OUTDOOR UNIT

SERVICE MANUAL

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

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

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 <G> 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- , MUZ-GL12/15NAH- and MUY-GL09/12/15NA- have been added.

Revision B:
• MUZ-GL09NA- and MUZ-GL09NAH- have been added.

Revision C:
• MUZ-GL09NA- and MUZ-GL09NAH- have been added.

Revision D:
• MUZ-GL24NAH- has been added.

1. TECHNICAL CHANGES

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

1. New model
2 PART NAMES AND FUNCTIONS

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

Air inlet (back and side)
Piping
Air outlet
Drain hose
Air outlet
Drain hose
Air outlet
Drain hose

OBH733D
## SPECIFICATION

### Outdoor unit model

<table>
<thead>
<tr>
<th>Model</th>
<th>MUZ-GL09NA</th>
<th>MUZ-GL09NAH</th>
<th>MUZ-GL12NA</th>
<th>MUZ-GL12NAH</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>MUZ-GL09NA</td>
<td>MUZ-GL09NAH</td>
<td>MUZ-GL12NA</td>
<td>MUZ-GL12NAH</td>
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<tr>
<td>Capacity</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Rate (Min)</td>
<td>9,000 (3,600 - 12,200)</td>
<td>12,000 (1,500 - 13,600)</td>
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</tr>
<tr>
<td>Rate (Max)</td>
<td>10,900 (4,500 - 15,000)</td>
<td>14,600 (2,000 - 18,000)</td>
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<tr>
<td>Heating</td>
<td>10,900 (4,500 - 14,100)</td>
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</tr>
<tr>
<td>Rate (Min)</td>
<td>6,700 (10,200)</td>
<td>7,000 (9,400)</td>
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<tr>
<td>Rate (Max)</td>
<td></td>
<td>9,200 (12,000)</td>
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<tr>
<td>Power</td>
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<td>Consumption</td>
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<td>Rate (Min)</td>
<td>585 (240 - 1,050)</td>
<td>920 (100 - 1,300)</td>
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<td>Rate (Max)</td>
<td>720 (230 - 1,250)</td>
<td>1,100 (110 - 1,620)</td>
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<td>EER (SEER)</td>
<td>15.4 [24.6]</td>
<td>13.0 [23.1]</td>
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<td>HSPF</td>
<td>NA: 12.8</td>
<td>NA: 12.5</td>
<td>NA: NA: 11.8</td>
<td>NA: 11.5</td>
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<tr>
<td></td>
<td>4.44</td>
<td>3.84</td>
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<td>3.84</td>
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<td>Fan motor</td>
<td>F.L.A A</td>
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<td>0.50</td>
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<tr>
<td>Compressor</td>
<td>Model</td>
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<tr>
<td></td>
<td>KB073FRCMC</td>
<td>SNB092FQAMT</td>
<td>KB073FRCMC</td>
<td>SNB092FQAMT</td>
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<tr>
<td></td>
<td>R.L.A A</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>6.2</td>
<td>4.9</td>
<td>6.2</td>
<td>4.9</td>
</tr>
<tr>
<td>Refrigerant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>oil</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>fl oz. (L)</td>
<td></td>
<td>fl oz. (L)</td>
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<tr>
<td>Liquid</td>
<td>9.1 (0.27)</td>
<td>11.8 (0.35)</td>
<td>9.1 (0.27)</td>
<td>11.8 (0.35)</td>
</tr>
<tr>
<td>Gas</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>method</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Defrost</td>
<td>Reverse cycle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W in.</td>
<td>31-1/2</td>
<td>31-1/2</td>
<td></td>
<td>31-1/2</td>
</tr>
<tr>
<td>D in.</td>
<td>11-1/4</td>
<td></td>
<td></td>
<td>11-1/4</td>
</tr>
<tr>
<td>H in.</td>
<td>21-5/8</td>
<td></td>
<td></td>
<td>21-5/8</td>
</tr>
<tr>
<td>Weight</td>
<td>lb.</td>
<td>81</td>
<td>81</td>
<td>81</td>
</tr>
<tr>
<td>External finish</td>
<td>Munseil 3Y 7.8/1.1</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Remote controller</td>
<td>Wireless type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control voltage</td>
<td>12 - 24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refrigerant piping</td>
<td>Not supplied</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refrigerant pipe size</td>
<td>Liquid: 1/4 (0.0315)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Min. wall thickness)</td>
<td>Gas: 3/8 (0.0315)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection method</td>
<td>Outdoor Flared</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>between the indoor &amp; outdoor units</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refrigerant charge (R410A)</td>
<td>2 lb. 5 oz.</td>
<td>2 lb. 9 oz.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

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

3: Test condition (Refer to page 6.)

4: Test condition (Refer to page 6.)

**OBH733D**
### Outdoor unit model

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Rated (Minimum~Maximum) Cooling</td>
<td>14,000 (3,100 - 18,200)</td>
<td>16,000 (5,800 ~ 22,000)</td>
<td>18,000 (3,100 - 18,200)</td>
<td>22,500 (8,200 ~ 31,400)</td>
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<td></td>
</tr>
<tr>
<td>Heating 47</td>
<td>18,000 (4,800 - 20,900)</td>
<td>21,630 (5,400 - 25,000)</td>
<td>27,600 (7,500 - 36,900)</td>
<td>27,600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated (Maximum) Heating 17</td>
<td>12,200 (16,400)</td>
<td>13,800 (18,200)</td>
<td>16,000 (24,600)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Power consumption Rated (Minimum~Maximum) Cooling</td>
<td>1,080 (210 - 2,000)</td>
<td>1,295 (285 ~ 2,105)</td>
<td>1,742 (580 ~ 3,592)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heating 47</td>
<td>1,600 (2,010)</td>
<td>1,435 (2,105)</td>
<td>1,712 (3,232)</td>
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<tr>
<td>Rated (Maximum) Heating 17</td>
<td>1,190 (1,850)</td>
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<tr>
<td>HSPF IV 4 Heating (MUZ)</td>
<td>NA: 11.7</td>
<td>NA: 11.2</td>
<td>NA: 10.0</td>
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<td></td>
<td></td>
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<tr>
<td>COP</td>
<td>3.30</td>
<td>3.77</td>
<td>3.46</td>
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<tr>
<td>Heating (MUZ) (208/230)</td>
<td>98/98</td>
<td>99/99</td>
<td></td>
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<tr>
<td>Power supply V, phase, Hz</td>
<td>208/230, 1, 60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Max. fuse size (time delay) A</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Fan motor F.L.A</td>
<td>0.50</td>
<td>0.93</td>
<td>0.93</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compressor Model</td>
<td>SNB130FQBM</td>
<td>SNB130FQBM</td>
<td>SNB172FQBMMT</td>
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<td></td>
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<tr>
<td>R.L.A</td>
<td>7.4</td>
<td>6.8</td>
<td>10</td>
<td>12.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L.R.A</td>
<td>9.3</td>
<td>8.5</td>
<td>12.5</td>
<td>16.1</td>
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<td></td>
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<tr>
<td>Refrigeration oil</td>
<td>11.8 (0.35)/(FV50S)</td>
<td>11.8 (0.35)/(FV50S)</td>
<td>11.8 (0.35)/(FV50S)</td>
<td>13.5 (1.40)/(FV50S)</td>
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<tr>
<td>Refrigerant control Linear expansion valve</td>
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<td></td>
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<tr>
<td>Sound level 1 Cooling DB(A)</td>
<td>49</td>
<td>54</td>
<td>55</td>
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<tr>
<td>Heating (MUZ) DB(A)</td>
<td>51</td>
<td>55</td>
<td>55</td>
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<tr>
<td>Airflow COOL CFM</td>
<td>1,102-639</td>
<td>1,742 - 922</td>
<td>2,016 - 1,769 - 890</td>
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<tr>
<td>HEAT CFM</td>
<td>1,181-1,372</td>
<td>1,371-1,371-1,371</td>
<td>1,371-1,371-1,371</td>
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<tr>
<td>Fan speed Cooling rpm</td>
<td>810 - 490</td>
<td>840 - 450</td>
<td>950 - 450</td>
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<td></td>
</tr>
<tr>
<td>Heating (MUZ) rpm</td>
<td>950 - 450</td>
<td>810 - 810</td>
<td>345</td>
<td></td>
<td></td>
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<tr>
<td>Defrost method Reverse cycle</td>
<td></td>
<td></td>
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<tr>
<td>Dimensions W in.</td>
<td>31-1/2</td>
<td>33-1/16</td>
<td></td>
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<td></td>
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<tr>
<td>D in.</td>
<td>11-1/4</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H in.</td>
<td>21-5/8</td>
<td>34-3/8</td>
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<tr>
<td>Weight lb.</td>
<td>81</td>
<td>121</td>
<td>119</td>
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<tr>
<td>External finish Munsell 7.8/1.1</td>
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<tr>
<td>Remote controller Wireless type</td>
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</tr>
<tr>
<td>Control voltage (by built-in transformer) VDC</td>
<td>12 - 24</td>
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<tr>
<td>Refrigerant piping Not supplied</td>
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<tr>
<td>Refrigerant pipe size (Min. wall thickness) Liquid in.</td>
<td>1/4 (0.0315)</td>
<td>3/8 (0.0315)</td>
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<tr>
<td>Gas in.</td>
<td>1/2 (0.0315)</td>
<td>5/8 (0.0315)</td>
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<td>Connection method Indoor Flared</td>
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<tr>
<td>Outdoor Flared</td>
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<tr>
<td>Between the indoor &amp; outdoor units Height difference ft.</td>
<td>40</td>
<td>50</td>
<td></td>
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<tr>
<td>Piping length ft.</td>
<td>65</td>
<td>100</td>
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<tr>
<td>Refrigerant charge (R410A) 2 lb. 9 oz.</td>
<td>3 lb. 9 oz.</td>
<td>4 lb. 3 oz.</td>
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</tbody>
</table>

