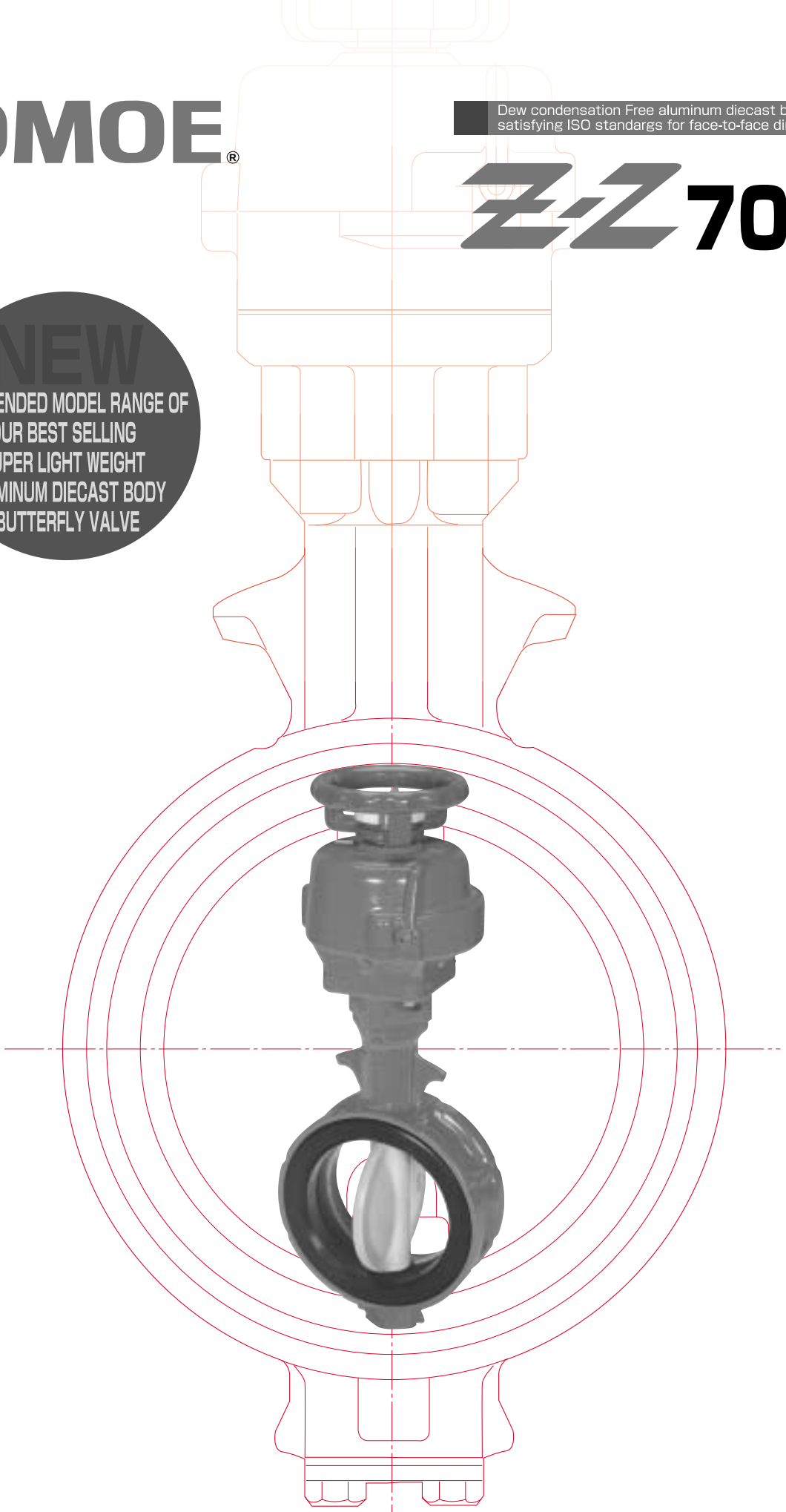
TOMOE®

Dew condensation Free aluminum diecast butterfly valves, satisfying ISO standargs for face-to-face dimensions

Z-Z 702Z

NEW

AN EXTENDED MODEL RANGE OF OUR BEST SELLING SUPER LIGHT WEIGHT ALUMINUM DIECAST BODY BUTTERFLY VALVE



TOMOE VALVE CO.,LTD.


