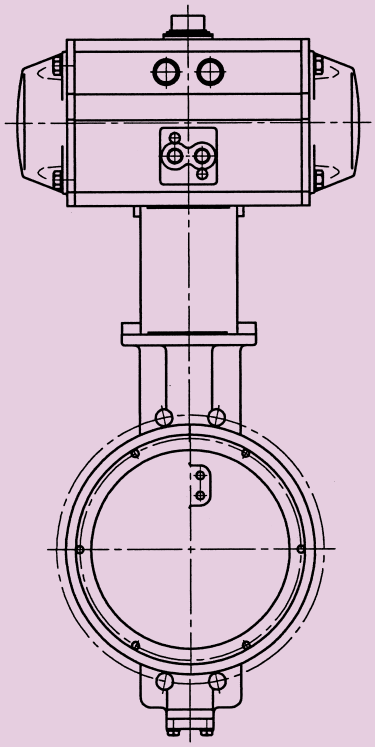
STANDARD SPECIFICATION

高性能バタフライバルブ
エキセントリック形 パラシール

HIGH PERFORMANCE BUTTERFLY VALVES
TRIPLE OFFSET TYPE

711T SERIES



KOSO

KOSO の自動調節弁と計装システム

KOSOは、自動調節弁（コントロールバルブ）のトップメーカとして高水準にある独自の技術開発力で時代の要請に応え、新世紀へ対応する幅広い製品を揃えるとともに、ISO 9001による品質保証体制のもとで製作した高品質、高信頼のコントロールバルブとそのシステムを提供してまいります。ここに紹介する資料は、KOSOコントロールバルブの技術カタログであります。KOSOコントロールバルブの選定に御利用下さい。更に詳細な資料が御必要な場合又は、本技術カタログについて不明な点がございましたら最寄りの弊社営業までお問い合わせ下さい。

KOSO's Control Valves and Instrumentation Systems

KOSO, the leading industrial control valve manufacturer with strong research and development capability of its own, has been meeting requirements of the time. Always making available a wide range of product lines that can satisfy the needs of the coming century, KOSO is committed to providing control valves, and the systems thereof, of highest quality and reliability, produced under its quality assurance system complying with ISO 9001 standard.

Here KOSO presents its technological catalog, introducing various types of KOSO control valves, hoping to be of service as you select valves for your specific applications.

If you have questions on this technological catalog or require additional printed materials, please contact our sales representative nearest you.

