



Motorized 2-port ball valve for steam with relay

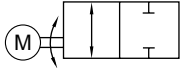
# MSB1D/MSB1DF Series

● Port size: Rc3/8 to Rc2



- EXA
- FWD
- HNB/G
- USB/G
- FAB/G
- FGB/G
- FVB
- FWB/G
- FHB
- FLB
- AB
- AG
- AP/AD
- APK/ADK
- DryAir
- EX-XPLNprf
- XPLNprf
- HVB/HVL
- S $\diamond$ B/NAB
- LAD/NAD
- Water-Rela
- NP/NAP/NVP
- SNP
- CHB/G
- MXB/G**
- Other valves
- SWD/MWD
- DustColl
- CVE/CVSE
- CCH/CPE/D
- LifeSci
- Gas-Combust
- Auto-Water
- Outdoor
- SpecFld
- Custom
- Ending

## JIS symbol



## Common specifications

1 MPa  $\approx$  145.0 psi, 1 MPa = 10 bar

| Item                                |    | MSB1D (standard bore)/MSB1DF (full bore)   |          |           |          |                   |           |           |                 |  |
|-------------------------------------|----|--|----------|-----------|----------|-------------------|-----------|-----------|-----------------|--|
| Working fluid                       |    | Steam, water   |          |           |          |                   |           |           |                 |  |
| Working pressure MPa                |    | 0 to 0.6 (refer to the working pressure in the individual specifications.)                         |          |           |          |                   |           |           |                 |  |
| Proof pressure (water pressure) MPa |    | 2.0 ( $\approx$ 290 psi, 20 bar)   |          |           |          |                   |           |           |                 |  |
| Ambient temperature $^{\circ}$ C    |    | -10 (14 $^{\circ}$ F) to 50 (122 $^{\circ}$ F)   |          |           |          |                   |           |           |                 |  |
| Ambient humidity %                  |    | 95 or less   |          |           |          |                   |           |           |                 |  |
| Mounting orientation                |    | From vertical direction with the actuator on the top to horizontal direction. (Refer to page 784.) |          |           |          |                   |           |           |                 |  |
| Pressurization direction            |    | Arbitrary  |          |           |          |                   |           |           |                 |  |
| Degree of protection                |    | IPX3 "rainproof" (standard and option T only)  |          |           |          |                   |           |           |                 |  |
| Electrical specifications           |    | MSB1D-10   | MSB1D-15 | MSB1D-20  | MSB1D-25 | MSB1D-32          | MSB1D-40  | MSB1D-50  |                 |  |
|                                     |    | MSB1DF-15  |          | MSB1DF-20 |          | MSB1DF-25         | MSB1DF-32 | MSB1DF-40 |                 |  |
| Rated voltage *1                    |    | 100 VAC(50/60 Hz), 200 VAC(50/60 Hz)   |          |           |          |                   |           |           |                 |  |
| Apparent power                      | VA | Operating  | 100 VAC  |           |          | 6.0/6.8(50/60 Hz) |           |           | 14/16(50/60 Hz) |  |
|                                     |    |  | 200 VAC  |           |          | 6.6/7.2(50/60 Hz) |           |           | 14/16(50/60 Hz) |  |
|                                     |    | Starting   | 100 VAC  |           |          | 6.0/6.8(50/60 Hz) |           |           | 14/16(50/60 Hz) |  |
|                                     |    |  | 200 VAC  |           |          | 6.6/7.2(50/60 Hz) |           |           | 14/16(50/60 Hz) |  |
| Power consumption W                 |    | 8  |          |           | 16       |                   |           |           |                 |  |

