

# 508V

## Standard specification for 508V

Size	50-80-100-150-200 mm	250-300-350 mm	400-450-500-600 mm
Applicable flange standard	JIS: 5K, 10K, 16K, 20K ANSI: 150Lb ISO (BS, DIN): NP 10, NP 16 BS 10: "E", "F" JIS G 5524, 5527	JIS: 10K, 16K ANSI: 150Lb ISO (BS, DIN): NP 10, NP 16 BS 10: "E", "F" JIS G 5524, 5527	JIS: 10K ANSI: 150Lb ISO: NP 10  JIS G 5527 7.5
Face-to-face dimension	JIS B 2002 series 46 / ISO 5752 (series 20)		
Flow characteristics	Nearly equal percent		
Rangeability	100 : 1		
Max. working pressure (Shut off pressure)	1.57 MPa (16 kgf/cm <sup>2</sup> G) <0.98 MPa (10 kgf/cm <sup>2</sup> G)>	0.98 MPa (10 kgf/cm <sup>2</sup> G)	
Body test pressure	2.35 MPa (24 kgf/cm <sup>2</sup> G) <1.47 MPa (15 kgf/cm <sup>2</sup> G)>	1.47 MPa (15 kgf/cm <sup>2</sup> G)	
Seat leakage test pressure	1.73 MPa (17.4 kgf/cm <sup>2</sup> G) <1.08 MPa (11 kgf/cm <sup>2</sup> G)>	1.08 MPa (11 kgf/cm <sup>2</sup> G)	
Working temperature range	-20 to 120°C <-10 to 80°C>		-10 to 80°C [-20 to 120°C]
Working temperature range for continue use	0 to 100°C <0 to 60°C>		0 to 60°C [0 to 100°C]
Standard materials	Body	FCD 450 / A395 (No fluid exposure)	
	Disc	SCS 14 / CF8M	SCS 13 / CF8
	Stem	SUS 420 J2 (No fluid exposure)	
	Seat ring	EPDM (Core-reinforced) (Semi-standard: NBR core-reinforced)	NBR (Core-reinforced) (Semi-standard: EPDM core-reinforced)
Coating	Silicon resin coating (Grey N7)		Lacquer primer (Grey N7)
Remark	< > shows the specification for NBR		[ ] shows the specification for EPDM

## 508V Actuator selection chart

Valve nominal size		Specification		3Y · 3A	3X · 3W 3T · 3S	4I	4E · 4L	6X · 6W
		3I · 3Q · 3R						
mm	inch	Double Acting	Single Acting					
50	2	Type 1	Type 2	Z-06F	Z-08SF	Type 1	SRE-010	280
80	3	Type 2	Type 3	Z-08F	Z-11SF			
100	4				Z-12SF			
150	6	Type 3	Type 4	Z-11F	Z-13SF	Type 2	SRE-020	400H
200	8	Type 4		Z-13F	AW-13S	Type 2.5	SRE-060	
250	10				AW-17S	Type 3		
300	12				TGA-125	AW-20S	AW-28S	DGH-2 LTKD-01
350	14							
400	16							
450	18							
500	20							
600	24							

\* With 70° stroke adjuster.

\* Consult us when 400 mm and over as actuators are selected as per temperature, pressure and differential pressure.