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

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

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OBH733D
### Test condition

<table>
<thead>
<tr>
<th>ARI</th>
<th>Mode</th>
<th>Test</th>
<th>Indoor air condition (°F)</th>
<th>Outdoor air condition (°F)</th>
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<tr>
<td></td>
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<td>Dry bulb</td>
<td>Wet bulb</td>
</tr>
<tr>
<td>SEER (Cooling)</td>
<td>&quot;A-2&quot; Cooling Steady State at rated compressor Speed</td>
<td>80</td>
<td>67</td>
<td>95</td>
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<tr>
<td></td>
<td>&quot;B-2&quot; Cooling Steady State at rated compressor Speed</td>
<td>80</td>
<td>67</td>
<td>82</td>
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<tr>
<td></td>
<td>&quot;B-1&quot; Cooling Steady State at minimum compressor Speed</td>
<td>80</td>
<td>67</td>
<td>82</td>
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<tr>
<td></td>
<td>&quot;F-1&quot; Cooling Steady State at minimum compressor Speed</td>
<td>80</td>
<td>67</td>
<td>67</td>
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<tr>
<td></td>
<td>&quot;E-V&quot; Cooling Steady State at Intermediate compressor Speed #5</td>
<td>80</td>
<td>67</td>
<td>87</td>
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<tr>
<td></td>
<td>&quot;H1-2&quot; Heating Steady State at rated compressor Speed</td>
<td>70</td>
<td>60</td>
<td>47</td>
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<tr>
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<td>&quot;H3-2&quot; Heating at rated compressor Speed</td>
<td>70</td>
<td>60</td>
<td>17</td>
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<tr>
<td></td>
<td>&quot;H0-1&quot; Heating Steady State at minimum compressor Speed</td>
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<td>60</td>
<td>62</td>
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<tr>
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<td>&quot;H1-1&quot; Heating Steady State at minimum compressor Speed</td>
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<td>60</td>
<td>47</td>
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<tr>
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<td>&quot;H2-V&quot; Heating at Intermediate compressor Speed #5</td>
<td>70</td>
<td>60</td>
<td>35</td>
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**NOTE:**

#5: At Intermediate compressor Speed

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

### OPERATING RANGE

#### (1) POWER SUPPLY

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<th>Rated voltage</th>
<th>Guaranteed voltage (V)</th>
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<td>Outdoor unit</td>
<td>208/230 V 1 phase 60 Hz</td>
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#### (2) OPERATION

<table>
<thead>
<tr>
<th>Mode</th>
<th>Condition</th>
<th>Intake air temperature (°F)</th>
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</thead>
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<td></td>
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<td>Indoor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DB</td>
</tr>
<tr>
<td>Cooling</td>
<td>Standard temperature</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>Minimum temperature</td>
<td>67</td>
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<tr>
<td></td>
<td>Maximum humidity</td>
<td>78 %</td>
</tr>
<tr>
<td>Heating</td>
<td>Standard temperature</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>Maximum temperature</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>Minimum temperature</td>
<td>70</td>
</tr>
</tbody>
</table>

OBH733D
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

Unit: inch

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

*1 20 in. (500 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

Liquid refrigerant pipe joint
Refrigerant pipe (flared) Φ 1/4 (GL18)
Refrigerant pipe (flared) Φ 3/8 (GL24)

Gas refrigerant pipe joint
Refrigerant pipe (flared) Φ 1/2 (GL18)
Refrigerant pipe (flared) Φ 5/8 (GL24)

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

Unit: inch
5 WIRING DIAGRAM

MUZ-GL09NA MUZ-GL12NA

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

REMARKS:
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. Connector

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>NAME</th>
<th>SYMBOL</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAT CAP</td>
<td>SMOOTHING CAPACITOR</td>
<td>LF1</td>
<td>INDUCTOR</td>
</tr>
<tr>
<td>CBR</td>
<td>BRIDGE MODULE</td>
<td>MC</td>
<td>COMPRESSOR</td>
</tr>
<tr>
<td>PDR1</td>
<td>FUSE (75, 1A, 250V)</td>
<td>MF</td>
<td>FAN MOTOR</td>
</tr>
<tr>
<td>T68</td>
<td>OUTDOOR HEAT EXCHANGE TEMP. THERM</td>
<td>TB</td>
<td>TERMINAL BLOCK</td>
</tr>
<tr>
<td>T181</td>
<td>SENSING THERM.</td>
<td>33A, 4A, NB RELAY</td>
<td></td>
</tr>
<tr>
<td>T62</td>
<td>REFRIG. THERM.</td>
<td>23V4</td>
<td>REVERSING VALVE COIL</td>
</tr>
<tr>
<td>T64</td>
<td>EIN TEMP. THERM.</td>
<td>24V1</td>
<td>HEATER MOTORIZATION INF.</td>
</tr>
<tr>
<td>T65</td>
<td>EXPANSION VALVE COIL</td>
<td>480V</td>
<td>AMPLI TEMP. THERM.</td>
</tr>
</tbody>
</table>

OBH733D
MUZ-GL09NAH  MUZ-GL12NAH

NOTES:
1. About the inner side electric wiring, refer to the indoor unit electric wiring diagram for servicing.
2. Blue creepers supply wires.
3. Symbols indicate terminal block, CONNECTOR Terminal block

REMARQUES:
1. Pour le câblage électronique côté intérieur, se reporter au schéma d'entretien du câblage électronique de l'appareil.
2. Utiliser des fils d'alimentation en cuivre.
3. Les symboles indiquent les connecteurs, connecteur

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>NAME</th>
<th>SYMBOL</th>
<th>NAME</th>
<th>SYMBOL</th>
<th>NAME</th>
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</thead>
<tbody>
<tr>
<td>DIN81</td>
<td>DIP Switch</td>
<td>L41</td>
<td>REACTOR</td>
<td>DIP SWITCH</td>
<td>OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR</td>
</tr>
<tr>
<td>DF1</td>
<td>DIP Switch</td>
<td>MC</td>
<td>COMPRESSOR</td>
<td>DF1</td>
<td>OUTDOOR HEAT EXCHANGER TEMP. THERMISTOR</td>
</tr>
<tr>
<td>FUSE (15A, 250V)</td>
<td>FUSE</td>
<td>MP</td>
<td>FAN MOTOR</td>
<td>TB</td>
<td>TERMINAL BLOCK</td>
</tr>
<tr>
<td>H</td>
<td>HEAT EXCHANGER</td>
<td>NT1</td>
<td>MOTOR PROTECTOR</td>
<td>NT1</td>
<td>TRANSFORMER</td>
</tr>
<tr>
<td>JU1</td>
<td>JU1</td>
<td>NT1</td>
<td>MOTOR PROTECTOR</td>
<td>NT1</td>
<td>TRANSFORMER</td>
</tr>
<tr>
<td>JU2</td>
<td>JU2</td>
<td>NT1</td>
<td>MOTOR PROTECTOR</td>
<td>NT1</td>
<td>TRANSFORMER</td>
</tr>
<tr>
<td>L2</td>
<td>L2</td>
<td>NT1</td>
<td>MOTOR PROTECTOR</td>
<td>NT1</td>
<td>TRANSFORMER</td>
</tr>
<tr>
<td>LEV</td>
<td>LEV</td>
<td>NT1</td>
<td>MOTOR PROTECTOR</td>
<td>NT1</td>
<td>TRANSFORMER</td>
</tr>
<tr>
<td>LEV</td>
<td>LEV</td>
<td>NT1</td>
<td>MOTOR PROTECTOR</td>
<td>NT1</td>
<td>TRANSFORMER</td>
</tr>
</tbody>
</table>

OBH733D
MUY-GL09NA  MUY-GL12NA

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.

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

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>NAME</th>
<th>NAME</th>
<th>SYMBOL</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>C101/C22</td>
<td>SMoothing CAPACITOR</td>
<td>LE1</td>
<td>REACTOR</td>
<td>P168</td>
</tr>
<tr>
<td>D11/12</td>
<td>DIODE MODULE</td>
<td>MC</td>
<td>COMPRESSION</td>
<td></td>
</tr>
<tr>
<td>EN1/1/1</td>
<td>FUSE (15, 16, 25A)</td>
<td>MF</td>
<td>FAN MOTOR</td>
<td>TB</td>
</tr>
<tr>
<td>F500/F510</td>
<td>POWER MODULE</td>
<td>FS1/FS2</td>
<td>CIRCUIT PROTECTION</td>
<td>T101</td>
</tr>
<tr>
<td>U220</td>
<td>POWER DEVICE</td>
<td>P61/62</td>
<td>DECHARGE TEMP. THERMOMETER</td>
<td>XA</td>
</tr>
<tr>
<td>LED</td>
<td></td>
<td>LED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEV</td>
<td>EXPANSION VALVE COIL</td>
<td>P164</td>
<td>FIN TEMP. THERMOMETER</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>P165</td>
<td>AMBIENT TEMP. THERMOMETER</td>
<td></td>
</tr>
</tbody>
</table>

OBH733D
MUY-GL15NA

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 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 indiquent les connecteurs.

