

For various applications such as air conditioning systems, pulp & paper mills, steel mills, chemical plants, food processing, and many other process industries, the rotary control valve 507V/508V will support your fluid control applications at all times.

Model 507V

Rotary control valve for high temperature fluids up to 400 degrees C

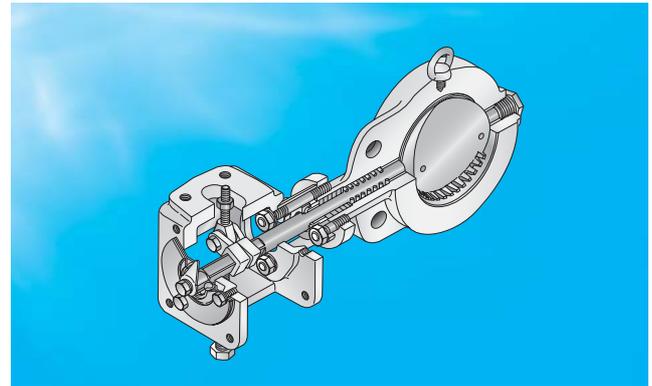
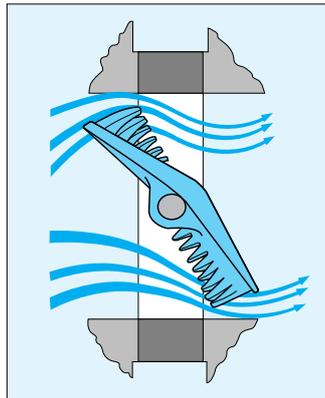
General

Model 507V is the high temperature version of our rotary control valve. In designing it for exclusive use in the regulation of fluids, we have pursued every angle of the control requirements and developed a state-of-the-art product: one with high rangeability, reduced dynamic torque, low noise level, anti-cavitation, and other excellent features. This model covers a wide temperature range in the fluid control of air conditioning systems, pulp and paper mills, chemical plants, steel mills, and food processing equipment.

Structure

The high performance characteristics of this model in fluid control originates from its unique design with a teeth and gull-wing shaped disc that touches the seat at a certain angle.

The teeth are arranged on the circumference of the disc towards either direction of flow. The "touch-at-an-angle" disc assists the reduction of seating and unseating torque and facilitates smooth control of the valve.



Features

(1)Flexible control over a wide range

The 507V allows complete control over the full range from the open to the closed position. The valve can also handle high temperatures of up to 400 degrees C such as in steam lines. These features enable the rotary valve to respond quickly and flexibly to any changes within the operating parameters of the process lines. The 507V, therefore, is the optimum valve for any control systems processing multiple products where the operating conditions change from time to time in accordance with process requirements.

(2)Cost-effective rotary control valve

In spite of its compact size and light weight, the 507V has a large valve capacity that minimizes the energy loss of fluid at the fully open position. This compact design reduces the required size of the actuator, installation space and piping supports, and minimizes vibration of control systems, and increases the operating life. These features provide the benefit of reducing the total operating cost of your plant.

Model 508V

Rotary control valve with tight shutoff and high grade rubber seat ring

General

With a specially designed rubber seat ring, Model 508V ensures tight shut-off, and eliminates the need for any additional stop valve required by conventional control valves. The face-to-face dimension meets both JIS and ISO standards and is applicable for various industrial fields including air conditioning systems.

Structure

Tight shutoff with a rubber seat ring

Except for the rubber seat ring, the 508V has the same design principle as the 507V. Excellent controllability is achieved by having the innovative teathed disc seating at a certain angle. The 508V has a reinforced core rubber seat ring allowing it to be used for high pressure service up to 1.6MPa with complete tight shutoff.



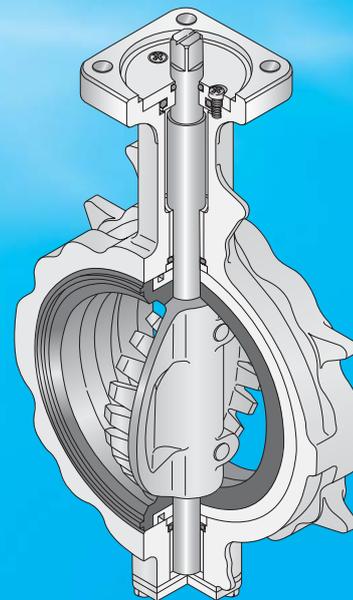
Features

(1)Rubber seat ring with a "control cosine curve" profile

Taking into consideration the cosine curve profile rubber seat ring, incorporated in our models 700G and 702Z, etc. we developed a new type of seat ring for exclusive use in the 508V.

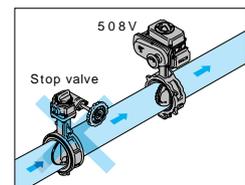
The 508V has a reinforced core rubber seat ring incorporated with a "control cosine curve" profile for sizes between 50 mm and 200mm. This seat ring design ensures a tight shut-off up to a working pressure of 1.6MPa.

The 508V available in sizes between 250 mm and 350 mm, has a similar seat ring design and profile. The seat ring is backed up by a metal core precisely formed and encapsulated inside the rubber. This design enables the control valve to function under severe conditions of high velocity, a large differential pressure, or a high vacuum. (The maximum allowable shutoff pressure is 1.0MPa.)



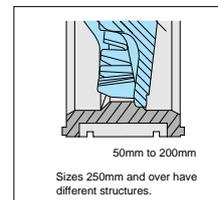
(2)No additional stop valve, less installation space, and less cost

Because of its reliable sealing effect against a high differential pressure, the 508V does not require an additional stop valve. You save on installation space and benefit from the excellent cost effective features of our rotary control valve.



(3)Satisfies both JIS and ISO standards for extended applications

The 508V is available in different flange specifications. Also, its face-to-face dimension meets both JIS and ISO requirements. Thus, this model is applicable for various industrial applications worldwide.



Control valve, 507V / 508V series

General

With guide-vane-like teeth around the disc edge, and the disc touching the seat at a certain angle, this product is a compact, lightweight and highly cost-effective, high-performance rotary control valve that exhibits outstanding control characteristics.

The valve provides steady control over a wide range with higher rangeability, better cavitation resistance, lower dynamic torque, lower noise level, and a better leakage rate than any other rotary control valve.

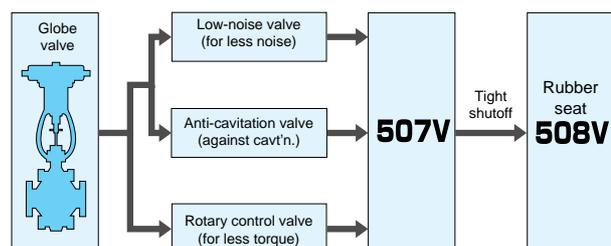
Two models, the 507V and 508V, are available for a range of severe applications. The 507V is the optimum type for fluid control of high pressure, high temperature systems. The 508V is characterized by its rubber seat ring.

Fundamental structure

This product has two basic design features that are responsible for the outstanding performance. One is the teeth around the disc and the other is the gull-wing-like design of the disc.

The teeth on the circumference of the disc break up the fluid energy acting on it with a resultant reduction of pressure recovery. Unlike conventional flat discs, the gull-wing-like disc of the product touches the seat at a certain angle for reduced seating/unseating torque. This results in steady control of the valve.

Recent trend toward rotary type control valves



507V/508V

Model **507V**

Standard specifications

Valve size		50 to 400mm		
Pressure rating		50 to 200mm: ANSI CLASS 300Lbs. 250 to 400mm: ANSI CLASS 150Lbs.		
Actuator mounting		Non-flange joint		
Flange accomodation		JIS 10K, JIS 16K, JIS 20K ANSI CLASS150Lb., ANSI CLASS 300Lb., DIN NP 10, 16, 25 Please contact us when 250mm/16K and over.		
Service temperature *	Cast steel	- 10 to +400 degrees C Following materials are used for 200 degrees C or higher temperatures Carbon for bearings Exfoliated graphite		
	Stainless steel	- 50 to +400 degrees C Following materials are used for 200 degrees C or higher temperatures Carbon for bearings Exfoliated graphite		
Rangeability		100:1		
Valve opening		Max 70 °		
Flow characteristics		Equal percent		
Leakage rate**		FCI 70-2 CLASS II		
Stuffing box		Studs and nuts tightening		
Standard materials	Body	50 to 200mm	Cast steel SCPH2	Stainless steel SCS14
		250 to 400mm	Cast steel SCPH2	Stainless steel SCS14
	Disc***	50 to 150mm	Cast steel SCPH2	Stainless steel SCS14
		200 to 400mm	Ductile iron FCD450	Stainless steel SCS14
	Stem		Stainless steel SUS630(SUS316)****	
	Bearings		Reinforced PTFE	Reinforced PTFE
	Packings		Exfoliated graphite	Exfoliated graphite
Gland flange		Stainless steel	Stainless steel	

*Please consult us if the application is in the range of 400 degrees C to 600 degrees C.

**The disc is gull wing shaped and touches the metal seat at an angle. This design minimizes leakage to a level less than 0.5% of the rated Cv, which is equal to or lower than the leakage permitted on a double-seat globe control valve.

***The disc is electroless plated with nickel.

****Please consult us if an SUS316 stem is required.

Model **508V** [Tight Shutoff With Rubber Seating]

Standard specifications

Valve size	50, 80, 100, 150, 200mm	250, 300, 350mm	400, 450, 500, 600mm
Face-to-face dimension ¹	JIS B 2002 series 46 / ISO 5752 basic series 20 wafer butterfly valve(Short)		
Flange accomodation	JIS:5K, 10K, 16K, 20K ANSI:150Lb DIN NP10, NP16 BS4504 PN10, PN16 BS10: "E" JIS G 5527	JIS:10K, 16K ANSI:150Lb DIN NP10, NP16 BS4504 PN10, PN16 BS10:"E" JIS G 5527	JIS:10K ANSI:150Lb DIN NP10, NP16 BS4504 PN10, PN16 JIS G 5527 7.5
Woking temperature range ²	- 20 to 120 degrees C	- 10 to 80 degrees C	- 10 to 80 degrees C【 - 20 to 120 degrees C】
Woking temperature in continuous use ³	0 to 100 degrees C,	0 to 60 degrees C	0 to 60 degrees C【0 to 100 degrees C】
Max. working pressure	P Shut-off pressure 1.6MPa 1.0MPa	P Shut-off pressure 1.0MPa	
Body test pressure	2.4MPa 1.5MPa	1.5MPa	
Seat leak test pressure	1.8MPa 1.1MPa	1.1MPa	
Flow characteristics	Nearly equal percent		
Rangeability	100: 1		
Standard materials *	Body	FCD450 (No fluid exposure)	
	Disc	SCS14	SCS13
	Stem	SUS420J2 (No fluid exposure)	
	Seat ring	* EPDM core-reinforced option: NBR core-reinforced	NBR core-reinforced, option: * EPDM core-reinforced

1. 350mm only: JIS B 2002 Series 47/ ISO Basic Series 25(medium)

2. represents NBR,【】represents EPDM*

3. "Woking temperature in continuous use" stands for the temperature continuouslykept exceeding one hour.

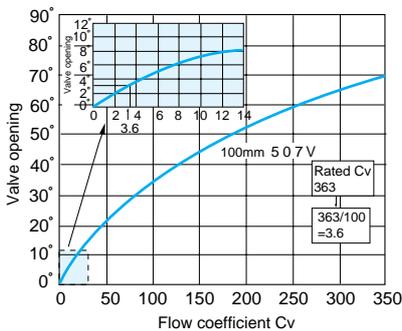
* Never use an EPDM rubber seat is ring if the valve being used for oil or for a fluid containing even a slight amount of oil.

Multiple merits for multiple applications

Controllability

High rangeability

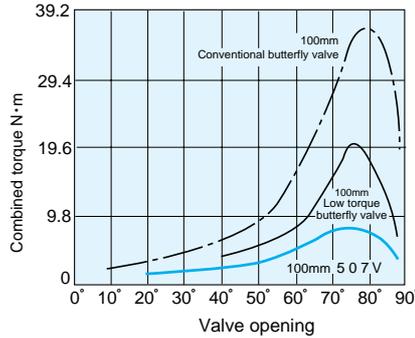
- *The wide range of controllability permits flexible adjustment to any changes in the process conditions of production lines. This merit is especially beneficial to multifold productions.
- *The conventional "split range control" with twin valves is no longer required. One product is enough to cover the whole range.



With its nearly "equal percent" flow characteristics and its very low leakage rate, the product offers an extremely high rangeability of 100:1.

Low dynamic torque

- *The steady performance ensures more precise control.
- *The compact actuator saves space and energy.