## MSB1D (standard bore) individual specifications

1 MPa  $\approx$  145.0 psi, 1 MPa = 10 bar,  $^{\circ}$ F = 9/5 $^{\circ}$ C + 32

| Item                           |                      | MSB1D-10 <sup>2</sup>   | MSB1D-15 | MSB1D-20 | MSB1D-25 | MSB1D-32          | MSB1D-40          | MSB1D-50 |  |
|--------------------------------|----------------------|---|----------|----------|----------|-------------------|-------------------|----------|--|
| Port size                      |                      | Rc3/8   | Rc1/2    | Rc3/4    | Rc1      | Rc1 $\frac{1}{4}$ | Rc1 $\frac{1}{2}$ | Rc2      |  |
| Orifice size mm                |                      | 10  | 10       | 15       | 20       | 25                | 32                | 40       |  |
| Cv                             |                      | 10  | 6        | 16       | 29       | 50                | 98                | 125      |  |
| Working pressure MPa           |                      | 0 ( $\approx$ 0 psi, 0 bar) to 0.6 ( $\approx$ 87 psi, 6 bar) |          |          |          |                   |                   | 0 to 0.5 |  |
| Fluid temperature $^{\circ}$ C |                      | 0 (32 $^{\circ}$ F) to 164 (327.2 $^{\circ}$ F) (no freezing) |          |          |          |                   |                   | 0 to 158 |  |
| Response time sec              | 50 Hz                | 10  |          |          | 13       |                   |                   |          |  |
|                                | 60 Hz                | 8   |          |          | 11       |                   |                   |          |  |
| Frequency *3                   |                      | 1 time/min. or less   |          |          |          |                   |                   |          |  |
| Weight kg                      | Bronze body          | 1.3   | 1.3      | 1.5      | 1.6      | 2.6               | 3.1               | 3.9      |  |
|                                | Stainless steel body | 1.5   | 1.5      | 1.7      | 1.8      | 2.8               | 3.3               | 4.1      |  |

## MSB1DF (full bore) individual specifications

1 MPa  $\approx$  145.0 psi, 1 MPa = 10 bar,  $^{\circ}$ F = 9/5 $^{\circ}$ C + 32

| Item                           |       | MSB1DF-15   | MSB1DF-20 | MSB1DF-25 | MSB1DF-32 | MSB1DF-40 |
|--------------------------------|-------|---|-----------|-----------|-----------|-----------|
| Port size                      |       | Rc1/2   | Rc3/4     | Rc1       | Rc1 1/4   | Rc1 1/2   |
| Orifice size mm                |       | 15  | 20        | 25        | 32        | 40        |
| Cv                             |       | 23  | 51        | 66        | 114       | 176       |
| Working pressure MPa           |       | 0 ( $\approx$ 0 psi, 0 bar) to 0.6 ( $\approx$ 87 psi, 6 bar) |           |           |           | 0 to 0.5  |
| Fluid temperature $^{\circ}$ C |       | 0 (32 $^{\circ}$ F) to 164 (327.2 $^{\circ}$ F) (no freezing) |           |           |           | 0 to 158  |
| Response time sec              | 50 Hz | 10  |           | 13        |           |           |
|                                | 60 Hz | 8   |           | 11        |           |           |
| Frequency *3                   |       | 1 time/min. or less   |           |           |           |           |
| Weight kg                      |       | 1.5   | 1.6       | 2.6       | 3.1       | 3.9       |

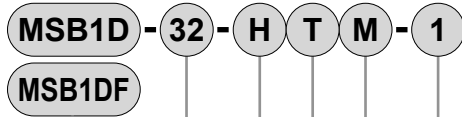
\*1 : Use the product within  $\pm$ 10% of the rated voltage.

\*2 : MSB1D-10 is a full bore.

\*3 : Be sure to observe the specified frequency of use.

\*4 : Consult with CKD for specifications not indicated above.

## How to order



Model No.

**A** Port size

**B** Body/seat material

**C** Other options

\*1

\*2

**D** Manual override

\*3

**E** Voltage

| Code                        | Description   | Model No.                                   |                                |   |   |
|-----------------------------|---|---|--------------------------------|---|---|
|                             |   | MSB1D<br>(Standard bore)                    | MSB1DF<br>(Full bore)          |   |   |
| <b>A Port size</b>          |   |   |                                |   |   |
| 10                          | Rc3/8   | *4  | ●                              |   |   |
| 15                          | Rc1/2   |   | ●                              |   |   |
| 20                          | Rc3/4   |   | ●                              |   |   |
| 25                          | Rc1   |   | ●                              |   |   |
| 32                          | Rc1 <sup>1</sup> / <sub>4</sub>                                   |   | ●                              |   |   |
| 40                          | Rc1 <sup>1</sup> / <sub>2</sub>                                   |   | ●                              |   |   |
| 50                          | Rc2   |   | ●                              |   |   |
| <b>B Body/seat material</b> |   |   |                                |   |   |
| H                           | Body - bronze/seat - reinforced PTFE                              |   | ●                              |   |   |
| W                           | Stainless steel - reinforced PTFE                                 |   | ●                              |   |   |
| <b>C Other options</b>      |   |   |                                |   |   |
|                             | Description   | Applications                                | Remarks                        |   |   |
| Blank                       | 5-conductor cable 0.5 mm <sup>2</sup><br>(with output lead wire)  | -   | -                              | ● | ● |
| T                           | 3-conductor cable 0.75 mm <sup>2</sup><br>(without signal output) | When output lead wire is not required       | 3-conductor cabtyre cable used | ● | ● |
| B                           | Round terminal box (5 terminals)                                  | When the lead wires are different in length | -                              | ● | ● |
| L                           | Round terminal box with lamp<br>(Lit when open, 3 terminals)      | Fully open confirmation by lamp             | Lit only when fully open       | ● | ● |
| R                           | Round terminal box with lamp<br>(Lit when closed, 3 terminals)    | Fully closed confirmation by lamp           | Lit only when fully closed     | ● | ● |
| <b>D Manual override</b>    |   |   |                                |   |   |
| Blank                       | None  |   |                                | ● | ● |
| M                           | Manual override   |   |                                | ● | ● |
| <b>E Voltage</b>            |   |   |                                |   |   |
| 1                           | 100 VAC(50/60 Hz)   |   |                                | ● | ● |
| 2                           | 200 VAC(50/60 Hz)   |   |                                | ● | ● |

