MXB/MXG

(Motor valve)
Motor driven ball valve 2, 3 port valve

■ For water, hot water, air, oil, corrosive fluid and steam

Overview

Water-hammering is eliminated with CKD original ball opening/closing structure.
This valve is suitable for water and hot water control, oil and steam application. Even with its small size, the flow rate is large and the pressure loss is small.
The outstanding sealing properties and durability enable use in a variety of applications.

Features

High-quality seal
A back-up O ring ensures a high-quality seal.

No burn damage in motor-locked state
Impedance and thermal protection ensure that the motor does not burn even if the ball locks.

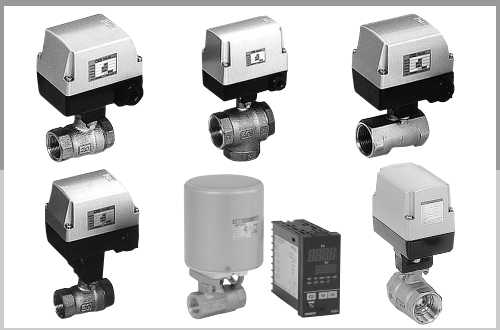
Forward/reverse rotation operation
(Except for the MHB/G4 series)

No limits to pressurizing direction
(Except for 3-way valves)

Signal detection and manual override are provided.

Class IPX3 "Rainproof" actuator protection.
(For standard and options T and K only. Note that the MH$^{B}_{G}$4 and MHBP series are excluded.)

A proportional control motor valve is also available.



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⚠ Read the precautions in the introduction and on page 554 carefully before starting use.

Series variation

Electric driven ball valve 2, 3 port valve
(motor valve)

Applications/purposes	Series		Bore shape		Fluid				Port size (Upper: Nominal, Lower: port size)							Page
					Water, hot water	Air	Oil	Steam	10A	15A	20A	25A	32A	40A	50A	
									3/8	1/2	3/4	1	1 1/4	1 1/2	2	
General control	Standard type 	MXB1	Standard bore		●	●	●		●*1	●	●	●	●	●	●	558
		MXB1F	Full bore		●	●	●			●	●	●	●	●		558
		MXG1	Standard bore		●	●	●			●	●	●	●	●	●	562
Compact type	Miniature type 	MHB3	Reduced bore		●	●			●	●						636
		MHG3			●	●			●	●						636
		MHB4			●	●	●		●	●	●					602
		MHG4			●	●	●		●	●	●					602
Parallel operation with other valve is available Valve open/closed at ON/OFF contact	With relay 	MXB1D	Standard bore		●	●	●		●*1	●	●	●	●	●	●	570
		MXB1DF	Full bore		●	●	●			●	●	●	●	●		570
		MXG1D	Standard bore		●	●	●			●	●	●	●	●	●	574
For corrosive fluid	High corrosion proof 	MXB1-C	Reduced bore		●	●	●			●	●	●	●	●	●	566
		MXB1D-C			●	●	●			●	●	●	●	●	●	578
For pure water and cleaning	Oil-prohibited specifications 	MXB1-N	Standard bore		●	●			●	●	●	●	●	●	●	582
		MXG1-N			●	●				●	●	●	●	●	●	586
		MXB1D-N			●	●			●	●	●	●	●	●	●	582
		MXG1D-N			●	●				●	●	●	●	●	●	586
For steam and hot water	For steam 	MSB1	Standard bore		●			●	●*1	●	●	●	●	●	●	590
		MSB1F	Full bore		●			●		●	●	●	●	●		590
		MSB1D	Standard bore		●			●	●*1	●	●	●	●	●	●	594
		MSB1DF	Full bore		●			●		●	●	●	●	●		594
Accurate flow control	Proportional control type 	MXBC	Standard bore		●				●*1	●	●	●				598
		MXGC			●					●	●	●				598
		MHBP			●			●		●	●	●				608
Corresponding to service interruption	Self reset type	MHBR	Standard bore		●					●	●	●				636
Acid water/alkaline water control	For ionized water	MHG4-20X913	Reduced bore		●						●					823

*1: The model belongs to the standard bore, but this is a full bore structure.
*2: For details on differences by bore shape, refer to the orifice diameter and dimensions on each page.

Safety precautions

Read this section carefully before starting use

Motor valve (MXB1.MXB1F.MXG1.MXB1D.MXB1DF.MXG1D.MSB1.MSB1F.MSB1D.MSB1DF.MHB4.MHG4.MHBP)

Design & Selection

CAUTION

1 Fluid viscosity

Generally, the valve can be used with a fluid viscosity of up to 500mm^2/s. However, the properties may differ according to the fluid type, so consult with CKD.

2 Fluid properties

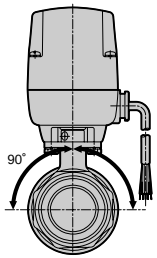
Iron rust and dirt, etc., in the fluid can cause operation faults or leaks.

Installation, piping & wiring

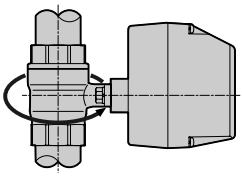
CAUTION

1 Installation

(1) Always hold the body when handling or installing the product. Do not pull on the lead wires or drop the product.
(2) Install the valve within the range of the vertical state with the motor section facing upward to the horizontal state.
(3) Avoid installment outdoors.



<For horizontal piping>



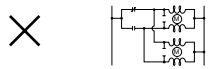
<For vertical piping>

2 Piping

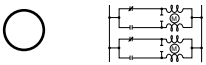
(1) Fix the product when tightening or reinstalling the piping. When piping to the body side, fix the body, and when piping to the cap side, fix the cap.
(2) Fix and support the pipes so that the weight and vibration of the pipes are not directly applied on the valves.
(3) The pressurizing direction, limited for the 3-way valve, must be observed.
(4) When using heat insulating material, do not cover the actuator section.

3 Wiring

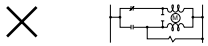
(1) Connection is shown in the connection diagram on page 557 or is attached to the bonnet. Follow the connection diagram.
(2) When using the DC specifications, use a capacitance power supply.
An all wave or half-wave rectified bridge will be affected by ripples, so always use a stabilized power supply.
(3) Avoid using a changeover switch with red and black lead wires as the signals could be input simultaneously.
(4) Parallel operation of motor valve (Excluding MXB1D, MXB1DF, MXG1D, MSB1D, MSB1DF)
Do not operate more than 1 motor valve in parallel with the same contact. Operation faults will occur.



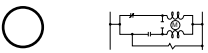
In parallel operation, insert a separate contact for each motor valve.



(5) Parallel operation with other valves, etc. (excluding MXB1D, MXB1DF, MXG1D, MSB1D, MSB1DF).
Do not operate in parallel with other products having different resistance, such as a solenoid valve or contact protection element, using the same contact. Operation faults will occur.



When operating in parallel, insert a contact between the motor valve and solenoid valve, etc.



(6) When not using the signal detection wire, cut the exposed core of the yellow and green wires, and insulate the wire ends.
(7) When using the signal detection wire with a large capacity load or extremely small load, etc., use within the specifications of the microswitch.

Series	Maker name, type
MXB1/MXB1F.MXG1/MXB1D/MXB1DF/ MXG1D/MSB1/MSB1F/MSB1D/MSB1DF	OMRON SS-5
MHB4/MHG4	Matsushita Electric Works AH1680
MHBP	OMRON SS-5GL

(8) When using in an area where the valve could be subject to water drip, take measures to protect the lead connection section.
(9) When wiring a terminal box with indicator light, do not pull off the cover with force.
The crimp terminals inside could bend, or indicator lighting faults or insulation faults could occur.

When Using

⚠ CAUTION

1 Cycle rate

Failure to observe the cycle rate could lead to incorrect operations or a shortened service life.

2 Signal switchover

Switch the valve signal so that the next signal is input after the valve operation ends.

If operation is stopped or if the signal is switched midway, operation faults could occur and the service life could be shortened.

3 Manual operation methods

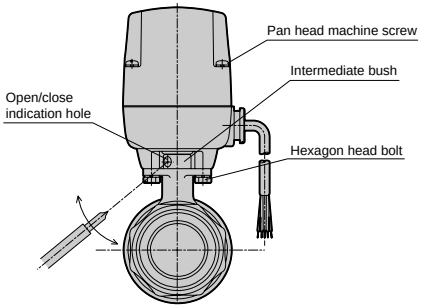
This applies to the MXB1, MXB1F, MXB1D, MXB1DF, MSB1, MSB1F, MSB1D and MSB1DF. For the large bore size (standard bore: Rc1 1/4 to Rc2, full bore: Rc1 to Rc1 1/2), this applies to the manual override "M" type.

<Manual operation methods>

- For the small bore size (standard bore: Rc3/8 to Rc1, full bore: Rc1/2 to Rc3/4), insert a cross-recessed screwdriver, etc., in the hole on the intermediate bush of the motor valve, and slowly rotate it.
- For the large bore size (standard bore: Rc1 1/4 to Rc2, full bore: Rc1 to Rc11/2) manual override "M" type, insert a cross-recessed screwdriver, etc., under the connection key at the intermediate bush, and slowly rotate it.
  Rotate for about 20 seconds between closed and open and vice versa.
- For both the large and small bore sizes, rotating in the counterclockwise direction looking at the valve from above will lead to "opening", and rotating in the clockwise direction will lead to "closing".

<Precautions for manual operation>

- Always turn the power OFF before starting.
- Do not apply sudden force when rotating the cross-recessed screwdriver as the gears could be damaged.
- For the large bore size (standard bore: Rc1 1/4 to Rc2, full bore: Rc1 to Rc1 1/2) manual override "M" type, always return the clutch after manual operation, and make sure that the clutch is accurately connected before starting operation.
- Manual operations must be used only in emergencies.



Maintenance

⚠ WARNING

1 Never remove the bonnet

Touching the electric parts inside could lead to electric shocks.

2 Do not disassemble.

If a fault occurs, do not disassemble the product. Contact your nearest dealer or CKD Sales Office.

Investigation of the cause is no longer possible if the product is disassembled.

Safety precautions

Read this section carefully before starting use

Proportional control motor valve (MXBC, MXGC)

Design & Selection

CAUTION

1 Power supply

Select the power supply allowing for a sufficient capacity. (50W class is recommended.) Do not use a full wave rectified bridge as it may be affected by the ripple or zero voltage, etc. Instead, use a safety power supply.

2 Control methods

Use a controller or temperature regulator having a PID function, and keep the energizing frequency to 10% or less. When using for ON/OFF control or control with a high energizing frequency, the service life will be shortened, and the thermal protector could activate due to motor heating. This will temporarily shut off the motor power and will prevent correct operations. Lowering the energizing frequency will allow the service life of the entire device to be lengthened, so carefully consider the control methods and energizing frequency.

3 Service life

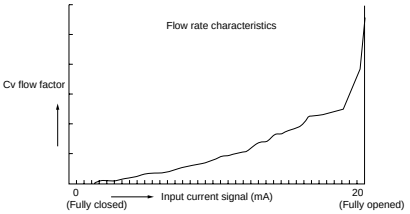
The product's service life will differ greatly according to the operation. However, as a guide, the life is approx. 12 to 18 months when used with an energizing frequency of 10% for eight hours a day.

4 Input signal and Cv flow factor

The ball valve opening degree position and input signal are initially adjusted as follow.

Input signal	Ball valve open/close position
0mA	Fully closed position
20mA	Fully opened position

As shown below, the Cv flow factor variation amount in one step will increase in the areas where the Cv flow factor is small and near large flow rates. Thus, avoid using in those ranges, and obtain stability by controlling so that the expression maximum Cv flow factor x 1/2 = required flow rate is satisfied.



The angle at which the ball valve starts to open and the Cv flow factor in respect to the input signal will differ according to the product.

5 Noise

When using outdoor piping, use resin piping to prevent damage from lightning. A stepping motor is used, so noise will be generated at the power line. Thus, use noise filters on devices susceptible to noise, such as computers connected to the common power supply.

6 Actual control

(1) Temperature control: When controlling the heating or cooling temperature, attention must be paid to the balance of the applied and lost heat. If this heat is not balanced, the control will not stabilize, and vibration could occur causing a large error. Design the device while taking the balance into consideration so that the required fluid flow rate and temperature (°C) in respect to the target temperature are clear.

(2) Constant flow rate control: The resolution of the ball valve is 2.5% or less. Thus, it may not be possible to attain the required flow rate if more precise resolution is required. When using at high pressures, note that this resolution limit may be particularly apparent.

7 Fluid viscosity

The valve can be used with a fluid viscosity of up to 500mm^2/s. However, the properties may differ according to the fluid type, so consult with CKD.

<<Miscellaneous>> Refer to page 554 for the precautions regarding the motor valve.

Installation, piping & wiring

WARNING

1 Wiring

Refer to page 557.

<<Miscellaneous>> Refer to page 554 for the precautions regarding the motor valve.

When Using

CAUTION

<<Miscellaneous>> Refer to page 554 for the precautions regarding the motor valve.

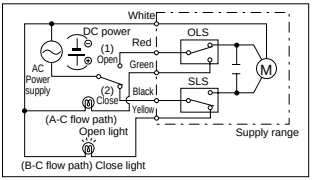
Maintenance

WARNING

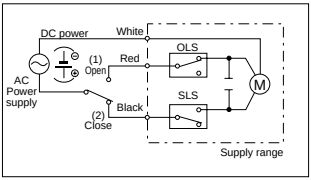
<<Miscellaneous>> Refer to page 554 for the precautions regarding the motor valve.

Motor valve wiring diagram (MX[B/G]1, MXB1F, MSB1, MSB1F)

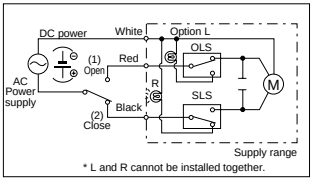
● Standard type



● Option: T (3-conductor cable)



● Option: L, R (with light)

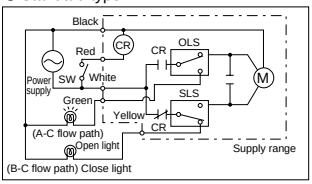


* L and R cannot be installed together.

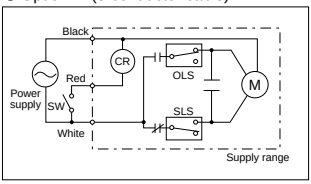
2 port valve	
Opening operation	(1): White - red After opening, the microswitch (OLS) functions and stops the motor.
Closing operation	(2): White - black After closing, the microswitch (SLS) functions and stops the motor.
3 port valve	
A-C flow path	(1): White - red After the A-C flow path operates, the microswitch (OLS) functions and stops the motor.
B-C flow path	(2): White - black After the B-C flow path operates, the microswitch (SLS) functions and stops the motor.

Motor valve with relay wiring diagram (MX[B/G]1D, MXB1DF, MSB1D, MSB1DF)

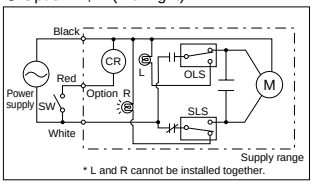
● Standard type



● Option: T (3-conductor cable)



● Option: L, R (with light)

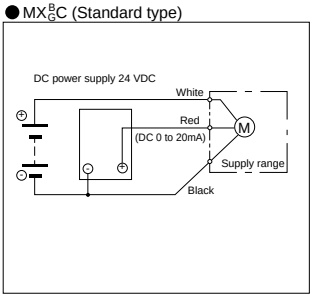


* L and R cannot be installed together.

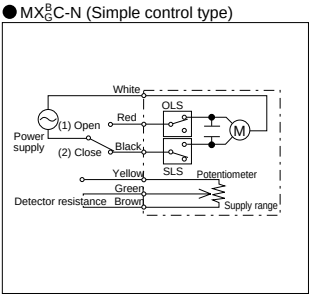
2 port valve	
Opening operation	SW:ON (Black-white,red) After opening, the microswitch (OLS) functions and stops the motor.
Closing operation	SW:OFF (Black-white) After closing, the microswitch (SLS) functions and stops the motor.
3 port valve	
A-C flow path	SW:ON (Black-white,red) After the A-C flow path operates, the microswitch (OLS) functions and stops the motor.
B-C flow path	SW:OFF (Black-white) After the B-C flow path operates, the microswitch (SLS) functions and stops the motor.

Proportional control motor valve wiring diagram (MX[B/G]C)

● MX[B/G]C (Standard type)



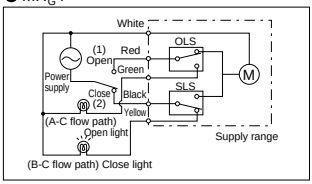
● MX[B/G]C-N (Simple control type)



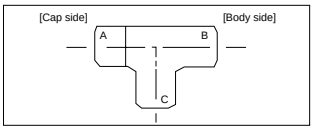
2 port valve			
Opening operation	20mA	(1): Brown - green	Detector resistance 2.4 to 3.2kΩ
Closing operation	0 (4) mA	(2): Brown - green	Detector resistance 0.1 to 0.9kΩ
3 port valve			
A-C flow path	20mA	(1): Brown - green	Detector resistance 2.4 to 3.2kΩ
B-C flow path	0 (4) mA	(2): Brown - green	Detector resistance 0.1 to 0.9kΩ

Motor valve wiring diagram (MH[B/G]4)

● MH[B/G]4



2 port valve	
Opening operation	(1): White - red
Closing operation	(2): White - black
3 port valve	
A-C flow path	(1): White - red
B-C flow path	(2): White - black



Electric driven ball valve 2 port valve
(motor valve)

MXB1/MXB1F Series

● Port size: Rc3/8 to Rc2

CAD

Common specifications

Descriptions		MXB1 (standard bore)/MXB1F (full bore)
Working fluid		Water, hot water, air, oil (500mm^2/s or less)
Working pressure range	MPa	0 to 1.0 (refer to working pressure range on individual specifications.)
Withstanding pressure (water)	MPa	2.0
Fluid temperature	℃	0 to 80 (no freezing)
Ambient temperature	℃	-10 to 50
Ambient humidity	%	95 or less
Valve seat leakage	cm^3/min	0 (under 1.0MPa or 0.5MPa (only for port size Rc2) water pressure)
Installation attitude		Limited from vertical to horizontal installation placing motor top.
Pressurization direction		Random
Protection grade		Rainproof IPX3 (standard and option T only)

Electrical specifications			MXB1-10	MXB1-15	MXB1-20	MXB1-25	MXB1-32	MXB1-40	MXB1-50
			MXB1F-15		MXB1F-20		MXB1F-25	MXB1F-32	MXB1F-40
Rated voltage		Note 1	100 VAC (50/60Hz), 200 VAC (50/60Hz), 12 VDC and 24 VDC						
Apparent power VA	Holding	100 VAC	4.9/5.9 (50/60Hz)				13/15 (50/60Hz)		
		200 VAC	5.4/6.2 (50/60Hz)				13/15 (50/60Hz)		
	Starting	100 VAC	4.9/5.9 (50/60Hz)				13/15 (50/60Hz)		
		200 VAC	5.4/6.2 (50/60Hz)				13/15 (50/60Hz)		
Average Ampere A		12 VDC	1.1				1.5		
	Note 2	24 VDC	0.7				1.0		
Peak Ampere A		12 VDC	1.8 or less				3 or less		
	Note 2	24 VDC	1.2 or less				2 or less		
Power consumption W		AC	7				15		
		12 VDC	13				18		
		24 VDC	17				24		

MXB1 (standard bore) individual specifications

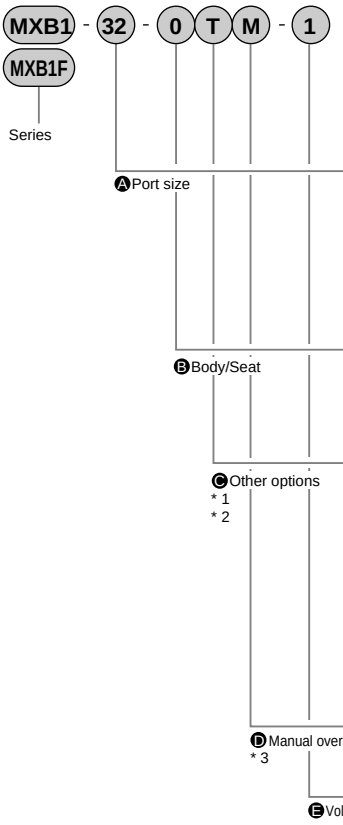
Descriptions		MXB1-10 Note 3	MXB1-15	MXB1-20	MXB1-25	MXB1-32	MXB1-40	MXB1-50
Port size		Rc3/8	Rc1/2	Rc3/4	Rc1	Rc1 1/4	Rc1 1/2	Rc2
Orifice	mm	10	10	15	20	25	32	40
Cv flow factor		10	6	16	29	50	98	125
Working pressure range	MPa	0 to 1.0						0 to 0.5
Interval when activated sec.	AC	10/8 (50/60Hz)				13/11 (50/60Hz)		
	DC	8				10.5		
Cycle rate Note 4	AC	2 cycles/min. or less				1 cycle/min. or less		
	DC	1 cycle/min. or less				1 cycle/2min. or less		
Mass kg	Bronze body	1.2	1.2	1.4	1.5	2.5	3.0	3.7
	Stainless steel body	1.2	1.2	1.4	1.5	2.6	3.1	3.8

MXB1F (full bore) individual specifications

Descriptions		MXB1F-15	MXB1F-20	MXB1F-25	MXB1F-32	MXB1F-40
Port size		Rc1/2	Rc3/4	Rc1	Rc1 1/4	Rc1 1/2
Orifice	mm	15	20	25	32	40
Cv flow factor		23	51	66	114	176
Working pressure range	MPa	0 to 1.0				0 to 0.5
Interval when activated sec.	AC	10/8 (50/60Hz)		13/11 (50/60Hz)		
	DC	8		10.5		
Cycle rate Note 4	AC	2 cycles/min. or less		1 cycle/min. or less		
	DC	1 cycle/min. or less		1 cycle/2min. or less		
Mass	kg	1.4	1.5	2.5	3.0	3.7

Note 1: Allowable voltage range should be within ±10% of rated voltage.
Note 2: Each ampere is the value when rated voltage.
Note 3: MXB1-10 is full bore.
Note 4: Cycle rate should be within the specifications.
Note 5: Consult with CKD about other than above specifications.

