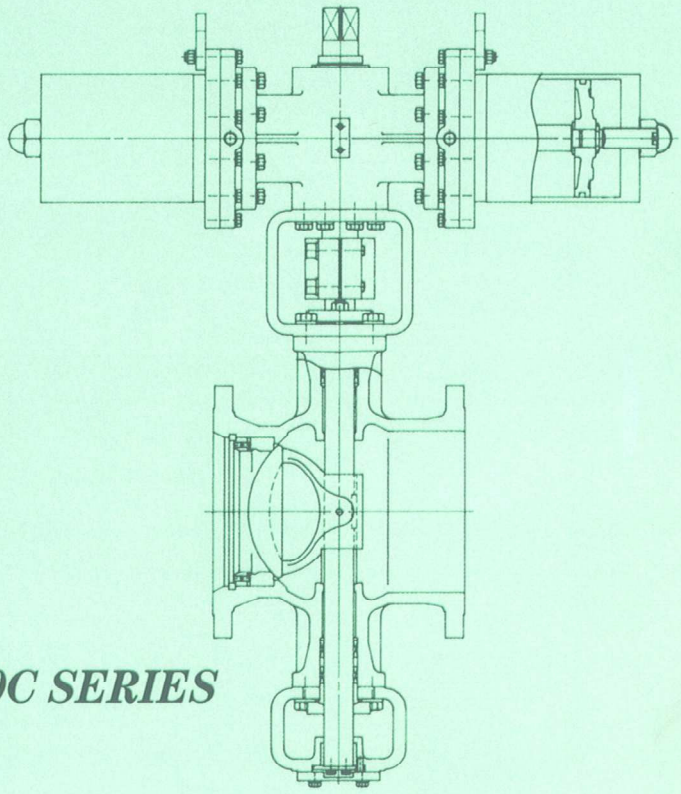
STANDARD SPECIFICATION

CONCENTRIC ROTARY TYPE

SEGMENTAL BALL VALVE



230C SERIES

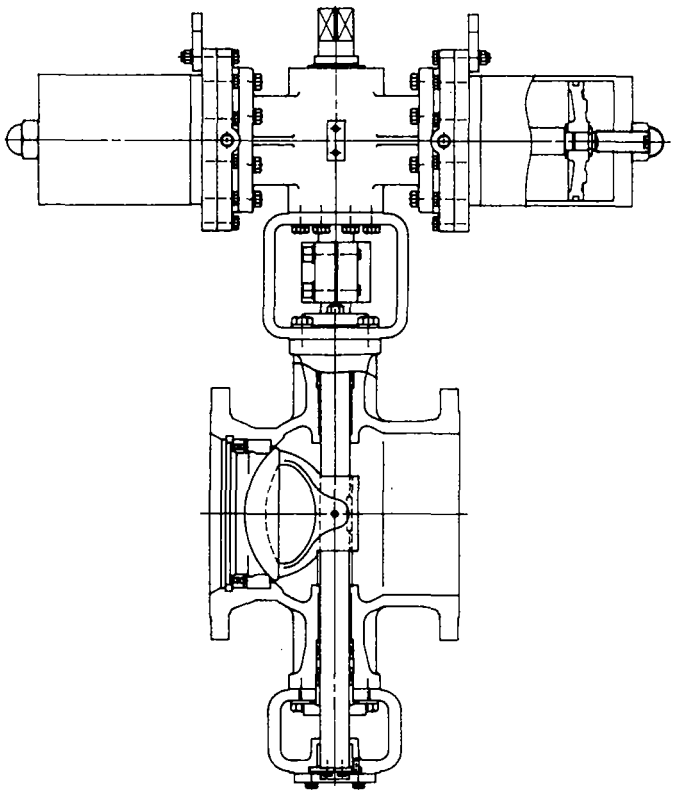
KOSO

STANDARD SPECIFICATION

SEGMENTAL BALL VALVE
CONCENTRIC ROTARY TYPE
230C SERIES

GENERAL

The Series 230 rotary type valve controls fluids by revolving a concentric spherical disc over the seal ring surface in the same manner as 201C. Unlike 201C, this series has dual gland type construction in which the stem penetrates the fluid path. The thrust that pushes the stem outwardly, therefore, is offset by the fluid pressure, making it usable under high pressure service. The Series 230C can also be used for high temperature fluids because of its structure to absorb the stem's thermal expansion. This series does not have a V-notch cut on the disc.



STANDARD SPECIFICATIONS

Body

Type: Concentric partial ball trim.

Size: 6″~24″ (150~600mm).

Rating: JIS 20K~JIS 63K.
ANSI Class 150~Class 1500.
Manufacturing range for Valve size 18″~24″ is JIS40K, ANSI Class 600 under.
Non-standard (900 # over) is available

Connection: Flanged (RF, RTJ).

Face to Face dimensions: See pages 10~14.

Materials: SCPH2, SCS13A, SCS14A. and other alloy steels. As to the operating temperature-pressure limitation for each materials, see pages 2~3, Tables 1~2.

Bonnet: Standard (Casted together with body)
····· −45~+450°C
Outer bearing type·····This type is available for high temperature service.
Note: Please be careful not to exceed allowable Temperatuer-pressure limitation for each material.

Packing: Teflon asbestos, Grafoil.

Painting color: Munsell N-6 (Epoxy resin group) is Standard. For stainless steel body, no painting is standard.

Trim

Disc type: Partial ball type disc.

Characteristic: Modified EQ%.

Materials/Treatment: Body & trim's standard material combination and treatment are stated on pages 2~3, Table 1.

Actuator

Standard specification: See page 2.

Performance

Cv value: See page 6, Table 3.

Flow characteristics: See page 6, Fig. 4.

Rangeability: 100: 1.

Seat leakage: See pages 2~3, Table 1.

Allowable pressure drop: See pages 7~9, Table 4.

Dimensions: See pages 10~14.

Optional Special Specification: See page 2.

Actuator Specifications

Specification \ Model	Pneumatic Cylinder		Solid State Electronic Actuator	Electric Motor
	6300RA, 6500RA, 6400RB		3600A	3400RA
	Double Acting	Spring Return	AC Motor/Resolution 0.4%	AC Motor
Purpose	Modulation/On-Off		Modulation	On-Off
Power Source	Air Supply 400kPa{gaug}		AC 100V 50/60 HZ	AC 100V 50/60 HZ
Piping/Wiring Conn.	Rc⅜, Rc½		2-G½	2-G½
Spring/Input range	0~400kPa{gaug}		DC 4~20mA	Change-over contact
Opening angle	90 deg		90 deg	90 deg
Action	Positioner Signal increase Valve Open or Shut	DA: Air to Valve Shut. RA: Air to Valve Open.	DA: Signal increase-Valve Shut. RA: Signal increase-Valve Open.	Manual selection Valve. Open, Shut or opening stop.
Hysteresis	Less than 1.5% of FS with positioner		Less than 0.8% of FS	—
Linearity	Less than ±2% of FS with positioner		Less than ±1% of FS	—
Ambient Temperature	−20°C~+60°C		−10°C~+55°C	−10°C~+55°C
Painting	Munsell N-6 (Epoxy Resin Group)		Metallic Blue	Metallic Blue
Option	E/P·P/P positioner, Air set, Limit switch, Solenoid valve, Open or Shut stopper, Speed controller, Lock-up valve, Volume tank, Position transmitter, Manual handle, etc.		Overload unit, Space heater, Torque switch, Junction Box, Manual handle etc.	Potentiometer, Micro switch, Space heater etc.

Optional Special Specifications (additional cost is required)

- Special testing.
  Flow characteristics testing, Material certificate, Low temperature testing, Steam testing, Non-destructive testing, Radiographic testing.
- Oxygen clean.
- Sand/Dust proof.
- Cold area proof.
- Tropical area proof.
- No copper alloy.
- Salty environment proof.
- Special piping & fitting.
- Vacuum service proof.
- SUS bolts/nuts for exposed parts.
- Non-standard painting.

Table 1 Body/Trim materials combinations, Operating Temperature & Seat leakage.

Table 1-1 Body Material: SCPH2, SCS13A.

Body material JIS/ASTM			SCPH2/A216-WCB: SCS13A						
Disc		Material	SCS13A	SCS13A	SCS13A	SCS13A	SCS13A	SCS13A	SCS13A
		Treatment	Chrome plated	Chrome plated	Chrome plated	Chrome plated	Chrome plated	Stellite Seat Surface	Stellite Seat Surface
Stem		Material	SUS630	SUS630	SUS630	SUS630	SUS630	SUS630	SUS630
Bearing		Material	SUS316	SUS316	SUS316	SUS316	SUS316	SUS316	SUS316
		Treatment	Chrome plated	Chrome plated	Chrome plated	Chrome plated	Chrome plated	Chrome plated	Chrome plated
Retainer		Material	SUS304	SUS304	SUS304	SUS304	SUS304	SUS304	SUS304
		Treatment	—	—	—	—	—	—	Stellite
Seal ring		Type	FN type	FV type	CS type	L type ※①	H type	HS type	HB type
		Material	Reinforced TFE	Reinforced TFE	Reinforced TFE	SUS316	SUS304	SUS304	SUS304
		Treatment	MoS_2 filled	MoS_2 filled	Carbonfiber filled	—	—	Stellite Seat Surface	Stellite Full Surface
		Back ring	NBR O-ring	VITON O-ring	SUS316	—	—	—	—
Seat leakage	ANSI		Class VI	Class VI	—	—	—	—	—
	Rated Cv×	≤250°C	Bubble-tight	Bubble-tight	0.000001%	0.001%	0.05%	0.05%	0.05%
		251~400°C	—	—	—	0.005%	0.1%	0.1%	0.1%
		401~500°C	—	—	—	—	—	—	—
Operating temperature °C		SCPH2 Body	−5~+60	−5~+180	−5~+250	−5~+400	−5~+400	−5~+400	−5~+400
		SCS13A Body	−45~+60	−10~+180	−45~+250	−45~+400	−45~+400	−45~+400	−45~+400

※① Valve size 12"(300mm) under only.

