TOMOE®

RUBBER SEATED BUTTERFLY VALVE 700G SERIES

Wafer Full Lugged Semi Lugged

700G / 704G / 705G

NEW

Rib Disc Design

TOMOE VALVE CO.,LTD.

Wafer Full Lugged Semi Lugged

700G / 704G / 705G


700G


704G


705G

Discs and seats come in various materials to meet a wide range of needs. The ultimate general purpose valve with excellent cost performance.

- Valve nominal size 40 to 600mm
- Max. working pressure 1.0MPa ※4
- Working temperature range
  NBR: -10 to 80°C
  EPDM: -20 to 120°C

General Description

Simple handling, durability, and long life are the most basic terms on which valves can be improved. TOMOE has now developed the 700Gseries, a superior pressure-proof general purpose valve, to improve cost performance and meet your various needs with its wide range of features.
The 700Gseries is designed to satisfy many international flange standards, which can be used worldwide.

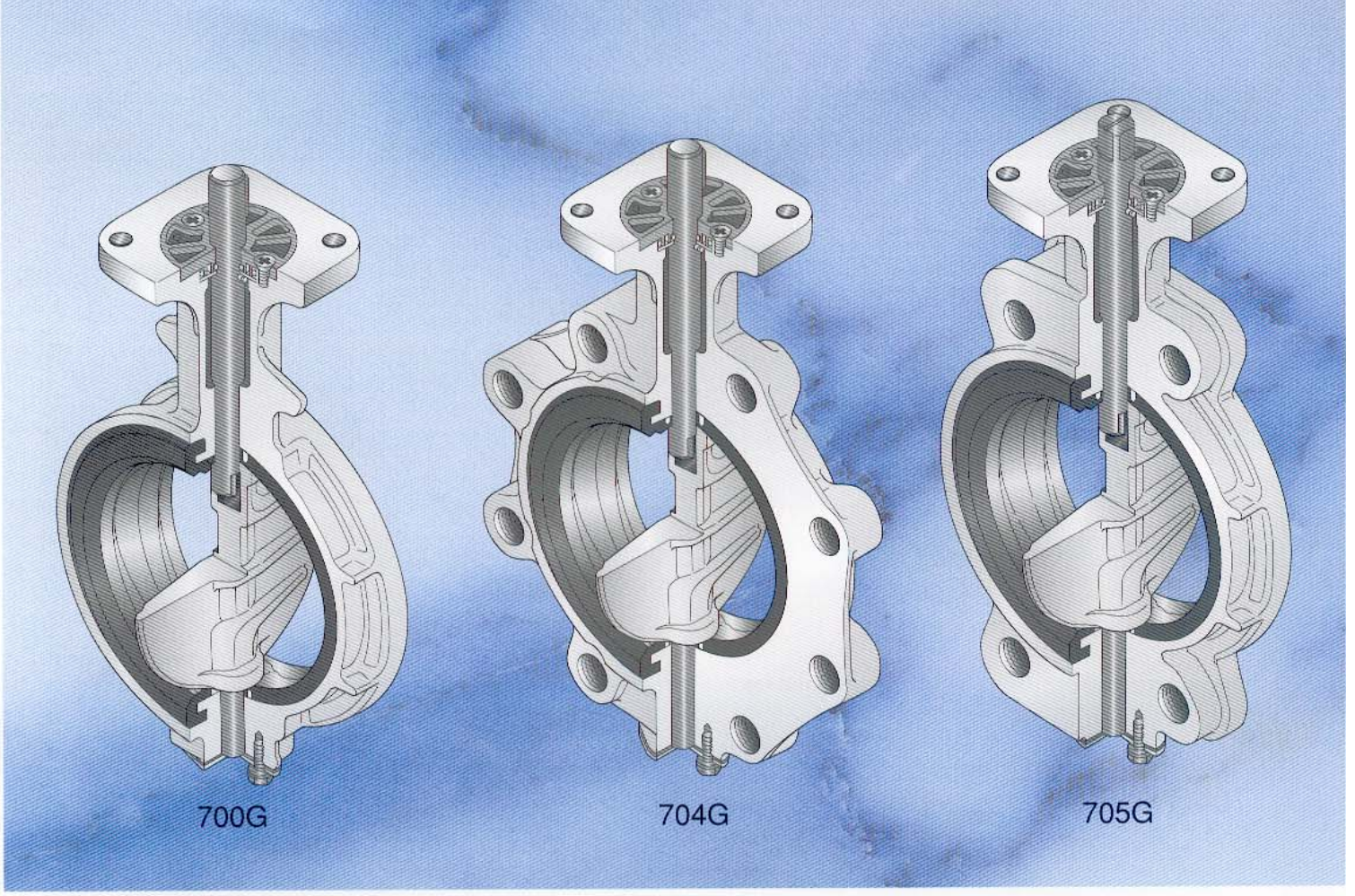
Structure

The body can be available with various designs such as wafer, semi-lugged and full-lugged in various materials such as, ductile Iron and carbon steel etc. The disc is also available with high-grade stainless steel, type 316, or nylon coated, aluminum bronze and PPS. The patented cosine-curve structure is adopted for the seat ring. The 700G series is superior to conventional models in all respects.

Standard Specifications

Model		700G(Wafer)			704G(Full Lugged)		705G(Semi Lugged)	
Valve nominal size		40 to 300mm	350 to 500mm	600mm	50 to 300mm	350 to 600mm	50 to 300mm	350 to 600mm
Applicable flange standard		JIS 5K・10K, ANSI 125Lb・150Lb DIN PN10,PN16 BS 4504 NP10,NP16, BS 10 "E"	JIS 5K・10K,	JIS 5K, ANSI 125Lb・150Lb DIN PN10, BS 4504 NP10, (exclude JIS 10K)	JIS 5K・10K, ANSI 125Lb・150Lb BS 4504 NP10・NP16, DIN PN10, PN16		JIS 5K・10K, ANSI 125Lb・150Lb, DIN PN10, PN16, BS 4504 NP10, NP16 BS10 "E"	JIS 5K・10K, ANSI 125Lb・150Lb, DIN PN10, BS 4504 NP10,NP16 BS10 "E"
