

**Revision A:**

- Resistance of LEV (Expansion valve) has been modified.
- Power input and others have been added to SPECIFICATION.

Please void OB326.

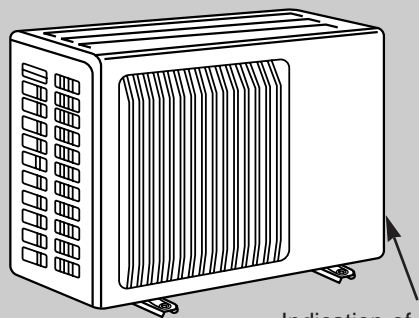
# SERVICE MANUAL



No. OB326  
REVISED EDITION-A

## Wireless type Models

- MU-A18WV** - E1
- MU-A24WV** - E1
- MU-A30WV** - E1



Indication of model name  
**MU-A18WV - E1**

## CONTENTS

|                                     |    |
|-------------------------------------|----|
| 1. TECHNICAL CHANGES .....          | 2  |
| 2. PART NAMES AND FUNCTIONS.....    | 5  |
| 3. SPECIFICATION.....               | 5  |
| 4. NOISE CRITERIA CURVES .....      | 7  |
| 5. OUTLINES AND DIMENSIONS .....    | 8  |
| 6. WIRING DIAGRAM .....             | 9  |
| 7. REFRIGERANT SYSTEM DIAGRAM ..... | 11 |
| 8. PERFORMANCE CURVES .....         | 14 |
| 9. MICROPROCESSOR CONTROL .....     | 22 |
| 10. TROUBLESHOOTING.....            | 25 |
| 11. DISASSEMBLY INSTRUCTIONS.....   | 32 |
| 12. PARTS LIST.....                 | 38 |

**NOTE:**

- This service manual describes technical data of outdoor units.  
As for indoor units MS-A18WV-[E1], MS-A24WV-[E1] and MS-A30WV-[E1], refer to the service manual OB325.



**Revision A:**

- Resistance of LEV (Expansion valve) has been modified. (30.3 Ω ~ 37.0 Ω→41.0 Ω ~ 49.0 Ω)  
TROUBLESHOOTING has been partially modified.
- Running current, power input and power factor have been added.  
SPECIFICATION has been partially modified.

# 1 TECHNICAL CHANGES

**MU-18RV -[E1]→MU-A18WV -[E1]**

1. Refrigerant has changed. (R22→R410A)
2. Refrigerant system diagram has changed.
  - Diameter of stop valve has changed. (Gas: φ15.88→φ12.7)
  - Accumulator has removed.
3. Oil separator has been added.
4. Compressor has changed. (PH33VPET→RN196VHSHT)

**MU-24RV -[E1]→MU-A24WV -[E1]**

1. Refrigerant has changed. (R22→R410A)
2. Refrigerant system diagram has changed.
  - Diameter of stop valve has changed.  
(Liquid: φ9.52→φ6.35)
3. Compressor has changed. (NH47VMDT→NN29VBAHT)

**MU-30RV -[E1]→MU-A30WV -[E1]**

1. Outdoor model has changed.
2. Refrigerant has changed. (R22→R410A)
3. Refrigerant system diagram has changed.
  - Accumulator has removed.
4. Compressor has changed. (NH56VNHT→NN37VAAHT)

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

- This room air conditioner adopts an HFC refrigerant (R410A) which never destroys the ozone layer.
  - Pay particular attention to the following points, though the basic installation procedure is same as that for R22 conditioners.
- ① As R410A has working pressure approximate 1.6 times as high as that of R22, some special tools and piping parts/materials are required. Refer to the table below.
  - ② Take sufficient care not to allow water and other contaminations to enter the R410A refrigerant during storage and installation, since it is more susceptible to contaminations than R22.
  - ③ For refrigerant piping, use clean, pressure-proof parts/materials specifically designed for R410A. (Refer to 2. Refrigerant piping.)
  - ④ Composition change may occur in R410A since it is a mixed refrigerant. When charging, charge liquid refrigerant to prevent composition change.

|                   |                                       | New refrigerant               | Previous refrigerant |
|-------------------|---------------------------------------|-------------------------------|----------------------|
| Refrigerant       | Refrigerant                           | R410A                         | R22                  |
|                   | Composition (Ratio)                   | HFC-32: HFC-125 (50%:50%)     | R22 (100%)           |
|                   | Refrigerant handling                  | Pseudo-azeotropic refrigerant | Single refrigerant   |
|                   | Chlorine                              | Not included                  | Included             |
|                   | Safety group (ASHRAE)                 | A1/A1                         | A1                   |
|                   | Molecular weight                      | 72.6                          | 86.5                 |
|                   | Boiling point (°C)                    | -51.4                         | -40.8                |
|                   | Steam pressure [25°C](Mpa)            | 1.557                         | 0.94                 |
|                   | Saturated steam density [25°C](Kg/m³) | 64                            | 44.4                 |
|                   | Combustibility                        | Non combustible               | Non combustible      |
|                   | ODP ※1                                | 0                             | 0.055                |
|                   | GWP ※2                                | 1730                          | 1700                 |
|                   | Refrigerant charge method             | From liquid phase in cylinder | Gas phase            |
|                   | Additional charge on leakage          | Possible                      | Possible             |
| Refrigerating oil | Kind                                  | Incompatible oil              | Compatible oil       |
|                   | Color                                 | Non                           | Light yellow         |
|                   | Smell                                 | Non                           | Non                  |

※1 :Ozone Destruction Parameter : based on CFC-11

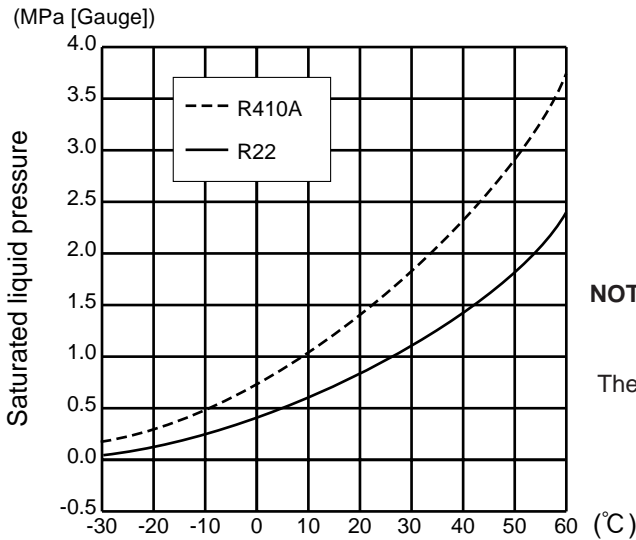
※2 :Global Warmth Parameter : based on CO<sub>2</sub>



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

**NOTE :** The unit of pressure has been changed to MPa on the international system of units(SI unit system).  
 The conversion factor is: **1(MPa [Gauge]) =10.2(kgf/cm<sup>2</sup> [Gauge])**

**Conversion chart of refrigerant temperature and pressure**



**NOTE :** The unit of pressure has been changed to MPa on the international system of units(SI unit system).  
 The conversion factor is: **1(MPa [Gauge]) =10.2(kgf/cm<sup>2</sup> [Gauge])**

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

The following tools are required for R410A refrigerant. Some R22 tools can be substituted for R410A tools. The diameter of the service port on the stop valve in outdoor unit has been changed to prevent any other refrigerant being charged into the unit. Cap size has been changed from 7/16 UNF with 20 threads to 1/2 UNF with 20 threads.

| R410A tools                               | Can R22 tools be used? | Description   |
|---|------------------------|---|
| Gauge manifold                            | No                     | R410A has high pressures beyond the measurement range of existing gauges. Port diameters have been changed to prevent any other refrigerant from being charged into the unit. |
| Charge hose                               | No                     | Hose material and cap size have been changed to improve the pressure resistance.  |
| Gas leak detector                         | No                     | Dedicated for HFC refrigerant.  |
| Torque wrench                             | Yes                    | 6.35 mm and 9.52 mm   |
|   | No                     | 12.7 mm and 15.88 mm  |
| Flare tool                                | Yes                    | Clamp bar hole has been enlarged to reinforce the spring strength in the tool.  |
| Flare gauge                               | New                    | Provided for flaring work (to be used with R22 flare tool).   |
| Vacuum pump adapter                       | New                    | Provided to prevent the back flow of oil. This adapter enables you to use vacuum pumps.   |
| Electronic scale for refrigerant charging | New                    | It is difficult to measure R410A with a charging cylinder because the refrigerant bubbles due to high pressure and high-speed vaporization                                    |

No : Not Substitutable for R410A    Yes : Substitutable for R410A

## 2.Refrigerant piping

### ① Specifications

Use the refrigerant pipes that meet the following specifications.

| Pipe       | Outside diameter | Wall thickness | Insulation material  |
|------------|------------------|----------------|--|
|            | mm               |                |  |
| For liquid | 6.35             | 0.8 mm         | Heat resisting foam plastic<br>Specific gravity 0.045 Thickness 8 mm |
|            | 9.52             | 0.8 mm         |  |
| For gas    | 12.7             | 0.8 mm         |  |
|            | 15.88            | 1.0 mm         |  |

- Use a copper pipe or a copper-alloy seamless pipe with a thickness of 0.8 mm (6.35, 9.52, 12.7), 1.0 mm (15.88). Never use any pipe with a thickness less than 0.8 mm (6.35, 9.52, 12.7), 1.0 mm (15.88), as the pressure resistance is insufficient.

### ② Flaring work and flare nut

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

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

| Pipe diameter | Dimension of flare nut |     |
|---------------|------------------------|-----|
|               | R410A                  | R22 |
| mm            |                        |     |
| 6.35          | 17                     | 17  |
| 9.52          | 22                     | 22  |
| 12.7          | 26                     | 24  |
| 15.88         | 29                     | 27  |

## 3.Refrigerant oil

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

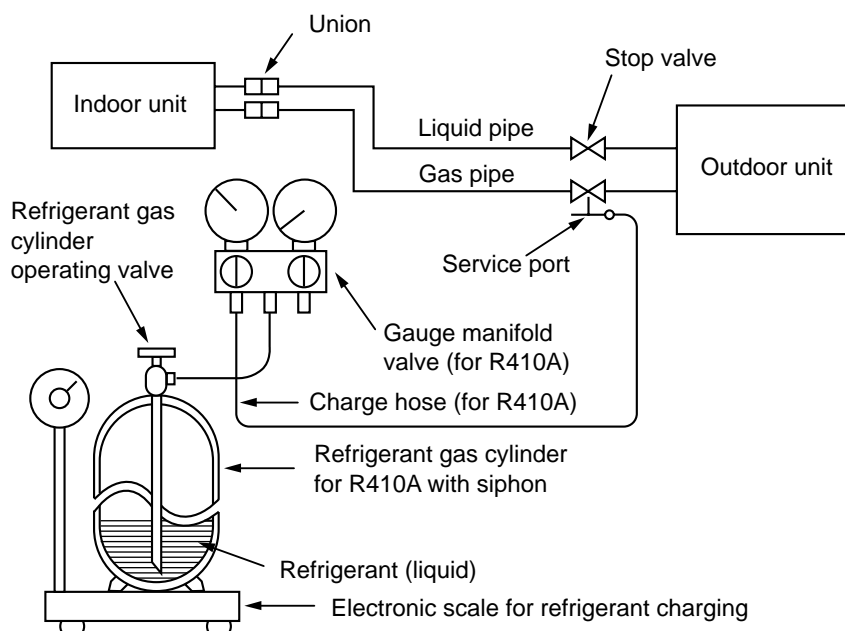
## 4.Air purge

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

## 5.Additional charge

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

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



## 2

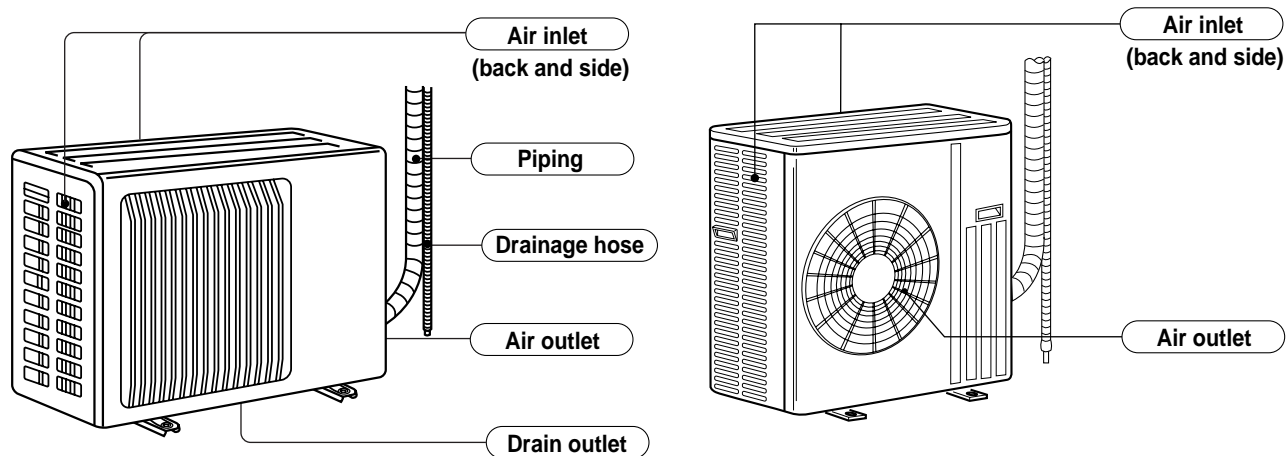
# PART NAMES AND FUNCTIONS

## OUTDOOR UNIT

MU-A18WV - E1

MU-A24WV - E1

MU-A30WV - E1



## 3

# SPECIFICATION

| Outdoor model                     |                                     |                   | MU-A18WV - E1              | MU-A24WV - E1              |   |
|-----------------------------------|-------------------------------------|-------------------|----------------------------|----------------------------|---|
| Function                          |                                     |                   | Cooling                    | Cooling                    |   |
| Power supply                      |                                     |                   | Single phase<br>230V, 50Hz | Single phase<br>230V, 50Hz |   |
| Capacity                          | Capacity                            | kW                | 5.0                        | 6.5                        |   |
|                                   | Dehumidification                    | ℓ /h              | 2.5                        | 3.4                        |   |
|                                   | Air flow(High)                      | m <sup>3</sup> /h | 2,196                      | 2,322                      |   |
| Electrical data                   | Power outlet                        | A                 | 15                         | 25                         |   |
|                                   | Running current                     | A                 | 7.90                       | 10.82                      |   |
|                                   | Power input                         | W                 | 1,750                      | 2,420                      |   |
|                                   | Power factor                        | %                 | 96                         | 97                         |   |
|                                   | Starting current                    | A                 | 37                         | 74                         |   |
|                                   | Compressor motor current            | A                 | 7.51                       | 10.27                      |   |
|                                   | Fan motor current                   | A                 | 0.39                       | 0.55                       |   |
| Coefficient of performance(C.O.P) |                                     |                   | 2.76                       | 2.62                       |   |
| Compressor                        | Model                               |                   | RN196VHSHT                 | NN29VBAHT                  |   |
|                                   | Output                              | W                 | 1,300                      | 1,900                      |   |
|                                   | Winding resistance(at 20°C)         | Ω                 | C-R 1.80<br>C-S 3.00       | C-R 0.80<br>C-S 1.64       |   |
| Fan motor                         | Model                               |                   | RA6V50-OG                  | RA6V60-MA                  |   |
|                                   | Winding resistance(at 20°C)         | Ω                 | WHT-BLK 116<br>BLK-RED 111 | WHT-BLK 71<br>BLK-RED 89   |   |
| Dimensions W×H×D                  |                                     |                   | mm                         | 850×605×290                |   |
| Weight                            |                                     |                   | kg                         | 44                         |   |
| Special remarks                   | Sound level(High)                   | dB                | 52                         | 53                         |   |
|                                   | Fan speed(High)                     | rpm               | 828                        | 873                        |   |
|                                   | Fan speed regulator                 |                   |                            | 1                          | 1 |
|                                   | Refrigerant filling capacity(R410A) | kg                | 1.40                       | 1.90                       |   |
|                                   | Refrigerating oil (Model)           | cc                | 520 (NEO22)                | 1,200 (NEO22)              |   |

NOTE: Test conditions are based on JIS C 9612.

Cooling : Indoor DB27°C WB19°C

Outdoor DB35°C WB(24°C)

Indoor-Outdoor piping length : 5m



|                                   |                                     |       |   |   |
|-----------------------------------|-------------------------------------|-------|---|---|
| Outdoor model                     |                                     |       | <b>MU-A30WV - E1</b>                      |   |
| Function                          |                                     |       | Cooling                                   |   |
| Power supply                      |                                     |       | Single phase<br>230V, 50Hz                |   |
| Capacity                          | Capacity                            | kW    | 8.5                                       |   |
|                                   | Dehumidification                    | ℓ /h  | 4.6                                       |   |
|                                   | Air flow(High/Low*)                 | m³ /h | 2,940/1,470*                              |   |
| Electrical data                   | Power outlet                        | A     | 25  |   |
|                                   | Running current                     | A     | 14.42                                     |   |
|                                   | Power input                         | W     | 3,191                                     |   |
|                                   | Power factor                        | %     | 96  |   |
|                                   | Starting current                    | A     | 90  |   |
|                                   | Compressor motor current            | A     | 13.85                                     |   |
|                                   | Fan motor current                   | A     | 0.57                                      |   |
| Coefficient of performance(C.O.P) |                                     |       | 2.61                                      |   |
| Compressor                        | Model                               |       | NN37VAAHT                                 |   |
|                                   | Output                              | W     | 2,500                                     |   |
|                                   | Winding resistance(at 20°C)         | Ω     | C-R 0.64<br>C-S 1.63                      |   |
| Fan motor                         | Model                               |       | RA6V75-AB                                 |   |
|                                   | Winding resistance(at 20°C)         | Ω     | WHT-BLK 62.8 BLK-YLW 55.9<br>YLW-RED 26.0 |   |
| Dimensions W×H×D                  |                                     | mm    | 840×850×330                               |   |
| Weight                            |                                     | kg    | 75  |   |
| Special remarks                   | Sound level(High/Low*)              | dB    | 55/53*                                    |   |
|                                   | Fan speed(High/Low*)                | rpm   | 805/435*                                  |   |
|                                   | Fan speed regulator                 |       |   | 2 |
|                                   | Refrigerant filling capacity(R410A) | kg    | 2.30                                      |   |
|                                   | Refrigerating oil (Model)           | cc    | 1,300 (NEO 22)                            |   |
|                                   | Thermistor RT62(at 25°C)            | kΩ    | 231.44                                    |   |
|                                   | Thermistor RT63(at 0°C)             | kΩ    | 33.18                                     |   |

NOTE: Test conditions are based on JIS C 9612.

Cooling : Indoor DB27°C WB19°C  
Outdoor DB35°C WB(24°C)

Indoor-Outdoor piping length : 5m

\* Reference value

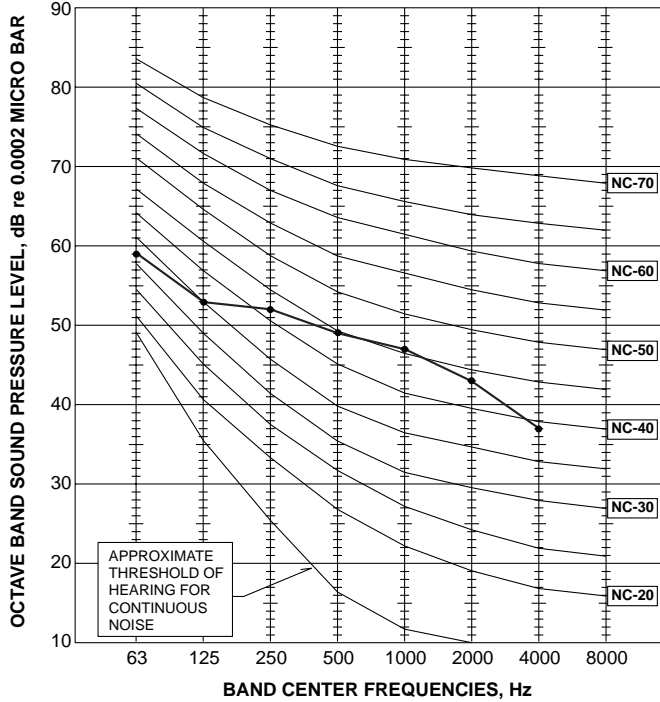
# 4

# NOISE CRITERIA CURVES

## MU-A18WV-E1

| FAN SPEED | SPL(dB(A)) | LINE  |
|-----------|------------|-------|
| High      | 52         | ● — ● |

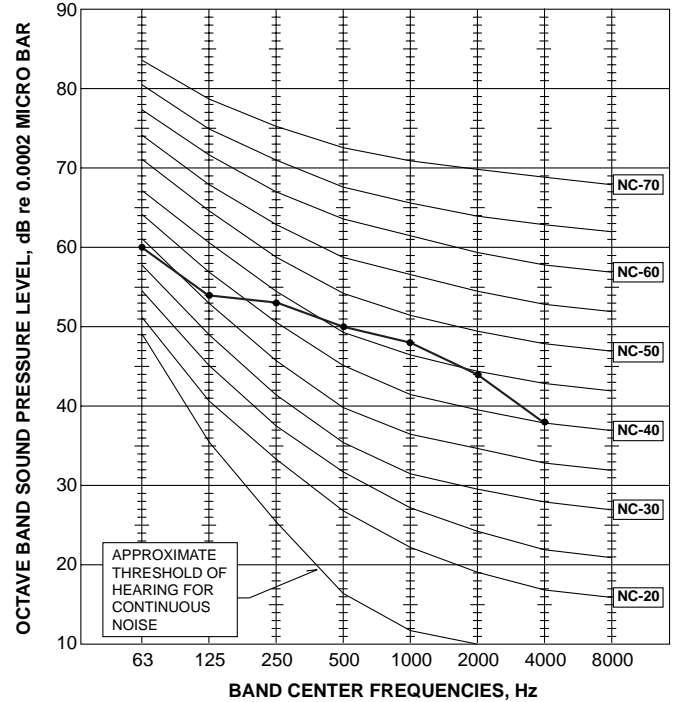
Test conditions,  
Cooling : Dry-bulb temperature 35°C Wet-bulb temperature 24°C



## MU-A24WV-E1

| FAN SPEED | SPL(dB(A)) | LINE  |
|-----------|------------|-------|
| High      | 53         | ● — ● |

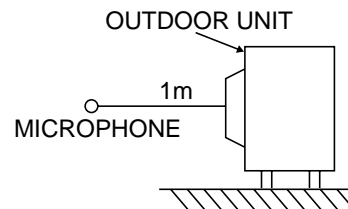
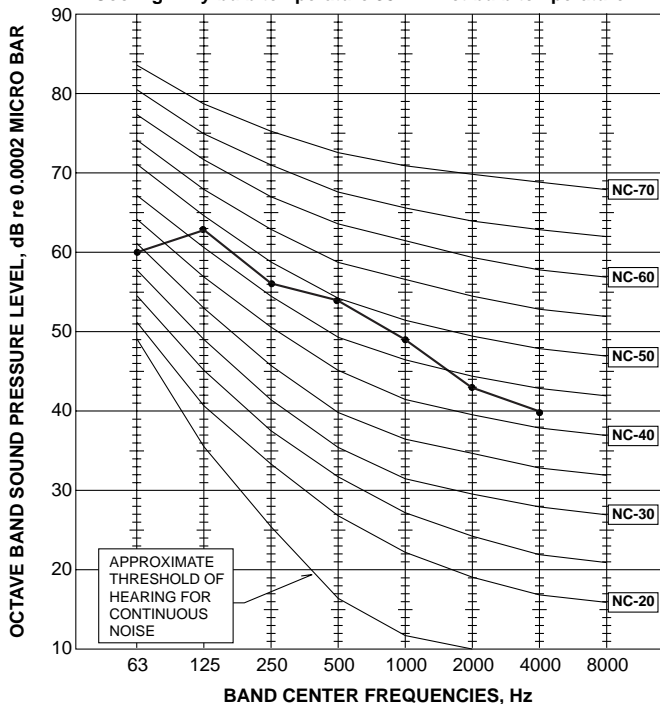
Test conditions,  
Cooling : Dry-bulb temperature 35°C Wet-bulb temperature 24°C



## MU-A30WV-E1

| FAN SPEED | SPL(dB(A)) | LINE  |
|-----------|------------|-------|
| High      | 55         | ● — ● |

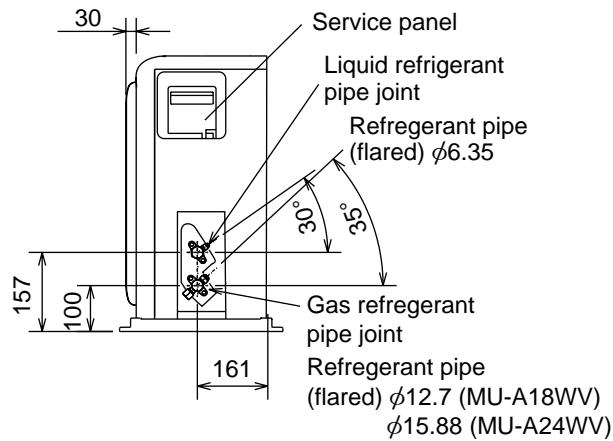
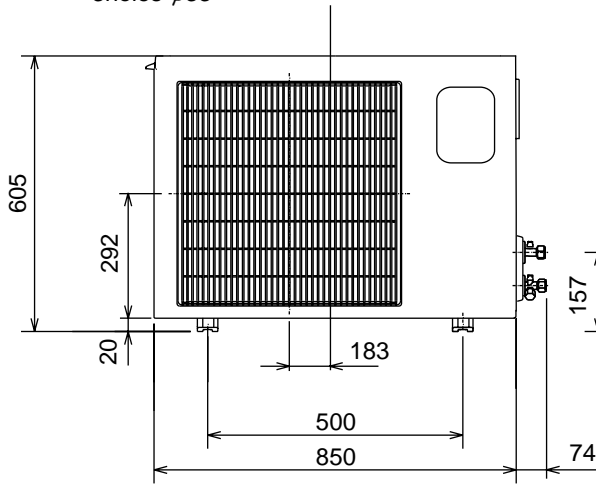
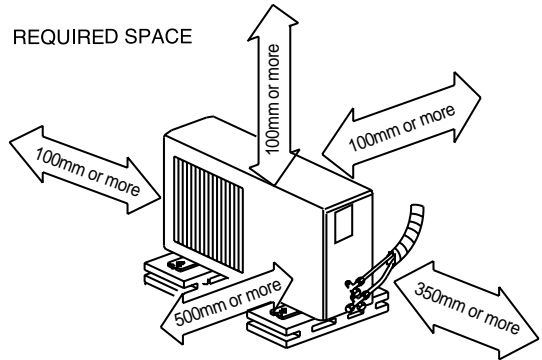
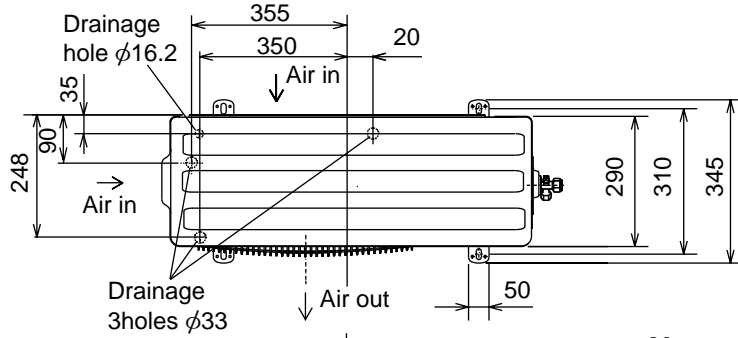
Test conditions,  
Cooling : Dry-bulb temperature 35°C Wet-bulb temperature 24°C