Note: Seal ring material/treatment vs Operating Temperature-pressure limitation; See pages 4~5, Fig. 1.

Table 1-2 Body Material: SCS 14A.

Body material JIS/ASTM			SCS14A/A351-CF8M						
Disc		Material	SCS14A	SCS14A	SCS14A	SCS14A	SCS14A	SCS14A	SCS14A
		Treatment	Chrome plated	Chrome plated	Chrome plated	Chrome plated	Chrome plated	Stellite Seat Surface	Stellite Seat Surface
Stem		Material	SUS316	SUS316	SUS316	SUS316	SUS316	SUS316	SUS316
Bearing		Material	SUS316	SUS316	SUS316	SUS316	SUS316	SUS316	SUS316
		Treatment	Chrome plated	Chrome plated	Chrome plated	Chrome plated	Chrome plated	Chrome plated	Chrome plated
Retainer		Material	SUS316	SUS316	SUS316	SUS316	SUS316	SUS316	SUS316
		Treatment	—	—	—	—	—	—	Stellite
Seal ring		Type	FN type	FV type	CS type	L type ※①	H type	HS type	HB type
		Material	Reinforced TFE	Reinforced TFE	Reinforced TFE	SUS316	SUS316	SUS316	SUS316
		Treatment	MoS_2 filled	MoS_2 filled	Carbonfiber filled	—	—	Stellite Seat Surface	Stellite Full Surface
		Back ring	NBR O-ring	VITON O-ring	SUS316	—	—	—	—
Seat leakage	ANSI		Class VI	Class VI	—	—	—	—	—
	Rated Cv×	≤250°C	Bubble-tight	Bubble-tight	0.000001%	0.001%	0.05%	0.05%	0.05%
		251~400°C	—	—	—	0.005%	0.1%	0.1%	0.1%
		401~500°C	—	—	—	—	—	0.2%	0.2%
Operating temperature			−45~+60	−10~+180	−45~+250	−45~+400	−45~+400	−45~+650	−45~+650

※① Valve size 12"(300mm) under only.

Note: Seal ring material/treatment vs Operating Temperature-pressure limitation; See pages 4~5, Fig. 1.

Table 2 Body Material Operating Pressure-Temperature Ratings.

Table 2-1 ANSI

Unit: MPa〔gaug〕

Temp. °C	150 #			300 #			600 #			900 #			1500 #		
	SCPH2 WCB	SCS13A	SCS14A CF-8M	SCPH2 WCB	SCS13A	SCS14A CF-8M	SCPH2 WCB	SCS13A	SCS14A CF-8M	SCPH2 WCB	SCS13A	SCS13A CF-8M	SCPH2 WCB	SCS13A	SCS14A CF-8M
−196~38	—	1.90	1.90	—	4.95	4.95	—	9.91	9.92	—	14.87	14.87	—	24.79	24.79
−5~38	1.96	1.90	1.90	5.10	4.95	4.95	10.20	9.91	9.92	15.30	14.87	14.87	25.50	24.79	24.79
50	1.92	1.84	1.84	5.00	4.77	4.80	10.01	9.56	9.62	15.01	14.33	14.42	25.01	23.90	24.03
100	1.76	1.56	1.61	4.63	4.08	4.21	9.27	8.17	8.43	13.89	12.25	12.65	23.17	20.42	21.08
150	1.57	1.39	1.47	4.51	3.62	3.85	9.04	7.26	7.69	13.56	10.88	11.54	22.59	18.15	19.23
200	1.40	1.25	1.37	4.38	3.27	3.56	8.75	6.54	7.12	13.14	9.81	10.69	21.89	16.36	17.82
250	1.20	1.16	1.20	4.16	3.04	3.34	8.33	6.10	6.67	12.51	9.15	10.01	20.84	15.25	16.67
300	1.01	1.01	1.01	3.87	2.91	3.15	7.74	5.80	6.32	11.61	8.71	9.48	19.35	14.52	15.79
350	0.84	0.84	0.84	3.69	2.81	3.03	7.38	5.60	6.07	11.08	8.41	9.12	18.46	14.02	15.19
375	0.73	0.73	0.73	3.64	2.77	2.96	7.28	5.54	5.93	10.93	8.32	8.90	18.21	13.86	14.83
400	0.64	0.64	0.64	3.44	2.74	2.91	6.89	5.48	5.81	10.33	8.23	8.72	17.23	13.72	14.55
425	—	0.55	0.55	—	2.71	2.87	—	5.42	5.72	—	8.14	8.59	—	13.57	14.31
450	—	0.47	0.47	—	2.68	2.81	—	5.37	5.61	—	8.05	8.41	—	13.41	14.03
475	—	0.37	0.37	—	2.65	2.73	—	5.30	5.46	—	7.96	8.20	—	13.26	13.67
500	—	0.28	0.28	—	2.60	2.67	—	5.20	5.37	—	7.81	8.04	—	13.02	13.39
525	—	0.18	0.18	—	2.19	2.57	—	4.77	5.15	—	7.15	7.73	—	11.93	12.88
550	—	—	0.12	—	2.17	2.49	—	4.36	4.98	—	6.53	7.48	—	10.90	12.47
575	—	—	0.12	—	2.00	2.41	—	4.00	4.82	—	6.01	7.22	—	10.03	12.04
600	—	—	0.12	—	1.66	2.13	—	3.34	4.28	—	5.00	6.42	—	8.34	10.71
625	—	—	0.12	—	1.31	1.83	—	2.61	3.64	—	3.92	5.47	—	6.53	9.12
650	—	—	0.12	—	1.04	1.41	—	2.09	2.82	—	3.13	4.23	—	5.25	7.05

Table 2-2 JIS

Unit: MPa〔gaug〕

Temp. °C	10K	20K	30K	40K	63K
	SCPH2	SCPH2	SCPH2	SCPH2	SCPH2
−5~120	1.37	3.33	4.99	6.66	10.48
~220	1.17	3.03	4.05	6.07	9.50
~300	0.98	2.84	4.21	5.58	8.82
~350		2.54	3.82	5.09	7.93
~400		2.25	3.33	4.50	7.05

Fig. 1 Seal ring Operating Temperature-Pressure limitation. (——— allowable fluid pressure at Valve Shut ; - - - - allowable differential pressure at Modulation)

Fig. 1-1 Soft seat(FN, FV type)

Disc: SCS13A chrome plated
SCS14A chrome plated
Seat leakage: ANSI Class VI

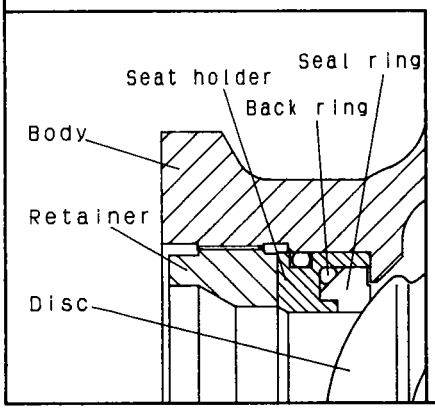


Fig. 1-1A FV type
Seal ring: Reinforced teflon Mos2filled
Back ring: Viton o-ring

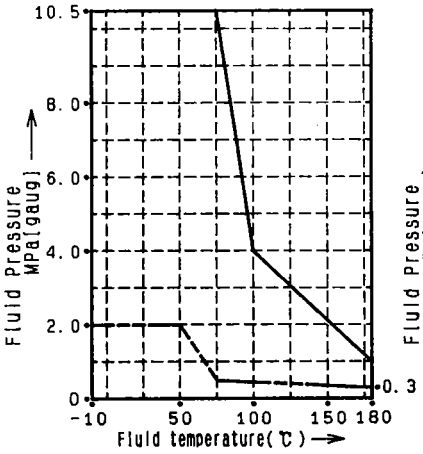


Fig. 1-1B FN type
Seal ring: Reinforced teflon Mos2filled
Back ring: NBR o-ring

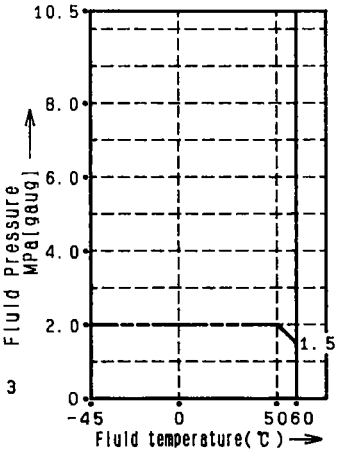
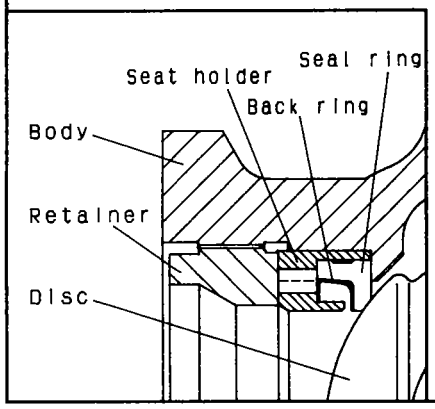


Fig. 1-2 Soft seat(CS type)