How to order



Symbol	Descriptions	Series MXB1 (Standard bore)	Series MXB1F (Full bore)
Ⓐ Port size			
10	Rc3/8 *4	●	
15	Rc1/2	●	●
20	Rc3/4	●	●
25	Rc1	●	●
32	Rc11/4	●	●
40	Rc11/2	●	●
50	Rc2	●	
Ⓑ Body/Seat			
0	Body - bronze/Seat - PTFE	●	●
H	Body - bronze/Seat - reinforced PTFE	●	●
E	Body - stainless steel/Seat - PTFE	●	
W	Body - stainless steel/Seat - reinforced PTFE	●	

Symbol	Descriptions	Applications	Remarks	MXB1	MXB1F
Ⓒ Other options					
Blank	5-conductor cable 0.5 mm² (output lead wire)	—	—	●	●
T	3-conductor cable 0.75 mm² (no output)	Output lead wire not required	3-conductor cabtire cord used	●	●
B	Round terminal box (5-conductor)	Optional lead wire length required	—	●	●
L	Round terminal box + light (ON when open, 3 terminal)	Fully open confir. by light	Lighting at fully open	●	●
R	Round terminal box + light (OFF when closed, 3 terminal)	Fully open confir. by light Fully closed confir.	Lighting at fully closed	●	●

Symbol	Descriptions	MXB1	MXB1F
Ⓓ Manual override			
Blank	Blank	●	●
M	Manual override	●	●
Ⓔ Voltage			
1	100 VAC (50/60Hz)	●	●
2	200 VAC (50/60Hz)	●	●
3	24 VDC	●	●
4	12 VDC	●	●

*1: When selecting both no output (T in "C") and a round terminal box (B in "C") as options, designate "C" as TB. A 3-terminal round terminal box will be provided.
*2: Combinations of LR, TL, TR, BL and BR aren't available for "C".
*3: When manual override ("D" M) is used, port size 32, 40, or 50 is selected for MXB1.
For MXB1F, port size 25, 32, or 40 is selected.
When port size is 10 to 25, manual override is equipped as standard.
*4: For full-bore port size 10, the model is MXB1.

<Example of model number>

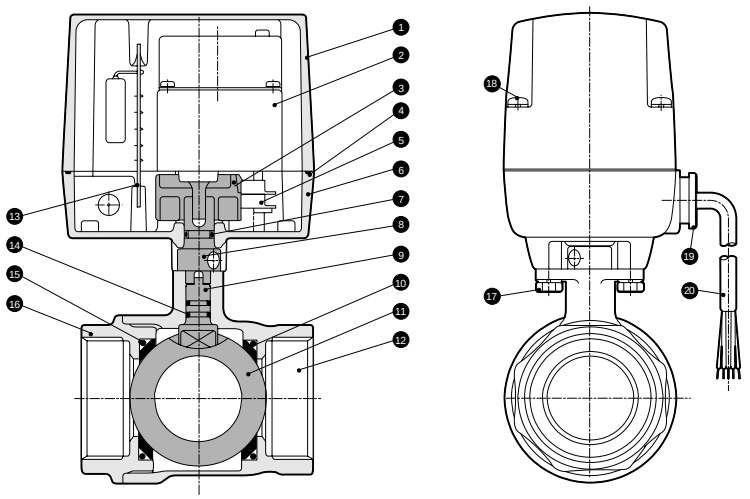
MXB1F-32-0TM-1

Series: MXB1F (full bore)

Ⓐ Port size : Rc1 1/4
Ⓑ Body-seat : Body - bronze/Seat - PTFE
Ⓒ Other options : 3 conductor cable (no output)
Ⓓ Manual override : Selected
Ⓔ Voltage : 100VAC (50/60Hz)

Internal structure and main parts material

● MXB1/MXB1F



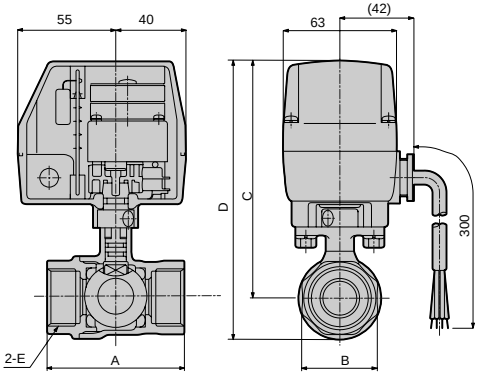
No.	Parts name	Material		No.	Parts name	Material	
1	Bonnet	ADC12	Aluminum alloy die-casting	11	Valve ball	C3771 (SUS304)	Brass *2 (stainless steel)
2	Geared motor	-	-	12	Body	CAC407 (SCS13)	Bronze casting (stainless steel casting)
3	Cam	PA	Polyamide	13	P plate assembly	PF	Phenol resin
4	Gasket	NBR	Nitrile rubber	14	O ring *1	FKM/NBR	Fluoro rubber/nitrile rubber
5	Micro switch	-	-	15	O ring	FKM	Fluoro rubber
6	Adaptor	ZDC2	Zinc alloy die-casting	16	Cap	CAC407 (SCS13)	Bronze casting (stainless steel casting)
7	O ring	NBR	Nitrile rubber	17	Hexagon head bolt	SWCH	Carbon steel wire for cold forging
8	Intermediate bush	SUS303	Stainless steel	18	Cross headed pan	SWCH	Carbon steel wire for cold forging
9	Shaft	SUS303 (SUS304)	Stainless steel (stainless steel)	19	Bushing	PF	Phenol resin
10	Ball seat	PTFE	Tetrafluoroethylene resin	20	Cabtire cord	0.5mm^2, 5-conductor	-

( ) shows values for stainless steel body

*1: Upper O ring is NBR, lower is FKM. For stainless steel, FKM is used for both upper and lower O rings.
*2: Valve ball is made of hard chrome plated brass.

Dimensions (Page 612)

● MXB1-10/15/20/25-*
● MXB1F-15/20-*

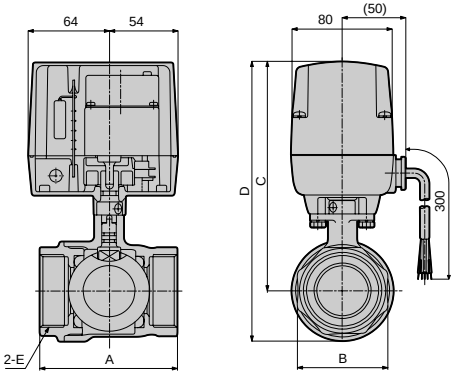


Cabtire cord length 300mm

Model	A	B	C	D	E
MXB1-10-*	50 (56)	24 (28)	124.5	139.5 (140.5)	Rc3/8
MXB1-15-*	56	28	124.5	139.5 (140.5)	Rc1/2
MXB1-20-*	65	34	130.5	150 (151)	Rc3/4
MXB1-25-*	76	41	133.5	156.5 (157.5)	Rc1
MXB1F-15-*	65	28	130.5	150	Rc1/2
MXB1F-20-*	71	34	133.5	156.5	Rc3/4

Note 1: ( ) shows values for stainless steel body

● MXB1-32/40/50-*
● MXB1F-25/32/40-*



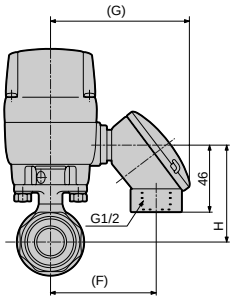
Cabtire cord length 300mm

Model	A	B	C	D	E
MXB1-32-*	84	50	166	193.5 (195.5)	Rc1 1/4
MXB1-40-*	94	57	172	205.5 (207.5)	Rc1 1/2
MXB1-50-*	108	70	181	220.5 (221.5)	Rc2
MXB1F-25-*	84	41	166	193.5	Rc1
MXB1F-32-*	95	50	172	205.5	Rc1 1/4
MXB1F-40-*	107	57	181	220.5	Rc1 1/2

Note 1: For manual override "M", the MSB1 Series yoke is inserted between the valve and actuator, making dimensions C and D 22 mm longer.
Note 2: ( ) shows values for stainless steel body

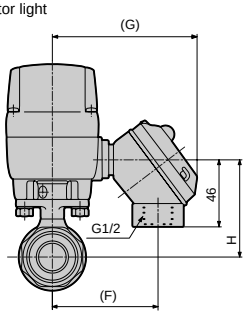
Optional dimensions (Page 612)

● Round terminal box
MXB1/MXB1F- Port size -* B



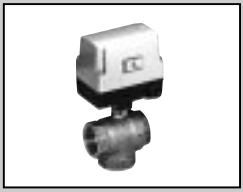
Port size		F	G	H
MXB1	MXB1F			
10	**-**	74	96	58.5
15	**-**	74	96	58.5
20	**15**	74	96	64.5
25	**20**	74	96	67.5
32	**25**	82	104	77.5 (Note 1)
40	**32**	82	104	83.5 (Note 1)
50	**40**	82	104	92.5 (Note 1)

● Round terminal box with indicator light
MXB1/MXB1F- Port size -* L R



Port size		F	G	H
MXB1	MXB1F			
10	**-**	74	101	58.5
15	**-**	74	101	58.5
20	**15**	74	101	64.5
25	**20**	74	101	67.5
32	**25**	82	109	77.5 (Note 1)
40	**32**	82	109	83.5 (Note 1)
50	**40**	82	109	92.5 (Note 1)

Note 1: For manual override "M", the MSB1 Series yoke is inserted between the valve and actuator, making dimensions 22 mm longer.



Electric driven ball valve 3 port valve
(motor valve)

MXG1 Series

● Port size: Rc1/2 to Rc2

CAD

Common specifications

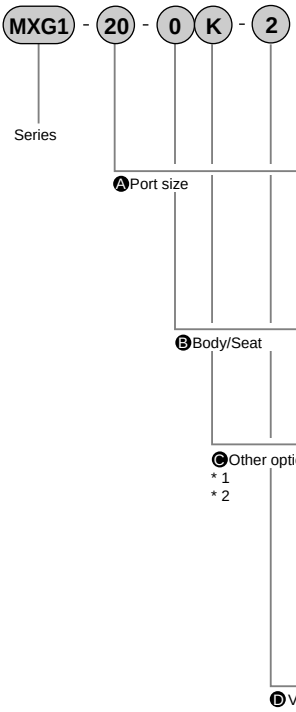
Descriptions		MXG1					
Working fluid		Water, hot water, air, oil (500mm²/s or less)					
Working pressure range MPa		0 to 1.0 (refer to working pressure range on individual specifications.)					
Withstanding pressure (water) MPa		2.0					
Fluid temperature ℃		0 to 80 (no freezing)					
Ambient temperature ℃		-10 to 50					
Ambient humidity %		95 or less					
Valve seat leakage cm³/min		0 (under 1.0MPa or 0.5MPa (only for port size Rc2) water pressure)					
Installation attitude		Limited from vertical to horizontal installation placing motor top.					
Pressurization direction		Limited to Port C pressurized.					
Protection grade		Rainproof IPX3 (standard and option T , K only)					
Electrical specifications		**MXG1-15**	**MXG1-20**	**MXG1-25**	**MXG1-32**	**MXG1-40**	**MXG1-50**
Rated voltage Note 1		100 VAC (50/60Hz), 200 VAC (50/60Hz), 12 VDC and 24 VDC					
Apparent power VA	Holding 100 VAC	4.9/5.9 (50/60Hz)			13/15 (50/60Hz)		
	Holding 200 VAC	5.4/6.2 (50/60Hz)			13/15 (50/60Hz)		
	Starting 100 VAC	4.9/5.9 (50/60Hz)			13/15 (50/60Hz)		
	Starting 200 VAC	5.4/6.2 (50/60Hz)			13/15 (50/60Hz)		
Average Ampere A Note 2	12 VDC	1.1			1.5		
	24 VDC	0.7			1.0		
Peak Ampere Note 2	12 VDC	1.8 or less			3 or less		
	24 VDC	1.2 or less			2 or less		
Power consumption W	AC	7			15		
	12 VDC	13			18		
	24 VDC	17			24		

Individual specifications

Descriptions		MXG1-15	MXG1-20	MXG1-25	MXG1-32	MXG1-40	MXG1-50
Port size		Rc1/2	Rc3/4	Rc1	Rc1 1/4	Rc1 1/2	Rc2
Orifice mm		10	14	19	23	30	38
Cv flow factor		3	6	11	16	28	47
Working pressure range MPa		0 to 1.0					0 to 0.5
Interval when activated sec.	AC	20/16 (50/60Hz)			26/22 (50/60Hz)		
	DC	16			21		
Cycle rate Note 3	AC	1 cycle/min. or less			1 cycle/2min. or less		
	DC	1 cycle/2min. or less			1 cycle/5min. or less		
Mass kg	Bronze body	1.3	1.4	1.7	2.7	3.2	4.1
	Stainless steel body	1.3	1.4	1.7	2.8	3.3	4.2

Note 1: Allowable voltage range should be within ±10% of rated voltage.
Note 2: Each ampere is the value when rated voltage.
Note 3: Cycle rate should be within the specifications.
Note 4: Consult with CKD about other than above specifications.

How to order



Symbol	Descriptions
Ⓐ Port size	
15	Rc1/2
20	Rc3/4
25	Rc1
32	Rc1 1/4
40	Rc1 1/2
50	Rc2

Ⓑ Body/Seat	
0	Body - bronze/Seat - PTFE
H	Body - bronze/Seat - reinforced PTFE
E	Body - stainless steel/Seat - PTFE
W	Body - stainless steel/Seat - reinforced PTFE

Ⓒ Other options

	Descriptions	Applications	Remarks
Blank	5-conductor 0.5 mm²(output lead wire)	-	-
T	3-conductor 0.75 mm²(no output)	Output lead wire not required	3-conductor cabtire cord used
B	Round terminal box (5 cores)	Optional lead wire length required	-
L	Round terminal box + light (ON at A-C flow path, 3-terminal)	A-C flow path complete confirmation by light	Lighting at operation complete of Flow path A-C
R	Round terminal box + light (ON at B-C flow path, 3-terminal)	B-C flow path complete confirmation by light	Lighting at operation complete of Flow path B-C
K	Multi fluids type (90° turn switching / Operation time 1/2)	To avoid pump load	Both flows mixed during switching

Ⓓ Voltage	
1	100 VAC (50/60Hz)
2	200 VAC (50/60Hz)
3	24 VDC
4	12 VDC

*1: When optional specifications of "C" is duplicate, select one from following combinations. A 3 terminal round terminal box is provided for TB, TK, BK, LK, RK, TBK or TB.
*2: Combinations of LR, TL, TR, BL and BR aren't available for "C".

<Example of model number>

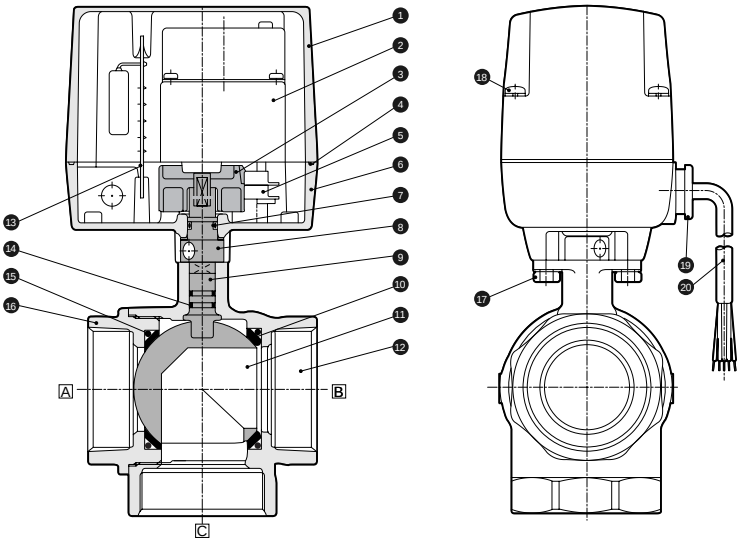
MXG1-20-0K-2

Series: MXG1

Ⓐ Port size : Rc3/4
Ⓑ Body-seat : Body - bronze/Seat - PTFE
Ⓒ Other options : Multi fluids type (90 degree rotation switching method, operation time 1/2)
Ⓓ Voltage : 200 VAC (50/60Hz)

Internal structure and main parts material

● MXG1



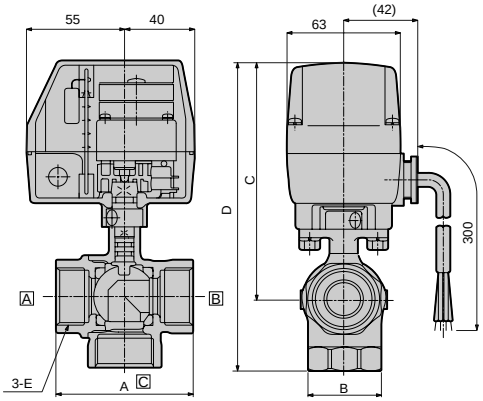
No.	Parts name	Material		No.	Parts name	Material	
1	Bonnet	ADC12	Aluminum alloy die-casting	11	Valve ball	C3771 (SUS304)	Brass *2 (stainless steel)
2	Geared motor	-	-	12	Body	CAC407 (SCS13)	Bronze casting (stainless steel casting)
3	Cam	PA	Polyamide	13	P plate assembly	PF	Phenol resin
4	Gasket	NBR	Nitrile rubber	14	O ring *1	FKM/NBR	Fluoro rubber/nitrile rubber
5	Micro switch	-	-	15	O ring	FKM	Fluoro rubber
6	Adaptor	ZDC2	Zinc alloy die-casting	16	Cap	CAC407 (SCS13)	Bronze casting (stainless steel casting)
7	O ring	NBR	Nitrile rubber	17	Hexagon head bolt	SWCH	Carbon steel wire for cold forging
8	Intermediate bush	SUS303	Stainless steel	18	Cross headed pan	SWCH	Carbon steel wire for cold forging
9	Shaft	SUS303 (SUS304)	Stainless steel (stainless steel)	19	Bushing	PF	Phenol resin
10	Ball seat	PTFE	Tetrafluoroethylene resin	20	Cabtire cord	0.5mm^2, 5-conductor	-

( ) shows values for stainless steel body

*1: Upper O ring is NBR, lower is FKM.For stainless steel, FKM is used for both upper and lower O rings.
*2: Valve ball made of hard chrome plated brass.