MU-A18WV-E1 MU-A24WV-E1

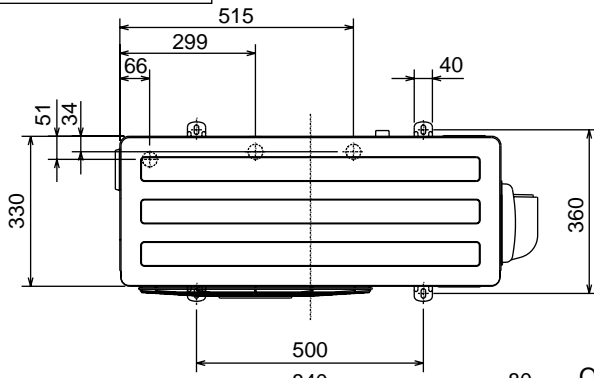
Unit: mm

OUTDOOR UNIT

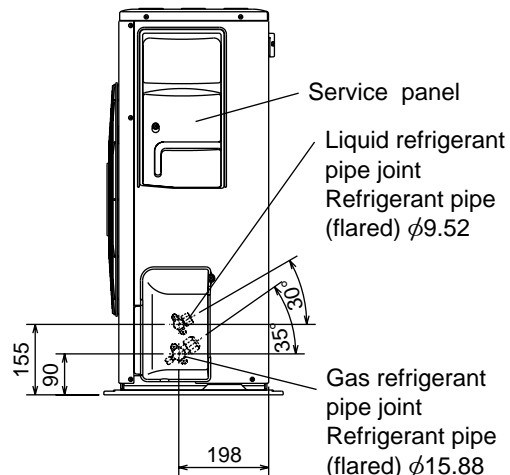
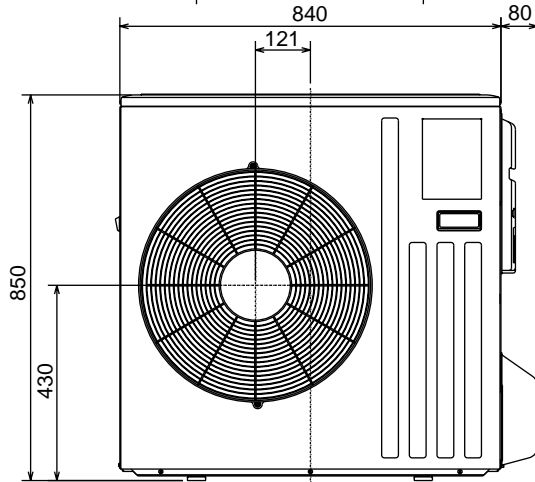
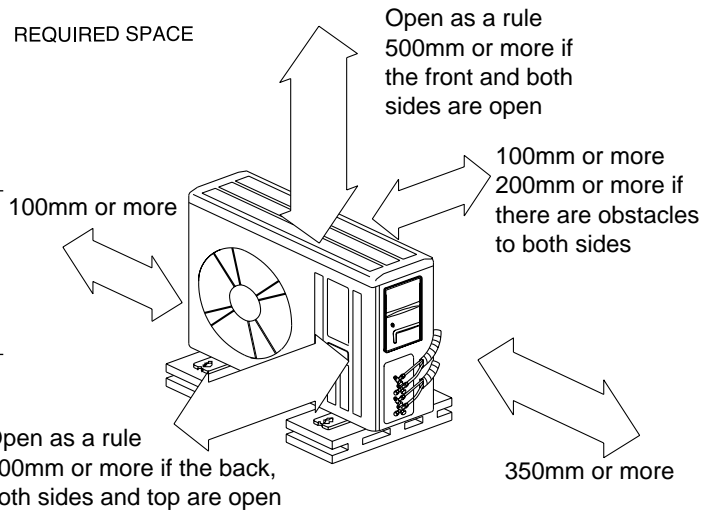


MU-A30WV-E1

OUTDOOR UNIT



REQUIRED SPACE

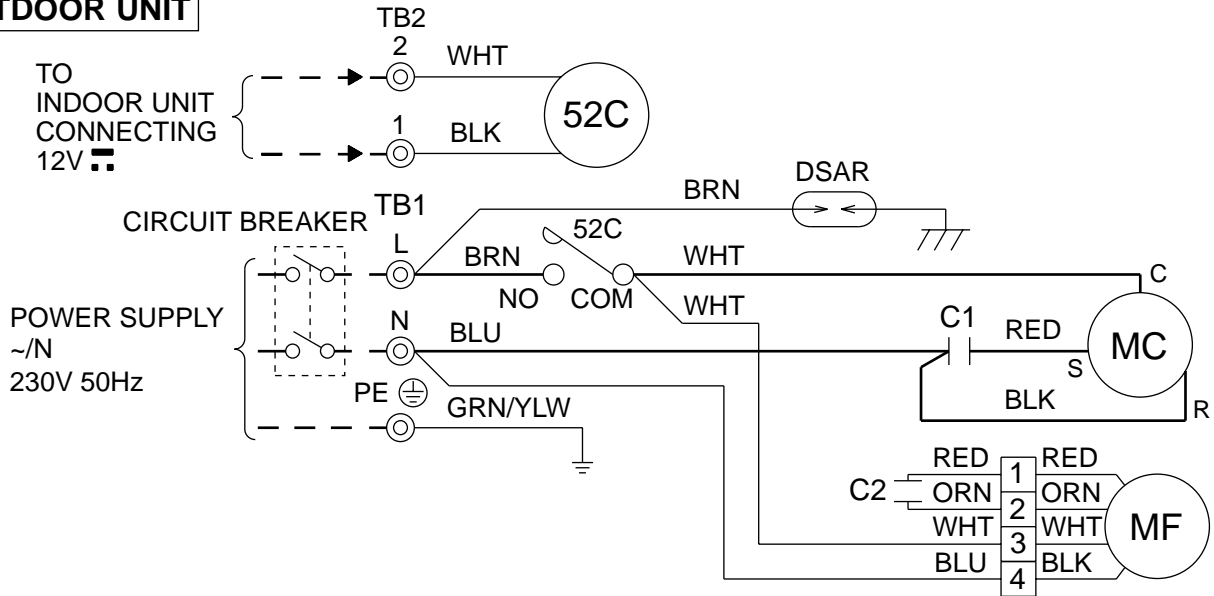




MU-A18WV -E1

MODEL WIRING DIAGRAM

OUTDOOR UNIT



| SYMBOL | NAME                  | SYMBOL  | NAME                                | SYMBOL | NAME                 |
|--------|-----------------------|---------|-------------------------------------|--------|----------------------|
| C1     | COMPRESSOR CAPACITOR  | MC      | COMPRESOR (INNER PROTECTOR)         | 52C    | COMPRESSOR CONTACTOR |
| C2     | OUTDOOR FAN CAPACITOR | MF      | OUTDOOR FAN MOTOR (INNER PROTECTOR) |        |                      |
| DSAR   | SURGE ABSORBER        | TB1,TB2 | TERMINAL BLOCK                      |        |                      |

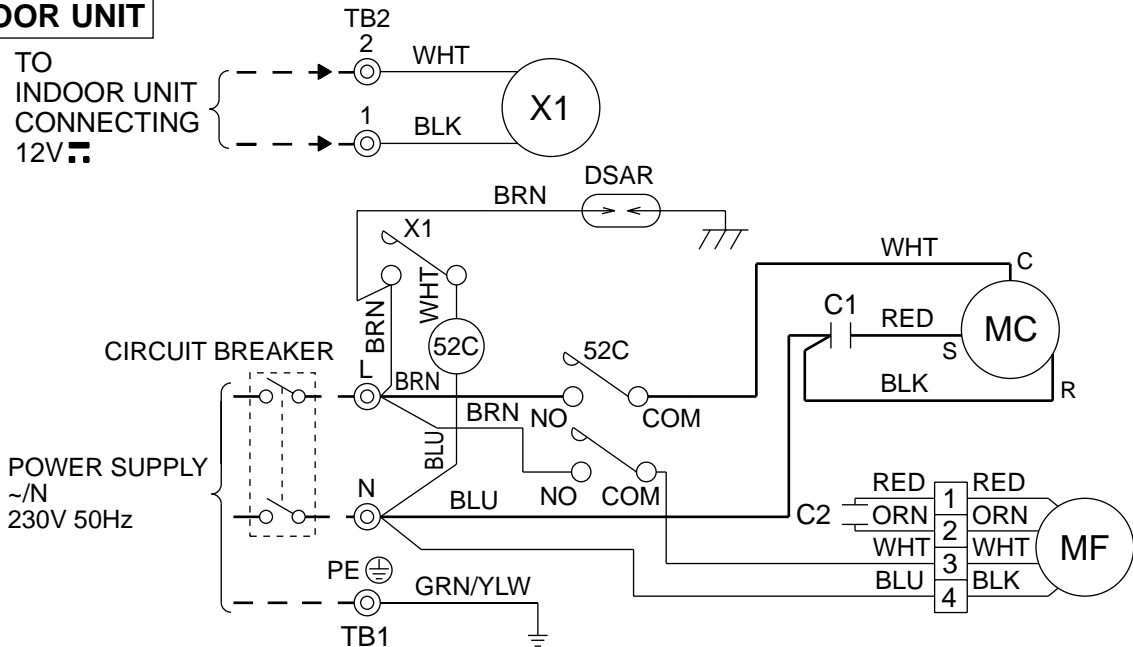
NOTES: 1.About the indoor side electric wiring refer to the indoor unit electric wiring diagram for servicing.  
 2.Use copper conductors only. (For field wiring)  
 3.Symbols below indicate.

⊙ : Terminal block    □□□□ : Connector

MU-A24WV -E1

MODEL WIRING DIAGRAM

OUTDOOR UNIT



| SYMBOL | NAME                  | SYMBOL  | NAME                                | SYMBOL | NAME                 |
|--------|-----------------------|---------|-------------------------------------|--------|----------------------|
| C1     | COMPRESSOR CAPACITOR  | MC      | COMPRESSOR (INNER PROTECTOR)        | X1     | RELAY                |
| C2     | OUTDOOR FAN CAPACITOR | MF      | OUTDOOR FAN MOTOR (INNER PROTECTOR) | 52C    | COMPRESSOR CONTACTOR |
| DSAR   | SURGE ABSORBER        | TB1,TB2 | TERMINAL BLOCK                      |        |                      |

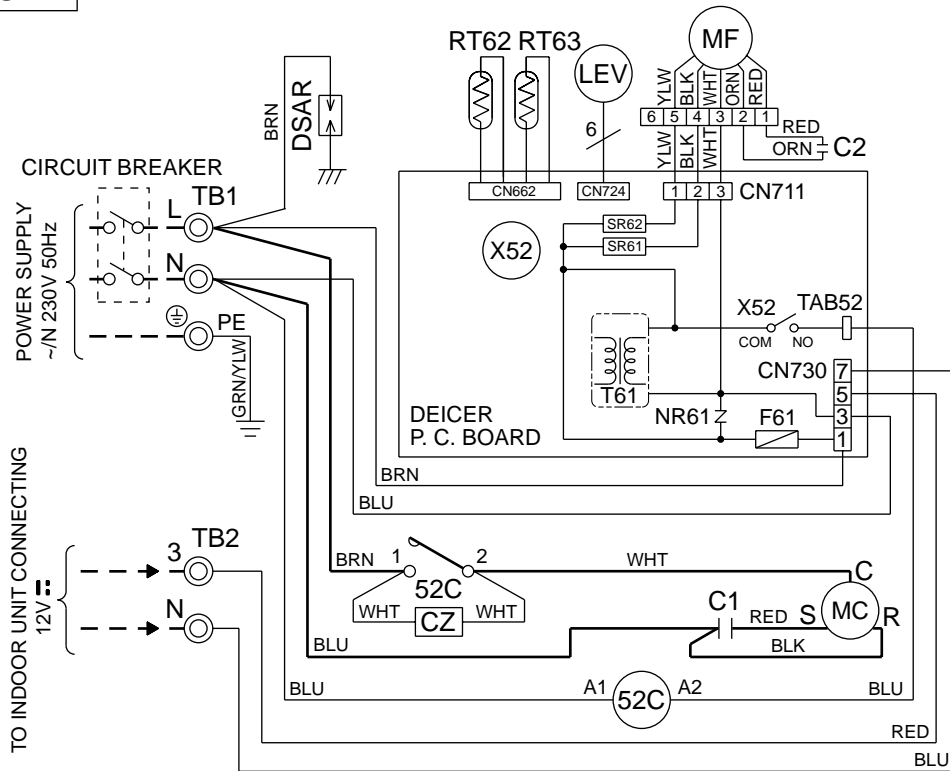
NOTES: 1.About the indoor side electric wiring refer to the indoor unit electric wiring diagram for servicing.  
 2.Use copper conductors only. (For field wiring)  
 3.Symbols below indicate.

⊙ : Terminal block    □□□□ : Connector

**MU-A30WV -[E1]**

**OUTDOOR UNIT**

**MODEL WIRING DIAGRAM**



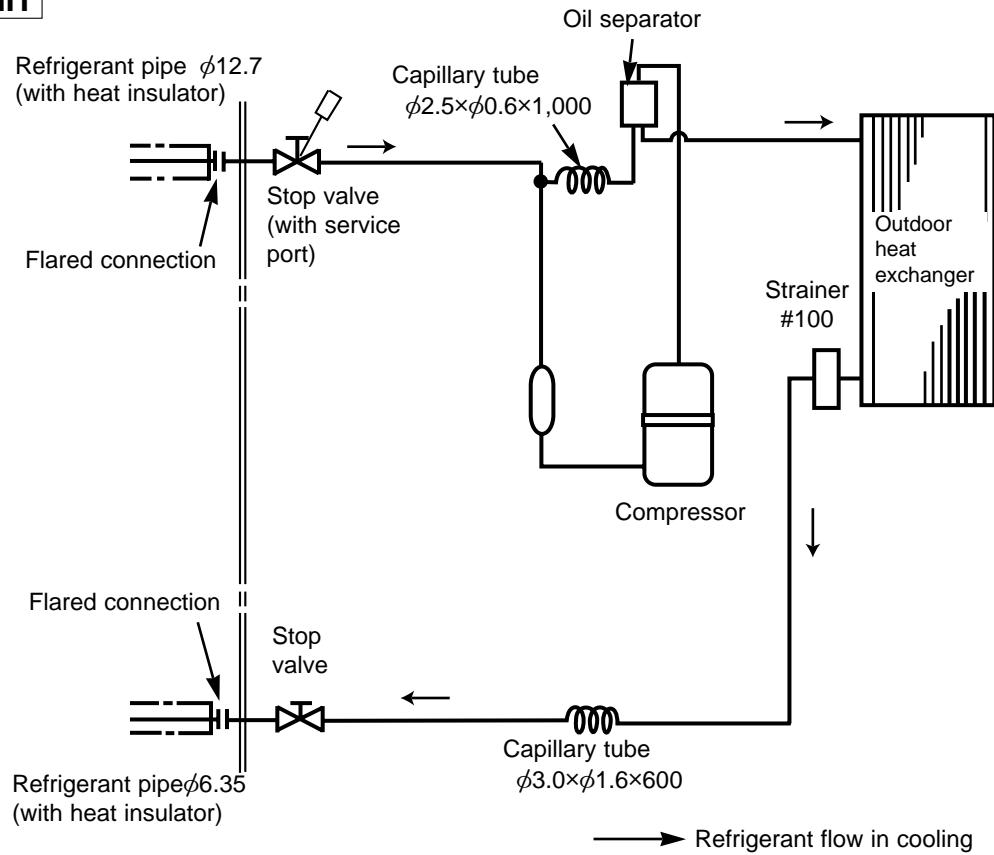
| SYMBOL | NAME                  | SYMBOL | NAME                                | SYMBOL | NAME                 |
|--------|-----------------------|--------|-------------------------------------|--------|----------------------|
| CZ     | CZ SURGE ABSRBER      | MC     | COMPRESSOR (INNER PROTECTOR)        | SR62   | SOLID STATE RELAY    |
| C1     | COMPRESSOR CAPACITOR  | MF     | OUTDOOR FAN MOTOR (INNER PROTECTOR) | TB1    | TERMINAL BLOCK       |
| C2     | OUTDOOR FAN CAPACITOR | NR61   | VARISTOR                            | TB2    | TERMINAL BLOCK       |
| DSAR   | SURGE ABSORBER        | RT62   | DISCHARGE TEMPERATURE THERMISTOR    | T61    | TRANSFORMER          |
| F61    | FUSE(3.15A)           | RT63   | AMBIENT TEMPERATURE THERMISTOR      | X52    | CONTACTOR            |
| LEV    | EXPANSION VALVE COIL  | SR61   | SOLID STATE RELAY                   | 52C    | COMPRESSOR CONTACTOR |

- NOTE 1. Use copper conductors only (For field wiring).  
 2. Since the indoor and outdoor unit connecting wires have polarity, connect them according to the numbers (3,N).  
 3. Symbols below indicate.  
 ◎: Terminal block, □□□□: Connector

MU-A18WV -E1

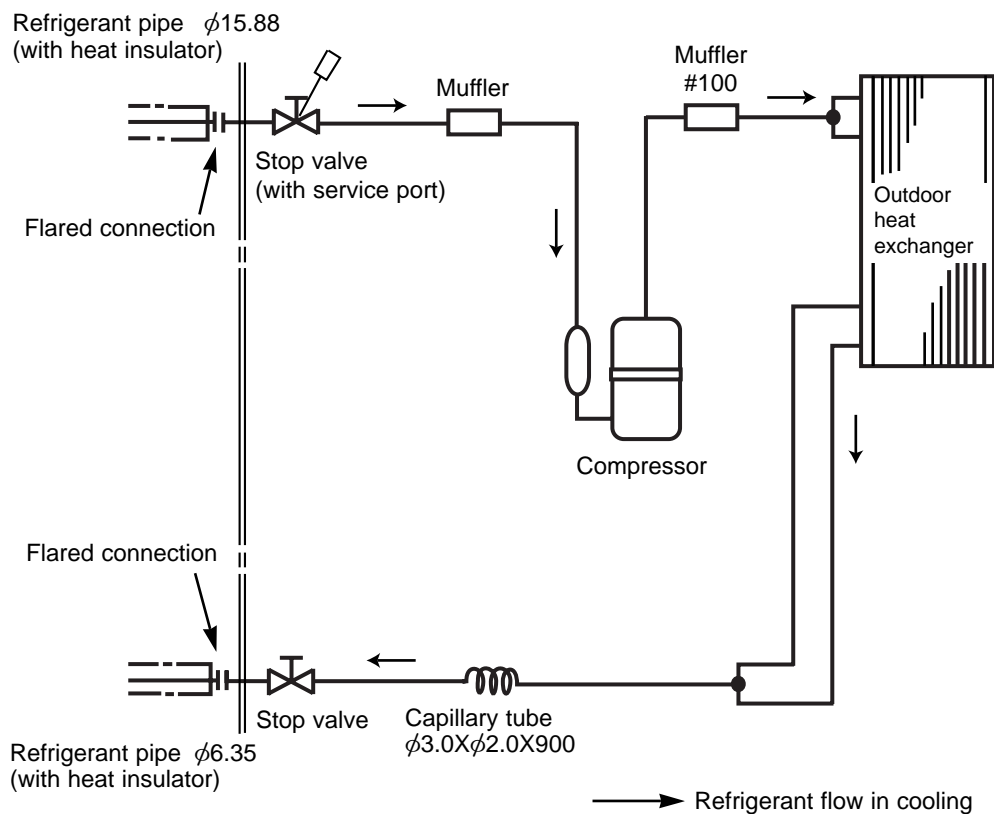
Unit:mm

OUTDOOR UNIT



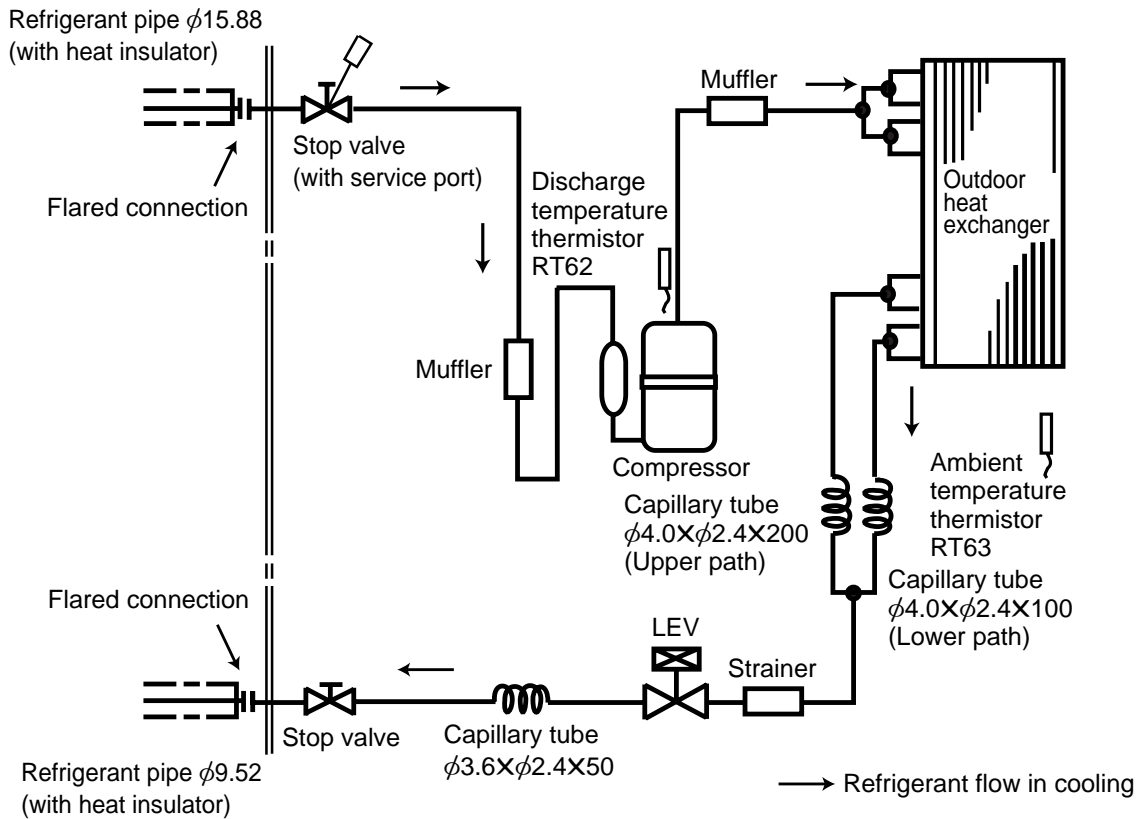
MU-A24WV -E1

OUTDOOR UNIT



**MU-A30WV - [E1]**  
**OUTDOOR UNIT**

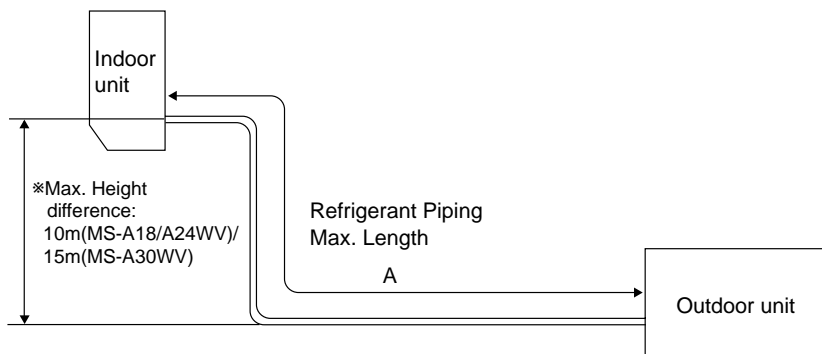
Unit:mm



**MAX. REFRIGERANT PIPING LENGTH**

| Model           | Refrigerant piping<br>Max. length : m<br>A | Piping size O.D : mm |        | Length of connecting pipe : m |              |
|-----------------|--|----------------------|--------|-------------------------------|--------------|
|                 |  | Gas                  | Liquid | Indoor unit                   | Outdoor unit |
| MU-A18WV - [E1] | 25   | 12.7                 | 6.35   | Gas 0.43                      | Gas 0        |
| MU-A24WV - [E1] |  |                      |        | Liquid 0.5                    | Liquid 0     |
| MU-A30WV - [E1] | 30   | 15.88                | 9.52   |                               |              |

**MAX. HEIGHT DIFFERENCE**



\* Height difference should be within 10m(MS-A18/A24WV)/ 15m(MS-A30WV) regardless of which unit, indoor or outdoor position is high.