Disc: SCS13A chrome plated
SCS14A chrome plated
Seat leakage: Rated Cvx0.000001%



Seal ring: Reinforced teflon Carbon Fiber filled
Back ring: SUS316

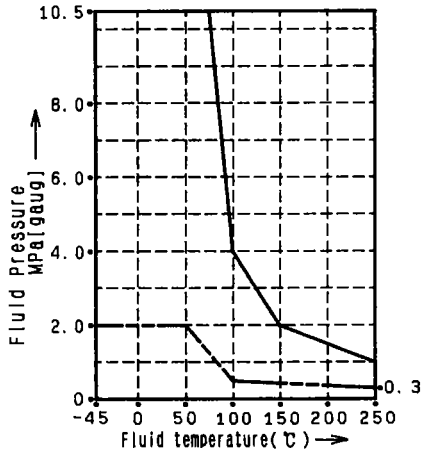


Fig. 1-3 Metal seat(LC type)

Disc: SCS13A chrome plated
SCS14A chrome plated
Seat leakage: Rated Cvx0.001%(≦250°C)
Rated Cvx0.005%(≦400°C)

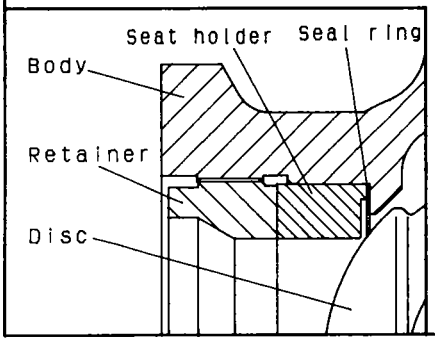


Fig. 1-3A Valve size: 1"~6"
Seal ring: SUS316 thin plate

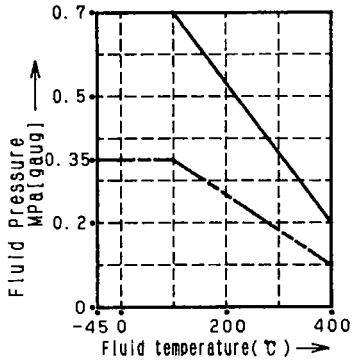
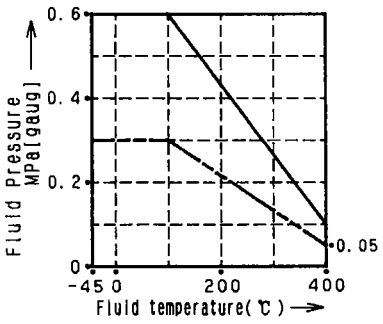


Fig. 1-3B Valve size: 8"~12"
Seal ring: SUS316 thin plate



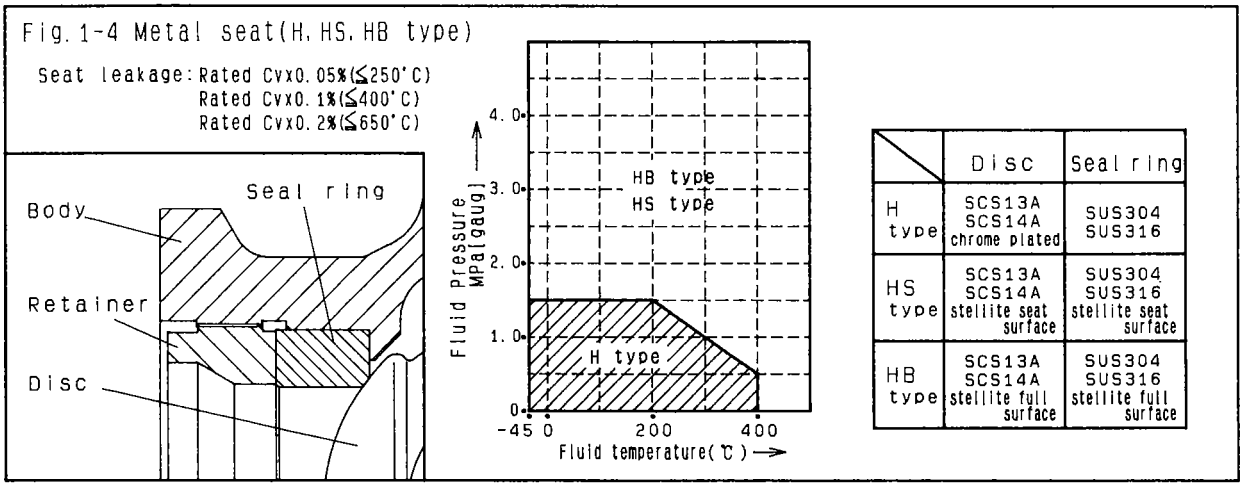


Fig. 2 Gland Packing Temperature-Pressure Limitation.

Fig. 2-1 Teflon asbestos.
Oxydizing fluid.

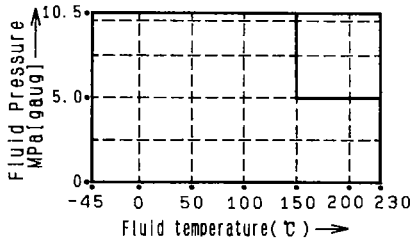


Fig. 2-2 Grafoil.

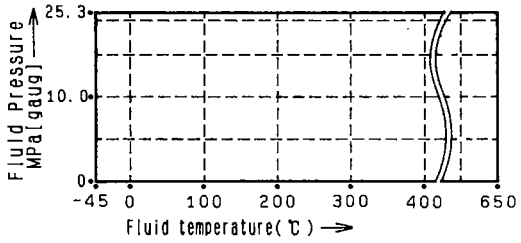


Fig. 3 Body Section View.

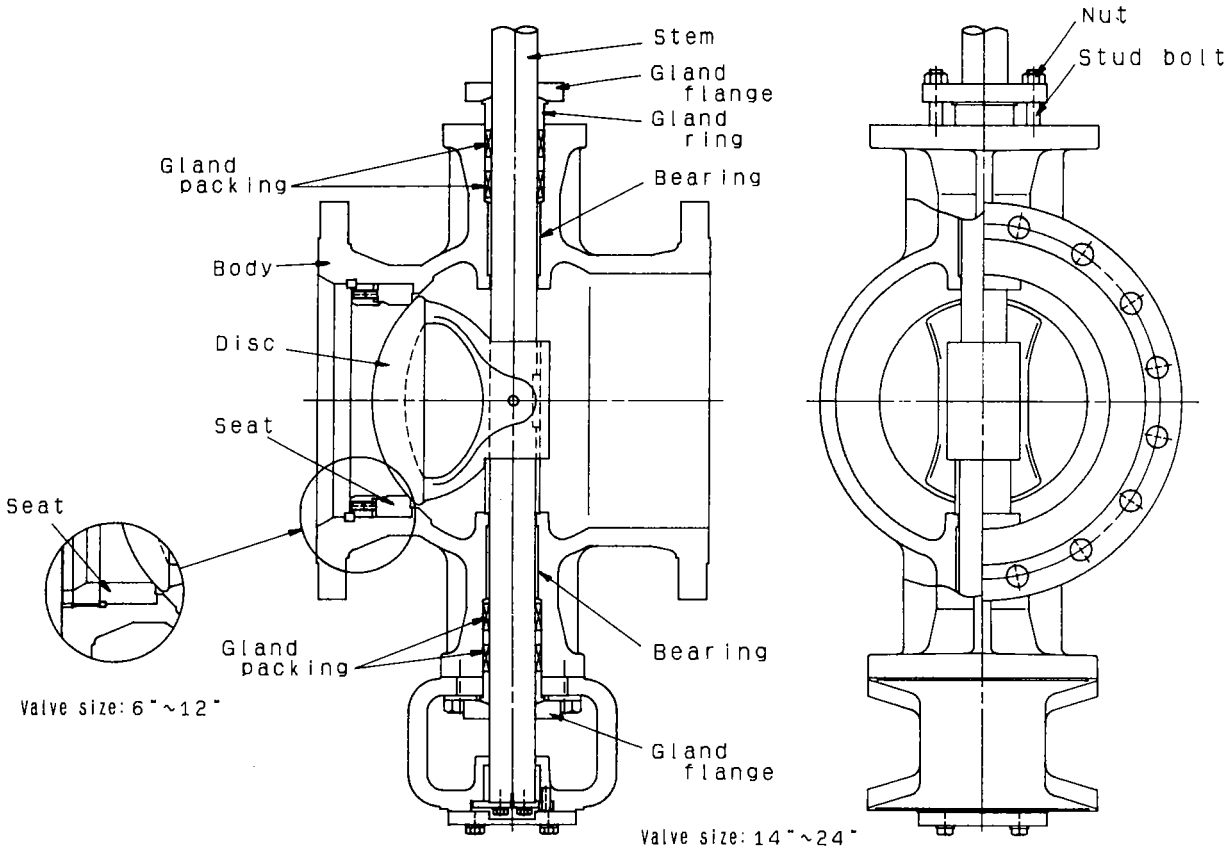


Table 3 Rated Cv Value (Rotating angle 90°)

Body rating \ Valve size	6″ (150mm)	8″ (200mm)	10″ (250mm)	12″ (300mm)	14″ (350mm)	16″ (400mm)	18″ (450mm)	20″ (500mm)	24″ (600mm)
JIS 20K, 30K ANSI Class 150, Class 300	1,100	1,950	3,050	4,330	5,570	7,250	9,610	11,300	16,150
JIS 40K ANSI Class 600	800	1,500	2,520	3,100	4,600	6,200	8,300	9,800	12,200
JIS 63K ANSI Class 900, Class 1500	700	1,250	1,900	2,650	3,800	5,000	—	—	—

Fig. 4 Flow characteristics.

Fig. 4-1 Body rating: JIS20K~30K/ANSI Class 150, Class 300.