Dimensions CAD (Page 612)

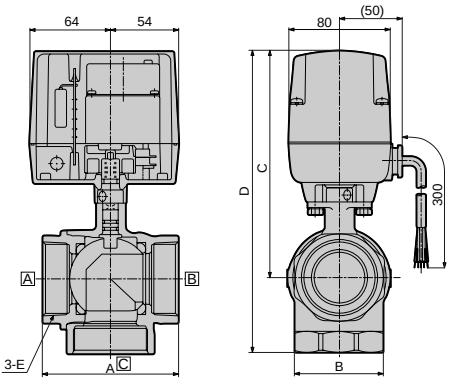
● MXG1-15/20/25-*



Cabtire cord length 300mm

Model	A	B	C	D	E
MXG1-15-*	56	28	124.5	154.5	Rc1/2
MXG1-20-*	65	34	130.5	166.5	Rc3/4
MXG1-25-*	76	41	133.5	175.5	Rc1

● MXG1-32/40/50-*

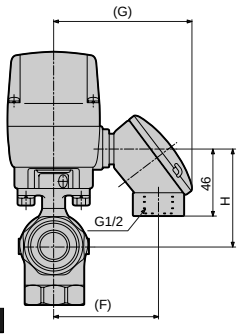


Cabtire cord length 300mm

Model	A	B	C	D	E
MXG1-32-*	84	50	166	213	Rc1 1/4
MXG1-40-*	94	57	172	225	Rc1 1/2
MXG1-50-*	108	70	181	242	Rc2

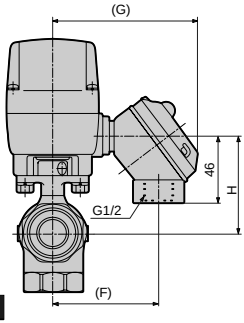
Optional dimensions CAD (Page 612)

● Round terminal box
MXG1- Port size -* B



Port size	F	G	H
15	74	96	58.5
20	74	96	64.5
25	74	96	67.5
32	82	104	77.5
40	82	104	83.5
50	82	104	92.5

● Round terminal box with indicator light
MXG1- Port size -* L R



Port size	F	G	H
15	74	101	58.5
20	74	101	64.5
25	74	101	67.5
32	82	109	77.5
40	82	109	83.5
50	82	109	92.5

High corrosion proof electric driven ball valve 2 port valve (motor valve)

MXB1-C Series

- Port size: Rc1/2 to Rc2
- Working fluid: Corrosive fluid

CAD

Common specifications

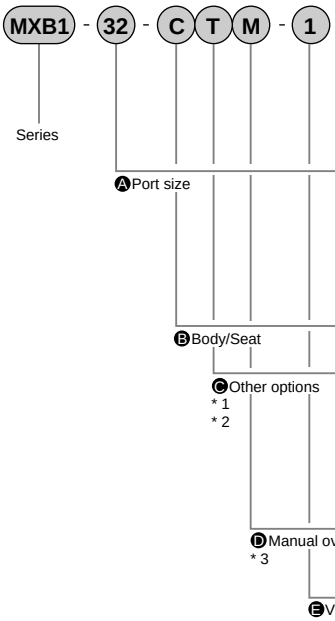
Descriptions			MXB1-C					
Working fluid			Corrosive fluid (not to corrode materials)					
Working pressure range MPa			0 to 1.0 (refer to working pressure range on individual specifications.)					
Withstanding pressure (water) MPa			2.0					
Fluid temperature ℃			0 to 80 (no freezing)					
Ambient temperature ℃			-10 to 50					
Ambient humidity %			95 or less					
Valve seat leakage cm^3/min			0 (under 1.0MPa or 0.5MPa (only for port size Rc2) water pressure)					
Installation attitude			Limited from vertical to horizontal installation placing motor top.					
Pressurization direction			Random					
Protection grade			Rainproof IPX3 (standard and option T only)					
Electrical specifications			MXB1-15-C	MXB1-20-C	MXB1-25-C	MXB1-32-C	MXB1-40-C	MXB1-50-C
Rated voltage Note 1			100 VAC (50/60Hz), 200 VAC (50/60Hz), 12 VDC and 24 VDC					
Apparent power VA	Holding	100 VAC	4.9/5.9 (50/60Hz)			13/15 (50/60Hz)		
		200 VAC	5.4/6.2 (50/60Hz)			13/15 (50/60Hz)		
	Starting	100 VAC	4.9/5.9 (50/60Hz)			13/15 (50/60Hz)		
		200 VAC	5.4/6.2 (50/60Hz)			13/15 (50/60Hz)		
Average Ampere A Note 2		12 VDC	1.1			1.5		
		24 VDC	0.7			1.0		
Peak Ampere A Note 2		12 VDC	1.8 or less			3 or less		
		24 VDC	1.2 or less			2 or less		
Power consumption W		AC	7			15		
		12 VDC	13			18		
		24 VDC	17			24		

Individual specifications

Descriptions		MXB1-15-C	MXB1-20-C	MXB1-25-C	MXB1-32-C	MXB1-40-C	MXB1-50-C
Port size		Rc1/2	Rc3/4	Rc1	Rc1 1/4	Rc1 1/2	Rc2
Orifice mm		9.2	12.5	16	20	24.5	32
Cv flow factor		4.8	9	15.5	24	37	62
Working pressure range MPa		0 to 1.0					0 to 0.5
Interval when activated sec.	AC	10/8 (50/60Hz)			13/11 (50/60Hz)		
	DC	8			10.5		
Cycle rate Note 3	AC	2 cycles/min. or less			1 cycle/min. or less		
	DC	1 cycle/min. or less			1 cycle/2min. or less		
Mass kg		1.1	1.2	1.4	2.3	2.4	2.8

Note 1: Allowable voltage range should be within ±10% of rated voltage.
Note 2: Each ampere is the value when rated voltage.
Note 3: Cycle rate should be within the specifications.
Note 4: Consult with CKD about other than above specifications.

How to order



Symbol	Descriptions
A Port size	
15	Rc1/2
20	Rc3/4
25	Rc1
32	Rc1 1/4
40	Rc1 1/2
50	Rc2
B Body/Seat	
C	Body - stainless steel/Seat- PTFE

C Other options

	Descriptions	Applications	Remarks
Blank	5-conductor 0.5mm² (output lead wire)	-	-
T	3-conductor 0.75mm² (no output)	Output lead wire not required	3-conductor cabtire cord used
B	Round terminal box (5 cores)	Optional lead wire length required	-
L	Round terminal box + light (on at open)	Fully open confir. by light	Lighting at fully open
R	Round terminal box + light (on at closed)	Fully closed confir. by light	Lighting at fully closed

D Manual override	
Blank	Blank
M	Manual override

E Voltage	
1	100 VAC (50/60Hz)
2	200 VAC (50/60Hz)
3	24 VDC
4	12 VDC

*1: When selecting both no output ("C" T) and a round terminal box ("C" B) as options, designate "C" as TB. A 3-terminal round terminal box will be provided.
*2: Combinations of LR, TL, TR, BL and BR aren't available for "C".
*3: Manual override ("D" is M) is available for port size 32, 40 and 50. When port size is 15 to 25, manual override is equipped as standard.

<Example of model number>

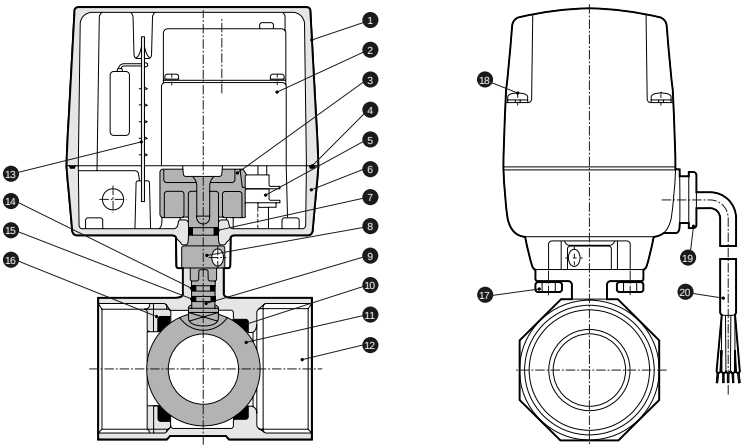
MXB1-32-CTM-1

Series: MXB1-C

A Port size : Rc1 1/4
B Body/Seat : Body - stainless steel/Seat - PTFE
C Other options : 3 conductor cable (no output)
D Manual override : Selected
E Voltage : 100VAC (50/60Hz)

Internal structure and main parts material

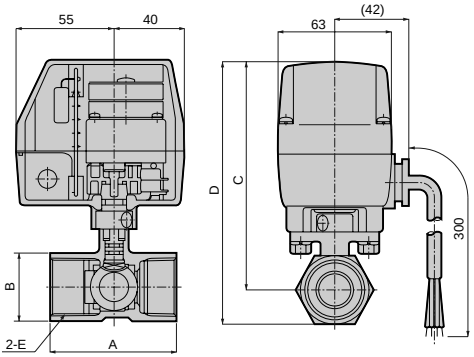
● MXB1-*-C



No.	Parts name	Material		No.	Parts name	Material	
1	Bonnet	ADC12	Aluminum alloy die-casting	11	Valve ball	SUS316	Stainless steel
2	Geared motor	-	-	12	Body	SCS14	Stainless steel die casting
3	Cam	PA	Polyamide	13	P plate assembly	PF	Phenol resin
4	Gasket	NBR	Nitrile rubber	14	O ring	NBR	Nitrile rubber
5	Micro switch	-	-	15	O ring	FKM	Fluoro rubber
6	Adaptor	ZDC2	Zinc alloy die-casting	16	Insert	SUS316	Stainless steel
7	O ring	NBR	Nitrile rubber	17	Hexagon head bolt	SWCH	Carbon steel wire for cold forging
8	Intermediate bush	SUS303	Stainless steel	18	Cross headed pan	SWCH	Carbon steel wire for cold forging
9	Shaft	SUS316	Stainless steel	19	Bushing	PF	Phenol resin
10	Ball seat	PTFE	Tetrafluoroethylene resin	20	Cabtire cord	0.5mm^2, 5-conductor	-

Dimensions CAD (Page 612)

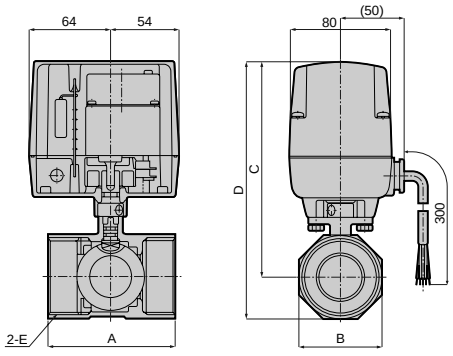
● MXB1-15/20/25-C



Cabtire cord length 300mm

Model	A	B	C	D	E
MXB1-15-C	56.5	25	119	131.5	Rc1/2
MXB1-20-C	59	32	121.5	137.5	Rc3/4
MXB1-25-C	71	38	125.5	144.5	Rc1

● MXB1-32/40/50-C



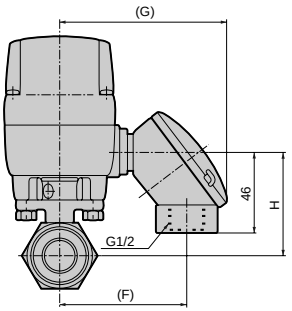
Cabtire cord length 300mm

Model	A	B	C	D	E
MXB1-32-C	78	49	155.5	180	Rc1 1/4
MXB1-40-C	83	53	161	187.5	Rc1 1/2
MXB1-50-C	100	65	166.5	199	Rc2

Note 1: For manual override "M", the MSB1 Series yoke is inserted between the valve and actuator, making dimensions C and D 22 mm longer.

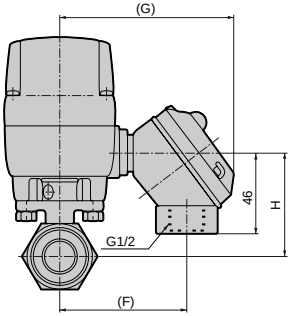
Optional dimensions

● Round terminal box
MXB1- Port size -C B



Port size	F	G	H
15	74	96	53
20	74	96	55.5
25	74	96	59.5
32	82	104	67 (Note 1)
40	82	104	72.5 (Note 1)
50	82	104	78 (Note 1)

● Round terminal box with indicator light
MXB1- Port size -C L R



Port size	F	G	H
15	74	101	53
20	74	101	55.5
25	74	101	59.5
32	82	109	67 (Note 1)
40	82	109	72.5 (Note 1)
50	82	109	78 (Note 1)

Note 1: For manual override "M", the MSB1 Series yoke is inserted between the valve and actuator, making dimensions 22 mm longer.

Electric driven ball valve 2 port valve with relay (motor valve)

MXB1D/MXB1DF Series

● Port size: Rc3/8 to Rc2

Common specifications

Descriptions			MXB1D (standard bore) / MXB1DF (full bore)						
Working fluid			Water, hot water, air, oil (500mm^2/s or less)						
Working pressure range MPa			0 to 1.0 (refer to working pressure range on individual specifications.)						
Withstanding pressure (water) MPa			2.0						
Fluid temperature ℃			0 to 80 (no freezing)						
Ambient temperature ℃			-10 to 50						
Ambient humidity %			95 or less						
Valve seat leakage cm^3/min			0 (under 1.0MPa or 0.5MPa (for MXB1D-50/40) water pressure)						
Installation attitude			Limited from vertical to horizontal installation placing motor top.						
Pressurization direction			Random						
Protection grade			Rainproof IPX3 (standard and option T only)						
Electrical specifications			MXB1D-10	MXB1D-15	MXB1D-20	MXB1D-25	MXB1D-32	MXB1D-40	MXB1D-50
			MXB1DF-15		MXB1DF-20		MXB1DF-25	MXB1DF-32	MXB1DF-40
Rated voltage		Note 1	100 VAC (50/60Hz) and 200 VAC (50/60Hz)						
Apparent power VA	Holding	100 VAC	6.0/6.8 (50/60Hz)				14/16 (50/60Hz)		
		200 VAC	6.6/7.2 (50/60Hz)				14/16 (50/60Hz)		
	Starting	100 VAC	6.0/6.8 (50/60Hz)				14/16 (50/60Hz)		
		200 VAC	6.6/7.2 (50/60Hz)				14/16 (50/60Hz)		
Power consumption W			8				16		

MXB1D (standard bore) individual specifications

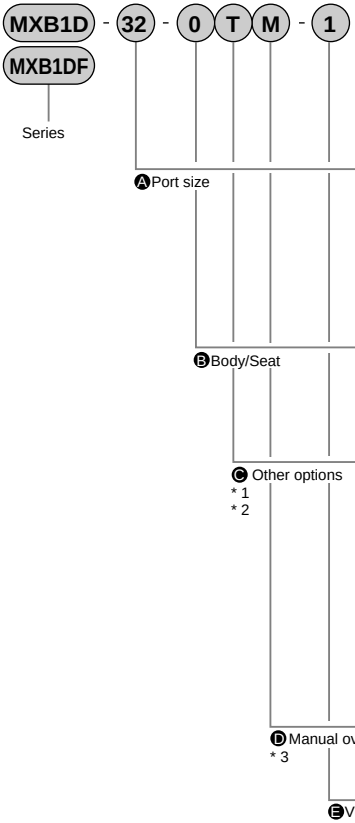
Descriptions		MXB1D-10 Note 2	MXB1D-15	MXB1D-20	MXB1D-25	MXB1D-32	MXB1D-40	MXB1D-50
Port size		Rc3/8	Rc1/2	Rc3/4	Rc1	Rc1 1/4	Rc1 1/2	Rc2
Orifice mm		10	10	15	20	25	32	40
Cv flow factor		10	6	16	29	50	98	125
Working pressure range MPa		0 to 1.0						0 to 0.5
Interval when activated sec.	50Hz	10				13		
	60Hz	8				11		
Cycle rate	Note 3	2 cycles/min. or less				1 cycle/min. or less		
Mass kg	Bronze body	1.2	1.3	1.4	1.6	2.6	3.0	3.8
	Stainless steel body	1.2	1.3	1.4	1.6	2.7	3.1	3.9

MXB1DF (full bore) individual specifications

Descriptions		MXB1DF-15	MXB1DF-20	MXB1DF-25	MXB1DF-32	MXB1DF-40
Port size		Rc1/2	Rc3/4	Rc1	Rc1 1/4	Rc1 1/2
Orifice mm		15	20	25	32	40
Cv flow factor		23	51	66	114	176
Working pressure range MPa		0 to 1.0				0 to 0.5
Interval when activated sec.	50Hz	10		13		
	60Hz	8		11		
Cycle rate	Note 3	2 cycles/min. or less		1 cycle/min. or less		
Mass	kg	1.4	1.6	2.6	3.0	3.8

Note 1: Allowable voltage range should be within ±10% of rated voltage.
Note 2: MXB1D-10 is a full bore.
Note 3: Cycle rate should be within the specifications.
Note 4: Consult with CKD about other than above specifications.

How to order



Symbol	Descriptions	Series MXB1D (Standard bore)	Series MXB1DF (Full bore)
Ⓐ Port size			
10	Rc3/8 *4	●	
15	Rc1/2	●	●
20	Rc3/4	●	●
25	Rc1	●	●
32	Rc1 1/4	●	●
40	Rc1 1/2	●	●
50	Rc2	●	
Ⓑ Body/Seat			
0	Body - bronze/Seat - PTFE	●	●
H	Body - bronze/Seat - reinforced PTFE	●	●
E	Body - stainless steel/Seat - PTFE	●	
W	Body - stainless steel/Seat - reinforced PTFE	●	

Ⓒ Other options

	Descriptions	Applications	Remarks		
Blank	5-conductor cable 0.5 mm² (output lead wire)	—	—	●	●
T	3-conductor cable 0.75 mm² (no output)	Output lead wire not required	3-conductor cabtire cord used	●	●
B	Round terminal box (5 conductor)	Optional lead wire length required	—	●	●
L	Round terminal box + light (ON when open, 3 terminal)	Fully open confir. by light	Lighting at fully open	●	●
R	Round terminal box + light (OFF when closed, 3 terminal)	Fully open confir. by light Fully closed confir.	Lighting at fully closed	●	●

Ⓓ Manual override			
Blank	Blank	●	●
M	Manual override	●	●
Ⓔ Voltage			
1	100 VAC (50/60Hz)	●	●
2	200 VAC (50/60Hz)	●	●

*1. When selecting both no output ("C" T) and a round terminal box ("C" B) as options, designate "C" as TB. A 3-terminal round terminal box will be provided.
*2: Combinations of LR, TL, TR, BL and BR aren't available for "C".
*3: When manual override ("D" M) is used, port size 32, 40, or 50 is selected for MXB1D. For MXB1DF, 25, 32, or 40 is selected. When port size is 10 to 25, manual override is equipped as standard.
*4: For full-bore port size 10, the model is MXB1D.

<Example of model number>

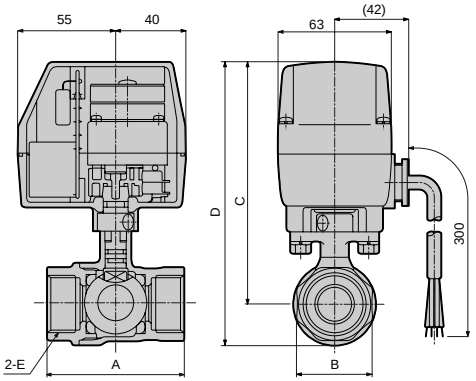
MXB1DF-32-0TM-1

Series: MXB1DF (full bore)

Ⓐ Port size : Rc1 1/4
Ⓑ Body/Seat : Body - bronze/Seat - reinforced PTFE
Ⓒ Other options : 3 conductor cable (no output)
Ⓓ Manual override : Selected
Ⓔ Voltage : 100VAC (50/60Hz)

Dimensions

● MXB1D-10/15/20/25-*
● MXB1DF-15/20-*

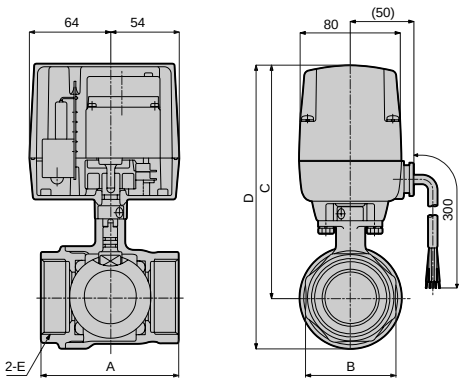


Cabtire cord length 300mm

Model	A	B	C	D	E
MXB1D-10-*	50 (56)	24 (28)	124.5	139.5 (140.5)	Rc3/8
MXB1D-15-*	56	28	124.5	139.5 (140.5)	Rc1/2
MXB1D-20-*	65	34	130.5	150 (151)	Rc3/4
MXB1D-25-*	76	41	133.5	156.5 (157.5)	Rc1
MXB1DF-15-*	65	28	130.5	150	Rc1/2
MXB1DF-20-*	71	34	133.5	156.5	Rc3/4

Note 1: ( ) shows values for stainless steel body

● MXB1D-32/40/50-*
● MXB1DF-25/32/40-*



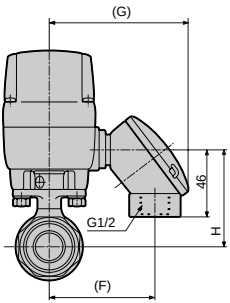
Cabtire cord length 300mm

Model	A	B	C	D	E
MXB1D-32-*	84	50	166	193.5 (195.5)	Rc1 1/4
MXB1D-40-*	94	57	172	205.5 (207.5)	Rc1 1/2
MXB1D-50-*	108	70	181	220.5 (221.5)	Rc2
MXB1DF-25-*	84	41	166	193.5	Rc1
MXB1DF-32-*	95	50	172	205.5	Rc1 1/4
MXB1DF-40-*	107	57	181	220.5	Rc1 1/2

Note 1: For manual override "M", the MSB1 Series yoke is inserted between the valve and actuator, making dimensions C and D 22 mm longer.
Note 2: ( ) shows values for stainless steel body

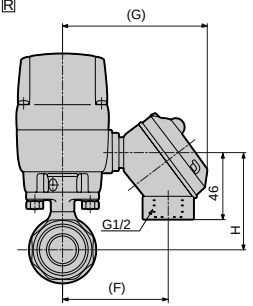
Optional dimensions

● Round terminal box
MXB1D/MXB1DF-Port size-*B



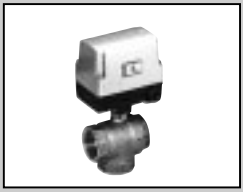
Port size		F	G	H
MXB1D	MXB1DF			
10	**-**	74	96	58.5
15	**-**	74	96	58.5
20	**15**	74	96	64.5
25	**20**	74	96	67.5
32	**25**	82	104	77.5 (Note 1)
40	**32**	82	104	83.5 (Note 1)
50	**40**	82	104	92.5 (Note 1)

● Round terminal box with indicator light
MXB1D/MXB1DF-Port size-*L
R



Port size		F	G	H
MXB1D	MXB1DF			
10	**-**	74	101	58.5
15	**-**	74	101	58.5
20	**15**	74	101	64.5
25	**20**	74	101	67.5
32	**25**	82	109	77.5 (Note 1)
40	**32**	82	109	83.5 (Note 1)
50	**40**	82	109	92.5 (Note 1)

Note 1: For manual override "M", the MSB1 Series yoke is inserted between the valve and actuator, making dimensions 22 mm longer.



