•Refer to 10-5.④ "How to check inverter/compressor".<br>•Check stop valve.                                                                                                                           |
| 9   |                                                                | 3-time flash 2.5 seconds OFF   | Discharge temperature overheat protection                              | Temperature of discharge temperature thermistor exceeds 241°F (116°C), compressor stops. Compressor can restart if discharge temperature thermistor reads 212°F (100°C) or less 3 minutes later.                                                                                                                                                                                       | •Check refrigerant circuit and refrigerant amount.<br>•Refer to 10-5.⑧ "Check of LEV".                                                                                                                                                      |
| 10  |                                                                | 4-time flash 2.5 seconds OFF   | Fin temperature /P.C. board temperature thermistor overheat protection | Temperature of the fin temperature thermistor on the heat sink exceeds 167 - 187°F (75 - 86°C) (MUZ-GL09/12/15/18, MUY-GL09/12/15/18)/167 - 176°F (75 - 80°C) (MUZ-GL24, MUY-GL24) or temperature of P.C. board temperature thermistor on the inverter P.C. board exceeds 162 - 185°F (72 - 85°C) (MUZ-GL09/12/15/18, MUY-GL09/12/15/18)/158 - 167°F (70 - 75°C) (MUZ-GL24, MUY-GL24). | •Check around outdoor unit.<br>•Check outdoor unit air passage.<br>•Refer to 10-5.① "Check of outdoor fan motor".                                                                                                                           |
| 11  |                                                                | 5-time flash 2.5 seconds OFF   | High pressure protection                                               | Indoor coil thermistor exceeds 158°F (70°C) in HEAT mode. Defrost thermistor exceeds 158°F (70°C) in COOL mode.                                                                                                                                                                                                                                                                        | •Check refrigerant circuit and refrigerant amount.<br>•Check stop valve.                                                                                                                                                                    |
| 12  |                                                                | 8-time flash 2.5 seconds OFF   | Compressor synchronous abnormality                                     | The waveform of compressor current is distorted.                                                                                                                                                                                                                                                                                                                                       | •Reconnect connector of compressor.<br>•Refer to 10-5.④ "How to check inverter/compressor".                                                                                                                                                 |
| 13  |                                                                | 10-time flash 2.5 seconds OFF  | Outdoor fan motor                                                      | Outdoor fan has stopped 3 times in a row within 30 seconds after outdoor fan start-up.                                                                                                                                                                                                                                                                                                 | •Refer to 10-5.① "Check of outdoor fan motor."<br>•Refer to 10-5.① "Check of inverter P.C. board."                                                                                                                                          |
| 14  |                                                                | 12-time flash 2.5 seconds OFF  | Each phase current of compressor                                       | Each phase current of compressor cannot be detected normally.                                                                                                                                                                                                                                                                                                                          | •Refer to 10-5.④ "How to check inverter/compressor".                                                                                                                                                                                        |
| 15  |                                                                | 13-time flash 2.5 seconds OFF  | DC voltage                                                             | DC voltage of inverter cannot be detected normally.                                                                                                                                                                                                                                                                                                                                    | •It occurs with following case. Instantaneous power voltage drop. (Short time power failure) (MUZ-GL24, MUY-GL24)<br>•Refer to 10-5.④ "Check of power supply". (MUZ-GL24, MUY-GL24)<br>•Refer to 10-5.④ "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.  
3. Blinking patterns of this mode differ from the ones of the failure recall mode.

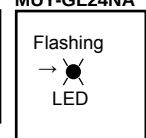
The flashing frequency shows the number of times the LED blinks after every 2.5-second OFF.  
(Example) When the flashing frequency is "2".



Inverter P.C. board  
MUZ-GL09/12/15/18NA(H)  
MUY-GL09/12/15/18NA



MUZ-GL24NA(H)  
MUY-GL24NA

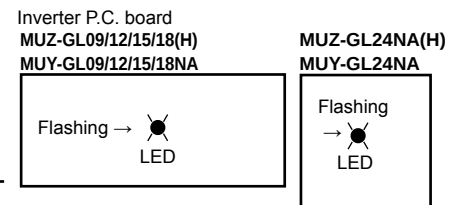
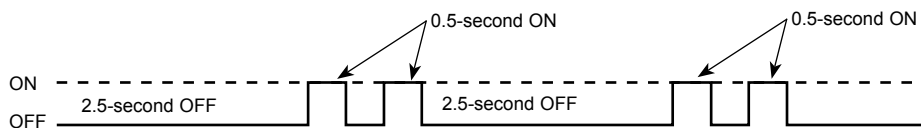




| No. | Symptom                         | LED indication                            | Abnormal point/<br>Condition                                                                                         | Condition                                                                                                                        |                                                                                  | Remedy                                                                                                                                                                                          |
|-----|---------------------------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16  | Outdoor unit operates.          | 1-time flash<br>2.5 seconds OFF           | Frequency drop by current protection                                                                                 | MUZ-GL09/12/15/18<br>MUY-GL09/12/15/18                                                                                           | When the input current exceeds approximately 10.5A, 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.      |
|     |                                 |                                           |                                                                                                                      | MUZ-GL24<br>MUY-GL24                                                                                                             | Current from power outlet is nearing breaker capacity.                           |                                                                                                                                                                                                 |
| 17  |                                 | 3-time flash<br>2.5 seconds OFF           | Frequency drop by high pressure protection                                                                           | Temperature of indoor coil thermistor exceeds 131 °F (55°C) in HEAT mode, compressor frequency lowers.                           |                                                                                  |                                                                                                                                                                                                 |
|     |                                 |                                           | Frequency drop by defrosting in COOL mode                                                                            | Indoor coil thermistor reads 46°F (8°C) or less in COOL mode, compressor frequency lowers.                                       |                                                                                  |                                                                                                                                                                                                 |
| 18  |                                 | 4-time flash<br>2.5 seconds OFF           | Frequency drop by discharge temperature protection                                                                   | Temperature of discharge temperature thermistor exceeds 232°F (111°C), compressor frequency lowers.                              |                                                                                  |                                                                                                                                                                                                 |
| 19  | 5-time flash<br>2.5 seconds OFF | Outside temperature thermistor protection | When the outside temperature thermistor shorts or opens, protective operation without that thermistors is performed. |                                                                                                                                  | •Refer to 10-5. Ⓢ Check of outdoor thermistors.                                  |                                                                                                                                                                                                 |
| 20  | Outdoor unit operates.          | 7-time flash<br>2.5 seconds OFF           | Low discharge temperature protection                                                                                 | Temperature of discharge temperature thermistor has been 122°F (50°C) or less for 20 minutes.                                    |                                                                                  | •Refer to 10-5.ⓧ "Check of LEV".<br>•Check refrigerant circuit and refrigerant amount.                                                                                                          |
| 21  |                                 | 8-time flash<br>2.5 seconds OFF           | MUZ-GL09/12/15/18<br>MUY-GL09/12/15/18<br>PAM protection<br>PAM: Pulse Amplitude Modulation                          | The overcurrent flows into PFC (Power factor correction :IC820) or the DC voltage reaches 394 V or more, PAM stops and restarts. |                                                                                  | This is not malfunction. PAM protection will be activated in the following cases:<br>1 Instantaneous power voltage drop. (Short time power failure)<br>2 When the power supply voltage is high. |
|     |                                 |                                           | MUZ-GL24<br>MUY-GL24<br>Zero cross detecting circuit                                                                 | Zero cross signal cannot be detected.                                                                                            |                                                                                  | •It occurs with following cases.<br>1 Instantaneous power voltage drop. (Short time power failure)<br>2 Distortion of primary voltage<br>•Refer to 10-5. Ⓣ "Check of power supply".             |
| 22  |                                 | 9-time flash<br>2.5 seconds OFF           | Inverter check mode                                                                                                  | The connector of compressor is disconnected, inverter check mode starts.                                                         |                                                                                  | •Check if the connector of the compressor is correctly connected.<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.  
 3. Blinking patterns of this mode differ from the ones of the failure recall mode.

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



#### 10-4. TROUBLE CRITERION OF MAIN PARTS

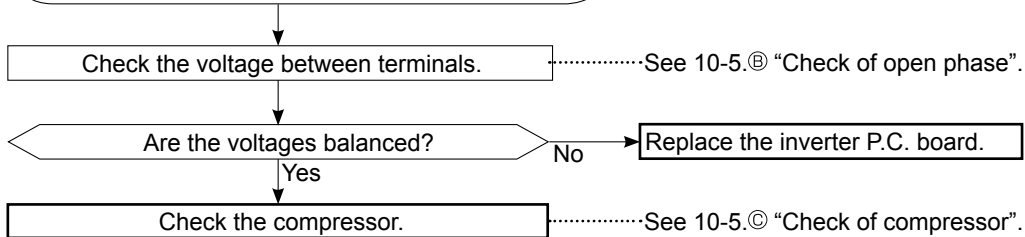
**MUZ-GL09NA MUZ-GL09NAH MUY-GL09NA**  
**MUZ-GL12NA MUZ-GL12NAH MUY-GL12NA**  
**MUZ-GL15NA MUZ-GL15NAH MUY-GL15NA**  
**MUZ-GL18NA MUZ-GL18NAH MUY-GL18NA**  
**MUZ-GL24NA MUZ-GL24NAH MUY-GL24NA**

| Part name                                                                                                                                                                            | Check method and criterion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Figure                                       |                            |                      |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|----------------------------|----------------------|----------------------------------|----------------------------|-------------------------------------|----------------------------------|----------------------------------------------|----------------------------|----------------------|-----|-------------|-------------|-------------|-------------|-----|--|--|--|--|-----|--|--|--|--|--|
| Defrost thermistor (RT61)<br>(MUZ)<br><br>Fin temperature thermistor (RT64)<br><br>Ambient temperature thermistor (RT65)<br><br>Outdoor heat exchanger temperature thermistor (RT68) | Measure the resistance with a tester.<br><br>Refer to 10-6. "Test point diagram and voltage", 1. "Inverter P.C. board", for the chart of thermistor.                                                                                                                                                                                                                                                                                                                                                                                                                            |                                              |                            |                      |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
| Discharge temperature thermistor (RT62)                                                                                                                                              | Measure the resistance with a tester. 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", for the chart of thermistor.                                                                                                                                                                                                                                                                                                                                                     |                                              |                            |                      |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
| Compressor                                                                                                                                                                           | Measure the resistance between terminals using a tester.<br>[Temperature: 14 - 104°F (-10 - 40°C)] <table><tr><td></td><td colspan="4">Normal (Ω)</td></tr><tr><td></td><td>MUY-GL09<br/>MUZ-GL09NA(H) - [U1]</td><td>MUZ-GL09NA(H) - [U8]<br/>MUZ-GL12<br/>MUY-GL12</td><td>MUZ-GL15/18<br/>MUY-GL15/18</td><td>MUZ-GL24<br/>MUY-GL24</td></tr><tr><td>U-V</td><td>1.26 - 1.72</td><td>1.60 - 2.17</td><td>0.82 - 1.11</td><td>0.87 - 1.18</td></tr><tr><td>U-W</td><td></td><td></td><td></td><td></td></tr><tr><td>V-W</td><td></td><td></td><td></td><td></td></tr></table> |                                              | Normal (Ω)                 |                      |                                  |                            |                                     | MUY-GL09<br>MUZ-GL09NA(H) - [U1] | MUZ-GL09NA(H) - [U8]<br>MUZ-GL12<br>MUY-GL12 | MUZ-GL15/18<br>MUY-GL15/18 | MUZ-GL24<br>MUY-GL24 | U-V | 1.26 - 1.72 | 1.60 - 2.17 | 0.82 - 1.11 | 0.87 - 1.18 | U-W |  |  |  |  | V-W |  |  |  |  |  |
|                                                                                                                                                                                      | Normal (Ω)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                              |                            |                      |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
|                                                                                                                                                                                      | MUY-GL09<br>MUZ-GL09NA(H) - [U1]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | MUZ-GL09NA(H) - [U8]<br>MUZ-GL12<br>MUY-GL12 | MUZ-GL15/18<br>MUY-GL15/18 | MUZ-GL24<br>MUY-GL24 |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
| U-V                                                                                                                                                                                  | 1.26 - 1.72                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1.60 - 2.17                                  | 0.82 - 1.11                | 0.87 - 1.18          |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
| U-W                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |                            |                      |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
| V-W                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |                            |                      |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
| Outdoor fan motor                                                                                                                                                                    | Measure the resistance between lead wires using a tester.<br>[Temperature: 14 - 104°F (-10 - 40°C)] <table><tr><td rowspan="2">Color of lead wire</td><td colspan="2">Normal (Ω)</td></tr><tr><td>MUZ-GL09/12/15<br/>MUY-GL09/12/15</td><td>MUZ-GL18/24<br/>MUY-GL18/24</td></tr><tr><td>RED - BLK<br/>BLK - WHT<br/>WHT - RED</td><td>29 - 40</td><td>12 - 16</td></tr></table>                                                                                                                                                                                                | Color of lead wire                           | Normal (Ω)                 |                      | MUZ-GL09/12/15<br>MUY-GL09/12/15 | MUZ-GL18/24<br>MUY-GL18/24 | RED - BLK<br>BLK - WHT<br>WHT - RED | 29 - 40                          | 12 - 16                                      |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
| Color of lead wire                                                                                                                                                                   | Normal (Ω)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                              |                            |                      |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
|                                                                                                                                                                                      | MUZ-GL09/12/15<br>MUY-GL09/12/15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | MUZ-GL18/24<br>MUY-GL18/24                   |                            |                      |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
| RED - BLK<br>BLK - WHT<br>WHT - RED                                                                                                                                                  | 29 - 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 12 - 16                                      |                            |                      |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
| R. V. coil (21S4)                                                                                                                                                                    | Measure the resistance using a tester.<br>[Temperature: 14 - 104°F (-10 - 40°C)] <table><tr><td>Normal (kΩ)</td></tr><tr><td>0.97 - 1.38</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                      | Normal (kΩ)                                  | 0.97 - 1.38                |                      |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
| Normal (kΩ)                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |                            |                      |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
| 0.97 - 1.38                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |                            |                      |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
| Expansion valve coil (LEV)                                                                                                                                                           | Measure the resistance using a tester.<br>[Temperature: 14 - 104°F (-10 - 40°C)] <table><tr><td>Color of lead wire</td><td>Normal (Ω)</td></tr><tr><td>RED - ORN</td><td rowspan="5">37 - 54</td></tr><tr><td>RED - WHT</td></tr><tr><td>RED - BLU</td></tr><tr><td>RED - YLW</td></tr><tr><td></td></tr></table>                                                                                                                                                                                                                                                               | Color of lead wire                           | Normal (Ω)                 | RED - ORN            | 37 - 54                          | RED - WHT                  | RED - BLU                           | RED - YLW                        |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
| Color of lead wire                                                                                                                                                                   | Normal (Ω)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                              |                            |                      |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
| RED - ORN                                                                                                                                                                            | 37 - 54                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                              |                            |                      |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
| RED - WHT                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |                            |                      |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
| RED - BLU                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |                            |                      |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
| RED - YLW                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |                            |                      |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
|                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |                            |                      |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
| Defrost heater (MUZ-GL-NAH)                                                                                                                                                          | Measure the resistance using a tester.<br>[Temperature: 14 - 104°F (-10 - 40°C)] <table><tr><td>Normal (Ω)</td></tr><tr><td>349 - 428</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                         | Normal (Ω)                                   | 349 - 428                  |                      |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
| Normal (Ω)                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |                            |                      |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |
| 349 - 428                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |                            |                      |                                  |                            |                                     |                                  |                                              |                            |                      |     |             |             |             |             |     |  |  |  |  |     |  |  |  |  |  |