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>NAME</th>
<th>SYMBOL</th>
<th>NAME</th>
<th>SYMBOL</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>U1</td>
<td>INVERTER P.C. BOARD</td>
<td>U2</td>
<td>LED</td>
<td>U3</td>
<td>LED</td>
</tr>
<tr>
<td>C1</td>
<td>INVERTER P.C. BOARD</td>
<td>C2</td>
<td>LED</td>
<td>C1</td>
<td>LED</td>
</tr>
<tr>
<td>M1</td>
<td>INVERTER P.C. BOARD</td>
<td>M2</td>
<td>LED</td>
<td>M1</td>
<td>LED</td>
</tr>
<tr>
<td>L1</td>
<td>INVERTER P.C. BOARD</td>
<td>L2</td>
<td>LED</td>
<td>L1</td>
<td>LED</td>
</tr>
<tr>
<td>R1</td>
<td>INVERTER P.C. BOARD</td>
<td>R2</td>
<td>LED</td>
<td>R1</td>
<td>LED</td>
</tr>
<tr>
<td>D1</td>
<td>INVERTER P.C. BOARD</td>
<td>D2</td>
<td>LED</td>
<td>D1</td>
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<td>INVERTER P.C. BOARD</td>
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<td>LED</td>
<td>N1</td>
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</tr>
<tr>
<td>S1</td>
<td>INVERTER P.C. BOARD</td>
<td>S2</td>
<td>LED</td>
<td>S1</td>
<td>LED</td>
</tr>
<tr>
<td>T1</td>
<td>INVERTER P.C. BOARD</td>
<td>T2</td>
<td>LED</td>
<td>T1</td>
<td>LED</td>
</tr>
<tr>
<td>P1</td>
<td>INVERTER P.C. BOARD</td>
<td>P2</td>
<td>LED</td>
<td>P1</td>
<td>LED</td>
</tr>
<tr>
<td>G1</td>
<td>INVERTER P.C. BOARD</td>
<td>G2</td>
<td>LED</td>
<td>G1</td>
<td>LED</td>
</tr>
<tr>
<td>X1</td>
<td>INVERTER P.C. BOARD</td>
<td>X2</td>
<td>LED</td>
<td>X1</td>
<td>LED</td>
</tr>
<tr>
<td>Y1</td>
<td>INVERTER P.C. BOARD</td>
<td>Y2</td>
<td>LED</td>
<td>Y1</td>
<td>LED</td>
</tr>
<tr>
<td>Z1</td>
<td>INVERTER P.C. BOARD</td>
<td>Z2</td>
<td>LED</td>
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<td>LED</td>
</tr>
</tbody>
</table>

OBH733D
### MAX. REFRIGERANT PIPING LENGTH and MAX. HEIGHT DIFFERENCE

<table>
<thead>
<tr>
<th>Model</th>
<th>Refrigerant piping: ft.</th>
<th>Piping size O.D: in.</th>
<th>Gas</th>
<th>Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Max. Length A</td>
<td>Max. Height difference B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUZ-GL09NA</td>
<td>65</td>
<td>40</td>
<td>3/8</td>
<td>1/4</td>
</tr>
<tr>
<td>MUZ-GL09NAH</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUY-GL12NA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUZ-GL12NAH</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUZ-GL15NA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUZ-GL15NAH</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUY-GL15NA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUZ-GL18NA</td>
<td>100</td>
<td>50</td>
<td>5/8</td>
<td>3/8</td>
</tr>
<tr>
<td>MUZ-GL18NAH</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUY-GL18NA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUZ-GL24NA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUZ-GL24NAH</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUY-GL24NA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### ADDITIONAL REFRIGERANT CHARGE (R410A: oz.)

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

<table>
<thead>
<tr>
<th>Model</th>
<th>Outdoor unit precharged</th>
<th>Refrigerant piping length (one way): ft.</th>
<th>25</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>65</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUZ-GL09NA</td>
<td>2 lb. 5 oz.</td>
<td></td>
<td>0</td>
<td>1.08</td>
<td>3.24</td>
<td>5.40</td>
<td>7.56</td>
<td>8.64</td>
</tr>
<tr>
<td>MUZ-GL09NAH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUY-GL12NA</td>
<td>2 lb. 9 oz.</td>
<td></td>
<td>0</td>
<td>1.08</td>
<td>3.24</td>
<td>5.40</td>
<td>7.56</td>
<td>8.64</td>
</tr>
<tr>
<td>MUZ-GL12NAH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUY-GL15NA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUZ-GL15NAH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUY-GL18NA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUZ-GL24NA</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUZ-GL24NAH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUY-GL24NA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Calculation: \( X\) oz. = \( \frac{1.08}{5} \) oz./ft. \( \times \) (Refrigerant piping length (ft.) - 25)
**NOTE:** Refrigerant piping exceeding 25 ft. requires additional refrigerant charge according to the calculation.

<table>
<thead>
<tr>
<th>Model</th>
<th>Outdoor unit precharged</th>
<th>Refrigerant piping length (one way): ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUZ-GL18NA</td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>MUZ-GL18NAH</td>
<td>3 lb. 9 oz.</td>
<td>0</td>
</tr>
<tr>
<td>MUY-GL18NA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Calculation: \( X \text{ oz.} = \frac{1.08}{5 \text{ oz./ft.}} \times (\text{Refrigerant piping length (ft.)} - 25) \)

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

<table>
<thead>
<tr>
<th>Model</th>
<th>Outdoor unit precharged</th>
<th>Refrigerant piping length (one way): ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUZ-GL24NA</td>
<td></td>
<td>33</td>
</tr>
<tr>
<td>MUZ-GL24NAH</td>
<td>4 lb. 3 oz.</td>
<td>0</td>
</tr>
<tr>
<td>MUY-GL24NA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Calculation: \( X \text{ oz.} = \frac{2.96}{5 \text{ oz./ft.}} \times (\text{Refrigerant piping length (ft.)} - 33) \)
## 7 DATA

### 7-1. PERFORMANCE DATA

#### 1) COOLING CAPACITY

<table>
<thead>
<tr>
<th>Model</th>
<th>Indoor air (WBT °F)</th>
<th>Outdoor intake air DB temperature (°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TC</td>
<td>SHC</td>
</tr>
<tr>
<td>MUZ-GL09NA</td>
<td>71</td>
<td>11.0</td>
</tr>
<tr>
<td>MUZ-GL09NAH</td>
<td>67</td>
<td>10.4</td>
</tr>
<tr>
<td>MUY-GL09NA</td>
<td>63</td>
<td>9.8</td>
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<tr>
<td>MUZ-GL12NA</td>
<td>71</td>
<td>14.7</td>
</tr>
<tr>
<td>MUZ-GL12NAH</td>
<td>67</td>
<td>13.9</td>
</tr>
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<td>13.1</td>
</tr>
<tr>
<td>MUZ-GL15NA</td>
<td>71</td>
<td>17.2</td>
</tr>
<tr>
<td>MUZ-GL15NAH</td>
<td>67</td>
<td>16.2</td>
</tr>
<tr>
<td>MUY-GL15NA</td>
<td>63</td>
<td>15.3</td>
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<td>71</td>
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<td>26.1</td>
</tr>
<tr>
<td>MUY-GL24NA</td>
<td>63</td>
<td>24.5</td>
</tr>
</tbody>
</table>

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

#### 2) COOLING CAPACITY CORRECTIONS

<table>
<thead>
<tr>
<th>Refrigerant piping length (one way: ft.)</th>
<th>25 (std.)</th>
<th>40</th>
<th>65</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUZ-GL09NA</td>
<td>1.0</td>
<td>0.954</td>
<td>0.878</td>
<td>-</td>
</tr>
<tr>
<td>MUZ-GL09NAH</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUY-GL09NA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUZ-GL12NA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUZ-GL12NAH</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUY-GL12NA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUZ-GL15NA</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>MUZ-GL15NAH</td>
<td></td>
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**NOTE:**
1. IWB: Intake air wet-bulb temperature
2. TC: Total Capacity (x10^3 Btu/h)
3. SHC: Sensible Heat Capacity (x10^3 Btu/h)
4. TPC: Total Power Consumption (kW)
5. SHC is based on 80°F of indoor Intake air DB temperature.
### 3) HEATING CAPACITY (MUZ)

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**NOTE:**
1. **IDB:** Intake air dry-bulb temperature
2. **TC:** Total Capacity (x10^3 Btu/h)
3. **TPC:** Total Power Consumption (kW)
4. 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

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.

OBH733D

27
Heating

Heating capacity (at Rated frequency)

Indoor intake air Dry-bulb temperature (°F)

-5 5 15 25 35 45 55 65
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0

Indoor intake air DB temperature (°F)

-5 5 15 25 35 45 55 65
0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0

Outdoor intake air WB temperature (°F)

-5 5 15 25 35 45 55 65
0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2

Total power consumption (kW)

-5 5 15 25 35 45 55 65
0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6

OBH733D
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

OBH733D
MUZ-GL18NA  MUZ-GL18NAH  MUY-GL18NA

MUZ-GL24NA  MUZ-GL24NAH  MUY-GL24NA

Outdoor ambient temperature

Indoor DB temperature (°F)

Condensing pressure

Suction pressure

Indoor DB temperature (°F)
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 - ④  MUZ-GL09NAH - ④

MUZ-GL09NA - ⑥  MUZ-GL09NAH - ⑥  MUZ-GL12NA  MUZ-GL12NAH
### 7-4. STANDARD OPERATION DATA

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<td>°F</td>
<td>108</td>
<td>102</td>
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<tr>
<td><strong>Suction temperature</strong></td>
<td>°F</td>
<td>61</td>
<td>44</td>
<td>63</td>
<td>44</td>
<td>66</td>
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<td><strong>Comp. shell bottom temperature</strong></td>
<td>°F</td>
<td>144</td>
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<td>152</td>
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<td>ft</td>
<td>25</td>
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<tr>
<td><strong>Refrigerant charge (R410A)</strong></td>
<td></td>
<td>2 lb 5 oz.</td>
<td>2 lb 9 oz.</td>
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<td><strong>Indoor unit</strong></td>
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<td>rpm</td>
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<td>1,040</td>
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<td>CFM</td>
<td>367 (Wet)</td>
<td>413</td>
<td>367 (Wet)</td>
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<td>rpm</td>
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<td>MSZ-GL15NA</td>
<td>MSY-GL12NA</td>
<td>MSY-GL15NA</td>
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<td>------------</td>
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<td>Btu/h</td>
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<td>kW</td>
<td></td>
<td>kW</td>
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<td>Hz</td>
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<td>Hz</td>
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<td>Indoor unit</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>V, phase, Hz</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Fan motor current</td>
<td>A</td>
<td></td>
<td>A</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Outdoor unit</td>
<td></td>
<td></td>
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<td>Power supply</td>
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<tr>
<td>V, phase, Hz</td>
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<tr>
<td>Input</td>
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<td>A</td>
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<td>A</td>
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<tr>
<td>Refrigerant circuit</td>
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<tr>
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<td>PSIG</td>
<td></td>
<td>PSIG</td>
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</tr>
<tr>
<td>Suction pressure</td>
<td>PSIG</td>
<td></td>
<td>PSIG</td>
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<td></td>
<td></td>
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<tr>
<td>Comp. shell bottom temperature</td>
<td>°F</td>
<td></td>
<td>°F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ref. pipe length</td>
<td>ft</td>
<td></td>
<td>ft</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Refrigerant charge (R410A)</td>
<td></td>
<td></td>
<td>2 lb 9 oz.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indoor unit</td>
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<td></td>
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<tr>
<td>Intake air temperature</td>
<td>°F</td>
<td></td>
<td>°F</td>
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<tr>
<td>Discharge air temperature</td>
<td>°F</td>
<td></td>
<td>°F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fan speed (High)</td>
<td>rpm</td>
<td></td>
<td>rpm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airflow (High)</td>
<td>CFM</td>
<td></td>
<td>CFM</td>
<td></td>
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<td>Outdoor unit</td>
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<tr>
<td>Intake air temperature</td>
<td>°F</td>
<td></td>
<td>°F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fan speed</td>
<td>rpm</td>
<td></td>
<td>rpm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airflow</td>
<td>CFM</td>
<td></td>
<td>CFM</td>
<td></td>
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</table>