Electric driven ball valve 3 port valve with relay (motor valve)

MXG1D Series

● Port size: Rc1/2 to Rc2

Common specifications

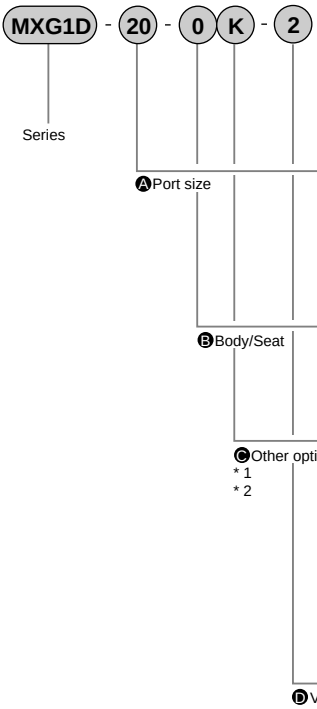
Descriptions			MXG1D					
Working fluid			Water, hot water, air, oil (500mm^2/s or less)					
Working pressure range	MPa		0 to 1.0 (refer to working pressure range on individual specifications.)					
Withstanding pressure (water)	MPa		2.0					
Fluid temperature	℃		0 to 80 (no freezing)					
Ambient temperature	℃		-10 to 50					
Ambient humidity	%		95 or less					
Valve seat leakage	cm^3/min		0 (under 1.0MPa or 0.5MPa (only for port size Rc2) water pressure)					
Installation attitude			Limited from vertical to horizontal installation placing motor top.					
Pressurization direction			Limited to Port C pressurized.					
Protection grade			Rainproof IPX3 (standard and option T only)					
Electrical specifications			MXG1D-15	MXG1D-20	MXG1D-25	MXG1D-32	MXG1D-40	MXG1D-50
Rated voltage		Note 1	100 VAC (50/60Hz) and 200 VAC (50/60Hz)					
Apparent power	VA	Holding 100 VAC	6.0/6.8 (50/60Hz)			14/16 (50/60Hz)		
		Holding 200 VAC	6.6/7.2 (50/60Hz)			14/16 (50/60Hz)		
		Starting 100 VAC	6.0/6.8 (50/60Hz)			14/16 (50/60Hz)		
		Starting 200 VAC	6.6/7.2 (50/60Hz)			14/16 (50/60Hz)		
Power consumption	W		8			16		

Individual specifications

Descriptions			MXG1D-15	MXG1D-20	MXG1D-25	MXG1D-32	MXG1D-40	MXG1D-50
Port size			Rc1/2	Rc3/4	Rc1	Rc1 1/4	Rc1 1/2	Rc2
Orifice	mm		10	14	19	23	30	38
Cv flow factor			3	6	11	16	28	47
Working pressure range	MPa		0 to 1.0					0 to 0.5
Interval when activated	sec.	50Hz	20			26		
		60Hz	16			22		
Cycle rate		Note 2	1 cycle/min. or less			1 cycle/2min. or less		
Mass	kg	Bronze body	1.3	1.5	1.7	2.7	3.3	4.2
		Stainless steel body	1.3	1.5	1.7	2.8	3.4	4.3

Note 1: Allowable voltage range should be within ±10% of rated voltage.
Note 2: Cycle rate should be within the specifications.
Note 3: consult with CKD about other than above specifications.

How to order



Symbol	Descriptions
Ⓐ Port size	
15	Rc1/2
20	Rc3/4
25	Rc1
32	Rc1 1/4
40	Rc1 1/2
50	Rc2
Ⓑ Body/Seat	
0	Body - bronze/Seat - PTFE
H	Body - bronze/Seat - reinforced PTFE
E	Body - stainless steel/Seat - PTFE
W	Body - stainless steel/Seat - reinforced PTFE

Ⓒ Other options

	Descriptions	Applications	Remarks
Blank	5-conductor 0.5mm² (output lead wire)	-	-
T	3-conductor 0.75mm² (no output)	Output lead wire not required	3-conductor cabtire cord used
B	Round terminal box (5 cores)	Optional lead wire length required	-
L	Round terminal box + light (ON at A-C flow path, 3-terminal)	A-C flow path complete confirmation by light	Lighting at operation complete of Flow path A-C
R	Round terminal box + light (ON at B-C flow path, 3-terminal)	B-C flow path complete confirmation by light	Lighting at operation complete of Flow path B-C
K	Multi fluids type (90 degree turn switching / Operation time 1/2)	To avoid pump load	Both flows mixed during switching

Ⓓ Voltage	
1	100 VAC (50/60Hz)
2	200 VAC (50/60Hz)

*1: When optional specifications of "C" is duplicate, select one from following combinations. A 3 terminal round terminal box is provided for TB, TK, BK, LK, RK, TBK or TB.
*2: Combinations of LR, TL, TR, BL and BR aren't available for "C".

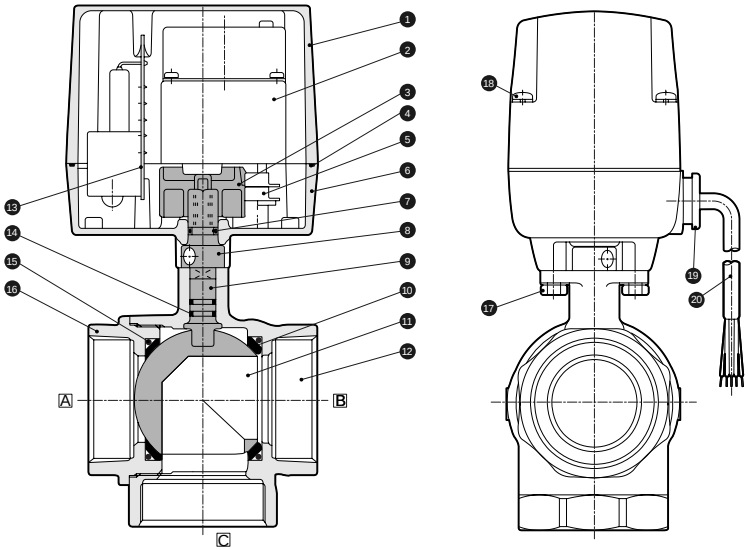
<Example of model number>

MXG1D-20-0K-2
Series: MXG1D

Ⓐ Port size : Rc3/4
Ⓑ Body/Seat : Body - bronze/Seat - PTFE
Ⓒ Other options : Multi fluids type (90 degree rotation switching method, operation time 1/2)
Ⓓ Voltage : 200VAC (50/60Hz)

Internal structure and main parts material

● MXG1D



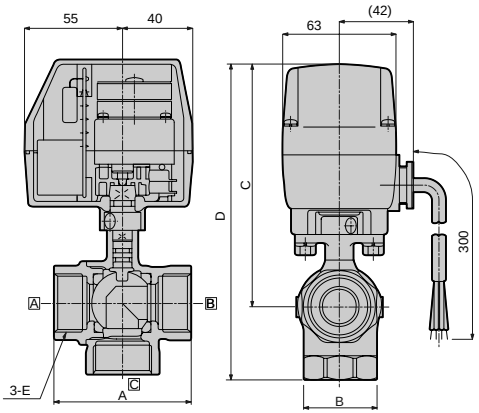
No.	Parts name	Material		No.	Parts name	Material	
1	Bonnet	ADC12	Aluminum alloy die-casting	11	Valve ball	C3771 (SUS304)	Brass *2 (stainless steel)
2	Geared motor	-	-	12	Body	CAC407 (SCS13)	Bronze casting (stainless steel casting)
3	Cam	PA	Polyamide	13	P plate assembly	PF	Phenol resin
4	Gasket	NBR	Nitrile rubber	14	O ring *1	FKM/NBR	Fluoro rubber/nitrile rubber
5	Micro switch	-	-	15	O ring	FKM	Fluoro rubber
6	Adaptor	ZDC2	Zinc alloy die-casting	16	Cap	CAC407 (SCS13)	Bronze casting (stainless steel casting)
7	O ring	NBR	Nitrile rubber	17	Hexagon head bolt	SWCH	Carbon steel wire for cold forging
8	Intermediate bush	SUS303	Stainless steel	18	Cross headed pan	SWCH	Carbon steel wire for cold forging
9	Shaft	SUS303 (SUS304)	Stainless steel (stainless steel)	19	Bushing	PF	Phenol resin
10	Ball seat	PTFE	Tetrafluoroethylene resin	20	Cabtire cord	0.5mm^2, 5-conductor	-

( ) shows values for stainless steel body

*1: Upper O ring is NBR, lower is FKM. For stainless steel, FKM is used for both upper and lower O rings.
*2: Valve ball made of hard chrome plated brass.

Dimensions

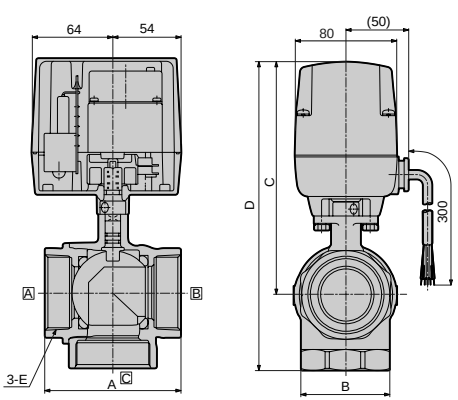
● MXG1D-15/20/25-*



Cabtire cord length 300mm

Model	A	B	C	D	E
MXG1D-15-*	56	28	124.5	154.5	Rc1/2
MXG1D-20-*	65	34	130.5	166.5	Rc3/4
MXG1D-25-*	76	41	133.5	175.5	Rc1

● MXG1D-32/40/50-*

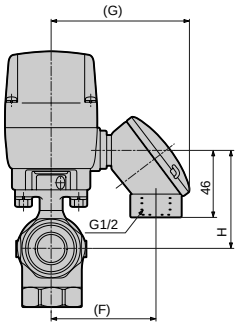


Cabtire cord length 300mm

Model	A	B	C	D	E
MXG1D-32-*	84	50	166	213	Rc1 1/4
MXG1D-40-*	94	57	172	225	Rc1 1/2
MXG1D-50-*	108	70	181	242	Rc2

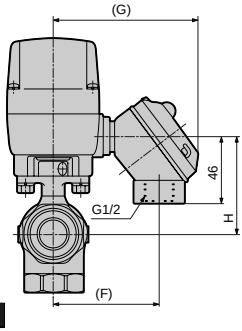
Optional dimensions

● Round terminal box
MXG1D-Port size-*B

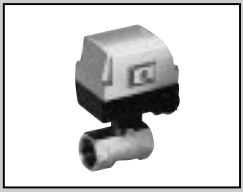


Port size	F	G	H
15	74	96	58.5
20	74	96	64.5
25	74	96	67.5
32	82	104	77.5
40	82	104	83.5
50	82	104	92.5

● Round terminal box with indicator light
MXG1D-Port size-*L
R



Port size	F	G	H
15	74	101	58.5
20	74	101	64.5
25	74	101	67.5
32	82	109	77.5
40	82	109	83.5
50	82	109	92.5



High corrosion proof electric driven ball valve 2 port valve with relay (motor valve)

MXB1D-C Series

- Port size: Rc1/2 to Rc2
- Working fluid: Corrosive fluid

Common specifications

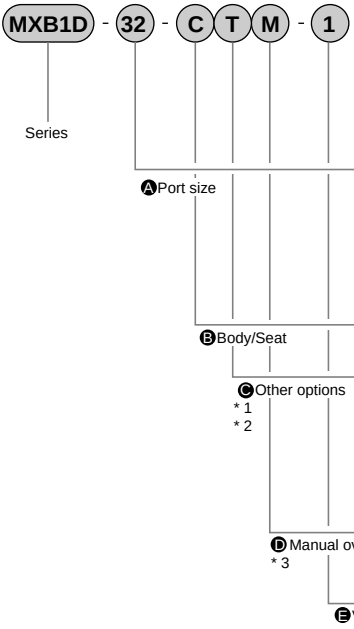
Descriptions		MXB1D-C					
Working fluid		Corrosive fluid (not to corrode materials)					
Working pressure range MPa		0 to 1.0 (refer to working pressure range on individual specifications.)					
Withstanding pressure (with water pressure) MPa		2.0					
Fluid temperature ℃		0 to 80 (no freezing)					
Ambient temperature ℃		-10 to 50					
Ambient humidity %		95 or less					
Valve seat leakage cm^3/min		0 (under 1.0MPa or 0.5MPa (only for port size Rc2) water pressure)					
Installation attitude		Limited from vertical to horizontal installation placing motor top.					
Pressurization direction		Random					
Protection grade		Rainproof IPX3 (standard and option T only)					
Electrical specifications		**MXB1D-15-C**	**MXB1D-20-C**	**MXB1D-25-C**	**MXB1D-32-C**	**MXB1D-40-C**	**MXB1D-50-C**
Rated voltage Note 1		100 VAC (50/60Hz) and 200 VAC (50/60Hz)					
Apparent power (VA)	Holding 100 VAC	6.0/6.8 (50/60Hz)			14/16 (50/60Hz)		
	Holding 200 VAC	6.6/7.2 (50/60Hz)			14/16 (50/60Hz)		
	Starting 100 VAC	6.0/6.8 (50/60Hz)			14/16 (50/60Hz)		
	Starting 200 VAC	6.6/7.2 (50/60Hz)			14/16 (50/60Hz)		
Power consumption W		8			16		

Individual specifications

Descriptions		MXB1D-15-C	MXB1D-20-C	MXB1D-25-C	MXB1D-32-C	MXB1D-40-C	MXB1D-50-C
Port size		Rc1/2	Rc3/4	Rc1	Rc1¼	Rc1½	Rc2
Orifice mm		9.2	12.5	16	20	24.5	32
Cv flow factor		4.8	9	15.5	24	37	62
Working pressure range MPa		0 to 1.0					0 to 0.5
Interval when activated sec.	50Hz	10			13		
	60Hz	8			11		
Cycle rate Note 2		2 cycles/min. or less			1 cycle/min. or less		
Mass kg		1.2	1.3	1.4	2.4	2.5	2.9

Note 1: Allowable voltage range should be within ±10 % of rated voltage.
Note 2: Cycle rate should be within the specifications.
Note 3: Consult with CKD about other than above specifications.

How to order



Symbol	Descriptions
Ⓐ Port size	
15	Rc1/2
20	Rc3/4
25	Rc1
32	Rc1¼
40	Rc1½
50	Rc2
Ⓑ Body/Sheet	
C	Body - stainless steel/Seat - PTFE
Ⓒ Other options	

	Descriptions	Applications	Remarks
Blank	5-conductor 0.5mm² (output lead wire)	-	-
T	3-conductor 0.75mm² (no output)	Output lead wire not required	3-conductor cabtire cord used
B	Round terminal box (5 cores)	Optional lead wire length required	-
L	Round terminal box + light (lighting at open)	Fully open confir. by light	Lighting at fully open
R	Round terminal box + light (lighting at closed)	Fully closed confir. by light	Lighting at fully closed

Ⓓ Manual override	
Blank	Blank
M	Manual override
Ⓔ Voltage	
1	100 VAC (50/60Hz)
2	200 VAC (50/60Hz)

*1: When selecting both no output ("C" T) and a round terminal box ("C" B) as options, designate "C" as TB. A 3-terminal round terminal box will be provided.
*2: Combinations of LR, TL, TR, BL and BR aren't available for "C".
*3: Manual override ("D" is M) is available for port size 32, 40 and 50. When port size is 15 to 25, manual override is equipped as standard.

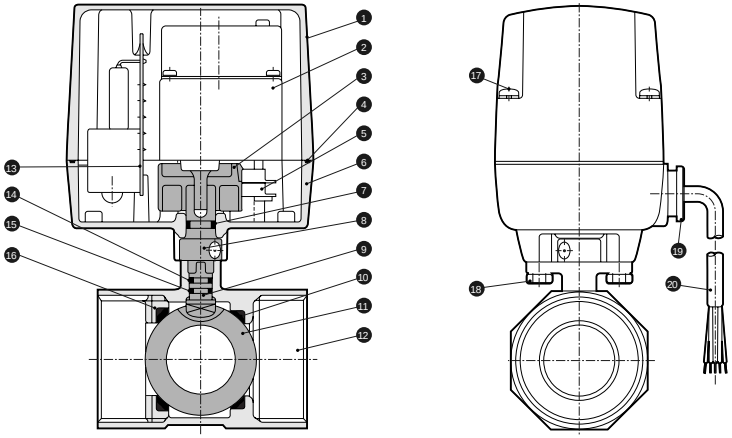
<Example of model number>

MXB1D-32-CTM-1
Series: MXB1D-C

Ⓐ Port size : Rc1 1/4
Ⓑ Body/Seat : Body - stainless steel/Seat - PTFE
Ⓒ Other options : 3-conductor cable (no output)
Ⓓ Manual override : Selected
Ⓔ Voltage : 100 VAC (50/60Hz)

Internal structure and main parts material

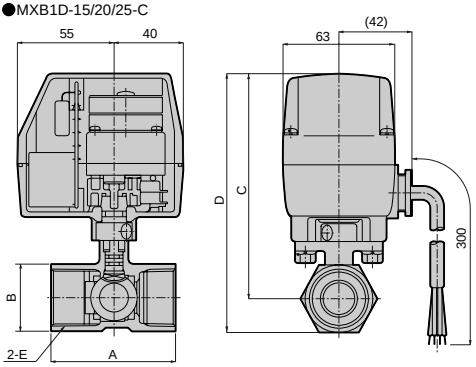
● MXB1D-*-C



No.	Parts name	Material		No.	Parts name	Material	
1	Bonnet	ADC12	Aluminum alloy die-casting	11	Valve ball	SUS316	Stainless steel
2	Geared motor	-	-	12	Body	SCS14	Stainless steel die casting
3	Cam	PA	Polyamide	13	P plate assembly	PF	Phenol resin
4	Gasket	NBR	Nitrile rubber	14	O ring	NBR	Nitrile rubber
5	Micro switch	-	-	15	O ring	FKM	Fluoro rubber
6	Adaptor	ZDC2	Zinc alloy die-casting	16	Insert	SUS316	Stainless steel
7	O ring	NBR	Nitrile rubber	17	Hexagon head bolt	SWCH	Carbon steel wire for cold forging
8	Intermediate bush	SUS303	Stainless steel	18	Cross headed pan	SWCH	Carbon steel wire for cold forging
9	Shaft	SUS316	Stainless steel	19	Bushing	PF	Phenol resin
10	Ball seat	PTFE	Tetrafluoroethylene resin	20	Cabtire cord	0.5mm^2, 5-conductor	-

Dimensions

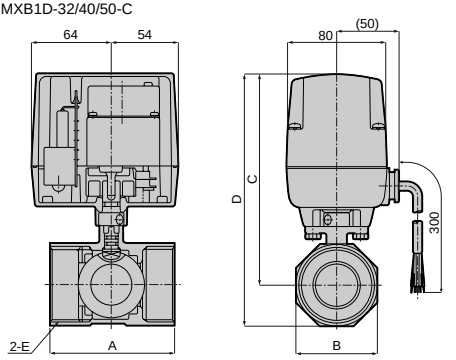
●MXB1D-15/20/25-C



Cabtire cord length 300 mm

Model	A	B	C	D	E
MXB1D-15-C	56.5	25	119	131.5	Rc1/2
MXB1D-20-C	59	32	121.5	137.5	Rc3/4
MXB1D-25-C	71	38	125.5	144.5	Rc1

●MXB1D-32/40/50-C



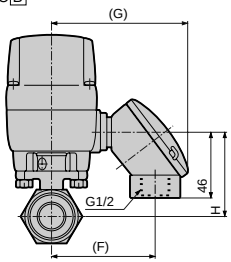
Cabtire cord length 300 mm

Model	A	B	C	D	E
MXB1D-32-C	78	49	155.5	180	Rc1¼
MXB1D-40-C	83	53	161	187.5	Rc1½
MXB1D-50-C	100	65	166.5	199	Rc2

Note 1: For manual override "M", the MSB1 Series yoke is inserted between the valve and actuator, making dimensions C and D 22 mm longer.