### ADDITIONAL REFRIGERANT CHARGE(R410A : g)

| Model  | Outdoor unit precharged | Refrigerant piping length (one way) |     |     |     |     |
|--|-------------------------|-------------------------------------|-----|-----|-----|-----|
|  |                         | 7m                                  | 10m | 15m | 20m | 25m |
| <b>MU-A18WV</b> - <span style="border: 1px solid black; padding: 0 2px;">E1</span> | 1,400                   | 0                                   | 60  | 160 | 260 | 360 |

Calculation :  $Xg=20g/m \times (\text{Refrigerant piping length (m)}-7)$

| Model  | Outdoor unit precharged | Refrigerant piping length (one way) |     |     |     |     |
|--|-------------------------|-------------------------------------|-----|-----|-----|-----|
|  |                         | 7m                                  | 10m | 15m | 20m | 25m |
| <b>MU-A24WV</b> - <span style="border: 1px solid black; padding: 0 2px;">E1</span> | 1,900                   | 0                                   | 60  | 160 | 260 | 360 |

Calculation :  $Xg=20g/m \times (\text{Refrigerant piping length (m)}-7)$

| Model  | Outdoor unit precharged | Refrigerant piping length (one way) |     |     |     |     |       |
|--|-------------------------|-------------------------------------|-----|-----|-----|-----|-------|
|  |                         | 7m                                  | 10m | 15m | 20m | 25m | 30m   |
| <b>MU-A30WV</b> - <span style="border: 1px solid black; padding: 0 2px;">E1</span> | 2,300                   | 0                                   | 165 | 440 | 715 | 990 | 1,165 |

Calculation :  $Xg=55g/m \times (\text{Refrigerant piping length(m)}-7)$

**MU-A18WV -[E1] MU-A24WV -[E1] MU-A30WV -[E1]**

The standard data contained in these specifications apply only to the operation of the air conditioner under normal conditions, since operating conditions vary according to the areas where these units are installed. The following information has been provided to clarify the operating characteristics of the air conditioner under the conditions indicated by the performance curve.

**(1) GUARANTEED VOLTAGE**

198 ~ 264V, 50Hz

**(2) AIR FLOW**

Air flow should be set at MAX.

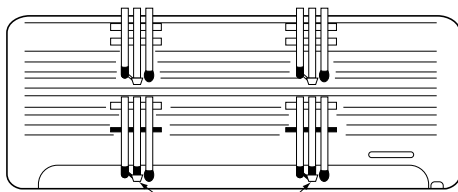
**(3) MAIN READINGS**

- |   |      |           |
|---|------|-----------|
| (1) Indoor intake air wet-bulb temperature :  | °CWB | } Cooling |
| (2) Indoor outlet air wet-bulb temperature :  | °CWB |           |
| (3) Outdoor intake air dry-bulb temperature : | °CDB |           |
| (4) Total input:                              | W    |           |

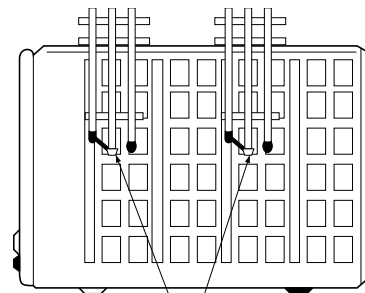
Indoor air wet/dry-bulb temperature difference on the left side of the chart on this page shows the difference between the indoor intake air wet/dry-bulb temperature and the indoor outlet air wet/dry-bulb temperature for your reference at service.

**How to measure the indoor air wet-bulb/dry-bulb temperature difference**

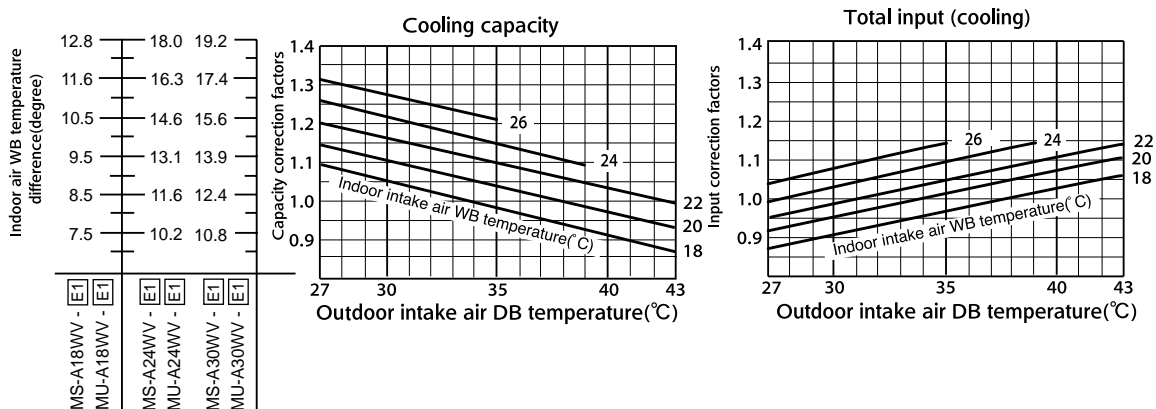
- Attach at least 2 sets of wet-and dry-bulb thermometers to the indoor air intake as shown in the figure, and at least 2 sets of wet-and dry-bulb thermometers to the indoor air outlet. The thermometers must be attached to the position where air speed is high.
- Attach at least 2 sets of wet-and dry-bulb thermometers to the outdoor air intake. Cover the thermometers to prevent direct rays of the sun.
- Check that the air filter is cleaned.
- Open windows and doors of room.
- Press the EMERGENCY OPERATION switch once to start the EMERGENCY COOL MODE.
- When system stabilizes after more than 15 minutes, measure temperature and take an average temperature.
- 10 minutes later, measure temperature again and check that the temperature does not change.

**INDOOR UNIT**

Wet-and dry-bulb thermometers  
FRONT VIEW

**OUTDOOR UNIT**

Wet-and dry-bulb thermometers  
BACK VIEW

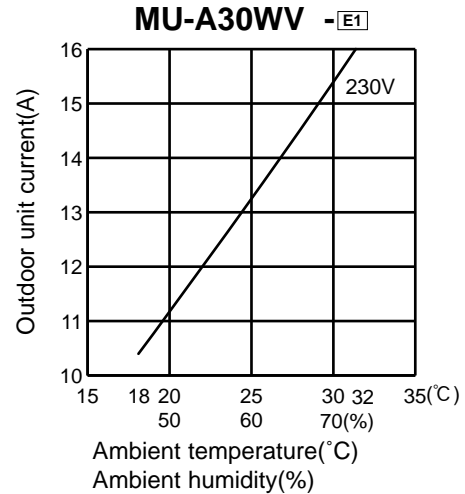
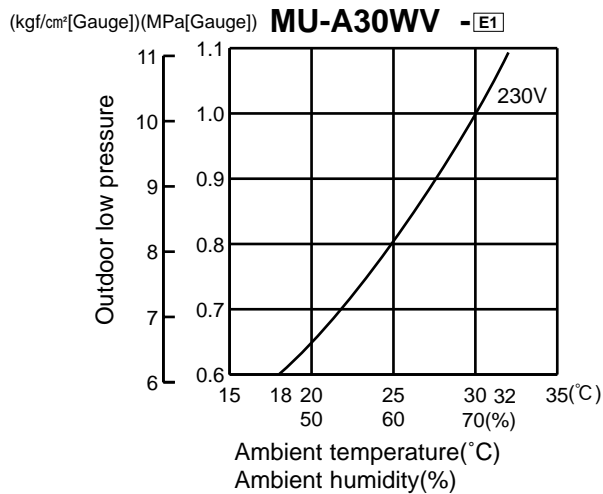
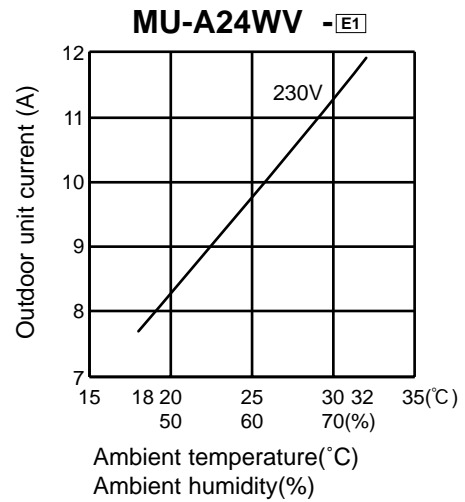
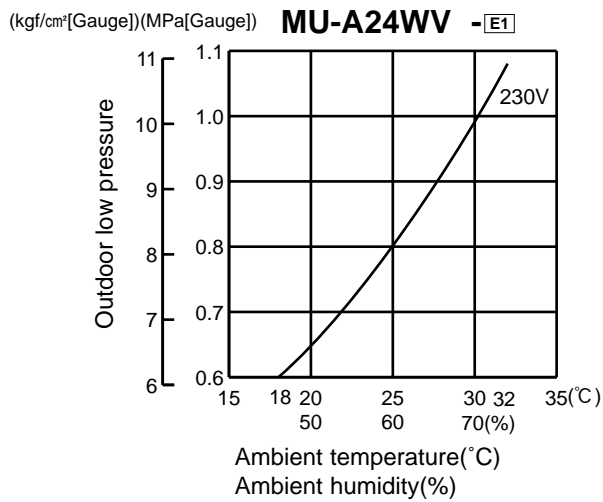
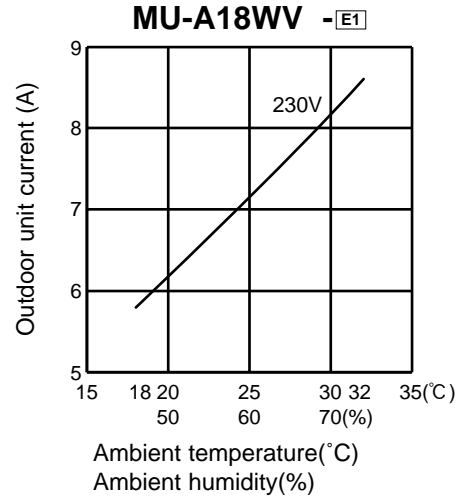
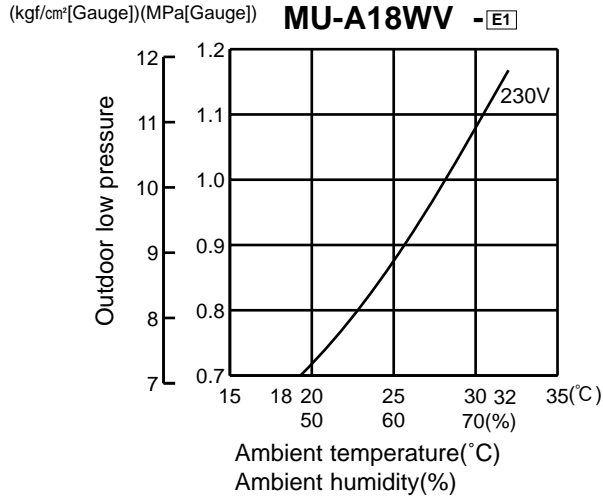
**OUTDOOR LOW PRESSURE AND OUTDOOR UNIT CURRENT COOL operation**

- ① Both indoor and outdoor unit are under the same temperature/humidity condition.

| Dry-bulb temperature | Relative humidity(%) |
|----------------------|----------------------|
| 20                   | 50                   |
| 25                   | 60                   |
| 30                   | 70                   |

② Air flow should be set at MAX.

③ The unit of pressure has been changed to MPa on the international system of units(SI unit system).  
The conversion factor is : **1(MPa [Gauge]) =10.2(kgf/cm<sup>2</sup> [Gauge])**



**PERFORMANCE DATA COOL operation**  
**MS-A18WV -[E1] : MU-A18WV -[E1] (230V)**

CAPACITY : 5.0(KW) SHF : 0.65 INPUT : 1810(W)

| INDOOR |        | OUTDOOR DB(°C) |      |      |       |      |      |      |       |      |      |      |       |      |      |      |       |
|--------|--------|----------------|------|------|-------|------|------|------|-------|------|------|------|-------|------|------|------|-------|
| DB(°C) | WB(°C) | 21             |      |      |       | 25   |      |      |       | 27   |      |      |       | 30   |      |      |       |
|        |        | Q              | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT |
| 21     | 18     | 5.88           | 2.76 | 0.47 | 1448  | 5.63 | 2.64 | 0.47 | 1520  | 5.40 | 2.54 | 0.47 | 1593  | 5.20 | 2.44 | 0.47 | 1665  |
| 21     | 20     | 6.13           | 2.14 | 0.35 | 1520  | 5.88 | 2.06 | 0.35 | 1611  | 5.70 | 2.00 | 0.35 | 1647  | 5.50 | 1.93 | 0.35 | 1720  |
| 22     | 18     | 5.88           | 3.00 | 0.51 | 1448  | 5.63 | 2.87 | 0.51 | 1520  | 5.40 | 2.75 | 0.51 | 1593  | 5.20 | 2.65 | 0.51 | 1665  |
| 22     | 20     | 6.13           | 2.39 | 0.39 | 1520  | 5.88 | 2.29 | 0.39 | 1611  | 5.70 | 2.22 | 0.39 | 1647  | 5.50 | 2.15 | 0.39 | 1720  |
| 22     | 22     | 6.38           | 1.72 | 0.27 | 1575  | 6.15 | 1.66 | 0.27 | 1674  | 6.00 | 1.62 | 0.27 | 1720  | 5.75 | 1.55 | 0.27 | 1792  |
| 23     | 18     | 5.88           | 3.23 | 0.55 | 1448  | 5.63 | 3.09 | 0.55 | 1520  | 5.40 | 2.97 | 0.55 | 1593  | 5.20 | 2.86 | 0.55 | 1665  |
| 23     | 20     | 6.13           | 2.63 | 0.43 | 1520  | 5.88 | 2.53 | 0.43 | 1611  | 5.70 | 2.45 | 0.43 | 1647  | 5.50 | 2.37 | 0.43 | 1720  |
| 23     | 22     | 6.38           | 1.98 | 0.31 | 1575  | 6.15 | 1.91 | 0.31 | 1674  | 6.00 | 1.86 | 0.31 | 1720  | 5.75 | 1.78 | 0.31 | 1792  |
| 24     | 18     | 5.88           | 3.47 | 0.59 | 1448  | 5.63 | 3.32 | 0.59 | 1520  | 5.40 | 3.19 | 0.59 | 1593  | 5.20 | 3.07 | 0.59 | 1665  |
| 24     | 20     | 6.13           | 2.88 | 0.47 | 1520  | 5.88 | 2.76 | 0.47 | 1611  | 5.70 | 2.68 | 0.47 | 1647  | 5.50 | 2.59 | 0.47 | 1720  |
| 24     | 22     | 6.38           | 2.23 | 0.35 | 1575  | 6.15 | 2.15 | 0.35 | 1674  | 6.00 | 2.10 | 0.35 | 1720  | 5.75 | 2.01 | 0.35 | 1792  |
| 24     | 24     | 6.70           | 1.54 | 0.23 | 1647  | 6.45 | 1.48 | 0.23 | 1738  | 6.30 | 1.45 | 0.23 | 1792  | 6.10 | 1.40 | 0.23 | 1882  |
| 25     | 18     | 5.88           | 3.70 | 0.63 | 1448  | 5.63 | 3.54 | 0.63 | 1520  | 5.40 | 3.40 | 0.63 | 1593  | 5.20 | 3.28 | 0.63 | 1665  |
| 25     | 20     | 6.13           | 3.12 | 0.51 | 1520  | 5.88 | 3.00 | 0.51 | 1611  | 5.70 | 2.91 | 0.51 | 1647  | 5.50 | 2.81 | 0.51 | 1720  |
| 25     | 22     | 6.38           | 2.49 | 0.39 | 1575  | 6.15 | 2.40 | 0.39 | 1674  | 6.00 | 2.34 | 0.39 | 1720  | 5.75 | 2.24 | 0.39 | 1792  |
| 25     | 24     | 6.70           | 1.81 | 0.27 | 1647  | 6.45 | 1.74 | 0.27 | 1738  | 6.30 | 1.70 | 0.27 | 1792  | 6.10 | 1.65 | 0.27 | 1882  |
| 26     | 18     | 5.88           | 3.94 | 0.67 | 1448  | 5.63 | 3.77 | 0.67 | 1520  | 5.40 | 3.62 | 0.67 | 1593  | 5.20 | 3.48 | 0.67 | 1665  |
| 26     | 20     | 6.13           | 3.37 | 0.55 | 1520  | 5.88 | 3.23 | 0.55 | 1611  | 5.70 | 3.14 | 0.55 | 1647  | 5.50 | 3.03 | 0.55 | 1720  |
| 26     | 22     | 6.38           | 2.74 | 0.43 | 1575  | 6.15 | 2.64 | 0.43 | 1674  | 6.00 | 2.58 | 0.43 | 1720  | 5.75 | 2.47 | 0.43 | 1792  |
| 26     | 24     | 6.70           | 2.08 | 0.31 | 1647  | 6.45 | 2.00 | 0.31 | 1738  | 6.30 | 1.95 | 0.31 | 1792  | 6.10 | 1.89 | 0.31 | 1882  |
| 26     | 26     | 6.90           | 1.31 | 0.19 | 1738  | 6.70 | 1.27 | 0.19 | 1828  | 6.60 | 1.25 | 0.19 | 1882  | 6.40 | 1.22 | 0.19 | 1937  |
| 27     | 18     | 5.88           | 4.17 | 0.71 | 1448  | 5.63 | 3.99 | 0.71 | 1520  | 5.40 | 3.83 | 0.71 | 1593  | 5.20 | 3.69 | 0.71 | 1665  |
| 27     | 20     | 6.13           | 3.61 | 0.59 | 1520  | 5.88 | 3.47 | 0.59 | 1611  | 5.70 | 3.36 | 0.59 | 1647  | 5.50 | 3.25 | 0.59 | 1720  |
| 27     | 22     | 6.38           | 3.00 | 0.47 | 1575  | 6.15 | 2.89 | 0.47 | 1674  | 6.00 | 2.82 | 0.47 | 1720  | 5.75 | 2.70 | 0.47 | 1792  |
| 27     | 24     | 6.70           | 2.35 | 0.35 | 1647  | 6.45 | 2.26 | 0.35 | 1738  | 6.30 | 2.21 | 0.35 | 1792  | 6.10 | 2.14 | 0.35 | 1882  |
| 27     | 26     | 6.90           | 1.59 | 0.23 | 1738  | 6.70 | 1.54 | 0.23 | 1828  | 6.60 | 1.52 | 0.23 | 1882  | 6.40 | 1.47 | 0.23 | 1937  |
| 28     | 18     | 5.88           | 4.41 | 0.75 | 1448  | 5.63 | 4.22 | 0.75 | 1520  | 5.40 | 4.05 | 0.75 | 1593  | 5.20 | 3.90 | 0.75 | 1665  |
| 28     | 20     | 6.13           | 3.86 | 0.63 | 1520  | 5.88 | 3.70 | 0.63 | 1611  | 5.70 | 3.59 | 0.63 | 1647  | 5.50 | 3.47 | 0.63 | 1720  |
| 28     | 22     | 6.38           | 3.25 | 0.51 | 1575  | 6.15 | 3.14 | 0.51 | 1674  | 6.00 | 3.06 | 0.51 | 1720  | 5.75 | 2.93 | 0.51 | 1792  |
| 28     | 24     | 6.70           | 2.61 | 0.39 | 1647  | 6.45 | 2.52 | 0.39 | 1738  | 6.30 | 2.46 | 0.39 | 1792  | 6.10 | 2.38 | 0.39 | 1882  |
| 28     | 26     | 6.90           | 1.86 | 0.27 | 1738  | 6.70 | 1.81 | 0.27 | 1828  | 6.60 | 1.78 | 0.27 | 1882  | 6.40 | 1.73 | 0.27 | 1937  |
| 29     | 18     | 5.88           | 4.64 | 0.79 | 1448  | 5.63 | 4.44 | 0.79 | 1520  | 5.40 | 4.27 | 0.79 | 1593  | 5.20 | 4.11 | 0.79 | 1665  |
| 29     | 20     | 6.13           | 4.10 | 0.67 | 1520  | 5.88 | 3.94 | 0.67 | 1611  | 5.70 | 3.82 | 0.67 | 1647  | 5.50 | 3.69 | 0.67 | 1720  |
| 29     | 22     | 6.38           | 3.51 | 0.55 | 1575  | 6.15 | 3.38 | 0.55 | 1674  | 6.00 | 3.30 | 0.55 | 1720  | 5.75 | 3.16 | 0.55 | 1792  |
| 29     | 24     | 6.70           | 2.88 | 0.43 | 1647  | 6.45 | 2.77 | 0.43 | 1738  | 6.30 | 2.71 | 0.43 | 1792  | 6.10 | 2.62 | 0.43 | 1882  |
| 29     | 26     | 6.90           | 2.14 | 0.31 | 1738  | 6.70 | 2.08 | 0.31 | 1828  | 6.60 | 2.05 | 0.31 | 1882  | 6.40 | 1.98 | 0.31 | 1937  |
| 30     | 18     | 5.88           | 4.88 | 0.83 | 1448  | 5.63 | 4.67 | 0.83 | 1520  | 5.40 | 4.48 | 0.83 | 1593  | 5.20 | 4.32 | 0.83 | 1665  |
| 30     | 20     | 6.13           | 4.35 | 0.71 | 1520  | 5.88 | 4.17 | 0.71 | 1611  | 5.70 | 4.05 | 0.71 | 1647  | 5.50 | 3.91 | 0.71 | 1720  |
| 30     | 22     | 6.38           | 3.76 | 0.59 | 1575  | 6.15 | 3.63 | 0.59 | 1674  | 6.00 | 3.54 | 0.59 | 1720  | 5.75 | 3.39 | 0.59 | 1792  |
| 30     | 24     | 6.70           | 3.15 | 0.47 | 1647  | 6.45 | 3.03 | 0.47 | 1738  | 6.30 | 2.96 | 0.47 | 1792  | 6.10 | 2.87 | 0.47 | 1882  |
| 30     | 26     | 6.90           | 2.42 | 0.35 | 1738  | 6.70 | 2.35 | 0.35 | 1828  | 6.60 | 2.31 | 0.35 | 1882  | 6.40 | 2.24 | 0.35 | 1937  |
| 31     | 18     | 5.88           | 5.11 | 0.87 | 1448  | 5.63 | 4.89 | 0.87 | 1520  | 5.40 | 4.70 | 0.87 | 1593  | 5.20 | 4.52 | 0.87 | 1665  |
| 31     | 20     | 6.13           | 4.59 | 0.75 | 1520  | 5.88 | 4.41 | 0.75 | 1611  | 5.70 | 4.28 | 0.75 | 1647  | 5.50 | 4.13 | 0.75 | 1720  |
| 31     | 22     | 6.38           | 4.02 | 0.63 | 1575  | 6.15 | 3.87 | 0.63 | 1674  | 6.00 | 3.78 | 0.63 | 1720  | 5.75 | 3.62 | 0.63 | 1792  |
| 31     | 24     | 6.70           | 3.42 | 0.51 | 1647  | 6.45 | 3.29 | 0.51 | 1738  | 6.30 | 3.21 | 0.51 | 1792  | 6.10 | 3.11 | 0.51 | 1882  |
| 31     | 26     | 6.90           | 2.69 | 0.39 | 1738  | 6.70 | 2.61 | 0.39 | 1828  | 6.60 | 2.57 | 0.39 | 1882  | 6.40 | 2.50 | 0.39 | 1937  |
| 32     | 18     | 5.88           | 5.35 | 0.91 | 1448  | 5.63 | 5.12 | 0.91 | 1520  | 5.40 | 4.91 | 0.91 | 1593  | 5.20 | 4.73 | 0.91 | 1665  |
| 32     | 20     | 6.13           | 4.84 | 0.79 | 1520  | 5.88 | 4.64 | 0.79 | 1611  | 5.70 | 4.50 | 0.79 | 1647  | 5.50 | 4.35 | 0.79 | 1720  |
| 32     | 22     | 6.38           | 4.27 | 0.67 | 1575  | 6.15 | 4.12 | 0.67 | 1674  | 6.00 | 4.02 | 0.67 | 1720  | 5.75 | 3.85 | 0.67 | 1792  |
| 32     | 24     | 6.70           | 3.69 | 0.55 | 1647  | 6.45 | 3.55 | 0.55 | 1738  | 6.30 | 3.47 | 0.55 | 1792  | 6.10 | 3.36 | 0.55 | 1882  |
| 32     | 26     | 6.90           | 2.97 | 0.43 | 1738  | 6.70 | 2.88 | 0.43 | 1828  | 6.60 | 2.84 | 0.43 | 1882  | 6.40 | 2.75 | 0.43 | 1937  |

**NOTE** Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature  
SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature