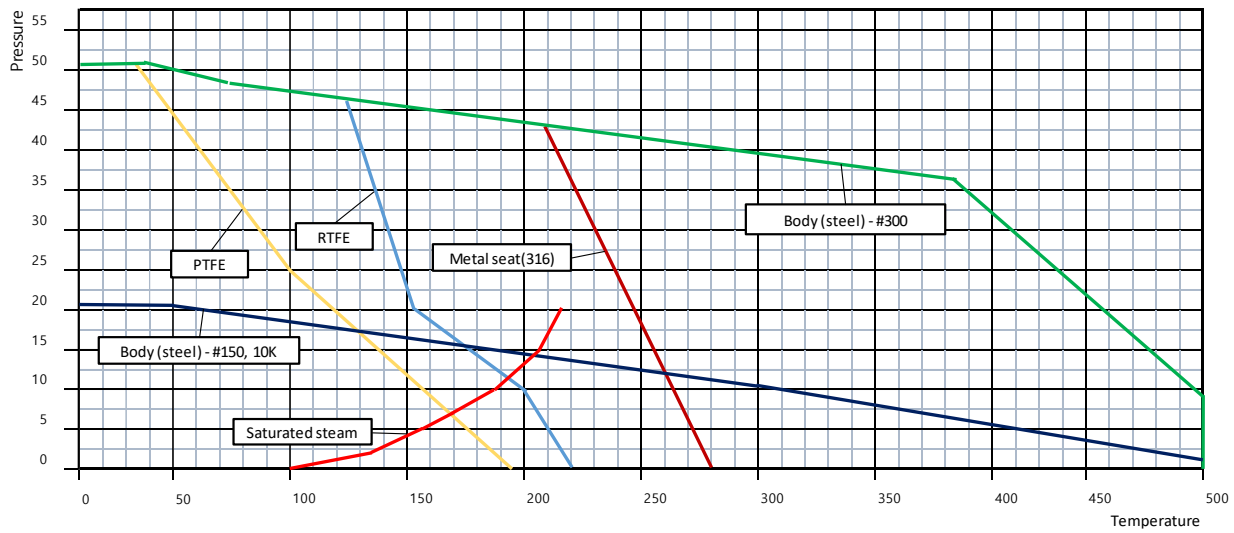
Standard Specifications

Series	711T	
Body size	ASME Class 150, JIS 10K	: 3" ~ 48" (80A~1200A)
	ASME Class 300, JIS 20K	: 3" ~ 36" (80A~900A)
	ASME Class 600	: 4" ~ 24" (100A~600A)
	ASME Class 900	: 6" ~ 16" (150A~400A)
	ASME Class 1500	: 8" ~ 16" (200A~400A)
Temperature	-29℃ ~ +380℃, -198℃ ~ (Cryogenic servive)	
	The working temperature depends on the media and on the material of the seat.	
Body rating	JIS 10K, 20K, ASME Class150, 300, 600, 900, 1500	
Body connection	Wafer, Lug, Double flange	
Material	see. Part list & Material	
	SCPH2/A216-WCB, A351-CF8, A351-CF8M, A351-CF3M and other alloy steels.	
Dimension	see. Dimension table	
Gland Packing	P(R)TFE V-Packing, Teflon, Graphite	
Seat type	Soild metal, Laminated(316SS+Graphite) seat	
Leakage class	Laminated(316SS+Graphite) seat - Class VI / Solid Metal seat - Class IV	
Applied standard	API 609, ASME B16.5, ASME B16.47, ASME B16.34, API 598, API 607, ISO 5208	
Cryogenic Standard	BS 6364 etc.	

Optional Special Specifications (additional cost is required)

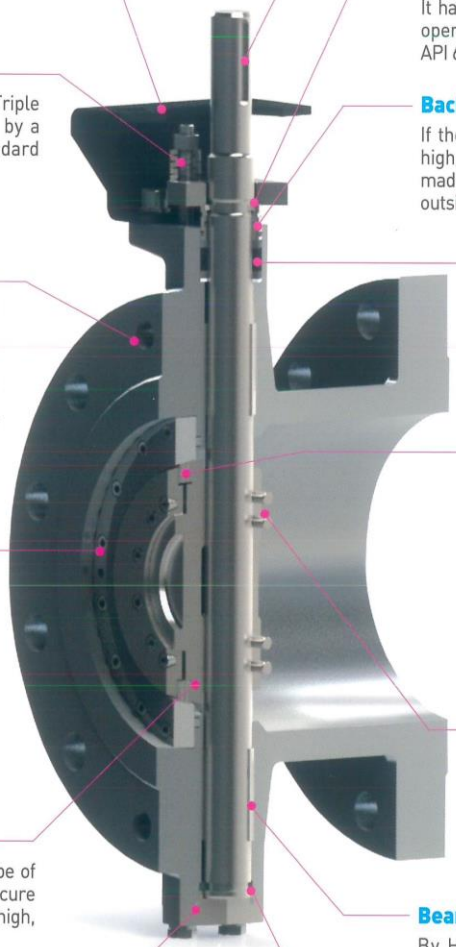
Special tesing for Body	Material certificate, Liquid penetrant testting, Radiographic testing, Flow characteristic testing, Low temperature testing, Steam testing
Spedcial cleaning for body	Oxygen clean, Oil-fress, Water-free.
Special specification for Body and Actuator	Sand and Dust proof, Salty environment proof, Cold area proof, Trofical area proof, Do not use copper alloy, Vaccuum service proof, Special piping and fitting, Stainless steel bolt and nut for exposed parts, Non-standard painting

Pressure & Temperature Curve(Rating)



Triple Offset Butterfly Valve
[711T Model] Technical Feature

KOSO



Bracket-mount flange

It helps to control Gland packing easily, that is located on the top part of the body of the valve and could apply the Live-load type packing which is in our option. The bended type of Bracket supplies ISO 5211 mount, so it is easily used for automation.

Live loaded packing gland

To maintain the sealing function of Triple offset valve's high inner pressure by a stable weight, we put this as a standard option when it's over Class 600.

Body

Body is being produced by a assembled (One piece) casting, which provides a high qualified unity, could be produced by a Wafer, Lug, Double flange forms, manufactured by Carbon steel, Stainless steel, Duplex etc., by customers demand.

Body seat

It has a Body seat structure that could be easily replaced on the field and is designed to have a great performance characteristic on high temperature. Hard Chromium and ENP plating as standard spec, weld the stellite by it's proceeding condition.

Disc

It's standard spec is CF8 and CF8M type of stainless steel, it maintains safe and secure sealing system for high pressure and high, low temperature.

(Gasket)
Bottom cover packing

To prevent the leaking problem between Bottom cover and valve's body, it is composed as the gasket form, so it cut off's the leaking issue securely.

Stem(shaft)

Supplied standard spec is 17-4PH Stainless steel, which gives the most intensity and safeness for using. It could be manufactured by other materials by the customers demand.

Blowout proof stem

It has a structure of Blowout proof stem and operates with gland structure, it meet's the API 609 standard.