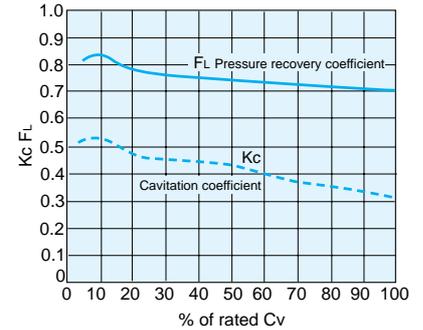


The above graph shows a comparison of the product with other typical valves. The patented disc has remarkably reduces the dynamic torque.

Reliability

Excellent cavitation resistance

- *The outstanding cavitation resistance increases the operational life of the valve and pipeline, and improves the reliability of the system.
- *This model is works in more severe requirements than ever.

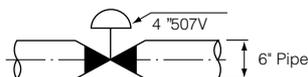


A high coefficient of initial cavitation (KC), and a high pressure recovery coefficient (FL), inhibit the occurrence of cavitation.

Cv value

Size			Opening angle						
mm	inch		10 °	20 °	30 °	40 °	50 °	60 °	70 °
50	2	Cv	3	11	22	38	53	69	85
		CvFp	3	11	22	37	50	63	74
80	3	Cv	14	33	58	88	120	140	176
		CvFp	14	33	58	86	115	133	158
100	4	Cv	17	43	80	127	179	250	363
		CvFp	17	43	80	126	175	238	323
150	6	Cv	55	120	210	320	450	590	825
		CvFp	55	120	208	315	441	560	730
200	8	Cv	70	175	350	620	1025	1265	1595
		CvFp	70	174	345	608	974	1151	1388
250	10	Cv	96	245	455	718	1135	1470	2515
		CvFp	96	244	450	710	1115	1396	2188
300	12	Cv	160	410	760	1200	1730	2460	3610
		CvFp	160	405	750	1175	1644	2238	3130
350	14	Cv	200	500	900	1500	2200	3200	4440
		CvFp	198	495	891	1470	2090	2910	3640
400	16	Cv	210	550	1020	1614	2327	3310	5650
		CvFp	210	548	1015	1598	2280	3145	5090

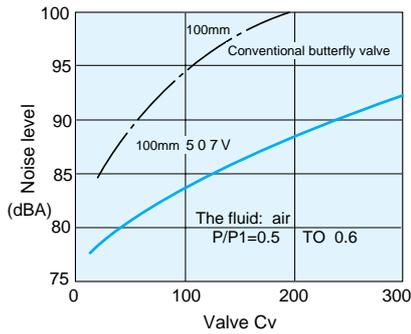
Remarks:
CvFp : Pipe size=1.5 × Valve size
EX:



Environmental considerations

Low noise level

- *Provides better work environment.
- *Especially in air and gas applications, this product has a lower noise level by 5 to 10dBA and meets and exceeds noise regulations



The teeth on the disc cut the flow into fine jet streams.
This is the most effective device for lowering the noise level when the valve is half open.

Cost merit

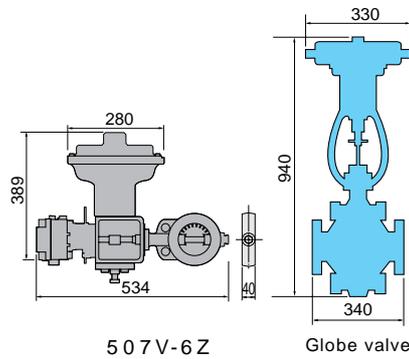
Larger valve capacity

- *Reduces loss of energy at the fully open position.
- *Allows one to two sizes of valve reduction in comparison with a conventional valve.

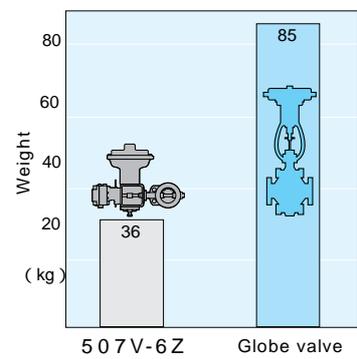
Compact and lightweight design

- *Permits compact piping arrangement.
- *Allows the use of a portable remote controller unit.
- *Eliminates vibration problems of the piping system, and improves operational life.

Comparison of dimensions
(Nominal size: 80mm)



Comparison of weight
(Nominal size: 80mm)



Simple design

- *Permits easy control of spare parts.
- *Facilitates easy maintenance.
- *Has a reduced number of parts and improved reliability.

Pressure recovery factor (FL), coefficient of incipient cavitation (Kc)

Opening angle	10 °	20 °	30 °	40 °	50 °	60 °	70 °
Pressure recovery factor (FL)	0.85	0.80	0.78	0.76	0.73	0.71	0.70
Coefficient of incipient cavitation (Kc)	0.55	0.50	0.47	0.45	0.40	0.37	0.32

507V

507V Actuator selection chart

507V

型番	Size ($\frac{\text{mm}}{\text{inch}}$)								
	50	80	100	150	200	250	300	350	400
	2	3	4	6	8	10	12	14	16
2S	DGH-1				DGH-2				
3E,3A	K70		K170		K370		TGA-100		
3G,3F	K170S			K370S		K700S			
4I	4I-1		4I-2		4I-2.5	4I-3			
6Z	280H				400H				

507V Allowable differential pressure for 3E

Double-action Cylinder (Stem 630ss)

(KPa)

Nominal size			Cv % (Cv/Rated Cv)					
			0	20	40	60	80	100
			Valve opening %					
mm	inch	Cylinder	0	41	57	69	86	100
50	2	K70	4900	1538	826	664	709	2940
80	3	K70	3994	1012	577	439	476	1860
100	4	K70	2396	459	248	184	197	780
150	6	K170	1370	477	260	210	253	290
200	8	K370	1170	300	200	140	140	140
250	10	K370	1356	164	103	91	115	200
300	12	K700	980	250	150	120	120	120
350	14	K700	640	160	99	78	78	78
400	16	K700	590	110	73	57	60	60

507V Allowable differential pressure for 3G, 3F

Single-action Cylinder (Stem 630ss)

(KPa)

Nominal size			Cv % (Cv/Rated Cv)					
			0	20	40	60	80	100
			Valve opening %					
mm	inch	Cylinder	0	41	57	69	86	100
50	2	K170S	4900	1284	816	854	1248	2940
80	3	K170S	2929	845	571	565	838	1860
100	4	K170S	1758	383	245	237	347	780
		K370S	3430	1064	785	748	780	780
150	6	K170S	732	128	79	76	110	290
		K370S	1370	356	255	240	290	290
200	8	K370S	953	152	108	102	140	140
		K700S	1170	300	200	140	140	140
250	10	K700S	749	136	84	79	113	200

507V Allowable differential pressure for 6Z

Diaphragm Actuator (Stem 630ss)

(MPa)

Nominal size		Model	Supply pressure (MPa)	Spring range (kPa)	Cv % (Cv/Rated Cv)					
					Close	20	40	60	80	100
mm	inch				Valve opening %					
					0	41	57	69	86	100
50	2	280H	0.27	60 to 220	4.90	4.90	3.33	2.94	2.94	2.94
80	3	280H	0.27	60 to 220	4.90	3.13	2.25	1.86	1.86	1.86
100	4	280H	0.27	60 to 220	3.43	1.37	0.97	0.78	0.78	0.78
150	6	280H	0.27	60 to 220	1.37	0.48	0.34	0.29	0.29	0.29
200	8	280H	0.27	60 to 220	1.21	0.30	0.20	0.14	0.14	0.14
250	10	400H	0.27	60 to 190	1.50	0.36	0.25	0.21	0.20	0.20
300	12	400H	0.27	60 to 190	1.03	0.22	0.14	0.12	0.12	0.12
350	14	400H	0.27	60 to 190	0.64	0.15	0.10	0.09	0.08	0.08
400	16	400H	0.27	60 to 190	0.59	0.10	0.07	0.06	0.05	0.05

507V

507V Allowable differential pressure on stem

SUS630

(MPa)

Nominal size		Cv % (Cv/Rated Cv)					
		0	20	40	60	80	100
		Valve opening %					
mm	inch	0	41	57	69	86	100
50	2	4.90	4.90	3.33	2.94	2.94	2.94
80	3	4.90	3.13	2.25	1.86	1.86	1.86
100	4	3.43	1.37	0.97	0.78	0.78	0.78
150	6	1.37	0.48	0.34	0.29	0.29	0.29
200	8	1.17	0.30	0.19	0.14	0.14	0.14
250	10	1.47	0.42	0.28	0.20	0.20	0.20
300	12	0.98	0.25	0.16	0.12	0.12	0.12
350	14	0.64	0.16	0.10	0.08	0.08	0.08
400	16	0.59	0.11	0.07	0.06	0.06	0.06

SUS316

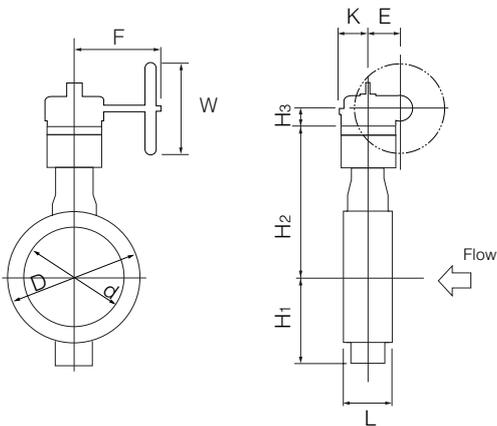
(MPa)

Nominal size		Cv % (Cv/Rated Cv)					
		0	20	40	60	80	100
		Valve opening %					
mm	inch	0	41	57	69	86	100
50	2	4.90	2.45	1.76	1.57	1.57	1.57
80	3	3.13	1.56	1.17	0.98	0.98	0.98
100	4	1.66	0.70	0.53	0.39	0.39	0.39
150	6	0.78	0.24	0.16	0.13	0.13	0.13
200	8	0.54	0.15	0.10	0.08	0.08	0.08
250	10	0.73	0.21	0.14	0.12	0.12	0.12
300	12	0.51	0.12	0.08	0.06	0.06	0.06
350	14	0.38	0.08	0.06	0.05	0.05	0.05
400	16	0.32	0.06	0.04	0.03	0.03	0.03

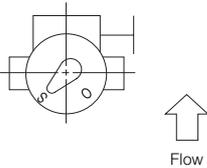
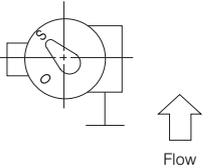
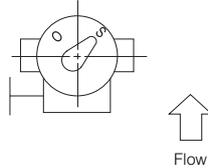
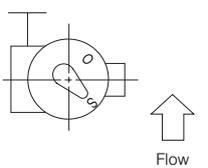
Worm gear type 507V-2S (50mm to 400mm)

Nominal size		Dimension (mm)										Gear type	Approx. Mass (kg)
mm	inch	d	D	L	H ₁	H ₂	H ₃	E	K	F	W		
50	2	49	92	40	63	183	32	58	93	156	160	DGH-1	13
80	3	73	127	40	86	201	32	58	93	156	160	DGH-1	15
100	4	97	155	40	98	224	32	58	93	156	160	DGH-1	16
150	6	146	216	52	129	262	32	58	93	156	160	DGH-1	23
200	8	194	265	62	184	283	32	58	93	161	200	DGH-1	32
250	10	241	324	89	196	393	42	85	126	246	280	DGH-2	60
300	12	289	370	89	230	446	42	85	126	246	280	DGH-2	70
350	14	318	415	89	256	431	42	85	126	246	280	DGH-2	86
400	16	364	470	108	296	453	42	85	126	246	280	DGH-2	100

507V-2S



2S Installation direction

			
2SA	2SB	2SC	2SD

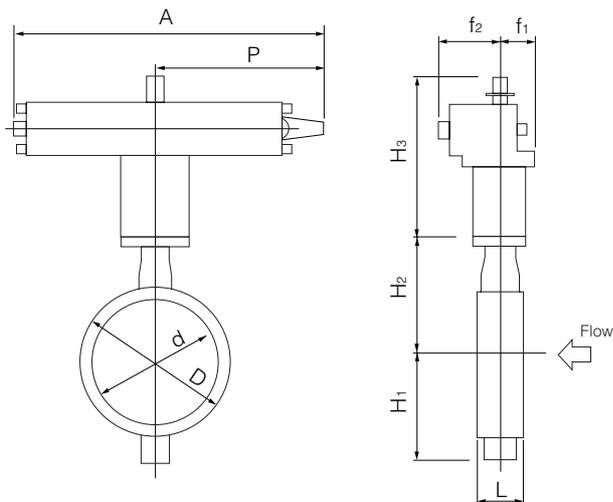
507V

Double-acting pneumatic cylinder type 507V-3A(350mm, 400mm)