**PERFORMANCE DATA COOL operation**  
**MS-A18WV -[E1] : MU-A18WV -[E1] (230V)**

CAPACITY : 5.0(KW) SHF : 0.65 INPUT : 1810(W)

| INDOOR |        | OUTDOOR DB(°C) |      |      |       |      |      |      |       |      |      |      |       |
|--------|--------|----------------|------|------|-------|------|------|------|-------|------|------|------|-------|
| DB(°C) | WB(°C) | 35             |      |      |       | 40   |      |      |       | 43   |      |      |       |
|        |        | Q              | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT |
| 21     | 18     | 4.90           | 2.30 | 0.47 | 1774  | 4.50 | 2.12 | 0.47 | 1882  | 4.33 | 2.03 | 0.47 | 1919  |
| 21     | 20     | 5.15           | 1.80 | 0.35 | 1846  | 4.80 | 1.68 | 0.35 | 1937  | 4.63 | 1.62 | 0.35 | 1991  |
| 22     | 18     | 4.90           | 2.50 | 0.51 | 1774  | 4.50 | 2.30 | 0.51 | 1882  | 4.33 | 2.21 | 0.51 | 1919  |
| 22     | 20     | 5.15           | 2.01 | 0.39 | 1846  | 4.80 | 1.87 | 0.39 | 1937  | 4.63 | 1.80 | 0.39 | 1991  |
| 22     | 22     | 5.45           | 1.47 | 0.27 | 1919  | 5.10 | 1.38 | 0.27 | 2027  | 4.93 | 1.33 | 0.27 | 2063  |
| 23     | 18     | 4.90           | 2.70 | 0.55 | 1774  | 4.50 | 2.48 | 0.55 | 1882  | 4.33 | 2.38 | 0.55 | 1919  |
| 23     | 20     | 5.15           | 2.21 | 0.43 | 1846  | 4.80 | 2.06 | 0.43 | 1937  | 4.63 | 1.99 | 0.43 | 1991  |
| 23     | 22     | 5.45           | 1.69 | 0.31 | 1919  | 5.10 | 1.58 | 0.31 | 2027  | 4.93 | 1.53 | 0.31 | 2063  |
| 24     | 18     | 4.90           | 2.89 | 0.59 | 1774  | 4.50 | 2.66 | 0.59 | 1882  | 4.33 | 2.55 | 0.59 | 1919  |
| 24     | 20     | 5.15           | 2.42 | 0.47 | 1846  | 4.80 | 2.26 | 0.47 | 1937  | 4.63 | 2.17 | 0.47 | 1991  |
| 24     | 22     | 5.45           | 1.91 | 0.35 | 1919  | 5.10 | 1.79 | 0.35 | 2027  | 4.93 | 1.72 | 0.35 | 2063  |
| 24     | 24     | 5.75           | 1.32 | 0.23 | 1991  | 5.40 | 1.24 | 0.23 | 2082  | 5.25 | 1.21 | 0.23 | 2127  |
| 25     | 18     | 4.90           | 3.09 | 0.63 | 1774  | 4.50 | 2.84 | 0.63 | 1882  | 4.33 | 2.72 | 0.63 | 1919  |
| 25     | 20     | 5.15           | 2.63 | 0.51 | 1846  | 4.80 | 2.45 | 0.51 | 1937  | 4.63 | 2.36 | 0.51 | 1991  |
| 25     | 22     | 5.45           | 2.13 | 0.39 | 1919  | 5.10 | 1.99 | 0.39 | 2027  | 4.93 | 1.92 | 0.39 | 2063  |
| 25     | 24     | 5.75           | 1.55 | 0.27 | 1991  | 5.40 | 1.46 | 0.27 | 2082  | 5.25 | 1.42 | 0.27 | 2127  |
| 26     | 18     | 4.90           | 3.28 | 0.67 | 1774  | 4.50 | 3.02 | 0.67 | 1882  | 4.33 | 2.90 | 0.67 | 1919  |
| 26     | 20     | 5.15           | 2.83 | 0.55 | 1846  | 4.80 | 2.64 | 0.55 | 1937  | 4.63 | 2.54 | 0.55 | 1991  |
| 26     | 22     | 5.45           | 2.34 | 0.43 | 1919  | 5.10 | 2.19 | 0.43 | 2027  | 4.93 | 2.12 | 0.43 | 2063  |
| 26     | 24     | 5.75           | 1.78 | 0.31 | 1991  | 5.40 | 1.67 | 0.31 | 2082  | 5.25 | 1.63 | 0.31 | 2127  |
| 26     | 26     | 6.05           | 1.15 | 0.19 | 2063  | 5.70 | 1.08 | 0.19 | 2154  | 5.53 | 1.05 | 0.19 | 2199  |
| 27     | 18     | 4.90           | 3.48 | 0.71 | 1774  | 4.50 | 3.20 | 0.71 | 1882  | 4.33 | 3.07 | 0.71 | 1919  |
| 27     | 20     | 5.15           | 3.04 | 0.59 | 1846  | 4.80 | 2.83 | 0.59 | 1937  | 4.63 | 2.73 | 0.59 | 1991  |
| 27     | 22     | 5.45           | 2.56 | 0.47 | 1919  | 5.10 | 2.40 | 0.47 | 2027  | 4.93 | 2.31 | 0.47 | 2063  |
| 27     | 24     | 5.75           | 2.01 | 0.35 | 1991  | 5.40 | 1.89 | 0.35 | 2082  | 5.25 | 1.84 | 0.35 | 2127  |
| 27     | 26     | 6.05           | 1.39 | 0.23 | 2063  | 5.70 | 1.31 | 0.23 | 2154  | 5.53 | 1.27 | 0.23 | 2199  |
| 28     | 18     | 4.90           | 3.68 | 0.75 | 1774  | 4.50 | 3.38 | 0.75 | 1882  | 4.33 | 3.24 | 0.75 | 1919  |
| 28     | 20     | 5.15           | 3.24 | 0.63 | 1846  | 4.80 | 3.02 | 0.63 | 1937  | 4.63 | 2.91 | 0.63 | 1991  |
| 28     | 22     | 5.45           | 2.78 | 0.51 | 1919  | 5.10 | 2.60 | 0.51 | 2027  | 4.93 | 2.51 | 0.51 | 2063  |
| 28     | 24     | 5.75           | 2.24 | 0.39 | 1991  | 5.40 | 2.11 | 0.39 | 2082  | 5.25 | 2.05 | 0.39 | 2127  |
| 28     | 26     | 6.05           | 1.63 | 0.27 | 2063  | 5.70 | 1.54 | 0.27 | 2154  | 5.53 | 1.49 | 0.27 | 2199  |
| 29     | 18     | 4.90           | 3.87 | 0.79 | 1774  | 4.50 | 3.56 | 0.79 | 1882  | 4.33 | 3.42 | 0.79 | 1919  |
| 29     | 20     | 5.15           | 3.45 | 0.67 | 1846  | 4.80 | 3.22 | 0.67 | 1937  | 4.63 | 3.10 | 0.67 | 1991  |
| 29     | 22     | 5.45           | 3.00 | 0.55 | 1919  | 5.10 | 2.81 | 0.55 | 2027  | 4.93 | 2.71 | 0.55 | 2063  |
| 29     | 24     | 5.75           | 2.47 | 0.43 | 1991  | 5.40 | 2.32 | 0.43 | 2082  | 5.25 | 2.26 | 0.43 | 2127  |
| 29     | 26     | 6.05           | 1.88 | 0.31 | 2063  | 5.70 | 1.77 | 0.31 | 2154  | 5.53 | 1.71 | 0.31 | 2199  |
| 30     | 18     | 4.90           | 4.07 | 0.83 | 1774  | 4.50 | 3.74 | 0.83 | 1882  | 4.33 | 3.59 | 0.83 | 1919  |
| 30     | 20     | 5.15           | 3.66 | 0.71 | 1846  | 4.80 | 3.41 | 0.71 | 1937  | 4.63 | 3.28 | 0.71 | 1991  |
| 30     | 22     | 5.45           | 3.22 | 0.59 | 1919  | 5.10 | 3.01 | 0.59 | 2027  | 4.93 | 2.91 | 0.59 | 2063  |
| 30     | 24     | 5.75           | 2.70 | 0.47 | 1991  | 5.40 | 2.54 | 0.47 | 2082  | 5.25 | 2.47 | 0.47 | 2127  |
| 30     | 26     | 6.05           | 2.12 | 0.35 | 2063  | 5.70 | 2.00 | 0.35 | 2154  | 5.53 | 1.93 | 0.35 | 2199  |
| 31     | 18     | 4.90           | 4.26 | 0.87 | 1774  | 4.50 | 3.92 | 0.87 | 1882  | 4.33 | 3.76 | 0.87 | 1919  |
| 31     | 20     | 5.15           | 3.86 | 0.75 | 1846  | 4.80 | 3.60 | 0.75 | 1937  | 4.63 | 3.47 | 0.75 | 1991  |
| 31     | 22     | 5.45           | 3.43 | 0.63 | 1919  | 5.10 | 3.21 | 0.63 | 2027  | 4.93 | 3.10 | 0.63 | 2063  |
| 31     | 24     | 5.75           | 2.93 | 0.51 | 1991  | 5.40 | 2.75 | 0.51 | 2082  | 5.25 | 2.68 | 0.51 | 2127  |
| 31     | 26     | 6.05           | 2.36 | 0.39 | 2063  | 5.70 | 2.22 | 0.39 | 2154  | 5.53 | 2.15 | 0.39 | 2199  |
| 32     | 18     | 4.90           | 4.46 | 0.91 | 1774  | 4.50 | 4.10 | 0.91 | 1882  | 4.33 | 3.94 | 0.91 | 1919  |
| 32     | 20     | 5.15           | 4.07 | 0.79 | 1846  | 4.80 | 3.79 | 0.79 | 1937  | 4.63 | 3.65 | 0.79 | 1991  |
| 32     | 22     | 5.45           | 3.65 | 0.67 | 1919  | 5.10 | 3.42 | 0.67 | 2027  | 4.93 | 3.30 | 0.67 | 2063  |
| 32     | 24     | 5.75           | 3.16 | 0.55 | 1991  | 5.40 | 2.97 | 0.55 | 2082  | 5.25 | 2.89 | 0.55 | 2127  |
| 32     | 26     | 6.05           | 2.60 | 0.43 | 2063  | 5.70 | 2.45 | 0.43 | 2154  | 5.53 | 2.38 | 0.43 | 2199  |

**NOTE** Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature  
SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

**PERFORMANCE DATA COOL operation**  
**MS-A24WV -[E1] : MU-A24WV -[E1] (230V)**

CAPACITY : 6.5(KW) SHF : 0.63 INPUT : 2480(W)

| INDOOR |        | OUTDOOR DB(°C) |      |      |       |      |      |      |       |      |      |      |       |      |      |      |       |
|--------|--------|----------------|------|------|-------|------|------|------|-------|------|------|------|-------|------|------|------|-------|
| DB(°C) | WB(°C) | 21             |      |      |       | 25   |      |      |       | 27   |      |      |       | 30   |      |      |       |
|        |        | Q              | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT |
| 21     | 18     | 7.64           | 3.44 | 0.45 | 1984  | 7.31 | 3.29 | 0.45 | 2083  | 7.02 | 3.16 | 0.45 | 2182  | 6.76 | 3.04 | 0.45 | 2282  |
| 21     | 20     | 7.96           | 2.63 | 0.33 | 2083  | 7.64 | 2.52 | 0.33 | 2207  | 7.41 | 2.45 | 0.33 | 2257  | 7.15 | 2.36 | 0.33 | 2356  |
| 22     | 18     | 7.64           | 3.74 | 0.49 | 1984  | 7.31 | 3.58 | 0.49 | 2083  | 7.02 | 3.44 | 0.49 | 2182  | 6.76 | 3.31 | 0.49 | 2282  |
| 22     | 20     | 7.96           | 2.95 | 0.37 | 2083  | 7.64 | 2.83 | 0.37 | 2207  | 7.41 | 2.74 | 0.37 | 2257  | 7.15 | 2.65 | 0.37 | 2356  |
| 22     | 22     | 8.29           | 2.07 | 0.25 | 2158  | 8.00 | 2.00 | 0.25 | 2294  | 7.80 | 1.95 | 0.25 | 2356  | 7.48 | 1.87 | 0.25 | 2455  |
| 23     | 18     | 7.64           | 4.05 | 0.53 | 1984  | 7.31 | 3.88 | 0.53 | 2083  | 7.02 | 3.72 | 0.53 | 2182  | 6.76 | 3.58 | 0.53 | 2282  |
| 23     | 20     | 7.96           | 3.26 | 0.41 | 2083  | 7.64 | 3.13 | 0.41 | 2207  | 7.41 | 3.04 | 0.41 | 2257  | 7.15 | 2.93 | 0.41 | 2356  |
| 23     | 22     | 8.29           | 2.40 | 0.29 | 2158  | 8.00 | 2.32 | 0.29 | 2294  | 7.80 | 2.26 | 0.29 | 2356  | 7.48 | 2.17 | 0.29 | 2455  |
| 24     | 18     | 7.64           | 4.35 | 0.57 | 1984  | 7.31 | 4.17 | 0.57 | 2083  | 7.02 | 4.00 | 0.57 | 2182  | 6.76 | 3.85 | 0.57 | 2282  |
| 24     | 20     | 7.96           | 3.58 | 0.45 | 2083  | 7.64 | 3.44 | 0.45 | 2207  | 7.41 | 3.33 | 0.45 | 2257  | 7.15 | 3.22 | 0.45 | 2356  |
| 24     | 22     | 8.29           | 2.73 | 0.33 | 2158  | 8.00 | 2.64 | 0.33 | 2294  | 7.80 | 2.57 | 0.33 | 2356  | 7.48 | 2.47 | 0.33 | 2455  |
| 24     | 24     | 8.71           | 1.83 | 0.21 | 2257  | 8.39 | 1.76 | 0.21 | 2381  | 8.19 | 1.72 | 0.21 | 2455  | 7.93 | 1.67 | 0.21 | 2579  |
| 25     | 18     | 7.64           | 4.66 | 0.61 | 1984  | 7.31 | 4.46 | 0.61 | 2083  | 7.02 | 4.28 | 0.61 | 2182  | 6.76 | 4.12 | 0.61 | 2282  |
| 25     | 20     | 7.96           | 3.90 | 0.49 | 2083  | 7.64 | 3.74 | 0.49 | 2207  | 7.41 | 3.63 | 0.49 | 2257  | 7.15 | 3.50 | 0.49 | 2356  |
| 25     | 22     | 8.29           | 3.07 | 0.37 | 2158  | 8.00 | 2.96 | 0.37 | 2294  | 7.80 | 2.89 | 0.37 | 2356  | 7.48 | 2.77 | 0.37 | 2455  |
| 25     | 24     | 8.71           | 2.18 | 0.25 | 2257  | 8.39 | 2.10 | 0.25 | 2381  | 8.19 | 2.05 | 0.25 | 2455  | 7.93 | 1.98 | 0.25 | 2579  |
| 26     | 18     | 7.64           | 4.96 | 0.65 | 1984  | 7.31 | 4.75 | 0.65 | 2083  | 7.02 | 4.56 | 0.65 | 2182  | 6.76 | 4.39 | 0.65 | 2282  |
| 26     | 20     | 7.96           | 4.22 | 0.53 | 2083  | 7.64 | 4.05 | 0.53 | 2207  | 7.41 | 3.93 | 0.53 | 2257  | 7.15 | 3.79 | 0.53 | 2356  |
| 26     | 22     | 8.29           | 3.40 | 0.41 | 2158  | 8.00 | 3.28 | 0.41 | 2294  | 7.80 | 3.20 | 0.41 | 2356  | 7.48 | 3.06 | 0.41 | 2455  |
| 26     | 24     | 8.71           | 2.53 | 0.29 | 2257  | 8.39 | 2.43 | 0.29 | 2381  | 8.19 | 2.38 | 0.29 | 2455  | 7.93 | 2.30 | 0.29 | 2579  |
| 26     | 26     | 8.97           | 1.52 | 0.17 | 2381  | 8.71 | 1.48 | 0.17 | 2505  | 8.58 | 1.46 | 0.17 | 2579  | 8.32 | 1.41 | 0.17 | 2654  |
| 27     | 18     | 7.64           | 5.27 | 0.69 | 1984  | 7.31 | 5.05 | 0.69 | 2083  | 7.02 | 4.84 | 0.69 | 2182  | 6.76 | 4.66 | 0.69 | 2282  |
| 27     | 20     | 7.96           | 4.54 | 0.57 | 2083  | 7.64 | 4.35 | 0.57 | 2207  | 7.41 | 4.22 | 0.57 | 2257  | 7.15 | 4.08 | 0.57 | 2356  |
| 27     | 22     | 8.29           | 3.73 | 0.45 | 2158  | 8.00 | 3.60 | 0.45 | 2294  | 7.80 | 3.51 | 0.45 | 2356  | 7.48 | 3.36 | 0.45 | 2455  |
| 27     | 24     | 8.71           | 2.87 | 0.33 | 2257  | 8.39 | 2.77 | 0.33 | 2381  | 8.19 | 2.70 | 0.33 | 2455  | 7.93 | 2.62 | 0.33 | 2579  |
| 27     | 26     | 8.97           | 1.88 | 0.21 | 2381  | 8.71 | 1.83 | 0.21 | 2505  | 8.58 | 1.80 | 0.21 | 2579  | 8.32 | 1.75 | 0.21 | 2654  |
| 28     | 18     | 7.64           | 5.58 | 0.73 | 1984  | 7.31 | 5.34 | 0.73 | 2083  | 7.02 | 5.12 | 0.73 | 2182  | 6.76 | 4.93 | 0.73 | 2282  |
| 28     | 20     | 7.96           | 4.86 | 0.61 | 2083  | 7.64 | 4.66 | 0.61 | 2207  | 7.41 | 4.52 | 0.61 | 2257  | 7.15 | 4.36 | 0.61 | 2356  |
| 28     | 22     | 8.29           | 4.06 | 0.49 | 2158  | 8.00 | 3.92 | 0.49 | 2294  | 7.80 | 3.82 | 0.49 | 2356  | 7.48 | 3.66 | 0.49 | 2455  |
| 28     | 24     | 8.71           | 3.22 | 0.37 | 2257  | 8.39 | 3.10 | 0.37 | 2381  | 8.19 | 3.03 | 0.37 | 2455  | 7.93 | 2.93 | 0.37 | 2579  |
| 28     | 26     | 8.97           | 2.24 | 0.25 | 2381  | 8.71 | 2.18 | 0.25 | 2505  | 8.58 | 2.15 | 0.25 | 2579  | 8.32 | 2.08 | 0.25 | 2654  |
| 29     | 18     | 7.64           | 5.88 | 0.77 | 1984  | 7.31 | 5.63 | 0.77 | 2083  | 7.02 | 5.41 | 0.77 | 2182  | 6.76 | 5.21 | 0.77 | 2282  |
| 29     | 20     | 7.96           | 5.18 | 0.65 | 2083  | 7.64 | 4.96 | 0.65 | 2207  | 7.41 | 4.82 | 0.65 | 2257  | 7.15 | 4.65 | 0.65 | 2356  |
| 29     | 22     | 8.29           | 4.39 | 0.53 | 2158  | 8.00 | 4.24 | 0.53 | 2294  | 7.80 | 4.13 | 0.53 | 2356  | 7.48 | 3.96 | 0.53 | 2455  |
| 29     | 24     | 8.71           | 3.57 | 0.41 | 2257  | 8.39 | 3.44 | 0.41 | 2381  | 8.19 | 3.36 | 0.41 | 2455  | 7.93 | 3.25 | 0.41 | 2579  |
| 29     | 26     | 8.97           | 2.60 | 0.29 | 2381  | 8.71 | 2.53 | 0.29 | 2505  | 8.58 | 2.49 | 0.29 | 2579  | 8.32 | 2.41 | 0.29 | 2654  |
| 30     | 18     | 7.64           | 6.19 | 0.81 | 1984  | 7.31 | 5.92 | 0.81 | 2083  | 7.02 | 5.69 | 0.81 | 2182  | 6.76 | 5.48 | 0.81 | 2282  |
| 30     | 20     | 7.96           | 5.49 | 0.69 | 2083  | 7.64 | 5.27 | 0.69 | 2207  | 7.41 | 5.11 | 0.69 | 2257  | 7.15 | 4.93 | 0.69 | 2356  |
| 30     | 22     | 8.29           | 4.72 | 0.57 | 2158  | 8.00 | 4.56 | 0.57 | 2294  | 7.80 | 4.45 | 0.57 | 2356  | 7.48 | 4.26 | 0.57 | 2455  |
| 30     | 24     | 8.71           | 3.92 | 0.45 | 2257  | 8.39 | 3.77 | 0.45 | 2381  | 8.19 | 3.69 | 0.45 | 2455  | 7.93 | 3.57 | 0.45 | 2579  |
| 30     | 26     | 8.97           | 2.96 | 0.33 | 2381  | 8.71 | 2.87 | 0.33 | 2505  | 8.58 | 2.83 | 0.33 | 2579  | 8.32 | 2.75 | 0.33 | 2654  |
| 31     | 18     | 7.64           | 6.49 | 0.85 | 1984  | 7.31 | 6.22 | 0.85 | 2083  | 7.02 | 5.97 | 0.85 | 2182  | 6.76 | 5.75 | 0.85 | 2282  |
| 31     | 20     | 7.96           | 5.81 | 0.73 | 2083  | 7.64 | 5.58 | 0.73 | 2207  | 7.41 | 5.41 | 0.73 | 2257  | 7.15 | 5.22 | 0.73 | 2356  |
| 31     | 22     | 8.29           | 5.06 | 0.61 | 2158  | 8.00 | 4.88 | 0.61 | 2294  | 7.80 | 4.76 | 0.61 | 2356  | 7.48 | 4.56 | 0.61 | 2455  |
| 31     | 24     | 8.71           | 4.27 | 0.49 | 2257  | 8.39 | 4.11 | 0.49 | 2381  | 8.19 | 4.01 | 0.49 | 2455  | 7.93 | 3.89 | 0.49 | 2579  |
| 31     | 26     | 8.97           | 3.32 | 0.37 | 2381  | 8.71 | 3.22 | 0.37 | 2505  | 8.58 | 3.17 | 0.37 | 2579  | 8.32 | 3.08 | 0.37 | 2654  |
| 32     | 18     | 7.64           | 6.80 | 0.89 | 1984  | 7.31 | 6.51 | 0.89 | 2083  | 7.02 | 6.25 | 0.89 | 2182  | 6.76 | 6.02 | 0.89 | 2282  |
| 32     | 20     | 7.96           | 6.13 | 0.77 | 2083  | 7.64 | 5.88 | 0.77 | 2207  | 7.41 | 5.71 | 0.77 | 2257  | 7.15 | 5.51 | 0.77 | 2356  |
| 32     | 22     | 8.29           | 5.39 | 0.65 | 2158  | 8.00 | 5.20 | 0.65 | 2294  | 7.80 | 5.07 | 0.65 | 2356  | 7.48 | 4.86 | 0.65 | 2455  |
| 32     | 24     | 8.71           | 4.62 | 0.53 | 2257  | 8.39 | 4.44 | 0.53 | 2381  | 8.19 | 4.34 | 0.53 | 2455  | 7.93 | 4.20 | 0.53 | 2579  |
| 32     | 26     | 8.97           | 3.68 | 0.41 | 2381  | 8.71 | 3.57 | 0.41 | 2505  | 8.58 | 3.52 | 0.41 | 2579  | 8.32 | 3.41 | 0.41 | 2654  |

**NOTE** Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature  
SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