## 10-5. TROUBLESHOOTING FLOW

### Ⓐ How to check inverter/compressor

Disconnect the connector between the compressor and the power module (IC700) (**MUZ-GL09/12/15/18, MUY-GL09/12/15/18**)/IGBT module (IC700) (**MUZ-GL24, MUY-GL24**).



### Ⓑ Check of open phase

- With the connector between the compressor and the power module (IC700) (**MUZ-GL09/12/15/18, MUY-GL09/12/15/18**)/IGBT module (IC700) (**MUZ-GL24, MUY-GL24**) disconnected, activate the inverter and check if the inverter is normal by measuring **the voltage balance** between the terminals.

Output voltage is 50 - 130 V. (The voltage may differ according to the tester.)

<< Operation method>>

Start cooling or heating operation by pressing EMERGENCY OPERATION switch on the indoor unit. (TEST RUN OPERATION: Refer to 7-6.)

<<Measurement point>>

At 3 points

BLK (U)-WHT (V)

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

BLK (U)-RED (W)

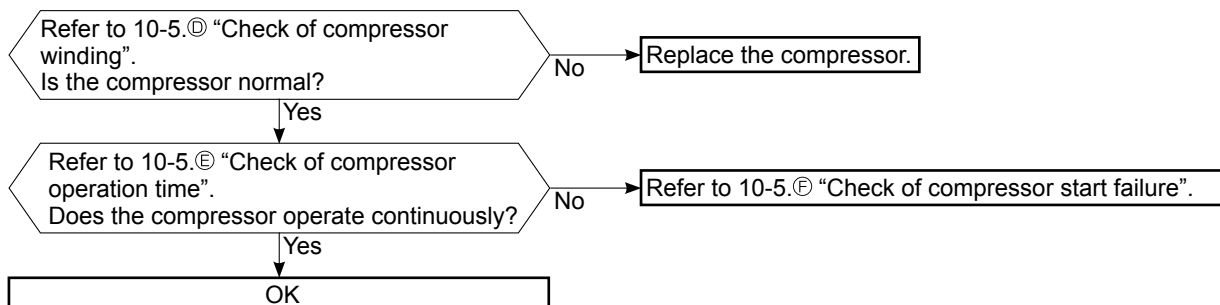
WHT(V)-RED (W)

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

2. Measure the voltage by analog type tester.

3. During this check, LED of the inverter P.C. board flashes 9 times. (Refer to 10-6.1.)

### Ⓒ Check of compressor



## D Check of compressor winding

- Disconnect the connector between the compressor and the power module (IC700) (MUZ-GL09/12/15/18, MUY-GL09/12/15/18)/ IGBT module (IC700) (MUZ-GL24, MUY-GL24), 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:** Be sure to zero the ohmmeter before measurement.

## E Check of compressor operation time

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

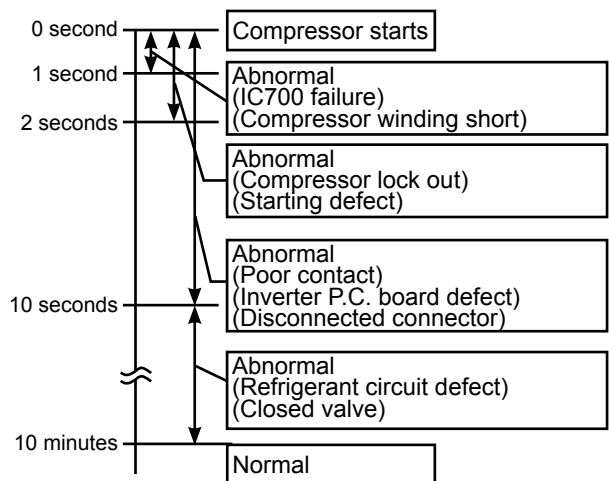
<<Operation method>>

Start heating or cooling operation by pressing EMERGENCY OPERATION switch on the indoor unit. (TEST RUN OPERATION: Refer to 7-6.)

<<Measurement>>

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

<<Judgement>>



## F Check of compressor start failure

Confirm that ①~④ is normal.

•Electrical circuit check

①. Contact of the compressor connector

②. Output voltage of inverter P.C. board and balance of them (See 10-5.⑥)

③. Direct current voltage between DB61(+) and (-) (MUZ-GL09/12/15/18, MUY-GL09/12/15/18)/JP715(+) and JP30(-) (MUZ-GL24, MUY-GL24) on the inverter P.C. board

④. Voltage between outdoor terminal block S1-S2

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

Yes

Check the refrigerant circuit.  
Check the stop valve.

No

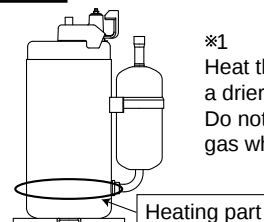
After the compressor is heated with a drier, does the compressor start? ※1

No

Replace the compressor.

Yes

Compressor start failure. Activate pre-heat control.  
(Refer to 9-2. "PRE-HEAT CONTROL SETTING")

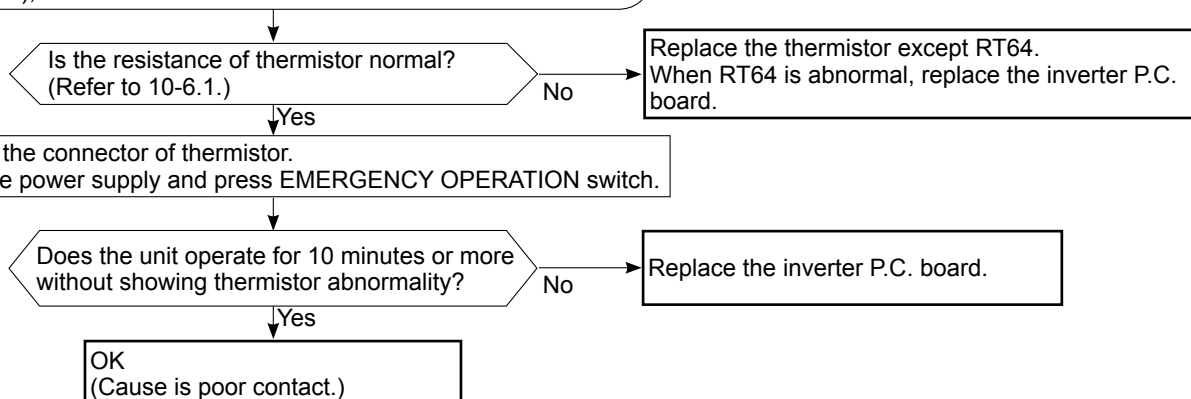


※1

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

## **③ Check of outdoor thermistors**

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



### **MUZ-GL09/12/15/18, MUY-GL09/12/15/18**

| Thermistor                         | Symbol | Connector, Pin No.          | Board               |
|------------------------------------|--------|-----------------------------|---------------------|
| Defrost ( <b>MUZ</b> )             | RT61   | Between CN641 pin1 and pin2 | Inverter P.C. board |
| Discharge temperature              | RT62   | Between CN641 pin3 and pin4 |                     |
| Fin temperature                    | RT64   | Between CN642 pin1 and pin2 |                     |
| Ambient temperature                | RT65   | Between CN643 pin1 and pin2 |                     |
| Outdoor heat exchanger temperature | RT68   | Between CN644 pin1 and pin3 |                     |

### **MUZ-GL24, MUY-GL24**

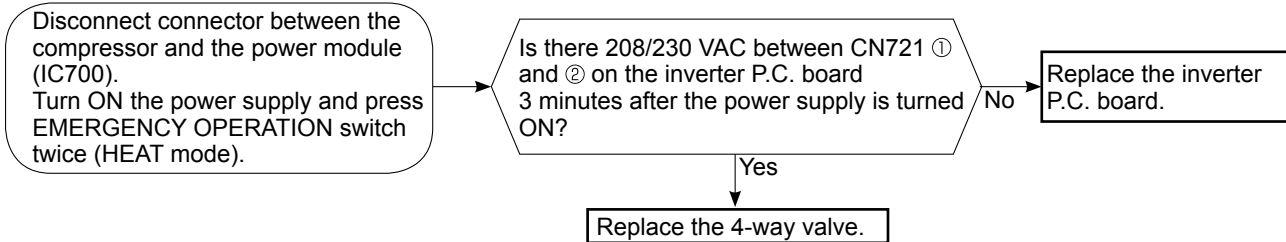
| Thermistor                         | Symbol | Connector, Pin No.          | Board               |
|------------------------------------|--------|-----------------------------|---------------------|
| Defrost ( <b>MUZ</b> )             | RT61   | Between CN671 pin1 and pin2 | Inverter P.C. board |
| Discharge temperature              | RT62   | Between CN671 pin3 and pin4 |                     |
| Fin temperature                    | RT64   | Between CN673 pin1 and pin2 |                     |
| Ambient temperature                | RT65   | Between CN672 pin1 and pin2 |                     |
| Outdoor heat exchanger temperature | RT68   | Between CN671 pin5 and pin6 |                     |

## H Check of R.V. coil (MUZ)

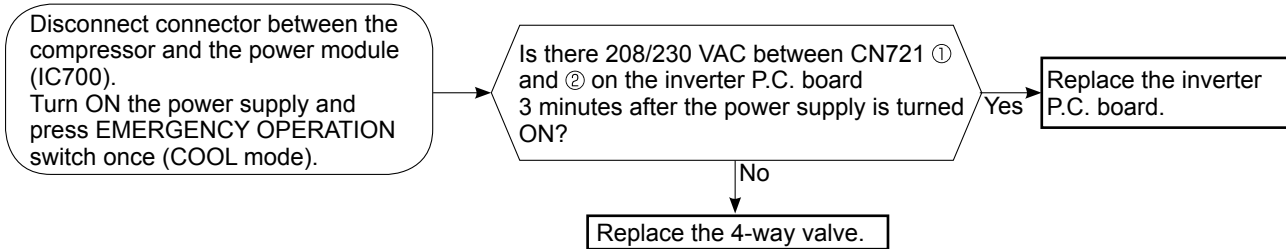
### MUZ-GL09/12/15/18NA MUZ-GL09/12/15/18NAH

- \* 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 disconnected or R.V. coil is open, voltage is generated between the terminal pins of the connector although no signal is being transmitted to R.V. coil.  
Check if CN721 is connected.

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



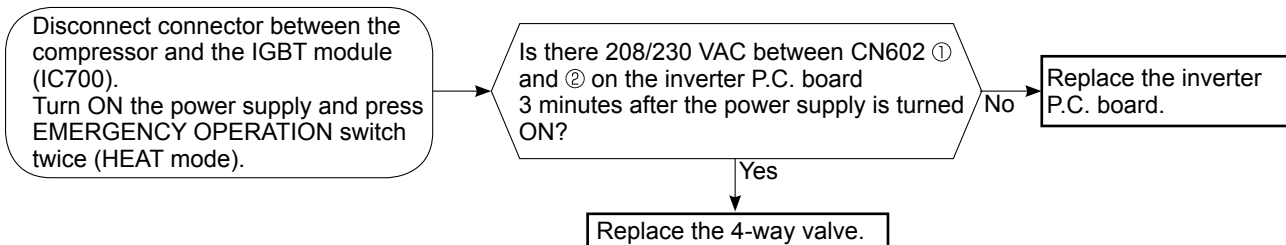
#### Unit operates HEAT mode even if it is set to COOL mode.