1X


2P


2I


3I


4I

Z-Z 702Z

General Description

ISO(JIS) face to face aluminum diecast body butterfly valve, an extended model range of our best selling super light-weight products (700Z), which has the largest market share in HVAC.

The high performance engineering plastic top plate (patent pending) with aluminum diecast body can prevent dew-condensation and allow auto-actuation with ISO top design.

Standard Specifications

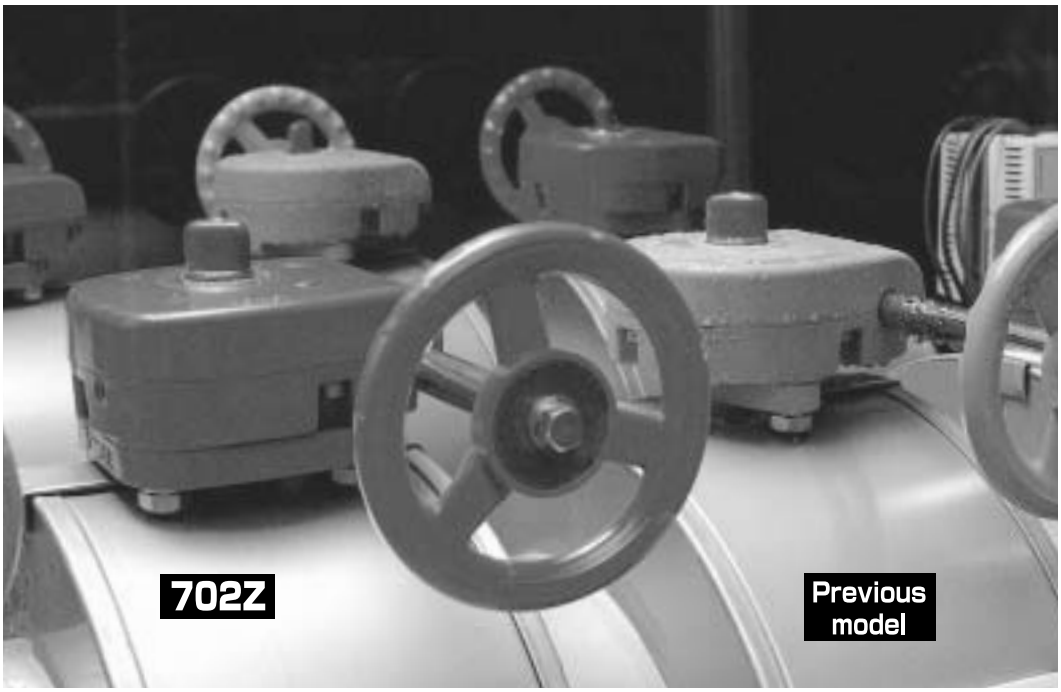
Valve Nominal Size		40mm to 300mm
Applicable Flange Standard		JIS5K／10K　ANSI125／150Lb, BS4504NP10, DIN 10K
Design Standard		JISB2032
Max.Working Pressure		0.98Mpa (10kgf/cm²G)
Working Temperature Range		EPDM　−20 to +120℃
Allowable Temperature range in Continuous Use		EPDM　−10 to +100℃
Body Shell Test		1.47Mpa *1 (15kgf/cm²G)
Seat Leak Test		1.08Mpa *2 (11kgf/cm²G)
Actuator Mounting Flange		ISO 5211
Actuators		Lock Lever, Worm Gear, Vertical Gear
		Pneumatic Cylinder, Electric Motor
Face to Face Dimensions		ISO 5752/JIS B2032
Standard Materials	Body	Aluminum Diecast Alloy
	Disc	Stainless Steel Type 316
		PPS (Polyphenylene Sulfide Lined on Stainless Steel Core) *3
	Stem	Stainless Steel Type 403 or 420J2
	Seat	EPDM, NBR
	Top Flange	HR85LV
Surface Treatment	Body	Epoxy-Melanin Baked with Munsell 2.5BG 6/12
	Top Flange	Acrylic Resin with Munsell 2.5BG 6/12
Condensation Prevention Performance		No condensation is formed on actuator and its mounting flange under 34℃ room temperature with 75% humidity on 5℃ chilled water line.