Face-to-face dimensions		API 609 / ISO 5752 (20 series)						
Max.working pressure		1.0MPa						
Body shell test (Hydraulic)		1.5MPa						
Seat leak test (Pneumatic)		1.1MPa※4						
Working temperature range ※1, ※2		NBR: −10 to 80℃, EPDM: −20 to 120℃						
Standard materials	Body※3	Ductile iron,JIS FCD450	Cast iron, JIS FC 250		Ductile iron, JIS FCD450		Ductile iron,JIS FCD 450	Cast iron, JIS FC250 Ductile iron, JIS FCD450
	Disc	316 Stainless steel, JIS SCS14 ※7	304 Stainless steel, JIS SCS13 316 Stainless steel, JIS SCS14		316 Stainlees steel, JIS SCS14 ※7	304 Stainlees steel,JIS SCS 13 316 Stainless steel,JIS SCS14	316 Stainlees steel, JIS SCS 14 ※7	304 Stainless steel,JIS SCS 13 316 Stainlees steel,JIS SCS 14
		PPS (50 to 200mm) Aluminum Bronze JIS CAC702 (50 to 600mm)	Aluminum Bronze JIS CAC702		PPS (50 to 200mm) Aluminum Bronze JIS CAC702 (50 to 600mm)	Aluminum Bronze JIS CAC702	PPS (50 to 200mm) Aluminum Bronze JIS CAC702 (50 to 600mm)	Aluminum Bronze JIS CAC702
		Nylon coating ※5	Ductile iron, JIS FCD 450 with hard chrome plating		Nylon coating ※5	Ductile iron, JIS FCD 450 with hard chrome plating	Nylon coating ※5	Ductile iron, JIS FCD450 with hard chrome plating
	Stem	SUS420J2 / SUS 392 J1						
	Seat ring	NBR, EPDM ※6						
Actuators	Lock lever	40 to 200mm	—		50 to 200mm	—	50 to 200mm	—
	Worm gear	40 to 300mm	350 to 600mm		50 to 300mm	350 to 600mm	50 to 300mm	350 to 600mm
	Center handle	40 to 300mm	—		50 to 300mm	—	50 to 300mm	—
	Pneumatic cylinder	40 to 300mm	350 to 600mm		50 to 300mm	350 to 600mm	50 to 300mm	350 to 600mm
	Motorized	40 to 300mm	350 to 600mm		50 to 300mm	350 to 600mm	50 to 300mm	350 to 600mm
Coating		Epoxy primer finish (Munsell N7)						