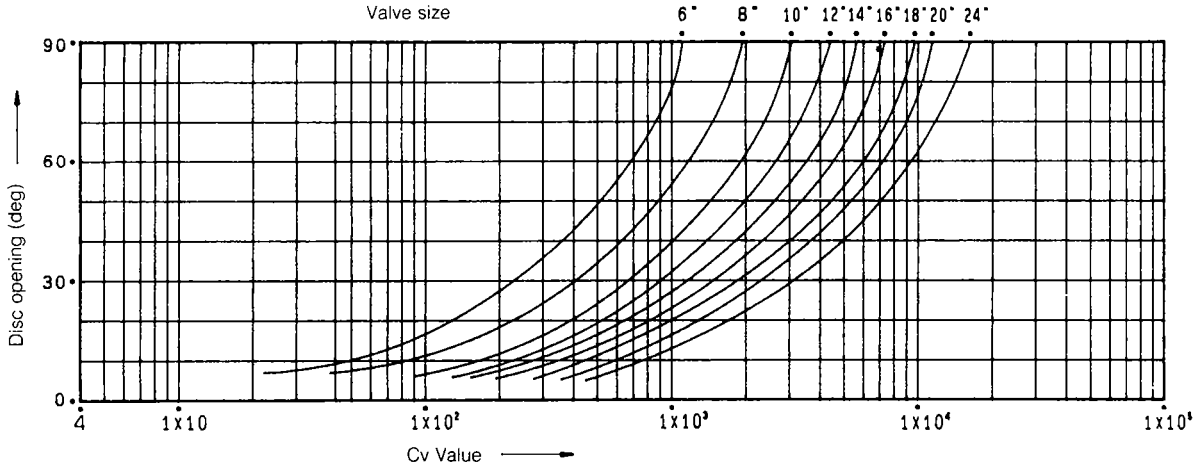


Fig. 4-2 Body rating: JIS40K/ANSI Class 600.

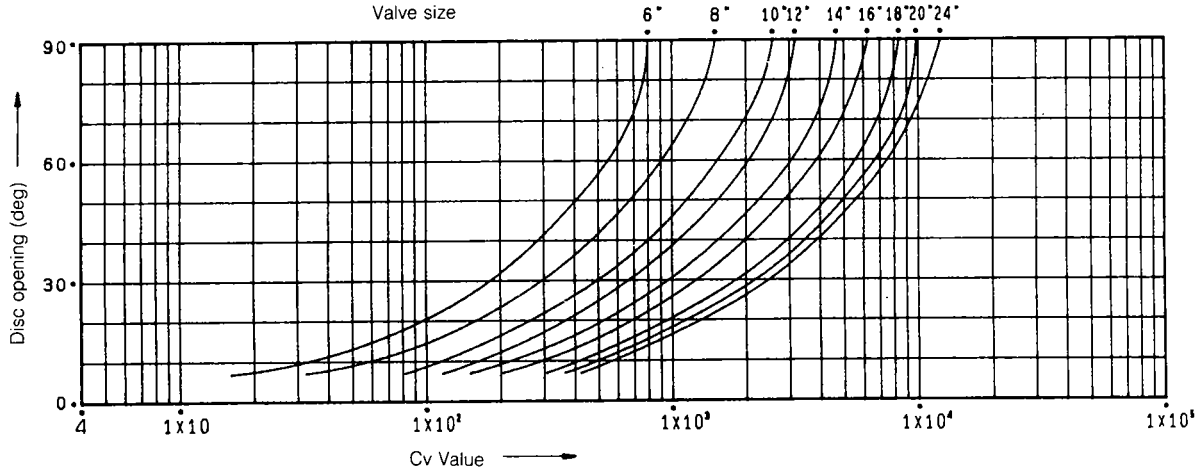


Fig. 4-3 Body rating: JIS63K/ANSI Class 900, 1500.

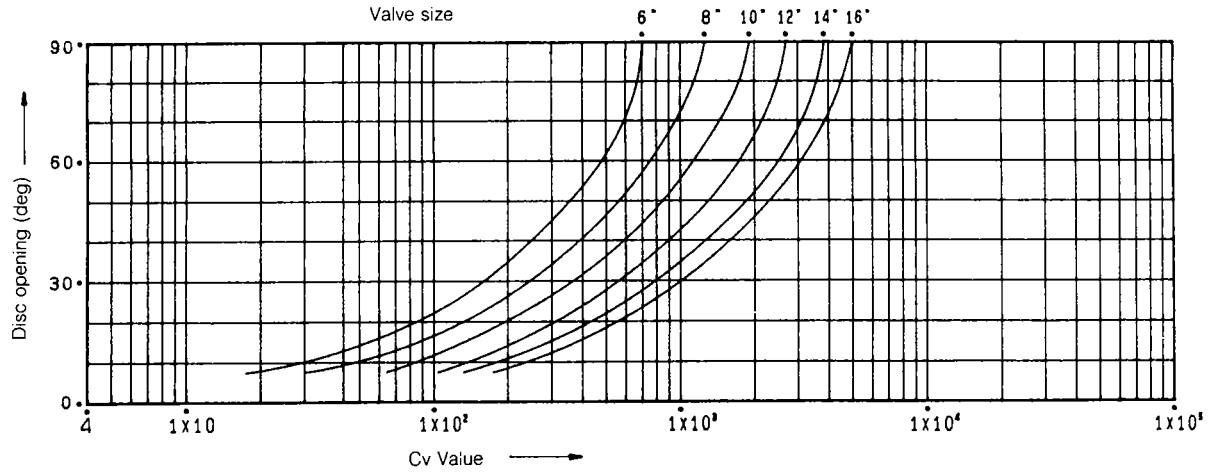


Table 4 Max. Allowable Differential pressure. (Unit: MPa)

△ P: Modulating differential pressure.

Tabel 4-1 Double acting pneumatic cylinder actuator/air supply 400 kPa〔gaug〕.

Tabel 4-1A Soft seat (FN, FV, CS type).

Body rating	Actuator Series	Size	Packing	Valve size	Teflon asbestos 6″ 150 mm	8″ 200 mm	10″ 250 mm	12″ 300 mm	14″ 350 mm	16″ 400 mm	18″ 450 mm	20″ 500 mm	24″ 600 mm	Grafoil 6″ 150 mm	8″ 200 mm	10″ 250 mm	12″ 300 mm	14″ 350 mm	16″ 400 mm	18″ 450 mm	20″ 500 mm	24″ 600 mm
JIS 20K, 30K ANSI Class 150, Class300	6300RA	AT70	Shut-off		1.45	2.29	2.08	1.39						1.07	1.99	1.88	1.22					
			△P		0.51	0.75	0.57	0.38						0.39	0.65	0.51	0.33					
	6500RA (2 piston)	200	Shut-off						1.00	0.72	0.50							0.86	0.59	0.38		
			△P						0.27	0.17	0.11							0.22	0.13	0.07		
		280	Shut-off						1.30	1.30	1.24	0.78						1.15	1.16	1.11	0.67	
			△P						0.48	0.44	0.33	0.23						0.42	0.39	0.29	0.19	
	6400RB (4 piston)	200	Shut-off						2.26	2.20	2.48	1.69	1.01					2.11	2.10	2.36	1.58	0.94
			△P						0.83	0.75	0.64	0.46	0.23					0.77	0.71	0.60	0.43	0.20
		280	Shut-off									2.27	1.90								2.17	1.82
			△P									0.81	0.53								0.77	0.51
JIS 40K ANSI Class 600	6300RA	AT70	Shut-off		5.97	3.38								5.22	2.87							
			△P		1.95	0.99								1.78	0.83							
	6500RA (2 piston)	200	Shut-off				2.56	1.71								2.07	1.31					
			△P				0.55	0.38								0.42	0.26					
		280	Shut-off				3.34	3.12	1.99							2.85	2.71	1.65				
			△P				0.98	0.95	0.62							0.83	0.82	0.49				
	6400RB (4 piston)	200	Shut-off				5.88	5.44	4.38	3.37	2.50	1.54	0.99			5.39	5.03	4.04	3.10	2.26	1.30	0.74
			△P				1.71	1.64	1.23	0.90	0.64	0.44	0.23			1.56	1.52	1.11	0.80	0.56	0.34	0.14
		280	Shut-off						5.91	4.54	4.73	3.66	2.45					5.57	4.29	4.48	3.42	2.20
			△P						1.86	1.58	1.51	1.05	0.59					1.86	1.48	1.43	0.97	0.51

Table 4-1B Metal seat (H, HS, HB, type).

Body rating	Actuator Series	Size	Packing	Valve size	Teflon asbestos 6″ 150 mm	8″ 200 mm	10″ 250 mm	12″ 300 mm	14″ 350 mm	16″ 400 mm	18″ 450 mm	20″ 500 mm	24″ 600 mm	Grafoil 6″ 150 mm	8″ 200 mm	10″ 250 mm	12″ 300 mm	14″ 350 mm	16″ 400 mm	18″ 450 mm	20″ 500 mm	24″ 600 mm
JIS 20K, 30K ANSI Class 150, Class300	6300RA	AT70	Shut-off		2.31	3.45	3.05	2.11						1.63	2.97	2.72	1.84					
			△P		0.51	0.75	0.57	0.38						0.39	0.65	0.51	0.33					
	6500RA (2 piston)	200	Shut-off						1.92	1.26	0.77							1.60	0.99	0.53		
			△P						0.27	0.17	0.11							0.22	0.13	0.07		
		280	Shut-off						2.52	2.40	2.12	1.47						2.21	2.13	1.89	1.27	
			△P						0.48	0.44	0.33	0.23						0.42	0.39	0.29	0.19	
	6400RB (4 piston)	200	Shut-off						4.34	4.01	4.13	3.39	1.76					4.09	3.81	3.95	3.17	1.61
			△P						0.83	0.75	0.64	0.46	0.23					0.77	0.71	0.60	0.43	0.20
		280	Shut-off									4.35	3.23								4.18	3.11
			△P									0.81	0.53								0.77	0.51
JIS 40K ANSI Class 600	6300RA	AT70	Shut-off		9.42	4.93								8.20	4.15							
			△P		2.05	0.99								1.78	0.83							
	6500RB (2 piston)	200	Shut-off				3.49	2.48								2.80	1.86					
			△P				0.55	0.38								0.42	0.26					
		280	Shut-off				4.59	4.66	3.38	2.46	1.74					3.90	4.03	2.78	2.02	1.33		
			△P				0.98	0.95	0.62	0.45	0.32					0.83	0.82	0.49	0.36	0.23		
	6400RA (4 piston)	200	Shut-off				7.84	7.75	7.60	5.60	4.08	2.82	1.63			7.31	7.26	7.00	5.16	3.65	2.35	1.19
			△P				1.71	1.65	1.23	0.90	0.64	0.44	0.23			1.56	1.52	1.11	0.80	0.56	0.34	0.14
		280	Shut-off						9.71	7.17	7.38	6.84	4.17					9.25	6.83	7.07	6.37	3.74
			△P						2.18	1.58	1.51	1.05	0.59					2.05	1.48	1.43	0.97	0.51

Table 4-1C Metal seat (L type: SUS316 thin plate).