*1 1.72 Mpa (17.5kgf/cm²G) piping pressure test at job site is available.
*2 1.18/1.37 Mpa (12/14kgf/cm²G) test is also available upon request.
*3 50mm to 200mm are available. (planning up to 300mm)

NEW

AN EXTENDED MODEL RANGE OF OUR BEST SELLING SUPER LIGHT WEIGHT ALUMINUM DIECAST BODY BUTTERFLY VALVE

■ Dew Condensation Test(34℃ RoomTemp,75%Humidity,5℃ Child Water)



Features

High Performance Engineering Plastic Top Plate

By employing the high performance engineering plastic top plate, the temperature drop of valve parts and reduced heat transfer ratio can be prevented. Thus, it can remove the causes of dew-condensation on actuators and its mounting flange area.

The high performance engineering plastic (Reny HR85LV) has excellent features such as low water absorption, high corrosion resistance, heat resistance, non-flammability as well as shock resistance which is approx. 4 times that of hard PVC materials.

Up to 300MM

Extended sizes up to 300MM are available with the same design concept.

Stainless Steel Worm Shaft

Stainless steel worm shaft is standardized on worm gear actuator to prevent the corrosion.

PPS Disc

PPS lined disc (polyphenylene sulfide with stainless steel core) is available up to 200MM (*planning up to 300MM) as the optimum product for HVAC and corrosive fluids (*subject to the performance of rubber materials).

Center Handle Type Gear

4 Aligning Ribs

4 aligning ribs help piping alignment for various kinds of flange accommodations.

Environmental Consideration

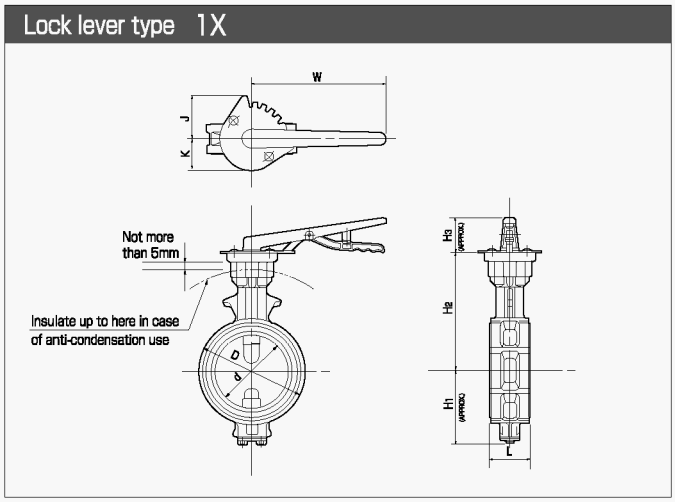
The plastic top plate and aluminum diecast body can be separated by unfastening locking screws.

Patented cosine-curve seat and spherical disc design

Patented cosine-curve seat ring makes it possible for the valve torque to be adjusted to the working pressure,and giving triple seat life by employing the spherical disc.

Outer Dimension List

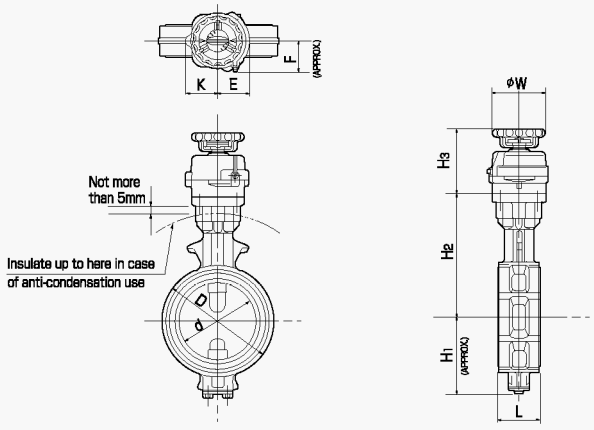
Lock lever type 1X



■ Dimension List

Nominalsize		Dimension (mm)									Approx. weight (kg)
mm	inch	d	D	L	H1	H2	H3	K	J	W	
40	1½	45	80	35	61	132	49	45	67	160	1.1
50	2	56	90	43	68	138					1.2
65	2½	69	115	46	79	151					1.4
80	3	84	126		86	156	60			190	1.8
100	4	104	148	52	103	167					2.4
125	5	130	181	56	118	191	71	63	85	270	3.8
150	6	153.5	211		135	202					5.0