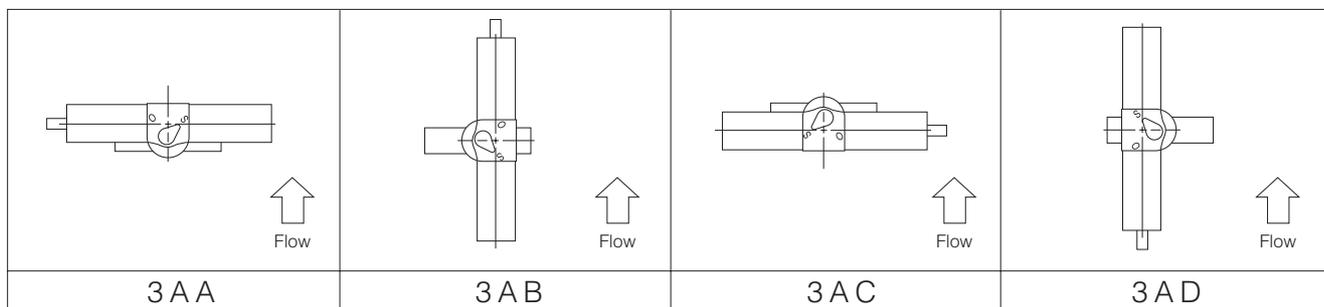
Nominal size		Dimension (mm)										Cylinder type	Approx. Mass (kg)
mm	inch	d	D	L	H ₁	H ₂	H ₃	A	P	f ₁	f ₂		
350	14	318	415	89	256	316	404	773	433	83	133	TGA-100	95
400	16	364	470	108	296	338	404	773	433	83	133	TGA-100	110

A free angle adjuster comes with the pneumatic cylinder.

507V-3A



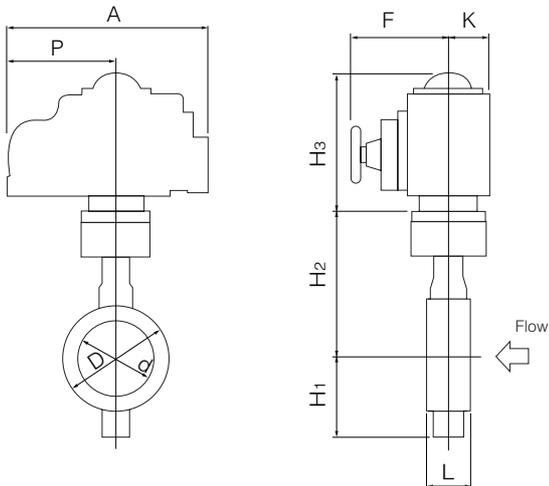
3A Installation direction



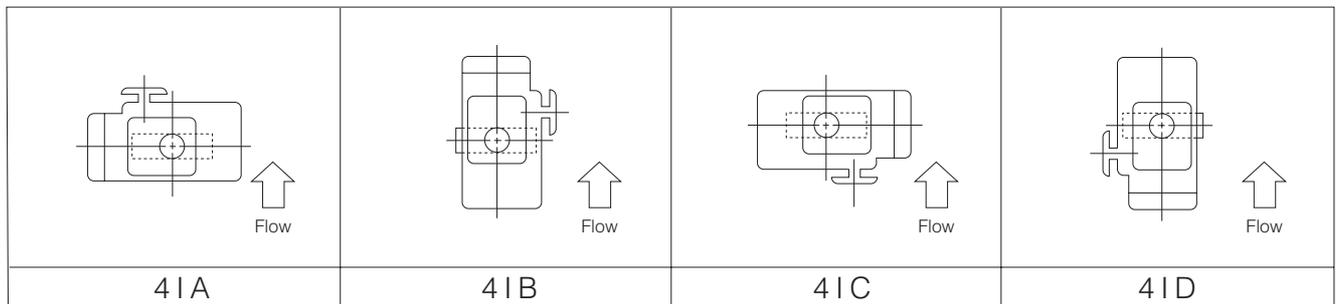
Single phase electric motor type 507V-4 I(50mm to 400mm)

Nominal size		Dimension (mm)										Motor type	Approx. Mass (kg)
mm	inch	d	D	L	H ₁	H ₂	H ₃	A	P	F	K		
50	2	49	92	40	63	198	191	252	138	126	65	4 I-1	18.3
80	3	73	127	40	86	216	191	252	138	126	65	4 I-1	19.3
100	4	97	155	40	98	239	191	252	138	126	65	4 I-1	20.3
150	6	146	216	52	129	262	224	310	167	154	85	4 I-2	24
200	8	194	265	62	184	283	224	310	167	154	85	4 I-2	34
250	10	241	324	89	196	413	227	310	167	154	85	4 I-2.5	51
300	12	289	370	89	230	446	255	388	223	246	136	4 I-3	70
350	14	318	415	89	256	431	255	388	223	246	136	4 I-3	86
400	16	364	470	108	296	453	255	388	223	246	136	4 I-3	100

507V-4 I



4 I Installation direction



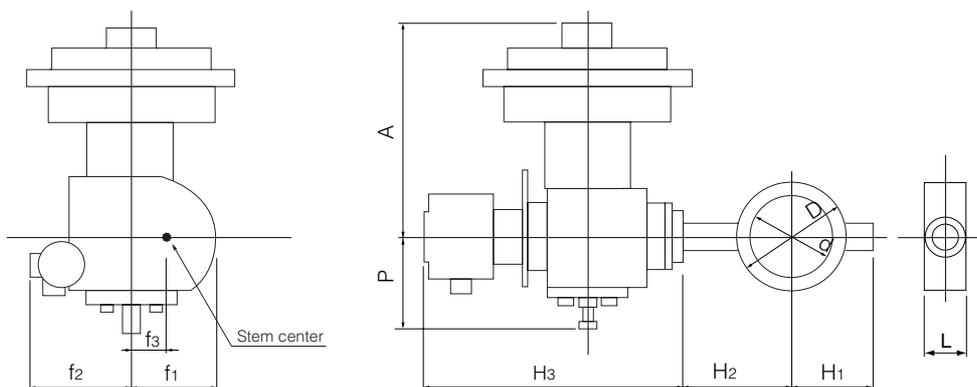
507V

507V-6Z(50mm to 400mm)with diaphragm actuator

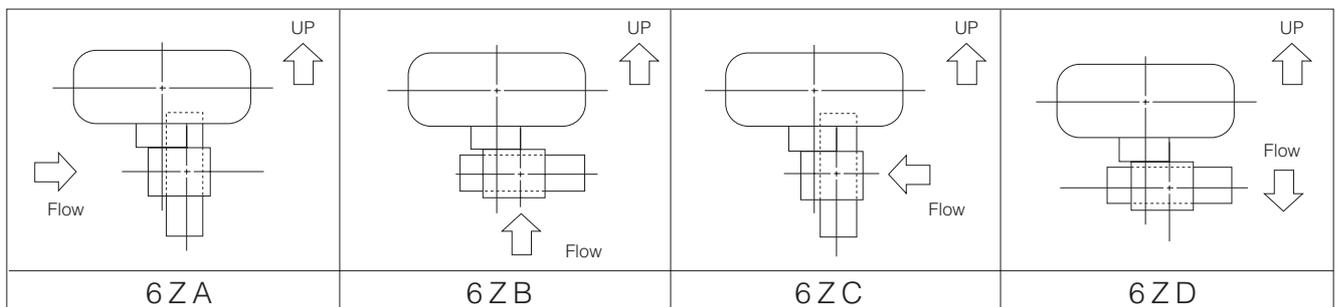
Nominal size		Dimension (mm)											Diaphragm type	Approx. Mass (kg)
mm	inch	d	D	L	H ₁	H ₂	H ₃	A	P	f ₁	f ₂	f ₃		
50	2	49	92	40	63	108	322	310	126	121	147	36	280H	35
80	3	73	127	40	86	126	322	310	126	121	147	36	280H	37
100	4	97	155	40	98	149	322	310	126	121	147	36	280H	38
150	6	146	216	52	129	187	322	310	126	121	147	36	280H	45
200	8	194	265	62	184	208	332	310	126	121	147	36	280H	54
250	10	241	324	89	196	278	402	416	185	135	133	50	400H	90
300	12	289	370	89	230	331	402	416	185	135	133	50	400H	100
350	14	318	415	89	256	316	402	416	185	135	133	50	400H	115
400	16	364	470	108	296	338	402	416	185	135	133	50	400H	130

Remarks: H₃ shows the dimension when the positioner (TCE2000) is installed.
The H₃ dimension will change depending on the positioner type.

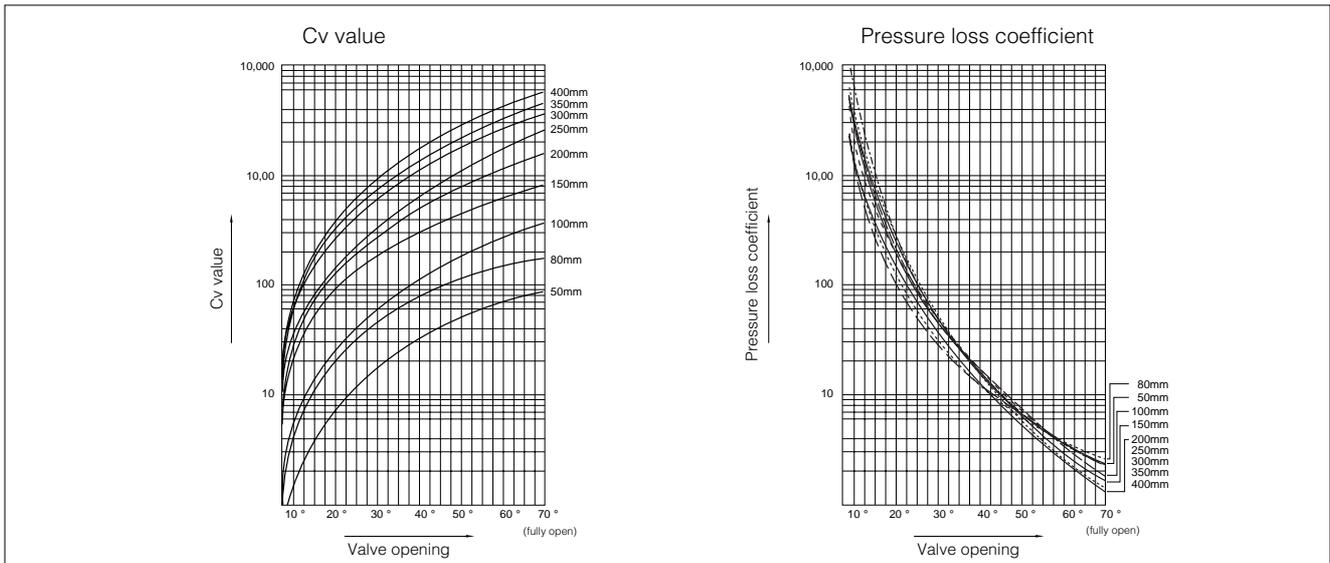
507V-6Z



6Z Installation direction



507V Cv value/pressure loss coefficient



507V Cv value

Nominal size		Valve opening						
mm	inch	10°	20°	30°	40°	50°	60°	70°
50	2	3	11	22	38	53	69	85
80	3	14	33	58	88	120	140	176
100	4	17	43	80	127	179	250	363
150	6	55	120	210	320	450	590	825
200	8	70	175	350	620	1020	1265	1595
250	10	96	245	455	718	1135	1470	2515
300	12	160	410	760	1200	1730	2460	3610
350	14	200	500	900	1500	2200	3200	4440
400	16	210	550	1020	1614	2329	3310	5650

507V Pressure loss coefficient

Nominal size		Valve opening						
mm	inch	10°	20°	30°	40°	50°	60°	70°
50	2	1832	136	34.1	11.4	5.9	3.5	2.3
80	3	406	73	23.6	10.3	5.5	4.1	2.6
100	4	810	127	36.6	14.5	6.5	3.1	1.8
150	6	367	77	25.2	10.9	5.5	2.8	1.7
200	8	697	111	31.3	11.3	4.6	2.1	1.4
250	10	889	136	39.6	14.2	5.4	2.5	1.3
300	12	748	100	30.7	11.0	4.7	2.3	1.3
350	14	815	115	32.6	11.7	5.0	2.4	1.4
400	16	1126	149	37.2	12.5	5.0	2.3	1.4

507V Pressure recovery coefficient(FL)and Cavitation coefficient(Kc)

Valve opening	10°	20°	30°	40°	50°	60°	70°
Pressure recovery coefficient(FL)	0.85	0.80	0.78	0.76	0.73	0.71	0.70
Cavitation coefficient(Kc)	0.55	0.50	0.47	0.45	0.40	0.37	0.32

507V

507V Applicable pipe list in case of **A**

Nominal size		SGP	STPY	Sch20	Sch40	Sch10S	Sch20S	Minimum internal diameters of piping (mm)
mm	inch							
50	2		-					36
80	3		-					71
100	4		-					98
150	6		-					148
200	8		-					199
250	10		-					241
300	12		-					293
350	14					-	-	321
400	16					-	-	367

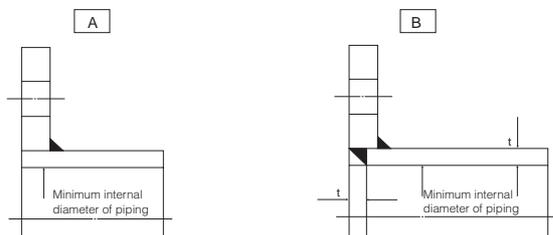
507V Applicable pipe list in case of **B**

Nominal size		SGP	STPY	Sch20	Sch40	Sch10S	Sch20S
mm	inch						
50	2		-				
80	3		-				
100	4		-				
150	6		-				
200	8		-				
250	10		-				
300	12		-				
350	14					-	-
400	16					-	-

Remark1: =Applicable ✕=Not applicable

Remark2: Butterfly valves are inserted into a pipe that was fitted with the disc when fully open.