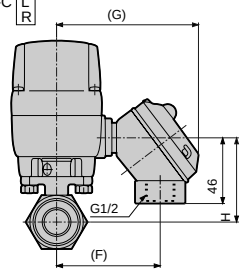
Optional dimensions

●Round terminal box
MXB1D-Port size-C B



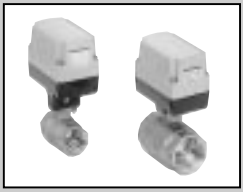
Port size	F	G	H
15	74	96	53
20	74	96	55.5
25	74	96	59.5
32	82	104	67 (Note 1)
40	82	104	72.5 (Note 1)
50	82	104	78 (Note 1)

●Round terminal box with indicator light
MXB1D-Port size-C L R



Port size	F	G	H
15	74	101	53
20	74	101	55.5
25	74	101	59.5
32	82	109	67 (Note 1)
40	82	109	72.5 (Note 1)
50	82	109	78 (Note 1)

Note 1: For manual override "M", the MSB1 Series yoke is inserted between the valve and actuator, making dimensions 22 mm longer.



Electric driven oil prohibited ball valve 2 port valve (motor valve)

MXB1-N/MXB1D-N Series

● Port size: Rc3/8 to Rc2

Common specifications

Descriptions	MXB1 (standard type) / MXB1D (with relay)
Working fluid	Water, hot water, air
Working pressure range MPa	0 to 1.0 (refer to working pressure range on individual specifications.)
Withstanding pressure (with water pressure) MPa	2.0
Fluid temperature ℃	0 to 80 (no freezing)
Ambient temperature ℃	-10 to 50
Ambient humidity %	95 or less
Valve seat leakage cm^3/min	0 (under 1.0MPa or 0.5MPa (only for port size Rc2) water pressure)
Installation attitude	Limited from vertical to horizontal installation placing motor top.
Pressurization direction	Random
Protection grade	Rainproof IPX3 (standard and option T only)

Electrical specifications

Descriptions			MXB1-10	MXB1-15	MXB1-20	MXB1-25	MXB1-32	MXB1-40	MXB1-50
Rated voltage		Note 1	100 VAC (50/60Hz), 200 VAC (50/60Hz), 12 VDC and 24 VDC						
Apparent power VA	Holding	100 VAC	4.9/5.9 (50/60Hz)				13/15 (50/60Hz)		
		200 VAC	5.4/6.2 (50/60Hz)				13/15 (50/60Hz)		
	Starting	100 VAC	4.9/5.9 (50/60Hz)				13/15 (50/60Hz)		
		200 VAC	5.4/6.2 (50/60Hz)				13/15 (50/60Hz)		
Average Ampere A		12 VDC	1.1				1.5		
Note 2		24 VDC	0.7				1.0		
Peak Ampere A		12 VDC	1.8 or less				3 or less		
Note 2		24 VDC	1.2 or less				2 or less		
Power consumption W		AC	7				15		
		12 VDC	13				18		
		24 VDC	17				24		

Descriptions			MXB1D-10	MXB1D-15	MXB1D-20	MXB1D-25	MXB1D-32	MXB1D-40	MXB1D-50
Rated voltage		Note 1	100 VAC (50/60Hz) and 200 VAC (50/60Hz)						
Apparent power VA	Holding	100 VAC	6.0/6.8 (50/60Hz)				14/16 (50/60Hz)		
		200 VAC	6.6/7.2 (50/60Hz)				14/16 (50/60Hz)		
	Starting	100 VAC	6.0/6.8 (50/60Hz)				14/16 (50/60Hz)		
		200 VAC	6.6/7.2 (50/60Hz)				14/16 (50/60Hz)		
Power consumption W			8				16		

Individual specifications

Descriptions		MXB1-10 / MXB1D-10	MXB1-15 / MXB1D-15	MXB1-20 / MXB1D-20	MXB1-25 / MXB1D-25	MXB1-32 / MXB1D-32	MXB1-40 / MXB1D-40	MXB1-50 / MXB1D-50
Port size		Rc3/8	Rc1/2	Rc3/4	Rc1	Rc1 1/4	Rc1 1/2	Rc2
Orifice mm		10	10	15	20	25	32	40
Cv flow factor		10	6	16	29	50	98	125
Working pressure range MPa		0 to 1.0						0 to 0.5
Interval when activated sec.	AC	10/8 (50/60Hz)				13/11 (50/60Hz)		
	DC	8				10.5		
Cycle rate Note 3	AC	2 cycles/min. or less				1 cycle/min. or less		
	DC	1 cycle/min. or less				1 cycle/2min. or less		
Mass kg	MXB1	1.2	1.2	1.4	1.5	2.6	3.1	3.8
	MXB1D	1.2	1.3	1.4	1.6	2.7	3.1	3.9

Note 1: Allowable voltage range should be within ±10% of rated voltage.
Note 2: Each ampere is the value when rated voltage.
Note 3: Cycle rate should be within the specifications.
Note 4: Consult with CKD about other than above specifications.

How to order

MXB1 - 32 - N T M - 1

MXB1D

Series

Ⓐ Port size

Ⓑ Body/Seat

Ⓒ Other options
*1
*2

Ⓓ Manual override
*3

Ⓔ Voltage

Symbol	Descriptions	Series MXB1	Series MXB1D
Ⓐ Port size			
10	Rc3/8	●	●
15	Rc1/2	●	●
20	Rc3/4	●	●
25	Rc1	●	●
32	Rc1¼	●	●
40	Rc1½	●	●
50	Rc2	●	●
Ⓑ Body/Seat			
N	Body - stainless steel / Seat - PTFE / Oil-prohibited specifications	●	●

Ⓒ Other options

	Descriptions	Applications	Remarks		
Blank	5-conductor cable 0.5 mm² (output lead wire)	—	—	●	●
T	3-conductor cable 0.75 mm² (no output)	Output lead wire not required	3-conductor cabtire cord used	●	●
B	Round terminal box (5 conductor)	Optional lead wire length required	—	●	●
L	Round terminal box + light (lighting at open, 3 terminals)	Fully open confir. by light	Lighting at fully open	●	●
R	Round terminal box + light (lighting at closed, 3 terminals)	Fully open confir. by light Fully closed confir.	Lighting at fully closed	●	●

Ⓓ Manual override			
Blank	Blank	●	●
M	Manual override	●	●
Ⓔ Voltage			
1	100 VAC (50/60Hz)	●	●
2	200 VAC (50/60Hz)	●	●
3	24 VDC	●	
4	12 VDC	●	

*1: When selecting both no output ("C" T) and a round terminal box ("C" B) as options, designate "C" as TB. A 3-terminal round terminal box will be provided.
*2: Combinations of LR, TL, TR, BL and BR aren't available for "C".
*3: Manual override ("D" is M) is available for port size 32, 40 and 50. When port size is 10 to 25, manual override is equipped as standard.

<Example of model number>

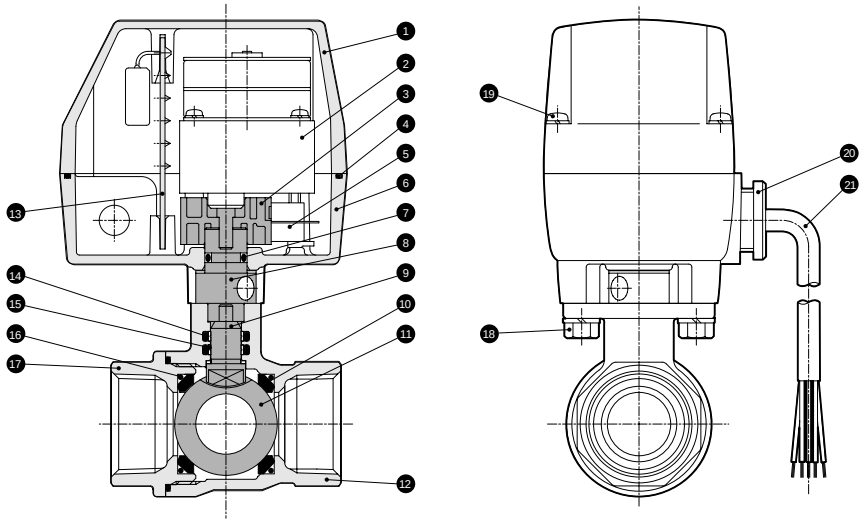
MXB1-32-NTM-1

Series: MXB1 (standard type)

Ⓐ Port size : Rc1 1/4
Ⓑ Body material : Body - stainless steel / Seat- PTFE / Oil-prohibited specifications
Ⓒ Other options : 3 conductor cable (no output)
Ⓓ Manual override : Selected
Ⓔ Voltage : 100 VAC (50/60Hz)

Internal structure and main parts material

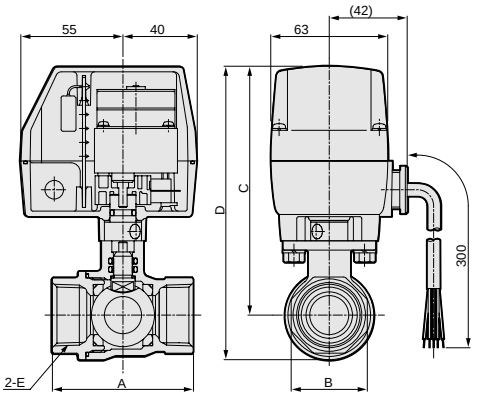
● MXB1/MXB1D



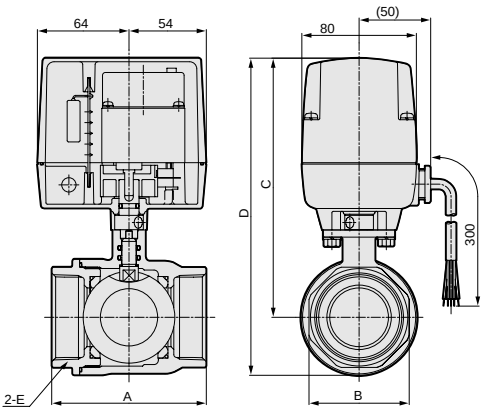
No.	Parts name	Material		No.	Parts name	Material	
1	Bonnet	ADC12	Aluminum alloy die-casting	11	Valve ball	SUS304	Stainless steel
2	Geared motor	-	-	12	Body	SCS13	Stainless steel die casting
3	Cam	PA	Polyamide	13	P plate assembly	PF	Phenol resin
4	Gasket	NBR	Nitrile rubber	14	O ring	FKM	Fluoro rubber
5	Micro switch	-	-	15	Sealing ring	UHMW-PE	Ultra high molecular weight polyethylene
6	Adaptor	ZDC2	Zinc alloy die-casting	16	O ring	FKM	Fluoro rubber
7	O ring	NBR	Nitrile rubber	17	Cap	SCS13	Stainless steel die casting
8	Intermediate bush	SUS303	Stainless steel	18	Hexagon head bolt	SWCH	Carbon steel wire for cold forging
9	Shaft	SUS304	Stainless steel	19	Cross headed pan	SWCH	Carbon steel wire for cold forging
10	Ball seat	PTFE	Tetrafluoroethylene resin	20	Bushing	PF	Phenol resin
				21	Cabtire cord	0.5mm^2, 5-conductor	-

Dimensions

●MXB1/MXB1D-10/15/20/25-N



●MXB1/MXB1D-32/40/50-N



Cabtire cord length 300mm

Model	A	B	C	D	E
MXB1 (D)-10-N	56	28	124.5	140.5	Rc3/8
MXB1 (D)-15-N	56	28	124.5	140.5	Rc1/2
MXB1 (D)-20-N	65	34	130.5	151	Rc3/4
MXB1 (D)-25-N	76	41	133.5	157.5	Rc1

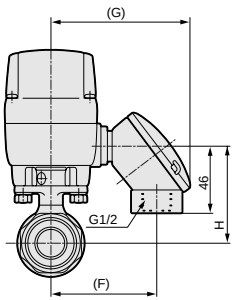
Cabtire cord length 300mm

Model	A	B	C	D	E
MXB1 (D)-32-N	84	50	166	195.5	Rc1 1/4
MXB1 (D)-40-N	94	57	172	207.5	Rc1 1/2
MXB1 (D)-50-N	108	70	181	221.5	Rc2

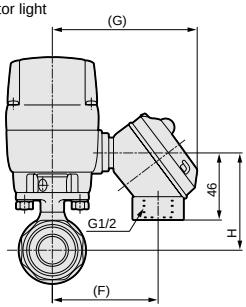
Note 1: For manual override "M", the MSB1 Series yoke is inserted between the valve and actuator, making dimensions C and D 22 mm longer.

Optional dimensions

●Round terminal box
MXB1/MXB1D- Port size -N B



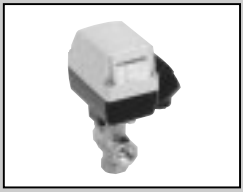
●Round terminal box with indicator light
MXB1/MXB1D- Port size -N L R



Port size	F	G	H
10	74	96	58.5
15	74	96	58.5
20	74	96	64.5
25	74	96	67.5
32	82	104	77.5 (Note 1)
40	82	104	83.5 (Note 1)
50	82	104	92.5 (Note 1)

Port size	F	G	H
10	74	101	58.5
15	74	101	58.5
20	74	101	64.5
25	74	101	67.5
32	82	109	77.5 (Note 1)
40	82	109	83.5 (Note 1)
50	82	109	92.5 (Note 1)

Note 1: For manual override "M", the MSB1 Series yoke is inserted between the valve and actuator, making dimensions 22 mm longer.



Electric driven oil prohibited ball valve 3 port valve (motor valve)

MXG1-N/MXG1D-N Series

● Port size: Rc1/2 to Rc2

Common specifications

Descriptions	MXG1 (standard type) / MXG1D (with relay)
Working fluid	Water, hot water, air
Working pressure range MPa	0 to 1.0 (refer to working pressure range on individual specifications.)
Withstanding pressure (water) MPa	2.0
Fluid temperature ℃	0 to 80 (no freezing)
Ambient temperature ℃	-10 to 50
Ambient humidity %	95 or less
Valve seat leakage cm^3/min	0 (under 1.0MPa or 0.5MPa (only for port size Rc2) water pressure)
Installation attitude	Limited from vertical to horizontal installation placing motor top.
Pressurization direction	Limited to Port C pressurized.
Protection grade	Rainproof IPX3 (standard and option T, K only)

Electrical specifications

Descriptions			MXG1-15	MXG1-20	MXG1-25	MXG1-32	MXG1-40	MXG1-50
Rated voltage Note 1			100 VAC (50/60Hz), 200 VAC (50/60Hz), 12 VDC and 24 VDC					
Apparent power VA	Holding	100 VAC	4.9/5.9 (50/60Hz)			13/15 (50/60Hz)		
		200 VAC	5.4/6.2 (50/60Hz)			13/15 (50/60Hz)		
	Starting	100 VAC	4.9/5.9 (50/60Hz)			13/15 (50/60Hz)		
		200 VAC	5.4/6.2 (50/60Hz)			13/15 (50/60Hz)		
Average Ampere A		12 VDC	1.1			1.5		
Note 2		24 VDC	0.7			1.0		
Peak Ampere A		12 VDC	1.8 or less			3 or less		
Note 2		24 VDC	1.2 or less			2 or less		
Power consumption W		AC	7			15		
		12 VDC	13			18		
		24 VDC	17			24		

Descriptions			MXG1D-15	MXG1D-20	MXG1D-25	MXG1D-32	MXG1D-40	MXG1D-50
Rated voltage Note 1			100 VAC (50/60Hz) and 200 VAC (50/60Hz)					
Apparent power VA	Holding	100 VAC	6.0/6.8 (50/60Hz)			14/16 (50/60Hz)		
		200 VAC	6.6/7.2 (50/60Hz)			14/16 (50/60Hz)		
	Starting	100 VAC	6.0/6.8 (50/60Hz)			14/16 (50/60Hz)		
		200 VAC	6.6/7.2 (50/60Hz)			14/16 (50/60Hz)		
Power consumption W			8			16		

Individual specifications

Descriptions		MXG1-15	MXG1-20	MXG1-25	MXG1-32	MXG1-40	MXG1-50
		MXG1D-15	MXG1D-20	MXG1D-25	MXG1D-32	MXG1D-40	MXG1D-50
Port size		Rc1/2	Rc3/4	Rc1	Rc1 1/4	Rc1 1/2	Rc2
Orifice mm		10	14	19	23	30	38
Cv flow factor		3	6	11	16	28	47
Working pressure range MPa		0 to 1.0					0 to 0.5
Interval when activated sec.	AC	20/16 (50/60Hz)			26/22 (50/60Hz)		
	DC	16			21		
Cycle rate Note 3	AC	1 cycle/min. or less			1 cycle/2min. or less		
	DC	1 cycle/2min. or less			1 cycle/5min. or less		
Mass kg	MXG1	1.3	1.4	1.7	2.7	3.2	4.1
	MXG1D	1.3	1.5	1.7	2.7	3.3	4.2

Note 1: Allowable voltage range should be within ±10% of rated voltage.
Note 2: Each ampere is the value when rated voltage.
Note 3: Cycle rate should be within the specifications.
Note 4: Consult with CKD about other than above specifications.

How to order

MXG1 - 20 - N K - 2

MXG1D

Series

Ⓐ Port size

Ⓑ Body/Seat

Ⓒ Other options

*1

*2

Ⓓ Voltage

Symbol	Descriptions	Series MXG1	Series MXG1D
Ⓐ Port size			
15	Rc1/2	●	●
20	Rc3/4	●	●
25	Rc1	●	●
32	Rc1¼	●	●
40	Rc1½	●	●
50	Rc2	●	●
Ⓑ Body/Seat			
N	Body - stainless steel / Seat - PTFE / Oil-prohibited specifications	●	●

Ⓒ Other options

	Descriptions	Applications	Remarks		
Blank	5-conductor cable 0.5 mm² (output lead wire)	—	—	●	●
T	3-conductor cable 0.75 mm² (no output)	Output lead wire not required	3-conductor cabtire cord used	●	●
B	Round terminal box (5 conductor)	Optional lead wire length required	—	●	●
L	Round terminal box + light (ON at A-C flow path, 3-terminal)	A-C flow path completion confirmation by light	Lighting whenA-C flow path completed	●	●
R	Round terminal box + light (ON at B-C flow path, 3-terminal)	B-C flow path completion confirmation by light	B-C flow path	●	●
K	Multi fluids type (90° turn switching / Operation time 1/2)	To avoid pump load	Both flows mixed during switching	●	●

Symbol	Descriptions	Series MXG1	Series MXG1D
Ⓓ Voltage			
1	100 VAC (50/60Hz)	●	●
2	200 VAC (50/60Hz)	●	●
3	24 VDC	●	
4	12 VDC	●	

*1: When optional specifications of "C" is duplicate, select one from following combinations. TB, TK, BK, LK, RK and TBK A 3-terminal round terminal box will be provided.
*2: Combinations of LR, TL, TR, BL and BR aren't available for "C".