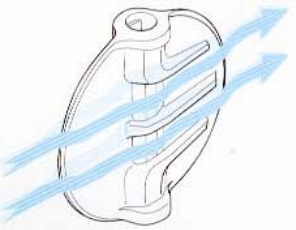
※1. Working temperature range varies depending on combination of disc materials and seatring, so please consult us whenever using valves.
※2. Please consult us when using NBR and EPDM seatring continuously above 60℃. and 100℃. respectively.
※3. Cast steel body or stainless steel body is also availahle.
※4. 16bar finish is also available subject to working condition.
※5. Nylon coated disc is available from 40A to 300A. Max. working temperature of Nylon coated Disc is 60℃.
※6. Heat resistant EPDM (to 150℃) , FPM, SEP, CR, White-NBR seat are also availahle.
※7. Rib Disc is astandard Flat face Disc as an optional.



Features

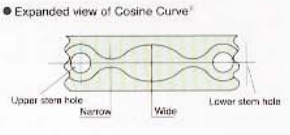
Rib Disc

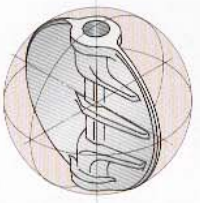
316 Stainless Steel(JIS SCS14) Rib disc is standardized on 50mm to 300mm. Thin profile disc reinforced by ribs(patent pending)provides larger Cv when comparing to our conventional design. It will also reduce the weight by maintaining mechanical strength. Flat face disc is also available on request.



Patented Cosine Curve seat ring

The Cosine Curve seat ring reduces valve operating torque substantially and allows the torque to be adjusted according to the working pressure.



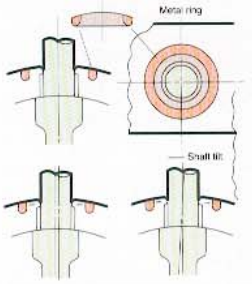


Much longer life with spherical design

Similar to a spherical body rotating inside a spherical area, the operation of the disc is smooth and unhindered. Torque is reduced and the valve life is lengthened by 300%.

Self-aligning stem seal through backup ring.

The stem seal is the primary and secondary seal system.
The backup ring functions as the self-aligning stem seal.



Select from various disc materials to meet your specific needs

As one of standard disc materials, PPS (50 to 200mm) has been added to meet the current trend of lined pipes. PPS(polypheneylene sulfide with stainless steel core) is a kind of plastic material suitable for corrosive fluids (subject to the performance of rubber seats).

Two aligning methods (350 to 600mm)

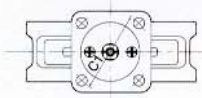
Two valve models are available: the casted hole type (700G) and the tapped hole type and drilled hole type (705G), which accommodates all the applicable flange standards.

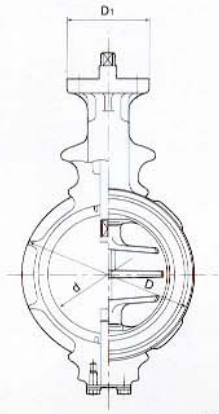
Long bonnet

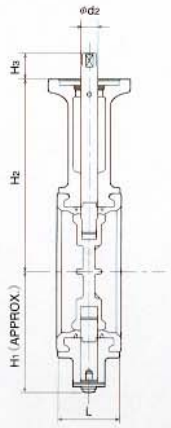
The long neck shape allows insulation of up to 50mm after the valve is installed.