Back-up ring packing

If the temperature of the using liquid is not high, we additionally apply the o-ring that is made by rubber so it could securely cut off the outside leaking problem.

Packing

The standard spec is given as Die-formed ring typed Graphite packing, which supplies the finest sealing performance. V-Packing type of PTFE material could be applied by the customers demand.

Disc seat

Layered form of Laminated type Disc seat such as Stainless steel plate and graphite has a metal seat structure that maintains a firm systematic function on high pressure and temperature. For it's great performance characteristic on low temperature, it has an excellent operating characteristics for Cryogenic service condition.

Disc taper pins

The Taper formed pin is being offset on the stem's centerline so it could have a high intensity, after it has been assembled and tested for it's pressure, it is being welded so it would not breakaway and be fixed.

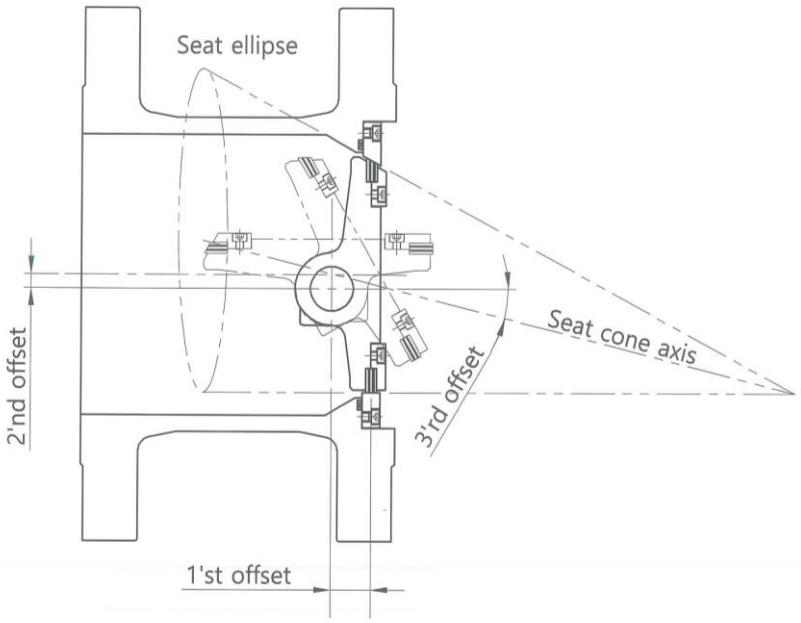
Bearing(Bushing)

By Hard Chromium and ENP plating on stainless steal, it give's a minimum rolling friction and makes it's stem rolling process more easily, eventually makes a longer lifecycle.

Bottom stem retainer

Being fixed by the Bottom cover and the valve's body, makes the stem fixed so the disc could be located on it's right position, eventually makes a longer lifecycle.

Triple Offset Butterfly Valve
[711T Model] Description



Triple Offset Geometry

A triple offset valve is a torque -seated valve. In addition to the standard components, the PHT has three offsets. Seats are made of a laminate of stainless metal and graphite and are commonly replaceable. This valve does not act like a normal butterfly valve that is seated by positioning the disc using a lever, gear or body stop. Triple offset valve are similar to globe valves in that the disc acts like a cone being torqued into a circle seat. The only way to get a zero leakage seal with a metal seat is to put a cone into a circle. Triple offset valves can be lug, wafer, flanged and butt - weld.

Because a triple offset valve has three offsets in the stem / disc alignment, its disc rotates 90 degrees with the last degree being a straight-forward cone movement. The body seat of the valve is not a perfect cone; rather, it is "offset" and machined at an angle so the disc will match up with no rub when seating.

Triple offset 밸브는 토크-시트 밸브입니다. 버터플라이밸브의 기본 구성 요소 외에도 PHT에는 세 가지 오프셋(triple offset)이 있습니다. 시트는 스테인레스 금속과 흑연의 적층(Laminate)으로 만들어지며 일반적으로 교체 가능합니다. 이 밸브는 레버, 기어 또는 바디 스톱을 사용하여 디스크를 위치시키는 일반적인 버터플라이 밸브처럼 작동하지 않습니다. Triple offset 밸브는 원판이 원형 시트로 토크를 가하는 역할을 하는 점에서 Globe 밸브와 유사합니다. 금속 시트가 있는 누설 방지 씰을 얻는 유일한 방법은 원뿔에 원으로 넣는 것입니다. 트리플 오프셋 밸브는 Lug, Wafer, Flange, Butt-weld type 이 가능합니다.