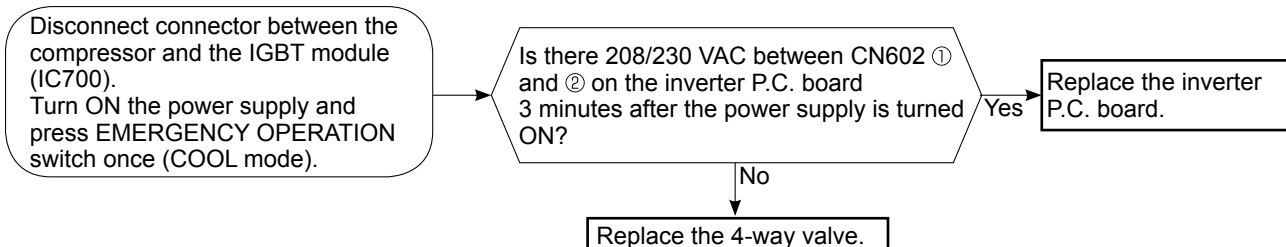
### MUZ-GL24NA MUZ-GL24NAH

- \* First of all, measure the resistance of R.V. coil to check if the coil is defective. Refer to 10-4.
- \* In case CN602 is disconnected or R.V. coil is open, voltage is generated between the terminal pins of the connector although no signal is being transmitted to R.V. coil.  
Check if CN602 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.



## ① Check of outdoor fan motor

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

Is the resistance between each terminal of outdoor fan motor normal? (Refer to 10-4.)

Yes

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

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

No

(Fixed to either 5 or 0 VDC)

No

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

Yes

No

Does the outdoor fan motor rotate smoothly?

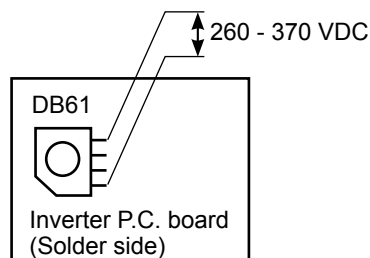
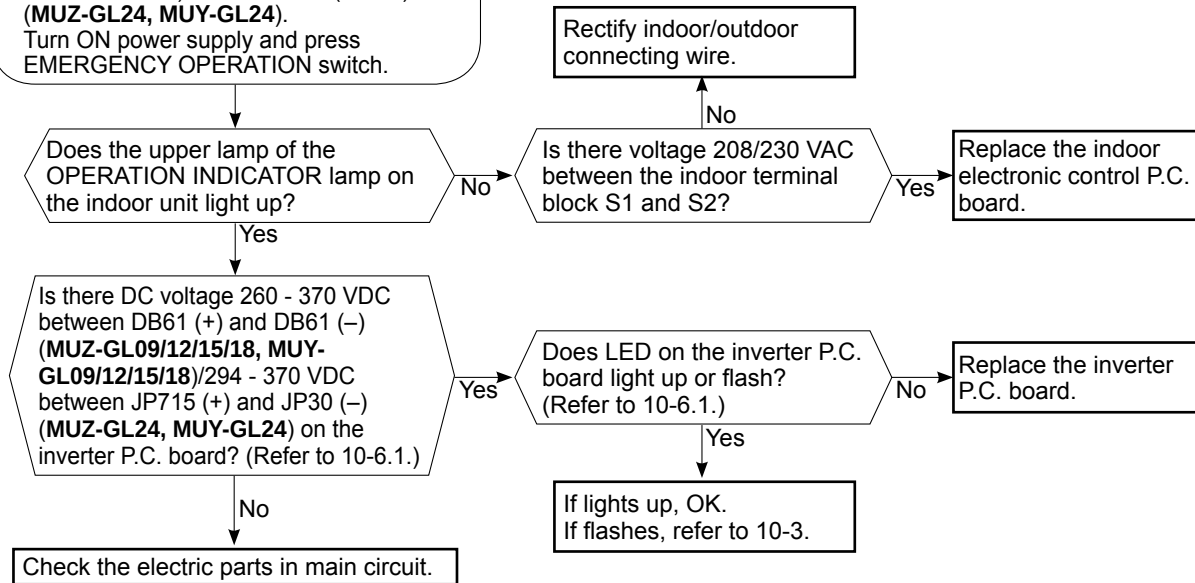
Yes

Replace the outdoor fan motor.

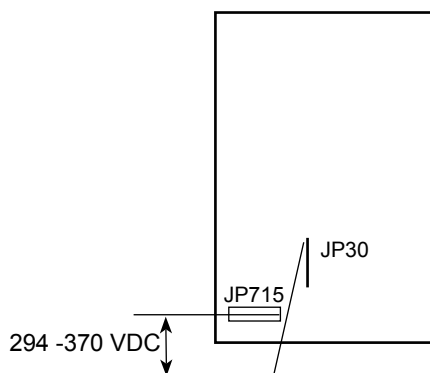
Replace the inverter P.C. board.

## **J Check of power supply**

Disconnect the connector between the compressor and the power module (IC700) (**MUZ-GL09/12/15/18, MUY-GL09/12/15/18**)/IGBT module (IC700) (**MUZ-GL24, MUY-GL24**).  
Turn ON power supply and press EMERGENCY OPERATION switch.



**MUZ-GL09/12/15/18NA**  
**MUZ-GL09/12/15/18NAH**  
**MUY-GL09/12/15/18NA**



**MUZ-GL24NA**  
**MUZ-GL24NAH**  
**MUY-GL24NA**

## K Check of LEV (Expansion valve)

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. Hold down the other 2 buttons for another 3 seconds. Make sure that the indicators on the LCD screen shown in the right figure are all displayed. Then release the buttons.

Press STOP/OPERATE (OFF/ON) 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 vibrates when touching it ?

Yes

OK

No

Is LEV coil properly fixed to the expansion valve?

No

Properly fix the LEV coil to the expansion valve.

Yes

Does the resistance of LEV coil have the characteristics? (Refer to 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 - 5 VAC between each?  
**NOTE:** Measure the voltage by an analog tester.

Yes

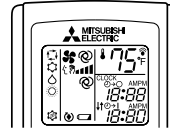
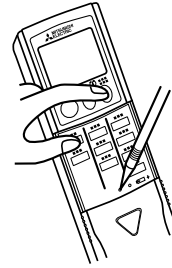
Replace the expansion valve.

No

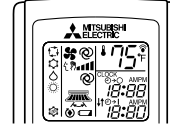
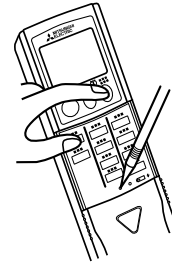
Replace the LEV coil.

Replace the inverter P.C. board.

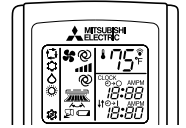
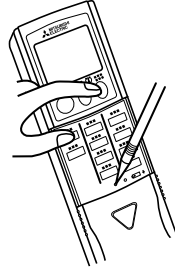
MSZ-GL06/09/12/15NA  
MSY-GL09/12/15NA



MSZ-GL18NA  
MSY-GL18NA



MSZ-GL24NA  
MSY-GL24NA



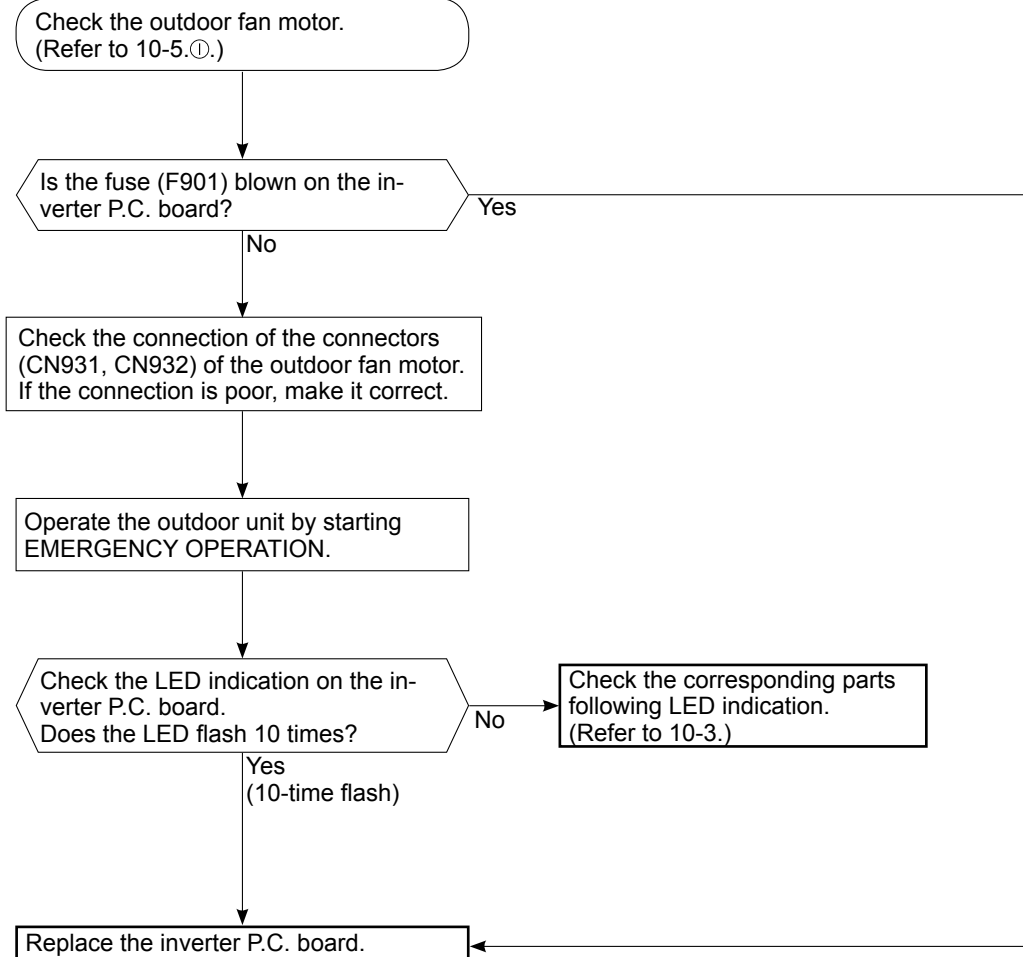
E.g.: MSZ type

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

**NOTE:** After check of LEV, do the undermentioned operations.

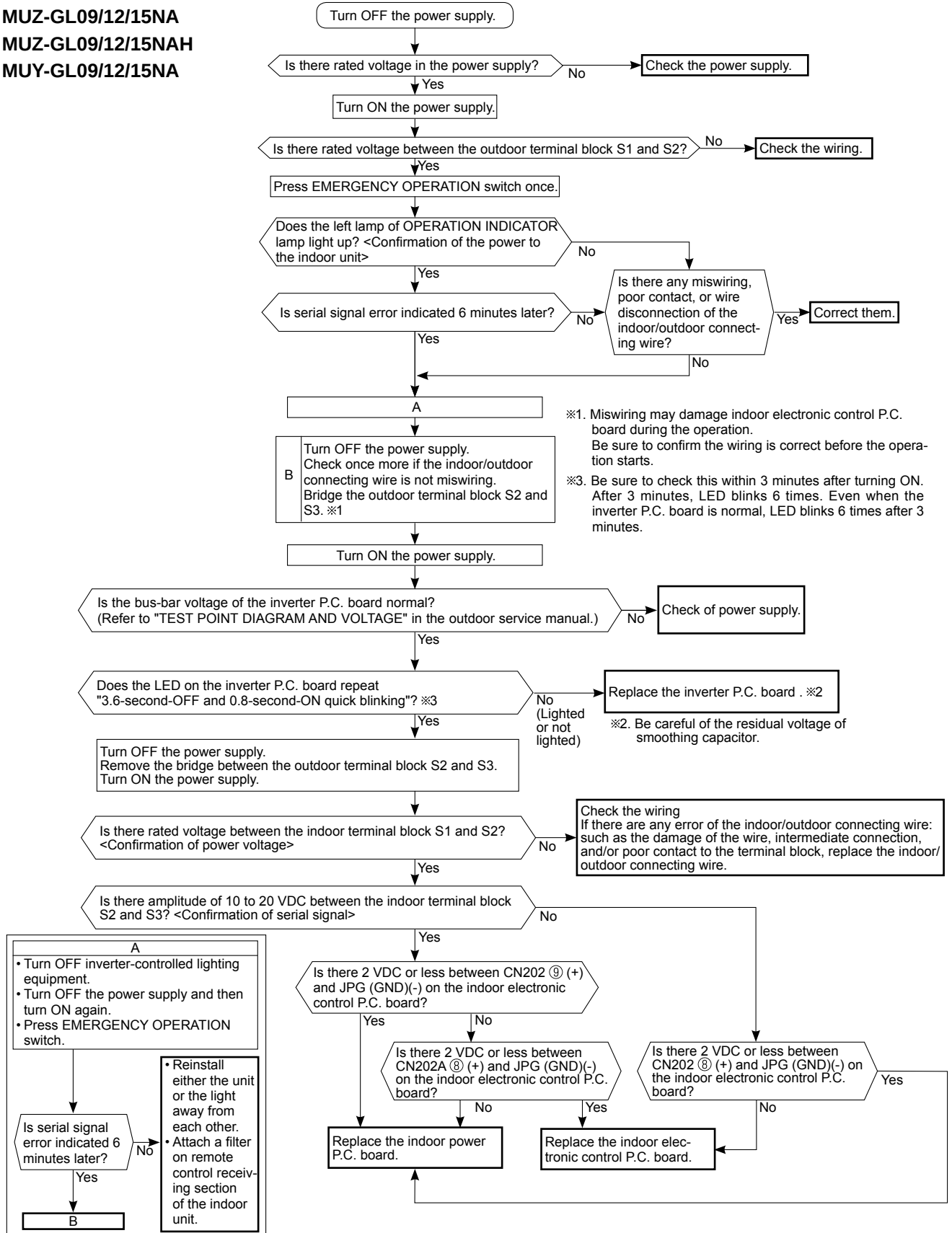
1. Turn OFF the power supply and turn it ON again.
2. Press RESET button on the remote controller.