**PERFORMANCE DATA COOL operation**  
**MS-A24WV -[E1] : MU-A24WV -[E1] (230V)**

CAPACITY : 6.5(KW) SHF : 0.63 INPUT : 2480(W)

| INDOOR |        | OUTDOOR DB(°C) |      |      |       |      |      |      |       |      |      |      |       |
|--------|--------|----------------|------|------|-------|------|------|------|-------|------|------|------|-------|
| DB(°C) | WB(°C) | 35             |      |      |       | 40   |      |      |       | 43   |      |      |       |
|        |        | Q              | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT |
| 21     | 18     | 6.37           | 2.87 | 0.45 | 2430  | 5.85 | 2.63 | 0.45 | 2579  | 5.62 | 2.53 | 0.45 | 2629  |
| 21     | 20     | 6.70           | 2.21 | 0.33 | 2530  | 6.24 | 2.06 | 0.33 | 2654  | 6.01 | 1.98 | 0.33 | 2728  |
| 22     | 18     | 6.37           | 3.12 | 0.49 | 2430  | 5.85 | 2.87 | 0.49 | 2579  | 5.62 | 2.76 | 0.49 | 2629  |
| 22     | 20     | 6.70           | 2.48 | 0.37 | 2530  | 6.24 | 2.31 | 0.37 | 2654  | 6.01 | 2.22 | 0.37 | 2728  |
| 22     | 22     | 7.09           | 1.77 | 0.25 | 2629  | 6.63 | 1.66 | 0.25 | 2778  | 6.40 | 1.60 | 0.25 | 2827  |
| 23     | 18     | 6.37           | 3.38 | 0.53 | 2430  | 5.85 | 3.10 | 0.53 | 2579  | 5.62 | 2.98 | 0.53 | 2629  |
| 23     | 20     | 6.70           | 2.74 | 0.41 | 2530  | 6.24 | 2.56 | 0.41 | 2654  | 6.01 | 2.47 | 0.41 | 2728  |
| 23     | 22     | 7.09           | 2.05 | 0.29 | 2629  | 6.63 | 1.92 | 0.29 | 2778  | 6.40 | 1.86 | 0.29 | 2827  |
| 24     | 18     | 6.37           | 3.63 | 0.57 | 2430  | 5.85 | 3.33 | 0.57 | 2579  | 5.62 | 3.20 | 0.57 | 2629  |
| 24     | 20     | 6.70           | 3.01 | 0.45 | 2530  | 6.24 | 2.81 | 0.45 | 2654  | 6.01 | 2.71 | 0.45 | 2728  |
| 24     | 22     | 7.09           | 2.34 | 0.33 | 2629  | 6.63 | 2.19 | 0.33 | 2778  | 6.40 | 2.11 | 0.33 | 2827  |
| 24     | 24     | 7.48           | 1.57 | 0.21 | 2728  | 7.02 | 1.47 | 0.21 | 2852  | 6.83 | 1.43 | 0.21 | 2914  |
| 25     | 18     | 6.37           | 3.89 | 0.61 | 2430  | 5.85 | 3.57 | 0.61 | 2579  | 5.62 | 3.43 | 0.61 | 2629  |
| 25     | 20     | 6.70           | 3.28 | 0.49 | 2530  | 6.24 | 3.06 | 0.49 | 2654  | 6.01 | 2.95 | 0.49 | 2728  |
| 25     | 22     | 7.09           | 2.62 | 0.37 | 2629  | 6.63 | 2.45 | 0.37 | 2778  | 6.40 | 2.37 | 0.37 | 2827  |
| 25     | 24     | 7.48           | 1.87 | 0.25 | 2728  | 7.02 | 1.76 | 0.25 | 2852  | 6.83 | 1.71 | 0.25 | 2914  |
| 26     | 18     | 6.37           | 4.14 | 0.65 | 2430  | 5.85 | 3.80 | 0.65 | 2579  | 5.62 | 3.65 | 0.65 | 2629  |
| 26     | 20     | 6.70           | 3.55 | 0.53 | 2530  | 6.24 | 3.31 | 0.53 | 2654  | 6.01 | 3.19 | 0.53 | 2728  |
| 26     | 22     | 7.09           | 2.90 | 0.41 | 2629  | 6.63 | 2.72 | 0.41 | 2778  | 6.40 | 2.63 | 0.41 | 2827  |
| 26     | 24     | 7.48           | 2.17 | 0.29 | 2728  | 7.02 | 2.04 | 0.29 | 2852  | 6.83 | 1.98 | 0.29 | 2914  |
| 26     | 26     | 7.87           | 1.34 | 0.17 | 2827  | 7.41 | 1.26 | 0.17 | 2951  | 7.18 | 1.22 | 0.17 | 3013  |
| 27     | 18     | 6.37           | 4.40 | 0.69 | 2430  | 5.85 | 4.04 | 0.69 | 2579  | 5.62 | 3.88 | 0.69 | 2629  |
| 27     | 20     | 6.70           | 3.82 | 0.57 | 2530  | 6.24 | 3.56 | 0.57 | 2654  | 6.01 | 3.43 | 0.57 | 2728  |
| 27     | 22     | 7.09           | 3.19 | 0.45 | 2629  | 6.63 | 2.98 | 0.45 | 2778  | 6.40 | 2.88 | 0.45 | 2827  |
| 27     | 24     | 7.48           | 2.47 | 0.33 | 2728  | 7.02 | 2.32 | 0.33 | 2852  | 6.83 | 2.25 | 0.33 | 2914  |
| 27     | 26     | 7.87           | 1.65 | 0.21 | 2827  | 7.41 | 1.56 | 0.21 | 2951  | 7.18 | 1.51 | 0.21 | 3013  |
| 28     | 18     | 6.37           | 4.65 | 0.73 | 2430  | 5.85 | 4.27 | 0.73 | 2579  | 5.62 | 4.10 | 0.73 | 2629  |
| 28     | 20     | 6.70           | 4.08 | 0.61 | 2530  | 6.24 | 3.81 | 0.61 | 2654  | 6.01 | 3.67 | 0.61 | 2728  |
| 28     | 22     | 7.09           | 3.47 | 0.49 | 2629  | 6.63 | 3.25 | 0.49 | 2778  | 6.40 | 3.14 | 0.49 | 2827  |
| 28     | 24     | 7.48           | 2.77 | 0.37 | 2728  | 7.02 | 2.60 | 0.37 | 2852  | 6.83 | 2.53 | 0.37 | 2914  |
| 28     | 26     | 7.87           | 1.97 | 0.25 | 2827  | 7.41 | 1.85 | 0.25 | 2951  | 7.18 | 1.80 | 0.25 | 3013  |
| 29     | 18     | 6.37           | 4.90 | 0.77 | 2430  | 5.85 | 4.50 | 0.77 | 2579  | 5.62 | 4.33 | 0.77 | 2629  |
| 29     | 20     | 6.70           | 4.35 | 0.65 | 2530  | 6.24 | 4.06 | 0.65 | 2654  | 6.01 | 3.91 | 0.65 | 2728  |
| 29     | 22     | 7.09           | 3.76 | 0.53 | 2629  | 6.63 | 3.51 | 0.53 | 2778  | 6.40 | 3.39 | 0.53 | 2827  |
| 29     | 24     | 7.48           | 3.06 | 0.41 | 2728  | 7.02 | 2.88 | 0.41 | 2852  | 6.83 | 2.80 | 0.41 | 2914  |
| 29     | 26     | 7.87           | 2.28 | 0.29 | 2827  | 7.41 | 2.15 | 0.29 | 2951  | 7.18 | 2.08 | 0.29 | 3013  |
| 30     | 18     | 6.37           | 5.16 | 0.81 | 2430  | 5.85 | 4.74 | 0.81 | 2579  | 5.62 | 4.55 | 0.81 | 2629  |
| 30     | 20     | 6.70           | 4.62 | 0.69 | 2530  | 6.24 | 4.31 | 0.69 | 2654  | 6.01 | 4.15 | 0.69 | 2728  |
| 30     | 22     | 7.09           | 4.04 | 0.57 | 2629  | 6.63 | 3.78 | 0.57 | 2778  | 6.40 | 3.65 | 0.57 | 2827  |
| 30     | 24     | 7.48           | 3.36 | 0.45 | 2728  | 7.02 | 3.16 | 0.45 | 2852  | 6.83 | 3.07 | 0.45 | 2914  |
| 30     | 26     | 7.87           | 2.60 | 0.33 | 2827  | 7.41 | 2.45 | 0.33 | 2951  | 7.18 | 2.37 | 0.33 | 3013  |
| 31     | 18     | 6.37           | 5.41 | 0.85 | 2430  | 5.85 | 4.97 | 0.85 | 2579  | 5.62 | 4.78 | 0.85 | 2629  |
| 31     | 20     | 6.70           | 4.89 | 0.73 | 2530  | 6.24 | 4.56 | 0.73 | 2654  | 6.01 | 4.39 | 0.73 | 2728  |
| 31     | 22     | 7.09           | 4.32 | 0.61 | 2629  | 6.63 | 4.04 | 0.61 | 2778  | 6.40 | 3.91 | 0.61 | 2827  |
| 31     | 24     | 7.48           | 3.66 | 0.49 | 2728  | 7.02 | 3.44 | 0.49 | 2852  | 6.83 | 3.34 | 0.49 | 2914  |
| 31     | 26     | 7.87           | 2.91 | 0.37 | 2827  | 7.41 | 2.74 | 0.37 | 2951  | 7.18 | 2.66 | 0.37 | 3013  |
| 32     | 18     | 6.37           | 5.67 | 0.89 | 2430  | 5.85 | 5.21 | 0.89 | 2579  | 5.62 | 5.00 | 0.89 | 2629  |
| 32     | 20     | 6.70           | 5.16 | 0.77 | 2530  | 6.24 | 4.80 | 0.77 | 2654  | 6.01 | 4.63 | 0.77 | 2728  |
| 32     | 22     | 7.09           | 4.61 | 0.65 | 2629  | 6.63 | 4.31 | 0.65 | 2778  | 6.40 | 4.16 | 0.65 | 2827  |
| 32     | 24     | 7.48           | 3.96 | 0.53 | 2728  | 7.02 | 3.72 | 0.53 | 2852  | 6.83 | 3.62 | 0.53 | 2914  |
| 32     | 26     | 7.87           | 3.22 | 0.41 | 2827  | 7.41 | 3.04 | 0.41 | 2951  | 7.18 | 2.94 | 0.41 | 3013  |

**NOTE** Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature  
 SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

**PERFORMANCE DATA COOL operation**  
**MS-A30WV -E1 : MU-A30WV -E1 (230V)**

CAPACITY : 8.5(KW) SHF : 0.62 INPUT : 3260(W)

| INDOOR |        | OUTDOOR DB(°C) |      |      |       |       |      |      |       |       |      |      |       |       |      |      |       |
|--------|--------|----------------|------|------|-------|-------|------|------|-------|-------|------|------|-------|-------|------|------|-------|
| DB(°C) | WB(°C) | 21             |      |      |       | 25    |      |      |       | 27    |      |      |       | 30    |      |      |       |
|        |        | Q              | SHC  | SHF  | INPUT | Q     | SHC  | SHF  | INPUT | Q     | SHC  | SHF  | INPUT | Q     | SHC  | SHF  | INPUT |
| 21     | 18     | 9.99           | 4.39 | 0.44 | 2608  | 9.56  | 4.21 | 0.44 | 2738  | 9.18  | 4.04 | 0.44 | 2869  | 8.84  | 3.89 | 0.44 | 2999  |
| 21     | 20     | 10.41          | 3.33 | 0.32 | 2738  | 9.99  | 3.20 | 0.32 | 2901  | 9.69  | 3.10 | 0.32 | 2967  | 9.35  | 2.99 | 0.32 | 3097  |
| 22     | 18     | 9.99           | 4.79 | 0.48 | 2608  | 9.56  | 4.59 | 0.48 | 2738  | 9.18  | 4.41 | 0.48 | 2869  | 8.84  | 4.24 | 0.48 | 2999  |
| 22     | 20     | 10.41          | 3.75 | 0.36 | 2738  | 9.99  | 3.60 | 0.36 | 2901  | 9.69  | 3.49 | 0.36 | 2967  | 9.35  | 3.37 | 0.36 | 3097  |
| 22     | 22     | 10.84          | 2.60 | 0.24 | 2836  | 10.46 | 2.51 | 0.24 | 3016  | 10.20 | 2.45 | 0.24 | 3097  | 9.78  | 2.35 | 0.24 | 3227  |
| 23     | 18     | 9.99           | 5.19 | 0.52 | 2608  | 9.56  | 4.97 | 0.52 | 2738  | 9.18  | 4.77 | 0.52 | 2869  | 8.84  | 4.60 | 0.52 | 2999  |
| 23     | 20     | 10.41          | 4.17 | 0.40 | 2738  | 9.99  | 4.00 | 0.40 | 2901  | 9.69  | 3.88 | 0.40 | 2967  | 9.35  | 3.74 | 0.40 | 3097  |
| 23     | 22     | 10.84          | 3.03 | 0.28 | 2836  | 10.46 | 2.93 | 0.28 | 3016  | 10.20 | 2.86 | 0.28 | 3097  | 9.78  | 2.74 | 0.28 | 3227  |
| 24     | 18     | 9.99           | 5.59 | 0.56 | 2608  | 9.56  | 5.36 | 0.56 | 2738  | 9.18  | 5.14 | 0.56 | 2869  | 8.84  | 4.95 | 0.56 | 2999  |
| 24     | 20     | 10.41          | 4.58 | 0.44 | 2738  | 9.99  | 4.39 | 0.44 | 2901  | 9.69  | 4.26 | 0.44 | 2967  | 9.35  | 4.11 | 0.44 | 3097  |
| 24     | 22     | 10.84          | 3.47 | 0.32 | 2836  | 10.46 | 3.35 | 0.32 | 3016  | 10.20 | 3.26 | 0.32 | 3097  | 9.78  | 3.13 | 0.32 | 3227  |
| 24     | 24     | 11.39          | 2.28 | 0.20 | 2967  | 10.97 | 2.19 | 0.20 | 3130  | 10.71 | 2.14 | 0.20 | 3227  | 10.37 | 2.07 | 0.20 | 3390  |
| 25     | 18     | 9.99           | 5.99 | 0.60 | 2608  | 9.56  | 5.74 | 0.60 | 2738  | 9.18  | 5.51 | 0.60 | 2869  | 8.84  | 5.30 | 0.60 | 2999  |
| 25     | 20     | 10.41          | 5.00 | 0.48 | 2738  | 9.99  | 4.79 | 0.48 | 2901  | 9.69  | 4.65 | 0.48 | 2967  | 9.35  | 4.49 | 0.48 | 3097  |
| 25     | 22     | 10.84          | 3.90 | 0.36 | 2836  | 10.46 | 3.76 | 0.36 | 3016  | 10.20 | 3.67 | 0.36 | 3097  | 9.78  | 3.52 | 0.36 | 3227  |
| 25     | 24     | 11.39          | 2.73 | 0.24 | 2967  | 10.97 | 2.63 | 0.24 | 3130  | 10.71 | 2.57 | 0.24 | 3227  | 10.37 | 2.49 | 0.24 | 3390  |
| 26     | 18     | 9.99           | 6.39 | 0.64 | 2608  | 9.56  | 6.12 | 0.64 | 2738  | 9.18  | 5.88 | 0.64 | 2869  | 8.84  | 5.66 | 0.64 | 2999  |
| 26     | 20     | 10.41          | 5.41 | 0.52 | 2738  | 9.99  | 5.19 | 0.52 | 2901  | 9.69  | 5.04 | 0.52 | 2967  | 9.35  | 4.86 | 0.52 | 3097  |
| 26     | 22     | 10.84          | 4.34 | 0.40 | 2836  | 10.46 | 4.18 | 0.40 | 3016  | 10.20 | 4.08 | 0.40 | 3097  | 9.78  | 3.91 | 0.40 | 3227  |
| 26     | 24     | 11.39          | 3.19 | 0.28 | 2967  | 10.97 | 3.07 | 0.28 | 3130  | 10.71 | 3.00 | 0.28 | 3227  | 10.37 | 2.90 | 0.28 | 3390  |
| 26     | 26     | 11.73          | 1.88 | 0.16 | 3130  | 11.39 | 1.82 | 0.16 | 3293  | 11.22 | 1.80 | 0.16 | 3390  | 10.88 | 1.74 | 0.16 | 3488  |
| 27     | 18     | 9.99           | 6.79 | 0.68 | 2608  | 9.56  | 6.50 | 0.68 | 2738  | 9.18  | 6.24 | 0.68 | 2869  | 8.84  | 6.01 | 0.68 | 2999  |
| 27     | 20     | 10.41          | 5.83 | 0.56 | 2738  | 9.99  | 5.59 | 0.56 | 2901  | 9.69  | 5.43 | 0.56 | 2967  | 9.35  | 5.24 | 0.56 | 3097  |
| 27     | 22     | 10.84          | 4.77 | 0.44 | 2836  | 10.46 | 4.60 | 0.44 | 3016  | 10.20 | 4.49 | 0.44 | 3097  | 9.78  | 4.30 | 0.44 | 3227  |
| 27     | 24     | 11.39          | 3.64 | 0.32 | 2967  | 10.97 | 3.51 | 0.32 | 3130  | 10.71 | 3.43 | 0.32 | 3227  | 10.37 | 3.32 | 0.32 | 3390  |
| 27     | 26     | 11.73          | 2.35 | 0.20 | 3130  | 11.39 | 2.28 | 0.20 | 3293  | 11.22 | 2.24 | 0.20 | 3390  | 10.88 | 2.18 | 0.20 | 3488  |
| 28     | 18     | 9.99           | 7.19 | 0.72 | 2608  | 9.56  | 6.89 | 0.72 | 2738  | 9.18  | 6.61 | 0.72 | 2869  | 8.84  | 6.36 | 0.72 | 2999  |
| 28     | 20     | 10.41          | 6.25 | 0.60 | 2738  | 9.99  | 5.99 | 0.60 | 2901  | 9.69  | 5.81 | 0.60 | 2967  | 9.35  | 5.61 | 0.60 | 3097  |
| 28     | 22     | 10.84          | 5.20 | 0.48 | 2836  | 10.46 | 5.02 | 0.48 | 3016  | 10.20 | 4.90 | 0.48 | 3097  | 9.78  | 4.69 | 0.48 | 3227  |
| 28     | 24     | 11.39          | 4.10 | 0.36 | 2967  | 10.97 | 3.95 | 0.36 | 3130  | 10.71 | 3.86 | 0.36 | 3227  | 10.37 | 3.73 | 0.36 | 3390  |
| 28     | 26     | 11.73          | 2.82 | 0.24 | 3130  | 11.39 | 2.73 | 0.24 | 3293  | 11.22 | 2.69 | 0.24 | 3390  | 10.88 | 2.61 | 0.24 | 3488  |
| 29     | 18     | 9.99           | 7.59 | 0.76 | 2608  | 9.56  | 7.27 | 0.76 | 2738  | 9.18  | 6.98 | 0.76 | 2869  | 8.84  | 6.72 | 0.76 | 2999  |
| 29     | 20     | 10.41          | 6.66 | 0.64 | 2738  | 9.99  | 6.39 | 0.64 | 2901  | 9.69  | 6.20 | 0.64 | 2967  | 9.35  | 5.98 | 0.64 | 3097  |
| 29     | 22     | 10.84          | 5.64 | 0.52 | 2836  | 10.46 | 5.44 | 0.52 | 3016  | 10.20 | 5.30 | 0.52 | 3097  | 9.78  | 5.08 | 0.52 | 3227  |
| 29     | 24     | 11.39          | 4.56 | 0.40 | 2967  | 10.97 | 4.39 | 0.40 | 3130  | 10.71 | 4.28 | 0.40 | 3227  | 10.37 | 4.15 | 0.40 | 3390  |
| 29     | 26     | 11.73          | 3.28 | 0.28 | 3130  | 11.39 | 3.19 | 0.28 | 3293  | 11.22 | 3.14 | 0.28 | 3390  | 10.88 | 3.05 | 0.28 | 3488  |
| 30     | 18     | 9.99           | 7.99 | 0.80 | 2608  | 9.56  | 7.65 | 0.80 | 2738  | 9.18  | 7.34 | 0.80 | 2869  | 8.84  | 7.07 | 0.80 | 2999  |
| 30     | 20     | 10.41          | 7.08 | 0.68 | 2738  | 9.99  | 6.79 | 0.68 | 2901  | 9.69  | 6.59 | 0.68 | 2967  | 9.35  | 6.36 | 0.68 | 3097  |
| 30     | 22     | 10.84          | 6.07 | 0.56 | 2836  | 10.46 | 5.85 | 0.56 | 3016  | 10.20 | 5.71 | 0.56 | 3097  | 9.78  | 5.47 | 0.56 | 3227  |
| 30     | 24     | 11.39          | 5.01 | 0.44 | 2967  | 10.97 | 4.82 | 0.44 | 3130  | 10.71 | 4.71 | 0.44 | 3227  | 10.37 | 4.56 | 0.44 | 3390  |
| 30     | 26     | 11.73          | 3.75 | 0.32 | 3130  | 11.39 | 3.64 | 0.32 | 3293  | 11.22 | 3.59 | 0.32 | 3390  | 10.88 | 3.48 | 0.32 | 3488  |
| 31     | 18     | 9.99           | 8.39 | 0.84 | 2608  | 9.56  | 8.03 | 0.84 | 2738  | 9.18  | 7.71 | 0.84 | 2869  | 8.84  | 7.43 | 0.84 | 2999  |
| 31     | 20     | 10.41          | 7.50 | 0.72 | 2738  | 9.99  | 7.19 | 0.72 | 2901  | 9.69  | 6.98 | 0.72 | 2967  | 9.35  | 6.73 | 0.72 | 3097  |
| 31     | 22     | 10.84          | 6.50 | 0.60 | 2836  | 10.46 | 6.27 | 0.60 | 3016  | 10.20 | 6.12 | 0.60 | 3097  | 9.78  | 5.87 | 0.60 | 3227  |
| 31     | 24     | 11.39          | 5.47 | 0.48 | 2967  | 10.97 | 5.26 | 0.48 | 3130  | 10.71 | 5.14 | 0.48 | 3227  | 10.37 | 4.98 | 0.48 | 3390  |
| 31     | 26     | 11.73          | 4.22 | 0.36 | 3130  | 11.39 | 4.10 | 0.36 | 3293  | 11.22 | 4.04 | 0.36 | 3390  | 10.88 | 3.92 | 0.36 | 3488  |
| 32     | 18     | 9.99           | 8.79 | 0.88 | 2608  | 9.56  | 8.42 | 0.88 | 2738  | 9.18  | 8.08 | 0.88 | 2869  | 8.84  | 7.78 | 0.88 | 2999  |
| 32     | 20     | 10.41          | 7.91 | 0.76 | 2738  | 9.99  | 7.59 | 0.76 | 2901  | 9.69  | 7.36 | 0.76 | 2967  | 9.35  | 7.11 | 0.76 | 3097  |
| 32     | 22     | 10.84          | 6.94 | 0.64 | 2836  | 10.46 | 6.69 | 0.64 | 3016  | 10.20 | 6.53 | 0.64 | 3097  | 9.78  | 6.26 | 0.64 | 3227  |
| 32     | 24     | 11.39          | 5.92 | 0.52 | 2967  | 10.97 | 5.70 | 0.52 | 3130  | 10.71 | 5.57 | 0.52 | 3227  | 10.37 | 5.39 | 0.52 | 3390  |
| 32     | 26     | 11.73          | 4.69 | 0.40 | 3130  | 11.39 | 4.56 | 0.40 | 3293  | 11.22 | 4.49 | 0.40 | 3390  | 10.88 | 4.35 | 0.40 | 3488  |

**NOTE** Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature  
SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

**PERFORMANCE DATA COOL operation**  
**MS-A30WV -[E1] : MU-A30WV -[E1] (230V)**

CAPACITY : 8.5(KW) SHF : 0.62 INPUT : 3260(W)

|               |               | OUTDOOR DB(°C) |      |      |       |      |      |      |       |      |      |      |       |
|---------------|---------------|----------------|------|------|-------|------|------|------|-------|------|------|------|-------|
| INDOOR DB(°C) | INDOOR WB(°C) | 35             |      |      |       | 40   |      |      |       | 43   |      |      |       |
|               |               | Q              | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT | Q    | SHC  | SHF  | INPUT |
| 21            | 18            | 8.33           | 3.67 | 0.44 | 3195  | 7.65 | 3.37 | 0.44 | 3390  | 7.35 | 3.24 | 0.44 | 3456  |
| 21            | 20            | 8.76           | 2.80 | 0.32 | 3325  | 8.16 | 2.61 | 0.32 | 3488  | 7.86 | 2.52 | 0.32 | 3586  |
| 22            | 18            | 8.33           | 4.00 | 0.48 | 3195  | 7.65 | 3.67 | 0.48 | 3390  | 7.35 | 3.53 | 0.48 | 3456  |
| 22            | 20            | 8.76           | 3.15 | 0.36 | 3325  | 8.16 | 2.94 | 0.36 | 3488  | 7.86 | 2.83 | 0.36 | 3586  |
| 22            | 22            | 9.27           | 2.22 | 0.24 | 3456  | 8.67 | 2.08 | 0.24 | 3651  | 8.37 | 2.01 | 0.24 | 3716  |
| 23            | 18            | 8.33           | 4.33 | 0.52 | 3195  | 7.65 | 3.98 | 0.52 | 3390  | 7.35 | 3.82 | 0.52 | 3456  |
| 23            | 20            | 8.76           | 3.50 | 0.40 | 3325  | 8.16 | 3.26 | 0.40 | 3488  | 7.86 | 3.15 | 0.40 | 3586  |
| 23            | 22            | 9.27           | 2.59 | 0.28 | 3456  | 8.67 | 2.43 | 0.28 | 3651  | 8.37 | 2.34 | 0.28 | 3716  |
| 24            | 18            | 8.33           | 4.66 | 0.56 | 3195  | 7.65 | 4.28 | 0.56 | 3390  | 7.35 | 4.12 | 0.56 | 3456  |
| 24            | 20            | 8.76           | 3.85 | 0.44 | 3325  | 8.16 | 3.59 | 0.44 | 3488  | 7.86 | 3.46 | 0.44 | 3586  |
| 24            | 22            | 9.27           | 2.96 | 0.32 | 3456  | 8.67 | 2.77 | 0.32 | 3651  | 8.37 | 2.68 | 0.32 | 3716  |
| 24            | 24            | 9.78           | 1.96 | 0.20 | 3586  | 9.18 | 1.84 | 0.20 | 3749  | 8.93 | 1.79 | 0.20 | 3831  |
| 25            | 18            | 8.33           | 5.00 | 0.60 | 3195  | 7.65 | 4.59 | 0.60 | 3390  | 7.35 | 4.41 | 0.60 | 3456  |
| 25            | 20            | 8.76           | 4.20 | 0.48 | 3325  | 8.16 | 3.92 | 0.48 | 3488  | 7.86 | 3.77 | 0.48 | 3586  |
| 25            | 22            | 9.27           | 3.34 | 0.36 | 3456  | 8.67 | 3.12 | 0.36 | 3651  | 8.37 | 3.01 | 0.36 | 3716  |
| 25            | 24            | 9.78           | 2.35 | 0.24 | 3586  | 9.18 | 2.20 | 0.24 | 3749  | 8.93 | 2.14 | 0.24 | 3831  |
| 26            | 18            | 8.33           | 5.33 | 0.64 | 3195  | 7.65 | 4.90 | 0.64 | 3390  | 7.35 | 4.71 | 0.64 | 3456  |
| 26            | 20            | 8.76           | 4.55 | 0.52 | 3325  | 8.16 | 4.24 | 0.52 | 3488  | 7.86 | 4.09 | 0.52 | 3586  |
| 26            | 22            | 9.27           | 3.71 | 0.40 | 3456  | 8.67 | 3.47 | 0.40 | 3651  | 8.37 | 3.35 | 0.40 | 3716  |
| 26            | 24            | 9.78           | 2.74 | 0.28 | 3586  | 9.18 | 2.57 | 0.28 | 3749  | 8.93 | 2.50 | 0.28 | 3831  |
| 26            | 26            | 10.29          | 1.65 | 0.16 | 3716  | 9.69 | 1.55 | 0.16 | 3879  | 9.39 | 1.50 | 0.16 | 3961  |
| 27            | 18            | 8.33           | 5.66 | 0.68 | 3195  | 7.65 | 5.20 | 0.68 | 3390  | 7.35 | 5.00 | 0.68 | 3456  |
| 27            | 20            | 8.76           | 4.90 | 0.56 | 3325  | 8.16 | 4.57 | 0.56 | 3488  | 7.86 | 4.40 | 0.56 | 3586  |
| 27            | 22            | 9.27           | 4.08 | 0.44 | 3456  | 8.67 | 3.81 | 0.44 | 3651  | 8.37 | 3.68 | 0.44 | 3716  |
| 27            | 24            | 9.78           | 3.13 | 0.32 | 3586  | 9.18 | 2.94 | 0.32 | 3749  | 8.93 | 2.86 | 0.32 | 3831  |
| 27            | 26            | 10.29          | 2.06 | 0.20 | 3716  | 9.69 | 1.94 | 0.20 | 3879  | 9.39 | 1.88 | 0.20 | 3961  |
| 28            | 18            | 8.33           | 6.00 | 0.72 | 3195  | 7.65 | 5.51 | 0.72 | 3390  | 7.35 | 5.29 | 0.72 | 3456  |
| 28            | 20            | 8.76           | 5.25 | 0.60 | 3325  | 8.16 | 4.90 | 0.60 | 3488  | 7.86 | 4.72 | 0.60 | 3586  |
| 28            | 22            | 9.27           | 4.45 | 0.48 | 3456  | 8.67 | 4.16 | 0.48 | 3651  | 8.37 | 4.02 | 0.48 | 3716  |
| 28            | 24            | 9.78           | 3.52 | 0.36 | 3586  | 9.18 | 3.30 | 0.36 | 3749  | 8.93 | 3.21 | 0.36 | 3831  |
| 28            | 26            | 10.29          | 2.47 | 0.24 | 3716  | 9.69 | 2.33 | 0.24 | 3879  | 9.39 | 2.25 | 0.24 | 3961  |
| 29            | 18            | 8.33           | 6.33 | 0.76 | 3195  | 7.65 | 5.81 | 0.76 | 3390  | 7.35 | 5.59 | 0.76 | 3456  |
| 29            | 20            | 8.76           | 5.60 | 0.64 | 3325  | 8.16 | 5.22 | 0.64 | 3488  | 7.86 | 5.03 | 0.64 | 3586  |
| 29            | 22            | 9.27           | 4.82 | 0.52 | 3456  | 8.67 | 4.51 | 0.52 | 3651  | 8.37 | 4.35 | 0.52 | 3716  |
| 29            | 24            | 9.78           | 3.91 | 0.40 | 3586  | 9.18 | 3.67 | 0.40 | 3749  | 8.93 | 3.57 | 0.40 | 3831  |
| 29            | 26            | 10.29          | 2.88 | 0.28 | 3716  | 9.69 | 2.71 | 0.28 | 3879  | 9.39 | 2.63 | 0.28 | 3961  |
| 30            | 18            | 8.33           | 6.66 | 0.80 | 3195  | 7.65 | 6.12 | 0.80 | 3390  | 7.35 | 5.88 | 0.80 | 3456  |
| 30            | 20            | 8.76           | 5.95 | 0.68 | 3325  | 8.16 | 5.55 | 0.68 | 3488  | 7.86 | 5.35 | 0.68 | 3586  |
| 30            | 22            | 9.27           | 5.19 | 0.56 | 3456  | 8.67 | 4.86 | 0.56 | 3651  | 8.37 | 4.69 | 0.56 | 3716  |
| 30            | 24            | 9.78           | 4.30 | 0.44 | 3586  | 9.18 | 4.04 | 0.44 | 3749  | 8.93 | 3.93 | 0.44 | 3831  |
| 30            | 26            | 10.29          | 3.29 | 0.32 | 3716  | 9.69 | 3.10 | 0.32 | 3879  | 9.39 | 3.01 | 0.32 | 3961  |
| 31            | 18            | 8.33           | 7.00 | 0.84 | 3195  | 7.65 | 6.43 | 0.84 | 3390  | 7.35 | 6.18 | 0.84 | 3456  |
| 31            | 20            | 8.76           | 6.30 | 0.72 | 3325  | 8.16 | 5.88 | 0.72 | 3488  | 7.86 | 5.66 | 0.72 | 3586  |
| 31            | 22            | 9.27           | 5.56 | 0.60 | 3456  | 8.67 | 5.20 | 0.60 | 3651  | 8.37 | 5.02 | 0.60 | 3716  |
| 31            | 24            | 9.78           | 4.69 | 0.48 | 3586  | 9.18 | 4.41 | 0.48 | 3749  | 8.93 | 4.28 | 0.48 | 3831  |
| 31            | 26            | 10.29          | 3.70 | 0.36 | 3716  | 9.69 | 3.49 | 0.36 | 3879  | 9.39 | 3.38 | 0.36 | 3961  |
| 32            | 18            | 8.33           | 7.33 | 0.88 | 3195  | 7.65 | 6.73 | 0.88 | 3390  | 7.35 | 6.47 | 0.88 | 3456  |
| 32            | 20            | 8.76           | 6.65 | 0.76 | 3325  | 8.16 | 6.20 | 0.76 | 3488  | 7.86 | 5.98 | 0.76 | 3586  |
| 32            | 22            | 9.27           | 5.93 | 0.64 | 3456  | 8.67 | 5.55 | 0.64 | 3651  | 8.37 | 5.36 | 0.64 | 3716  |
| 32            | 24            | 9.78           | 5.08 | 0.52 | 3586  | 9.18 | 4.77 | 0.52 | 3749  | 8.93 | 4.64 | 0.52 | 3831  |
| 32            | 26            | 10.29          | 4.11 | 0.40 | 3716  | 9.69 | 3.88 | 0.40 | 3879  | 9.39 | 3.76 | 0.40 | 3961  |