Fig 701G : Nylon coated body, is also available(50 to 300mm)
Please contact us for more detailed information.

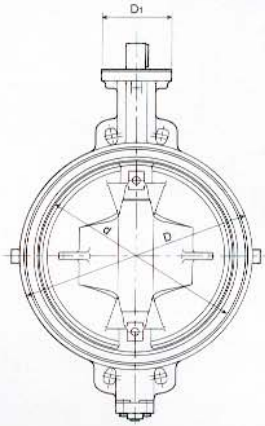
700G
(Wafer)

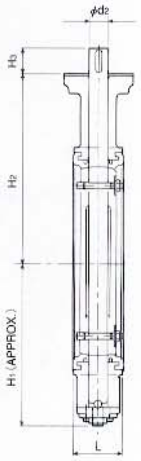






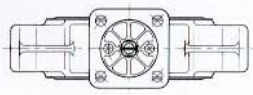
40 to 300mm

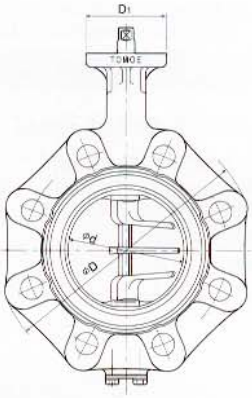


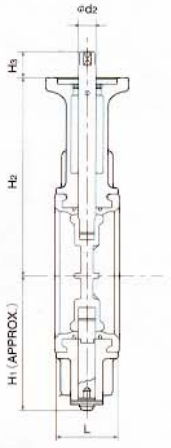


350 to 600mm

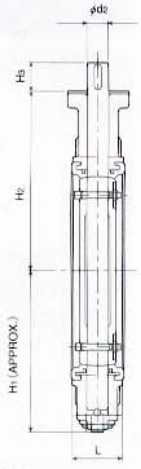
704G
(Full-Lugged)





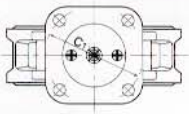


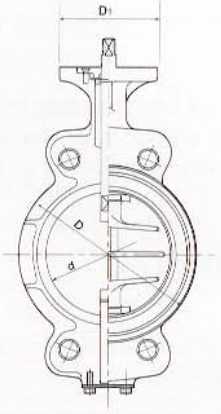
50 to 300mm

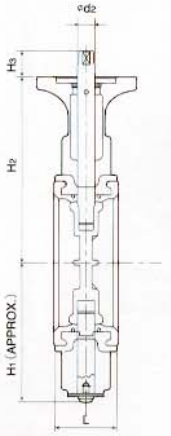


350 to 600mm

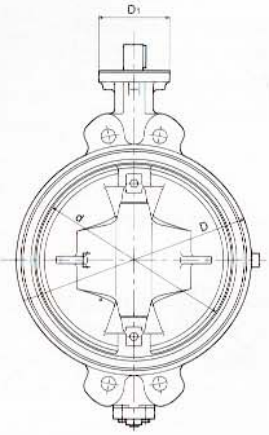
705G
(Semi-Lugged)