**OBH733D**
<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
<th>Cooling</th>
<th>Heating</th>
<th>Cooling</th>
<th>Heating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>Btu/h</td>
<td>18,000</td>
<td>21,600</td>
<td>22,500</td>
<td>27,600</td>
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<td>SHF</td>
<td></td>
<td>0.87</td>
<td>—</td>
<td>0.75</td>
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<td>kW</td>
<td>1.34</td>
<td>1.68</td>
<td>1.80</td>
<td>2.34</td>
</tr>
<tr>
<td>Rated frequency</td>
<td>Hz</td>
<td>69</td>
<td>81</td>
<td>67.5</td>
<td>82.0</td>
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<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indoor unit</td>
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</tr>
<tr>
<td>Power supply</td>
<td>V,</td>
<td>208/230</td>
<td>1, 60</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>phase, Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input</td>
<td>kW</td>
<td>0.045</td>
<td></td>
<td>0.058</td>
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</tr>
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<td>Fan motor current</td>
<td>A</td>
<td>0.46/0.42</td>
<td></td>
<td>0.56/0.51</td>
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</tr>
<tr>
<td>Outdoor unit</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Power supply</td>
<td>V,</td>
<td>208/230</td>
<td>1, 60</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>phase, Hz</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Input</td>
<td>kW</td>
<td>1.295</td>
<td>1.635</td>
<td>1.742</td>
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<td>Comp. current</td>
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<td>5.01/4.53</td>
<td>6.67/6.03</td>
<td>7.01/6.34</td>
<td>9.59/8.67</td>
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<td>Fan motor current</td>
<td>A</td>
<td>1.05/0.95</td>
<td>1.05/0.95</td>
<td>1.16/1.05</td>
<td>1.13/1.02</td>
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<tr>
<td>Refrigerant circuit</td>
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<td></td>
</tr>
<tr>
<td>Condensing pressure</td>
<td>PSIG</td>
<td>377</td>
<td>391</td>
<td>395</td>
<td>405</td>
</tr>
<tr>
<td>Suction pressure</td>
<td>PSIG</td>
<td>144</td>
<td>103</td>
<td>141</td>
<td>102</td>
</tr>
<tr>
<td>Condensing temperature</td>
<td>F</td>
<td>149</td>
<td>178</td>
<td>158</td>
<td>171</td>
</tr>
<tr>
<td>Suction temperature</td>
<td>F</td>
<td>111</td>
<td>111</td>
<td>115</td>
<td>115</td>
</tr>
<tr>
<td>Comp. shell bottom temperature</td>
<td>F</td>
<td>51</td>
<td>43</td>
<td>52</td>
<td>33</td>
</tr>
<tr>
<td>Ref. pipe length</td>
<td>ft.</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refrigerant charge (R410A)</td>
<td></td>
<td>3 lb 9 oz.</td>
<td>4 lb 3 oz.</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Indoor unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intake air temperature</td>
<td>DB</td>
<td>80</td>
<td>70</td>
<td>80</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>WB</td>
<td>67</td>
<td>60</td>
<td>67</td>
<td>60</td>
</tr>
<tr>
<td>Discharge air temperature</td>
<td>DB</td>
<td>52</td>
<td>111</td>
<td>56</td>
<td>111</td>
</tr>
<tr>
<td></td>
<td>WB</td>
<td>51</td>
<td>—</td>
<td>53</td>
<td>—</td>
</tr>
<tr>
<td>Fan speed (High)</td>
<td>rpm</td>
<td>1,170</td>
<td>1,170</td>
<td>1,300</td>
<td>1,300</td>
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<td>Airflow (High)</td>
<td>CFM</td>
<td>581 (Wet)</td>
<td>646</td>
<td>634 (Wet)</td>
<td>738</td>
</tr>
<tr>
<td>Outdoor unit</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Intake air temperature</td>
<td>DB</td>
<td>95</td>
<td>47</td>
<td>95</td>
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<td></td>
<td>WB</td>
<td>—</td>
<td>43</td>
<td>—</td>
<td>43</td>
</tr>
<tr>
<td>Fan speed</td>
<td>rpm</td>
<td>810</td>
<td>810</td>
<td>840</td>
<td>810</td>
</tr>
<tr>
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<td>CFM</td>
<td>1,691</td>
<td>1,691</td>
<td>1,769</td>
<td>1,701</td>
</tr>
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</table>
7-5. CAPACITY AND INPUT CORRECTION BY INVERTER OUTPUT FREQUENCY

MUZ-GL09NA - MUZ-GL09NAH

Corrected Cooling capacity
Corrected Cooling total input
Corrected Heating capacity
Corrected Heating total input

MUZ-GL12NA - MUZ-GL12NAH

MUY-GL09NA

MUY-GL12NA

OBH733D
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.
# ACTUATOR CONTROL

**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**

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Purpose</th>
<th>Actuator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharge temperature thermistor</td>
<td>Protection</td>
<td>○</td>
</tr>
<tr>
<td>Indoor coil temperature thermistor</td>
<td>Cooling: Coil frost prevention</td>
<td>○</td>
</tr>
<tr>
<td>Defrost thermistor (MUZ)</td>
<td>Heating: Defrosting</td>
<td>○</td>
</tr>
<tr>
<td>Fin temperature thermistor</td>
<td>Protection</td>
<td>○</td>
</tr>
<tr>
<td>Ambient temperature thermistor</td>
<td>Cooling: Low ambient temperature operation</td>
<td>○</td>
</tr>
<tr>
<td>Outdoor heat exchanger temperature thermistor</td>
<td>Heating: Defrosting (Heater)</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>Cooling: Low ambient temperature operation</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>Cooling: High pressure protection</td>
<td>○</td>
</tr>
</tbody>
</table>

* MUZ-GL-NAH only.

---

**OBH733D**
9 SERVICE FUNCTIONS

**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).

<table>
<thead>
<tr>
<th>Jumper</th>
<th>Defrost finish temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>JS Soldered</td>
<td>MUZ-GL09/12/15NA</td>
</tr>
<tr>
<td></td>
<td>MUZ-GL18/24NA</td>
</tr>
<tr>
<td></td>
<td>MUZ-GL09/12/15NAH</td>
</tr>
<tr>
<td></td>
<td>MUZ-GL18/24NAH</td>
</tr>
<tr>
<td>None Cut</td>
<td>41°F (5°C)</td>
</tr>
<tr>
<td></td>
<td>50°F (10°C)</td>
</tr>
<tr>
<td></td>
<td>50°F (10°C)</td>
</tr>
<tr>
<td></td>
<td>64°F (18°C)</td>
</tr>
</tbody>
</table>

**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 thermometer 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)

<table>
<thead>
<tr>
<th>Jumper</th>
<th>Pre-heat control setting</th>
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<tbody>
<tr>
<td>JK Soldered</td>
<td>MUZ-GL09/12/15/18NA</td>
</tr>
<tr>
<td></td>
<td>MUZ-GL09/12/15/18NAH</td>
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<td></td>
<td>MUZ-GL24NA</td>
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<td></td>
<td>MUZ-GL24NAH</td>
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<tr>
<td>None Cut</td>
<td>Deactivated</td>
</tr>
<tr>
<td></td>
<td>(Factory setting)</td>
</tr>
<tr>
<td></td>
<td>Activated</td>
</tr>
<tr>
<td></td>
<td>(Factory setting)</td>
</tr>
</tbody>
</table>

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

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.

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

**Operational procedures**

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

2. Blinking pattern when the indoor unit is abnormal:

   - Blinking at 0.5-second interval
   - 2.5-second OFF
   - Repeated cycle

3. Blinking pattern when the outdoor unit is abnormal:

   - Blinking at 0.5-second interval
   - 3-second ON
   - No beep
   - Repeated cycle

**Additional notes**

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.

**Setting up the failure mode recall function**

1. Turn ON the power supply.

2. While pressing OPERATION SELECT button and TOO COOL button on the remote controller at the same time, press RESET button.
3. 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.

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

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

**Releasing the failure mode recall function**

1. Turn OFF the power supply and turn it ON again.

2. Press RESET button of the remote controller.

**Deleting the memorized abnormal condition**

After repairing the unit, recall the failure mode again according to "Setting up the failure mode recall function" mentioned above.

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

2. Press EMERGENCY OPERATION switch so that the memorized abnormal condition is deleted.

3. Release the failure mode recall function according to "Releasing the failure mode recall function" mentioned above.

**Judgment of indoor/outdoor abnormality**

1. Before blinking, does the upper lamp of the OPERATION INDICATOR lamp stay ON for 3 seconds?

   - When it stays ON for 3 seconds (without beep): The outdoor unit is abnormal.
   - The indoor unit is abnormal.

   - Check the blinking pattern, and identify the abnormal point by referring to the indoor unit failure recall mode table. (Refer to indoor unit service manual.)

   - Make sure to check at least 2 consecutive blinking cycles.

