

ML-FW Type motor valve is a single seat, two-way valve with pressure balancing structure for applications requiring high pressure differential and small leakage.

### ■ FEATURES

- Pressure balancing structure for high pressure differential.
- Less water hammer when opening/closing valve.

### ■ SPECIFICATIONS

|                          |                                                                                                                  |
|--------------------------|------------------------------------------------------------------------------------------------------------------|
| Model name               | ML-FW                                                                                                            |
| Code name                | MLFW-BD                                                                                                          |
| Applicable fluid         | Water, hot water, oils* <sup>1</sup> & gases* <sup>2</sup>                                                       |
| Rated pressure           | 1.0MPa                                                                                                           |
| Fluid temperature        | Max. 80°C* <sup>2</sup>                                                                                          |
| Ambient temperature      | -10~60°C                                                                                                         |
| Plug characteristics     | ON-OFF and Linear                                                                                                |
| Leakage allowance        | Less than 0.01% of rated flow                                                                                    |
| Protection               | Splash-proof, for indoor installation* <sup>3</sup> . (Equivalent to IP54 when waterproof cable ground is used.) |
| End connection           | Flanged JIS 10KFF                                                                                                |
| Materials                | Body(Cast iron), Trim(Cast bronze)* <sup>4</sup> .                                                               |
| Valve body pressure test | Hydraulic 1.5MPa                                                                                                 |

\* 1. If there is any local regulation for fuel oils or diesel oil, confirm the body material according to the regulation.

\* 2. Applicable temperature Max. 180°C for steam is available upon your request.

\* 3. Rain cover for outdoor installation is available upon your request.

\* 4. Products with Teflon disc are available.

\* 5. Refer to Pages 264 and 265 for specifications and circuit, etc.

### ■ DIMENSIONS

(mm)

| Size    | L   | G   | H   | Mass(kg) |
|---------|-----|-----|-----|----------|
| 32(1¼") | 160 | 67  | 437 | 16       |
| 40(1½") | 180 | 72  | 456 | 18       |
| 50(2")  | 200 | 82  | 465 | 21       |
| 65(2½") | 270 | 117 | 471 | 36       |
| 80(3")  | 290 | 140 | 493 | 42       |
| 100(4") | 350 | 159 | 512 | 65       |
| 125(5") | 360 | 190 | 543 | 95       |
| 150(6") | 410 | 214 | 596 | 120      |

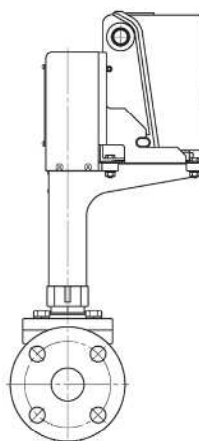
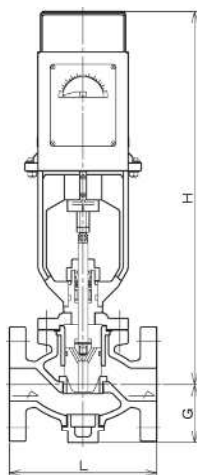
Flange code JIS 10KFF

### ■ TABLE OF Cv VALUE AND APPLICABLE DIFFERENTIAL PRESSURE LIMIT

| Size    | Cv value | Differential pressure limit(MPa) |
|---------|----------|----------------------------------|
| 32(1¼") | 16       | 1.0 (1.0)                        |
| 40(1½") | 25       | 1.0 (1.0)                        |
| 50(2")  | 40       | 1.0 (1.0)                        |
| 65(2½") | 67       | 1.0 (0.7)                        |
| 80(3")  | 102      | 1.0 (0.5)                        |
| 100(4") | 160      | 1.0 (0.5)                        |
| 125(5") | 250      | 0.5 (0.25)                       |
| 150(6") | 360      | 0.35(0.15)                       |

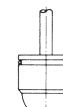
\* Figures in ( ) are for those with Teflon disc.