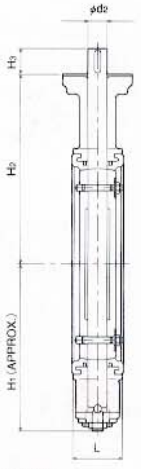






50 to 300mm



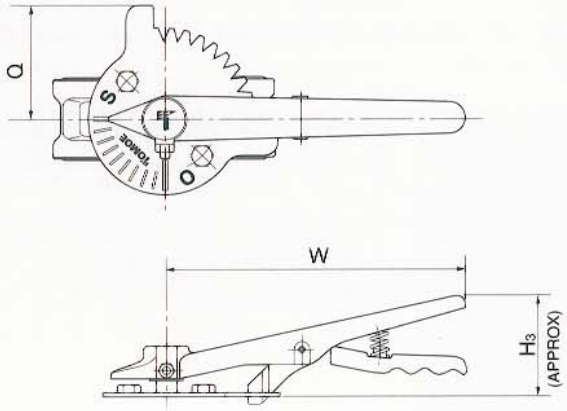


350 to 600mm

Dimension list

Nominal size		Dimension (mm)								Approx. weight (kg)
mm	inch	d	D	D_1	L	ϕd_2	H_1	H_2	H_3	
40	1½	45	80	70	35	10	61	132	21.5	1.5
50	2	56	90		43		68	138		1.8
65	2½	69	115		46		79	151		2.5
80	3	84	126			12	86	156	22.5	2.6
100	4	104	146		52	14	103	167		3.4
125	5	130	181	102	56	16	118	191	27.5	5.4
150	6	153.5	211			18	135	202		7.0
200	8	199	256		60	22	177	227	30	10.4
250	10	253	322		68	28	215	280	35	18
300	12	302	367		78	32	253	312		25
350	14	337	410	140			276	348	48	42
400	16	394	469		102	40	338	383	54	64
450	18	441	525		114	46	368	413	65	87
500	20	492	580		127	50	403	453	79	114
600	24	584	682	165	154	55	458	528		191

Lock lever type 700G-1T



Dimension list

Nominal size		Dimension (mm)								Approx. weight (kg)
mm	inch	d	D	D_1	L	ϕd_2	H_1	H_2	H_3	
50	2	56	90	70	43	10	85	138	21.5	2.5
65	2½	69	115		46		94	151		3.5
80	3	84	126			12	109	156	22.5	4.0
* 80	3		190							4.8
100	4	104	223		52	14	117	167		6.7
125	5	130	250	102	56	16	143	191	27.5	8.8
150	6	153.5	276			18	164	202		10.4
200	8	199	334		60	22	176	227	30	16.3
250	10	253	402		68	28	215	280	35	27
※ 300	12	302	483 472	125	78	32	253	312		39
* 350	14	337	505 533	140			276	348	48	66
400	16	394	579		102	40	338	383	54	107
* 450	18	441	526		114	46	368	413	65	128
500	20	492	634 696		127	50	403	453	79	170
600	24	584	820	165	154	55	458	528		275
※ 600	24		795							269

In Case JIS10K : *
In Case JIS10K or DIN PN10 : ※

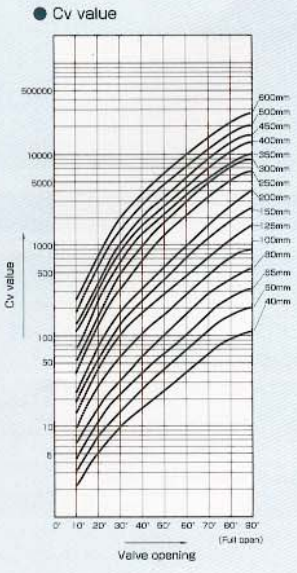
Dimension list

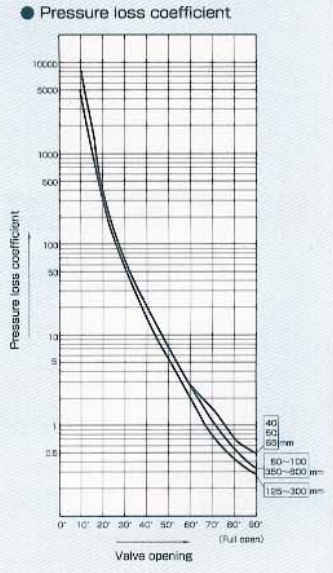
Nominal size		Dimension (mm)			Approx. weight (kg)
mm	inch	H_3	Q	W	
40	1½	66	75	200	2.1
50	2				2.4
65	2½				3.1
80	3				3.2
100	4				4.0
125	5	92	87.5	300	6.7
150	6				8.3
200	8	97	102.5	350	12.1