**NOTE** Q : Total capacity (kW) SHF : Sensible heat factor DB : Dry-bulb temperature  
SHC : Sensible heat capacity (kW) INPUT : Total power input (W) WB : Wet-bulb temperature

**MU-A30WV** -[E1]**9-1. "I FEEL CONTROL" ( ) OPERATION****9-1-1. COOL mode of "I FEEL CONTROL"****1. Outdoor fan speed control <MU-A30WV>**

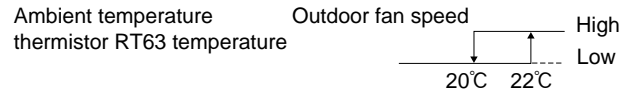
Outdoor fan speed is controlled according to the temperature of ambient temperature thermistor RT63.

Outdoor fan Low operation : When the outside temperature decreases to 20°C or less.

Until the outside temperature goes to 22°C.

Outdoor fan High operation : Until the outside temperature decreases to 20°C or less.

When the outside temperature goes to 22°C.



**NOTE :** When indoor fan speed is Low except FAN operation mode and the outside temperature is 30°C or less, the outdoor fan operates at Low.

Outdoor fan Low operation is cancelled according to the following conditions(① or ②):

- ① When the operation is not changed and the outside temperature goes to 33°C or more.
- ② When the operation is changed. (Change to FAN operation mode / Change of the indoor fan speed)

**2. Discharge temperature protection <MU-A30WV>**

The compressor is controlled by the temperature of discharge temperature thermistor RT62 for excess rise protection of compressor discharge pressure.

- Compressor

When the temperature of discharge temperature thermistor RT62 goes to 120°C or more, the compressor is turned OFF.

After 3 minutes since the compressor has been turned OFF, if the temperature of discharge temperature thermistor RT62 becomes 100°C or less, the compressor is turned ON.

**9-1-2. DRY mode of "I FEEL CONTROL"****1. Outdoor fan speed control <MU-A30WV>**

Outdoor fan speed control is as same as one of COOL mode of "I FEEL CONTROL".

## 9-2. LEV control <MU-A30WV>

LEV (Expansion valve) is controlled by "Thermostat ON" commands given from the unit.

|                     |   |  |
|---------------------|---|--|
| Basic specification | Controlled range  | Minimum : 54 pulse, Maximum : 500 pulse  |
|                     | Drive speed   | 30 ~ 90 pulse / second   |
|                     | Opening set   | The setting is always in opening direction.<br>(To close the LEV, it is closed to the pulse smaller than the one which is set finally. Then the LEV is opened to the final setting pulse.)   |
| General operation   | Stop of indoor unit   | Opening in stop : 150 pulse → LEV opening is set to becomes 500 pulse after 3 minutes passed.  |
|                     | Remote controller ON  | LEV positioning (LEV is closed completely at once)   |
|                     | Power ON (Breaker ON)   | LEV is positioned. However, afterwards, LEV is not positioned at the first remote controller ON.   |
|                     | Approximate for 2 minutes since compressor has started.   | Opening is set by the initial opening.<br>(Initial opening is set according to each operation modes and outer temperature conditions.)   |
|                     | From approximate 2 minutes to approximate 13 minutes (for 11 minutes) since compressor has started. | Opening is set by standard opening.<br>(Standard opening is set according to each operation modes and outer temperature conditions.)   |
|                     | After 13 minutes passed since compressor has started.   | LEV opening is corrected to be once every 2 minutes so that discharge temperature becomes the target discharge temperature.<br>(When the discharge temperature is lower than target one : LEV is corrected in closed direction, when the discharge temperature is higher than target one : LEV is corrected in opening direction.) |
|                     | At thermostat OFF   | Opening in stop : 150 pulse → LEV is set to the initial opening after about 3 minutes passed.  |
|                     | At thermostat ON  | Same as the starting of compressor operation   |
|                     | At remote controller OFF  | Opening in stop : 150 pulse → LEV is set so that the opening is opened completely at the speed of 4 pulse every 5 seconds in opening after about 3 minutes passed.   |

### (1) LEV opening correction by discharge temperature

The LEV opening is corrected according to the temperature difference between target discharge temperature (Tb) and actual discharge temperature (Ta).

① The LEV correction is used properly for two kinds according to the LEV opening status at operation off.

| Rank            | Opening immediately before having stopped last time |                   |
|-----------------|---|-------------------|
|                 | 100 pulse or less                                   | 100 pulse or more |
| Ta (°C)         | Cooling   | Cooling           |
| more than Tb+10 | 5   | 20                |
| Tb+5 to Tb+10   | 2   | 10                |
| Tb+2 to Tb+5    | 1   | 2                 |
| Tb-2 to Tb+2    | 0   | 0                 |
| Tb-5 to Tb-2    | -1  | -2                |
| Tb-10 to Tb-5   | -2  | -5                |
| less than Tb-10 | -5  | -10               |

**NOTE** : Discharge temperature : Ta, Target discharge temperature : Tb

② When the temperature difference  $\Delta RT$  between indoor coil thermistor (main) RT12 and indoor coil thermistor (sub) RT13 in the indoor unit is  $2^{\circ}\text{C}$  or more for a fixed time at cool or dry operation, the target discharge temperature is changed. After the temperature is changed, when temperature difference  $\Delta RT$  is  $3^{\circ}\text{C}$  or more, the target temperature is changed again. The LEV opening is controlled based on the changed target discharge temperature and the temperature difference  $\Delta RT$ .

| Ta ( $^{\circ}\text{C}$ ) | $\Delta RT$                   |   |                             |
|---------------------------|-------------------------------|---|-----------------------------|
|                           | less than $2^{\circ}\text{C}$ | $2^{\circ}\text{C}$ or more and less than $3^{\circ}\text{C}$ | $3^{\circ}\text{C}$ or more |
| more than Tb+10           | 20                            | 60  | 60                          |
| Tb+5 to Tb+10             | 10                            | 20  | 20                          |
| Tb+2 to Tb+5              | 2                             | 2   | 2                           |
| Tb-2 to Tb+2              | 0                             | 0   | 0                           |
| Tb-5 to Tb-2              | -2                            | -2  | -2                          |
| Tb-10 to Tb-5             | -5                            | -5  | -5                          |
| less than Tb-10           | -10                           | -10   | -10                         |

**NOTE** : Discharge temperature : Ta, Target discharge temperature : Tb

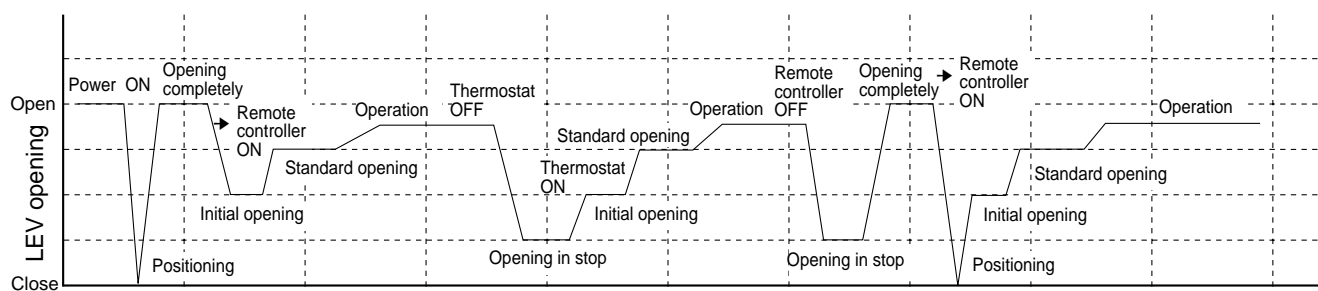
The target discharge temperature (Tb) is set according to the operation mode or the unit status as follows.

| Operation mode   | Tb ( $^{\circ}\text{C}$ ) |
|--|---------------------------|
| COOL (Normal)  | 80                        |
| COOL ( $\Delta RT$ is less than $2^{\circ}\text{C}$ , or $\Delta RT$ is $2^{\circ}\text{C}$ or more and less than $3^{\circ}\text{C}$ .) | 70                        |
| COOL ( $\Delta RT$ is $3^{\circ}\text{C}$ or more.)  | 65                        |

**NOTE** : Target discharge temperature : Tb

**NOTE** : When the discharge temperature (Ta) is  $50^{\circ}\text{C}$  or less on the cool operation LEV opening is set in 54 pulse. When this state continues for 20 minutes, the compressor is stopped and restarts in 3 minutes. When the compressor is stopped, the indoor unit indicates the abnormality of refrigerant system and stops. (OPERATION INDICATOR lamp is 10-time flashing on and off.)

(2) LEV time chart



**NOTE** : Opening increases and decreases to be in the target discharge temperature during operation.



**MU-A18WV** -[E1]

**MU-A24WV** -[E1]

**MU-A30WV** -[E1]

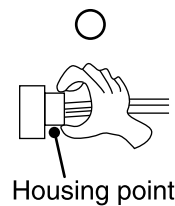
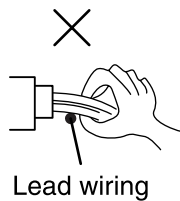
### 10-1. Cautions on troubleshooting

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

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

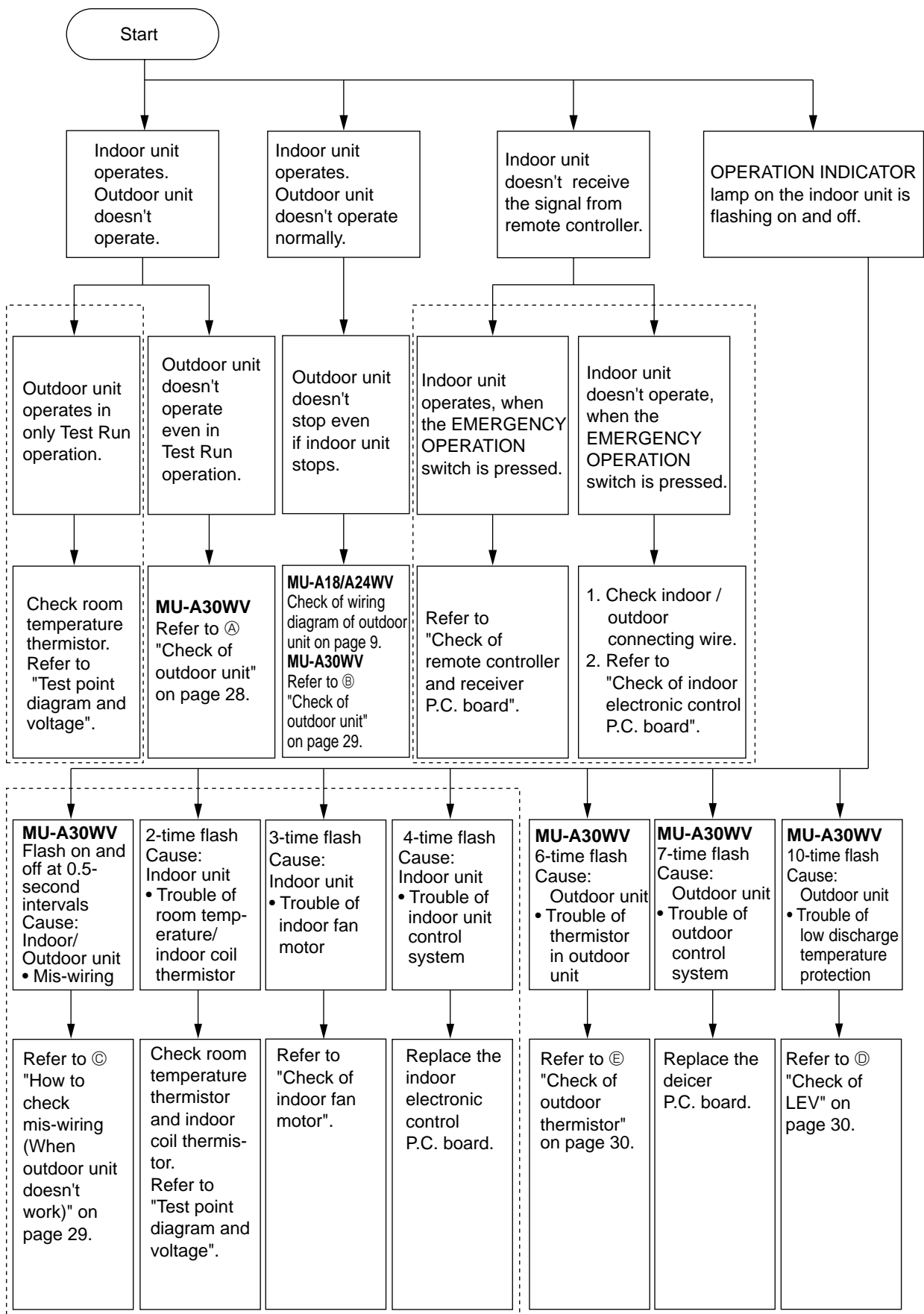
#### 2. Take care the following during servicing.

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



#### 3. Troubleshooting procedure

- (1) First, check if the OPERATION INDICATOR lamp on the indoor unit is flashing on and off to indicate an abnormality. To make sure, check how many times the abnormality indication is flashing on and off before starting service work.
- (2) Before servicing that the connector and terminal are connected properly.
- (3) If the electronic control P.C. board is supposed to be defective, check the copper foil pattern for disconnection and the components for bursting and discoloration.
- (4) When troubleshooting, refer to the flow chart on page 26.



⋯ As for indoor unit, refer to service manual OB325.

## 10-2. Trouble criterion of main parts

### MU-A18WV -<sup>[E1]</sup> MU-A24WV -<sup>[E1]</sup> MU-A30WV -<sup>[E1]</sup>

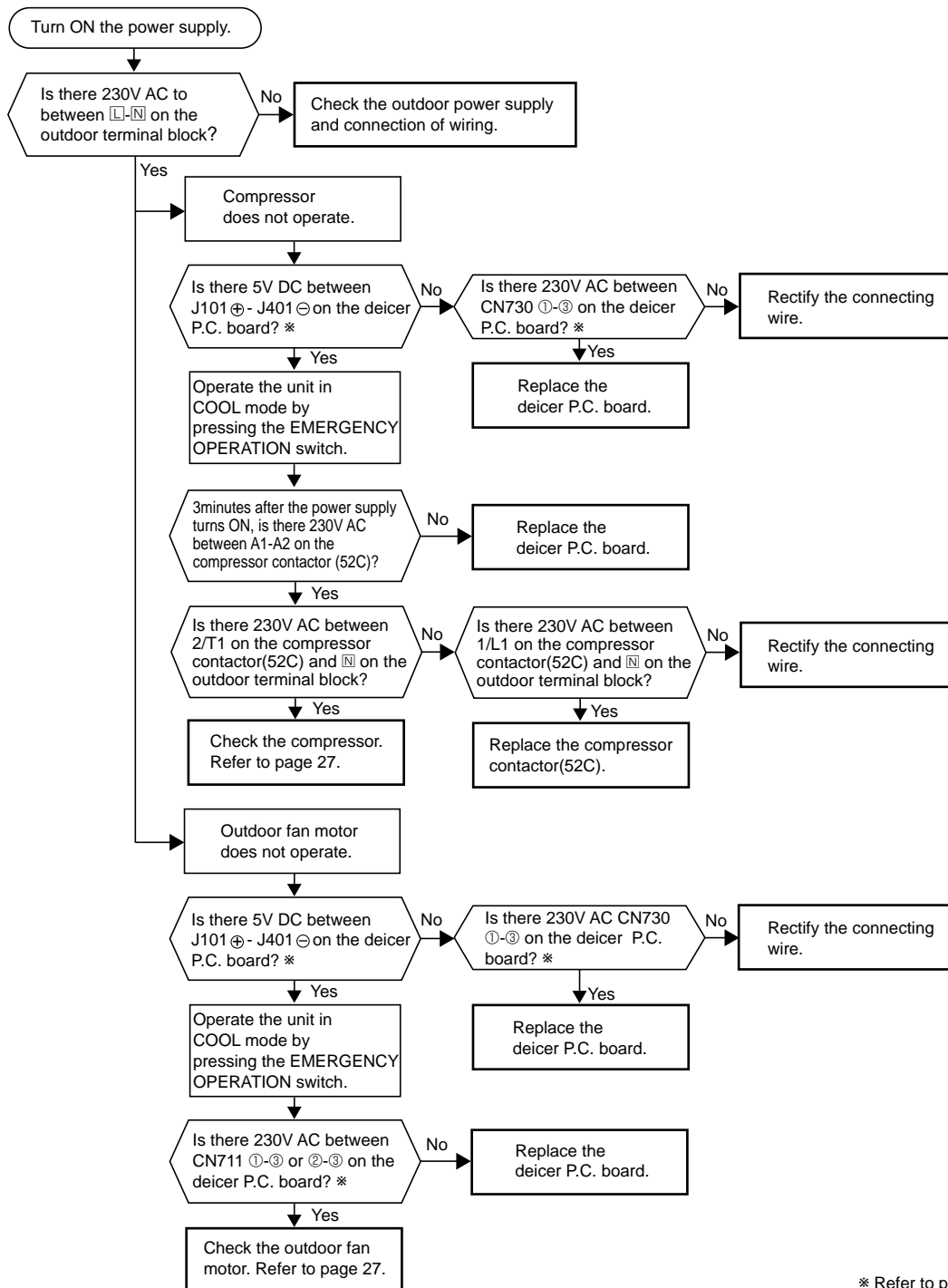
| Part name   | Check method and criterion  | Figure                |                 |                       |                       |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
|---|---|-----------------------|-----------------|-----------------------|-----------------------|-----------------|-----------------------|-----------|-----------|-----------|-----------------|-----------------|-----------------|-----------------------|-----------|-----------------|-----------------|-----------------|-----------|---|---|-------------|-----------|---|---|-------------|-------------------------------------|
| Discharge temperature thermistor(RT62)<br><b>MU-A30WV</b>   | Measure the resistance with a tester.<br>Before measurement, hold the thermistor with your hands to warm it up.<br>(Part temperature 0°C ~ 40°C)<br><table border="1"> <thead> <tr> <th>Normal</th> <th>Abnormal</th> </tr> </thead> <tbody> <tr> <td>120 kΩ ~ 800kΩ</td> <td>Open or short-circuit</td> </tr> </tbody> </table>  | Normal                | Abnormal        | 120 kΩ ~ 800kΩ        | Open or short-circuit |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
| Normal  | Abnormal  |                       |                 |                       |                       |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
| 120 kΩ ~ 800kΩ  | Open or short-circuit   |                       |                 |                       |                       |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
| Ambient temperature thermistor(RT63)<br><b>MU-A30WV</b>   | Measure the resistance with a tester.<br>(Part temperature -10°C ~ 40°C)<br><table border="1"> <thead> <tr> <th>Normal</th> <th>Abnormal</th> </tr> </thead> <tbody> <tr> <td>5 kΩ ~ 60 kΩ</td> <td>Open or short-circuit</td> </tr> </tbody> </table>  | Normal                | Abnormal        | 5 kΩ ~ 60 kΩ          | Open or short-circuit |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
| Normal  | Abnormal  |                       |                 |                       |                       |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
| 5 kΩ ~ 60 kΩ  | Open or short-circuit   |                       |                 |                       |                       |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
| Compressor (MC)<br>INNER PROTECTOR<br>160± 5°C OPEN<br>90±10°C CLOSE  | Measure the resistance between the terminals with a tester.<br>(Part temperature -10°C ~ 40°C)<br><table border="1"> <thead> <tr> <th rowspan="2">Terminal</th> <th colspan="3">Normal</th> <th rowspan="2">Abnormal</th> </tr> <tr> <th>MU-A18WV</th> <th>MU-A24WV</th> <th>MU-A30WV</th> </tr> </thead> <tbody> <tr> <td>C - R</td> <td>1.59 Ω ~ 1.95 Ω</td> <td>0.71 Ω ~ 0.87 Ω</td> <td>0.56 Ω ~ 0.71 Ω</td> <td rowspan="2">Open or short-circuit</td> </tr> <tr> <td>C - S</td> <td>2.65 Ω ~ 3.24 Ω</td> <td>1.45 Ω ~ 1.77 Ω</td> <td>1.43 Ω ~ 1.76 Ω</td> </tr> </tbody> </table>  | Terminal              | Normal          |                       |                       | Abnormal        | MU-A18WV              | MU-A24WV  | MU-A30WV  | C - R     | 1.59 Ω ~ 1.95 Ω | 0.71 Ω ~ 0.87 Ω | 0.56 Ω ~ 0.71 Ω | Open or short-circuit | C - S     | 2.65 Ω ~ 3.24 Ω | 1.45 Ω ~ 1.77 Ω | 1.43 Ω ~ 1.76 Ω |           |   |   |             |           |   |   |             |                                     |
| Terminal  | Normal  |                       |                 | Abnormal              |                       |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
|   | MU-A18WV  | MU-A24WV              | MU-A30WV        |                       |                       |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
| C - R   | 1.59 Ω ~ 1.95 Ω   | 0.71 Ω ~ 0.87 Ω       | 0.56 Ω ~ 0.71 Ω | Open or short-circuit |                       |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
| C - S   | 2.65 Ω ~ 3.24 Ω   | 1.45 Ω ~ 1.77 Ω       | 1.43 Ω ~ 1.76 Ω |                       |                       |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
| Outdoor fan motor(MF)<br>INNER PROTECTOR<br><b>MU-A18WV</b><br>135± 5°C OPEN<br>( 87±15°C CLOSE*)<br><b>MU-A24WV</b><br>130± 5°C OPEN<br>( 83±15°C CLOSE*)<br><b>MU-A30WV</b><br>135± 5°C OPEN<br>( 87±15°C CLOSE*) | Measure the resistance between the terminals with a tester.<br>(Part temperature -10°C ~ 40°C)<br><table border="1"> <thead> <tr> <th rowspan="2">Color of lead wire</th> <th colspan="3">Normal</th> <th rowspan="2">Abnormal</th> </tr> <tr> <th>MU-A18WV</th> <th>MU-A24WV</th> <th>MU-A30WV</th> </tr> </thead> <tbody> <tr> <td>WHT - BLK</td> <td>103 Ω ~ 126 Ω</td> <td>63 Ω ~ 77 Ω</td> <td>55 Ω ~ 68 Ω</td> <td rowspan="4">Open or short-circuit</td> </tr> <tr> <td>BLK - RED</td> <td>89 Ω ~ 120 Ω</td> <td>79 Ω ~ 96 Ω</td> <td>-</td> </tr> <tr> <td>BLK - YLW</td> <td>-</td> <td>-</td> <td>49 Ω ~ 61 Ω</td> </tr> <tr> <td>YLW - RED</td> <td>-</td> <td>-</td> <td>22 Ω ~ 29 Ω</td> </tr> </tbody> </table> | Color of lead wire    | Normal          |                       |                       | Abnormal        | MU-A18WV              | MU-A24WV  | MU-A30WV  | WHT - BLK | 103 Ω ~ 126 Ω   | 63 Ω ~ 77 Ω     | 55 Ω ~ 68 Ω     | Open or short-circuit | BLK - RED | 89 Ω ~ 120 Ω    | 79 Ω ~ 96 Ω     | -               | BLK - YLW | - | - | 49 Ω ~ 61 Ω | YLW - RED | - | - | 22 Ω ~ 29 Ω | <p>MU-A18/A24WV</p> <p>MU-A30WV</p> |
| Color of lead wire  | Normal  |                       |                 | Abnormal              |                       |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
|   | MU-A18WV  | MU-A24WV              | MU-A30WV        |                       |                       |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
| WHT - BLK   | 103 Ω ~ 126 Ω   | 63 Ω ~ 77 Ω           | 55 Ω ~ 68 Ω     | Open or short-circuit |                       |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
| BLK - RED   | 89 Ω ~ 120 Ω  | 79 Ω ~ 96 Ω           | -               |                       |                       |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
| BLK - YLW   | -   | -                     | 49 Ω ~ 61 Ω     |                       |                       |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
| YLW - RED   | -   | -                     | 22 Ω ~ 29 Ω     |                       |                       |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
| LEV(Expansion valve)<br><b>MU-A30WV</b>   | Measure the resistance with a tester.<br>(Part temperature : -10°C ~ 40°C)<br><table border="1"> <thead> <tr> <th>Color of lead wire</th> <th>Normal</th> <th>Abnormal</th> </tr> </thead> <tbody> <tr> <td>WHT - RED</td> <td rowspan="4">41.0 Ω ~ 49.0 Ω</td> <td rowspan="4">Open or short-circuit</td> </tr> <tr> <td>RED - ORN</td> </tr> <tr> <td>YLW - BRN</td> </tr> <tr> <td>BRN - BLU</td> </tr> </tbody> </table>  | Color of lead wire    | Normal          | Abnormal              | WHT - RED             | 41.0 Ω ~ 49.0 Ω | Open or short-circuit | RED - ORN | YLW - BRN | BRN - BLU |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
| Color of lead wire  | Normal  | Abnormal              |                 |                       |                       |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
| WHT - RED   | 41.0 Ω ~ 49.0 Ω   | Open or short-circuit |                 |                       |                       |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
| RED - ORN   |   |                       |                 |                       |                       |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
| YLW - BRN   |   |                       |                 |                       |                       |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |
| BRN - BLU   |   |                       |                 |                       |                       |                 |                       |           |           |           |                 |                 |                 |                       |           |                 |                 |                 |           |   |   |             |           |   |   |             |                                     |

\* Reference value

Ⓟ:INNER PROTECTOR

Compressor and/or outdoor fan motor doesn't operate.