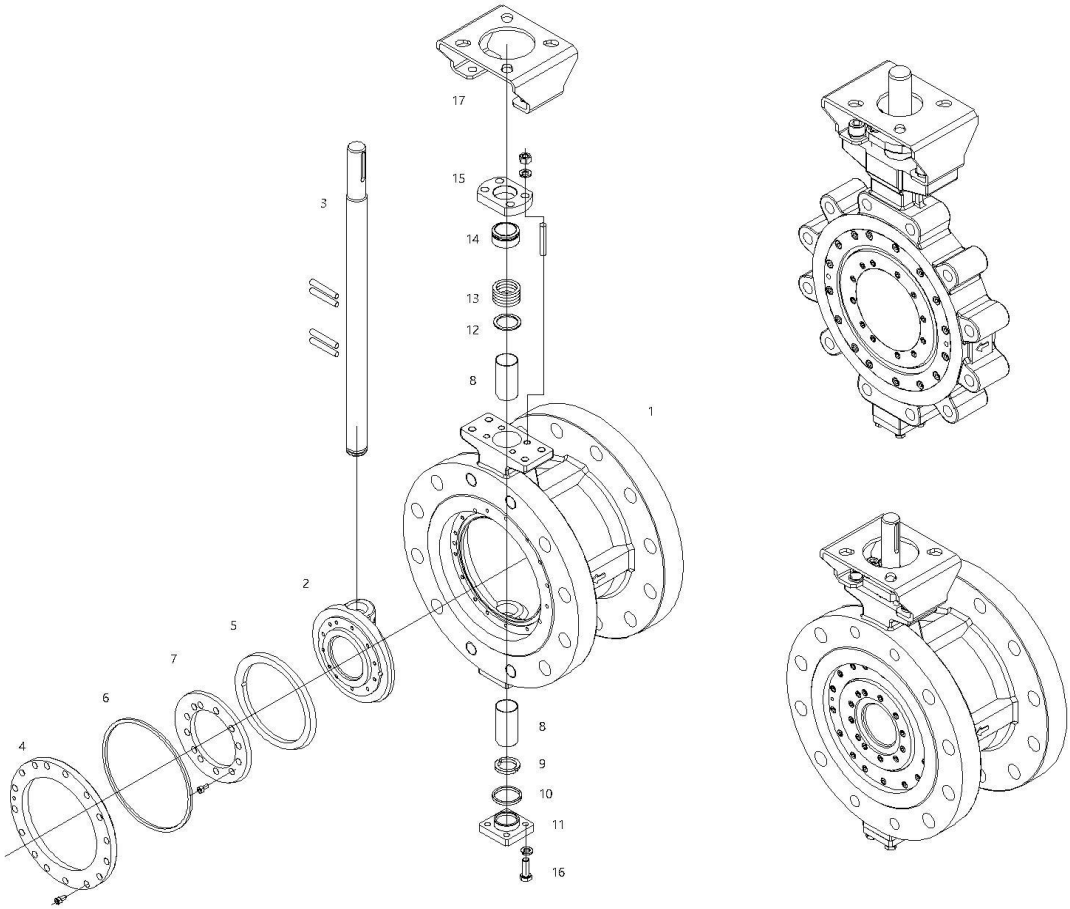
Triple offset 밸브는 stem, disc 정렬에 세 가지 오프셋이 있기 때문에 디스크가 90도 회전하고 마지막 각도는 콘(원추형이동)시팅입니다. 밸브의 몸체 시트는 완전한 원뿔 모양이 아닙니다. 오히려 각도가 "오프셋 된"상태로 가공되어 디스크가 시팅 할 때 문질러지지 않게 맞춰집니다.

Replaceable Body-Seat and Disc Seal

PHT triple offset valves feature independent field replacement of both the body-seat and the disc seal ring. Should fluid service conditions change, body-seat and seal ring materials may be substituted, without replacing the entire valve.

PHT triple offset valve 는 개별적으로 바디시트와 디스크 씰 링을 현장 교체할 수 있습니다. 유체의 서비스조건이 변경되면 전체밸브를 교체하지 않고 바디시트 및 디스크 씰 링의 재질을 대체 할 수 있습니다.