## 508V Basic torque chart

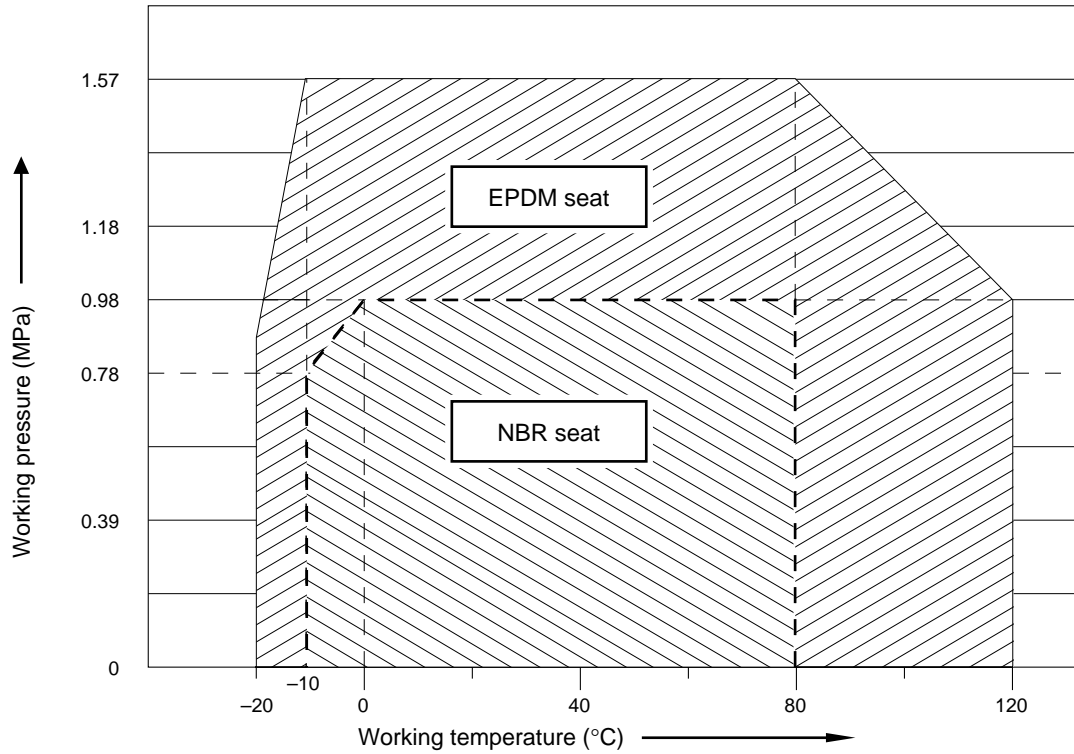
(Unit: N·m)

Size		Basic torque
mm	inch	
50	2	8.8
80	3	27
100	4	36
150	6	76
200	8	176
250	10	225
300	12	431
350	14	588
400	16	843
450	18	1180
500	20	1510
600	24	2310

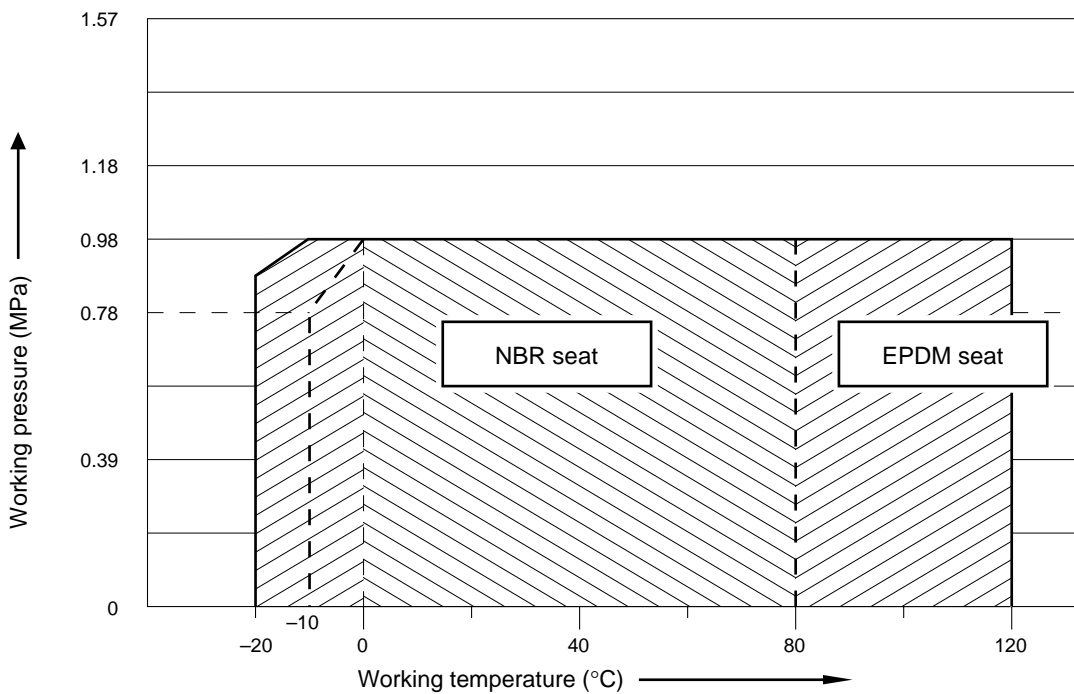
## 508V Pressure – Temperature chart

Fluid: Fresh water with 10,000 times cycling.