**A Check of outdoor unit** MU-A30WV

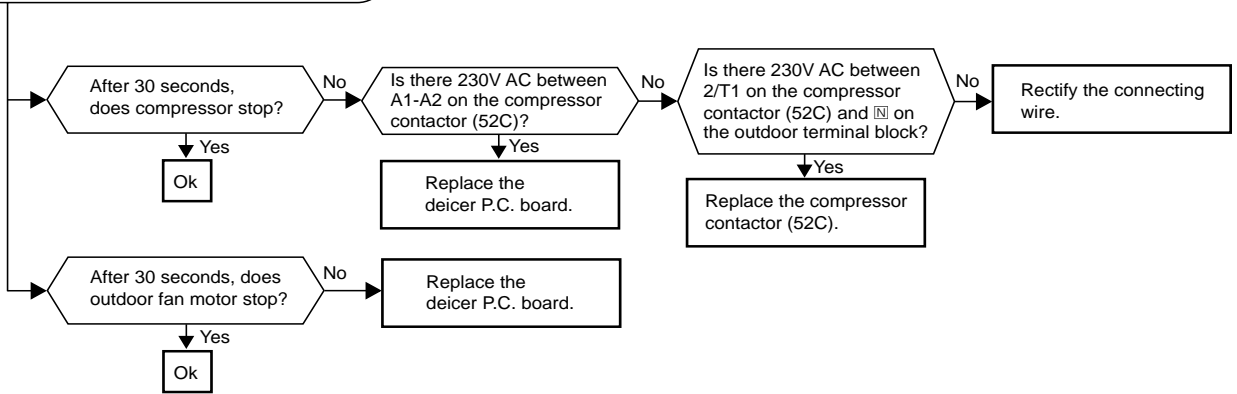


\* Refer to page 31.

**Compressor and/or outdoor fan motor doesn't stop.**

**B Check of outdoor unit MU-A30WV**

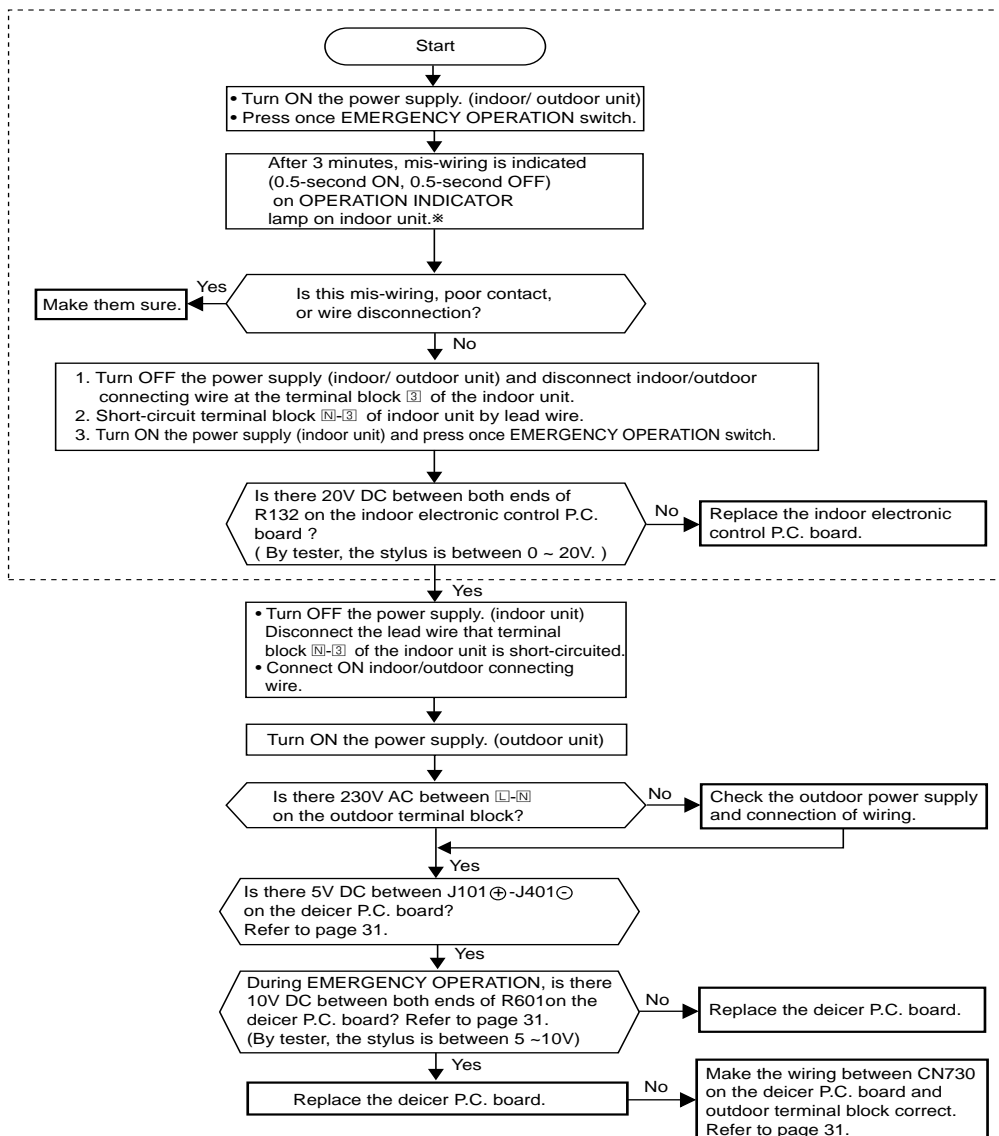
- ① Turn OFF the power supply.
- ② After 30 seconds, turn ON the power supply again.
- ③ Operate the unit in COOL mode by pressing the EMERGENCY OPERATION switch.
- ④ Operate the unit for 1 minute or more and stop it by pressing the EMERGENCY OPERATION switch again.



**When OPERATION INDICATOR lamp flashes ON and OFF in every 0.5-second. Outdoor unit doesn't operate.**

**C How to check mis-wiring MU-A30WV**

※ Short circuit of JPG and JPS on the indoor electronic control P.C. board enables self-check to be displayed in 3 seconds.



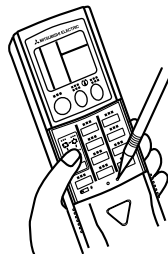
As for indoor unit, refer to service manual OB325.

When OPERATION INDICATOR lamp flashes 10-time.  
Cooling doesn't operate.

**D Check of LEV (Expansion valve)**

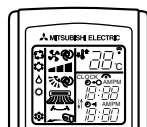
MU-A30WV

- ① During pressing OPERATION SELECT button on remote controller, press RESET button.
- ② First, release RESET button.  
(Confirm all displays of remote controller.)
- ③ Then release OPERATION SELECT button.



- ① During pressing OPERATION SELECT button on remote controller, press RESET button.
- ② First, release RESET button.

With remote controller set toward the indoor unit, press OPERATE/ STOP(ON/ OFF) button and confirm one beep tone.



- (Confirm all displays of remote controller.)
- ③ Then release OPERATION SELECT button.

LEV operates in full-opening direction.

Do you hear LEV "click, click....." ?  
Do you touch LEV and feel it vibrate?

Yes → Ok

No

Is LEV coil properly fixed to the body?

No

Properly fix LEV coil to the body.

Yes

Does the resistance of LEV coil have the characteristics?

Yes

Replace the deicer P.C. board.

No

Replace the LEV coil.

Characteristics of LEV coil

| LEV (CN724) | Resistance      |
|-------------|-----------------|
| WHT-RED     | 41.0 Ω ~ 49.0 Ω |
| RED-ORN     |                 |
| YLW-BRN     |                 |
| BRN-BLU     |                 |

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

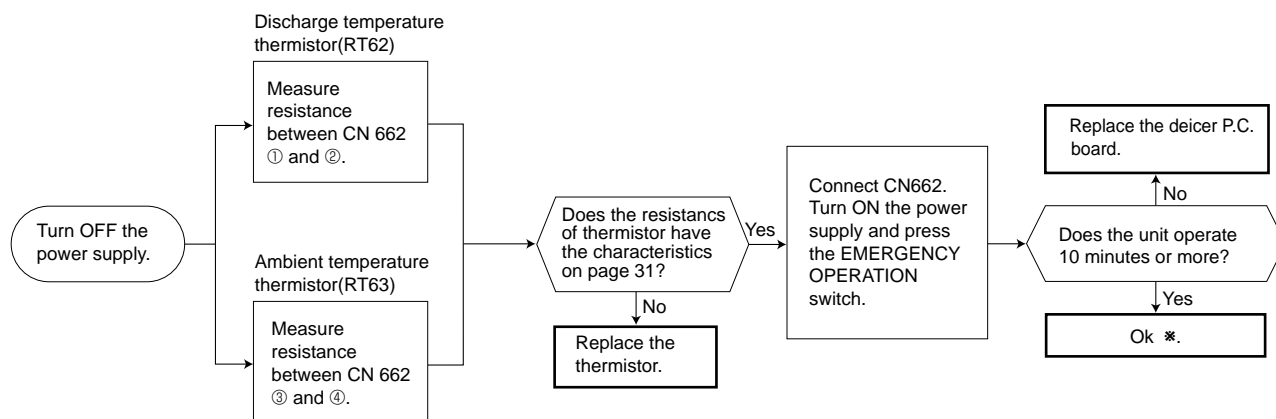
1. Turn OFF the power supply of the unit and turn ON again.
2. Press the RESET button on the remote controller.

When OPERATION INDICATOR lamp flashes 6-time.  
Thermistors in the outdoor unit are abnormal.

**E Check of outdoor thermistor**

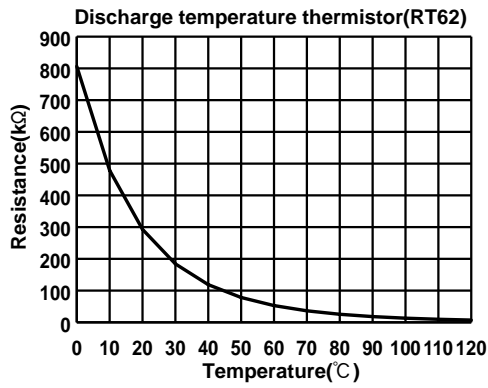
MU-A30WV

\* Disconnect the connectors CN662 from the deicer P.C. board.  
(Check the characteristics of each thermistor.)

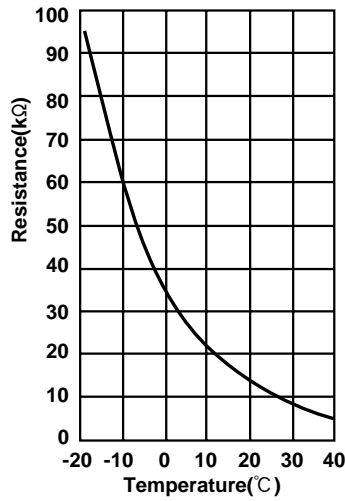


\* It is thought defective contact of the connector.

**MU-A30WV -E1**  
**Outdoor deicer P.C. board**



**Ambient temperature thermistor (RT63)**



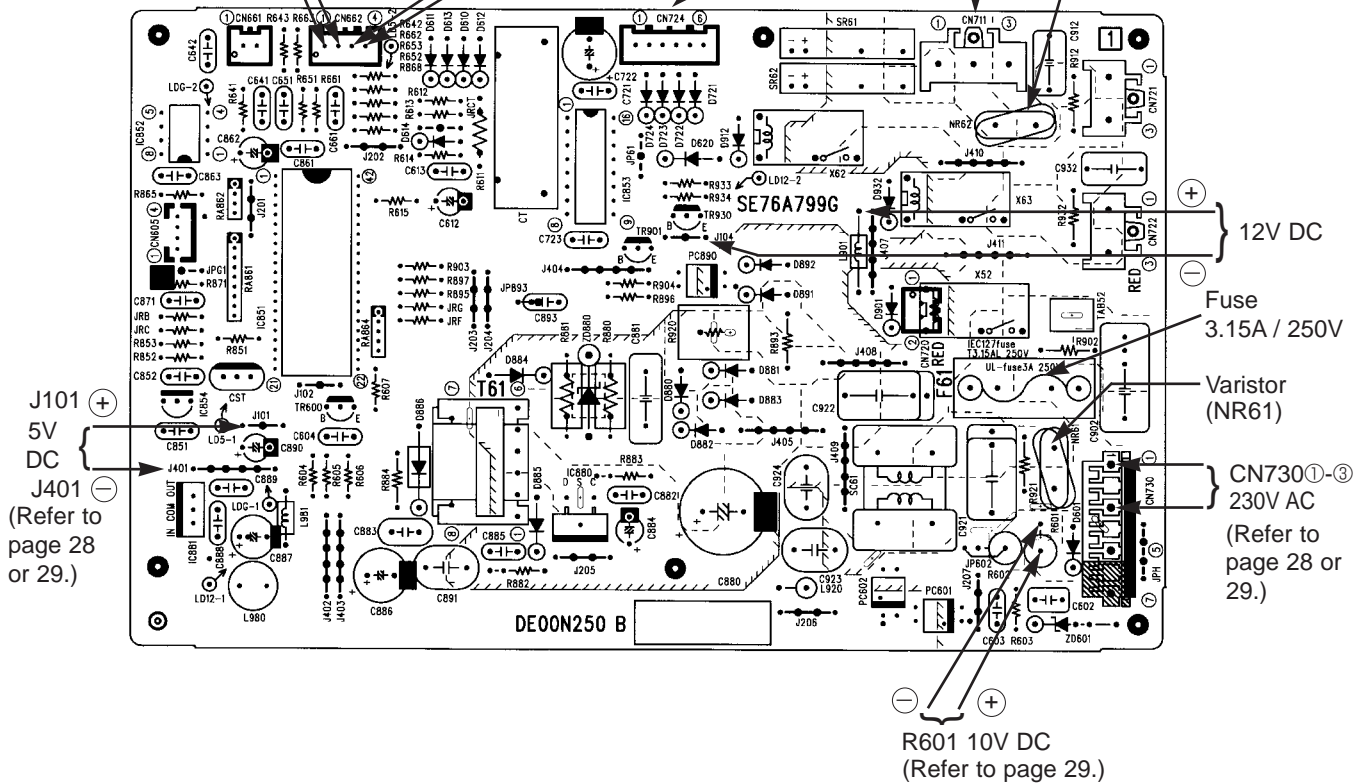
CN662 ①-②  
 Discharge temperature thermistor (RT62)  
 (Refer to page 30.)

CN662 ③-④  
 Ambient temperature thermistor (RT63)  
 (Refer to page 30.)

LEV connector (CN724)

Fan motor connector (CN711)

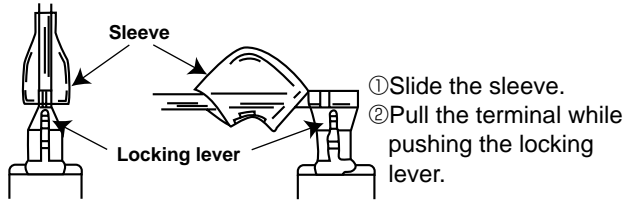
Varistor (NR62)



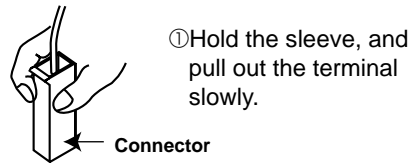
<"Terminal with lock mechanism" Detaching points>

In case of terminal with lock mechanism, detach the terminal as shown below.  
 There are two types ( Refer to (1) and (2)) of the terminal with lock mechanism.  
 The terminal with no lock mechanism can be removed by pulling it out.  
 Check the shape of the terminal and work.

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



(2) The terminal with this connector is a terminal with lock mechanism



**11-1. MU-A18WV -E1  
 OUTDOOR UNIT**

| OPERATING PROCEDURE   | PHOTOS   |
|---|--|
| <p><b>1. Removing the cabinet</b></p> <p>(1) Remove the screws of the cabinet.<br/>                     (2) Hold the down of the cabinet on the both side and remove the cabinet.</p> <p><b>Photo 2</b></p> <p>Screws of the cabinet</p>  | <p><b>Photo 1</b></p> <p>Service panel</p> <p>Screws of the cabinet</p>  |
| <p><b>2. Removing the electrical parts</b></p> <p>(1) Remove the service panel and the cabinet.<br/>                     (2) Remove the following parts.</p> <ul style="list-style-type: none"> <li>•Compressor capacitor (C1)</li> <li>•Outdoor fan capacitor (C2)</li> <li>•Terminal block (TB1, TB2)</li> <li>•Compressor contactor (52C)</li> </ul> | <p><b>Photo 3</b></p> <p>Outdoor fan capacitor(C2)</p> <p>Connector</p> <p>Compressor contactor(52C)</p> <p>Compressor capacitor(C1)</p> <p>Terminal blocks (TB1, TB2)</p> |



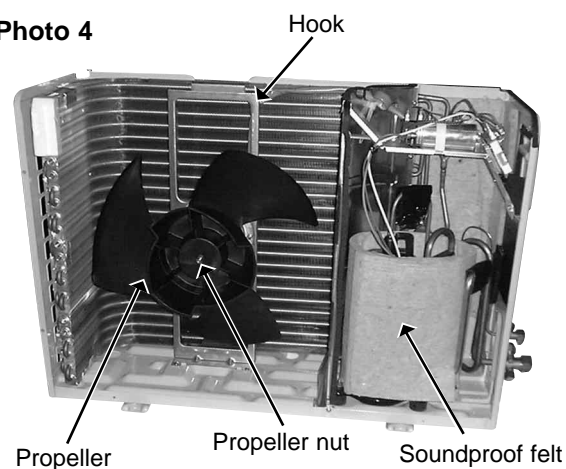
## OPERATING PROCEDURE

### 3. Removing the outdoor fan motor

- (1) Remove the cabinet. (Refer to 1.)
- (2) Disconnect the connector and remove the hooked lead wire from the fan motor.
- (3) Remove the propeller nut and remove the propeller.
- (4) Remove screws fixing the outdoor fan motor.
- (5) Remove the outdoor fan motor.

## PHOTOS

Photo 4



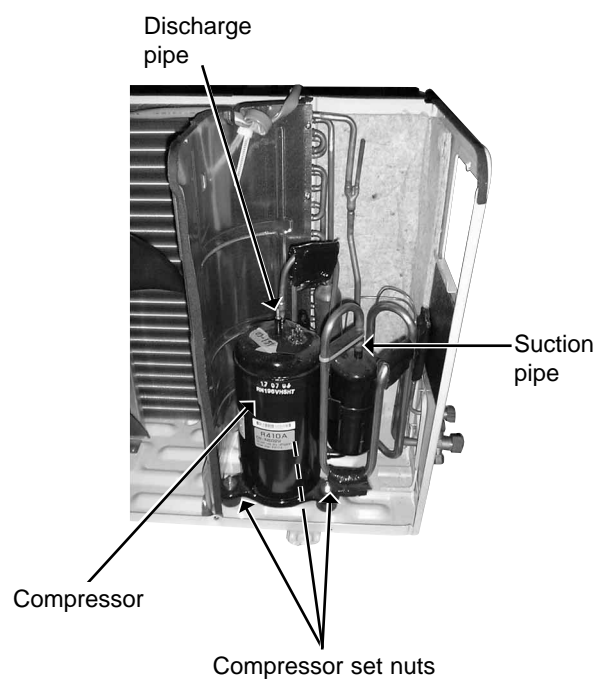
### 4. Removing the compressor

- (1) Remove the cabinet. (Refer to 1.)
- (2) Remove the relay panel.
- (3) Remove the soundproof felt.
- (4) Remove the terminal cover on the compressor.
- (5) Disconnect lead wires from the glass terminal of the compressor.
- (6) Recover gas from the refrigerant circuit.
- (7) Disconnect the welded part of the discharge pipe.
- (8) Disconnect the welded part of the suction pipe.
- (9) Remove nuts fixing the compressor.
- (10) Remove the compressor.

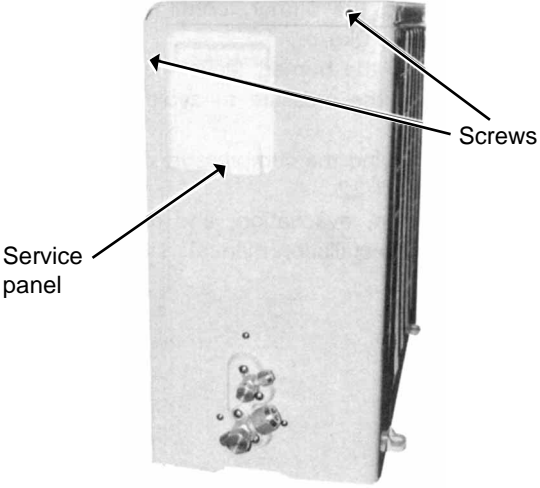
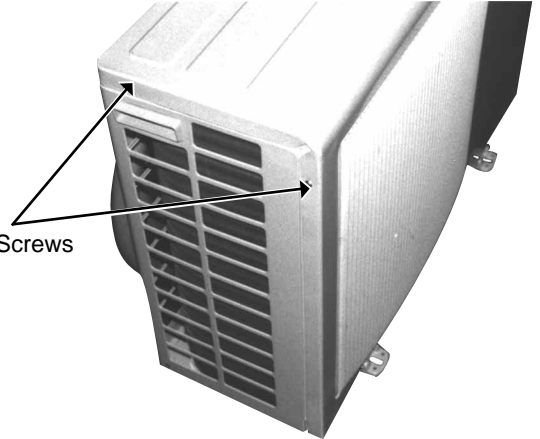
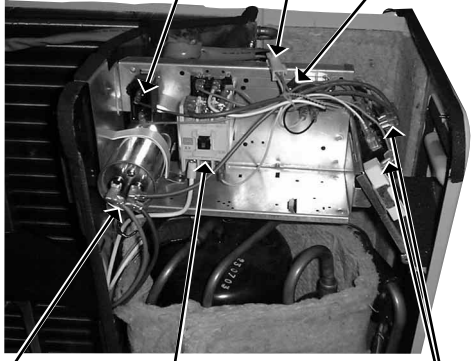
#### NOTE

- Before using a burner, reclaim gas from the pipes until the pressure gauge shows 0 kg/cm<sup>2</sup> (MPa).
- Use the burner under the condition that gas can be recovered even when the inner pressure rises by heat.