In cases where you are using a pipe or flange that is less than the minimum inner pipe diameter, use is still possible if means are taken such as inserting a spacer between the valve and flange. For details, please consult us.



507V Applicable flange standard

Nominal size		JIS			ANSI		BS4504 PN10	DIN NP10
mm	inch	10K	16K	20K	150Lb	300Lb		
50	2	○	D	D		D	○	○
80	3	D	D	D		D	D	D
100	4	D	D	D	D	D	D	D
150	6	D	D	D	D	D	D	D
200	8	D	D	D	D	D	D	D
250	10	D	×	×	D	×	D	D
300	12	D	×	×	D	×	D	D
350	14	D	×	×	D	×	D	D
400	16	D	×	×	D	×	D	D

○ : Can be used without flange drilling.
D : With flange drilling
× : Not applicable

507V Piping bolt and nut sizes

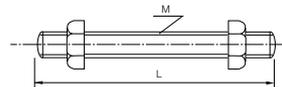
Nominal size		JIS 10K	JIS 20K	ANSI 150Lb	ANSI 300Lb
mm	inch	Long bolts and nuts		Long bolts and nuts	
50	2	4-M16×130	8-M16×130	4-U 5/8×140	8-U 5/8×140
80	3	8-M16×130	8-M20×170	4-U 5/8×150	8-U 3/4×175
100	4	8-M16×130	8-M20×170	8-U 5/8×150	8-U 3/4×175
150	6	8-M20×170	12-M22×190	8-U 3/4×175	12-U 3/4×190
200	8	12-M20×170	12-M22×210	8-U 3/4×190	12-U 7/8×230
250	10	12-M22×210	-	12-U 7/8×230	-
300	12	16-M22×210	-	12-U 7/8×230	-
350	14	16-M22×210	-	12-U 1 ×260	-
400	16	16-M24×240	-	16-U 1 ×260	-

Material Long bolt: SNB7
Nut: S45C

Example

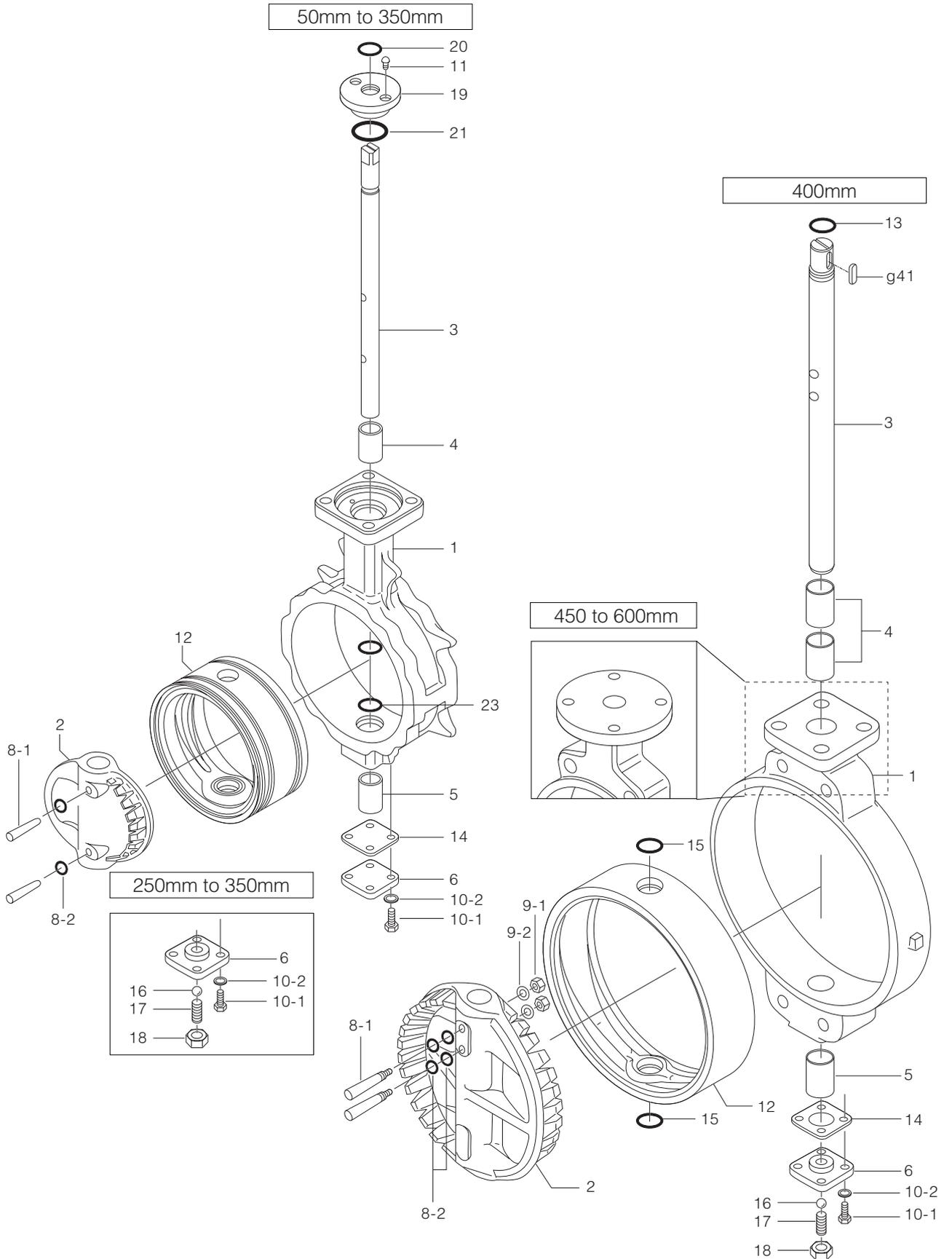
Long bolts: 12 - M22 × 185
| | |
N M L

Long bolts and nuts (full thread)



508V

508V Expanded view of components



508V Parts list

508V Parts list(50mm to 350mm)

No.	Description	Q'ty	Remarks
1	Body	1	
2	Disc	1	
3	Stem	1	
4	Bearing	1	50mm to 250mm
		2	300mm, 350mm
5	Bearing	1	
6	Bottom cover	1	
8-1	Taper pin	2	
8-2	O-ring	4	Only 250mm, 350mm
10-1	Hexagon bolt	4	
10-2	Spring washer	4	
11	Machine screw	2	50mm to 200mm
		4	250mm to 350mm
12	Seat ring	1	
14	Gasket	1	
16	Ball	1	Only 250mm to 300mm
17	Hollow bolt	1	Only 250mm to 300mm
18	Lock nut	1	Only 250mm to 300mm
19	Dust seal	1	
20	O-ring	1	
21	O-ring	1	
23	O-ring	2	

508V Parts list(400mm to 600mm)

No.	Description	Q'ty	Remarks
1	Body	1	
2	Disc	1	
3	Stem	1	
4	Bearing	2	400mm, 500mm
		3	450mm, 600mm
5	Bearing	1	400mm
		2	450mm to 600mm
6	Bottom cover	1	
8-1	Taper pin	2	
8-2	O-ring	4	
9-1	Hexagon bolt	2	
9-2	Spring washer	2	
10-1	Hexagon bolt	4	
10-2	Spring washer	4	
12	Seat ring	1	
13	O-ring	1	
14	Gasket	1	
15	O-ring	2	
16	Ball	1	
17	Hollow bolt	1	
18	Lock nut	1	
g41	Key	1	

Remark: The **g41** indicates recommended spare parts. They are supplied as "Seat ring set" with a small hexagonal spanner to remove hollow bolt (P.21).

508V

508V Actuator selection chart

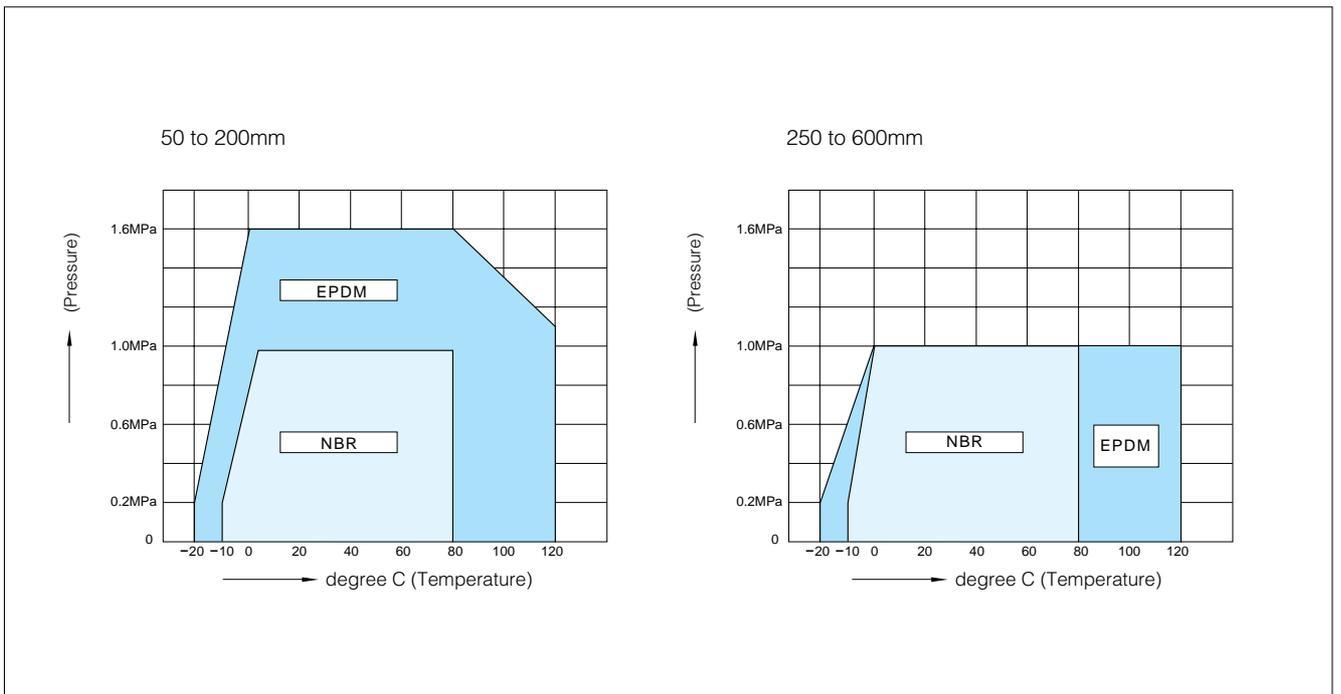
508V

Model	Category	Size ($\frac{\text{mm}}{\text{inch}}$)											
		50	80	100	150	200	250	300	350	400	450	500	600
		2	3	4	6	8	10	12	14	16	18	20	24
2U	Standard	2U-0	2U-1	2U-2	2U-3	2U-4	2U-5	MGH-3	MGH-4				
3E,3A	Standard	K30	K70	K170	K370	K700	TGA-125	TGA-140	TGA-160	TGA-200			
3G,3F 3U,3K	Standard	K70S	K170S	K370S	K700S	TG-10S	TG-12S	TG-14S	TG-20S				
4 I	ON-OFF Control	4 I-0	4 I-1	4 I-2.5	4 I-3	4 I-4							
4J,4L	Standard	SRJ-010	SRJ-020	SRJ-060	LTKD-01 0.2kW/ DGH-2	LTKD-01 0.4kW/ MGH-3	LTKD-02 0.75kW/ MGH-4	LTKD-05 0.75kW/ MGH-5					
6X,6W	Standard	280H	400H										

Remark: In case of 350mm type with accessories below for control type 4I-4 should be selected.