\*1 : When selecting both without signal output (Item **C**T) and round terminal box (Item **C**B) as options, designate Item **C** as TB. A 3-terminal round terminal box will be provided.

\*2 : Combination of Item **C** LR/TL/TR/BL/BR is not available.

\*3 : When the manual override (Item **D**M) is selected, available port sizes are 32, 40 and 50 for MSB1D. For MSB1DF, available port sizes are 25, 32 and 40. Manual override is provided as standard with other port size.

\*4 : When port size is 10, the valve is full bore but the model No. is MSB1D.

[Example of model No.]

### MSB1D-32-HTM-2

Model: MSB1D (standard bore)

- A** Port size : Rc1<sup>1</sup>/<sub>4</sub>
- B** Body/seat material : Body - bronze/seat - reinforced PTFE
- C** Other options : 3-conductor cable (without output lead wire)
- D** Manual override : Selected
- E** Voltage : 200 VAC (50/60 Hz)

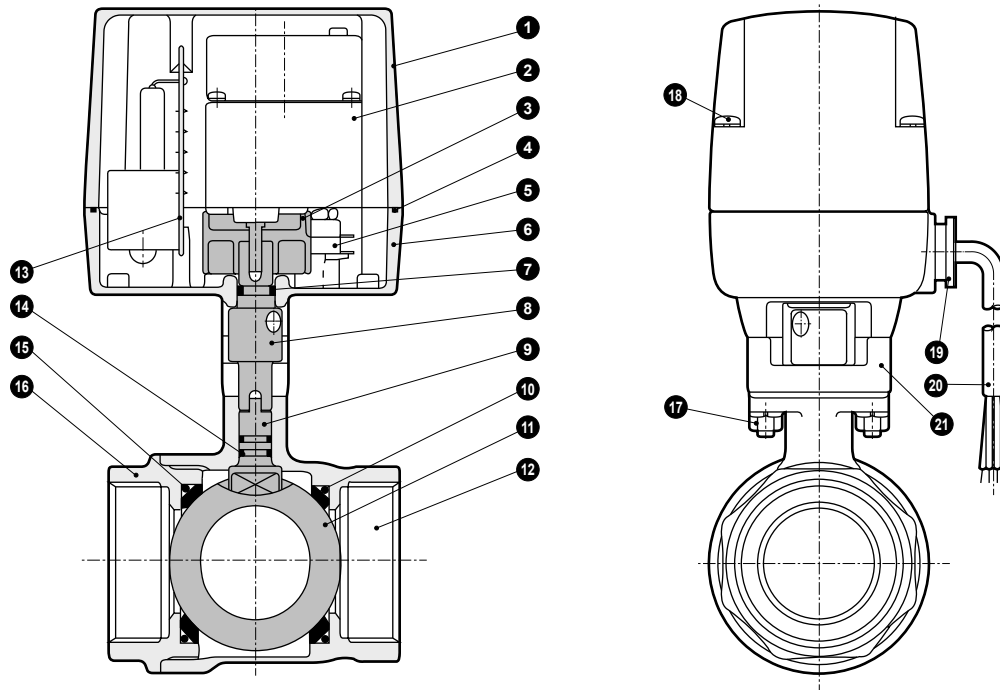
|              |
|--------------|
| EXA          |
| FWD          |
| HNB/G        |
| USB/G        |
| FAB/G        |
| FGB/G        |
| FVB          |
| FWB/G        |
| FHB          |
| FLB          |
| AB           |
| AG           |
| AP/AD        |
| APK/ADK      |
| DryAir       |
| EX-XPLNprf   |
| XPLNprf      |
| HVB/HVL      |
| S ⚡ B/NAB    |
| LAD/NAD      |
| Water-Rela   |
| NP/NAP/NVP   |
| SNP          |
| CHB/G        |
| <b>MXB/G</b> |
| Other valves |
| SWD/MWD      |
| DustColl     |
| CVE/CVSE     |
| CCH/CPE/D    |
| LifeSci      |
| Gas-Combus   |
| Auto-Water   |
| Outdoor      |
| SpecFld      |
| Custom       |
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EXA  
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FHB  
FLB  
AB  
AG  
AP/  
AD  
APK/  
ADK  
DryAir  
EX-  
XPLNprf  
XPLNprf  
HVB/  
HVL  
S ◇ B/  
NAB  
LAD/  
NAD  
Water-  
Rela  
NP/NAP/  
NVP  
SNP  
CHB/G  
MXB/G  
Other  
valves  
SWD/  
MWD  
DustColl  
CVE/  
CVSE  
CCH/  
CPE/D  
LifeSci  
Gas-  
Combus  
Auto-  
Water  
Outdoor  
SpecFld  
Custom  
Ending