<Example of model number>

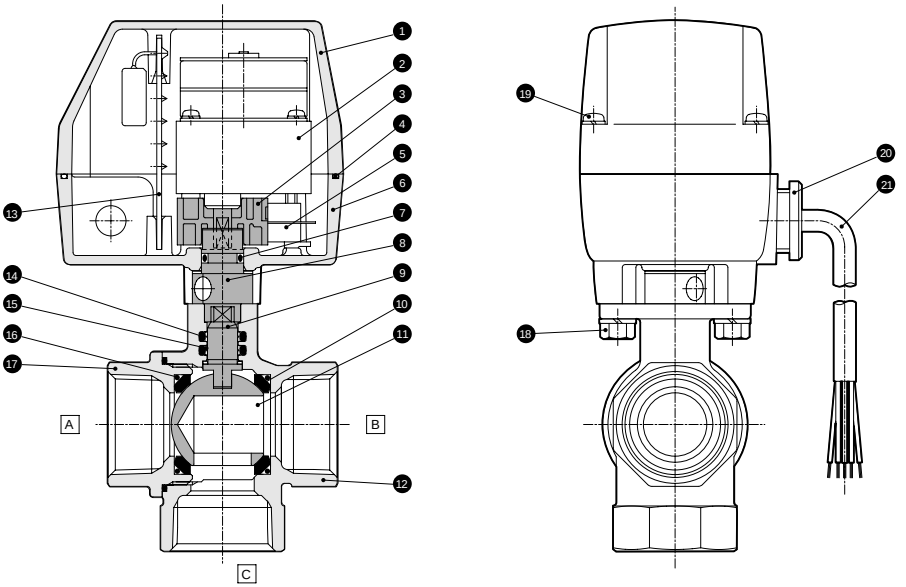
MXG1-20-NK-2

Series: MXG1

Ⓐ Port size : Rc3/4
Ⓑ Body/Seat : Body - stainless steel / Seat - PTFE / Oil-prohibited specifications
Ⓒ Other options : Multi fluids type (90 degree rotation switching method, operation time 1/2)
Ⓓ Voltage : 200 VAC (50/60Hz)

Internal structure and main parts material

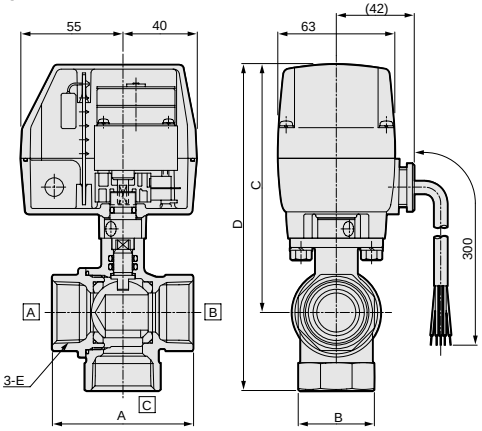
● MXG1/MXG1D



No.	Parts name	Material		No.	Parts name	Material	
1	Bonnet	ADC12	Aluminum alloy die-casting	11	Valve ball	SUS304	Stainless steel
2	Geared motor	-	-	12	Body	SCS13	Stainless steel die casting
3	Cam	PA	Polyamide	13	P plate assembly	PF	Phenol resin
4	Gasket	NBR	Nitrile rubber	14	O ring	FKM	Fluoro rubber
5	Micro switch	-	-	15	Sealing ring	UHMW-PE	Ultra high molecular weight polyethylene
6	Adaptor	ZDC2	Zinc alloy die-casting	16	O ring	FKM	Fluoro rubber
7	O ring	NBR	Nitrile rubber	17	Cap	SCS13	Stainless steel die casting
8	Intermediate bush	SUS303	Stainless steel	18	Hexagon head bolt	SWCH	Carbon steel wire for cold forging
9	Shaft	SUS304	Stainless steel	19	Cross headed pan	SWCH	Carbon steel wire for cold forging
10	Ball seat	PTFE	Tetrafluoroethylene resin	20	Bushing	PF	Phenol resin
				21	Cabtire cord	0.5mm^2, 5-conductor	-

Dimensions

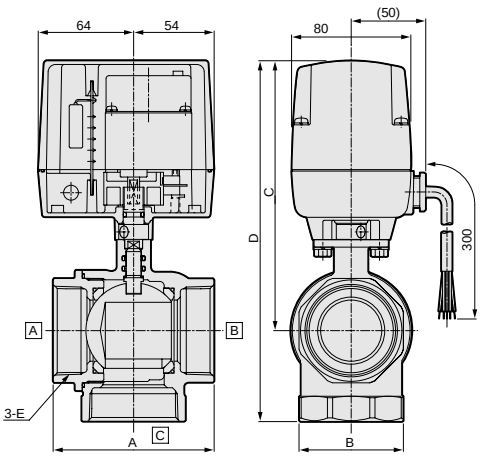
● MXG1/MXG1D-15/20/25-N



Cabtire cord length 300mm

Model	A	B	C	D	E
MXG1 (D)-15-N	56	28	124.5	154.5	Rc1/2
MXG1 (D)-20-N	65	34	130.5	166.5	Rc3/4
MXG1 (D)-25-N	76	41	133.5	175.5	Rc1

● MXG1/MXG1D-32/40/50-N

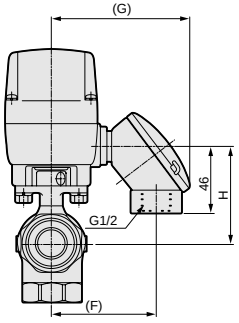


Cabtire cord length 300mm

Model	A	B	C	D	E
MXG1 (D)-32-N	84	50	166	213	Rc1 1/4
MXG1 (D)-40-N	94	57	172	225	Rc1 1/2
MXG1 (D)-50-N	108	70	181	242	Rc2

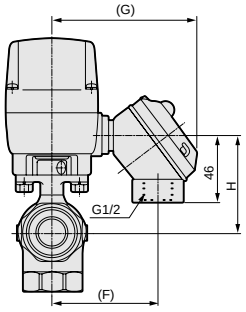
Optional dimensions

● Round terminal box
MXG1/MXG1D- Port size -N B

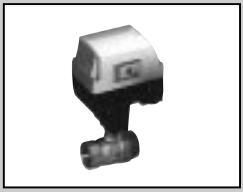


Port size	F	G	H
15	74	96	58.5
20	74	96	64.5
25	74	96	67.5
32	82	104	77.5
40	82	104	83.5
50	82	104	92.5

● Round terminal box with indicator light
MXG1/MXG1D- Port size -N L R



Port size	F	G	H
15	74	101	58.5
20	74	101	64.5
25	74	101	67.5
32	82	109	77.5
40	82	109	83.5
50	82	109	92.5



Electric driven ball valve 2 port valve for steam (motor valve)

MSB1/MSB1F Series

● Port size: Rc3/8 to Rc2

CAD

Common specifications

Descriptions			MSB1 (standard bore)/MSB1F (full bore)						
Working fluid			Steam, hot water						
Working pressure range MPa			0 to 0.6 (refer to working pressure range on individual specifications.)						
Withstanding pressure (water) MPa			2.0						
Ambient temperature ℃			-10 to 50						
Ambient humidity %			95 or less						
Valve seat leakage cm^3/min			1 or less (Note when pressure is 0.6MPa, or for MSB1-50/MSB1F-40 when pressure is 0.5MPa)						
Installation attitude			Limited from vertical to horizontal installation placing motor top.						
Pressurization direction			Random						
Protection grade			Rainproof IPX3 (standard and option T only)						
Electrical specifications			MSB1-10	MSB1-15	MSB1-20	MSB1-25	MSB1-32	MSB1-40	MSB1-50
			MSB1F-15		MSB1F-20		MSB1F-25	MSB1F-32	MSB1F-40
Rated voltage		Note 1	100 VAC (50/60Hz) and 200 VAC (50/60Hz)						
Apparent power VA	Holding	100 VAC	4.9/5.9 (50/60Hz)				13/15 (50/60Hz)		
		200 VAC	5.4/6.2 (50/60Hz)				13/15 (50/60Hz)		
	Starting	100 VAC	4.9/5.9 (50/60Hz)				13/15 (50/60Hz)		
		200 VAC	5.4/6.2 (50/60Hz)				13/15 (50/60Hz)		
Power consumption W		AC	7				15		

MSB1 (standard bore) individual specifications

Descriptions		MSB1-10 Note 2	MSB1-15	MSB1-20	MSB1-25	MSB1-32	MSB1-40	MSB1-50
Port size		Rc3/8	Rc1/2	Rc3/4	Rc1	Rc1 1/4	Rc1 1/2	Rc2
Orifice mm		10	10	15	20	25	32	40
Cv flow factor		10	6	16	29	50	98	125
Working pressure range MPa		0 to 0.6						0 to 0.5
Fluid temperature ℃		0 to 164 (no freezing)						0 to 158
Interval when activated sec.	50Hz	10				13		
	60Hz	8				11		
Cycle rate	Note 3	1 cycle/min. or less						
Mass kg		1.3	1.3	1.4	1.6	2.6	3.1	3.8

MSB1F (full bore) individual specifications

Descriptions		MSB1F-15	MSB1F-20	MSB1F-25	MSB1F-32	MSB1F-40
Port size		Rc1/2	Rc3/4	Rc1	Rc1 1/4	Rc1 1/2
Orifice mm		15	20	25	32	40
Cv flow factor		23	51	66	114	176
Working pressure range MPa		0 to 0.6				0 to 0.5
Fluid temperature ℃		0 to 164 (no freezing)				0 to 158
Interval when activated sec.	50Hz	10		13		
	60Hz	8		11		
Cycle rate	Note 3	1 cycle/min. or less				
Mass kg		1.4	1.6	2.6	3.1	3.8

Note 1: Allowable voltage range should be within ±10% of rated voltage.
Note 2: MSB1-10 is a full bore.
Note 3: Cycle rate should be within the specifications.
Note 4: Consult with CKD about other than above specifications.

How to order

MSB1 / MSB1F - 32 - H T M - 1

Series

Ⓐ Port size

Ⓑ Body/Seat

Ⓒ Other options
* 1
* 2

Ⓓ Manual override
* 3

Ⓔ Voltage

Symbol	Descriptions			Series MSB1 (Standard bore)	Series MSB1F (Full bore)
Ⓐ Port size					
10	Rc3/8 *4			●	
15	Rc1/2			●	●
20	Rc3/4			●	●
25	Rc1			●	●
32	Rc1 1/4			●	●
40	Rc1 1/2			●	●
50	Rc2			●	
Ⓑ Body/Seat					
H	Body - bronze/Seat - reinforced PTFE			●	●
W	Stainless steel-reinforced Teflon			●	
Ⓒ Other options					
	Descriptions	Applications	Remarks		
Blank	5-conductor cable 0.5 mm² (output lead wire)	—	—	●	●
T	3-conductor cable 0.75 mm² (no output)	Output lead wire not required	3-conductor cabtire cord used	●	●
B	Round terminal box (5 conductor)	Optional lead wire length required	—	●	●
L	Round terminal box + light (ON when open, 3 terminal)	Fully open confir. by light	Lighting at fully open	●	●
R	Round terminal box + light (OFF when closed, 3 terminal)	Fully open confir. by light Fully closed confir.	Lighting at fully closed	●	●
Ⓓ Manual override					
Blank	Blank			●	●
M	Manual override			●	●
Ⓔ Voltage					
1	100 VAC (50/60Hz)			●	●
2	200 VAC (50/60Hz)			●	●

*1: When selecting both no output ("C" T) and a round terminal box ("C" B) as options, designate "C" as TB. A 3-terminal round terminal box will be provided.
*2: Combinations of LR, TL, TR, BL and BR aren't available for "C".
*3: For manual override ("D" M), port size 32, 40, or 50 is selected for MSB1.
For MSB1F, 25, 32, or 40 is selected.
When port size is 10 to 25, manual override is equipped as standard.
*4: The port size 10 is a full bore, but the model is MSB1.

<Example of model number>

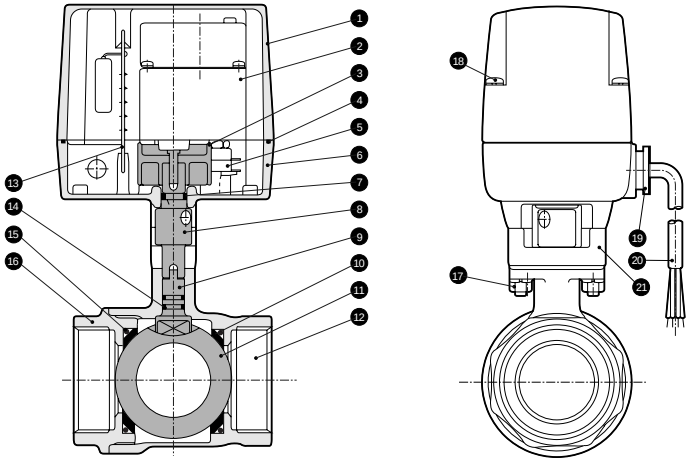
MSB1-32-HTM-1

Series: MSB1 (standard bore)

Ⓐ Port size : Rc1 1/4
Ⓑ Body/Seat : Body - bronze/Seat - reinforced PTFE
Ⓒ Other options : 3 conductor cable (no output)
Ⓓ Manual override : Selected
Ⓔ Voltage : 100 VAC (50/60Hz)

Internal structure and main parts material

● MSB1/MSB1F



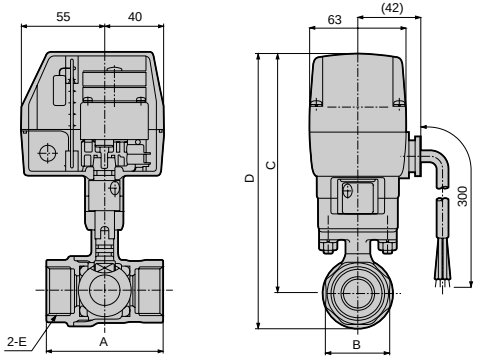
No.	Parts name	Material		No.	Parts name	Material	
1	Bonnet	ADC12	Aluminum alloy die-casting	11	Valve ball	C3771 (SUS304)	Brass *1 (stainless steel)
2	Geared motor	-	-	12	Body	CAC407 (SCS13)	Bronze casting (stainless steel casting)
3	Cam	PA	Polyamide	13	P plate assembly	PF	Phenol resin
4	Gasket	NBR	Nitrile 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	CAC407 (SCS13)	Bronze casting (stainless steel casting)
7	O ring	NBR	Nitrile rubber	17	Hexagon nut	SWCH	Carbon steel wire for cold forging
8	Intermediate bush	SUS303	Stainless steel	18	Cross headed pan	SWCH	Carbon steel wire for cold forging
9	Shaft	SUS303 (SUS304)	Stainless steel (stainless steel)	19	Bushing	PF	Phenol resin
10	Ball seat	Reinforced Teflon	-	20	Cabtire cord	0.5mm^2, 5-conductor	-
				21	Yoke	PM-HH	Phenol resin

( ) shows values for stainless steel body

*1: Valve ball is made of hard chrome plated brass.

Dimensions CAD (Page 613)

● MSB1-10/15/20/25-*
● MSB1F-15/25-H

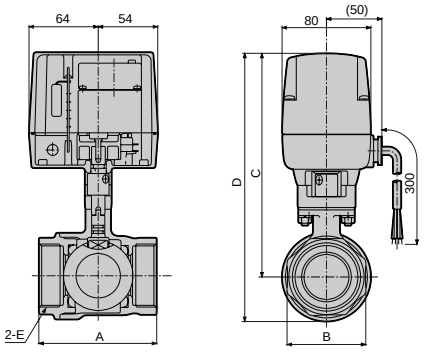


Cabtire cord length 300 mm

Model	A	B	C	D	E
MSB1-10-*	50 (56)	24 (28)	146.5	161.5 (162.5)	Rc3/8
MSB1-15-*	56	28	146.5	161.5 (162.5)	Rc1/2
MSB1-20-*	65	34	152.5	172 (173)	Rc3/4
MSB1-25-*	76	41	155.5	178.5 (179.5)	Rc1
MSB1F-15-H	65	28	152.5	172	Rc1/2
MSB1F-20-H	71	34	155.5	178.5	Rc3/4

Note 1: ( ) shows values for stainless steel body

● MSB1-32/40/50-*
● MSB1F-25/32/40-H



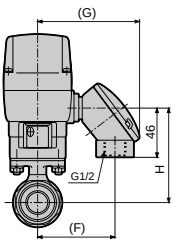
Cabtire cord length 300 mm

Model	A	B	C	D	E
MSB1-32-*	84	50	188	215.5 (217.5)	Rc1¼
MSB1-40-*	94	57	194	227.5 (229.5)	Rc1½
MSB1-50-*	108	70	203	242.5 (243.5)	Rc2
MSB1F-25-H	84	41	188	215.5	Rc1
MSB1F-32-H	95	50	194	227.5	Rc1¼
MSB1F-40-H	107	57	203	242.5	Rc1½

Note 1: Dimensions do not change when the manual override "M" is provided.
Note 2: ( ) shows values for stainless steel body

Optional dimensions

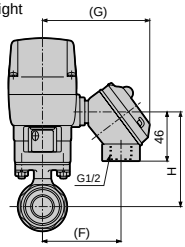
● Round terminal box
MSB1- Port size -* B
MSB1F- Port size -H B



Port size		F	G	H
MSB1	MSB1F			
10	**-**	74	96	80.5
15	**-**	74	96	80.5
20	**15**	74	96	86.5
25	**20**	74	96	89.5
32	**25**	82	104	99.5
40	**32**	82	104	105.5
50	**40**	82	104	114.5

Note 1: Dimensions do not change for large port size (32 to 50) when the manual override "M" is provided.

● Round terminal box with indicator light
MSB1- Port size -* L R
MSB1F- Port size -H L R



Port size		F	G	H
MSB1	MSB1F			
10	**-**	74	101	80.5
15	**-**	74	101	80.5
20	**15**	74	101	86.5
25	**20**	74	101	89.5
32	**25**	82	109	99.5
40	**32**	82	109	105.5
50	**40**	82	109	114.5

Note 1: Dimensions do not change for large port size (32 to 50) when the manual override "M" is provided.

Electric driven ball valve 2 port valve for steam with relay (motor valve)

MSB1D/MSB1DF Series

● Port size: Rc3/8 to Rc2

Common specifications

Descriptions			MSB1D (standard bore) / MSB1DF (full bore)						
Working fluid			Steam, hot water						
Working pressure range MPa			0 to 0.6 (refer to working pressure range on individual specifications.)						
Withstanding pressure (water) MPa			2.0						
Ambient temperature ℃			-10 to 50						
Ambient humidity %			95 or less						
Valve seat leakage cm^3/min			1 or less (Note when pressure is 0.6MPa, or for MSB1D-50/MSB1DF-40 when pressure is 0.5MPa)						
Installation attitude			Limited from vertical to horizontal installation placing motor top.						
Pressurization direction			Random						
Protection grade			Rainproof IPX3 (standard and option T only)						
Electrical specifications			MSB1D-10	MSB1D-15	MSB1D-20	MSB1D-25	MSB1D-32	MSB1D-40	MSBD1-50
			MSB1DF-15		MSB1DF-20		MSB1DF-25	MSB1DF-32	MSB1DF-40
Rated voltage Note 1			100 VAC (50/60Hz) and 200 VAC (50/60Hz)						
Apparent power VA	Holding	100 VAC	6.0/6.8 (50/60Hz)				14/16 (50/60Hz)		
		200 VAC	6.6/7.2 (50/60Hz)				14/16 (50/60Hz)		
	Starting	100 VAC	6.0/6.8 (50/60Hz)				14/16 (50/60Hz)		
		200 VAC	6.6/7.2 (50/60Hz)				14/16 (50/60Hz)		
Power consumption W			8				16		

MSB1D (standard bore) individual specifications

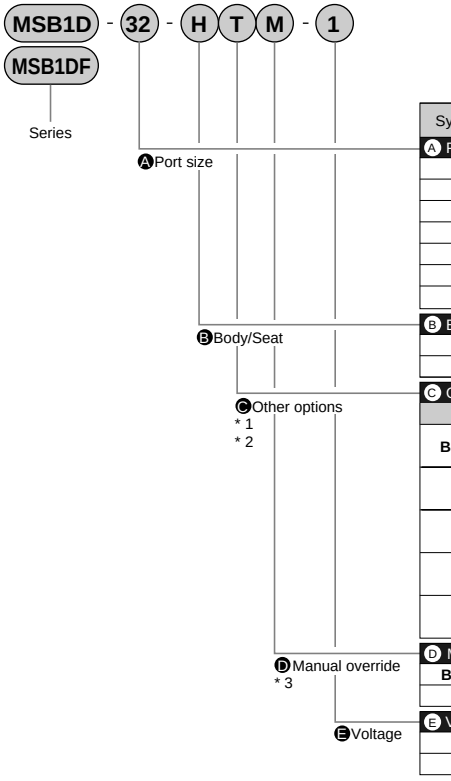
Descriptions		MSB1D-10 Note 2	MSB1D-15	MSB1D-20	MSB1D-25	MSB1D-32	MSB1D-40	MSB1D-50
Port size		Rc3/8	Rc1/2	Rc3/4	Rc1	Rc1 1/4	Rc1 1/2	Rc2
Orifice mm		10	10	15	20	25	32	40
Cv flow factor		10	6	16	29	50	98	125
Working pressure range MPa		0 to 0.6						0 to 0.5
Fluid temperature ℃		0 to 164 (no freezing)						0 to 158
Interval when activated sec.	50Hz	10				13		
	60Hz	8				11		
Cycle rate Note 3		1 cycle/min. or less						
Mass kg		1.3	1.3	1.5	1.6	2.6	3.1	3.9

MSB1DF (full bore) individual specifications

Descriptions		MSB1DF-15	MSB1DF-20	MSB1DF-25	MSB1DF-32	MSB1DF-40
Port size		Rc1/2	Rc3/4	Rc1	Rc1 1/4	Rc1 1/2
Orifice mm		15	20	25	32	40
Cv flow factor		23	51	66	114	176
Working pressure range MPa		0 to 0.6				0 to 0.5
Fluid temperature ℃		0 to 164 (no freezing)				0 to 158
Interval when activated sec.	50Hz	10		13		
	60Hz	8		11		
Cycle rate Note 3		1 cycle/min. or less				
Mass kg		1.5	1.6	2.6	3.1	3.9

Note 1: Allowable voltage range should be within ±10% of rated voltage.
Note 2: MSB1D-10 is a full bore.
Note 3: Cycle rate should be within the specifications.
Note 4: Consult with CKD about other than above specifications.