Actuator Series	Size	Packing	Teflon asbestos								Grafoil							
		Body rating	JIS 20K, 30K ANSI Class 150, Class 300				JIS 40K ANSI Class 600				JIS 20K, 30K ANSI Class 150, Class 300				JIS 40K ANSI Class 600			
		Valve size	6″	8″	10″	12″	6″	8″	10″	12″	6″	8″	10″	12″	6″	8″	10″	12″
		Purpose	150 mm	200 mm	250 mm	300 mm	150 mm	200 mm	250 mm	300 mm	150 mm	200 mm	250 mm	300 mm	150 mm	200 mm	250 mm	300 mm
6300RA	AT70	Shut-off	0.68	0.58	0.58	0.58	0.68	0.58	0.58	0.58	0.52	0.58	0.58	0.58	0.68	0.58	0.58	0.56
		ΔP	0.34	0.29	0.29	0.29	0.34	0.29	0.29	0.29	0.34	0.29	0.29	0.29	0.34	0.29	0.29	0.16
6500RA (2 piston)	200	Shut-off																0.58
		ΔP																0.26

Table 4-2 Spring return pneumatic cylinder actuator/air supply 400 kPa〔gaug〕.

Table 4-2A Soft seat (FN, FV, CS Type).

Body rating	Actuator Series	Size	Packing	Teflon asbestos									Grafoil								
			Valve size	6″	8″	10″	12″	14″	16″	18″	20″	24″	6″	8″	10″	12″	14″	16″	18″	20″	24″
			Purpose	150 mm	200 mm	250 mm	300 mm	350 mm	400 mm	450 mm	500 mm	600 mm	150 mm	200 mm	250 mm	300 mm	350 mm	400 mm	450 mm	500 mm	600 mm
JIS 20K, 30K ANSI Class 150, Class 300	6300RA	AT70	Shut-off	1.45	1.76	1.01	0.67						1.07	1.76	0.81	0.50					
			ΔP	0.51	0.53	0.28	0.18						0.39	0.53	0.22	0.13					
	6500RA (2 piston)	280	Shut-off		2.29	2.01	1.34	0.63	0.45	0.30				1.99	1.80	1.17	0.48	0.31	0.17		
			ΔP		0.75	0.56	0.38	0.21	0.13	0.07				0.65	0.49	0.32	0.15	0.08	0.03		
		360	Shut-off			2.08	1.39	1.30	1.00	0.71	0.44	0.24			1.88	1.22	1.15	0.87	0.58	0.33	0.17
			ΔP			0.62	0.91	0.47	0.31	0.20	0.14	0.06			0.56	0.37	0.42	0.26	0.16	0.10	0.03
JIS 40K ANSI Class 600	6300RA	AT70	Shut-off	2.90	1.59								2.13	1.08							
			ΔP	1.00	0.48								0.72	0.31							
	6500RA (2 piston)	280	Shut-off	5.72	3.23	1.55	1.01						5.00	2.74	1.06	0.61					
			ΔP	1.86	0.98	0.42	0.28						1.73	0.81	0.28	0.16					
		360	Shut-off	5.97	3.33	3.34	2.40	1.09	0.84	0.59	0.30	0.13	5.19	2.87	2.85	1.98	0.76	0.57	0.35	0.05	—
			ΔP	1.86	1.07	0.88	0.67	0.37	0.26	0.18	0.09	0.02	1.85	0.93	0.82	0.55	0.24	0.17	0.09	0.01	—

Table 4-2B Metal seat (H, HS, HB, type).

Body rating	Actuator Series	Size	Packing	Teflon asbestos									Grafoil								
			Valve size	6″	8″	10″	12″	14″	16″	18″	20″	24″	6″	8″	10″	12″	14″	16″	18″	20″	24″
			Purpose	150 mm	200 mm	250 mm	300 mm	350 mm	400 mm	450 mm	500 mm	600 mm	150 mm	200 mm	250 mm	300 mm	350 mm	400 mm	450 mm	500 mm	600 mm
JIS 20K, 30K ANSI Class 150, Class 300	6300RA	AT70	Shut-off	2.31	2.61	1.39	0.92						1.63	2.13	1.39	0.92					
			ΔP	0.51	0.53	0.28	0.18						0.39	0.44	0.28	0.18					
	6500RA (2 piston)	280	Shut-off		3.45	2.94	2.03	1.11	0.70	0.39				2.97	2.61	1.76	0.81	0.44	0.15		
			ΔP		0.75	0.56	0.38	0.21	0.13	0.07				0.65	0.49	0.32	0.15	0.08	0.03		
		360	Shut-off					2.52	1.81	1.14	0.77	0.34					2.21	1.55	0.92	0.55	0.19
			ΔP					0.47	0.31	0.20	0.14	0.06					0.42	0.26	0.16	0.10	0.03
JIS 40K ANSI Class 600	6300RA	AT70	Shut-off	4.44	2.22								3.22	1.45							
			ΔP	1.00	0.48								0.72	0.31							
	6500RA (2 piston)	280	Shut-off	9.08	4.74	2.06	1.41						7.85	3.96	1.36	0.78					
			ΔP	2.01	0.98	0.42	0.28						1.37	0.81	0.28	0.16					
		360	Shut-off	9.42	4.93	4.59	3.53	1.79	1.29	0.86	0.45	0.12	8.20	4.15	3.90	2.91	1.19	0.85	0.45	—	—
			ΔP	2.25	1.07	0.97	0.67	0.37	0.26	0.18	0.09	0.02	1.96	0.93	0.82	0.55	0.24	0.17	0.09	—	—

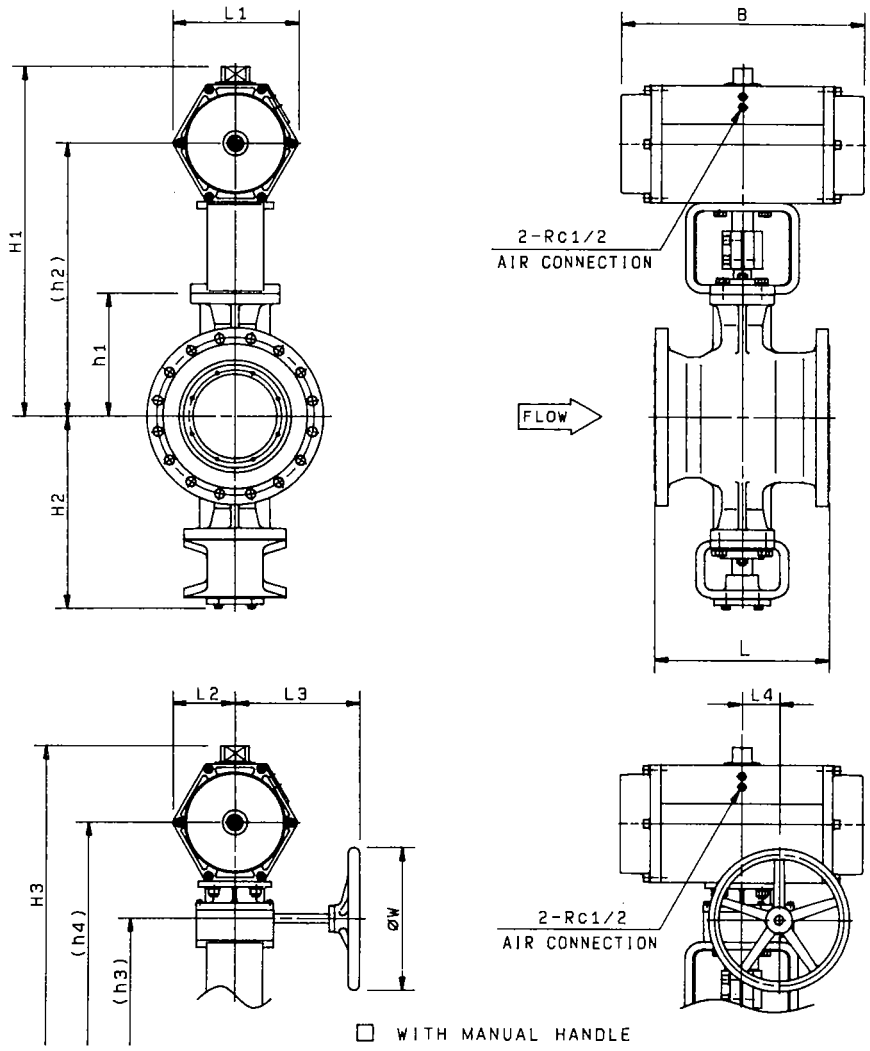
Table 4-2C Metal seat (L type: SUS316 thin plate).