### 50 to 200 mm



### 250 to 350 mm



(Note) The shut off pressure may be subject to the actuator. See differential pressure chart.

## 508V Allowable differential pressure

### 1. 50 to 200 mm Diaphragm actuator (6X, 6W)

(Unit: kPa)

Size		Shut off pressure		Low opening degree	Inter mediate degree	Full open
mm	inch	EPDM	NBR	(10°)	(40°)	(70°)
50	2	1570	980	840	300	29
80	3	1370	980	840	300	29
100	4	780	780	780	300	29
150	6	1570	980	840	300	29
200	8	1570	980	840	300	29

### 2. Other types of actuators (50 to 350 mm)

(Unit: kPa)

Size		Shut off pressure		Low opening degree	Inter mediate degree	Full open
mm		EPDM	NBR	(10°)	(40°)	(70°)
50 ~ 200		1570	980	840	260	29
250 ~ 350		980	980	550	200	19

The above data is based on the test at our laboratory. The actual performance may be subject to individual working conditions. Therefore, please treat the data for guidance only.

### 508V Allowable velocity

Data for allowable average velocity at valve fully open.

Fresh water	Short period	10 m/s
	Continuous	7 m/s
Sea water	Short period	10 m/s
	Continuous	5 m/s
Air (Room temperature)	Short period	80 m/s
	Continuous	30 m/s

(Note) "Short period" refers to a few minutes of high velocity flow, during which the disc is travelling to it's required position.

### 508V Life span

The 508V continues to maintain it's performance after passing our in-house laboratory life span test (open-close as one cycle) as below. (see separate test data)

50 to 100 mm : 1.57 MPa — Room temp. — 100,000 times  
 300 mm : 0.98 MPa — Room temp. — 50,000 times

However, the life span is dependent on the actual working condition. Test data is based on 10,000 cycles at 80°C. As a general guide, our product's estimated life span can be considered as 10,000 cycles.

In case of modulating application with high frequency at intermediate position, our data shows that 1,000,000 operations can be possible. But again, it is the data at our laboratory and may be subject to variety of actual working conditions. Therefore, our estimated life span with considerations for high frequency of operations with  $\pm 5$  degree motion as well as for the performance of actuators, shall be 100,000 to 300,000 times as a guidance.

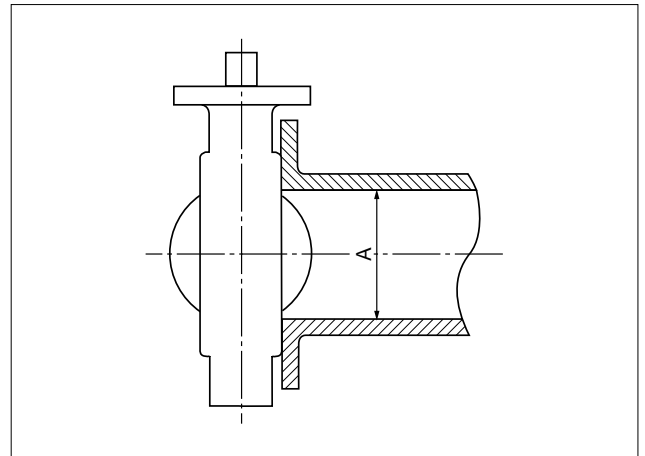
### 508V Pressure recovery coefficient (FL) & Cavitation coefficient (Kc)

Opening Degree	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

## Minimum internal piping diameter for 508V

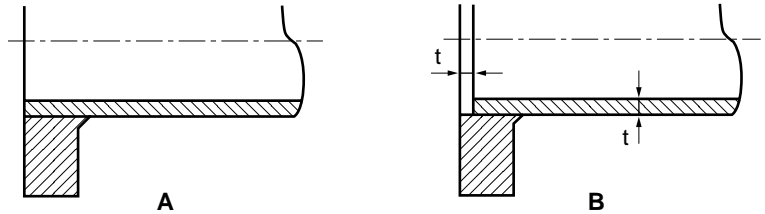
(Unit: mm)

Size		Minimum diameter A
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	387
450	18	434
500	20	484
600	24	581



## Applicable pipes for 508V

Confirm the method of flange welding as applicable pipe standards are different.