### ■ CONSTRUCTION

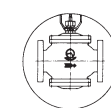
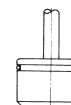


#### Valve shape

Linear plug



ON-OFF plug



Size 65~150mm

DATA/ML Type Motor Valve



Motor

【MOTOR】

FEATURES

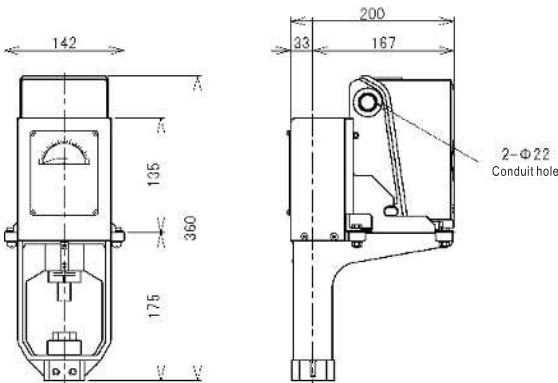
- Four types of motor available for meeting requirements of different input methods.
- Low power consumption, energy saving.
- Buffer in drive unit protect motor and disc from excessive stress.
- Needle and scale plate allow easy reading of valve opening degree.

SPECIFICATIONS

| Control type              | ON-OFF type                                                                                         | Proportional control type |               |                  |
|---------------------------|-----------------------------------------------------------------------------------------------------|---------------------------|---------------|------------------|
|                           |                                                                                                     | A motor                   | B motor *1.   | C motor          |
| Input signal              | Relay contact                                                                                       | Potentiometer(135Ω/0.5W)  | Relay contact | DC 4~20mA        |
| Rated voltage             | AC24V 50/60Hz*3.                                                                                    |                           |               | AC24V 50/60Hz*4. |
| Rated capacity            | 9VA                                                                                                 |                           |               |                  |
| Timing (at non-load)      | 50Hz:69sec, 60Hz:58sec                                                                              |                           |               |                  |
| Withstanding voltage test | AC 500V/min                                                                                         |                           |               |                  |
| Insulation resistance     | 5MΩ or more                                                                                         |                           |               |                  |
| Ambient temperature       | -10~60°C                                                                                            |                           |               |                  |
| Protection                | Splash-proof, for indoor installation*5. (Equivalent to IP54 when waterproof cable ground is used.) |                           |               |                  |

\* 1. The proportional B motor is equipped with feedback potential meter (135Ω/0.5W).  
\* 2. Motor that is equipped with one of the following components are available:  
①Auxiliary limit switch unit (with 4 switches, non-voltage/C contacts); or  
②Auxiliary potential meter for opening display (1kΩ, max. DC5V)  
\* 3. AC 100V or 200V for ON-OFF or B motor are available upon your request.  
\* 4. Proportional C motor with rated voltage AC85~264V free power supply is also available.  
\* 5. Rain cover for outdoor installation is available upon your request.

FIGURATION



MOTOR VALVES

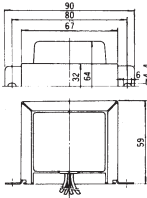


Transformer

【TRANSFORMER】 (accessory, not embedded)

The rated voltage of motor of ML motor valve is AC24V.  
Use the accessorial transformer to reduce general commercial voltage to rated voltage.

FIGURATION

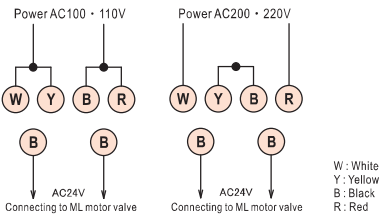


SPECIFICATIONS

|                           |                                                                                  |
|---------------------------|----------------------------------------------------------------------------------|
| Primary side voltage      | AC100/200V 50/60Hz, AC110/220V 60Hz*<br>Common use by method for wire connection |
| Secondary side voltage    | 25V(at non-load)                                                                 |
| Apparent power            | 25VA                                                                             |
| Withstanding voltage test | 1500V/min                                                                        |
| Insulation resistance     | 100MΩ or more                                                                    |
| Coil connection           | Coil connection Lead wires at both sides                                         |
| Mounting                  | Mount on a panel board, etc. with M4 size screws or nuts.                        |
| Mass                      | 0.95kg                                                                           |