Actuator Series	Size	Packing	Teflon asbestos								Grafoil							
		Body rating	JIS 20K, 30K ANSI Class 150, Class 300				JIS 40K ANSI Class 600				JIS 20K, 30K ANSI Class 150, Class 300				JIS 40K ANSI Class 600			
		Valve size	6″	8″	10″	12″	6″	8″	10″	12″	6″	8″	10″	12″	6″	8″	10″	12″
		Purpose	150 mm	200 mm	250 mm	300 mm	150 mm	200 mm	250 mm	300 mm	150 mm	200 mm	250 mm	300 mm	150 mm	200 mm	250 mm	300 mm
6300RA	AT70	Stut-off	0.68	0.58			0.68	0.58			0.68	0.58			0.68	0.58		
		ΔP	0.34	0.29			0.34	0.29			0.34	0.29			0.29	0.29		
6500RA (2 piston)	280	Stut-off			0.58	0.58			0.58	0.58			0.58	0.58			0.58	0.35
		ΔP			0.29	0.29			0.29	0.28			0.29	0.29			0.28	0.16

Table 4-3 Solid state electronic & electric motor actuator.

Actuator Size code (kgf-m)	Seal ring type	Packing	Teflon asbestos								Grafoil							
		Body rating	JIS 20K, 30K ANSI Class 150, Class 300				JIS 40K ANSI Class 600				JIS 20K, 30K ANSI Class 150, Class 300				JIS 40K ANSI Class 600			
		Valve size	6″	8″	10″	12″	6″	8″	10″	12″	6″	8″	10″	12″	6″	8″	10″	12″
		Purpose	150 mm	200 mm	250 mm	300 mm	150 mm	200 mm	250 mm	300 mm	150 mm	200 mm	250 mm	300 mm	150 mm	200 mm	250 mm	300 mm
36D1RA 34D1RA (100)	Soft seat	Shut-off	1.45	2.24	1.31	0.87	3.73	2.08	0.92	0.57	1.07	1.95	1.09	0.70	2.97	1.56	0.43	0.17
	FN, FV, CS type	ΔP	0.51	0.74	0.40	0.26	1.41	0.67	0.27	0.17	0.47	0.64	0.33	0.21	1.12	0.50	0.13	0.05
	Metal seat	Shut-off	2.31	3.38	1.84	1.24	5.80	2.95	1.15	0.72	1.63	2.91	1.51	0.97	4.57	2.18	0.46	0.09
	H, HS, HB type	ΔP	0.51	0.74	0.40	0.26	1.41	0.67	0.27	0.17	0.39	0.64	0.33	0.21	1.12	0.50	0.13	0.06
	Metal seat	Stut-off	0.68	0.58	0.58	0.50	0.68	0.58	0.47	0.33	0.52	0.58	0.58	0.40	0.68	0.58	0.08	0.05
	L type	ΔP	0.34	0.29	0.29	0.26	0.34	0.29	0.27	0.17	0.34	0.29	0.29	0.21	0.34	0.29	0.08	0.05

SEGMENTAL BALL VALVE *Double acting and Spring return cylinder*



☐ Double Acting

DIMENSIONS

UNIT:mm

CODE No.	VALVE SIZE	M Class Body ☐JIS 20k ☐JIS 30k ☐ANSI Class 150 ☐ANSI Class 300								H Class Body ☐JIS 40k ☐ANSI Class 600								ACTUATOR				☐WITH MANUAL HANDLE			
		L	h1	H2	h2	H1	h3	h4	H3	L	h1	H2	h2	H1	h3	h4	H3	Cylinder size	B	L1	L2	L3	L4	W	CODE No.
06	☐ 6"(150A)	267	230	365	600	815	520	790	1005	403	255	430	645	860	575	845	1060	☐ AT70	684	350	175	355	106	400	63A7RA
08	☐ 8"(200A)	330	275	435	650	865	580	850	1065	419	295	470	685	900	615	885	1100	☐ AT70	684	350	175	355	106	400	63A7RA
08	☐ 10"(250A)	394	310	485	700	915	630	900	1115	457	360	605	800	1015	710	980	1195	☐ AT70	684	350	175	355	106	400	63A7RA
08	☐ 12"(300A)	419	345	520	735	950	665	935	1150	502	415	660	855	1070	765	1035	1250	☐ AT70	684	350	175	355	106	400	63A7RA

☐ Spring Acting

DIMENSIONS

UNIT:mm

CODE No.	VALVE SIZE	M Class Body ☐JIS 20k ☐JIS 30k ☐ANSI Class 150 ☐ANSI Class 300								H Class Body ☐JIS 40k ☐ANSI Class 600								ACTUATOR				☐WITH MANUAL HANDLE			
		L	h1	H2	h2	H1	h3	h4	H3	L	h1	H2	h2	H1	h3	h4	H3	Cylinder size	B	L1	L2	L3	L4	W	CODE No.
06	☐ 6"(150A)	267	230	365	600	815	520	790	1005	403	255	430	645	860	575	845	1060	☐ AT70	684	350	175	355	106	630	63A7RA
08	☐ 8"(200A)	330	275	435	650	865	580	850	1065	419	295	470	685	900	615	885	1100	☐ AT70	684	350	175	355	106	630	63A7RA
08	☐ 10"(250A)	394	310	485	700	915	630	900	1115	—	—	—	—	—	—	—	—	☐ AT70	684	350	175	355	106	630	63A7RA
08	☐ 12"(300A)	419	345	520	735	950	665	935	1150	—	—	—	—	—	—	—	—	☐ AT70	684	350	175	355	106	630	63A7RA

*FLANGE IS ACCORDING TO THE STANDARD WHICH IS DESCRIBED ON SPECIFICATION SHEET.

NOTE:

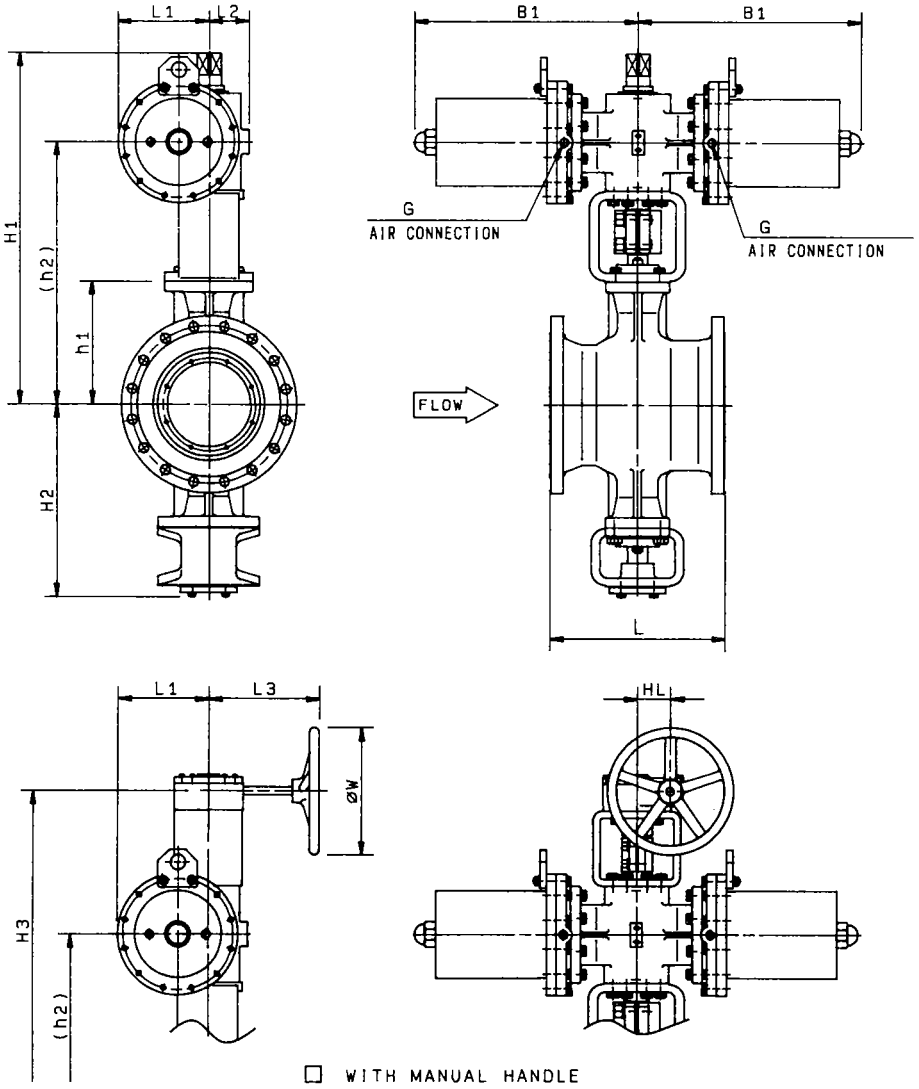
DRAWING No.