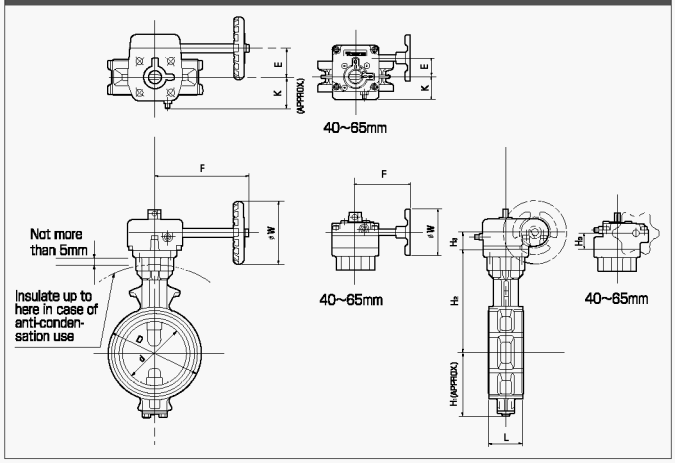
Center handle type 2P



■ Dimension List

Nominalsize		Dimension (mm)										Approx. weight (kg)
mm	inch	d	D	L	H1	H2	H3	E	K	F	ϕW	
40	1½	45	80	35	61	132	122.5	60.5	62.5	65	100	2.0
50	2	56	90	43	68	138						2.1
65	2½	69	115	46	79	151						2.3
80	3	84	126		86	156						2.6
100	4	104	148	52	103	167						3.1
125	5	130	181	56	118	191	127.5					4.6
150	6	153.5	211		135	202	148					6.0
200	8	199	256	60	177	227		—	—	—	180	8.9

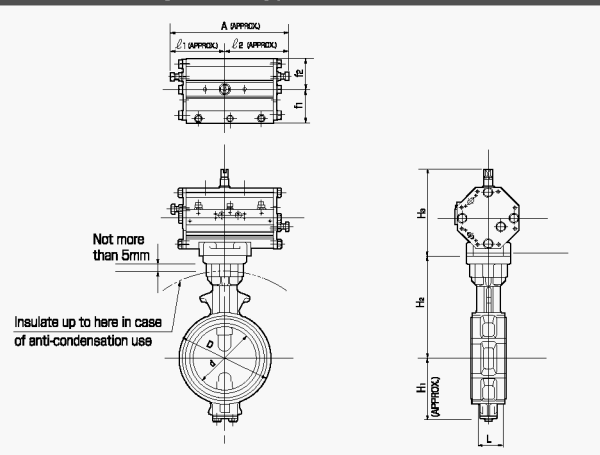
Worm gear type 2 I



■ Dimension List

Nominalsize		Dimension (mm)										Approx. weight (kg)
mm	inch	d	D	F	L	H1	H2	H3	E	K	ϕW	
40	1½	45	80	83	35	61	132	24	28	35	70	1.3
50	2	56	90		43	68	138					1.4
65	2½	69	115		46	79	151					1.6
80	3	84	126	145		86	156	35.5	46	48	100	2.5
100	4	104	148		52	103	167					3.1
125	5	130	181	160	56	118	191	30	53	51	125	5.5
150	6	153.5	211			135	202					6.9
200	8	199	256	208	60	177	227	36	71	65	200	12.0
250	10	253	322		68	215	280	38.5				18.0
300	12	302	367		78	253	312					23.0