## Internal structure and parts list

● MSB1D/MSB1DF



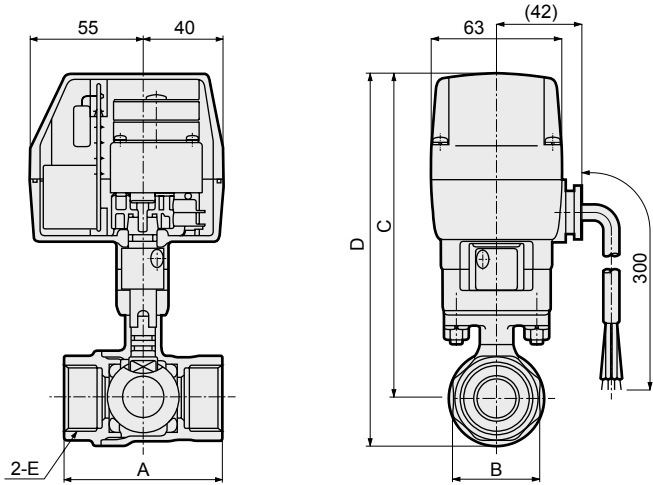
| No. | Part name         | Material   | No. | Part name                       | Material   |
|-----|-------------------|--|-----|---------------------------------|--|
| 1   | Bonnet            | ADC12 Aluminum die-casting                       | 11  | Valve ball                      | C3771(SUS304) Copper alloy *1 (stainless steel)                |
| 2   | Geared motor      | -  | 12  | Body                            | CAC408/CAC407 (SCS13) Bronze casting (stainless steel casting) |
| 3   | Cam               | PA Polyamide resin                               | 13  | P plate assembly                | PF Phenolic resin  |
| 4   | Gasket            | NBR Nitrile rubber                               | 14  | O-ring                          | FKM Fluoro rubber  |
| 5   | Micro switch      | -  | 15  | O-ring                          | FKM Fluoro rubber  |
| 6   | Adaptor           | ZDC2 Zinc alloy die-casting                      | 16  | Cap                             | CAC408/CAC407 (SCS13) Bronze casting (stainless steel casting) |
| 7   | O-ring            | NBR Nitrile rubber                               | 17  | Hexagon nut                     | SWCH Carbon steel wire for cold rolling                        |
| 8   | Intermediate bush | SUS303 Stainless steel                           | 18  | Phillips pan head machine screw | SWCH Carbon steel wire for cold rolling                        |
| 9   | Shaft             | SUS303(SUS304) Stainless steel (stainless steel) | 19  | Bushing                         | PF Phenolic resin  |
| 10  | Ball seat         | Reinforced PTFE                                  | 20  | Cabtyre cable                   | 0.5 mm <sup>2</sup> , 5-conductor                              |
|     |                   |  | 21  | Yoke                            | PM-HH Phenolic resin   |

Materials shown in ( ) are for stainless steel body.

\*1 : Valve ball is hard chrome plated copper alloy.