### 50 to 200 mm

Size	Type	Type A				Type B				Ductile iron pipes for water works	Min. internal diameter in case of type A welding (mm)
	JIS G 3452 SGP	JIS G 3454 SCH 40	SCH 60	SCH 80	JIS G 3452 SGP	JIS G 3454 SCH 40	SCH 60	SCH 80			
50	○	○	○	○	○	○	○	○	○	34	
80	○	○	○	○	○	○	○	○	○	70	
100	○	○	○	○	○	○	○	○	○	91	
150	○	○	○	×	○	○	○	○	○	144	
200	○	○	○	×	○	○	○	○	○	194	

(Remark) The worst piping conditions, such as misalignment, tolerance of dimension of pipes etc. are considered. Rubber lined pipe (JIS G 3457) can be used for all sizes.

### 1. 250 to 350 mm Applicable in case of type A

Size	Type	JIS G 3452 SGP	JIS G 3454 STPG			JIS G 5524 5527	ANSI B36.10					Min. internal diameter for piping
	JIS G 3452 SGP	#40	#60	#80	STD	#40	XS	#60	#80			
250	○	○	×	×	○	○	○	○	○	×	245.8	
300	○	○	×	×	○	○	○	○	○	×	294.0	
350	○	○	×	×	○	○	○	○	×	×	327.1	

### 2. 250 to 350 mm Applicable in case of type B

Size	Type	JIS G 3452 SGP	JIS G 3454 STPG			ANSI B36.10				
	JIS G 3452 SGP	#40	#60	#80	STD	#40	XS	#60	#80	
250	○	○	○	○	○	○	○	○	○	
300	○	○	○	○	○	○	○	○	○	
350	○	○	○	○	○	○	○	○	○	

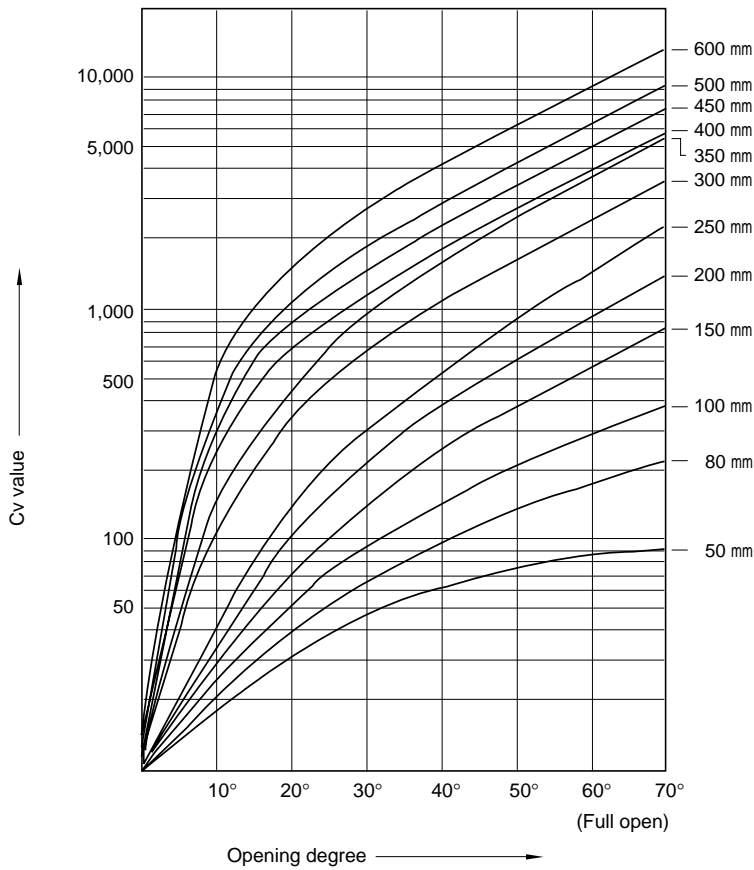
○ → Good  
× → Not good

JIS G 3452: SGP      JIS G 5524: Iron pipes for water works  
JIS G 3454: STPG    JIS G 5527: Ductile iron pipe