Photo 5



**11-2. MU-A24WV -E1**  
**OUTDOOR UNIT**

| OPERATING PROCEDURE  | PHOTOS   |
|--|--|
| <p><b>1. Removing the cabinet</b></p> <p>(1) Remove the screws of the cabinet.</p> <p>(2) Hold the bottom of the cabinet on the both side to remove the cabinet.</p>   | <p><b>Photo 1</b></p>  <p>Service panel</p> <p>Screws</p> <p><b>Photo 2</b></p>  <p>Screws</p>                 |
| <p><b>2. Removing the electrical parts</b></p> <p>(1) Remove the cabinet . (Refer to 1.)</p> <p>(2) Remove the following parts.</p> <ul style="list-style-type: none"> <li>•Compressor capacitor (C1)</li> <li>•Outdoor fan capacitor (C2)</li> <li>•Terminal block(TB1, TB2)</li> <li>•Relay (X1)</li> <li>•Compressor contactor (52C)</li> </ul> | <p><b>Photo 3</b></p>  <p>Outdoor fan capacitor (C2)</p> <p>Connector</p> <p>Relay (X1)</p> <p>Compressor capacitor (C1)</p> <p>Compressor contactor (52C)</p> <p>Terminal blocks (TB1, TB2)</p> |

## OPERATING PROCEDURE

### 3. Removing the outdoor fan motor

- (1) Remove the cabinet. (Refer to 1.)
- (2) Disconnect the connector and remove the hooked lead wire from the fan motor.
- (3) Remove the propeller nut and remove the propeller.
- (4) Remove the screws fixing the fan motor.
- (5) Remove the outdoor fan motor.

### 4. Removing the compressor

- (1) Remove the cabinet. (Refer to 1.)
- (2) Remove the soundproof felt.
- (3) Remove the terminal cover on the compressor.
- (4) Disconnect the lead wires from the glass terminal of the compressor.
- (5) Recover gas from the refrigerant circuit.
- (6) Disconnect the welded part of the discharge pipe.
- (7) Disconnect the welded part of the suction pipe.
- (8) Remove nuts fixing the compressor.
- (9) Remove the compressor.

#### NOTE

- Before using a burner, reclaim gas from the pipes until the pressure gauge shows 0 kg/cm<sup>2</sup> (0MPa).
- Use the burner under the condition that gas can be recovered even when the inner pressure rises by heat.

## PHOTOS

Photo 4

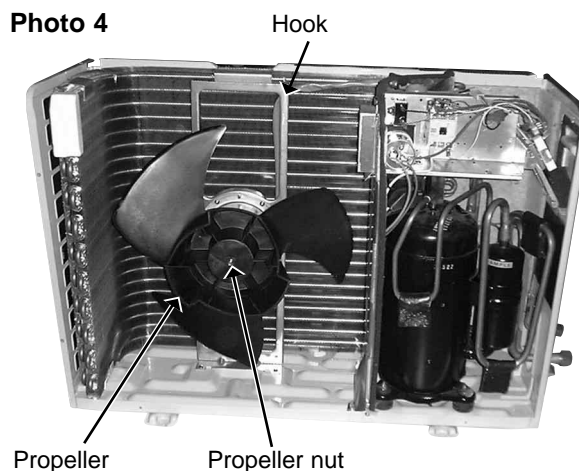
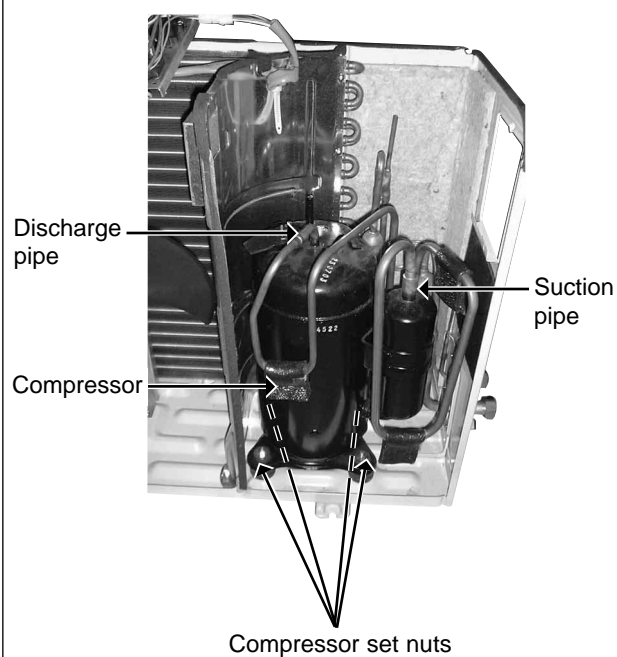
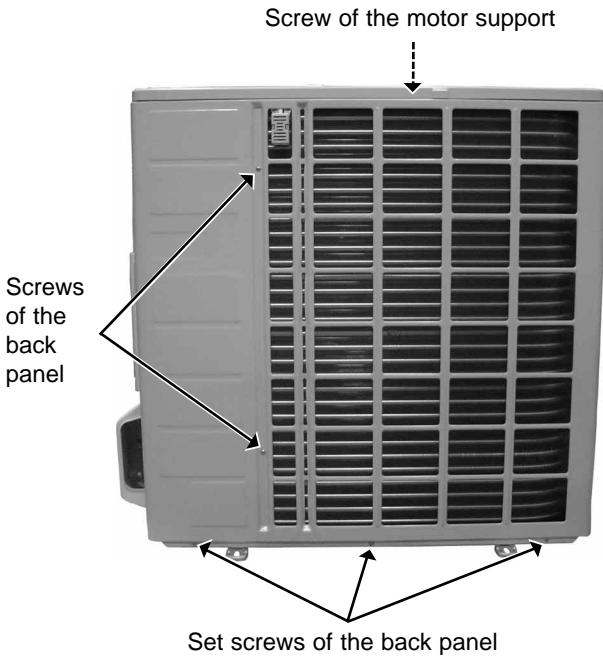
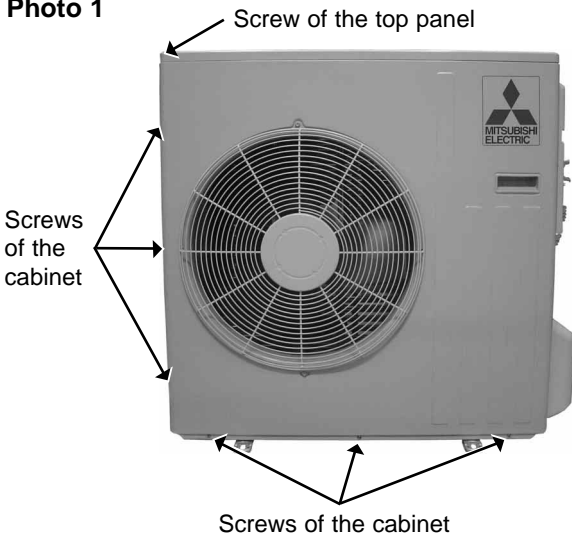
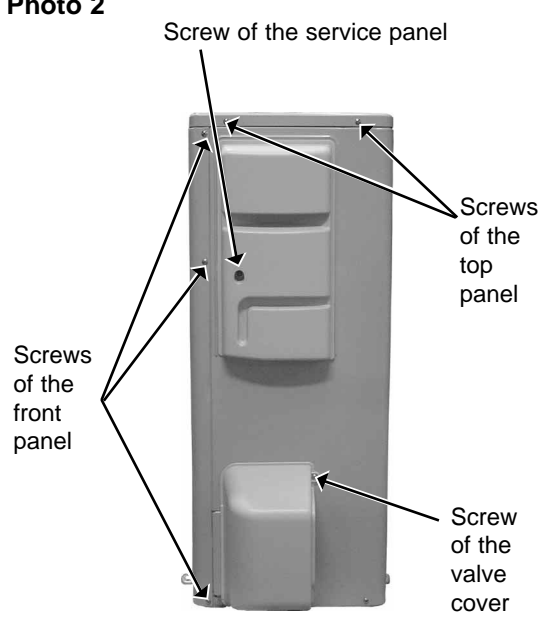
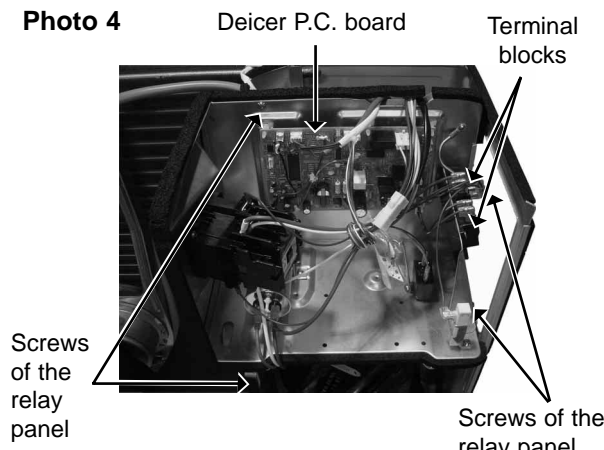


Photo 5



**11-3. MU-A30WV -E1**  
**OUTDOOR UNIT**

| OPERATING PROCEDURE  | PHOTOS  |
|--|---|
| <p><b>1. Removing the cabinet</b></p> <ol style="list-style-type: none"> <li>(1) Remove the screws of the service panel.</li> <li>(2) Remove the screws of the top panel.</li> <li>(3) Remove the screw of the valve cover.</li> <li>(4) Remove the service panel.</li> <li>(5) Remove the top panel.</li> <li>(6) Remove the valve cover.</li> <li>(7) Remove the screws of the front panel.</li> <li>(8) Remove the front panel.</li> <li>(9) Remove the screws of the back panel.</li> <li>(10) Remove the back panel.</li> </ol><br><p><b>Photo 3</b></p>  | <p><b>Photo 1</b></p> <br><p><b>Photo 2</b></p>  |
| <p><b>2. Removing the deicer P.C. board</b></p> <ol style="list-style-type: none"> <li>(1) Remove the service panel and the cabinet.</li> <li>(2) Disconnect all the connectors and the terminals on the deicer P.C. board.</li> <li>(3) Remove the deicer P.C. board.</li> </ol>  | <p><b>Photo 4</b></p>   |



**OPERATING PROCEDURE**

**3. Removing the propeller and the outdoor fan motor**

(1) Remove the cabinet. (Refer to 1.)

(2) Remove the propeller nut and the propeller.

**NOTE : Loose the propeller in the rotating direction for removal.**

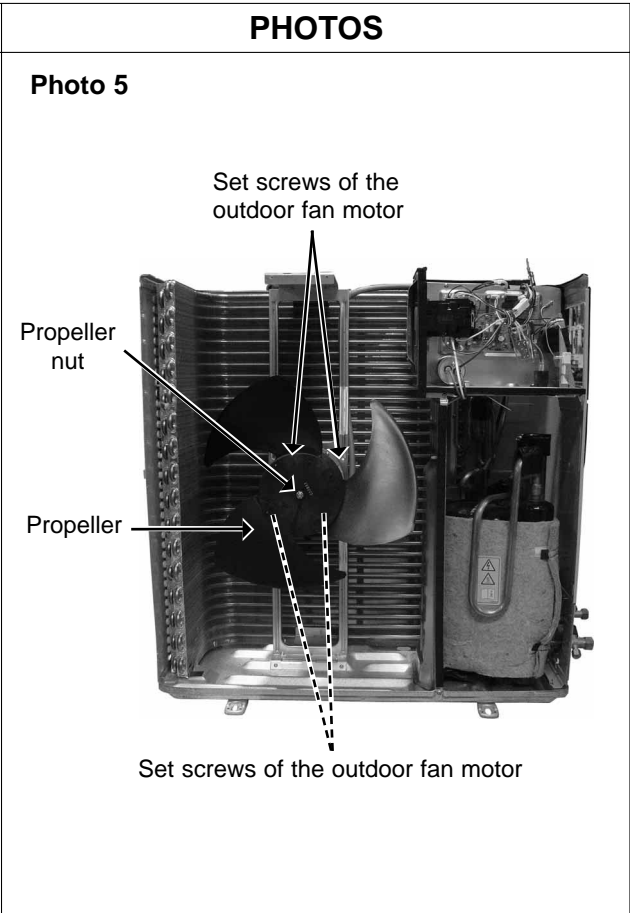
When attaching the propeller, align the mark on the propeller and the motor shaft cut section.

Set the propeller in position by using the cut on the shaft and the mark on the propeller.

(3) Remove the clamp of outdoor fan motor lead wire and disconnect the outdoor fan motor connector.

(4) Remove the screws fixing the outdoor fan motor.

(5) Remove the outdoor fan motor.



**4. Removing the compressor**

(1) Remove the cabinet. (Refer to 1.)

(2) Remove the relay panel.

(3) Remove the soundproof felt.

(4) Remove the terminal cover on the compressor.

(5) Disconnect lead wires from the compressor.

(6) Recover gas from the refrigerant circuit.

(7) Disconnect the welded part of the discharge pipe.

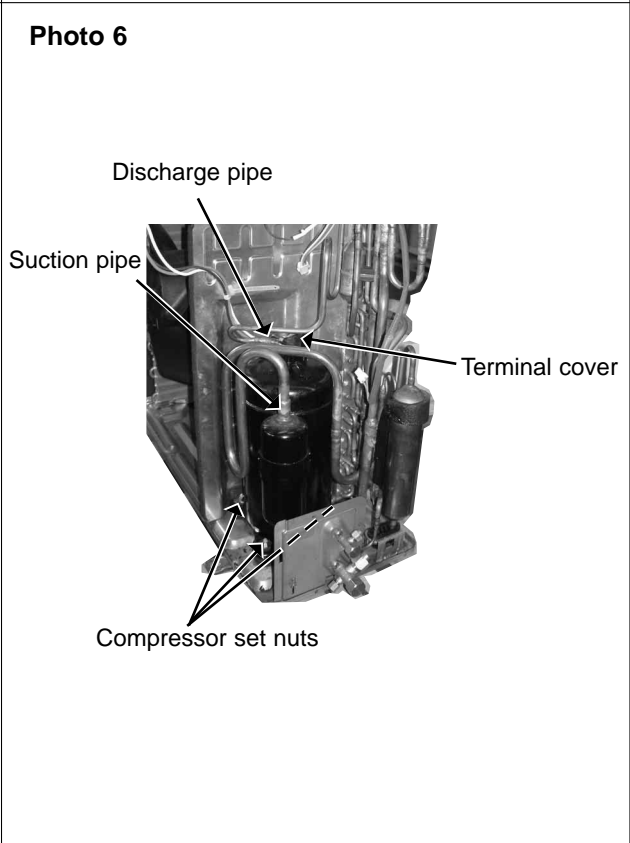
(8) Disconnect the welded part of the suction pipe.

(9) Remove nuts fixing the compressor.

(10) Remove the compressor.

**NOTE**

- Before using a burner, reclaim gas from the pipes until the pressure gauge shows 0 kg/cm<sup>2</sup> (0 MPa).
- Use the burner under the condition that gas can be recovered even when the inner pressure rises by heat.

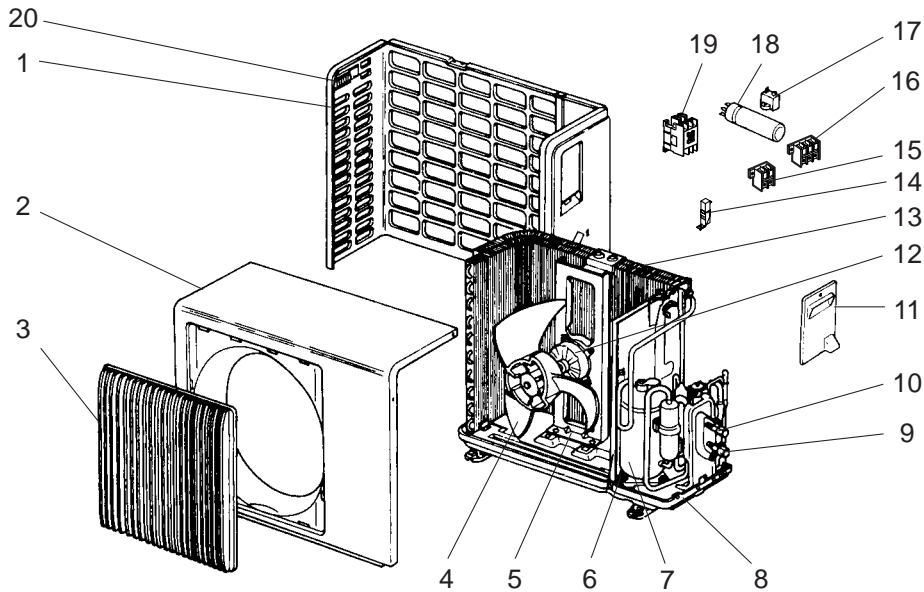


MU-A18WV -[E1]

MU-A24WV -[E1]

## 12-1. OUTDOOR UNIT

## STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS

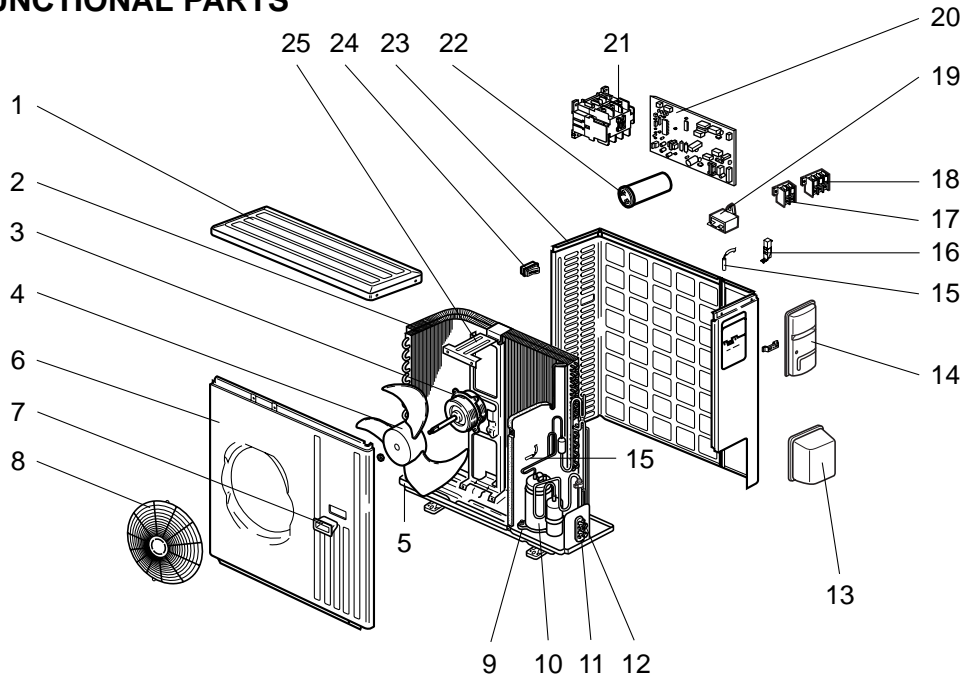


Part numbers that are circled are not shown in the illustration.

| No. | Part No.    | Part Name              | Symbol<br>in Wiring<br>Diagram | Q'ty/unit     |               | Remarks                           |
|-----|-------------|------------------------|--------------------------------|---------------|---------------|-----------------------------------|
|     |             |                        |                                | MU-A18WV-[E1] | MU-A24WV-[E1] |                                   |
| 1   | E02 817 233 | BACK PANEL             |                                | 1             | 1             |                                   |
| 2   | E02 817 232 | CABINET                |                                | 1             | 1             |                                   |
| 3   | E02 817 521 | GRILLE                 |                                | 1             | 1             |                                   |
| 4   | E02 141 501 | PROPELLER              |                                | 1             | 1             |                                   |
| 5   | E02 139 515 | MOTOR SUPPORT          |                                | 1             | 1             |                                   |
| 6   | E02 075 506 | COMPRESSOR RUBBER SET  |                                | 3             |               | 3RUBBERS/SET                      |
|     | E02 527 506 | COMPRESSOR RUBBER SET  |                                |               | 4             | 4RUBBERS/SET                      |
| 7   | E02 817 900 | COMPRESSOR             | MC                             | 1             |               | RN196VHSHT                        |
|     | E02 821 900 | COMPRESSOR             | MC                             |               | 1             | NN29VBAHT                         |
| 8   | E02 817 290 | BASE                   |                                | 1             |               |                                   |
|     | E02 818 290 | BASE                   |                                |               | 1             |                                   |
| 9   | E02 817 661 | STOP VALVE(GAS)        |                                | 1             |               | φ12.7                             |
|     | E02 818 661 | STOP VALVE(GAS)        |                                |               | 1             | φ15.88                            |
| 10  | E02 817 662 | STOP VALVE(LIQUID)     |                                | 1             | 1             | φ 6.35                            |
| 11  | E02 817 245 | SERVICE PANEL          |                                | 1             | 1             |                                   |
| 12  | E02 144 301 | OUTDOOR FAN MOTOR      | MF                             | 1             |               | RA6V50 - <input type="checkbox"/> |
|     | E02 818 301 | OUTDOOR FAN MOTOR      | MF                             |               | 1             | RA6V60 - <input type="checkbox"/> |
| 13  | E02 817 630 | OUTDOOR HEAT EXCHANGER |                                | 1             |               |                                   |
|     | E02 818 630 | OUTDOOR HEAT EXCHANGER |                                |               | 1             |                                   |
| 14  | E02 466 383 | SURGE ABSORBER         | DSAR                           | 1             | 1             |                                   |
| 15  | E02 818 374 | TERMINAL BLOCK         | TB2                            | 1             | 1             | 2P                                |
| 16  | E02 817 374 | TERMINAL BLOCK         | TB1                            | 1             | 1             | 3P                                |
| 17  | E02 138 351 | OUTDOOR FAN CAPACITOR  | C2                             | 1             | 1             | 3.0μF/440V AC                     |
| 18  | E02 817 353 | COMPRESSOR CAPACITOR   | C1                             | 1             |               | 40μF/440V AC                      |
|     | E02 818 353 | COMPRESSOR CAPACITOR   | C1                             |               | 1             | 55μF/440V AC                      |
| 19  | E07 012 340 | COMPRESSOR CONTACTOR   | 52C                            |               | 1             |                                   |
| 20  | E02 817 009 | HANDLE                 |                                | 1             | 1             |                                   |
| 21  | E02 412 936 | CAPILLARY TUBE         |                                | 1             |               | φ3.0×φ1.6×600                     |
|     | E02 076 936 | CAPILLARY TUBE         |                                |               | 1             | φ3.0×φ2.0×900                     |
|     | E02 820 936 | CAPILLARY TUBE         |                                | 1             |               | φ2.5×φ0.6×1000                    |
| 22  | E02 466 340 | COMPRESSOR CONTACTOR   | 52C                            | 1             |               |                                   |
| 23  | E02 466 340 | RELAY                  | X1                             |               | 1             |                                   |

MU-A30WV -E1

12-2. OUTDOOR UNIT STRUCTURAL PARTS, ELECTRICAL PARTS AND FUNCTIONAL PARTS



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

| No. | Part No.    | Part Name                  | Symbol in Wiring Diagram | Q'ty/unit    | Remarks            |
|-----|-------------|----------------------------|--------------------------|--------------|--------------------|
|     |             |                            |                          | MU-A30WV -E1 |                    |
| 1   | E02 819 297 | TOP PANEL                  |                          | 1            |                    |
| 2   | E02 819 630 | OUTDOOR HEAT EXCHANGER     |                          | 1            |                    |
| 3   | E02 819 301 | OUTDOOR FAN MOTOR          | MF                       | 1            | RA6V75- □□         |
| 4   | E02 214 501 | PROPELLER                  |                          | 1            |                    |
| 5   | E02 819 290 | BASE                       |                          | 1            |                    |
| 6   | E02 819 232 | CABINET                    |                          | 1            |                    |
| 7   | E02 819 009 | HANDLE                     |                          | 1            |                    |
| 8   | E02 819 521 | FAN GUARD                  |                          | 1            |                    |
| 9   | E02 527 506 | COMPRESSOR RUBBER SET      |                          | 4            | 4RUBBERS/SET       |
| 10  | E02 819 900 | COMPRESSOR                 | MC                       | 1            | NN37VAAHT          |
| 11  | E02 819 661 | STOP VALVE(GAS)            |                          | 1            | φ15.88             |
| 12  | E02 819 662 | STOP VALVE(LIQUID)         |                          | 1            | φ9.52              |
| 13  | E02 819 650 | VALVE COVER                |                          | 1            |                    |
| 14  | E02 819 245 | SERVICE PANEL              |                          | 1            |                    |
| 15  | E02 819 309 | THERMISTOR                 | RT62, RT63               | 1            | DISCHARGE, AMBIENT |
| 16  | E02 128 383 | SURGE ABSORBER             | DSAR                     | 1            |                    |
| 17  | E02 821 374 | TERMINAL BLOCK             | TB2                      | 1            | 2P                 |
| 18  | E02 817 374 | TERMINAL BLOCK             | TB1                      | 1            | 3P                 |
| 19  | E02 064 351 | OUTDOOR FAN CAPACITOR      | C2                       | 1            | 4.0μF/440V AC      |
| 20  | E02 819 451 | DEICER P.C. BOARD          |                          | 1            |                    |
| 21  | E02 819 340 | COMPRESSOR CONTACTOR       | 52C                      | 1            |                    |
| 22  | E02 819 353 | COMPRESSOR CAPACITOR       | C1                       | 1            | 60μF/440V AC       |
| 23  | E02 819 233 | BACK PANEL(OUT)            |                          | 1            |                    |
| 24  | E02 817 009 | HANDLE                     |                          | 1            |                    |
| 25  | E02 726 515 | MOTOR SUPPORT              |                          | 1            |                    |
| 26  | E02 822 640 | EXPANSION VALVE            |                          | 1            |                    |
| 27  | E02 819 493 | EXPANSION VALVE COIL       | LEV                      | 1            |                    |
| 28  | E02 127 382 | FUSE                       | F61                      | 1            | 250V/3.15A         |
| 29  | E02 336 385 | VARISTOR                   | NR61                     | 1            |                    |
| 30  | E02 214 386 | CZ SURGE ABSORBER          | CZ                       | 1            |                    |
| 31  | E02 819 936 | CAPILLARY TUBE(TAPER PIPE) |                          | 1            | φ3.6xφ2.4x50       |
| 32  | E02 262 936 | CAPILLARY TUBE             |                          | 1            | φ4.0xφ2.4x200      |
| 33  | E02 527 936 | CAPILLARY TUBE             |                          | 1            | φ4.0xφ2.4x100      |



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