711T Body Parts

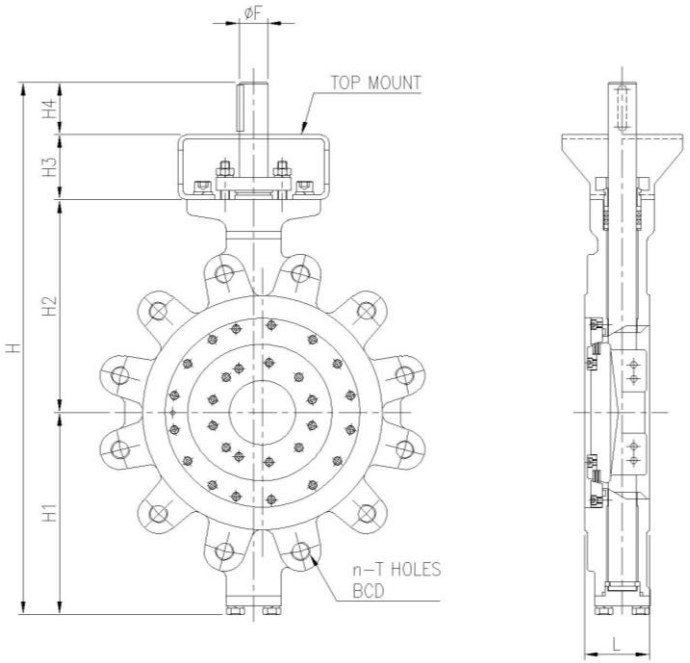


Part list and Materials

No.	Part	Material	Material standards
1	Body	Carbon steel	WCB, LCB
		Stainless steel	CF8, CF8M, CF3, CF3M
2	Disc	Carbon steel	WCB, LCB
		Stainless steel	SCS13, SCS14, CF8, CF8M
3	Stem(Shaft)	Stainless steel	304, 316, 316L
		17-4PH	ASTM A564 630
4	Body seat	Stainless steel	304, 316, 316L
		Hard facing	HCR, Stellite#6
5	Disc seat	Stainless steel	316+GRAPHITE Laminated
			316+PTFE Laminated
6	Body seat gasket	Spiral gasket	316+Graphite
		Graphite	Graphite Gasket
7	Disc cover	Stainless steel	304, 316
8	Bush	316 Stainless steel with TFE	
	Bearing	316+HCR	

No.	Part	Material	Material standards
9	Shaft	Stainless steel	316
	retainer	Copper Alloy	A271 C83600
10	Bottom	PTFE / RTFE	
	packing	Graphite	
11	Bottom	Carbon steel	WCB, LCB
		Stainless steel	CF8, CF8M, CF3, CF3M
12	Packing retainer	Stainless steel	ASTM A240 316
13	Packing	PTFE / RTFE	
		Graphite	
14	Gland	Stainless steel	304+HCR, 316+HCR
15	Gland bridge	Stainless steel	304, 316
15	Bolt	304SS / 316SS	
17	Bracket	Carbon steel & Stainless Steel	

■ Contact your sales representative for appropriate materiala for specific service.



DIMENSION [ASME B16.5 Class150, Lug] [unit : mm,inch]

Size		L	n	BCD	T	H	H1	H2	H3	H4	F	TOP MOUNT
inch	mm											
3	80	48	4	Φ152.4	5/8"	352	117	130	65	40	Φ16-5x5	ISO5211 F07
4	100	54	8	Φ177.8	5/8"	413	143	160	70	40	Φ22-8x7	ISO5211 F10, F12
6	150	57	8	Φ241.3	3/4"	466	171	185	70	40	Φ22-8x7	ISO5211 F10, F12
8	200	64	8	Φ298.5	3/4"	573	198	235	90	50	Φ29-8x7	ISO5211 F10, F12
10	250	71	12	Φ362.0	7/8"	667	242	275	90	60	Φ35-10x8	ISO5211 F12, F14
12	300	81	12	Φ431.8	7/8"	712	267	295	90	60	Φ38-12x8	ISO5211 F12, F14
14	350	92	12	Φ476.3	1"	775	295	320	100	60	Φ38-12x8	ISO5211 F12, F14
16	400	102	16	Φ539.8	1"	890	325	370	120	75	Φ44-12x8	ISO5211 F14, F16
18	450	114	16	Φ577.9	1 1/8"	970	375	400	120	75	Φ48-14x9	ISO5211 F14, F16
20	500	127	20	Φ635.0	1 1/8"	1035	405	435	120	75	Φ54-16x10	ISO5211 F14, F16
24	600	154	20	Φ749.3	1 1/4"	1205	470	505	140	110	Φ68-20x12	ISO5211 F14, F16

▶ Body type also offers wafer and double flanged type.

▶ Dimension are subject to change without notice.