How to order



Symbol	Descriptions	Series MSB1D (Standard bore)	Series MSB1DF (Full bore)
Ⓐ Port size			
10	Rc3/8 *4	●	
15	Rc1/2	●	●
20	Rc3/4	●	●
25	Rc1	●	●
32	Rc1 1/4	●	●
40	Rc1 1/2	●	●
50	Rc2	●	
Ⓑ Body/Seat			
H	Body - bronze/Seat - reinforced PTFE	●	●
W	Stainless steel - reinforced Teflon	●	

Ⓒ Other options

	Descriptions	Applications	Remarks		
Blank	5-conductor cable 0.5 mm² (output lead wire)	—	—	●	●
T	3-conductor cable 0.75 mm² (no output)	Output lead wire not required	3-conductor cabtire cord used	●	●
B	Round terminal box (5 conductor)	Optional lead wire length required	—	●	●
L	Round terminal box + light (ON when open, 3 terminal)	Fully open confir. by light	Lighting at fully open	●	●
R	Round terminal box + light (OFF when closed, 3 terminal)	Fully open confir. by light Fully closed confir.	Lighting at fully closed	●	●

Ⓓ Manual override			
Blank	Blank	●	●
M	Manual override	●	●
Ⓔ Voltage			
1	100 VAC (50/60Hz)	●	●
2	200 VAC (50/60Hz)	●	●

*1. When selecting both no output ("C" T) and a round terminal box ("C" B) as options, designate "C" as TB. A 3-terminal round terminal box will be provided.
*2: Combinations of LR, TL, TR, BL and BR aren't available for "C".
*3: For manual override ("D" M), port size 32, 40, or 50 is selected for MSB1D. For MSB1DF, 25, 32, or 40 is selected. When port size is 10 to 25, manual override is equipped as standard.
*4: The port size 10 is a full bore, but the model is MSB1D.

<Example of model number>

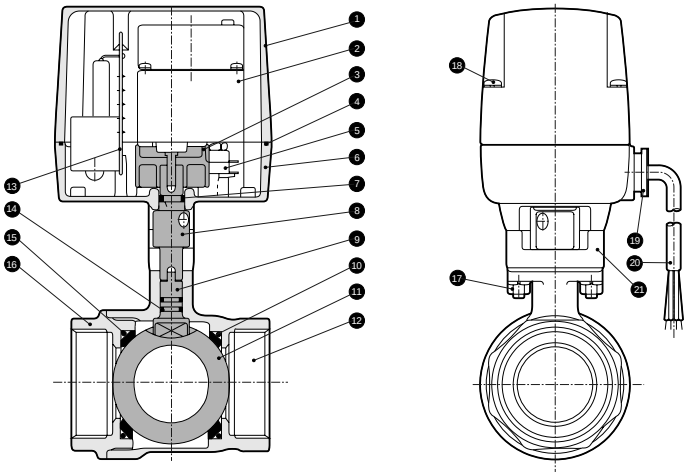
MSB1D-32-HTM-2

Series: MSB1D (standard bore)

Ⓐ Port size : Rc1 1/4
Ⓑ Body/Seat : Body - bronze/Seat - reinforced PTFE
Ⓒ Other options : 3 conductor cable (no output)
Ⓓ Manual override : Selected
Ⓔ Voltage : 200 VAC (50/60Hz)

Internal structure and main parts material

● MSB1D/MSB1DF



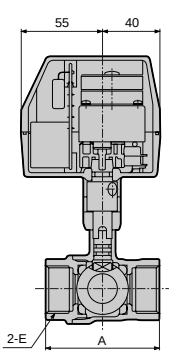
No.	Parts name	Material		No.	Parts name	Material	
1	Bonnet	ADC12	Aluminum alloy die-casting	11	Valve ball	C3771 (SUS304)	Brass *1 (stainless steel)
2	Geared motor	-	-	12	Body	CAC407 (SCS13)	Bronze casting (stainless steel casting)
3	Cam	PA	Polyamide	13	P plate assembly	PF	Phenol resin
4	Gasket	NBR	Nitrile 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	CAC407 (SCS13)	Bronze casting (stainless steel casting)
7	O ring	NBR	Nitrile rubber	17	Hexagon nut	SWCH	Carbon steel wire for cold forging
8	Intermediate bush	SUS303	Stainless steel	18	Cross headed pan	SWCH	Carbon steel wire for cold forging
9	Shaft	SUS303 (SUS304)	Stainless steel (stainless steel)	19	Bushing	PF	Phenol resin
10	Ball seat	Reinforced Teflon	-	20	Cabtire cord	0.5mm^2, 5-conductor	-
				21	Yoke	PM-HH	Phenol resin

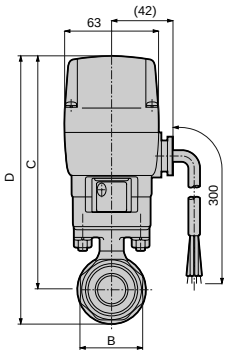
( ) shows values for stainless steel body

*1: Valve ball made of hard chrome plated brass.

Dimensions

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

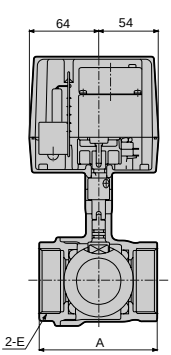


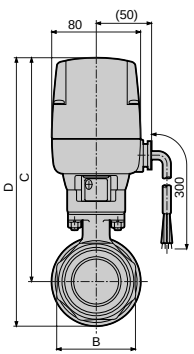


Cabtire cord length 300 mm

Model	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





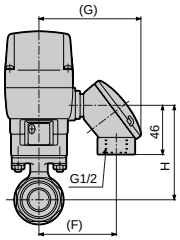
Cabtire cord length 300 mm

Model	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

Note 1: Dimensions do not change when the manual override "M" is provided.

Optional dimensions

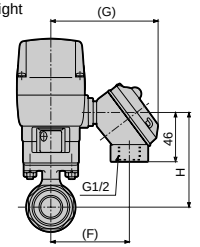
● Round terminal box
MSB1D-[Port size]-*[B]
MSB1DF-[Port size]-H[B]



Port size		F	G	H
MSB1D	MSB1DF			
10	**-**	74	96	80.5
15	**-**	74	96	80.5
20	**15**	74	96	86.5
25	**20**	74	96	89.5
32	**25**	82	104	99.5
40	**32**	82	104	105.5
50	**40**	82	104	114.5

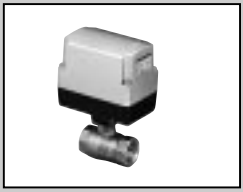
Note 1: Dimensions do not change for large port size (32 to 50) when the manual override "M" is provided.

● Round terminal box with indicator light
MSB1D-[Port size]-*[L/R]
MSB1DF-[Port size]-H[L/R]



Port size		F	G	H
MSB1D	MSB1DF			
10	**-**	74	101	80.5
15	**-**	74	101	80.5
20	**15**	74	101	86.5
25	**20**	74	101	89.5
32	**25**	82	109	99.5
40	**32**	82	109	105.5
50	**40**	82	109	114.5

Note 1: Dimensions do not change for large port size (32 to 50) when the manual override "M" is provided.



Electric driven ball valve 2, 3 port valve proportional control (motor valve)

MXBC/MXGC Series

● Port size: Rc3/8 to Rc1

CAD

Common specifications

Descriptions	MXBC	MXGC
Working fluid	Water, hot water	
Working pressure range MPa	0 to 1.0	
Withstanding pressure (with water pressure) MPa	2.0	
Fluid temperature ℃	0 to 80 (no freezing)	
Ambient temperature ℃	-10 to 50	
Ambient humidity %	95 or less	
Valve seat leakage cm³/min	0 (under 1.0MPa water pressure)	
Installation attitude	Limited from vertical to horizontal installation placing motor top.	
Pressurization direction	Random	Limited to C port pressurizing
Protection grade	Rainproof IPX	

Electrical specifications

Descriptions			Standard type
Rated voltage Note 1			24 VDC
Consumption current (average) mA			750±100
Input signal			DC0(4) to 20mA, internal impedance 240 ohm (fully closed: 0mA)
Resolution			2.5% or less
Descriptions			**Simple control type**
Rated voltage Note 1			100 VAC (50/60Hz) and 200 VAC (50/60Hz)
Apparent power VA	Holding	100 VAC	4.9/5.9 (50/60Hz)
		200 VAC	5.4/6.2 (50/60Hz)
	Starting	100 VAC	4.9/5.9 (50/60Hz)
		200 VAC	5.4/6.2 (50/60Hz)
Power consumption W			7
Interval when activated sec.			10/8 (50/60Hz)

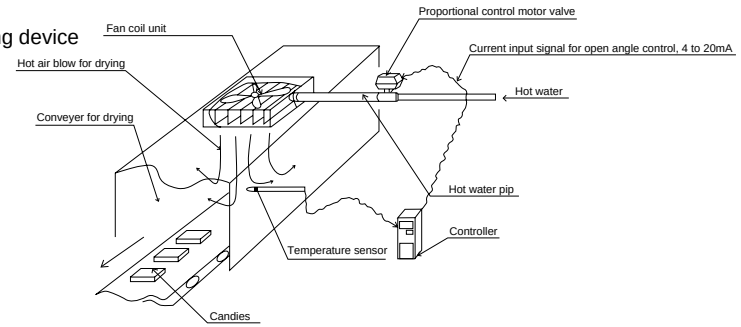
Note 1: Keep the allowable voltage range to within ±10% of the rated voltage.

Individual specifications

Descriptions	2 port valve				3 port valve		
	MXBC-10	MXBC-15	MXBC-20	MXBC-25	MXGC-15	MXGC-20	MXGC-25
Port size	Rc3/8	Rc1/2	Rc3/4	Rc1	Rc1/2	Rc3/4	Rc1
Orifice mm	10	10	15	20	10	14	19
Cv flow factor	10	6	16	29	3	6	11
Max. ON/OFF frequency	3 second operation / 5 second stop						
Interval when activated sec.	Fully open-fully closed 8				A-C flow path-B-C flow path 16		
Mass kg	2.0	2.0	2.2	2.3	2.2	2.3	2.5

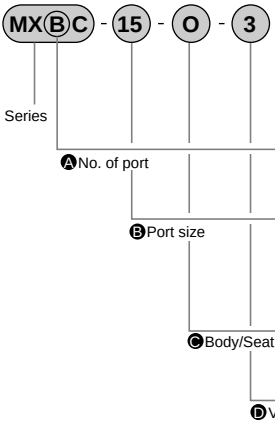
Application

● Candy drying device



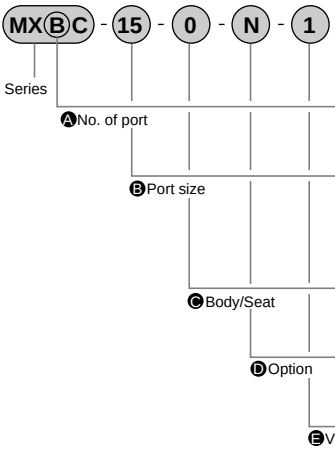
How to order

●When standard type (current input control circuit board incorporated)



Symbol	Descriptions	Remarks
A No. of port		
B	2 port	
G	3 port	Multi fluids type
B Port size		
10	Rc3/8	Only MXBC (2 port valve) available
15	Rc1/2	
20	Rc3/4	
25	Rc1	
C Body/Seat		
O	Body - bronze/Seat - PTFE	
E	Body - stainless steel/Seat - PTFE	
D Voltage		
3	24 VDC	

●When simple control type (no control circuit board but potentiometer only)



Symbol	Descriptions	Remarks
A No. of port		
B	2 port	
G	3 port	Multi fluids type
B Port size		
10	Rc3/8	Only MXBC (2 port valve) available
15	Rc1/2	
20	Rc3/4	
25	Rc1	
C Body/Seat		
O	Body - bronze/Seat - PTFE	
E	Body - stainless steel/Seat - PTFE	
D Option		
N	Simple control type (no control circuit board but potentiometer only)	Proportional positioning control device is required for proportional control.
E Voltage		
1	100 VAC (50/60Hz)	
2	200 VAC (50/60Hz)	

<Example of model number>

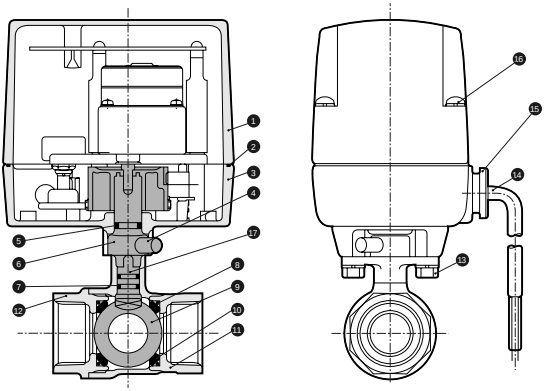
MXBC-15-0-N-1

Series: MXBC

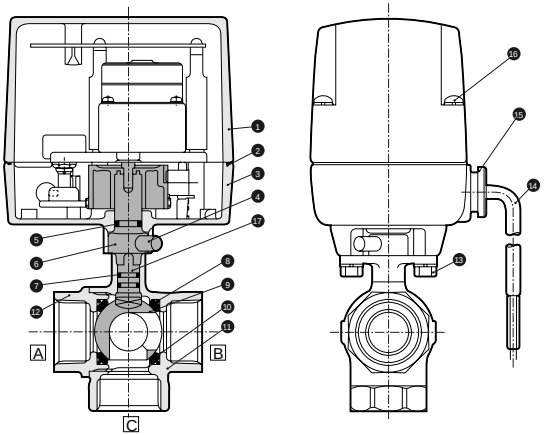
A No. of port : 2 port valve
B Port size : Rc1/2
C Body/Seat : Body - bronze/valve seat - PTFE
D Option : simple control type
E Voltage : 100 VAC (50/60Hz)

Internal structure and main parts material

● MXBC-10/15/20/25-0



● MXGC-15/20/25-0



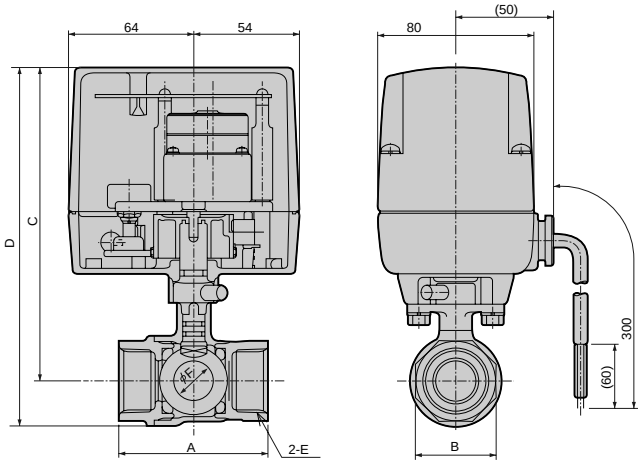
No.	Parts name	Material		No.	Parts name	Material	
1	Bonnet	ADC12	Aluminum alloy die-casting	10	Ball seat	PTFE	Tetrafluoroethylene resin
2	Gasket	NBR	Nitrile rubber	11	Body	CAC407 (SCS13)	Bronze casting (stainless steel casting)
3	Adaptor	ZDC2	Zinc alloy die-casting	12	Cap	CAC407 (SCS13)	Bronze casting (stainless steel casting)
4	Stopper	C2700	Brass	13	Hexagon head bolt	SWCH	Carbon steel wire for cold forging
5	O ring	FKM	Fluoro rubber	14	Code	0.75mm², 3-conductor	-
6	Intermediate bush	SUS303	Stainless steel	15	Bushing	PF	Phenol resin
7	O ring	FKM, NBR *1	Fluoro rubber/ nitrile rubber	16	Cross headed pan	SWCH	Carbon steel wire for cold forging
8	O ring	FKM	Fluoro rubber	17	Shaft	SUS303 (SUS304)	Stainless steel (stainless steel)
9	Valve ball	C3771 (SUS304)	Brass *2 (stainless steel)				

( ) shows values for stainless steel body

* 1: Upper O ring is NBR, lower is FKM. For stainless steel, FKM is used for both upper and lower O rings.
* 2: Valve ball made of hard chrome plated brass.

Dimensions CAD (Page 613)

● MXBC-10/15/20/25-0

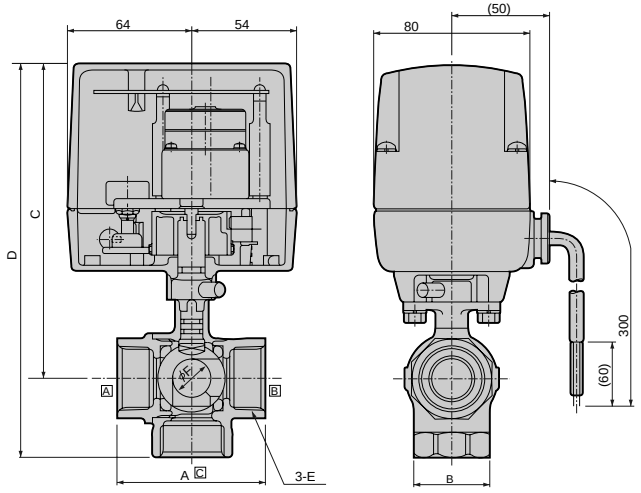


Cabtire cord length 300 mm

Model	A	B	C	D	E	F
MXBC-10	50 (56)	24 (28)	151	166 (167)	Rc3/8	10
MXBC-15	56	28	151	166 (167)	Rc1/2	10
MXBC-20	65	34	157	176.5 (177.5)	Rc3/4	15
MXBC-25	76	41	160	183 (184)	Rc1	20

( ) shows values for stainless steel body

● MXGC-15/20/25-0



Cabtire cord length 300 mm

Model	A	B	C	D	E	F
MXGC-15	56	28	151	181	Rc1/2	10
MXGC-20	65	34	157	193	Rc3/4	14
MXGC-25	76	41	160	202	Rc1	19

Electric driven ball valve 2, 3 port valve miniature type (motor valve)

MHB4/MHG4 Series

● Port size: Rc3/8 to Rc1

CAD

Common specifications

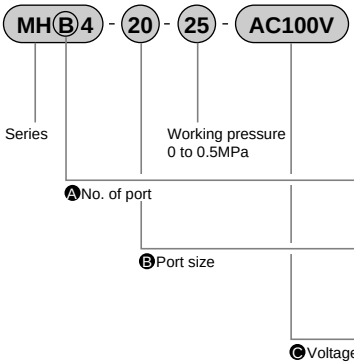
Descriptions			MHB4/MHG4
Working fluid			Water, hot water, air, oil (500mm^2/s or less)
Working pressure range	MPa		0 to 0.5
Withstanding pressure (water)	MPa		1.0
Fluid temperature	℃		0 to 80 (no freezing)
Ambient temperature	℃		-10 to 50
Ambient humidity	%		70 or less
Valve seat leakage	cm^3/min		0 (under 0.5MPa water pressure)
Installation attitude			Limited from vertical to horizontal installation placing motor top.
Rated voltage		Note 1	100 VAC (50/60Hz) and 200 VAC (50/60Hz)
Apparent power	VA	Holding 100 VAC	4.4/3.5 (50/60Hz)
		Holding 200 VAC	3.4/2.6 (50/60Hz)
		Starting 100 VAC	4.4/3.5 (50/60Hz)
		Starting 200 VAC	3.4/2.6 (50/60Hz)
Power consumption	W		5
Cycle rate			1 cycle/min. or less

Individual specifications

Descriptions		2 port valve			3 port valve		
		MHB4-10-25	MHB4-15-25	MHB4-20-25	MHG4-10-25	MHG4-15-25	MHG4-20-25
Port size		Rc3/8	Rc1/2	Rc3/4	Rc3/8	Rc1/2	Rc3/4
Orifice	mm	8	8	10	8	8	10
Cv flow factor		3.3	3.0	4.7	1.8	1.1	3.0
Interval when activated	50Hz sec.	4.5			9		
	60Hz sec.	3.8			7.5		
Mass	kg	0.42	0.44	0.51	0.45	0.49	0.57
Pressurization direction		Random			Limited to Port C pressurized		

Note 1: Allowable voltage range should be within ±10% of rated voltage.
Note 2: Consult with CKD about other than above specifications.
Note 3: Only when vertical installation placing motor top, protection grade is JIS CO920 IPX2 "drip proof type II.