- Micom unit
- Servo unit
- Speed control unit
- Potentiometer

508V Pressure rating



508V Allowable differential pressure for 6X and 6W

(kPa)

Nominal size		Valve opening							
mm	inch	0°	10°	20°	30°	40°	50°	60°	70°
50	2	1600	685	334	148	86	59	45	40
80	3	1400	694	475	308	176	116	69	47
100	4	800	765	575	315	204	133	69	37
150	6	1600	783	546	360	219	152	90	44
200	8	1600	676	453	287	178	124	79	44

508V Allowable differential pressure on stem

(kPa)

Nominal size		Valve opening							
mm	inch	0°	10°	20°	30°	40°	50°	60°	70°
50	2	1600	685	334	148	86	59	45	40
80	3	1600	694	475	308	176	116	69	47
100	4	1600	765	575	315	204	133	69	37
150	6	1600	783	546	360	219	152	90	44
200	8	1600	676	453	287	178	124	79	44
250	10	1000	562	233	149	84	58	37	21
300	12	1000	220	232	149	84	58	37	21
350	14	1000	367	222	116	65	45	29	16
400	16	1000	209	118	58	52	46	33	25
450	18	1000	223	197	115	56	48	33	26
500	20	1000	162	143	97	55	44	30	23
600	24	1000	246	171	110	54	49	41	27

The above is based on the result at our test plant. The test was conducted with fresh water at ambient temperature. Therefore, please use the data for reference only. Consult us if you have a question or doubt.

508V Maximum velocity

Fresh water	Short period	10m/s
	Continuous	7m/s
Sea water	Short period	10m/s
	Continuous	5m/s
Air (ambient temp.)	Short period	80m/s
	Continuous	30m/s

The maximum velocity shown is estimated as an average in the fully open state.

Remark: "Short period" means a few minutes creating high velocity until the disc angle reaches the designated position.

508V

508V Bare shaft (01: 50mm to 350mm, 02: 400mm to 600mm)

508V-01 (50mm to 350mm) / 508V-02 (400mm)

Nominal size		Dimension (mm)													Approx. Mass (kg)
mm	inch	d	D	L	H ₁	H ₂	a ₁	a ₂	S ₁	d ₂	b	t ₂	t	Flanges	
50	2	48	101	43	76	142	22	10.5	8	10	-	-	14	F07	2.5
80	3	75	131	46	95	158	23	11.5	12	14	-	-	14	F07	4.0
100	4	96	156	52	110	169	23	11.5	12	14	-	-	14	F07	5.3
150	6	143	217	56	160	202	28	16.5	14	18	-	-	14	F10	10.8
200	8	188	268	60	182	227	30	20	18	22	-	-	14	F10	15
250	10	248	322	68	255	280	35	30	24	28	-	-	14	F10	29
300	12	296	375	78	284	312	35	30	24	32	-	-	16	F12	42
350	14	332	420	92	320	360	35	30	24	32	-	-	16	F12	62
400	16	390	477	102	343	380	65	59	-	46	14	3.5	20	F14	115

Flange dimensions

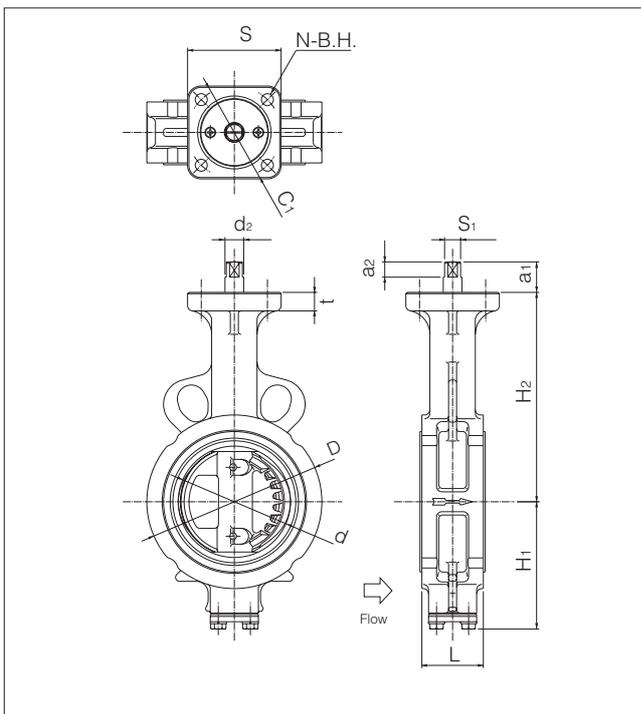
Flanges	S	C ₁	N	B.H.
F07	70	70	4	9
F10	102	102	4	11
F12	125	125	4	13
F14	140	140	4	19
F16	165	165	4	23

Stem design	
01:	Square
02:	Round with key

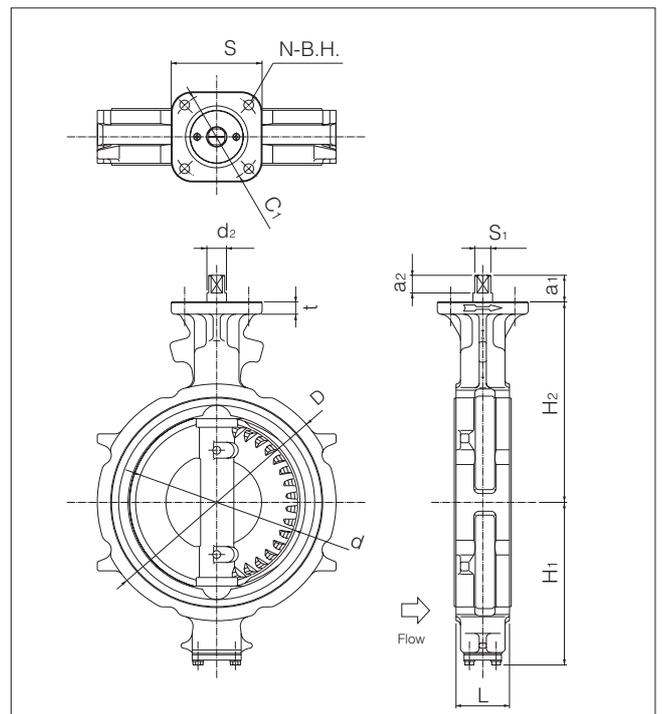
508V-02 (450mm to 600mm)

Nominal size		Dimension (mm)															Approx. Mass (kg)	
mm	inch	d	D		L	H ₁	H ₂	a ₁	a ₂	d ₂	b	t ₂	t	D ₁	C ₁	N		B.H.
			JIS10K	JIS16K														
450	18	439	532	532	114	379	420	60	53	47	12	3.5	20	200	170	4	19	144
500	20	490	610	610	127	422	450	60	53	47	12	3.5	20	200	170	4	19	196
600	24	583	826	720	154	494	530	75	65	65	18	6	25	260	220	4	23	333 (303)