## **L Check of inverter P.C. board**

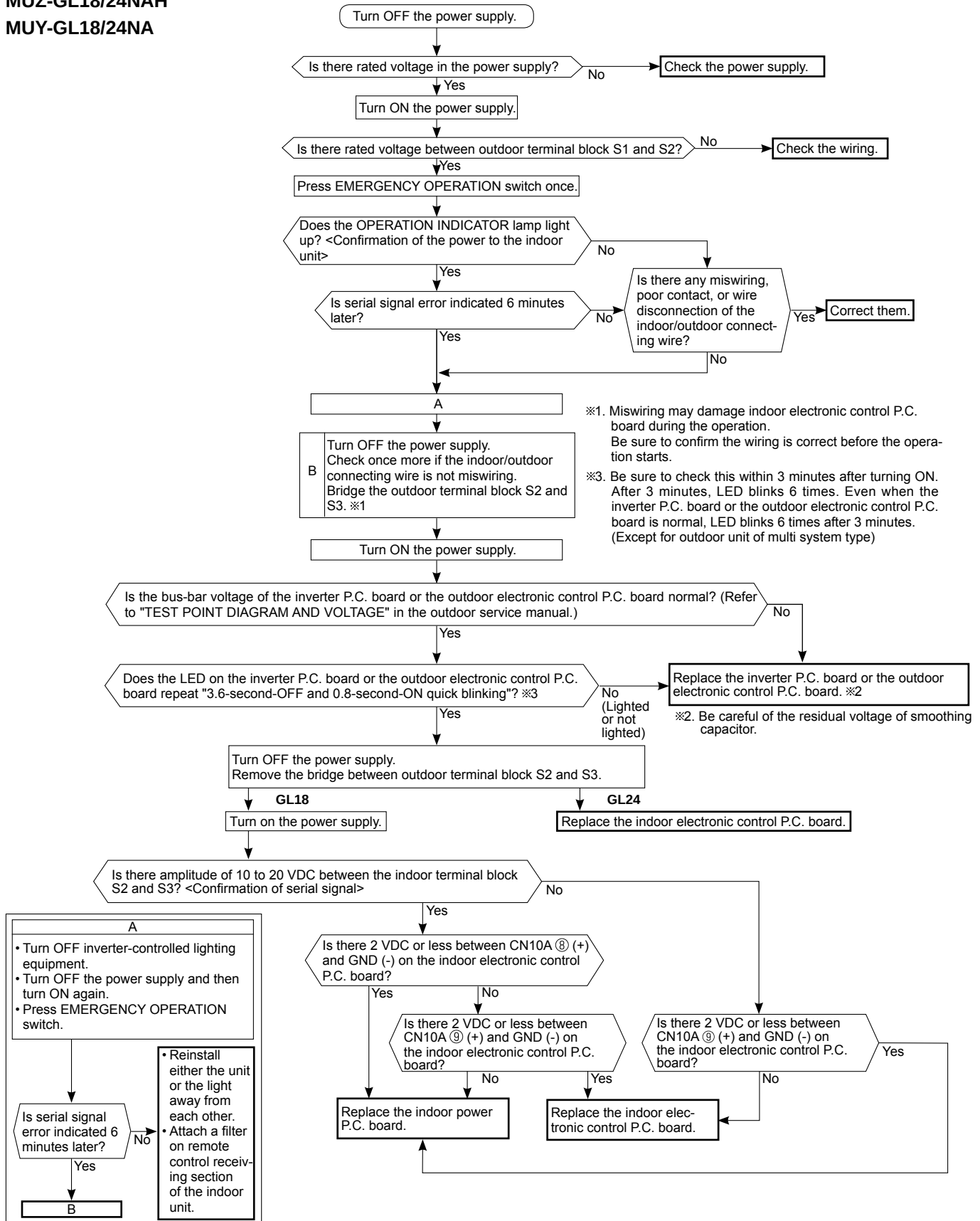


## M How to check miswiring and serial signal error

MUZ-GL09/12/15NA  
MUZ-GL09/12/15NAH  
MUY-GL09/12/15NA



**MUZ-GL18/24NA**  
**MUZ-GL18/24NAH**  
**MUY-GL18/24NA**



## N Check of defrost heater (base pan heater) (MUZ-GL•NAH)

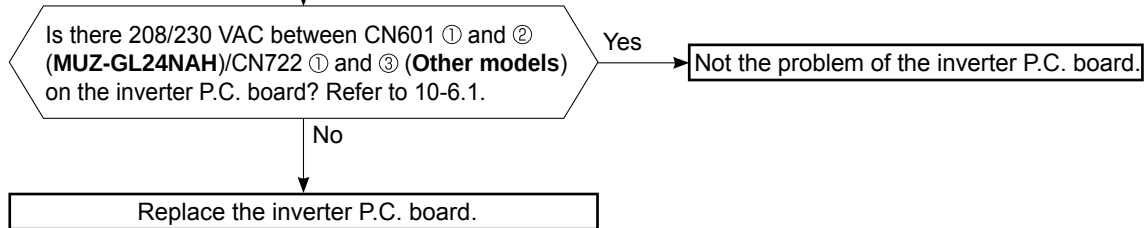
### MUZ-GL09/12/15/18/24NAH

Check the following points before checking electric continuity.

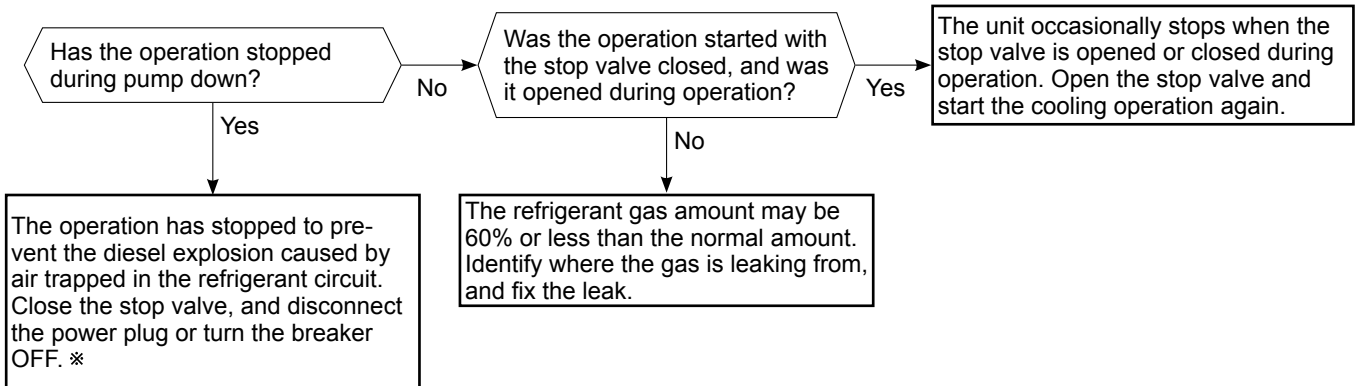
1. Does the resistance of ambient temperature thermistor have the characteristics? Refer to 10-6.1.
2. Is the resistance of defrost heater normal? Refer to 10-4.
3. Does the heater protector remain conducted (not open)?
4. Are both ambient temperature thermistor and circuit of defrost heater securely connected to connectors?

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

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

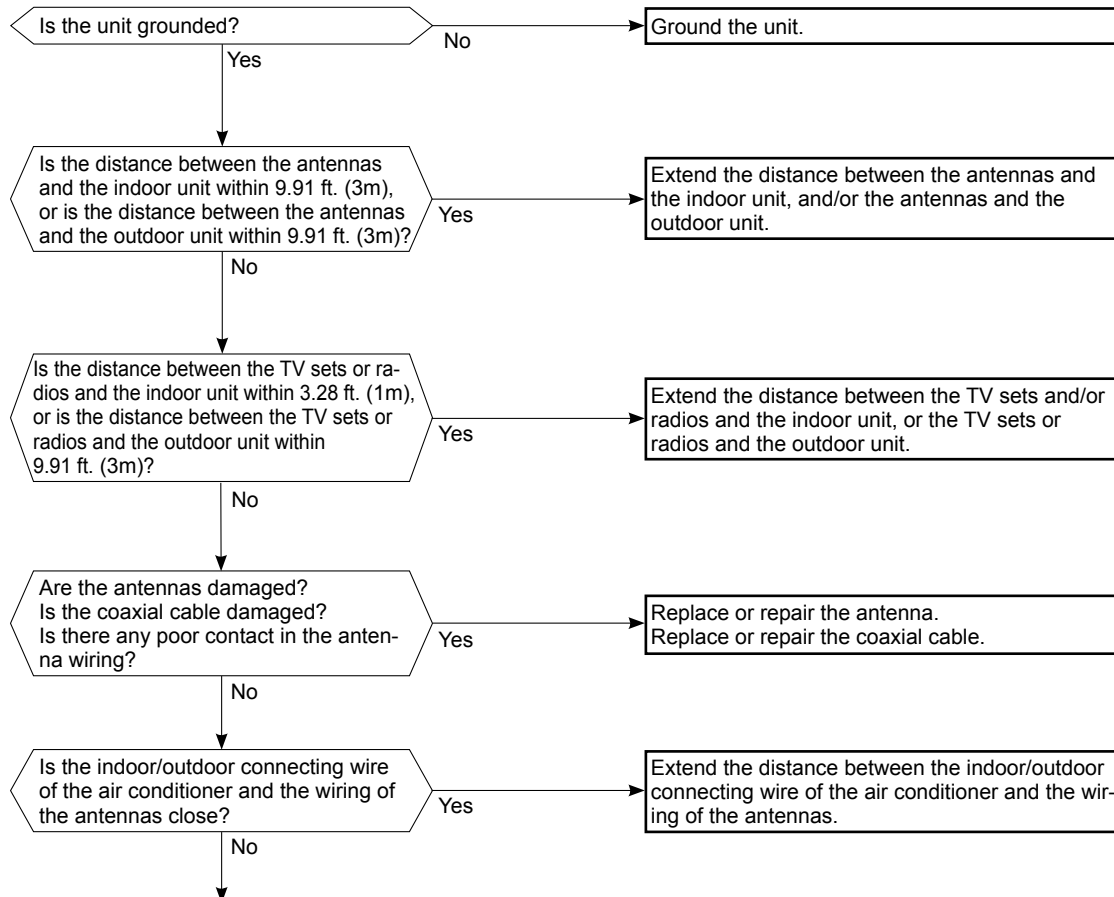


## O Check of outdoor refrigerant circuit



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

## P Electromagnetic noise enters into TV sets or radios



Even if all of the above conditions are 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 following 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, ground 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 STOP/OPERATE (OFF/ON) 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 STOP/OPERATE (OFF/ON) 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.