Dimension list

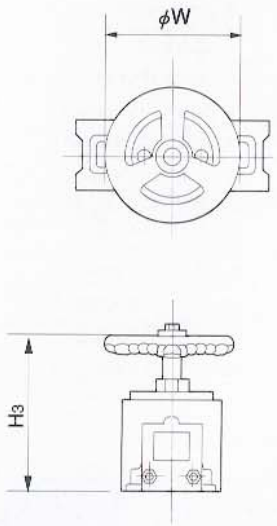
Nominal size		Dimension (mm)								Approx. weight (kg)
mm	inch	d	D	D_1	L	ϕd_2	H_1	H_2	H_3	
50	2	56	90	70	43	10	85	138	21.5	2.5
65	2½	69	115		46		94	151		3.5
80	3	84	126			12	109	156	22.5	4.0
100	4	104	146		52	14	117	167		5.0
125	5	130	181	102	56	16	143	191		8.0
150	6	153.5	211			18	164	202	27.5	11.0
200	8	199	256		60	22	186	227	30	15.0
250	10	253	322		68	28	215	280	35	24
300	12	302	367	125	78	32	253	312		31
350	14	337	410	140			276	348	48	47
400	16	394	469		102	40	338	383	54	72
450	18	441	525		114	46	368	413	65	96
500	20	492	580		127	50	403	453	79	127
600	24	584	682	165	154	55	458	528		191

Cv value/pressure loss coefficient

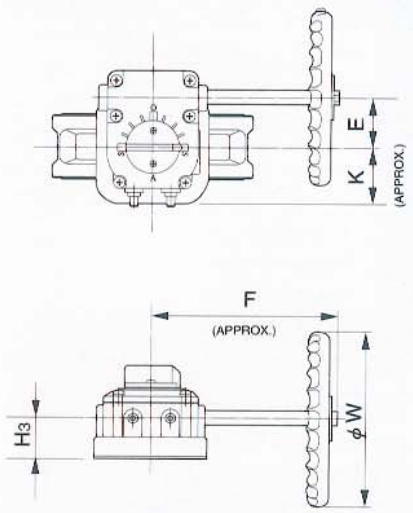




Center handle type 700G-2G



Worm gear type 700G-2U



■Dimension list

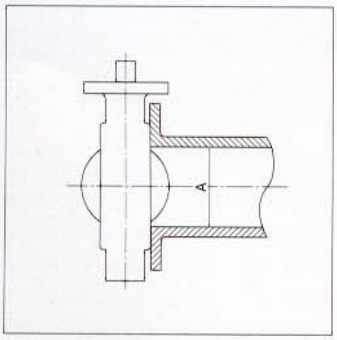
Nominal size		Dimension (mm)		Approx. weight (kg)
mm	inch	H3	φW	
40	1½	136	100	2.9
50	2			2.9
65	2½			2.9
80	3			2.9
100	4			2.9
125	5	133		3.8
150	6			3.8
200	8	151	200	7.1
250	10			7.1
300	12	161		7.1

■Dimension list

Nominal size		Dimension (mm)					Approx. weight (kg)
mm		H3	E	K	F	φW	
40	1½	29.5	36	46	160	100	2.3
50	2						2.3
65	2½						2.3
80	3						2.3
100	4						2.3
125	5	34.5	44	53	173.5	160	4.2
150	6						4.2
200	8	41.5	67	75	198	200	7.6
250	10						7.6
300	12	48	87.5	90	222.5		13.4
350	14					280	15.6
400	16	50	90	105	266		18.3
450	18						18.3
500	20						18.3
600	24	61	113	140	352	400	33.2

■Minimum internal diameters of piping

Nominal size		Minimum 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
350	14	330
400	16	381
450	18	427
500	20	477
600	24	569



Handling Precautions

Storage conditions

- To protect the seat rings, do not unpack valves until you are ready to install them. If a valve remains unpacked for a long period of time, dust or other particles may enter the valve and cause seat leakage.
- For temporary storage before installing or for long-term storage, keep valves in the vinyl bag in which they came and store them indoors in a cool, well-ventilated location (temperature of -10 to 60。C and humidity of 70% or less). Keep the valve away from dusty locations and take care in protecting the valve and actuator from bearing excessive weights.

Installing valves

- Valves can be installed in any orientation, to allow for the easiest possible operation of the valve. However, be careful of the orientation of the stem when your pipe layout is one of those covered on page 119.