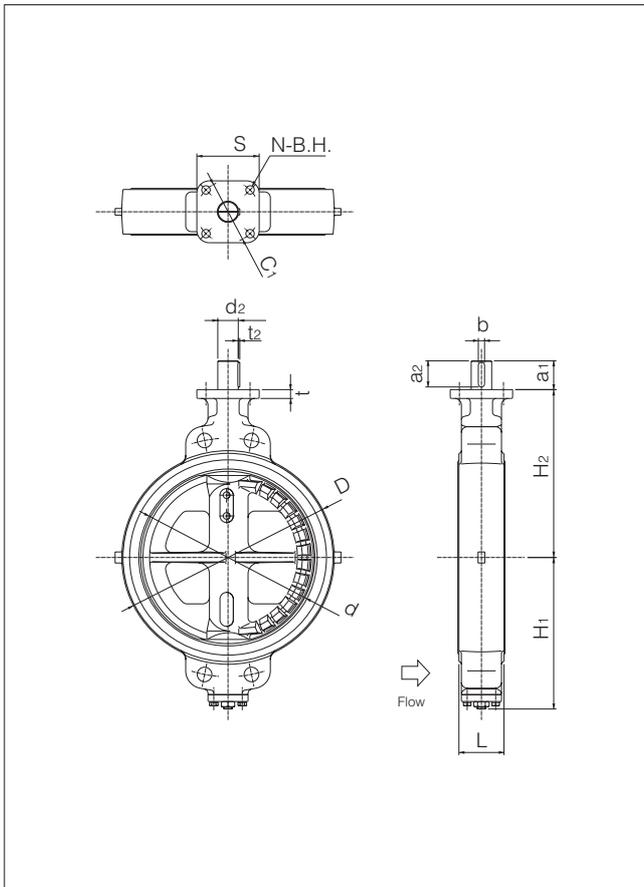
508V 50mm, 80mm



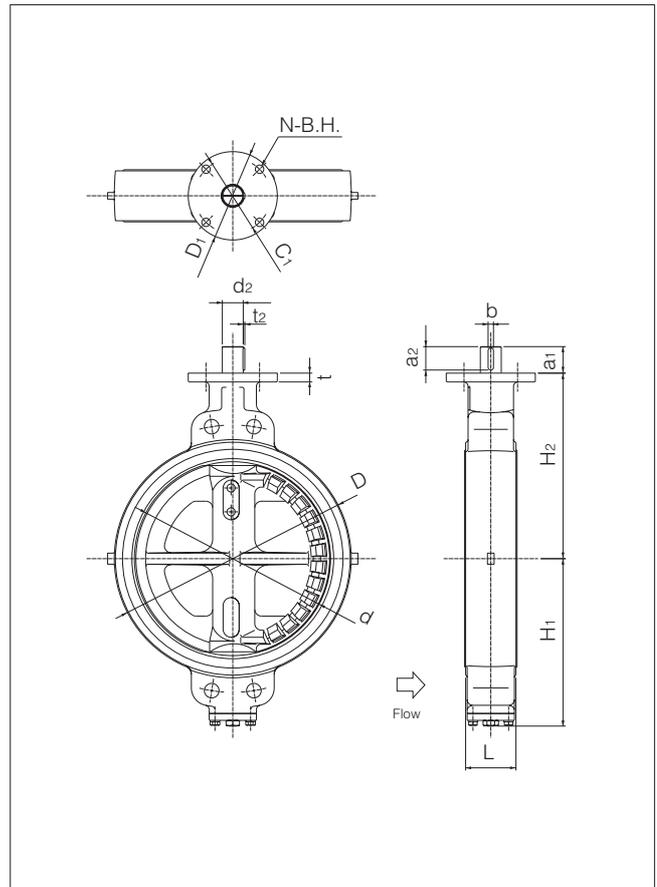
508V 100mm to 350mm



508V 400mm

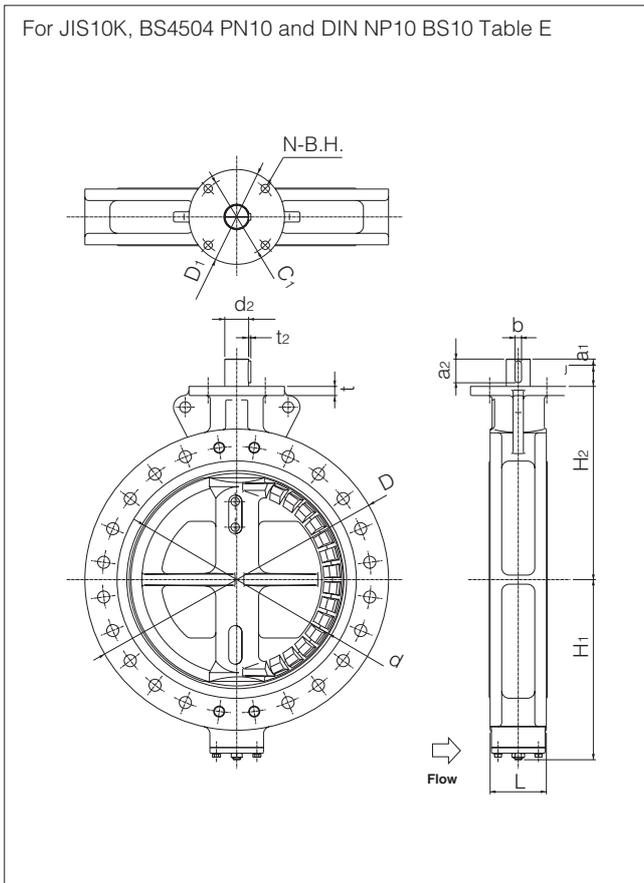


508V 450mm, 500mm



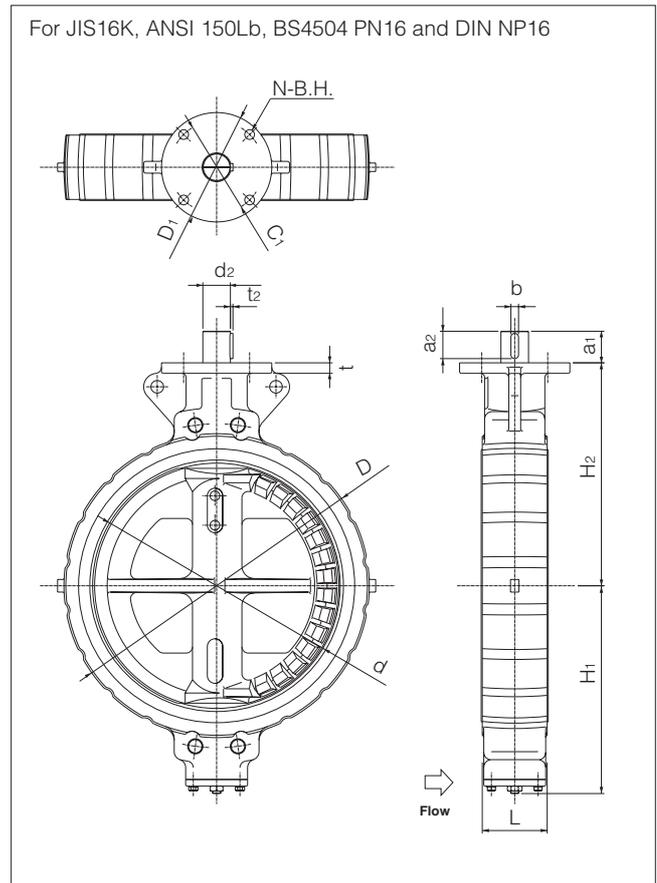
508V 600mm

For JIS10K, BS4504 PN10 and DIN NP10 BS10 Table E



508V 600mm

For JIS16K, ANSI 150Lb, BS4504 PN16 and DIN NP16



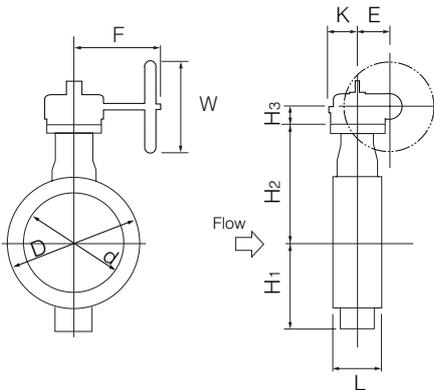
508V

Worm gear type 508V-2U(50mm to 400mm) / 508V-2S(450mm to 600mm)

Nominal size		Dimension (mm)										Gear type	Approx. Mass (kg)
mm	inch	d	D	L	H ₁	H ₂	H ₃	E	K	F	W		
50	2	48	101	43	76	142	29.5	36	46	160	100	2U-0	4.9
80	3	75	131	46	95	158	29.5	36	46	160	100	2U-1	6.4
100	4	96	156	52	110	169	29.5	36	46	160	100	2U-1	7.7
150	6	143	217	56	160	202	34.5	44	53	173.5	160	2U-2	15.1
200	8	188	268	60	182	227	41.5	67	75	198	200	2U-3	22.8
250	10	248	322	68	255	280	41.5	67	75	198	200	2U-3	37
300	12	296	375	78	284	312	48	87.5	90	222.5	200	2U-4	57
350	14	332	420	92	320	360	48	87.5	90	222.5	200	2U-4	77
400	16	390	477	102	343	380	50	90	105	266	280	2U-5	126
450	18	439	532	114	379	420	55	117	164	335	355	MGH-3	178
500	20	490	610	127	422	450	55	117	164	335	355	MGH-3	230
600	24	583	826 (720)	154	494	530	65	140	198	400	450	MGH-4	393 (363)

A handle lock is attached for manual gear.
 () shows the data for JIS 16K 600mm.

508V-2U/2S



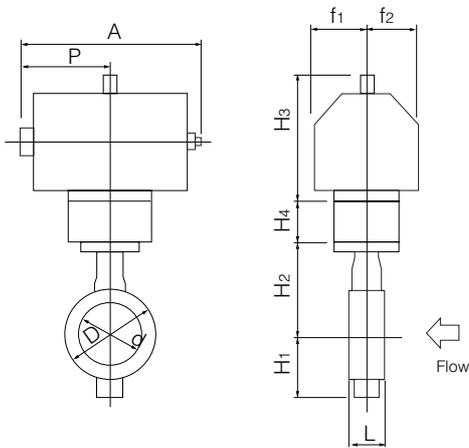
2U/2S Installation direction

 Flow	 Flow	 Flow	 Flow
2UA/2SA	2UB/2SB	2UC/2SC	2UD/2SD

Double-acting pneumatic cylinder type 508V-3E(50mm to 300mm)

Nominal size		Dimension (mm)										Cylinder type	Approx. Mass (kg)	
mm	inch	d	D	L	H ₁	H ₂	H ₃	H ₄	A	P	f ₁			f ₂
50	2	48	101	43	76	142	113	-	271.5	113.5	35	50	K30	4.4
80	3	75	131	46	95	158	133	-	320.5	138	53	51	K70	7.9
100	4	96	156	52	110	169	133	-	320.5	138	53	51	K70	9.2
150	6	143	217	56	160	202	157	-	427	171	65	58	K170	17.4
200	8	188	268	60	182	227	184	-	503	209	83	69	K370	26.6
250	10	248	322	68	255	280	224	-	660	262	101	85	K700	51.5
300	12	296	375	78	284	312	224	-	660	262	101	85	K700	64.5

508V-3E



3E Installation direction

<p>Retainer side</p> <p>Flow</p> <p>Air port side</p> <p>Stem side</p> <p>3EA</p>	<p>Retainer side</p> <p>Air port side</p> <p>Flow</p> <p>Stem side</p> <p>3EB</p>	<p>Retainer side</p> <p>Flow</p> <p>Stem side</p> <p>Air port side</p> <p>3EC</p>	<p>Retainer side</p> <p>Flow</p> <p>Stem side</p> <p>Air port side</p> <p>3ED</p>
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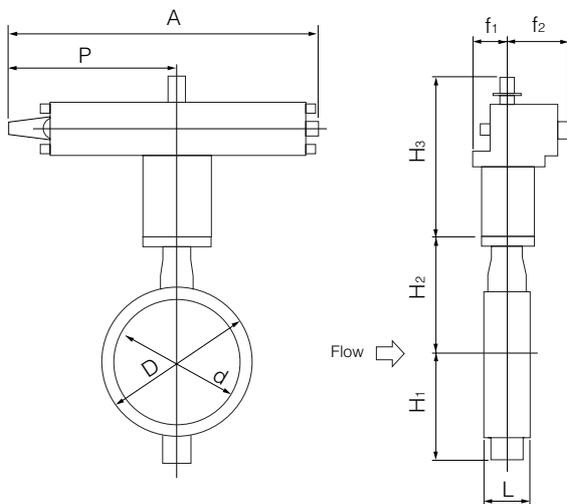
508V

Double-acting pneumatic cylinder type 508V-3A(350mm to 600mm)

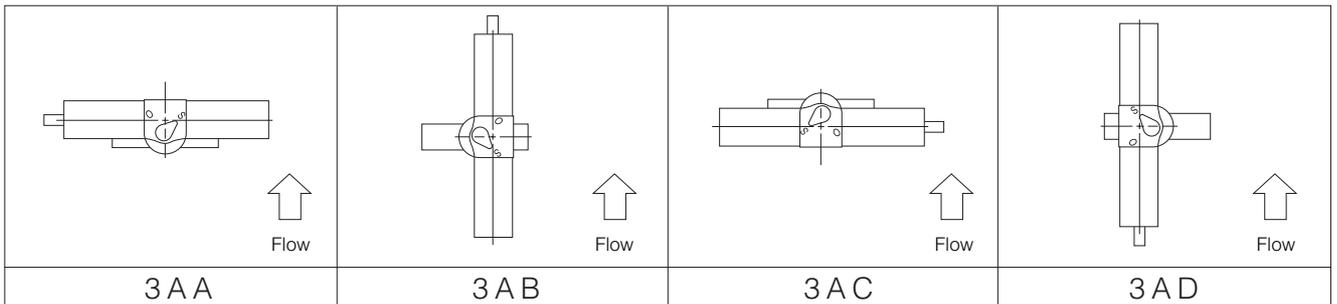
Nominal size		Dimension (mm)										Cylinder type	Approx. Mass (kg)
mm	inch	d	D	L	H ₁	H ₂	H ₃	A	P	f ₁	f ₂		
350	14	332	420	92	320	360	359	868	487	100	164	TGA-125	112
400	16	390	477	102	343	380	359	868	487	100	164	TGA-125	156
450	18	439	532	114	379	420	407	951	534	100	180	TGA-140	201
500	20	490	610	127	422	450	435	1092	609	130	202	TGA-160	302
600	24	583	826(720)	154	494	530	570	1339	740	160	253	TGA-200	552(522)

Remark: Value in brackets indicates 3Q (air to close).
A free angle adjuster comes with the pneumatic cylinder.

508V-3A



3A Installation direction



Single-acting pneumatic cylinder type 508V-3G(Air to open: 50mm TO 150mm) / 302A-3F(Air to close: 50mm to 150mm)

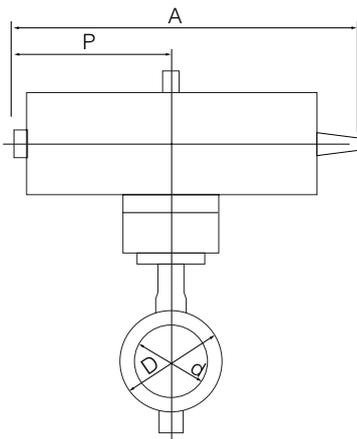
508V-3G

Nominal size		Dimension (mm)										Cylinder type	Approx. Mass (kg)
mm	inch	d	D	L	H ₁	H ₂	H ₃	A	P	f ₁	f ₂		
50	2	48	101	43	76	142	133	401.5	187.5	53	51	K70S	7.6
80	3	75	131	46	95	158	157	526	220.5	65	58	K170S	12.9
100	4	96	156	52	110	169	184	627	271	83	69	K370S	21.1
150	6	143	217	56	160	202	224	840	352	101	85	K700S	40.8

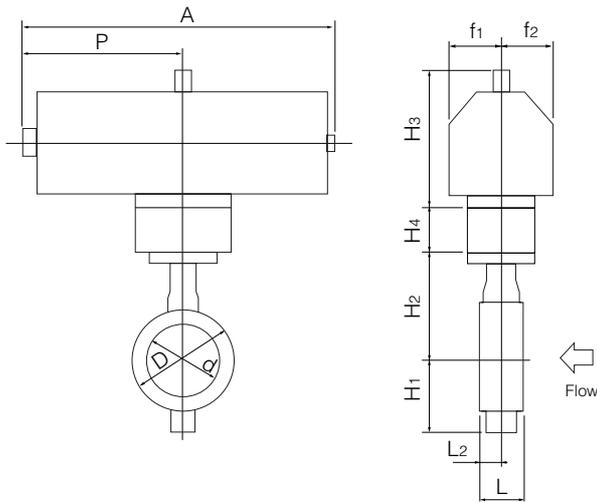
508V-3F

Nominal size		Dimension (mm)											Cylinder type	Approx. Mass (kg)
mm	inch	d	D	L	H ₁	H ₂	H ₃	H ₃	A	P	f ₁	f ₂		
50	2	48	101	43	76	142	133	66	362	178.5	61.5	61.5	K70S	11.6
80	3	75	131	46	95	158	157	84	446	220.5	80	80	K170S	19.5
100	4	96	156	52	110	169	184	92	547	271	92	92	K370S	36
150	6	143	217	56	160	202	224	104	709	352	120	120	K700S	66.7