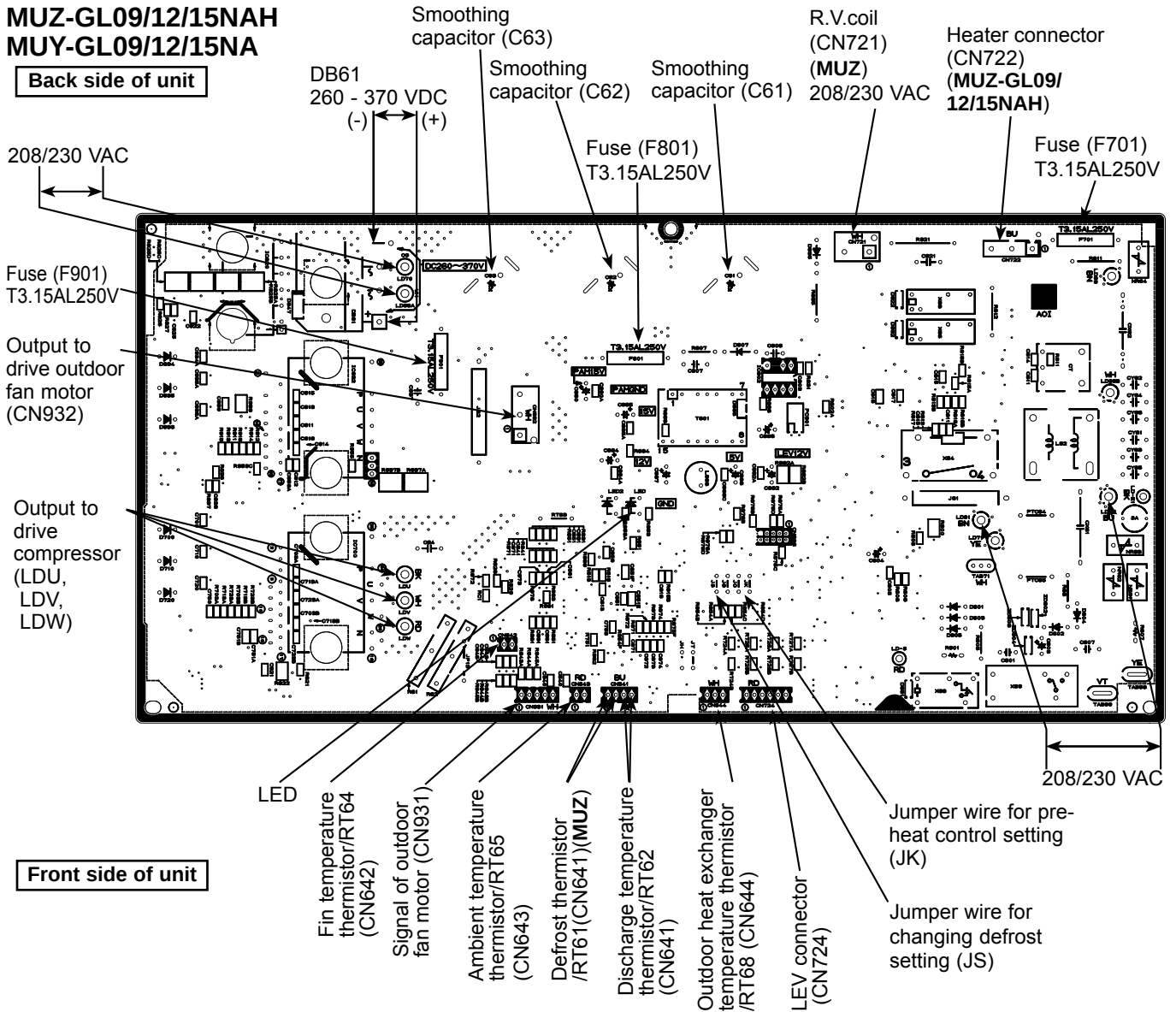
## 10-6. TEST POINT DIAGRAM AND VOLTAGE

### 1. Inverter P.C. board

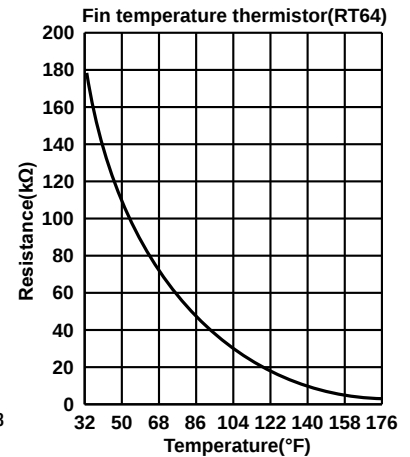
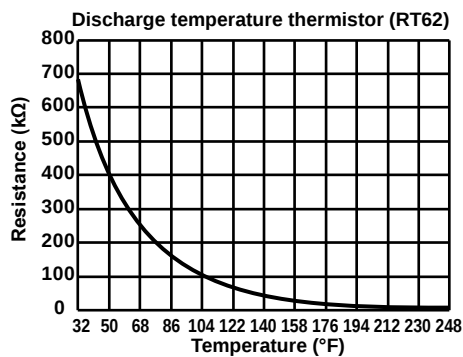
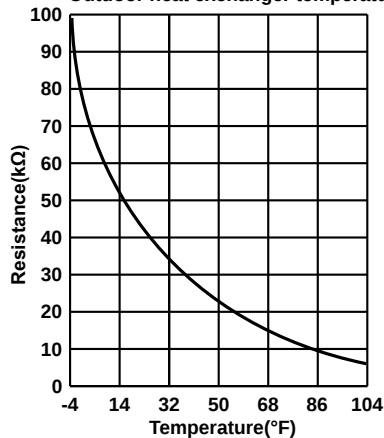
MUZ-GL09/12/15NA

MUZ-GL09/12/15NAH

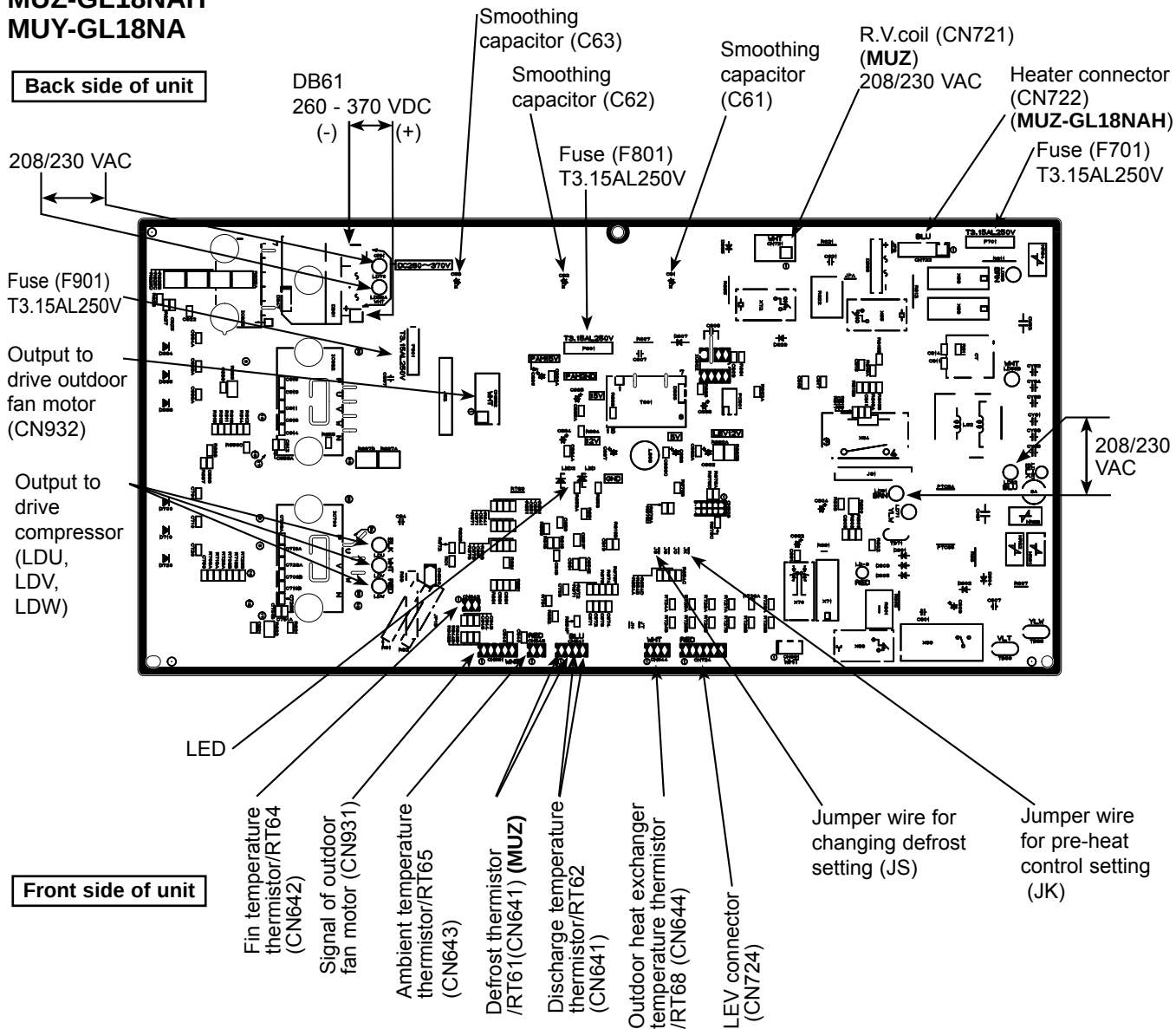
MUY-GL09/12/15NA



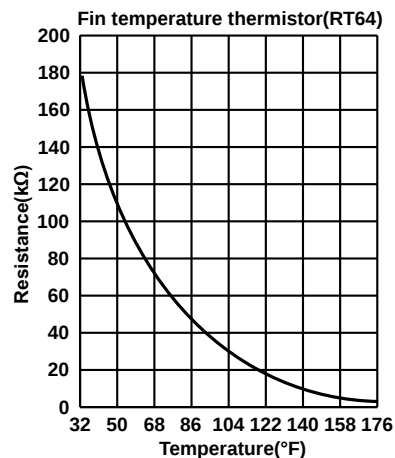
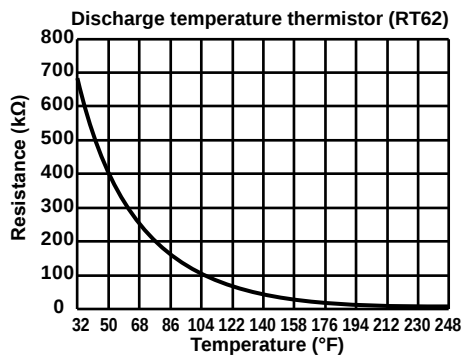
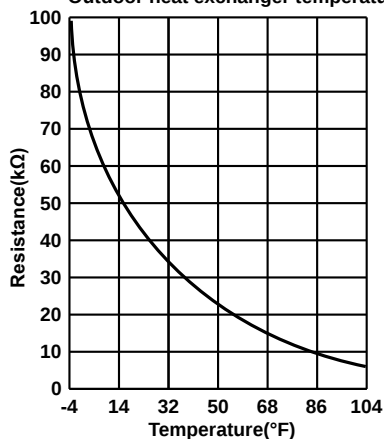
Defrost thermistor(RT61)  
Ambient temperature thermistor(RT65)  
Outdoor heat exchanger temperature thermistor(RT68)



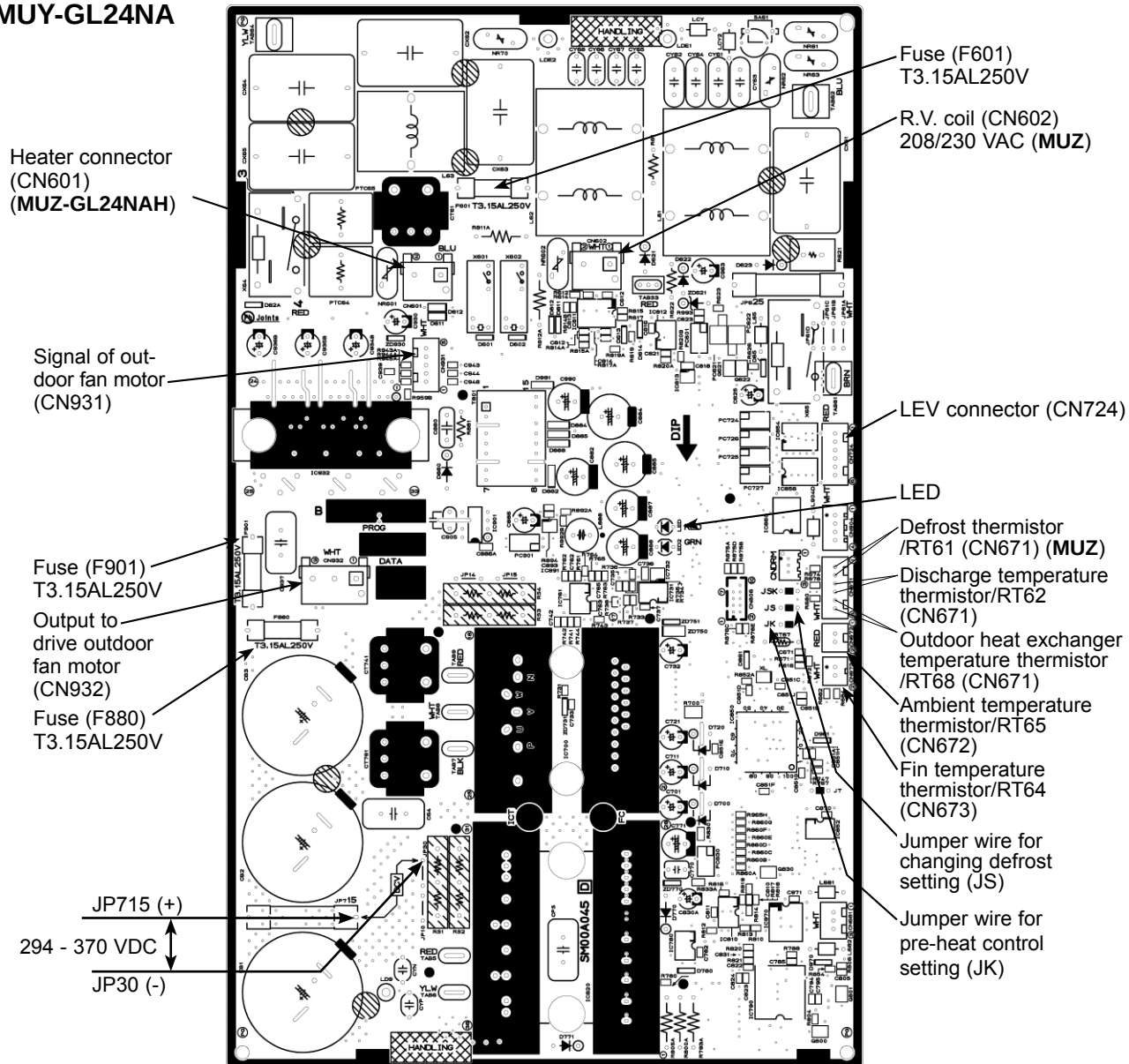
**MUZ-GL18NA  
MUZ-GL18NAH  
MUY-GL18NA**