Pneumatic cylinder type 3 I

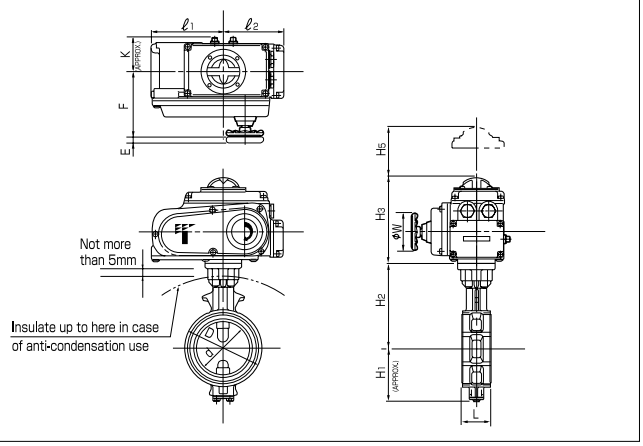


■ Dimension List

Nominalsize		Dimension (mm)										Cylimder type	Approx. weight (kg)
mm	inch	d	D	L	H1	H2	H3	A	ℓ1	ℓ2	f1	f2	
40	1½	45	80	35	61	132	142	190	86.5	103.5	55	50	Type1	3.9
50	2	56	90	43	68	138								4.0
65	2½	69	115	46	79	151								4.2
80	3	84	126		86	156								4.4
100	4	104	148	52	103	167	178	272	127	145	74.5	65	Type2	6.9
125	5	130	181	56	118	191								8.2
150	6	153.5	211		135	202	220	342	161	181	95	93	Type3	15
200	8	199	256	60	177	227								17
250	10	253	322	68	215	280		462	204	258			Type4	26
300	12	302	367	78	253	312								33

Outer Dimension List

Electric motor actuators type 4 |



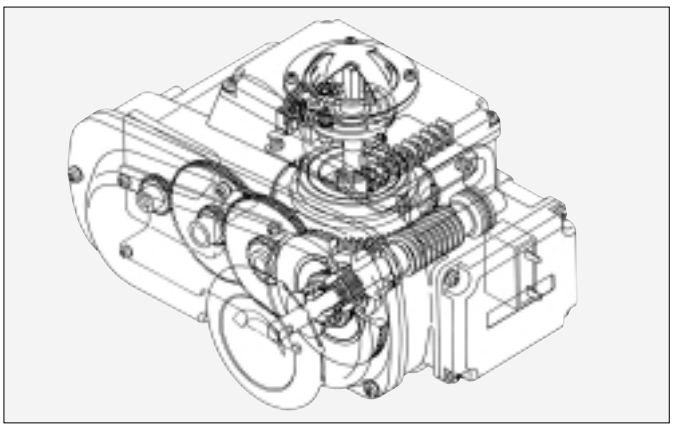
■ Dimension List(Heavy duty selection)

Nominalsize		Dimension (mm)												Motor typr	Approx. weight (kg)
mm	inch	d	D	L	H_1	H_2	H_3	H_5	E	F	K	ℓ_1	ℓ_2	φW	
40	1½	45	80	35	61	132	165	100	12	126	65	138	114	70	Type1	7.2
50	2	56	90	43	68	138										7.3
65	2½	69	115	46	79	151										7.5
80	3	84	126		86	156										7.9
100	4	104	148	52	103	167										8.4
125	5	130	181	56	118	191	198		14	154	85	167	143	100	Type2	14.4
150	6	153.5	211		135	202										15.5
200	8	199	256	60	177	227										17.9
250	10	253	322	68	215	280	218								Type2.5	37.2
300	12	302	367	78	253	312	230		23	246	136	223	165	200	Type3	42.5

Motor actuator

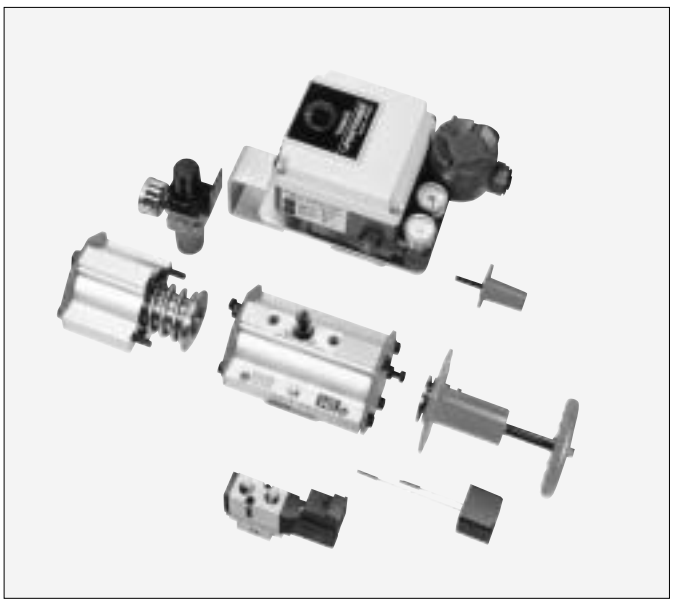
Item \ Type	Type1	Type2	Type2.5	Type3
Output torque	98 N·m (10kgf·m)	196 N·m (20kgf·m)	333 N·m (34kgf·m)	981 N·m (100kgf·m)
Power source (V)	AC 100, 120, 200, 220, 240 50/60Hz			
Motor capacity (W)	20	30		90
Travel time (50/60Hz) (sec)	25/20 ※2 (180/150)		37/30 ※2 (260/210)	55/50 ※2 (500/440)
Rating (min)	30			
Insulation	Class E			
Control options	① Potentiometer, 135Ω, 500Ω ② Intermediate limit switch (no voltage) ③ Servo unit,※1 (AC 4-20mA, DC1-5V, 0-10V) ④ Speed Controller Unit.			