DIMENSION [ASME B16.5 Class300, Lug] [unit : mm,inch]

Size		L	n	BCD	T	H	H1	H2	H3	H4	F	TOP MOUNT
inch	mm											
3	80	48	8	Φ168.3	3/4"	352	117	130	65	40	Φ16-5X5	ISO5211 F10, F12
4	100	54	8	Φ200.0	3/4"	413	143	160	70	40	Φ22-8x7	ISO5211 F10, F12
6	150	59	12	Φ269.9	3/4"	533	203	210	70	50	Φ25-8x7	ISO5211 F10, F12
8	200	73	12	Φ330.2	7/8"	613	233	245	75	60	Φ32-10x8	ISO5211 F12, F14
10	250	83	16	Φ387.4	1"	700	255	285	100	60	Φ38-12x8	ISO5211 F12, F14
12	300	92	16	Φ450.8	1 1/8"	800	290	330	120	60	Φ42-12x8	ISO5211 F14, F16
14	350	117	20	Φ514.4	1 1/8"	900	335	370	120	75	Φ52-16x10	ISO5211 F14, F16
16	400	133	20	Φ571.5	1 1/4"	1000	365	415	130	90	Φ60-18x11	ISO5211 F25 / F30
18	450	149	24	Φ628.8	1 1/4"	994	420	470	14	90	Φ65-20x12	ISO5211 F25 / F30
20	500	159	24	Φ685.8	1 1/4"	1210	460	500	140	110	Φ70-20x12	ISO5211 F25 / F30
24	600	181	24	Φ812.8	1 1/2"	1385	525	590	160	110	Φ85-22x14	ISO5211 F35 / F40

▶ Body type also offers wafer and double flanged type.

▶ Dimension are subject to change without notice.

DIMENSION [ASME B16.5 Class600, Lug] [unit : mm,inch]

Size		L	n	BCD	T	H	H1	H2	H3	H4	F	TOP MOUNT
inch	mm											
4	100	64	8	Φ215.9	7/8"	485	160	195	80	50	Φ29-8x7	ISO5211 F10, F12
6	150	78	12	Φ292.1	1"	625	215	250	100	60	Φ38-12x8	ISO5211 F12, F14
8	200	102	12	Φ349.2	1 1/8"	715	245	275	120	75	Φ45-14x9	ISO5211 F12, F14
10	250	117	16	Φ431.8	1 1/4"	875	320	360	120	75	Φ54-16x10	ISO5211 F14, F16
12	300	140	20	Φ489.0	1 1/4"	920	330	370	130	90	Φ65-20x12	ISO5211 F25 / F30
14	350	155	20	Φ527.0	1 3/8"	924	380	420	14	110	Φ70-20x12	ISO5211 F25 / F30
16	400	178	20	Φ603.2	1 1/2"	1180	430	500	140	110	Φ85-22x14	ISO5211 F25 / F30
18	450	200	20	Φ654.0	1 5/8"	1205	450	485	160	110	Φ90-25x14	ISO5211 F35 / F40
20	500	216	24	Φ723.9	1 5/8"	1290	500	510	160	120	Φ100-28-16	ISO5211 F35 / F40
24	600	232	24	Φ838.2	1 7/8"	1565	605	630	180	150	Φ125-32x18	ISO5211 F35 / F40

▶ Body type also offers wafer and double flanged type.

▶ Dimension are subject to change without notice.

Cv (Flow Coefficients)

711T Series

711T Class 150 Cv										
Size		Valve Opening(°)								
NPS	DN	10°	20°	30°	40°	50°	60°	70°	80°	90°
3	80	12	27	38	52	65	76	89	102	96
4	100	28	48	79	105	128	157	180	202	194
6	150	51	108	182	276	394	534	667	782	765
8	200	79	170	303	488	715	980	1,236	1,488	1,475
10	250	128	275	489	787	1,152	1,580	2,050	2,448	2,452
12	300	198	451	803	1,293	1,893	2,597	3,270	3,888	3,890
14	350	271	581	1,034	1,665	2,438	3,344	4,216	4,931	4,938
16	400	367	787	1,401	2,255	3,303	4,530	5,711	6,930	6,932
18	450	420	1,061	1,888	3,039	4,450	6,104	7,695	8,996	8,990
20	500	605	1,310	2,310	3,718	5,445	7,469	9,450	11,289	11,350
24	600	822	1,763	3,137	5,049	7,394	10,143	13,487	16,285	16,690
28	700	1,231	2,856	5,082	8,180	11,979	16,432	20,715	25,537	26,200
30	750	1,579	3,388	6,030	9,706	14,214	19,498	24,581	28,885	29,856
32	800	1,861	3,993	7,107	11,439	16,752	22,979	28,970	33,735	34,840
36	900	2,309	4,954	8,816	14,189	20,780	28,504	35,935	42,650	43,980
40	1000	2,885	6,443	11,510	18,455	27,027	37,073	46,738	53,890	54,900
42	1050	3,201	6,868	12,350	19,672	28,809	39,518	49,819	58,527	59,890
46	1150	4,100	8,796	15,653	25,195	36,897	50,613	63,806	73,422	74,540
48	1200	4,279	9,180	16,338	26,296	38,511	52,826	66,597	77,645	79,800