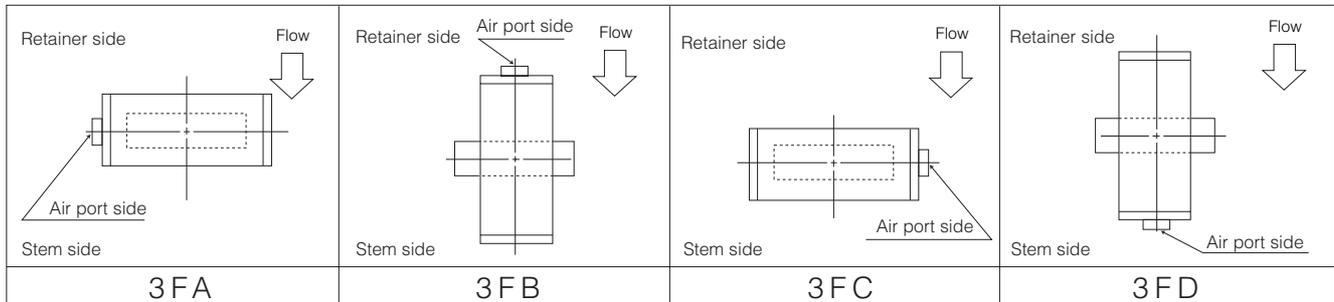
508V-3G



508V-3F



3F Installation direction



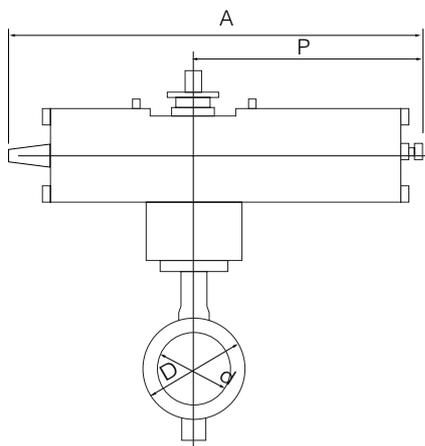
508V

Single-acting pneumatic cylinder type 508V-3U(Air to open: 200mm to 600mm) / 508V-3K(Air to close: 200mm to 600mm)

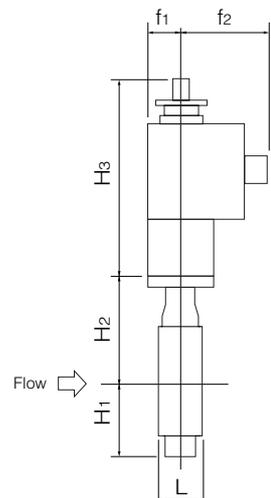
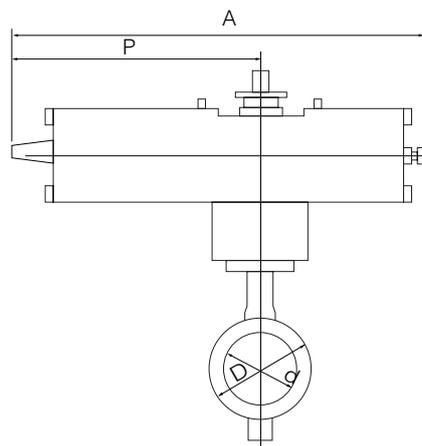
Nominal size		Dimension (mm)										Cylinder type	Approx. Mass (kg)
mm	inch	d	D	L	H ₁	H ₂	H ₃	A	P	f ₁	f ₂		
200	8	188	268	60	182	227	307	1030	670 (585)	70	165	TG-10S	66
250	10	248	322	68	255	280	307	1180	820 (720)	94	206	TG-12S	125
300	12	296	375	78	284	312	307	1180	820 (720)	94	206	TG-12S	143
350	14	332	420	92	320	360	340	1355	965 (865)	131	257	TG-14S	259
400	16	390	477	102	343	380	340	1355	965 (865)	131	257	TG-14S	313
450	18	439	532	114	379	420	474	1790	1230 (1095)	164	348	TG-20S	562
500	20	490	610	127	422	450	474	1790	1230 (1095)	164	348	TG-20S	614
600	24	583	826 [720]	154	494	530	474	1790	1230 (1095)	164	348	TG-20S	751 [721]

Remark: Value in brackets indicates 3Q (air to close).
 Brackets indicates the data for JIS 16K 600mm.
 A free angle adjuster comes with the pneumatic cylinder.

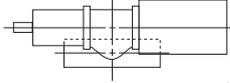
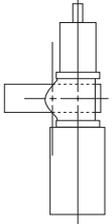
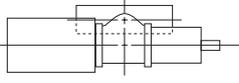
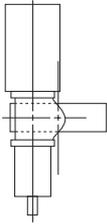
508V-3K



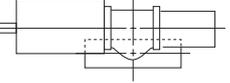
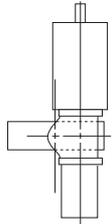
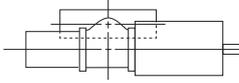
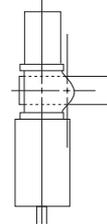
508V-3U



3K Installation direction

 Flow ↑	 Flow ↑	 Flow ↑	 Flow ↑
3 K A	3 K B	3 K C	3 K D

3U Installation direction

 Flow ↑	 Flow ↑	 Flow ↑	 Flow ↑
3 U A	3 U B	3 U C	3 U D

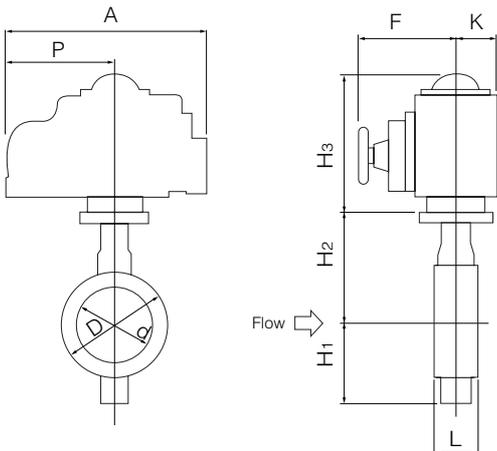
Single phase electric motor type 508V-4 I(50mm to 400mm)

Nominal size		Dimension (mm)										Motor type	Approx. Mass (kg)
mm	inch	d	D	L	H ₁	H ₂	H ₃	A	P	F	K		
50	2	48	101	43	76	142	150	202	100	85	54	4 I-0	6.7
80	3	75	131	46	95	158	150	202	100	85	54	4 I-0	8.2
100	4	96	156	52	110	169	165	252	138	126	65	4 I-1	11.7
150	6	143	217	56	160	202	198	310	167	154	85	4 I-2.5	23.6
200	8	188	268	60	182	227	198	310	167	154	85	4 I-2.5	28.6
250	10	248	322	68	255	280	230	388	223	246	136	4 I-3	53
300	12	296	375	78	284	312	230	388	223	246	136	4 I-3	66
350	14	332	420	92	320	360	230	388	223	246	136	4 I-3	80
							255	388	223	246	136	4 I-4	91
400	16	390	477	102	343	380	230	388	223	246	136	4 I-4	131

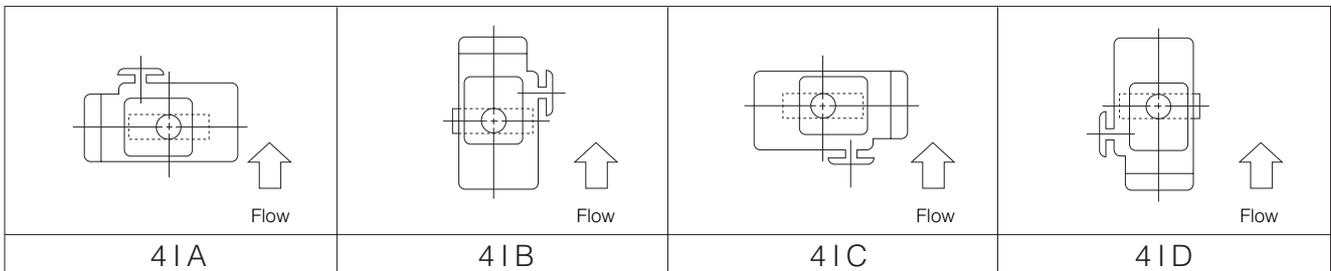
Remark: For 350mm type with accessories below for control type 4I-4 should be selected.

- Micom unit
- Servo unit
- Speed control unit
- Potentiometer

508V-4 I



4I Installation direction



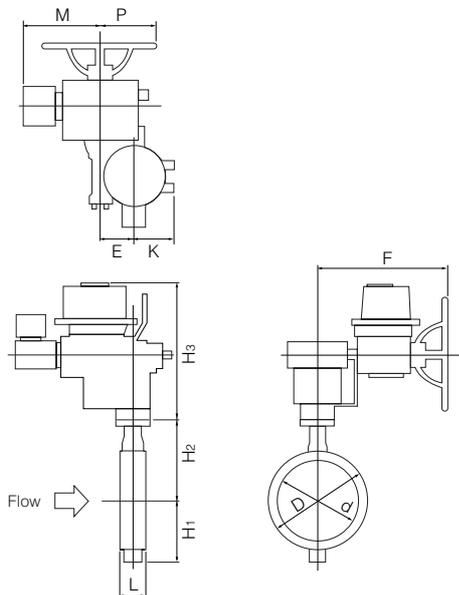
508V

Three phase motor actuator type 508V-4L (300mm to 600mm)

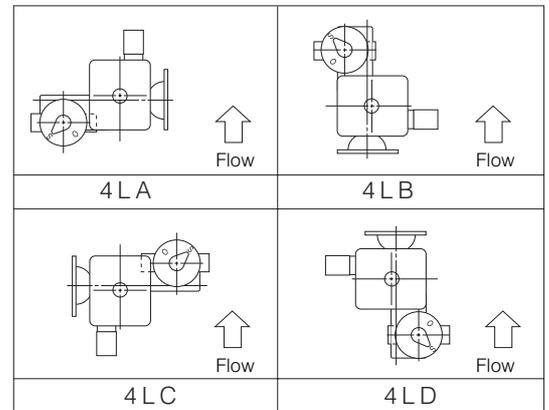
Nominal size		Dimension (mm)											Motor type	Approx. Mass (kg)
mm	inch	d	D	L	H ₁	H ₂	H ₃	E	K	F	M	P		
300	12	296	375	78	284	312	414	85	126	496	357	190	LTKD-01 0.2kW/ DGH-2	118
350	14	332	420	92	320	360	414	85	126	496	357	190	LTKD-01 0.2kW/ DGH-2	131
400	16	390	477	102	343	380	457	117	164	532	370	230	LTKD-01 0.4kW/ MGH-3	223
450	18	439	532	114	379	420	537	140	198	592	395	230	LTKD-02 0.75kW/ MGH-4	304
500	20	490	610	127	422	450	537	140	198	592	395	230	LTKD-02 0.75kW/ MGH-4	356
600	24	583	826(720)	154	494	530	604	210	293	748	440	360	LTKD-05 0.75kW/ MGH-5	660(630)

Brackets indicate the data for JIS 16K 600mm.

508V-4L



4L Installation direction

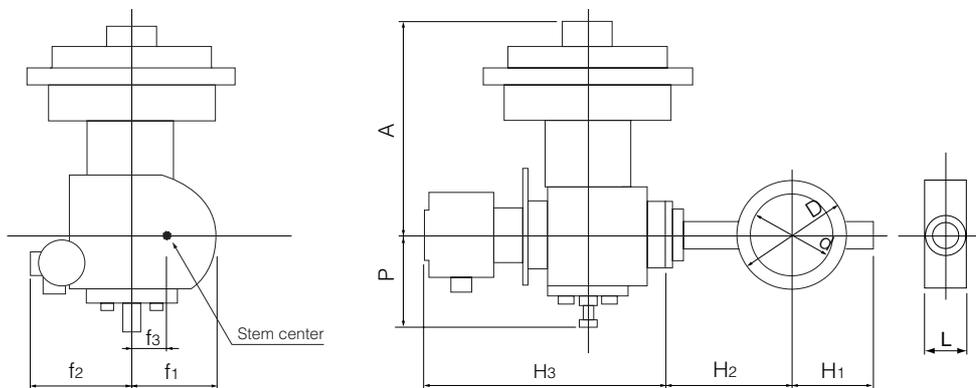


508V-6X(Air to open: 50mm to 200mm) / 508V-6W(Air to close: 50mm to 200mm)with diaphragm actuator

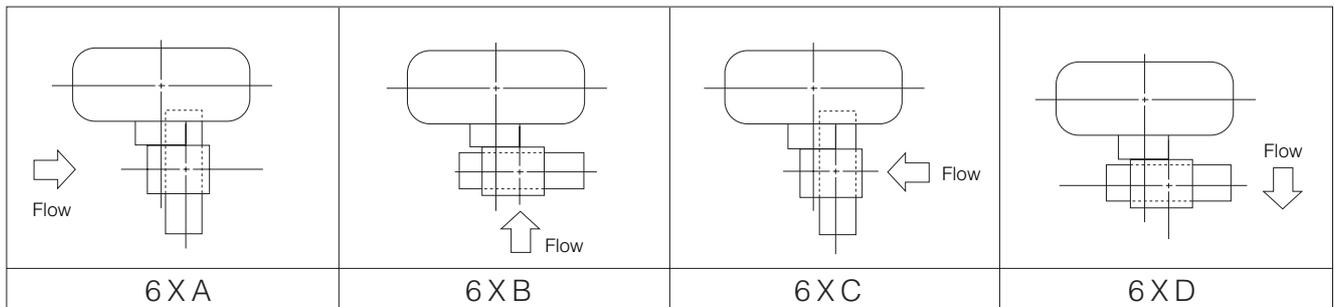
Nominal size		Dimension (mm)											Diaphragm type	Approx. Mass (kg)
mm	inch	d	D	L	H ₁	H ₂	H ₃	A	P	f ₁	f ₂	f ₃		
50	2	48	101	43	76	142	333	310	126	140	164	36	280H	37
80	3	75	131	46	95	158	333	310	126	140	164	36	280H	38
100	4	96	156	52	110	169	333	310	126	140	164	36	280H	39
150	6	143	217	56	160	202	381	440	185	125	200	50	400H	75
200	8	188	268	60	182	227	381	440	185	125	200	50	400H	79

Remarks: H₃ shows the dimension when the positioner (TCE2000) is installed.
The H₃ dimension will change depending on the positioner type.