※1. There is no space heater with servounit.
※2. With speed controller unit.

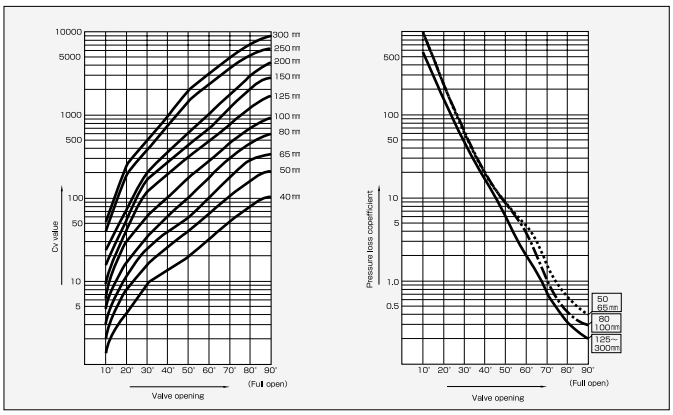


Pneumatic actuator

Working pressure range	0.39 to 0.69Mpa (4 ot 7kgf/cm²G)
Operational fluid	Dry air
Pressure shell test	0.98Mpa (10kgf/cm²G)
Rotating speed range	5-15 sec.
Rotating angle	−5°to +95°
Working temperature range	0 to 80℃

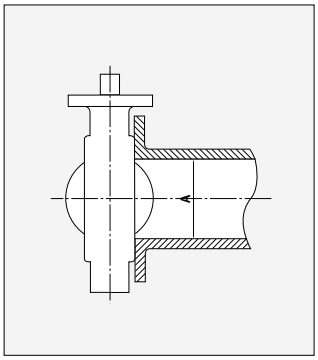


Cv value/Pressure loss coefficient (Disc:Stainless Steel)



Min.internal diameters of piping

Nominal size		Min.internal diameters of piping A (mm)
mm	inch	
40	1½	25
50	2	34
65	2½	51
80	3	70
100	4	91
125	5	118
150	6	144
200	8	194
250	10	246
300	12	294

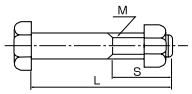


Piping bolt and nut sizes

Nominal size		JIS 5K	JIS 10K	ANSI 125Lb/150Lb, JPI 150Lb
mm	inch	Hexagon bolt and nut	Hexagon bolt and nut	Long bolt and nut
40	1½	4 - M12 × 75 × 30	4 - M16 × 90 × 38	4 - U5/8 × 110 × 40
50	2	4 - M12 × 90 × 30	4 - M16 × 105 × 40	4 - U5/8 × 145 × 45
65	2½	4 - M12 × 90 × 30	4 - M16 × 105 × 40	4 - U5/8 × 155 × 50
80	3	4 - M16 × 105 × 40	8 - M16 × 110 × 40	4 - U5/8 × 155 × 50
100	4	8 - M16 × 110 × 40	8 - M16 × 110 × 40	8 - U5/8 × 165 × 50
125	5	8 - M16 × 110 × 40	8 - M20 × 120 × 50	8 - U3/4 × 175 × 55
150	6	8 - M16 × 120 × 40	8 - M20 × 130 × 50	8 - U3/4 × 175 × 55
200	8	8 - M20 × 130 × 50	12 - M20 × 135 × 50	8 - U3/4 × 175 × 55
250	10	12 - M20 × 135 × 50	12 - M22 × 150 × 50	12 - U7/8 × 215 × 55
300	12	12 - M20 × 150 × 50	16 - M22 × 160 × 60	12 - U7/8 × 215 × 55

[Hexagon bolt] 4 - M16 × 90 × 38

Quantity Screw diameter Bolt length Effective screw length



- The bolt length complys with JIS standard thickness of steel flange.