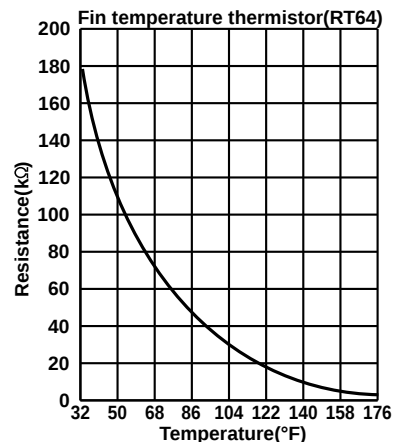
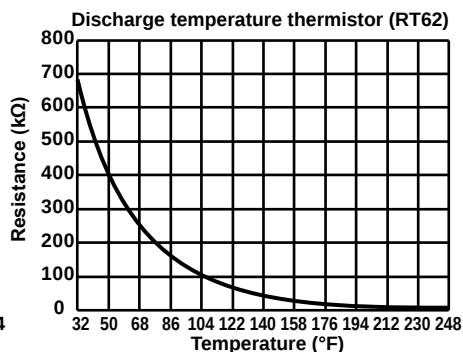
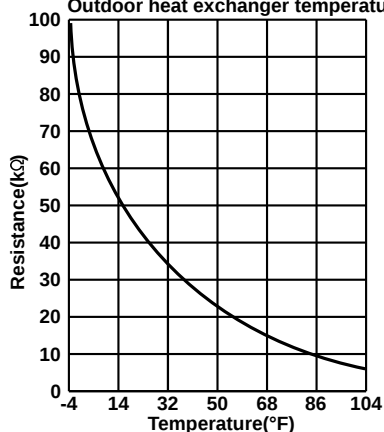
Defrost thermistor(RT61)  
Ambient temperature thermistor(RT65)  
Outdoor heat exchanger temperature thermistor(RT68)



**MUZ-GL24NA  
MUZ-GL24NAH  
MUY-GL24NA**



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



## &lt;"Terminal with locking mechanism" Detaching points&gt;

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

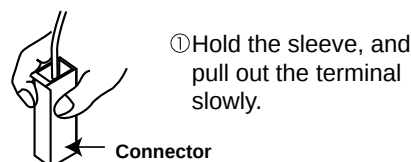
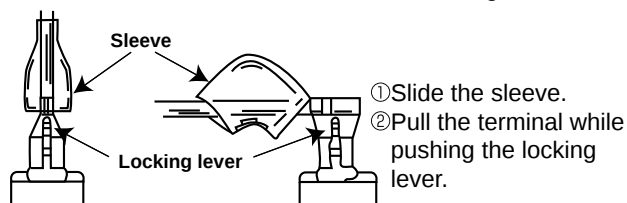
There are 2 types (refer to (1) and (2)) of the terminal with locking mechanism.

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.

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

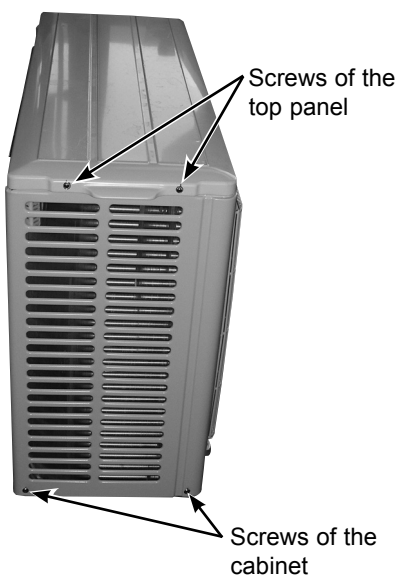
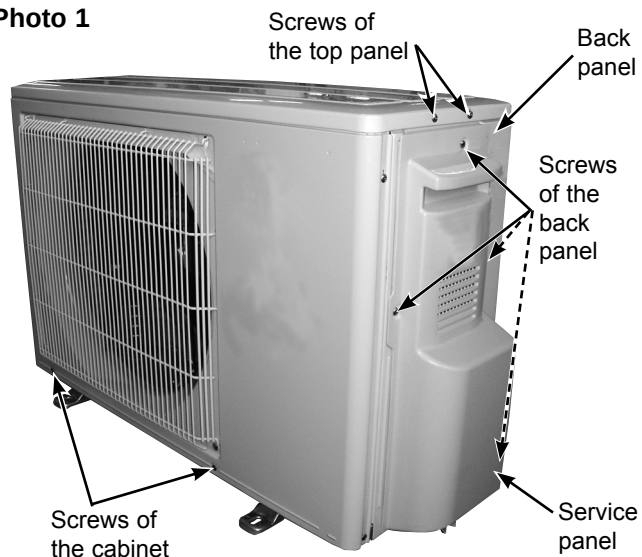
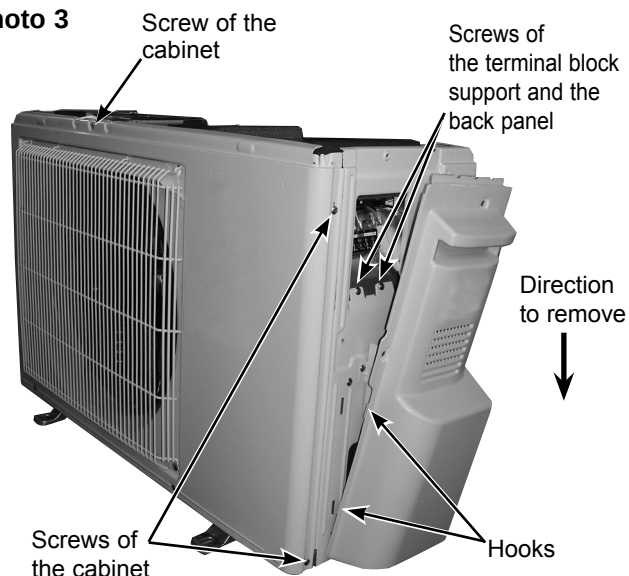


**11-1. MUZ-GL09NA MUZ-GL09NAH MUY-GL09NA**  
**MUZ-GL12NA MUZ-GL12NAH MUY-GL12NA**  
**MUZ-GL15NA MUZ-GL15NAH MUY-GL15NA**

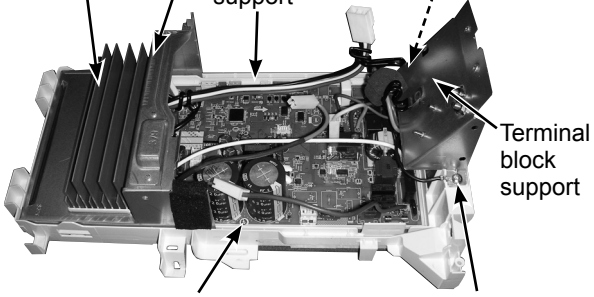
**NOTE:** Turn OFF the power supply before disassembly.

**OPERATING PROCEDURE****1. Removing the cabinet**

- (1) Remove the screw fixing the service panel.
- (2) Pull down the service panel and remove it.
- (3) Remove the screws fixing the conduit cover.
- (4) Remove the conduit cover. (Photo 4)
- (5) Remove the screw fixing the conduit plate. (Photo 5)
- (6) Remove the conduit plate.
- (7) Disconnect the power supply wire and indoor/outdoor connecting wire.
- (8) Remove the screws fixing the top panel.
- (9) Remove the top panel.
- (10) Remove the screws fixing the cabinet.
- (11) Remove the cabinet.
- (12) Remove the screws fixing the back panel.
- (13) Remove the back panel.

**Photo 2****PHOTOS****Photo 1****Photo 3**



| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PHOTOS                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Photo 4</b></p>  <p>Screws of the conduit cover</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p><b>Photo 5</b></p>  <p>Screw of the conduit plate</p>                                                                                                                                                                                      |
| <p><b>2. Removing the inverter assembly, inverter P.C. board</b></p> <p>(1) Remove the cabinet and panels. (Refer to 1.)</p> <p>(2) Disconnect the lead wire to the reactor and the following connectors:</p> <p>&lt;Inverter P.C. board&gt;</p> <p>CN721 (R.V. coil) (<b>MUZ</b>)</p> <p>CN722 (Defrost heater and heater protector) (<b>MUZ-GL09/12/15NAH</b>)</p> <p>CN931, CN932 (Fan motor)</p> <p>CN641 (Defrost thermistor (<b>MUZ</b>) and discharge temperature thermistor)</p> <p>CN643 (Ambient temperature thermistor)</p> <p>CN644 (Outdoor heat exchanger temperature thermistor)</p> <p>CN724 (LEV)</p> <p>(3) Remove the compressor connector (CN61).</p> <p>(4) Remove the screws fixing the heat sink support and the separator.</p> <p>(5) Remove the fixing screws of the terminal block support and the back panel.</p> <p>(6) Remove the inverter assembly.</p> <p>(7) Remove the screw of the ground wire and screw of the terminal block support.</p> <p>(8) Remove the heat sink support from the P.C. board support.</p> <p>(9) Remove the screw of the inverter P.C. board and remove the inverter P.C. board from the P.C. board support.</p> | <p><b>Photo 6</b></p> <p>Screws of the heat sink support and the separator</p>  <p>Screws of the terminal block support and the back panel</p>                                                                                               |
| <p><b>3. Removing R.V. coil</b></p> <p>(1) Remove the cabinet and panels. (Refer to 1.)</p> <p>(2) Disconnect the following connectors:</p> <p>&lt;Inverter P.C. board&gt;</p> <p>CN721 (R.V. coil) (<b>MUZ</b>)</p> <p>(3) Remove the R.V. coil.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p><b>Photo 7</b></p>  <p>Heat sink</p> <p>Heat sink support</p> <p>P.C. board support</p> <p>Screw of the Terminal block support</p> <p>Terminal block support</p> <p>Screw of the inverter P.C. board</p> <p>Screw of the ground wire</p> |

## OPERATING PROCEDURE

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

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

## PHOTOS

Photo 8

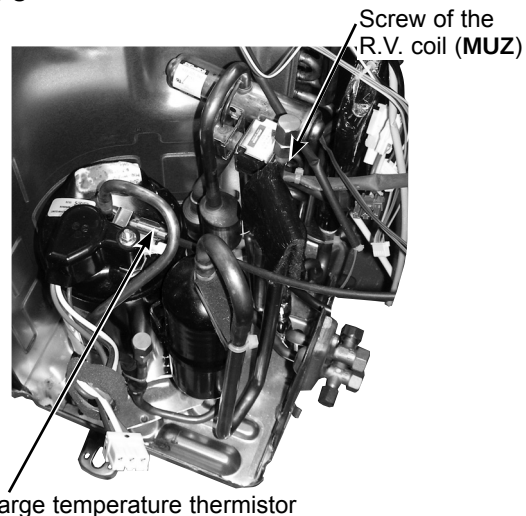
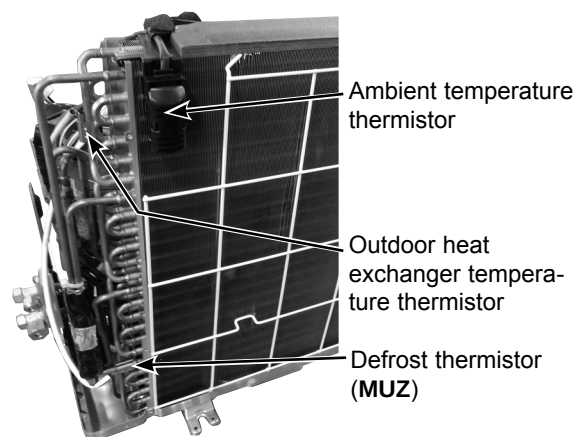
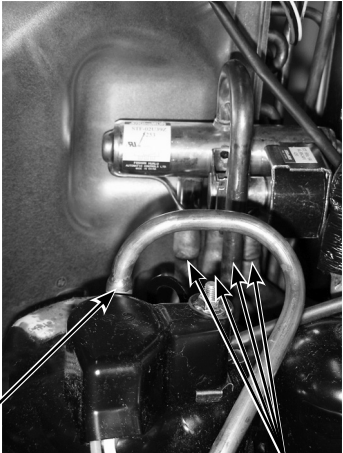
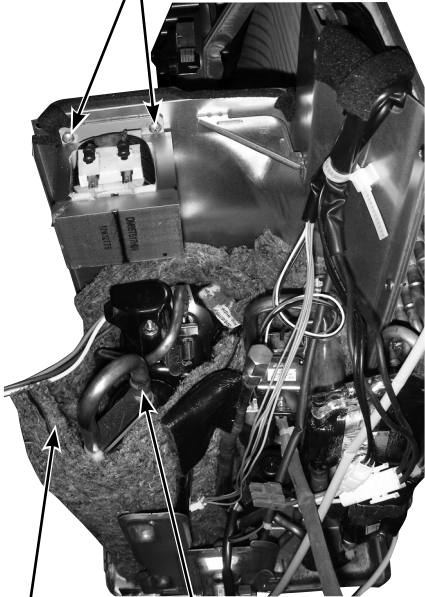