2. Blinking pattern when the indoor unit is abnormal:

   - Blinking at 0.5-second interval
   - No beep
   - Repeated cycle

3. Blinking pattern when the outdoor unit is abnormal:

   - Blinking at 0.5-second interval
   - 3-second ON
   - No beep
   - Repeated cycle

**Setting up the operation code**

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

2. Blinking pattern when the indoor unit is abnormal:

   - Blinking at 0.5-second interval
   - 2.5-second OFF
   - Repeated cycle

3. Blinking pattern when the outdoor unit is abnormal:

   - Blinking at 0.5-second interval
   - 3-second ON
   - No beep
   - Repeated cycle

**E.g.: MSZ type**

MSZ-GL06/09/12/15NA
MSY-GL09/12/15NA
MSZ-GL24NA
MSY-GL24NA
MSZ-GL06/09/12/15NA
MSY-GL09/12/15NA
MSZ-GL24NA
MSY-GL24NA
2. Flow chart of the detailed outdoor unit failure mode recall function

Operational procedure

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

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

With the remote controller headed towards the indoor unit, press TOO COOL button to adjust the set temperature to 77°F (25°C). \(\text{\textsuperscript{1}}\)

Does the upper lamp of the OPERATION INDICATOR lamp on the indoor unit blink at the interval of 0.5 seconds? Blinks The outdoor unit is abnormal. Beep is emitted at the same timing as the blinking of the upper lamp of the OPERATION INDICATOR lamp. \(\text{\textsuperscript{2}}\)

No (OFF)

Yes (Blinks)

The outdoor unit is abnormal. Check the abnormal point by referring to the outdoor unit failure recall mode table (10-2.3.). Make sure to check at least 2 consecutive blinking cycles. \(\text{\textsuperscript{2}}\)

The outdoor unit is normal.

Releasing the failure mode recall function

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

Repair the failure parts.

Deleting the memorized abnormal condition

(a) After repairing the unit, recall the failure mode again according to “Setting up the failure mode recall function” (10-2.1.).
(b) Press STOP/OPERATE (OFF/ON) button of the remote controller (the set temperature is displayed) with the remote controller headed towards the indoor unit.
(c) Press EMERGENCY OPERATION switch so that the memorized abnormal condition is deleted.
(d) Release the failure mode recall function according to “Releasing the failure mode recall function” mentioned above.

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.

\(\text{\textsuperscript{1}}\) Regardless of normal or abnormal condition, 2 short beeps are emitted as the signal is received.

\(\text{\textsuperscript{2}}\) Blinks when outdoor unit is abnormal:

- 2.5-second OFF
- 3-second ON
- Blinks
- Repeated cycle

- Blinks at 0.5-second interval

- No beep

- Repeated cycle

- Blinks

- Repeated cycle

OBH733D
# Outdoor unit failure recall mode table

<table>
<thead>
<tr>
<th>Condition</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any signals from the inverter P.C. board cannot be received normally for 3 minutes.</td>
<td>Refer to 10-5. How to check miswiring and serial signal error.</td>
</tr>
<tr>
<td>Although the inverter P.C. board sends signal &quot;10&quot;, signal &quot;1&quot; has been received 30 consecutive times.</td>
<td>Refer to 10-5. How to check miswiring and serial signal error.</td>
</tr>
<tr>
<td>Overcurrent protection cut-out operates 3 consecutive times within 1 minute after the compressor gets started.</td>
<td>Reconnect connectors. Refer to 10-5-6. How to check inverter/compressor. Check stop valve.</td>
</tr>
<tr>
<td>Thermostat shorts or opens during compressor running.</td>
<td>Refer to 10-5-16. &quot;Check of outdoor thermostats&quot;. Defective outdoor thermostats can be identified by checking the blinking pattern of LED.</td>
</tr>
<tr>
<td>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).</td>
<td>Reconnect compressor connector. Refer to 10-5-6. How to check inverter/compressor. Check stop valve.</td>
</tr>
<tr>
<td>Temperature of charge temperature thermistor exceeds 241°F (116°C), compressor stops. Compressor can restart if temperature thermistor reads 212°F (100°C) or less 3 minutes later.</td>
<td>Check refrigerant circuit and refrigerant amount. Refer to 10-5-6. &quot;Check of LEV&quot;.</td>
</tr>
<tr>
<td>Temperature of discharge temperature thermistor exceeds 158°F (70°C) in HEAT mode. Temperature defrost thermostor exceeds 158°F (70°C) in COOL mode.</td>
<td>Check refrigerant circuit and refrigerant amount. Check stop valve.</td>
</tr>
<tr>
<td>Outdoor fan has stopped 3 times in a row within 30 seconds after outdoor fan start-up.</td>
<td>Refer to 10-5-2. &quot;Check of outdoor fan motor&quot;. Refer to 10-5-2. &quot;Check of inverter P.C. board&quot;.</td>
</tr>
<tr>
<td>Non-volatile memory data cannot be read properly.</td>
<td>Replace the inverter P.C. board.</td>
</tr>
<tr>
<td>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).</td>
<td>Refer to 10-5-6. How to check inverter/compressor.</td>
</tr>
</tbody>
</table>

**NOTE:** Blinking patterns of this mode differ from the ones of TROUBLESHOOTING CHECK TABLE (10-3.).
<table>
<thead>
<tr>
<th>The upper lamp of the OPERATION INDICATOR lamp (Indoor unit)</th>
<th>Abnormal point (Failure mode/protection)</th>
<th>LED indication (Outdoor P.C. board)</th>
<th>Condition</th>
<th>Remedy</th>
<th>Indoor/outdoor unit failure mode recall function</th>
<th>Outdoor unit failure mode recall function</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-time flash 2.5 seconds OFF</td>
<td>Discharge temperature</td>
<td>—</td>
<td>Temperature of discharge temperature thermistor has been 122°F (50°C) or less for 20 minutes.</td>
<td>Refer to 10-5. &quot;Check of LEV&quot;.</td>
<td>—</td>
<td>○</td>
</tr>
<tr>
<td>11-time flash 2.5 seconds OFF</td>
<td>DC voltage</td>
<td>8-time flash 2.5 seconds OFF</td>
<td>DC voltage of inverter cannot be detected normally.</td>
<td>Refer to 10-5. &quot;How to check inverter/ compressor&quot;</td>
<td>—</td>
<td>○</td>
</tr>
<tr>
<td>14-time flash or more 2.5 seconds OFF</td>
<td>Stop valve (Closed valve)</td>
<td>14-time flash 2.5 seconds OFF</td>
<td>Closed valve is detected by compressor current.</td>
<td>Check stop valve.</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>4-way valve/ Pipe temperature</td>
<td>16-time flash 2.5 seconds OFF</td>
<td>The 4-way valve does not work properly. The indoor coil thermistor detects an abnormal temperature.</td>
<td>Check the 4-way valve. Replace the inverter P.C. board.</td>
<td>—</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Outdoor refrigerant system abnormality</td>
<td>1-time flash 2.5 seconds OFF</td>
<td>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.</td>
<td>Check for a gas leak in a connecting piping etc. Check the stop valve. Refer to 10-5. &quot;Check of outdoor refrigerant circuit&quot;</td>
<td>—</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>No.</th>
<th>Symptom</th>
<th>LED indication</th>
<th>Abnormal point/Condition</th>
<th>Condition</th>
<th>Remedy</th>
</tr>
</thead>
</table>
| 1   | Outdoor unit does not operate.          | Outdoor power system | Overcurrent protection cut-out operates 3 consecutive times within 1 minute after the compressor gets started. | - Reconnect connector of compressor.  
   |                                          |                |                          |           | - Refer to 10-5. "How to check inverter/compressor".  
   |                                          |                |                          |           | - Check stop valve.                                      |
| 2   | Indoor thermistors                      |                | Discharge temperature thermistor, fin temperature thermistor, defrost thermistor, P.C. board temperature thermistor, outdoor heat exchanger thermistor or ambient temperature thermistor shorts or opens during compressor running. | - Refer to 10-5. "Check of outdoor thermistors". |
| 3   | Outdoor control system                  |                | Nonvolatile memory data cannot be read properly. | - Replace inverter P.C. board. |
| 4   | 5-time flash 2.5 seconds OFF            | Serial signal  | The communication falls between the indoor and outdoor unit for 3 minutes. | - Refer to 10-5. "How to check miswiring and serial signal error." |
| 5   | 11-time flash 2.5 seconds OFF           | Closed valve   | Closed valve is detected by compressor current. | - Check stop valve. |
| 6   | 16-time flash 2.5 seconds OFF           | 4-way valve/ Pipe temperature | The 4-way valve does not work properly. | - Refer to 10-5. "Check of outdoor refrigerant system abnormality". |
| 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.  
   |                                          |                |                          |           | - Check the stop valve.  
   |                                          |                |                          |           | - Refer to 10-5. "Check of outdoor refrigerant circuit". |
| 8   | Outdoor unit stops and restarts 3 minutes later is repeated. | Outdoor power system | Overcurrent protection Large current flows into the power module (IC700). | - Reconnect connector of compressor.  
   |                                          |                |                          |           | - Refer to 10-5. "How to check inverter/compressor".  
   |                                          |                |                          |           | - Check stop valve.                                      |
| 9   | 3-time flash 2.5 seconds OFF            | Discharge temperature overheating protection | Temperature of discharge temperature thermistor exceeds 241°F (110°C), compressor stops. Compressor can restart if discharge temperature thermistor reads 212°F (100°C) or less 3 minutes later. | - Check refrigerant circuit and refrigerant amount.  
   |                                          |                |                          |           | - Refer to 10-6. "Check of LEV".                         |
| 10  | 4-time flash 2.5 seconds OFF            | Fin temperature P.C. board temperature overheating protection | Temperature of the fin temperature thermistor on the heat sink exceeds 167°F - 169°F (75 - 80°C) (MUZ-GL09/12/15/18, MUY-GL09/12/15/18/1GBT module (IC700)) (MUZ-GL24, MUY-GL24). | - Check around outdoor unit.  
   |                                          |                |                          |           | - Replace inverter P.C. board.                          |
| 11  | 5-time flash 2.5 seconds OFF            | High pressure protection | Outdoor coil thermistor exceeds 158°F (70°C) in COOL mode. | - Check refrigerant circuit and refrigerant amount.  
   |                                          |                |                          |           | - Check stop valve.                                      |
| 12  | 6-time flash 2.5 seconds OFF            | Compressor synchronous abnormality | The waveform of compressor current is distorted. | - Reconnect connector of compressor.  
   |                                          |                |                          |           | - Refer to 10-5. "How to check inverter/compressor".  
   |                                          |                |                          |           | - Check refrigerant circuit and refrigerant amount.  
   |                                          |                |                          |           | - Check stop valve.                                      |
| 13  | 7-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 10-6. "Check of outdoor fan motor". |
| 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. "How to check inverter/compressor".  
   |                                          |                |                          |           | - Refer to 10-5. "Check of inverter/compressor". |
| 15  | 13-time flash 2.5 seconds OFF           | DC voltage | DC voltage of inverter cannot be detected normally. | - Refer to 10-6. "How to check inverter/compressor".  
   |                                          |                |                          |           | - Refer to 10-5. "Check of power supply" (MUZ-GL24, MUY-GL24).  
   |                                          |                |                          |           | - 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".