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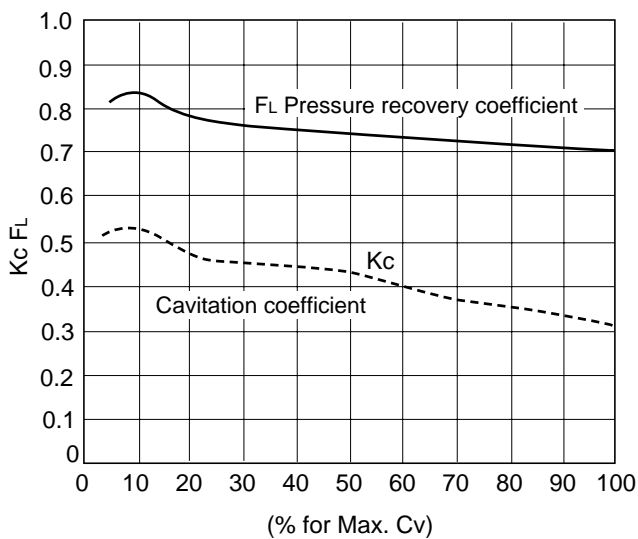
## 508V Cv/FL/Kc value

### • Cv value



Cv value is defined as follows:  
The flow rate expressed as US gal./min. at which a fresh water of 60°F flows when the pressure difference across the valve is maintained at 1 psi.

### • Anti-cavitation



### 508V Cv value chart

Size		Opening degree													
mm	inch	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°
50	2	8	16	24	32	40	48	56	63	70	76	82	87	91	93
80	3	9	19	29	41	53	68	84	101	120	139	160	180	200	218
100	4	11	24	38	55	73	94	117	143	171	203	240	281	329	383
150	6	11	26	46	71	102	140	186	239	302	375	459	555	665	790
200	8	20	38	66	105	154	215	290	380	480	600	750	920	1120	1380
250	10	22	42	82	145	220	300	410	550	700	910	1160	1480	1850	2260
300	12	40	118	220	350	495	670	860	1120	1380	1700	2080	2580	3180	4000
350	14	60	160	300	500	720	980	1250	1600	2000	2450	3050	3800	4650	5800
400	16	80	249	448	670	860	1080	1350	1650	2050	2510	3050	3650	4340	5230
450	18	100	316	604	848	1090	1370	1710	2090	2600	3180	3860	4620	5500	6620
500	20	100	390	746	1050	1340	1690	2110	2590	3210	3920	4760	5710	6790	8170
600	24	100	561	1075	1500	1940	2430	3040	3720	4620	5640	6850	8220	9780	11800

### 508V Pressure loss coefficient

Size		Opening degree													
mm	inch	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°
50	2	266	65.2	28.6	16.1	10.3	7.19	5.35	4.18	3.39	2.86	2.48	2.20	2.01	1.89
80	3	912	223	93.3	48.3	27.9	17.4	11.4	7.80	5.52	4.12	3.11	2.46	1.99	1.67
100	4	2007.53	420.42	159.63	77.69	43.46	26.50	17.11	11.45	8.01	5.68	4.07	2.97	2.16	1.60
150	6	9529.45	1644.25	527.58	219.26	106.84	56.71	32.13	19.46	12.19	7.90	5.28	3.61	2.51	1.78
200	8	8534.91	2364.24	783.74	309.66	143.95	73.86	40.59	23.64	14.82	9.48	6.07	4.03	2.72	1.79
250	10	16926	4644	1218.38	389.65	169.26	91.03	48.74	27.08	16.72	9.89	6.09	3.74	2.39	1.60
300	12	10524	1209	347.89	137.45	68.72	37.51	22.77	13.42	8.84	5.83	3.89	2.53	1.67	1.05
350	14	7338	1032	293.51	105.66	50.96	27.51	16.91	10.32	6.60	4.40	2.84	1.83	1.22	0.785
400	16	7039	727	224.47	100.36	60.91	38.62	24.72	16.55	10.72	7.15	4.84	3.38	2.39	1.65
450	18	8907	723	197.76	100.33	60.72	38.44	24.67	16.52	10.67	7.13	4.84	3.38	2.39	1.65
500	20	11143	733	200.22	101.07	62.06	39.01	25.03	16.61	10.81	7.25	4.92	3.42	2.42	1.67
600	24	19261	741	201.68	103.58	61.93	39.47	25.22	16.84	10.92	7.33	4.97	3.45	2.44	1.67