Photo 9

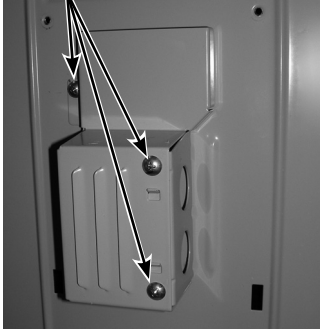
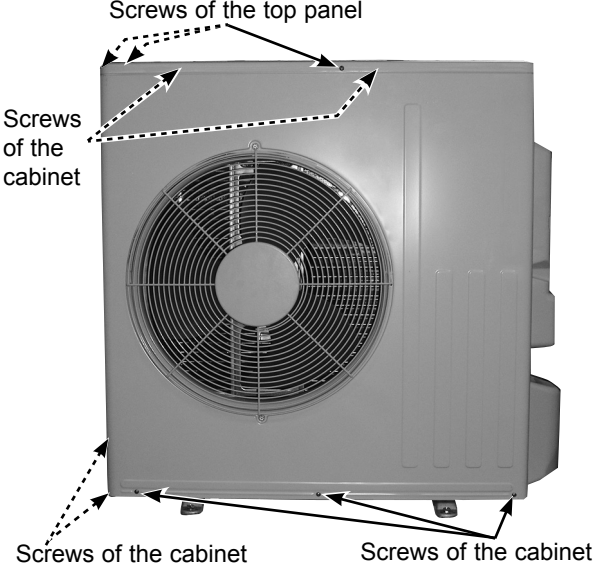
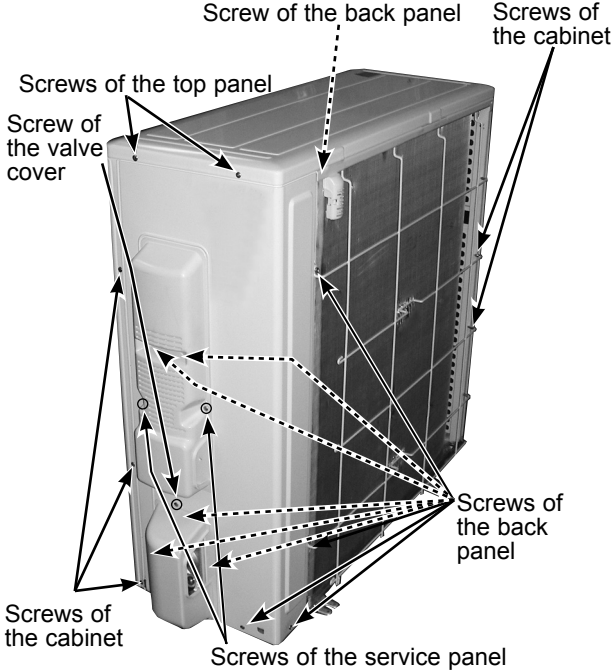




| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PHOTOS                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>5. Removing outdoor fan motor</b></p> <p>(1) Remove the cabinet and panels. (Refer to 1.)</p> <p>(2) Disconnect the following connectors:<br/>    &lt;Inverter P.C. board&gt;<br/>        CN931, CN932 (Fan motor)</p> <p>(3) Remove the propeller fan nut.</p> <p>(4) Remove the propeller fan.</p> <p>(5) Remove the screws fixing the fan motor.</p> <p>(6) Remove the fan motor.</p> <p><b>NOTE:</b> The propeller fan nut is a revers thread.</p>                                                                                                                                                                                                                                                                                                                                                                                                                               | <p><b>Photo 10</b></p> <p>Screws of the outdoor fan motor</p>  <p>Propeller fan      Propeller fan nut</p> |
| <p><b>6. Removing the compressor and 4-way valve</b></p> <p>(1) Remove the cabinet and panels. (Refer to 1.)</p> <p>(2) Remove the inverter assembly. (Refer to 2.)</p> <p>(3) Remove the screws fixing the reactor.</p> <p>(4) Remove the reactor.</p> <p>(5) Remove the soundproof felt.</p> <p>(6) Recover gas from the refrigerant circuit.</p> <p>    <b>NOTE:</b> Recover gas from the pipes until the pressure gauge shows 0 PSIG.</p> <p>(7) Detach the brazed part of the suction and the discharge pipe connected with compressor.</p> <p>(8) Remove the nuts fixing the compressor.</p> <p>(9) Remove the compressor.</p> <p>(10) Detach the brazed part of pipes connected with 4-way valve.</p> <p><b>Photo 12</b></p>  <p>Discharge pipe brazed part      Brazed parts of 4-way valve</p> | <p><b>Photo 11</b></p> <p>Screws of the reactor</p>  <p>Soundproof felt      Suction pipe brazed part</p> |

## 11-2. MUZ-GL18NA MUZ-GL18NAH MUY-GL18NA

**NOTE:** Turn OFF the power supply before disassembly.

| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PHOTOS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1. Removing the cabinet</b></p> <ol style="list-style-type: none"> <li>(1) Remove the screws of the service panel.</li> <li>(2) Remove the screws of the top panel.</li> <li>(3) Remove the screw of the valve cover.</li> <li>(4) Remove the service panel.</li> <li>(5) Remove the screws fixing the conduit cover.</li> <li>(6) Remove the conduit cover.</li> <li>(7) Remove the screw of fixing the conduit plate.</li> <li>(8) Remove the conduit plate.</li> <li>(9) Remove the top panel.</li> <li>(10) Remove the valve cover.</li> <li>(11) Disconnect the power supply and indoor/outdoor connecting wire.</li> <li>(12) Remove the screws of the cabinet.</li> <li>(13) Remove the cabinet.</li> <li>(14) Remove the screws of the back panel.</li> <li>(15) Remove the back panel.</li> </ol> <p><b>Photo 3</b></p> <p>Screws of the conduit cover</p>  <p><b>Photo 4</b></p> <p>Screw of the conduit plate</p>  | <p><b>Photo 1</b></p> <p>Screws of the top panel</p> <p>Screws of the cabinet</p>  <p><b>Photo 2</b></p> <p>Screw of the back panel</p> <p>Screws of the cabinet</p> <p>Screws of the top panel</p> <p>Screw of the valve cover</p> <p>Screws of the back panel</p> <p>Screws of the service panel</p> <p>Screws of the cabinet</p>  |

## OPERATING PROCEDURE

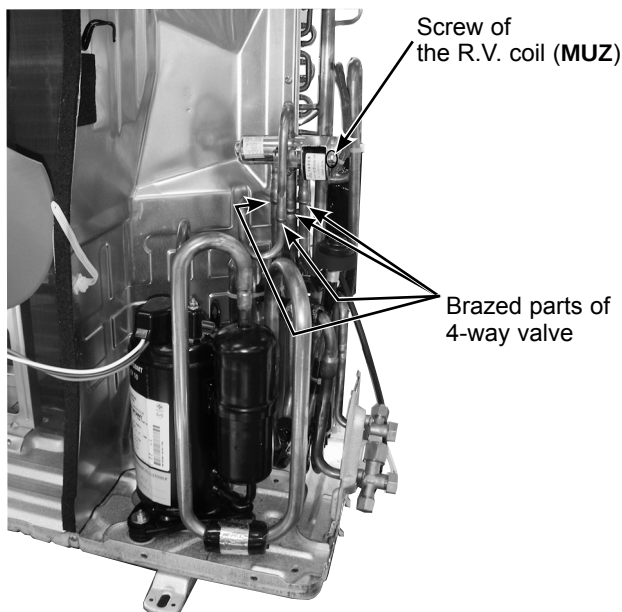
### 2. Removing the inverter assembly, inverter P.C. board

- (1) Remove the cabinet and panels. (Refer to 1.)
- (2) Disconnect the lead wire to the reactor and the following connectors:  
 <Inverter P.C. board>  
 CN721 (R.V. coil) (**MUZ**)  
 CN722 (Defrost heater) (**MUZ-GL18NAH**)  
 CN931, CN932 (Fan motor)  
 CN641 (Defrost thermistor (**MUZ**) and discharge temperature thermistor)  
 CN643 (Ambient temperature thermistor)  
 CN644 (Outdoor heat exchanger temperature thermistor)  
 CN724 (LEV)
- (3) Remove the compressor connector.
- (4) Remove the screw fixing the heat sink support and the separator.
- (5) Remove the fixing screws of the terminal block support and the back panel.
- (6) Remove the inverter assembly.
- (7) Remove the screw of the ground wire, screw of the P.C. board cover and screws of the terminal block support.
- (8) Remove the heat sink support from the P.C. board support.
- (9) Remove the screw of the inverter P.C. board and the inverter P.C. board from the P.C. board support.

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

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

Photo 7



## PHOTOS

Photo 5

Screw of the heat sink support and the separator  
 Screws of the terminal block support and the back panel

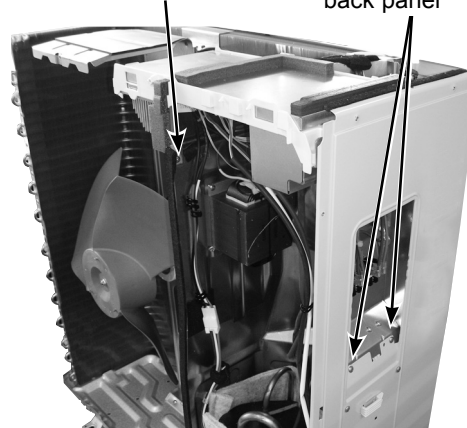
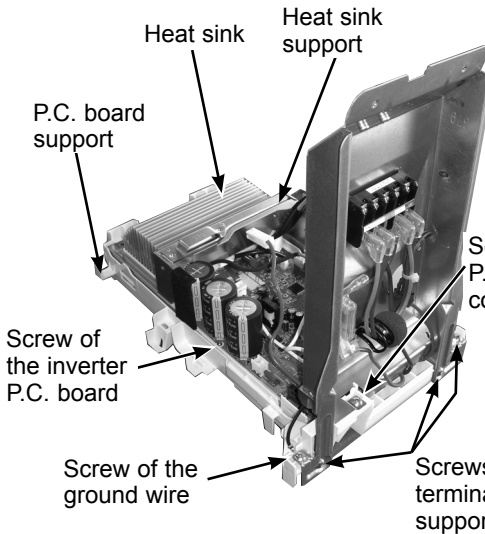


Photo 6

Heat sink  
 Heat sink support  
 P.C. board support  
 Screw of the inverter P.C. board  
 Screw of the ground wire  
 Screws of the terminal block support  
 Screw of the P.C. board cover



## OPERATING PROCEDURE

### 4. Removing the discharge temperature thermistor, defrost thermistor (MUZ), outdoor heat exchanger temperature thermistor and ambient temperature thermistor

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

### 5. Removing outdoor fan motor

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

### 6. Removing the compressor and 4-way valve

- (1) Remove the top panel, cabinet and service panel. (Refer to 1.)
  - (2) Remove the back panel. (Refer to 1.)
  - (3) Remove the inverter assembly. (Refer to 2.)
  - (4) Recover gas from the refrigerant circuit.
- NOTE:** Recover gas from the pipes until the pressure gauge shows 0 PSIG.
- (5) Detach the brazed part of the suction and the discharge pipe connected with compressor.
  - (6) Remove the compressor nuts.
  - (7) Remove the compressor.
  - (8) Detach the brazed part of 4-way valve and pipe. (Photo 7)