---

### LED Indication

- **ON:** 2.5-second OFF
- **OFF:** 2.5-second OFF

---

**Inverter P.C. board:**
- **MUZ-GL09/12/15/18/1GBT module (IC700) (MUZ-GL24, MUY-GL24):**
  - **Flashing → LED:** 0.5-second ON
- **MUY-GL09/12/15/18NA (H):**
  - **Flashing → LED:** 0.5-second ON
- **MUZ-GL09/12/15/18NA**:
  - **Flashing → LED:** 0.5-second ON

---

**OBH733D**

46
<table>
<thead>
<tr>
<th>No.</th>
<th>Symptom</th>
<th>LED indication</th>
<th>Abnormal point/Condition</th>
<th>Condition</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Outdoor unit operates.</td>
<td>1-time flash 2.5 seconds OFF</td>
<td>Frequency drop by current protection.</td>
<td>MUY-GL09/12/15/18</td>
<td>When the input current exceeds approximately 10.5A, compressor frequency lowers. The unit is normal, but check the following. ・Check if indoor filters are clogged. ・Check if refrigerant is short. ・Check if indoor/outdoor unit air circulation is short cycled.</td>
</tr>
<tr>
<td>17</td>
<td></td>
<td>2-time flash 2.5 seconds OFF</td>
<td>Frequency drop by high pressure protection. Temperature of indoor coil thermostat exceeds 131 °F (55°C) in HEAT mode, compressor frequency lowers.</td>
<td>MUY-GL24</td>
<td>・Check refrigerant circuit and refrigerant amount. ・Refer to 10-5.7 &quot;Check of LEV&quot;. ・Refer to 10-5.9 &quot;Check of outdoor thermostars&quot;.</td>
</tr>
<tr>
<td>18</td>
<td></td>
<td>3-time flash 2.5 seconds OFF</td>
<td>Frequency drop by discharge temperature protection. Temperature of discharge temperature thermistor exceeds 232°F (111°C), compressor frequency lowers.</td>
<td>MUY-GL24</td>
<td>・Check refrigerant circuit and refrigerant amount. ・Refer to 10-5.7 &quot;Check of LEV&quot;. ・Refer to 10-5.9 &quot;Check of outdoor thermostars&quot;.</td>
</tr>
<tr>
<td>19</td>
<td></td>
<td>4-time flash 2.5 seconds OFF</td>
<td>Outside temperature thermistor protection. When the outside temperature thermistor shorts or opens, protective operation without that thermistors is performed.</td>
<td>MUY-GL24</td>
<td>・Refer to 10-5.7 &quot;Check of outdoor thermostars&quot;.</td>
</tr>
<tr>
<td>20</td>
<td>Outdoor unit operates.</td>
<td>7-time flash 2.5 seconds OFF</td>
<td>Low discharge temperature protection. Temperature of discharge temperature thermistor has been 122°F (50°C) or less for 20 minutes.</td>
<td>MUY-GL24</td>
<td>・Refer to 10-5.7 &quot;Check of LEV&quot;. ・Check refrigerant circuit and refrigerant amount.</td>
</tr>
<tr>
<td>21</td>
<td></td>
<td>2.5 seconds OFF</td>
<td>PAM protection 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.</td>
<td>MUY-GL24</td>
<td>・Refer to 10-5.7 &quot;Check of LEV&quot;. ・Check refrigerant circuit and refrigerant amount.</td>
</tr>
<tr>
<td>22</td>
<td></td>
<td>8-time flash 2.5 seconds OFF</td>
<td>Inverter check mode. The connector of compressor is disconnected, inverter check mode starts.</td>
<td>MUY-GL24</td>
<td>・Check if the connector of the compressor is correctly connected. Refer to 10-5.8 &quot;How to check inverter/compressor&quot;.</td>
</tr>
</tbody>
</table>

**NOTE:**
1. The location of LED is illustrated at the right figure. Refer to 10-6.1.
2. LED is lighten 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

<table>
<thead>
<tr>
<th>Part name</th>
<th>Check method and criterion</th>
<th>Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defrost thermistor (RT61) (MUZ)</td>
<td>Measure the resistance with a tester.</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature thermistor (RT65)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outdoor heat exchanger temperature thermistor (RT68)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discharge temperature thermistor (RT62)</td>
<td>Measure the resistance with a tester. Before measurement, hold the thermistor with your hands to warm it up.</td>
<td></td>
</tr>
<tr>
<td>Compressor</td>
<td>Measure the resistance between terminals using a tester. [Temperature: 14 - 104°F (-10 - 40°C)]</td>
<td>![Compressor Diagram]</td>
</tr>
<tr>
<td></td>
<td>Normal (Ω)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MUZ-GL09/12/15</td>
<td>MUZ-GL15/18</td>
</tr>
<tr>
<td>U-V</td>
<td>1.60 - 2.17</td>
<td>0.82 - 1.11</td>
</tr>
<tr>
<td>U-W</td>
<td>1.26 - 1.72</td>
<td></td>
</tr>
<tr>
<td>V-W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outdoor fan motor</td>
<td>Measure the resistance between lead wires using a tester. [Temperature: 14 - 104°F (-10 - 40°C)]</td>
<td>![Outdoor Fan Motor Diagram]</td>
</tr>
<tr>
<td></td>
<td>Color of lead wire</td>
<td>Normal (Ω)</td>
</tr>
<tr>
<td></td>
<td>MUZ-GL09/12/15</td>
<td>MUZ-GL18/24</td>
</tr>
<tr>
<td>RED – BLK</td>
<td>29 - 40</td>
<td></td>
</tr>
<tr>
<td>BLK – WHT</td>
<td></td>
<td>12 - 16</td>
</tr>
<tr>
<td>WHT – RED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R. V. coil (21S4)</td>
<td>Measure the resistance using a tester. [Temperature: 14 - 104°F (-10 - 40°C)]</td>
<td>![R. V. Coil Diagram]</td>
</tr>
<tr>
<td></td>
<td>Normal (kΩ)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.97 - 1.38</td>
</tr>
<tr>
<td>Expansion valve coil (LEV)</td>
<td>Measure the resistance using a tester. [Temperature: 14 - 104°F (-10 - 40°C)]</td>
<td>![Expansion Valve Coil Diagram]</td>
</tr>
<tr>
<td></td>
<td>Color of lead wire</td>
<td>Normal (Ω)</td>
</tr>
<tr>
<td></td>
<td>MUZ-GL09/12/15</td>
<td>MUZ-GL18/24</td>
</tr>
<tr>
<td>RED – ORN</td>
<td>37 - 54</td>
<td></td>
</tr>
<tr>
<td>RED – YLW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Defrost heater (MUY-GL-NAH)</td>
<td>Measure the resistance using a tester. [Temperature: 14 - 104°F (-10 - 40°C)]</td>
<td>![Defrost Heater Diagram]</td>
</tr>
<tr>
<td></td>
<td>Normal (Ω)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>349 - 428</td>
</tr>
</tbody>
</table>

OBH733D
10-5. TROUBLESHOOTING FLOW

[A] 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 the voltage between terminals.

Are the voltages balanced?

No: Replace the inverter P.C. board.

Yes: Check the compressor.

See 10-5. "Check of open phase".

[B] 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)
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.)

[C] Check of compressor

Refer to 10-5. "Check of compressor winding".

Is the compressor normal?

No: Replace the compressor.

Yes: Refer to 10-5. "Check of compressor operation time".

Does the compressor operate continuously?

No: Refer to 10-5. "Check of compressor start failure".

Yes: OK
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

<<Judgement>>
- Refer to 10-4.
- 0 [Ω] ················ Abnormal [short]
- Infinite [Ω] ······· Abnormal [open]

NOTE: Be sure to zero the ohmmeter before measurement.

Check of compressor operation time

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

<<Measurement>>
- Measure the time from the start of compressor to the stop of compressor due to overcurrent.

Compressor starts
- 0 second
- 1 second
- 2 seconds
- 10 seconds
- 10 minutes

<<Judgement>>
- Normal
- Abnormal (IC700 failure)
- Abnormal (Compressor winding short)
- Abnormal (Compressor lock out) (Starting defect)
- Abnormal (Poor contact) (Inverter P.C. board defect) (Disconnected connector)
- Abnormal (Refrigerant circuit defect) (Closed valve)

Check of compressor start failure

- Confirm that 1~5 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) and 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: Replace the compressor.

After the compressor is heated with a drier, does the compressor start?
- Yes: Compressor start failure. Activate pre-heat control. (Refer to 9-2. "PRE-HEAT CONTROL SETTING")
- No: Replace the compressor.

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

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

- Is the resistance of thermistor normal? (Refer to 10-6.1.)
  - Yes
  - No

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

Reconnect the connector of thermistor. Turn ON the power supply and press EMERGENCY OPERATION switch.

- Does the unit operate for 10 minutes or more without showing thermistor abnormality?
  - Yes
  - No

Replace the inverter P.C. board.