E-230C-63A7RA-$\frac{W}{S}$-$\frac{N}{S}$

REV A

KOSO

SEGMENTAL BALL VALVE *Double acting cylinder*



DIMENSIONS

UNIT:mm

CODE No.	VALVE SIZE	M Class Body ☐JIS 20k ☐ANSI Class 150 ☐JIS 30k ☐ANSI Class 300						H Class Body ☐JIS 40k ☐ANSI Class 600						ACTUATOR					☐WITH MANUAL HANDLE			
		L	h1	H2	h2	H1	H3	L	h1	H2	h2	H1	H3	Cylinder size	B1	L1	L2	G	L3	HL	W	CODE No.
10	☐ 10"(250A)	—	—	—	—	—	—	457	360	605	755	975	1185	☐ 200	555	230	100	RC1/2	355	106	400	6520RA
											810	1100	1280	☐ 280	675	290	130	RC1/2	395	152	560	6528RA
12	☐ 12"(300A)	—	—	—	—	—	—	502	415	660	810	1030	1240	☐ 200	555	230	100	RC1/2	355	106	400	6520RA
											865	1155	1335	☐ 280	675	290	130	RC1/2	395	152	560	6528RA
14	☐ 14"(350A)	550	380	620	775	995	1185	550	450	760	—	—	—	☐ 200	555	230	100	RC1/2	355	106	400	6520RA
					830	1120	1300				930	1220	1400	☐ 280	675	290	130	RC1/2	395	152	560	6528RA
16	☐ 16"(400A)	600	420	660	815	1035	1245	600	510	820	—	—	—	☐ 200	555	230	100	RC1/2	355	106	400	6520RA
					870	1160	1340				990	1280	1460	☐ 280	675	290	130	RC1/2	395	152	560	6528RA
18	☐ 18"(450A)	650	450	720	845	1065	1275	650	580	890	—	—	—	☐ 200	555	230	100	RC1/2	355	106	400	6520RA
					900	1190	1370				1060	1350	1530	☐ 280	675	290	130	RC1/2	395	152	560	6528RA
20	☐ 20"(500A)	700	480	785	960	1250	1430	—	—	—	—	—	—	☐ 280	675	290	130	RC1/2	395	152	560	6528RA

*FLANGE IS ACCORDING TO THE STANDARD WHICH IS DESCRIBED ON SPECIFICATION SHEET.

NOTE :

DRAWING No.

E-230C-6500RA-W-$^{N}_{S}$

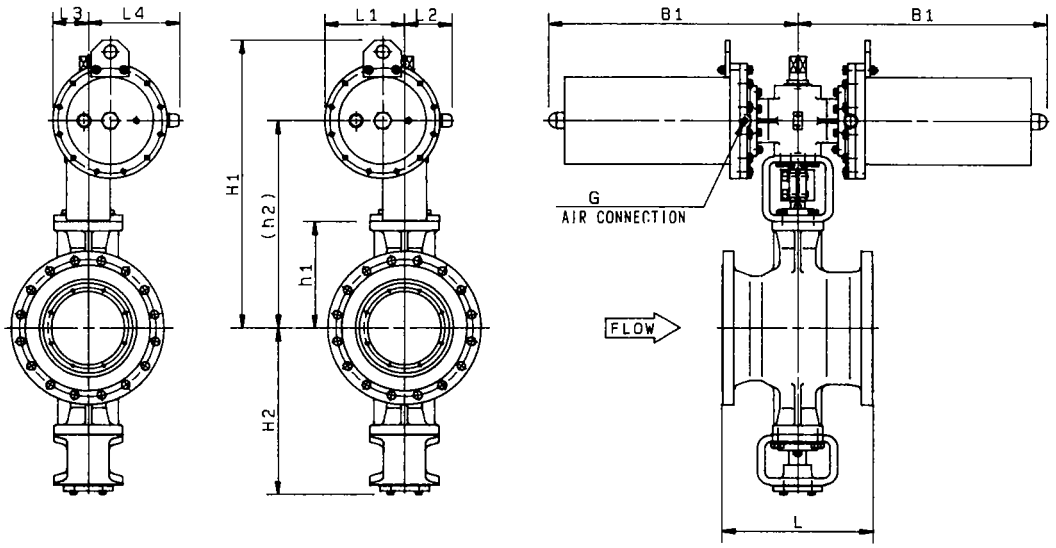
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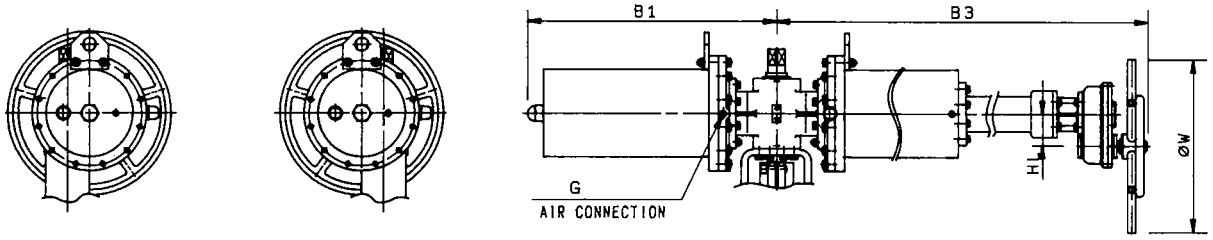
KOSO

SEGMENTAL BALL VALVE *Spring return cylinder*

☐DIRECT ACTION ☐REVERSE ACTION



☐DIRECT ACTION ☐REVERSE ACTION



☐WITH MANUAL HANDLE

DIMENSIONS UNIT:mm

CODE No.	VALVE SIZE	M Class Body ☐JIS 20k ☐ANSI Class 150 ☐JIS 30k ☐ANSI Class 300					H Class Body ☐JIS 40k ☐ANSI Class 600					ACTUATOR							☐WITH MANUAL HANDLE			
		L	h1	H2	h2	H1	L	h1	H2	h2	H1	Cylinder size	B1	L1	L2	L3	L4	G	B3	HL	W	CODE No.
06	☐ 6"(150A)	—	—	—	—	—	403	255	430	600	875	☐280	865	275	165	122	315	RC1/2	1615	108	590	6528RA
										675	1005	☐360	1070	315	265	135	355	RC1/2	1990	196	590	6536RA
08	☐ 8"(200A)	330	275	435	605	880	419	295	470	640	915	☐280	865	275	165	122	315	RC1/2	1615	108	590	6528RA
					—	—				715	1045	☐360	1070	315	265	135	355	RC1/2	1990	196	590	6536RA
10	☐ 10"(250A)	394	310	485	655	930	457	360	605	755	1030	☐280	865	275	165	122	315	RC1/2	1615	108	590	6528RA
					730	1060				810	1140	☐360	1070	315	265	135	355	RC1/2	1990	196	590	6536RA
12	☐ 12"(300A)	419	345	520	690	965	502	415	660	810	1085	☐280	865	275	165	122	315	RC1/2	1615	108	590	6528RA
					765	1095				865	1195	☐360	1070	315	265	135	355	RC1/2	1990	196	590	6536RA
14	☐ 14"(350A)	550	380	620	775	1050	550	450	760	—	—	☐280	865	275	165	122	315	RC1/2	1615	108	590	6528RA
					830	1160				930	1260	☐360	1070	315	265	135	355	RC1/2	1990	196	590	6536RA
16	☐ 16"(400A)	600	420	660	815	1090	600	510	820	—	—	☐280	865	275	165	122	315	RC1/2	1615	108	590	6528RA
					870	1200				990	1320	☐360	1070	315	265	135	355	RC1/2	1990	196	590	6536RA
18	☐ 18"(450A)	650	450	720	845	1120	650	580	890	—	—	☐280	865	275	165	122	315	RC1/2	1615	108	590	6528RA
					900	1230				1060	1390	☐360	1070	315	265	135	355	RC1/2	1990	196	590	6536RA
20	☐ 20"(500A)	700	480	785	960	1290	700	650	960	1130	1460	☐360	1070	315	265	135	355	RC1/2	1990	196	590	6536RA
24	☐ 24"(600A)	800	550	860	1030	1360	800	750	1060	1230	1560	☐360	1070	315	265	135	355	RC1/2	1990	196	590	6536RA

*FLANGE IS ACCORDING TO THE STANDARD WHICH IS DESCRIBED ON SPECIFICATION SHEET.

NOTE:

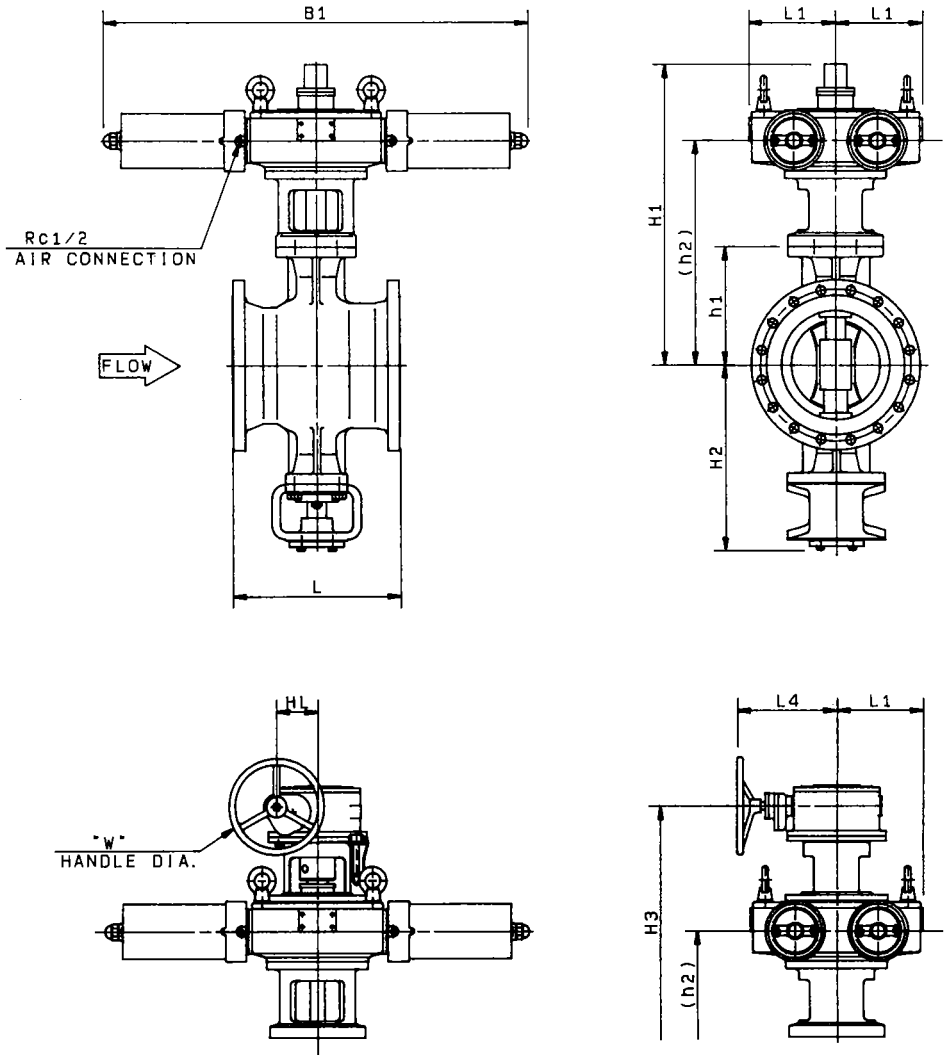
DRAWING No.