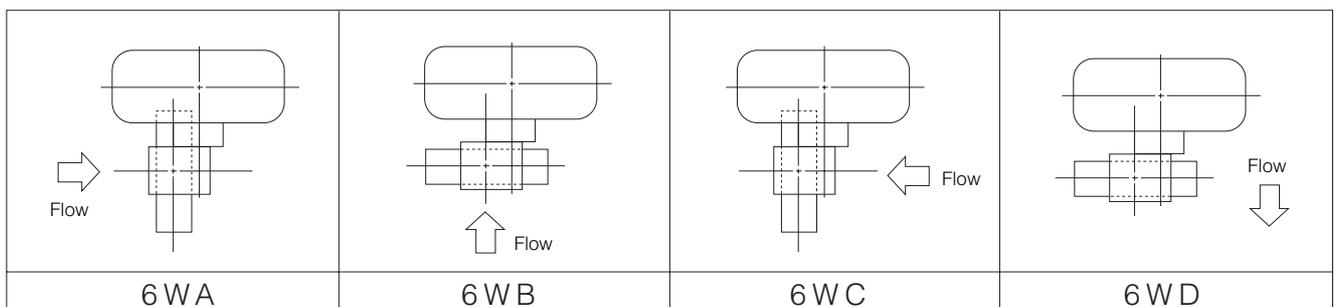
508V-6X/6W



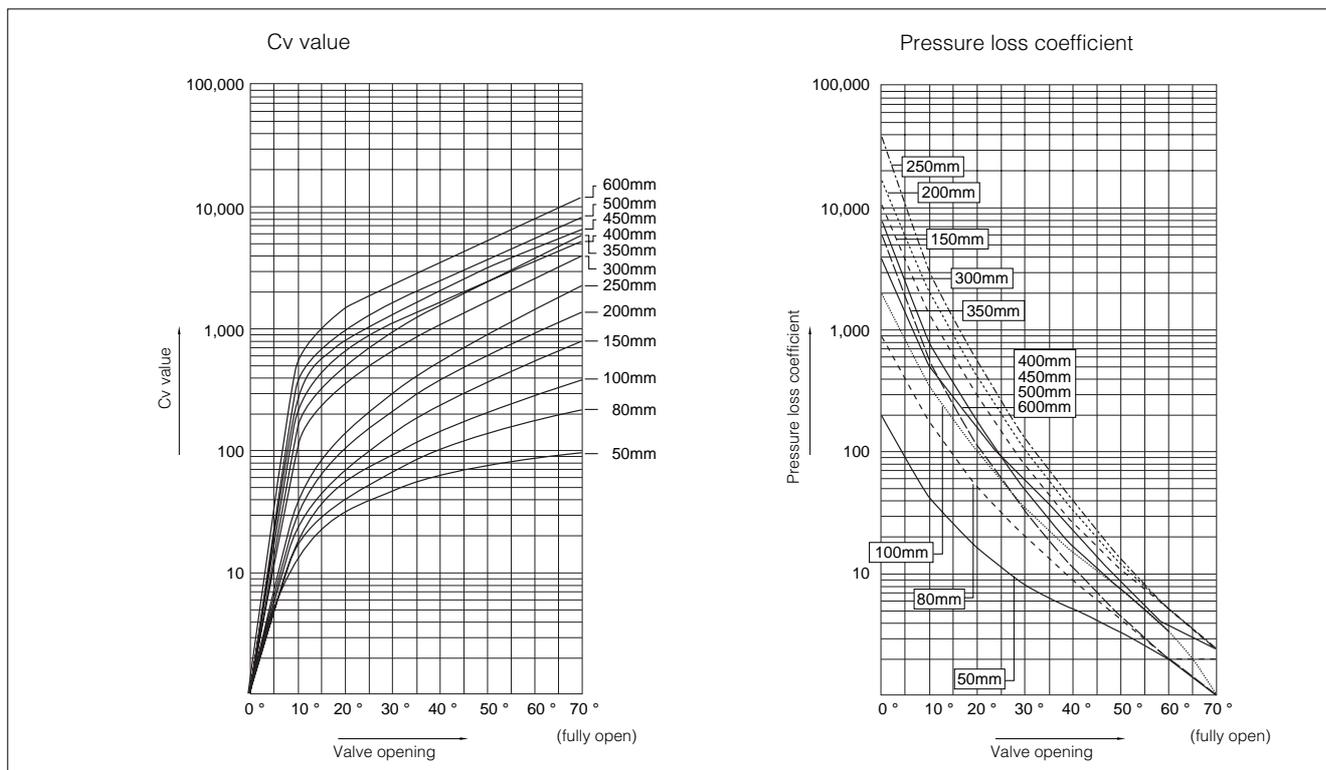
6X Installation direction



6W Installation direction



508V Cv value/pressure loss coefficient



508V Cv value

Nominal size		Valve opening						
mm	inch	10°	20°	30°	40°	50°	60°	70°
50	2	16	32	48	63	76	87	94
80	3	19	41	68	101	139	180	218
100	4	24	55	94	143	203	281	383
150	6	26	72	140	239	375	555	790
200	8	38	105	215	380	600	920	1380
250	10	42	145	300	550	910	1480	2260
300	12	118	350	670	1120	1700	2580	4000
350	14	160	500	980	1600	2450	3800	5800
400	16	249	670	1080	1650	2150	3650	5230
450	18	316	848	1370	2090	3180	4620	6620
500	20	390	1050	1690	2590	3920	5710	8170
600	24	561	1500	2430	3720	5640	8220	11800

508V Pressure loss coefficient

Nominal size		Valve opening						
mm	inch	10°	20°	30°	40°	50°	60°	70°
50	2	65	16	7	4	3	2	2
80	3	223	48	17	8	4	2	2
100	4	420	78	27	11	6	3	2
150	6	1640	219	57	19	8	4	2
200	8	2360	310	74	24	9	4	2
250	10	4640	390	91	27	10	4	2
300	12	1210	138	38	13	6	3	1
350	14	1030	106	28	10	4	2	1
400	16	727	100	39	17	7	3	2
450	18	723	100	38	17	7	3	2
500	20	733	101	39	17	7	3	2
600	24	741	104	39	17	7	3	2

508V Pressure recovery coefficient(FL)and Cavitation coefficient(Kc)

Valve opening	10°	20°	30°	40°	50°	60°	70°
Pressure recovery coefficient(FL)	0.85	0.80	0.78	0.76	0.73	0.71	0.70
Cavitation coefficient(Kc)	0.55	0.50	0.47	0.45	0.40	0.37	0.32

508V

508V Applicable pipe list in case of **A**

Nominal size		SGP	STPY	Sch20	Sch40	Sch10S	Sch20S	Minimum internal diameters of piping (mm)
mm	inch							
50	2		-					34
80	3		-					70
100	4		-					91
150	6		-					144
200	8		-					194
250	10		-					246
300	12		-					294
350	14					-	-	327
400	16				x	-	-	387
450	18				x	-	-	434
500	20				x	-	-	484
600	24	-			x	-	-	581

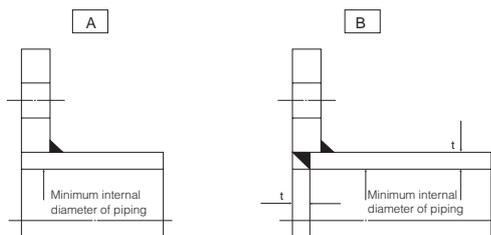
508V Applicable pipe list in case of **B**

Nominal size		SGP	STPY	Sch20	Sch40	Sch10S	Sch20S
mm	inch						
50	2		-				
80	3		-				
100	4		-				
150	6		-				
200	8		-				
250	10		-				
300	12		-				
350	14					-	-
400	16					-	-
450	18					-	-
500	20					-	-
600	24	-				-	-

Remark 1: = Applicable x = Not applicable

Remark 2: Butterfly valves are inserted into a pipe that was fitted with the disc when fully open.

In cases where you are using a pipe or flange that is less than the minimum inner pipe diameter, use is still possible if means are taken such as inserting a spacer between the valve and flange. For details, please consult us.



508V Applicable flange standard

Nominal size		JIS				ANSI	BS4504		DIN		BS10
mm	inch	5K	10K	16K	20K	150Lb	PN10	PN16	NP10	NP16	Table E
50	2	D	○	○	○	○	○	○	○	○	○
80	3	○	○	○	○	○	○	○	○	○	○
100	4	○	○	○	○	○	○	○	○	○	○
150	6	○	○	○	○	○	○	○	○	○	○
200	8	○	○	○	○	○	○	○	○	○	○
250	10	×	○	○	×	○	○	○	○	○	○
300	12	×	○	○	×	○	○	○	○	○	○
350	14	×	○	○	×	○	○	○	○	○	○
400	16	×	D	D	×	D	D	D	D	D	D
450	18	×	D	D	×	D	D	D	D	D	D
500	20	×	D	D	×	D	D	D	D	D	D
600	24	×	T	T	×	T	T	T	T	T	T

○ : Can be used without flange drilling.
 D : With flange drilling
 T : With flange tapping
 × : Not applicable

508V Piping bolt and nut sizes

Nominal size		JIS5K		JIS10K		JIS16K		ANSI 150Lb	
mm	inch	Long bolts and nuts	Setting bolts						
50	2	4-M12×105	—	4-M16×120	—	8-M16×125	—	4-U5/8-11UNC×140	—
80	3	4-M16×120	—	8-M16×125	—	8-M20×135	—	4-U5/8-11UNC×140	—
100	4	8-M16×130	—	8-M16×130	—	8-M20×150	—	8-U5/8-11UNC×150	—
150	6	8-M16×130	—	8-M20×155	—	12-M22×165	—	8-U3/4-10UNC×165	—
200	8	8-M20×150	—	12-M20×155	—	12-M22×170	—	8-U3/4-10UNC×175	—
250	10	—	—	12-M22×175	—	12-M24×190	—	12-U7/8-9UNC×195	—
300	12	—	—	16-M22×185	—	16-M24×210	—	12-U7/8-9UNC×205	—
350	14	—	—	16-M22×195	—	16-M30(P3)×225	—	12-U1-8UNC×240	—
400	16	—	—	16-M24×220	—	—	—	16-U1-8UNC×255	—
450	18	—	—	20-M24×230	—	—	—	16-U1 1/8-8UN×280	—
500	20	—	—	20-M24×245	—	—	—	20-U1 1/8-8UN×295	—
600	24	—	—	20-M30×290	8-M30×65	—	—	16-U1 1/4-8UN×340	8-U1 1/4-8UN×85

Remark: Bold and nut material: SS400/SS400 and SUS 304/SUS04.
 Long bolt uses full threaded bolt.
 Use thin hexagon nut. (Use heavy hexagon nut for ANSI150Lb.)
 A unified screw should have 8 threads per inch if its nominal diameter exceeds 1 inch.

Example

Long bolts: 12 - M22 × 185
 | | |
 N M L

Setting bolts: 4 - M30 × 95 × 65
 (Hexagon bolts) | | | |
 N M L S