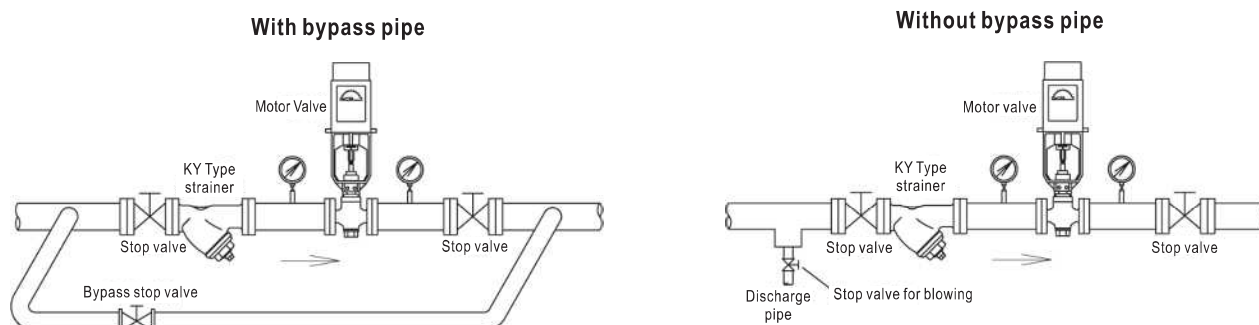
\* Other voltages for primary side are available.

WIRING DIAGRAM



# DATA/ML Type Motor Valve

Fig.1 Piping example



## ■ Selection and Installation

1. Install strainer on the primary side of motor valve (see Fig.1).
2. Install a bypass pipe (with stop valve) between the primary and secondary sides of motor valve if the operation of equipment cannot be stopped (see Fig.1).  
If you do not intend to install bypass pipe, install blowing stop valve, which is branched from the main pipe, right before the stop valve on the primary side of motor valve, to allow flushing.
3. Install the valve upright to horizontal pipe or on vertical pipe (see Fig.2). For installation on vertical pipe and when the size is 80mm above, leave sufficient space for maintenance purpose.
4. As for application with 1 piece of operational switch, in the case 2 or more motor valves are connected through parallel connection, install external relay and the operation should be performed through the contact of relay.
5. The ambient temperature should be within the range of applicable temperature described in specifications.  
In addition, avoid using motor valve in environment where there is excessive humidity, dust, corrosive gas or explosive gas.
6. Install steam trap on piping if the valve is used for steam.
7. When the fluid is liquid, the pressure in pipe may increase due to thermal expansion caused by ambient temperature when valve is closed. In such cases, it is recommended to install relief valve to protect machine (see Fig. 3).
8. Make sure the arrow mark on motor valve match with the direction of flow of fluid.
9. Leave some space for disassembling and maintenance.
10. Fix and support piping properly to prevent motor valve from being damaged due to weight of piping, excessively large stress, bending force or vibration.
11. Discharge drain or apply thermal insulation if there is risk of freezing.

Fig.2 Direction of installation of ML motor valve

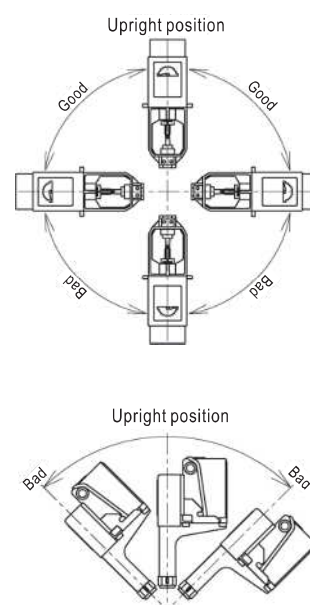
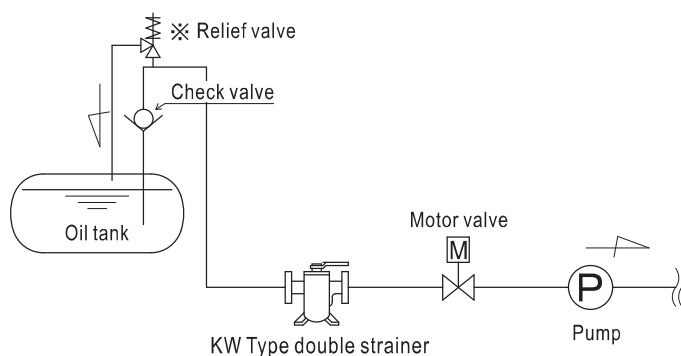


Fig.3 Relief valve installation



※Install relief valve if pressure rise due to thermal expansion or other factors is anticipated.