E-230C-6500RA-$\frac{D}{R}$-$\frac{N}{S}$

REV D

KOSO

SEGMENTAL BALL VALVE *Double acting cylinder*



☐ WITH MANUAL HANDLE

DIMENSIONS UNIT:mm

CODE No.	VALVE SIZE	M class BODY ☐JIS 20k ☐JIS 30k ☐ANSI Class 150 ☐ANSI Class 300						H class BODY ☐JIS 40k ☐ANSI Class 600						ACTUATOR Cylinder size	B1	L1	☐ WITH MANUAL HANDLE L4	HL	W	CODE No.
		L	h1	H2	h2	H1	H3	L	h1	H2	h2	H1	H3							
10	☐ 10" (250A)	—	—	—	—	—	—	457	360	605	780	1085	1285	☐ 200	1690	345	455	104	460	6420RA
12	☐ 12" (300A)	—	—	—	—	—	—	502	415	660	835	1140	1340	☐ 200	1690	345	455	104	460	6420RA
14	☐ 14" (350A)	550	380	620	800	1070	1305	550	450	760	870	1175	1375	☐ 200	1690	345	455	104	460	6420RA
					—	—	—				895	1215	1470	☐ 280	1980	395	550	118	460	6428RA
16	☐ 16" (400A)	600	420	660	840	1110	1345	600	510	820	930	1235	1435	☐ 200	1690	345	455	104	460	6420RA
					—	—	—				955	1275	1530	☐ 280	1980	395	550	118	460	6428RA
18	☐ 18" (450A)	650	450	720	870	1140	1375	650	580	890	1000	1305	1505	☐ 200	1690	345	455	104	460	6420RA
					—	—	—				1025	1345	1600	☐ 280	1980	395	550	118	460	6428RA
20	☐ 20" (500A)	700	480	785	900	1170	1405	700	650	960	1070	1375	1575	☐ 200	1690	345	455	104	460	6420RA
					925	1235	1500				1095	1415	1670	☐ 280	1980	395	550	118	460	6428RA
24	☐ 24" (600A)	800	555	860	975	1245	1480	800	750	1060	1130	1435	1635	☐ 200	1690	345	455	104	460	6420RA
					1000	1310	1575				1195	1515	1770	☐ 280	1980	395	550	118	460	6428RA

*FLANGE IS ACCORDING TO THE STANDARD WHICH IS DESCRIBED ON SPECIFICATION SHEET.

NOTE :

DRAWING No.

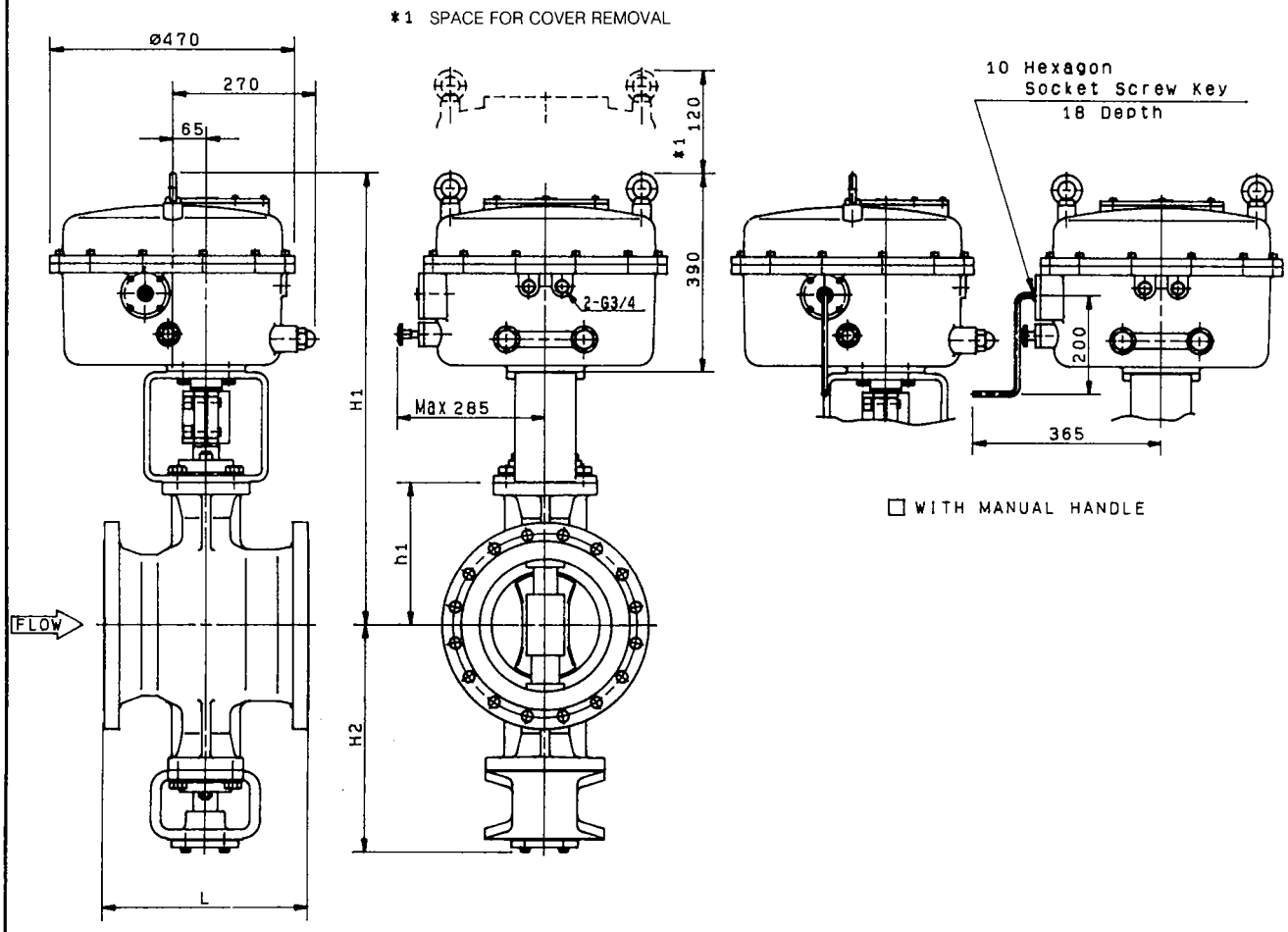
E-230C-6400RB-W-$\frac{N}{S}$

REV

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KOSO

SEGMENTAL BALL VALVE



DIMENSIONS UNIT:mm

CODE No.	VALVE SIZE	M Class Body ☐ JIS 20k ☐ ANSI Class 150 ☐ JIS 30k ☐ ANSI Class 300				H Class Body ☐ JIS 40k ☐ ANSI Class 600				ACTUATOR SIZE CODE No.
		L	h1	H2	H1	L	h1	H2	H1	
06	☐ 6" (150A)	267	230	365	815	403	255	430	860	☐34D1RA ☐36D1RA
08	☐ 8" (200A)	330	275	435	865	419	295	470	900	☐34D1RA ☐36D1RA
10	☐ 10" (250A)	394	310	485	915	457	360	605	990	☐34D1RA ☐36D1RA
12	☐ 12" (300A)	419	345	520	950	502	415	660	1045	☐34D1RA ☐36D1RA

* Flange is according to the standard which is described on specification sheet.

NOTE :

DRAWING No.

E-230C-36D■RA-B-$^{N}_{S}$

REV

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KOSO

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丁目16番7号 工場日本橋ビル
☎ 03-5202-4300　　FAX 03-5202-4301

Head office　KOSO NIHONBASHI B/D, 1-16-7 NIHONBASHI, CHUO-KU,
TOKYO, 103-0027, JAPAN
☎ 03-5202-4300　　FAX 03-5202-4301

E-mail: info@koso.co.jp
Website: http://www.koso.co.jp

KOSO 韓國KOSO株式會社
KOREA KOSO CO., LTD.

本　　社 서울特別市 江南區 驛三洞 642-6 (星志하이츠III 18F 16)
☎ (02) 539-9011　　FAX (02) 566-5119

工　　場 仁川廣域市 南洞區 古殘洞 671-2 南洞工團 90B-3L
☎ (032) 818-2136　　FAX (032) 816-3870

WEB : www.kosokor.co.kr
E-mail : kosokor@kosokor.co.kr

■ WORLD-WIDE NETWORK(Sales, Manufacturing, Services)

Koso International, Inc., Ltd., CA, U.S.A	Tel.(1)805-942-4499	FAX.(1)805-942-0999
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Wuxi Koso Control Valve Co., Ltd., China	Tel.(86)510-2408634	FAX.(86)510-2402498
Anshan-Nippon Ar-Koso Co., Ltd., China	Tel.(86)412-812686	FAX.(86)412-814582
Korea Controls Co., Ltd., Seoul, Korea	Tel.(82)2-539-9011	FAX.(82)2-566-5119
Korea Koso Engineering Co., Ltd., Seoul, Korea	Tel.(82)2-539-9018	FAX.(82)2-566-5119
Koso Controls Asia Pte. Ltd., Singapore	Tel.(65)7472722	FAX.(65)7467677

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