---

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

<table>
<thead>
<tr>
<th>Thermistor</th>
<th>Symbol</th>
<th>Connector, Pin No.</th>
<th>Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defrost (MUZ)</td>
<td>RT61</td>
<td>Between CN641 pin1 and pin2</td>
<td></td>
</tr>
<tr>
<td>Discharge temperature</td>
<td>RT62</td>
<td>Between CN641 pin3 and pin4</td>
<td></td>
</tr>
<tr>
<td>Fin temperature</td>
<td>RT64</td>
<td>Between CN642 pin1 and pin2</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>RT65</td>
<td>Between CN643 pin1 and pin2</td>
<td></td>
</tr>
<tr>
<td>Outdoor heat exchanger temperature</td>
<td>RT68</td>
<td>Between CN644 pin1 and pin3</td>
<td></td>
</tr>
</tbody>
</table>

**MUZ-GL24, MUY-GL24**

<table>
<thead>
<tr>
<th>Thermistor</th>
<th>Symbol</th>
<th>Connector, Pin No.</th>
<th>Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defrost (MUZ)</td>
<td>RT61</td>
<td>Between CN671 pin1 and pin2</td>
<td></td>
</tr>
<tr>
<td>Discharge temperature</td>
<td>RT62</td>
<td>Between CN671 pin3 and pin4</td>
<td></td>
</tr>
<tr>
<td>Fin temperature</td>
<td>RT64</td>
<td>Between CN673 pin1 and pin2</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>RT65</td>
<td>Between CN672 pin1 and pin2</td>
<td></td>
</tr>
<tr>
<td>Outdoor heat exchanger temperature</td>
<td>RT66</td>
<td>Between CN671 pin3 and pin5</td>
<td></td>
</tr>
</tbody>
</table>

---

**OK**

(Cause is poor contact.)
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.

- Disconnect connector between the compressor and the power module (IC700).
- Turn ON the power supply and press EMERGENCY OPERATION switch twice (HEAT mode).
- Is there 208/230 VAC between CN721 $\oplus$ and $\ominus$ on the inverter P.C. board 3 minutes after the power supply is turned ON?
  - No: Replace the inverter P.C. board.
  - Yes: Replace the 4-way valve.

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

- Disconnect connector between the compressor and the power module (IC700).
- Turn ON the power supply and press EMERGENCY OPERATION switch once (COOL mode).
- Is there 208/230 VAC between CN721 $\oplus$ and $\ominus$ on the inverter P.C. board 3 minutes after the power supply is turned ON?
  - No: Replace the inverter P.C. board.
  - Yes: Replace the 4-way valve.

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.

- Disconnect connector between the compressor and the power module (IC700).
- Turn ON the power supply and press EMERGENCY OPERATION switch twice (HEAT mode).
- Is there 208/230 VAC between CN602 $\oplus$ and $\ominus$ on the inverter P.C. board 3 minutes after the power supply is turned ON?
  - No: Replace the inverter P.C. board.
  - Yes: Replace the 4-way valve.

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

- Disconnect connector between the compressor and the IGBT module (IC700).
- Turn ON the power supply and press EMERGENCY OPERATION switch once (COOL mode).
- Is there 208/230 VAC between CN602 $\oplus$ and $\ominus$ on the inverter P.C. board 3 minutes after the power supply is turned ON?
  - No: Replace the 4-way valve.
  - Yes: Replace the inverter P.C. board.
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.

No

Rotate the outdoor fan motor manually and measure the voltage of CN931.

Between 1(+) and 5(-)
Between 2(+) and 5(-)
Between 3(+) and 5(-)

(Fixed to either 5 or 0 VDC)

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

No

Yes

No

Does the outdoor fan motor rotate smoothly?

Yes

Replace the outdoor fan motor.

Replace the inverter P.C. board.
**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, IG700) (MUZ-GL24, MUY-GL24).**

Turn ON power supply and press EMERGENCY OPERATION switch.

**Does the upper lamp of the OPERATION INDICATOR lamp on the indoor unit light up?**

- Yes
  - Is there voltage 208/230 VAC between the indoor terminal block S1 and S2?  
    - Yes, Replace the indoor electronic control P.C. board.
    - No, Replace the indoor electronic control P.C. board.

- No, Rectify indoor/outdoor connecting wire.

**Is there DC voltage 260 - 370 VDC between DB61 (+) and DB61 (-) (MUZ-GL09/12/15/18, MUY-GL09/12/15/18) 294 - 370 VDC between JP715 (+) and JP30 (-) (MUZ-GL24, MUY-GL24) on the inverter P.C. board? (Refer to 10-6.1.)**

- Yes
  - Does LED on the inverter P.C. board light up or flash? (Refer to 10-6.1.)
    - Yes, If lights up, OK. If flashes, refer to 10-3.
    - No, Replace the inverter P.C. board.

- No, Check the electric parts in main circuit.

**Does LED on the inverter P.C. board light up or flash? (Refer to 10-6.1.)**

**Disconnect the connector between the compressor and the power module (IC700) (MUZ-GL09/12/15/18, MUY-GL09/12/15/18, IG700) (MUZ-GL24, MUY-GL24).**

Turn ON power supply and press EMERGENCY OPERATION switch.
**Check of LEV (Expansion valve)**

Turn ON the power supply.

<Preparation of the remote controller>
- While pressing both OPERATION SELECT button and TOO COOL button on the remote controller at the same time, press RESET button.
- 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?

Is LEV coil properly fixed to the expansion valve?

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

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

Properly fix the LEV coil to the expansion valve.

Replace the inverter P.C. board.

Replace the LEV coil.

Replace the expansion valve.

**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.

※1. Regardless of normal or abnormal condition, a short beep is emitted once the signal is received.
Check the outdoor fan motor.
(Refer to 10-5.①.)

Is the fuse (F901) blown on the inverter P.C. board?

Yes

No

Check the connection of the connectors (CN931, CN932) of the outdoor fan motor. If the connection is poor, make it correct.

Operate the outdoor unit by starting EMERGENCY OPERATION.

Check the LED indication on the inverter P.C. board.
Does the LED flash 10 times?

Yes

(10-time flash)

No

Check the corresponding parts following LED indication.
(Refer to 10-3.)

Replace the inverter P.C. board.
How to check miswiring and serial signal error

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

1. Miswiring may damage indoor electronic control P.C. board during the operation. Be sure to confirm the wiring is correct before the operation starts.

2. Be careful of the residual voltage of smoothing capacitor.

3. Be sure to check this within 3 minutes after turning ON. After 3 minutes, LED blinks 6 times. Even when the inverter P.C. board is normal, LED blinks 6 times after 3 minutes.

- Turn OFF inverter-controlled lighting equipment.
- Turn OFF the power supply and then turn ON again.
- Press EMERGENCY OPERATION switch.

Is serial signal error indicated 6 minutes later?

Yes

No

Check the wiring.

Is the unit or the light away from each other?

Yes

No

Attach a filter on remote control receiving section of the indoor unit.

Does the left lamp of OPERATION INDICATOR lamp light up? <Confirmation of the power to the indoor unit>

Yes

No

Press EMERGENCY OPERATION switch once.

Does the left lamp of OPERATION INDICATOR lamp light up? <Confirmation of the power to the indoor unit>

Yes

No

Is there rated voltage between the outdoor terminal block S1 and S2? <Confirmation of power voltage>

Turn ON the power supply.

Is there rated voltage in the power supply? <Refer to "TEST POINT DIAGRAM AND VOLTAGE" in the outdoor service manual>

Yes

No

Check the power supply.

Is there rated voltage between the outdoor terminal block S1 and S2? <Confirmation of the power to the indoor unit>

Yes

No

Check the wiring.

Is serial signal error indicated 6 minutes later?

Yes

No

Correct them.

Turn OFF the power supply.

Check once more if the indoor/outdoor connecting wire is not miswiring.

Bridge the outdoor terminal block S2 and S3.

Does the left lamp of OPERATION INDICATOR lamp light up? <Confirmation of the power to the indoor unit>

Yes

No

Check the wiring.

Is the bus-bar voltage of the inverter P.C. board normal? (Refer to "TEST POINT DIAGRAM AND VOLTAGE" in the outdoor service manual.)

Yes

No

Check of power supply.

Does the LED on the inverter P.C. board repeat *3.6-second-OFF and 0.8-second-ON quick blinking*? #3

Yes

No

(Lefted or not lighted)

Replace the inverter P.C. board #2.

#2. Be careful of the residual voltage of smoothing capacitor.

Is there rated voltage between the indoor terminal block S1 and S2? <Confirmation of power voltage>

Yes

No

Check the power supply.

Is there rated voltage in the power supply? <Refer to "TEST POINT DIAGRAM AND VOLTAGE" in the outdoor service manual>

Yes

No

Check the wiring.

Is there rated voltage between the indoor terminal block S1 and S2? <Confirmation of power voltage>

Yes

No

Check the wiring.

Is there rated voltage between the indoor terminal block S2 and S3? <Confirmation of serial signal>

Yes

No

Check the wiring.

Is there rated voltage between the outdoor terminal block S2 and S3? <Confirmation of the power to the indoor unit>

Yes

No

Check the wiring.

Is there rated voltage between the indoor terminal block S2 and S3? <Confirmation of serial signal>

Yes

No

Check the wiring.

Is the bus-bar voltage of the inverter P.C. board normal? (Refer to "TEST POINT DIAGRAM AND VOLTAGE" in the outdoor service manual.)

Yes

No

Check of power supply.

Is there rated voltage between the indoor terminal block S1 and S2? <Confirmation of power voltage>

Yes

No

Check the wiring.

Is there rated voltage in the power supply? <Refer to "TEST POINT DIAGRAM AND VOLTAGE" in the outdoor service manual>

Yes

No

Check the wiring.

Is there rated voltage between the indoor terminal block S2 and S3? <Confirmation of serial signal>

Yes

No

Check the wiring.

Is the bus-bar voltage of the inverter P.C. board normal? (Refer to "TEST POINT DIAGRAM AND VOLTAGE" in the outdoor service manual.)

Yes

No

Check of power supply.

Is there rated voltage between the indoor terminal block S1 and S2? <Confirmation of power voltage>

Yes

No

Check the wiring.

Is there rated voltage in the power supply? <Refer to "TEST POINT DIAGRAM AND VOLTAGE" in the outdoor service manual>

Yes

No

Check the wiring.
MUZ-GL18/24NA
MUZ-GL18/24NAH
MUY-GL18/24NA

Turn OFF inverter-controlled lighting equipment. Turn OFF the power supply and then turn ON again. Press EMERGENCY OPERATION switch.

Is serial signal error indicated 6 minutes later?