## Dimensions

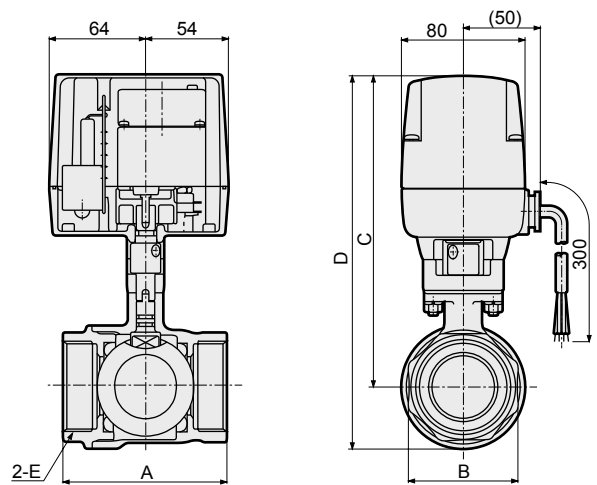
- MSB1D-10/15/20/25-\*
- MSB1DF-15/20-H



Cable length 300 mm

| Model No.   | A      | B      | C     | D            | E     |
|-------------|--------|--------|-------|--------------|-------|
| MSB1D-10-*  | 50(56) | 24(28) | 146.5 | 161.5(162.5) | Rc3/8 |
| MSB1D-15-*  | 56     | 28     | 146.5 | 161.5(162.5) | Rc1/2 |
| MSB1D-20-*  | 65     | 34     | 152.5 | 172(173)     | Rc3/4 |
| MSB1D-25-*  | 76     | 41     | 155.5 | 178.5(179.5) | Rc1   |
| MSB1DF-15-H | 65     | 28     | 152.5 | 172          | Rc1/2 |
| MSB1DF-20-H | 71     | 34     | 155.5 | 178.5        | Rc3/4 |

- MSB1D-32/40/50-\*
- MSB1DF-25/32/40-H



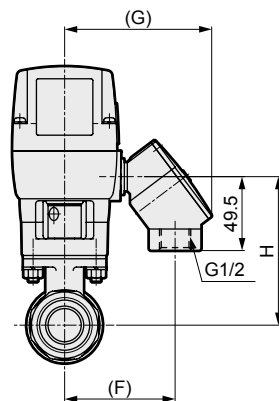
Cable length 300 mm

| Model No.   | A   | B  | C   | D            | E    |
|-------------|-----|----|-----|--------------|------|
| MSB1D-32-*  | 84  | 50 | 188 | 215.5(217.5) | Rc1¼ |
| MSB1D-40-*  | 94  | 57 | 194 | 227.5(229.5) | Rc1½ |
| MSB1D-50-*  | 108 | 70 | 203 | 242.5(243.5) | Rc2  |
| MSB1DF-25-H | 84  | 41 | 188 | 215.5        | Rc1  |
| MSB1DF-32-H | 95  | 50 | 194 | 227.5        | Rc1¼ |
| MSB1DF-40-H | 107 | 57 | 203 | 242.5        | Rc1½ |

\*1 : Dimensions are the same even with manual override "M".

## Optional dimensions

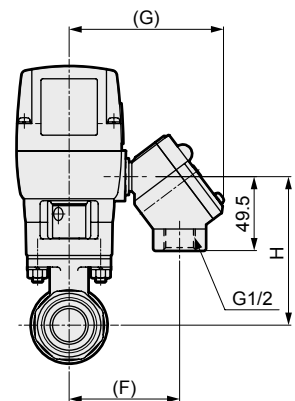
- With round terminal box  
MSB1D-**bore size**-\***B**  
MSB1DF-**bore size**-H**B**



| Bore size |        | F  | G   | H     |
|-----------|--------|----|-----|-------|
| MSB1D     | MSB1DF |    |     |       |
| 10        | -      | 74 | 98  | 80.5  |
| 15        | -      | 74 | 98  | 80.5  |
| 20        | 15     | 74 | 98  | 86.5  |
| 25        | 20     | 74 | 98  | 89.5  |
| 32        | 25     | 82 | 106 | 99.5  |
| 40        | 32     | 82 | 106 | 105.5 |
| 50        | 40     | 82 | 106 | 114.5 |

\*1 : Dimensions of the large bore size (32 to 50) are the same even with manual override "M".

- Round terminal box with lamp  
MSB1D-**bore size**-\***L**  
MSB1DF-**bore size**-H**L**



| Bore size |        | F  | G   | H     |
|-----------|--------|----|-----|-------|
| MSB1D     | MSB1DF |    |     |       |
| 10        | -      | 74 | 102 | 80.5  |
| 15        | -      | 74 | 102 | 80.5  |
| 20        | 15     | 74 | 102 | 86.5  |
| 25        | 20     | 74 | 102 | 89.5  |
| 32        | 25     | 82 | 110 | 99.5  |
| 40        | 32     | 82 | 110 | 105.5 |
| 50        | 40     | 82 | 110 | 114.5 |

\*1 : Dimensions of the large bore size (32 to 50) are the same even with manual override "M".

|              |
|--------------|
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| HNB/G        |
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| FWB/G        |
| FHB          |
| FLB          |
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| AG           |
| AP/AD        |
| APK/ADK      |
| DryAir       |
| EX-XPLNprf   |
| XPLNprf      |
| HVB/HVL      |
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