How to order



Symbol	Descriptions
Ⓐ No. of port	
B	2 port
G	3 port
Ⓑ Port size	
10	Rc3/8
15	Rc1/2
20	Rc3/4
Ⓒ Voltage	
AC100V	100 VAC (50/60Hz)
AC200V	200 VAC (50/60Hz)

<Example of model number>

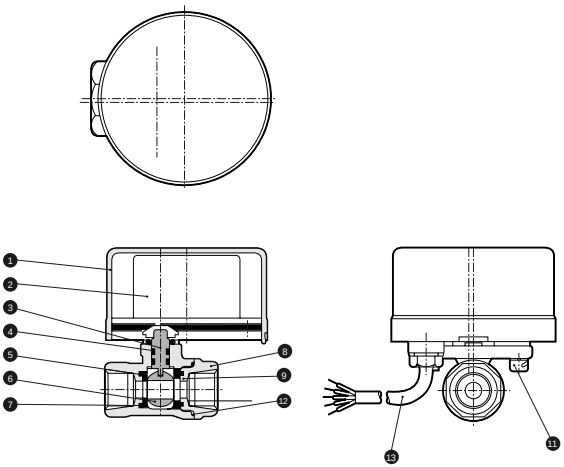
MHB4-20-25-AC100V

Series: MHB4

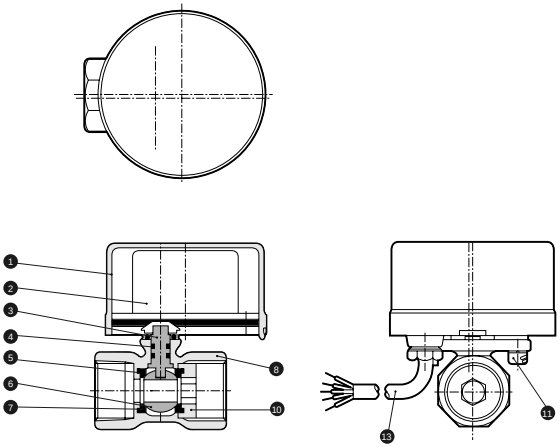
ⒶNo. of port : 2 port valve
ⒷPort size : Rc3/4
ⒸVoltage : 100 VAC (50/60Hz)

Internal structure and main parts material: MHB4 Series

● MHB4-10-25



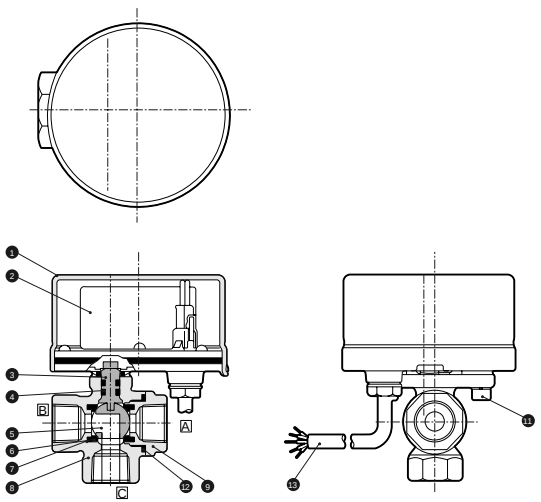
● MHB4-15/20-25



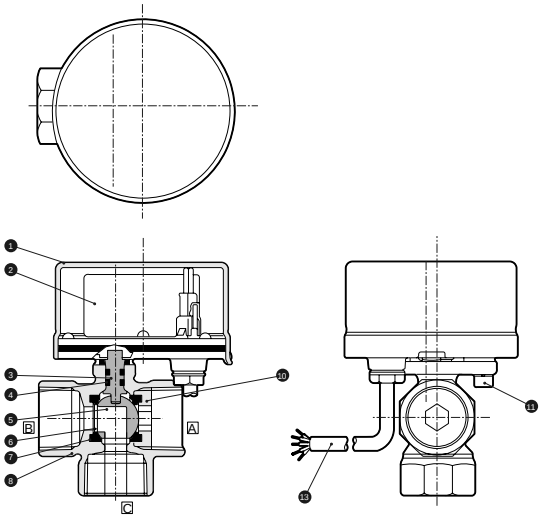
No.	Parts name	Material		No.	Parts name	Material	
1	Cover	PP	Polypropylene resin	**7**	Valve seat	PTFE	Tetrafluoroethylene resin
2	Motor assembly	-	-	**8**	Body	CAC407	Bronze casting
3	Shaft	SUS303	Stainless steel	**9**	Cap	CAC407	Bronze casting
4	O ring	FKM	Fluoro rubber	**10**	Insert	CAC407	Bronze casting
5	O ring	FKM	Fluoro rubber	**11**	Hexagon socket head cap screw	SCM435	Alloy steel
6	Valve ball	CAC407	Bronze casting	**12**	O ring	FKM	Fluoro rubber
				13	Cabtire cord	0.3mm^2, 5-conductor	-

Internal structure and main parts material: MHG4 Series

● MHG4-10-25



● MHG4-15/20-25

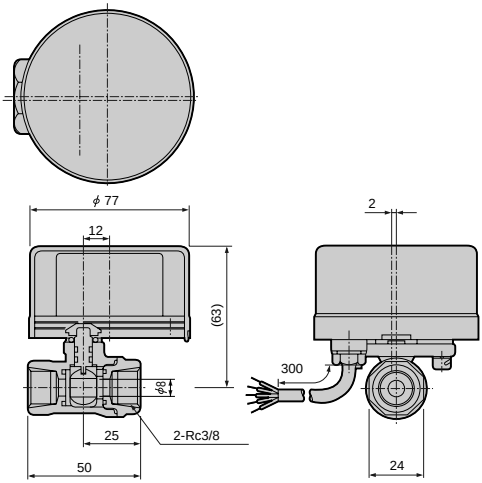


No.	Parts name	Material		No.	Parts name	Material	
1	Cover	PP	Polypropylene resin	7	O ring	FKM	Fluoro rubber
2	Motor assembly	-	-	8	Body	CAC407	Bronze casting
3	Shaft	SUS303	Stainless steel	9	Cap	CAC407	Bronze casting
4	O ring	FKM	Fluoro rubber	10	Insert	CAC407	Bronze casting
5	Valve ball	CAC407	Bronze casting	11	Hexagon socket head cap screw	SCM435	Alloy steel
6	Valve seat	PTFE	Tetrafluoroethylene resin	12	O ring	FKM	Fluoro rubber
				13	Cabtire cord	0.3mm^2, 5-conductor	-

Dimensions: MHB4 Series

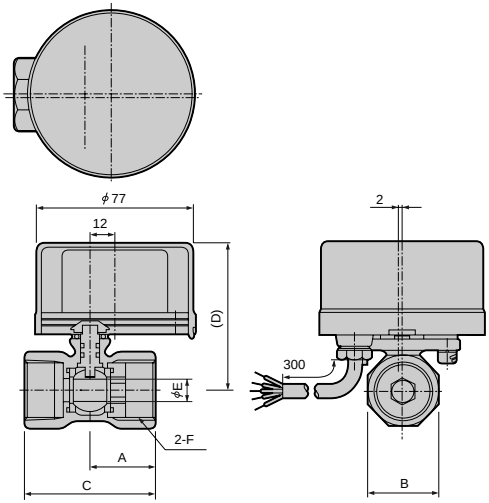
(Page 613)

● MHB4-10-25



Cabtire cord length 300 mm

● MHB4-15/20-25



Cabtire cord length 300 mm

Model	A	B	C	D	E	F
MHB4-15-25	27	27	56	63	8	Rc1/2
MHB4-20-25	30	32	63	66	10	Rc3/4

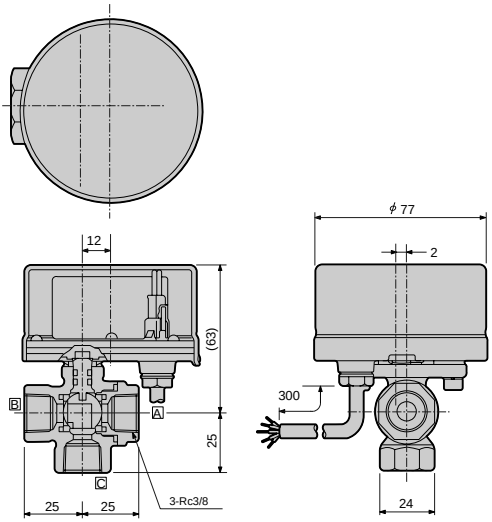
⚠ Cautions on use

● Since this valve rotates one way only, reverse turn is impossible during operation. For example, if the operation switch is returned to closed during switching close to open, the valve will be closed after fully open.

Dimensions: MHG4 Series

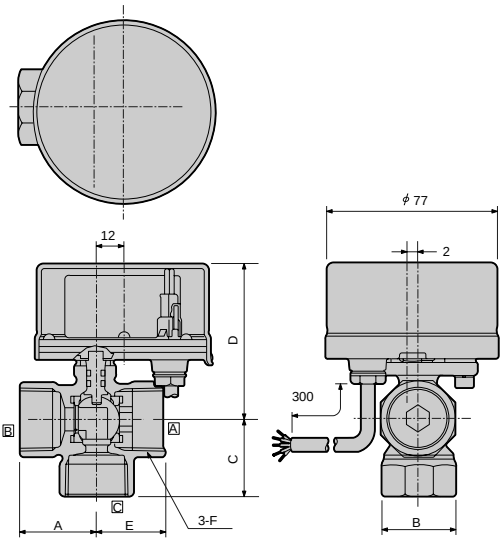
CAD (Page 613)

● MHG4-10-25



Cabtire cord length 300 mm

● MHG4-15/20-25



Cabtire cord length 300 mm

Model	A	B	C	D	E	F
MHG-4-15-25	29	27	29	63	27	Rc1/2
MHG-4-20-25	33	32	33	66	30	Rc3/4

⚠ Cautions on use

● Since this valve rotates one way only, reverse turn is impossible during operation. For example, if the operation switch is returned to Flow path B-C during switching Flow path B-C to Flow path A-C, the valve will turn Flow path B-C after completed the change to Flow path A-C.

Electric driven ball valve type temperature control system

MHBP Series

- Motor valve and thermostat combination
- Port size: Rc1/2 to Rc1

CAD

Common specifications

Descriptions		MHBP
Working fluid		Water, hot water, steam
Working pressure range	MPa	0 to 0.5
Withstanding pressure	MPa	1.75
Fluid temperature	℃	0 to 150 (no freezing)
Ambient temperature	℃	-10 to 50
Ambient humidity	%	70 or less
Valve seat leakage	cm^3/min	0 (under 0.5MPa water pressure)
Rated voltage	Note 1	100 VAC (50/60Hz) and 200 VAC (50/60Hz)
Power consumption	W	9 or less
Pressurization direction		Random
Installation attitude		Limited from vertical to horizontal installation placing motor top.
Operation time	50Hz	13
sec.	60Hz	11
Thermostat specifications		
Measuring range	℃	Thermocouple K1: -200 to 1300 K2: 0.0 to 500.0 T: -199.9 to 400.0 Resistance temperature sensor Pt100 ohm -199.9 to 650.0
Indicated accuracy		Thermocouple: (±0.3% of the indicated value or ±1℃ , whichever is larger) ±1 digit or less Resistance temperature sensor: (±0.2% of the indicated value or ±0.8℃ , whichever is larger) ±1 digit or less
Proportional band	%FS	0.1 to 999.9
Integral time	sec.	1 to 3999
Derivative action	sec.	0 to 3999
Alarm output		Upper and lower limit setting (250 VAC, 3A)
Sampling cycle	ms	250
Rated voltage	Note 1	100 VAC (50/60Hz) and 200 VAC (50/60Hz)
Power consumption	VA	Approx.15
Ambient temperature range	℃	-10 to 55 (no freezing)
Applicable output		Motor valve MHBP Series

Individual specifications

Descriptions		MHBP-15	MHBP-20	MHBP-25
Port size		Rc1/2	Rc3/4	Rc1
Orifice	mm	10	15	19
Cv flow factor		6	14	28
Mass	kg	2	2.1	2.1

Note 1: Allowable voltage range should be within ±10%.
Note 2: Only when vertical installation placing motor top, protection grade is JIS CO920 IPX2 "drip proof type ll.

How to order

MHBP - 20 - 25 C - T - E - AC100V

- 20: Port size
- 25: Working pressure 0 to 0.5MPa
- C: Body material
- T: Thermostat
- E: Option
- AC100V: Voltage

Symbol		Descriptions
A	15	Rc1/2
	20	Rc3/4
	25	Rc1
B	Blank	Body material: BC6
	C	Body material: SCS13
C	Blank	Motor valve only (no thermostat)
	T	Thermostat + motor valve set
D	Blank	3-conductor cable (no output)
	E	5-conductor cable (output lead wire)
E	AC100V	100 VAC (50/60Hz)
	AC200V	200 VAC (50/60Hz)

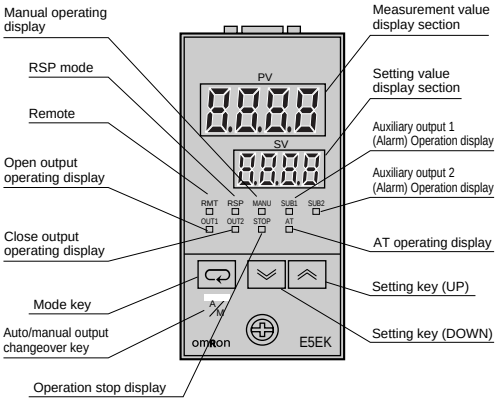
<Example of model number>

MHBP-20-25C-T-E-AC100V

Series: MHBP

- A Port size : Rc3/4
- B Body material : SCS13
- C Thermostat : Thermostat + motor valve set
- D Option : 5-conductor cable (output lead wire)
- E Voltage : 100 VAC (50/60Hz)

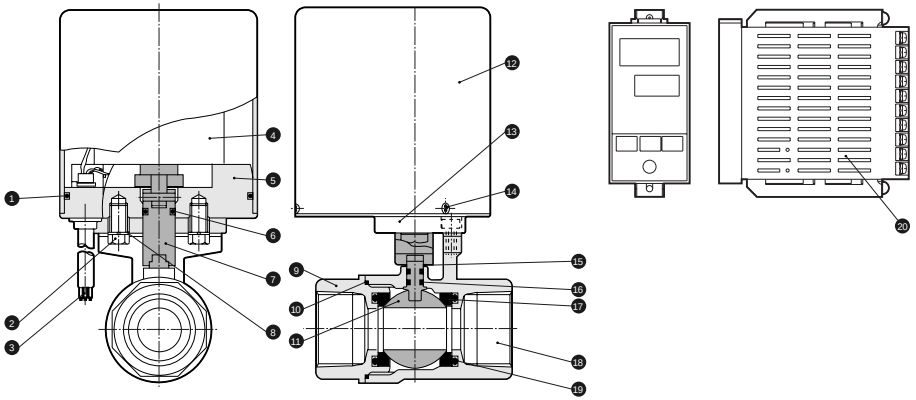
Names and functions of front section



Precautions for temperature regulator

- Avoid use in areas with high levels of dust or corrosive gas.
- Avoid use in areas with high levels of vibration or impact, where the device could be submerged in water or subject to oil, on in areas with high temperatures.
- Install the device as far as possible from devices generating strong high frequency noise (such as high frequency welders or high frequency sewing machines, etc.).
- When tightening the terminal screws, take care not to tighten excessively.
- The lead wires connecting the temperature measuring element and temperature regulator are easily influenced by noise and induction, so lay these as far as possible from the power supply line and load line.
- When using this device for a sequence circuit, it may take several seconds for the relay to turn ON when the power is turned ON. Take care when assembling the temperature regulator into the sequence circuit.
- OMRON E5EK-PRR2B is used.

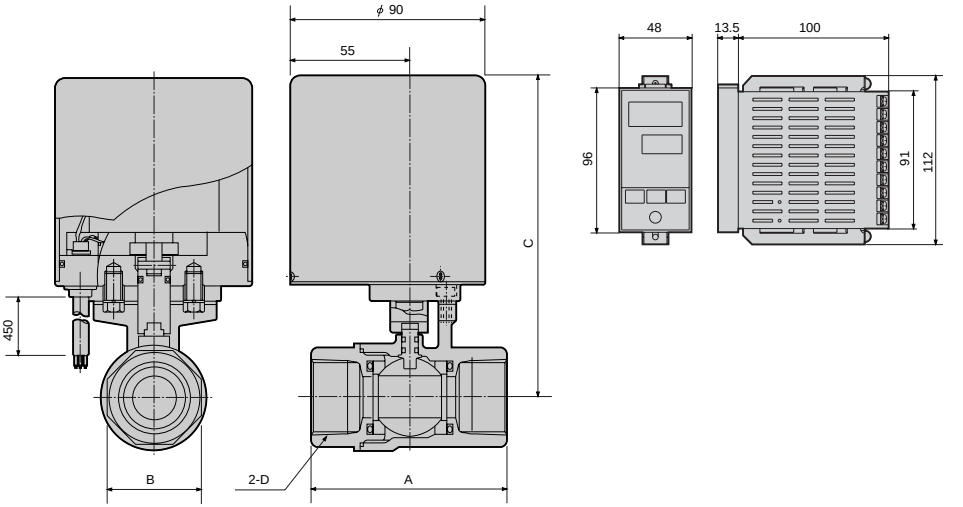
Internal structure and main parts material



No.	Parts name	Material		No.	Parts name	Material	
1	O ring	NBR	Nitrile rubber	**11**	Valve ball	SUS304	Stainless steel
2	Hexagon head bolt	SUSXM7	Stainless steel	**12**	Bonnet	SPC	Steel
3	Cabtire cord	-	-	**13**	Mounting plate	A6063	Aluminum
4	Geared motor	-	-	**14**	Flat headed cross cut screw	SUSXM7	Stainless steel
5	Base	A5056	Aluminum	**15**	Shaft	SUS303	Stainless steel
6	O ring	NBR	Nitrile rubber	**16**	O ring	FKM	Fluoro rubber
7	Bush	SUS303	Stainless steel	**17**	Valve seat	Reinforced PTFE	-
8	Spring washer	SUS304	Stainless steel	**18**	Body	CAC407	Bronze casting
9	Cap	CAC407	Bronze casting	**19**	O ring	FKM	Fluoro rubber
10	O ring	FKM	Fluoro rubber	**20**	Thermostat	-	-

Dimensions CAD (Page 613)

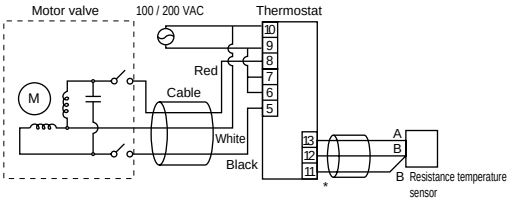
● MHBP-15/20/25



Cabtire cord length 450 mm

Model	A	B	C	D
MHBP-15-25-T	65	29	138	Rc1/2
MHBP-20-25-T	80	35	142	Rc3/4
MHBP-25-25-T	92	44	145	Rc1

External connection diagram

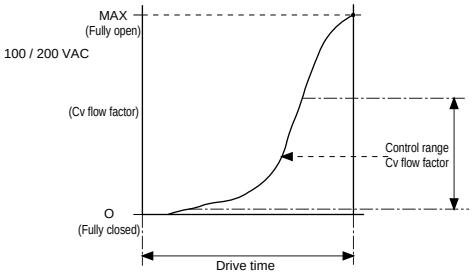


* When thermocouple, connect (11) to +, (12) to -.

When selecting temperature detector, if high precision required or temperature 100℃ or less, select Class 0.5 platinum resistance temperature sensor, while general use, select Class 0.75 thermocouple. When using thermocouple, compensating lead wire should be used.
<<Recommendation: OMRON E52 series>>

Cv flow factor and applicable valves

In order to perform highly accurate control, Cv flow factor should be the middle (◄ -) in the control range.



Port size	15	20	25
Control range Cv flow factor	0.2 to 2.5	0.5 to 4	1 to 14

Temperature control e.g.