## PHOTOS

Photo 8

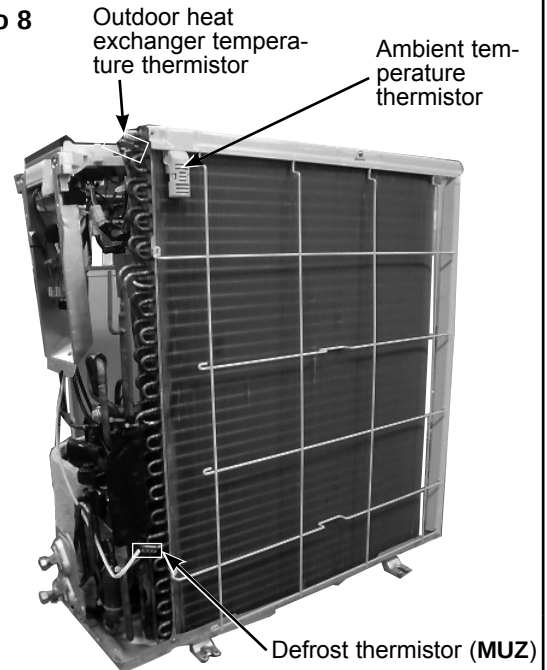


Photo 9

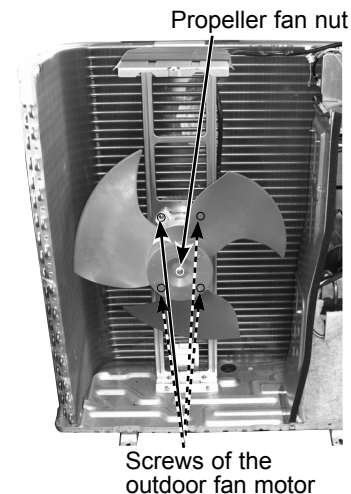
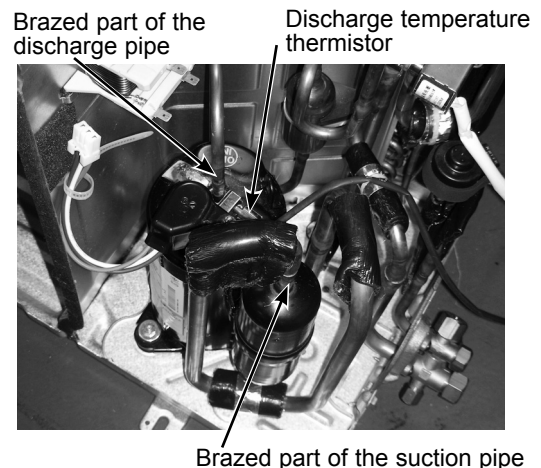
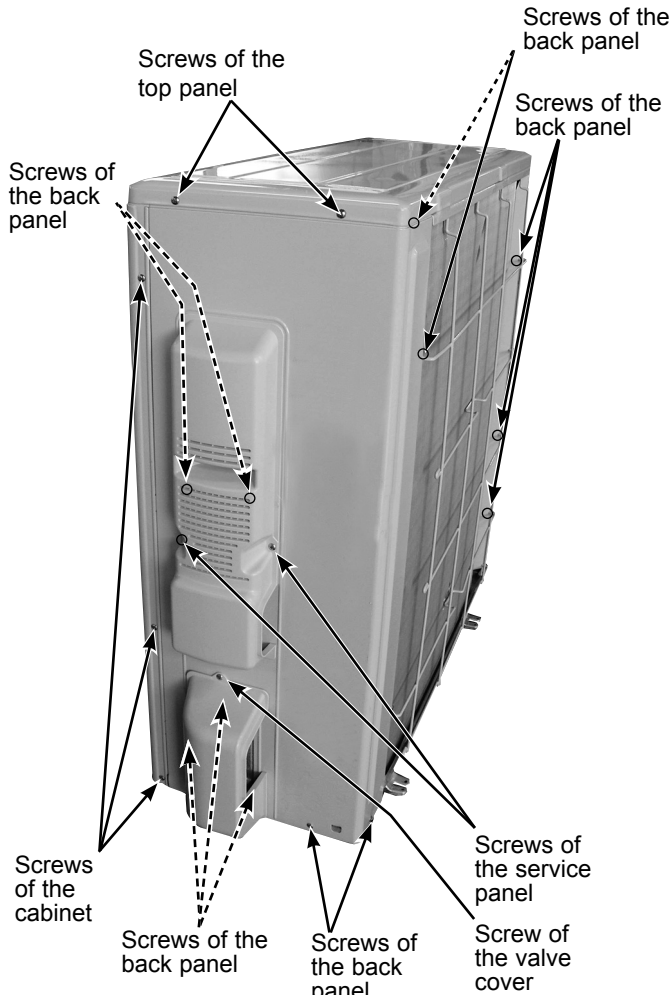
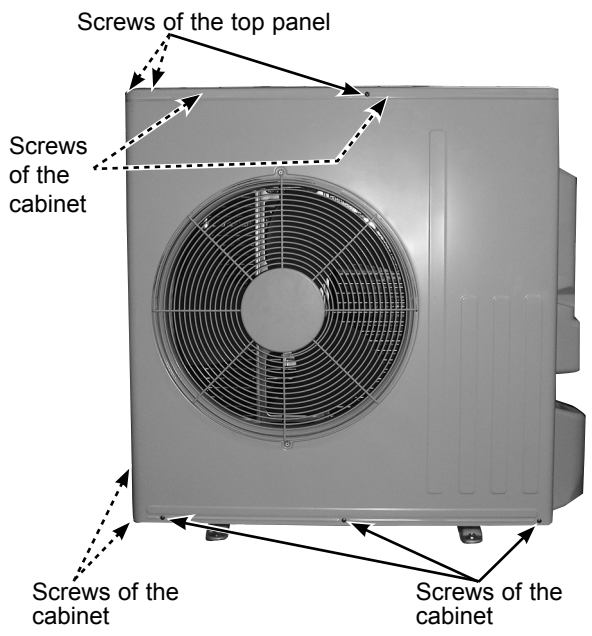
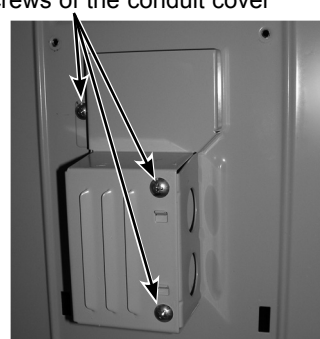


Photo 10



### 11-3. MUZ-GL24NA MUZ-GL24NAH MUY-GL24NA

**NOTE:** Turn OFF the power supply before disassembly.

| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PHOTOS                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1. Removing the cabinet</b></p> <ol style="list-style-type: none"> <li>(1) Remove the screws of the service panel.</li> <li>(2) Remove the screws of the top panel.</li> <li>(3) Remove the screw of the valve cover.</li> <li>(4) Remove the service panel.</li> <li>(5) Remove the screws fixing the conduit cover.</li> <li>(6) Remove the conduit cover.</li> <li>(7) Remove the top panel.</li> <li>(8) Remove the valve cover.</li> <li>(9) Disconnect the power supply and indoor/outdoor connecting wire.</li> <li>(10) Remove the screws of the cabinet.</li> <li>(11) Remove the cabinet.</li> <li>(12) Remove the screws of the back panel.</li> <li>(13) Remove the back panel.</li> </ol> <p><b>Photo 2</b></p>  | <p><b>Photo 1</b></p>  <p><b>Photo 3</b></p>  <p><b>Photo 4</b></p>  |

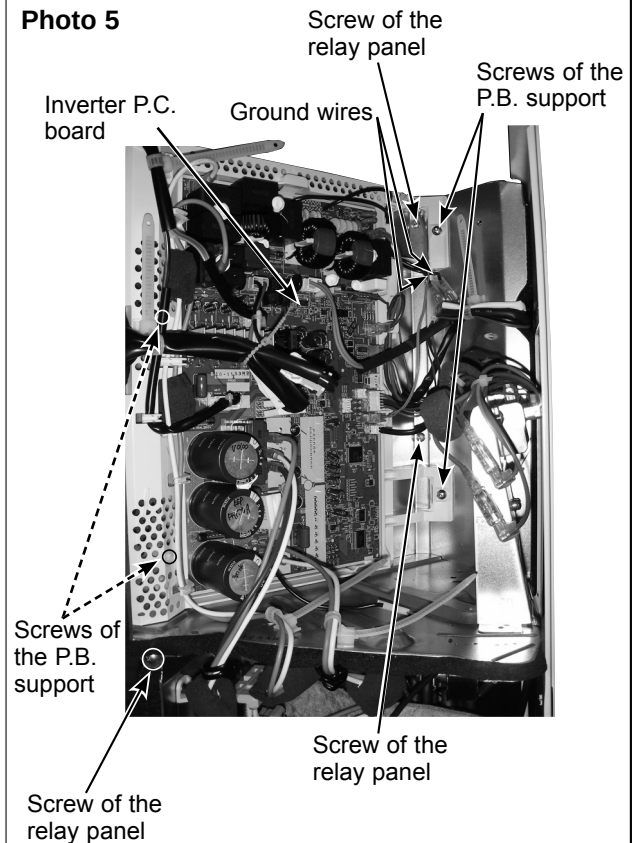
## OPERATING PROCEDURE

### 2. Removing the inverter assembly, inverter P.C. board and relay P.C. board

- (1) Remove the cabinet and panels. (Refer to 1.)
- (2) Disconnect the lead wire to the reactor and the following connectors:
  - <Inverter P.C. board>
  - CN601 (Defrost heater) (**MUZ-GL24NAH**)
  - CN602 (R.V. coil) (**MUZ**)
  - CN931, CN932 (Fan motor)
  - CN671 (Defrost thermistor (**MUZ**), discharge temperature thermistor and outdoor heat exchanger temperature thermistor)
  - CN672 (Ambient temperature thermistor)
  - CN724 (LEV)
- (3) Remove the compressor connector.
- (4) Remove the screws fixing the relay panel.
- (5) Remove the relay panel.
- (6) Remove the ground wires and the lead wires of the inverter P.C. board.
- (7) Remove the screws of the P.B. support.
- (8) Remove the inverter P.C. board from the P.B. support.

## PHOTOS

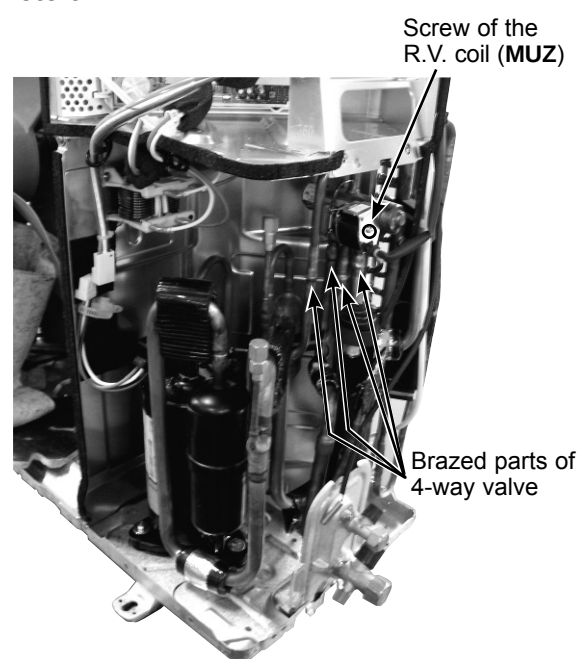
Photo 5



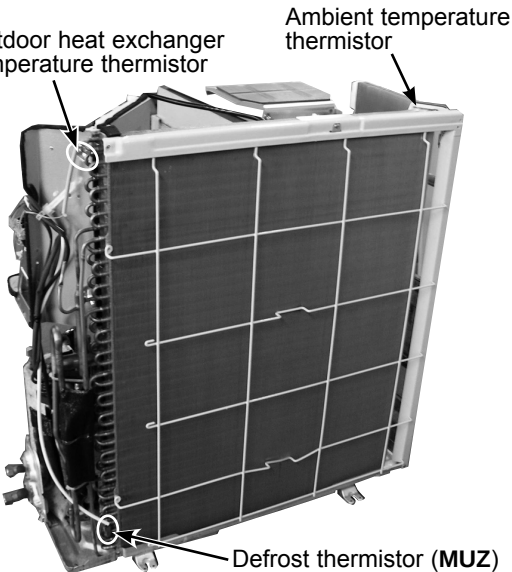
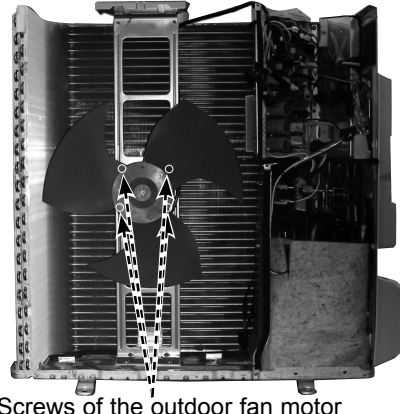
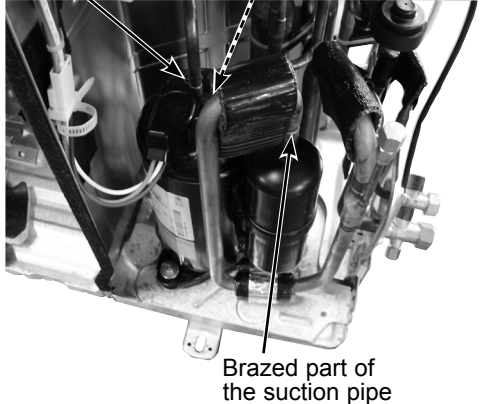
### 3. Removing R.V. coil (MUZ)

- (1) Remove the cabinet and panels. (Refer to 1.)
- (2) Disconnect the following connector:
  - <Inverter P.C. board>
  - CN602 (R.V. coil) (**MUZ**)
- (3) Remove the R.V. coil.

Photo 6





| OPERATING PROCEDURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | PHOTOS                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>4. Removing the discharge temperature thermistor, defrost thermistor (MUZ), outdoor heat exchanger temperature thermistor and ambient temperature thermistor</b></p> <p>(1) Remove the cabinet and panels. (Refer to 1.)</p> <p>(2) Disconnect the lead wire to the reactor and the following connectors:</p> <p>    &lt;Inverter P.C. board&gt;</p> <p>        CN671 (Defrost thermistor (<b>MUZ</b>), discharge temperature thermistor and outdoor heart exchanger temperature thermistor)</p> <p>        CN672 (Ambient temperature thermistor)</p> <p>(3) Pull out the discharge temperature thermistor from its holder.</p> <p>(4) Pull out the defrost thermistor from its holder.</p> <p>(5) Pull out the outdoor heat exchanger temperature thermistor from its holder.</p> <p>(6) Pull out the ambient temperature thermistor from its holder.</p> | <p><b>Photo 7</b></p>  <p>Outdoor heat exchanger temperature thermistor</p> <p>Ambient temperature thermistor</p> <p>Defrost thermistor (<b>MUZ</b>)</p> |
| <p><b>5. Removing outdoor fan motor</b></p> <p>(1) Remove the top panel, cabinet and service panel. (Refer to 1.)</p> <p>(2) Disconnect the following connectors:</p> <p>    &lt;Inverter P.C. board&gt;</p> <p>        CN931 and CN932 (Fan motor)</p> <p>(3) Remove the propeller.</p> <p>(4) Remove the screws fixing the fan motor.</p> <p>(5) Remove the fan motor.</p> <p><b>NOTE:</b> The propeller fan nut is a revers thread.</p>                                                                                                                                                                                                                                                                                                                                                                                                                        | <p><b>Photo 8</b></p>  <p>Screws of the outdoor fan motor</p>                                                                                          |
| <p><b>6. Removing the compressor and 4-way valve</b></p> <p>(1) Remove the top panel, cabinet and service panel. (Refer to 1.)</p> <p>(2) Remove the back panel. (Refer to 1.)</p> <p>(3) Remove the inverter assembly. (Refer to 2.)</p> <p>(4) Recover gas from the refrigerant circuit.</p> <p><b>NOTE:</b> Recover gas from the pipes until the pressure gauge shows 0 PSIG.</p> <p>(5) Detach the brazed part of the suction and the discharge pipes connected with compressor.</p> <p>(6) Remove the compressor nuts.</p> <p>(7) Remove the compressor.</p> <p>(8) Detach the brazed parts of 4-way valve and pipes. (Photo 6)</p>                                                                                                                                                                                                                          | <p><b>Photo 9</b></p>  <p>Brazed part of the discharge pipe</p> <p>Discharge temperature thermistor</p> <p>Brazed part of the suction pipe</p>         |

# **mitsubishi electric corporation**

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