711T Class 300 Cv										
Size		Valve Opening(°)								
NPS	DN	10°	20°	30°	40°	50°	60°	70°	80°	90°
3	80	12	27	38	52	65	76	89	102	96
4	100	28	48	79	105	128	157	180	202	194
6	150	44	93	157	238	340	448	535	620	615
8	200	67	143	255	410	600	823	1,037	1,205	1,232
10	250	120	257	458	737	1,079	1,395	1,788	2,147	2,195
12	300	188	402	716	1,153	1,688	2,316	2,920	3,360	3,490
14	350	248	532	947	1,524	2,232	3,062	3,861	4,442	4,508
16	400	327	702	1,249	2,010	2,943	4,037	5,090	5,987	6,052
18	450	446	956	1,702	2,739	4,012	5,503	6,938	7,983	8,110
20	500	542	1,176	2,094	3,370	4,935	6,770	8,490	9,820	9,982
24	600	759	1,628	2,898	4,664	6,831	9,370	12,613	15,350	15,650
28	700	1,130	2,425	4,315	6,945	10,171	13,951	17,898	21,839	22,345
30	750	1,332	2,857	5,084	8,183	11,984	16,439	21,785	27,650	28,911
32	800	1,656	3,552	6,321	10,174	14,900	20,438	26,766	30,649	32,050
36	900	2,040	4,590	8,169	13,148	19,256	26,413	33,298	38,852	39,900

711T Class 600 Cv										
Size		Valve Opening(°)								
NPS	DN	10°	20°	30°	40°	50°	60°	70°	80°	90°
4	100	21	38	59	82	106	132	158	185	184
6	150	41	87	147	223	318	405	490	580	578
8	200	52	111	197	318	465	638	805	926	940
10	250	88	189	336	540	791	1,085	1,345	1,598	1,595
12	300	146	313	557	896	1,290	1,681	2,170	2,492	2,485
14	350	215	461	820	1,320	1,933	2,651	3,343	3,846	3,905
16	400	285	612	1,089	1,753	2,567	3,535	4,438	5,190	5,282
18	450	392	840	1,495	2,407	3,524	4,834	6,120	7,113	7,280
20	500	501	1,074	1,911	3,076	4,505	6,179	7,890	9,542	9,680
24	600	640	1,487	2,646	4,259	6,237	8,555	10,986	13,250	13,890

711T Torque value

[unit : N.m]

Class150		Operating Differential pressure							
		10 bar				20 bar			
Size		Shaft side(preferd)		Disc side(Reverse)		Shaft side(preferd)		Disc side(Reverse)	
inch	mm	to OPEN	to CLOSE	to OPEN	to CLOSE	to OPEN	to CLOSE	to OPEN	to CLOSE
3	80	150	150	65	160	150	150	88	175
4	100	170	160	80	180	170	160	100	200
6	150	210	190	110	247	210	190	126	280
8	200	380	340	190	425	395	340	236	525
10	250	745	710	400	888	765	710	457	1,015
12	300	959	880	530	1,100	995	880	638	1,330
14	350	1,382	1,268	810	1,648	1,500	1,300	888	1,850
16	400	2,067	1,862	1,190	2,421	2,430	1,910	1,344	2,800
18	450	2,716	2,447	1,570	3,181	3,075	2,510	1,848	3,850
20	500	3,344	3,040	2,000	3,852	3,950	3,200	2,525	5,260
24	600	4,230	3,744	2,440	4,942	3,980	3,820	3,489	7,930

[unit : N.m]

Class300		Operating Differential pressure							
		25 bar				50 bar			
Size		Shaft side(preferd)		Disc side(Reverse)		Shaft side(preferd)		Disc side(Reverse)	
inch	mm	to OPEN	to CLOSE	to OPEN	to CLOSE	to OPEN	to CLOSE	to OPEN	to CLOSE
3	80	175	162	98	195	200	180	117	260
4	100	205	186	119	238	230	200	136	340
6	150	231	220	151	335	440	420	226	645
8	200	448	400	342	759	1,005	800	442	1,380
10	250	930	830	592	1,286	1,580	1,220	768	1,920
12	300	1,562	1,395	869	1,811	2,820	1,860	1,412	3,070
14	350	1,873	1,673	1,086	2,262	3,650	2,230	1,885	3,770
16	400	3,284	2,933	1,843	3,480	6,530	3,910	3,302	7,680
18	450	4,103	3,664	2,330	4,855	9,320	4,885	4,370	9,710
20	500	5,460	4,875	3,350	6,980	11,170	6,500	5,585	11,635
24	600	8,595	7,163	5,785	118,510	18,900	9,550	9,840	19,680

[unit : N.m]