[Remarks]

※ Hexagon bolts should be used with hexagon(thin)nut.

※ This list is for SS400,standard material.

■ No piping gasket is required

Precautions in Handling

Piping instruction

- Check materials of the seat ring and body of the valve before piping operation.
- When installing butterfly valves directly to a check valve or pump, an extension piece should be employed to prevent the disc of butterfly valves from touching a check valve or pump.
- Install the valve after the completion of all welding operations around the valve in order to prevent damage caused by adhesion of weld spatters.
- Wait until the welded flange has cooled before installing the valve to the piping. Never weld the flange with the valve installed.
- In piping, make sure that no weld spatters, pipe wastes, scale, or dust remain in the pipe, and clear inside of the pipe if necessary prior to piping operation.
- Chamfer the edges of the flange mating with the valve seat ring to avoid possible damage to the seat ring.
- Before blowing air to remove any foreign matter, attach an extension tube with face-to- face dimensions equal to that of the valve in the pipe. Do not blow air with the valve installed in the pipe. Otherwise, this may damage the seat ring.
- Clean the gasket surface by air-purging. If any rust or foreign matter adhere, remove with solutions such as trichlorethane.
- In case of a zinc plated flange, attention must be paid to avoid flange leakage due to excessively uneven surface of the flange.
- Check to see any distortion of the piping flange, misalignment, and damage to the gasket surface of the flange.
- Carefully center the flange and valve.
- Set a jack bolt with great care not to damage the seat ring of the valve and adjust the face-to-face dimensions. Increase the distance between flanges to approx. 3-5 mm or more (on each side) to that of the valve, then place the valve. (A jack bolt is available on request.)
- After centering the pipe, insert bolts into the bottom of the valve to support the valve and prevent it from dropping through.
- Before tightening the piping bolts, make sure that the disc at an opened position does not touch the flange inside.
- The piping bolts should be tightened alternately and evenly. Tighten one bolt and another diagonally, then repeat the same procedure to insure well-balanced tightening.
- On the completion of the piping, open and close the valve to make sure that the disc does not touch the piping or gasket.
- When valves are fitted in the pipelines where the valve stem is not vartic al then it is necessary to support the valve operating device, for example.
  1. Large pneumatic and electric actuators.
  2. Extension gear where the lever or geat box are attached by means of extended spindles.

  This suppoet will prevent excessive load being applied to valve stem/stem sealing area.

Operational instruction

- Prior to operation, clean the outside of the piping by air-purging, and the inside of the piping by running water through the piping.
- If the valve is to be used at an opening angle of 30 deg or under, please consult us in advance.

Others

- On the completion of piping, open and close the valve once every two weeks if the valve is not in use for a long duration, and open and close the valve a few times before starting actual operation.
- Keep the valve fully opened during the pressure test (in which applied pressure exceeds the rated pressure). Never fully close the valve and use it as a blind flange.
- When the actuator is manual operated gear, pneumatic cylinder, motor, or diaphragm, and the ambient temperature is high, special modifications may be required, including the material of "O" rings which should be changed, or solenoid valve which should be changed for higher insulation . Inform us in advance.
- Manually operated lock lever type, worm gear type, or center handle type To avoid possible damage to the handle, lever, or the valve, never use an extension bar on the lever or a key on the gear handle. Unlike gate valves or globe valves, no torque tightening is required.

TOMOE VALVE CO.,LTD.

●Head Office & International Department
11th Floor, Mitsui Bldg., 1-11-7Utsubo Hommachi, Nishi-ku, Osaka550-0004, Japan
Telephone:81-6-6448-4320 Telefax:81-6-6448-4330