Yes

No

Replace the indoor power P.C. board.

Is there amplitude of 10 to 20 VDC between the indoor terminal block S2 and S3? <Confirmation of serial signal>

Yes

No

Replace the indoor electronic control P.C. board.

Is there 2 VDC or less between CN10A (+) and GND (-) on the indoor electronic control P.C. board?

Yes

No

Replace the indoor electronic control P.C. board.

Is there 2 VDC or less between CN10A (+) and GND (-) on the indoor electronic control P.C. board?

Yes

No

Replace the indoor electronic control P.C. board.

Is there amplitude of 10 to 20 VDC between the indoor terminal block S2 and S3? <Confirmation of serial signal>

Yes

No

Replace the indoor power P.C. board.

Is there AMplitude of 10 to 20 VDC between the indoor terminal block S2 and S3? <Confirmation of serial signal>

Yes

No

Replace the indoor electronic control P.C. board.

Is there 2 VDC or less between CN10A (+) and GND (-) on the indoor electronic control P.C. board?

Yes

No

Replace the indoor electronic control P.C. board.

Is there 2 VDC or less between CN10A (+) and GND (-) on the indoor electronic control P.C. board?

Yes

No

Replace the indoor electronic control P.C. board.

Is there amplitude of 10 to 20 VDC between the indoor terminal block S2 and S3? <Confirmation of serial signal>

Yes

No

Replace the indoor power P.C. board.

Is there 2 VDC or less between CN10A (+) and GND (-) on the indoor electronic control P.C. board?

Yes

No

Replace the indoor electronic control P.C. board.

Is there 2 VDC or less between CN10A (+) and GND (-) on the indoor electronic control P.C. board?

Yes

No

Replace the indoor electronic control P.C. board.

Is there amplitude of 10 to 20 VDC between the indoor terminal block S2 and S3? <Confirmation of serial signal>

Yes

No

Replace the indoor power P.C. board.

Is there 2 VDC or less between CN10A (+) and GND (-) on the indoor electronic control P.C. board?
Has the operation stopped during pump down?

- Yes
  - The operation has stopped to prevent the diesel explosion caused by air trapped in the refrigerant circuit. Close the stop valve, and disconnect the power plug or turn the breaker OFF.
  - The refrigerant gas amount may be 60% or less than the normal amount. Identify where the gas is leaking from, and fix the leak.

- No
  - The unit occasionally stops when the stop valve is opened or closed during operation. Open the stop valve and start the cooling operation again.

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

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...

Is there 208/230 VAC between CN601 (MUZ-GL24NAH)/CN722 (Other models) and CN602/CN723 on the inverter P.C. board? Refer to 10-6.1.

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

- No
  - Replace the inverter P.C. board.

Check of outdoor refrigerant circuit

- Has the operation stopped during pump down?
  - Yes
  - The operation has stopped to prevent the diesel explosion caused by air trapped in the refrigerant circuit. Close the stop valve, and disconnect the power plug or turn the breaker OFF.
  - The refrigerant gas amount may be 60% or less than the normal amount. Identify where the gas is leaking from, and fix the leak.

  - No
  - The unit occasionally stops when the stop valve is opened or closed during operation. Open the stop valve and start the cooling operation again.

- Was the operation started with the stop valve closed, and was it opened during operation?
  - Yes
  - The operation has stopped to prevent the diesel explosion caused by air trapped in the refrigerant circuit. Close the stop valve, and disconnect the power plug or turn the breaker OFF.
  - The refrigerant gas amount may be 60% or less than the normal amount. Identify where the gas is leaking from, and fix the leak.

  - No
  - The unit occasionally stops when the stop valve is opened or closed during operation. Open the stop valve and start the cooling operation again.
Electromagnetic noise enters into TV sets or radios

- Is the unit grounded?
  - Yes: Ground the unit.
  - No: Extend the distance between the antennas and the indoor unit, and/or the antennas and the outdoor unit.

- Is the distance between the TV sets or radios and the indoor unit within 3.28 ft. (1m), or is the distance between the TV sets or radios and the outdoor unit within 9.91 ft. (3m)?
  - Yes: Extend the distance between the TV sets and/or radios and the indoor unit, or the TV sets or radios and the outdoor unit.
  - No: Extend the distance between the indoor/outdoor connecting wire of the air conditioner and the wiring of the antennas.

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

Back side of unit

DB61
260 - 370 VDC
(-)
(+)

Fuse (F801)
T3.15AL250V

Output to drive outdoor fan motor
(CN932)

Fuse (F901)
T3.15AL250V

Output to drive compressor
(LDU, LDV, LDW)

Front side of unit

LED

Jumper wire for preheat control setting
(JK)

Jumper wire for changing defrost setting (JS)

208/230 VAC

FV.coil
(MUZ)

208/230 VAC

32 50 68 86 104 122 140 158 176 194 212 230 248

0 20 40 60 80 100

Temperature(°F)

Resistance (Ω)

Fin temperature thermistor (RT64)

Outdoor heat exchanger temperature thermistor (RT68)

Defrost thermistor (RT61)

Outdoor heat exchanger temperature thermistor (RT65)

Discharge temperature thermistor (RT62)
# DISASSEMBLY INSTRUCTIONS

"Terminal with locking mechanism" Detaching points

The terminal which has the locking mechanism can be detached as shown below. The terminal without locking mechanism can be detached by pulling it out.

1. MUZ-GL09NA  MUZ-GL09NAH  MUY-GL09NA
2. MUZ-GL12NA  MUZ-GL12NAH  MUY-GL12NA
3. 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.

## PHOTOS

### Photo 1
- Screws of the top panel
- Screws of the cabinet
- Back panel
- Service panel

### Photo 2
- Screws of the cabinet
- Screws of the top panel

### Photo 3
- Screws of the terminal block support and the back panel
- Direction to remove
- Hooks
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 and heater protector) (**MUZ-GL09/12/15NAH**)
       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 (CN61).
   (4) Remove the screws fixing the heat sink support and the separator.
   (5) Remove the fixing screws of the terminal block support and the back panel.
   (6) Remove the inverter assembly.
   (7) Remove the screw of the ground wire and screw 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 remove the inverter P.C. board from the P.C. board support.

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

<table>
<thead>
<tr>
<th>Photo 8</th>
<th>Photo 9</th>
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<tbody>
<tr>
<td><img src="image1.png" alt="Photo 8" /></td>
<td><img src="image2.png" alt="Photo 9" /></td>
</tr>
</tbody>
</table>

- **Photo 8**: Screw of the R.V. coil (MUZ)
- **Photo 9**: Discharge temperature thermistor, Ambient temperature thermistor, Outdoor heat exchanger temperature thermistor, Defrost thermistor (MUZ)
## OPERATING PROCEDURE

### 5. Removing outdoor fan motor
1. Remove the cabinet and panels. (Refer to 1.)
2. Disconnect the following connectors:
   - Inverter P.C. board
   - CN931, CN932 (Fan motor)
3. Remove the propeller fan nut.
4. Remove the propeller fan.
5. Remove the screws fixing the fan motor.
6. Remove the fan motor.

**NOTE:** The propeller fan nut is a revers thread.

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

### PHOTOS

**Photo 10**
- Screws of the outdoor fan motor

**Photo 11**
- Screws of the reactor
  - Soundproof felt
  - Suction pipe brazed part

**Photo 12**
- Discharge pipe brazed part
- Brazed parts of 4-way valve

OBH733D 67
### OPERATING PROCEDURE

1. Removing the cabinet
   - (1) Remove the screws of the service panel.
   - (2) Remove the screws of the top panel.
   - (3) Remove the screw of the valve cover.
   - (4) Remove the service panel.
   - (5) Remove the screws fixing the conduit cover.
   - (6) Remove the conduit cover.
   - (7) Remove the screw of fixing the conduit plate.
   - (8) Remove the conduit plate.
   - (9) Remove the top panel.
   - (10) Remove the valve cover.
   - (11) Disconnect the power supply and indoor/outdoor connecting wire.
   - (12) Remove the screws of the cabinet.
   - (13) Remove the cabinet.
   - (14) Remove the screws of the back panel.
   - (15) Remove the back panel.

### PHOTOS

**Photo 1**

- Screws of the top panel
- Screws of the cabinet

**Photo 2**

- Screw of the back panel
- Screws of the cabinet
- Screws of the top panel
- Screw of the valve cover

**Photo 3**

- Screws of the conduit cover

**Photo 4**

- Screw of the conduit plate
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

Screw of the R.V. coil (MUZ)
Brazed parts of 4-way valve
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)
       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 reverse 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)
11-3. MUZ-GL24NA MUZ-GL24NAH MUY-GL24NA

OPERATING PROCEDURE

1. Removing the cabinet
   (1) Remove the screws of the service panel.
   (2) Remove the screws of the top panel.
   (3) Remove the screw of the valve cover.
   (4) Remove the service panel.
   (5) Remove the screws fixing the conduit cover.
   (6) Remove the conduit cover.
   (7) Remove the top panel.
   (8) Remove the valve cover.
   (9) Disconnect the power supply and indoor/outdoor connecting wire.
   (10) Remove the screws of the cabinet.
   (11) Remove the cabinet.
   (12) Remove the screws of the back panel.
   (13) Remove the back panel.

PHOTOS

Photo 1

Photo 2

Photo 3

Photo 4

NOTE: Turn OFF the power supply before disassembly.
### 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 (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.

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

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

### PHOTOS

#### Photo 5

- Inverter P.C. board
- Ground wires
- Screws of the P.B. support
- Screws of the relay panel

#### Photo 6

- Screw of the R.V. coil (MUZ)
- Brazed parts of 4-way valve
- Screw of the relay panel
- Screw of the relay panel
- Screws of the P.B. support
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>
         CN671 (Defrost thermistor (MUZ), discharge temperature thermistor and outdoor heat exchanger temperature thermistor)
         CN672 (Ambient 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.
   (4) Remove the screws fixing the fan motor.
   (5) 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 pipes connected with compressor.
   (6) Remove the compressor nuts.
   (7) Remove the compressor.
   (8) Detach the brazed parts of 4-way valve and pipes. (Photo 6)