Class600		Operating Differential pressure							
		55 bar				100 bar			
Size		Shaft side(preferd)		Disc side(Reverse)		Shaft side(preferd)		Disc side(Reverse)	
inch	mm	to OPEN	to CLOSE	to OPEN	to CLOSE	to OPEN	to CLOSE	to OPEN	to CLOSE
4	100	330	300	125	385	420	370	175	700
6	150	650	540	240	9,215	1,100	900	425	1,680
8	200	1,350	960	740	1,650	2,300	1,595	1,350	3,000
10	250	2,500	1,800	1,030	2,860	4,100	2,930	1,870	5,200
12	300	3,700	2,800	1,690	4,260	5,920	4,000	2,820	7,100
14	350	5,400	3,500	2,200	6,188	8,100	4,700	4,000	9,100
16	400	7,200	4,200	3,470	8,710	11,600	8,000	5,600	14,050
18	450	10,500	6,500	6,000	12,238	19,400	12,000	10,330	21,100
20	500	14,200	9,000	8,405	15,565	26,700	16,950	15,200	28,300
24	600	20,600	12,000	13,250	21,725	38,200	22,200	24,500	39,500

▶Torque value does not include 'safety factor'.

KOSO 日本工装株式会社
NIHON KOSO CO., LTD.

本　　社　〒103-0027　東京都中央区日本橋1−16−7（工装日本橋ビル）
TEL. 03（5202）4300（代表）　FAX. 03（5202）4301

Head Office　1-16-7, Nihombashi, Chuo-ku, Tokyo, 103-0027, Japan
TEL. 81-3-5202-4300　FAX. 81-3-5202-4301

東日本営業部　〒103-0027　東京都中央区日本橋1−16−7（工装日本橋ビル）
TEL. 03（5202）4300（代表）　FAX. 03（5202）4301

西日本営業部　〒564-0062　大阪府吹田市垂水町3−31−29
TEL. 06（6378）7117（代表）　FAX. 06（6378）7050

CSC北海道　〒053-0047　北海道苫小牧市泉町1−1−6
TEL. 0144（31）4400（代表）　FAX. 0144（31）4401

CSC仙台　〒989-2322　宮城県亘理郡亘理町逢隈蕨字卯49−1
TEL. 0223（33）1891（代表）　FAX. 0223（33）1892

CSC福島　〒962-0312　福島県須賀川市大久保字川虫内129
TEL. 0248（65）3128（代表）　FAX. 0248（65）3224

CSC新潟　〒950-0813　新潟県新潟市東区大形本町5−12−36
TEL. 025（275）8461（代表）　FAX. 025（275）8462

CSC鹿島　〒314-0115　茨城県神栖市知手3612−1
TEL. 0299（96）6891（代表）　FAX. 0299（96）6892

CSC関東　〒290-0057　千葉県市原市五井金杉1−42
TEL. 0436（22）0604（代表）　FAX. 0436（21）1311

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TEL. 048（421）5111（代表）　FAX. 048（421）5115

CSC富士　〒416-0909　静岡県富士市松岡14−1
TEL. 0545（66）3191（代表）　FAX. 0545（66）3192

CSC名古屋　〒486-0935　愛知県春日井市森山田町62
TEL. 0568（34）1421（代表）　FAX. 0568（34）1431

CSC大阪　〒564-0062　大阪府吹田市垂水町3−31−29
TEL. 06（6378）7117（代表）　FAX. 06（6378）7050

CSC広島　〒731-5127　広島県広島市佐伯区五日市1−8−25
TEL. 082（943）7750（代表）　FAX. 082（922）9033

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CSC九州　〒802-0802　福岡県北九州市小倉南区城野4−5−55
TEL. 093（922）3431（代表）　FAX. 093（951）1435

CSC大分　〒870-0901　大分県大分市西新地1−8−17
TEL. 097（551）4816（代表）　FAX. 097（551）4827

WORLD-WIDE NETWORK (Sales, Manufacturing, Services)

Nihon Koso Co., Ltd., Tokyo Japan	*Tel.* (81)3-5202-4300	*Fax.* (81)3-5202-4301
Paris Office	*Tel.* (33)1-73-75-23-1	*Fax.* (83)1-73-75-23-1
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Wuxi Koso Valve Casting Co., Ltd., China	*Tel.* (86)510-85117433	*Fax.* (86)510-85117433
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Korea Koso Co., Ltd., Seoul, Korea	*Tel.* (85)2-539-9011	*Fax.* (82)2-566-5119
Korea Koso Engineering Co., Ltd., Seoul, Korea	*Tel.* (85)2-539-9018	*Fax.* (82)2-566-5119
Koso Controls Asia Pte. Ltd., Singapore	*Tel.* (65)67472722	*Fax.* (65)67467677
Kent Introl Private Ltd., India	*Tel.* (91)253-2383111	*Fax.* (91)253-2384413
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