Piping instructions

- Verify the materials of the seat ring and disc of the valve before installation.
- When installing a butterfly valve directly to a check valve or pump, install an extension or spacer to prevent the disc of the butterfly valve from contacting the check valve or pump.
- Install the valve only after completing all welding operations around the valve to prevent damage caused by the solder and other welding materials.
- After welding is performed on a flange, wait until it has sufficiently cooled before installing the valve. Never perform welding on a flange with the valve installed.
- In the surrounding piping, make sure that no welding remains, pipe wastes, scaling, or dust remain in the pipe. Clean the inside of the pipes if necessary prior to installation.
- Before blowing air to remove any foreign matter in the piping, install an extension tube with face-to-face dimensions equal to that of the valve in place of the valve. Do not blow air with the valve installed in the pipe, for this may damage the seat ring.
- Clean the mating surface of the flange with compressed air before installation. Remove rust or foreign particles with a cleaning alcohol or neutral detergent.
- With a zinc plated flange, attention must be paid to avoid flange leakage due to an uneven surface of the flange.
- Make sure that there is no warpage in the flange, misalignment, or damage to the mating surface of the flange.
- Be sure to properly align the valve and mounting flanges.
- Install the jack bolts taking care not to damage the seat ring of the valve and adjust the face-to-face dimensions. The face-to-face dimensions should be such that the piping must be spread open 3 to 5mm to allow the valve to be inserted. (A jack bolt is available on request.)
- If possible, avoid mounting the actuator with it facing downward. Especially for valve sizes of 350mm or larger, where the lower portion of the valve stem bears thrust loads, never install the actuator facing downward.
- After centering the pipes, insert bolts at the proper locations so that the bottom of the valve can rest upon them to prevent the valve from falling through.
- Before tightening the installation bolts, make sure that the disc of the valve does not contact any portion of the flange when it is fully opened.
- Tighten the installation bolts to a torque of no more than 60Nm
- The installation bolts should be tightened evenly and in the proper sequence. Tighten one bolt a small amount, and then proceed to another bolt that is located on the other side. Proceed tightening each bolt a little at a time by crisscrossing across the flange to insure well-balanced tightening.
- On the completion of the installation, fully open and close the valve to once again make sure that the disc does not touch the piping or gasket.

Operational instructions

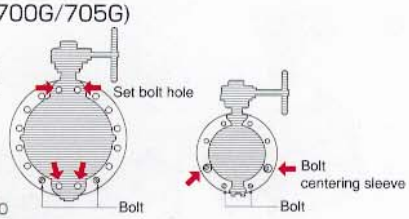
- Prior to operation, clean the outside of the piping with compressed air, and the inside of the piping with running water.
- If the valve is to be used at an opening angle of 30。 or under for flow constriction, consult us in advance.

Others

- After installation, open and close the valve once every two weeks if the valve is not used for a long period of time, and open and close the valve a few times before starting actual operation.
- For pressure tests of the piping (where pressures exceed the rated pressure), always keep the valve fully open. Never fully close the valve or use it as a blind flange.
- If the actuator is a manual gear, pneumatic cylinder, electric motor, or diaphragm, or other similar type, and the ambient temperature is extremely high, it may be necessary to change the O-rings and other rubber components using special materials or change the motor or solenoids to those with higher insulation levels, so be sure to consult us in advance.
- Always operated lock lever, worm gear, or center handle type actuators by hand. Never use an extension bar on the lever or a wheel key on the gear handle, for they might damage the handle or lever. Unlike gate valves or globe valves, tightening with a high torque is unnecessary.
- Do not loosen the installation bolts or other bolted components before relieving the system pressure.

Installation instructions (700G/705G)

- Insert bolts to support the upper rib of the valve when 3/4 of the valve is inserted between the flanges.
- To center the piping for JIS 10K flanges, insert centering sleeves on the bolts and install the bolts to support the valve at the bottom and prevent it from falling through (only for 100, 125, and 150mm sizes).



*Use the provided centering sleeves to facilitate the operation.

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