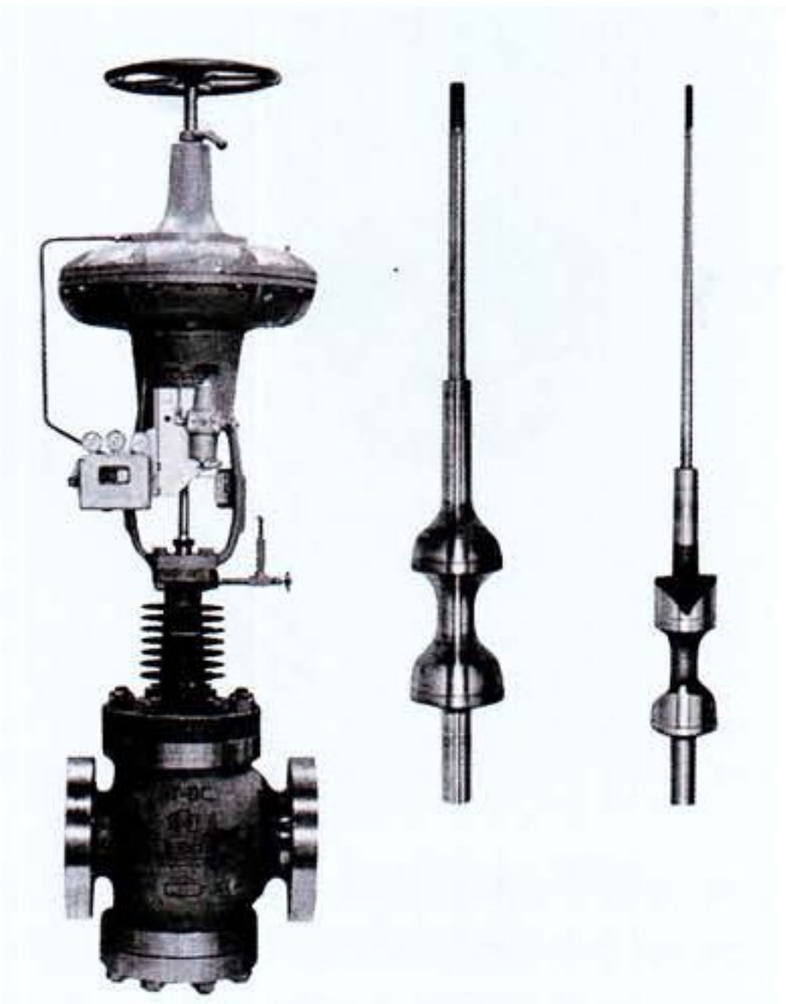
DY-D DOUBLE SEATED CONTROL VALVE

This control valve is used in a wide range of services. The use of two ports, upper one and lower one (double seats) for the valve plug woks to balance and cancell the back pressure exerted on the valve. As the unbalanced force exerted on the valve stem is extremely small, the valve has an excellent controllability.

Two types of valve plug are available; the direct plug type and the reversed plug type. For easier maintenance, we recommend the direct plug type for large bore valves.

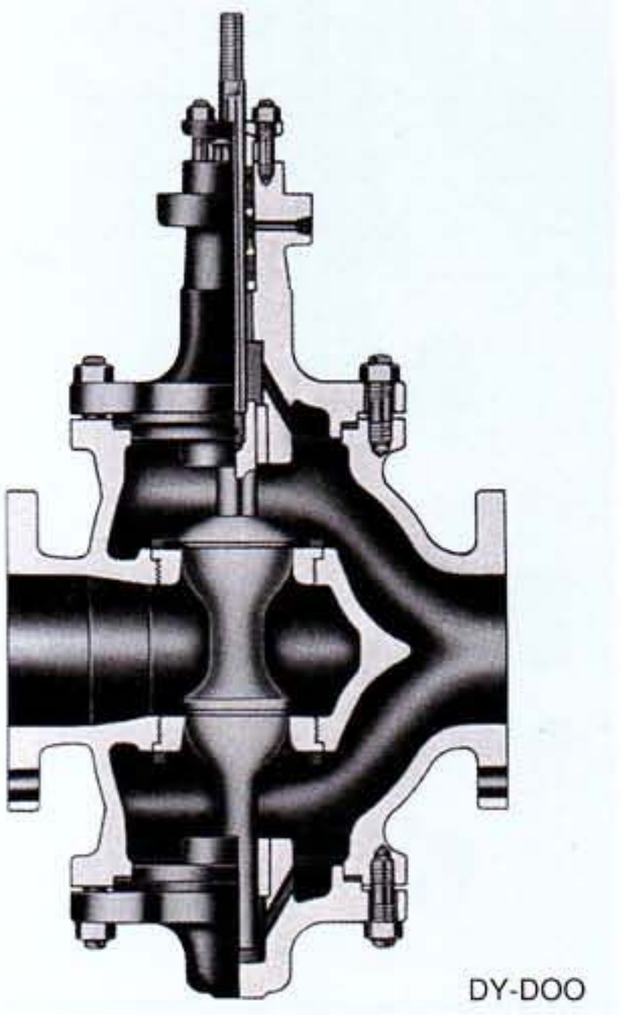


DY-D double seated control valve

NOMINAL BORE mm (inch)				25A (1B)				32A (1¼B)				40A (1½B)					50A (2B)					65A (2½B)					80A (3B)				
RATING	JIS (K)			5 10	16 20	30 40	63	5 10	16 20	30 40	63	5 10	16 20	30 40	63	(100)	5 10	16 20	30 40	63	(100)	5 10	16 20	30 40	63	(100)	5 10	16 20	30 40	63	(100)
	ANSI (Class)			125 150	300	600	900	125 150	300	600	900	125 150	300	600	900	1500	125 150	300	600	900	1500	125 150	300	600	900	1500	125 150	300	600	900	1500
	IEC (PN-bar)			10 16	25 40	64 100		10 16	25 40	64 100		10 16	25 40	64 100			10 16	25 40	64 100			10 16	25 40	64 100			10 16	25 40	64 100		
RATED Cv VALUE	Flow Characteristic Equal % Parabolic Linear	P-port		12.5				14	18	24		20	26	31			26	36	48			56	72	96			96		125		
		V-solid		—				14		18		20		26			26		36			56		72			72		96		
DIMENSIONS (mm)	Face to Face L (※1)			184	197	210	235	200	213	229	275	222	235	251	295	320	254	267	286	310	380	276	292	311	365	430	298	317	337	375	470
	G			108		115		120		125		130		158	162	186	170			174	215	194		204	200	236	212		222	218	242
	Height	H (※2)		692		705		705		715	718	720		748	755	832	812		832	838	968	838		858	862	978	858		868	870	985
		Additional value to H	With fin	100		102		98		102		107		102		130	100		102		130	96		102		130	88		102		130
			With handwheel	185				185				185				215	215				276	215				276	215				276
	Actuator J			Refer to following (J)																											
ALLOWABLE PRESSURE DROP (MPa) (in case of single action diaphragm actuator)	Actuator size (J) mm	275	20	2.0	3.0			2.0				1.6																			
			40		4.9	6.1			3.8			2.0	3.2																		
			60			10.0	11.3		4.9	6.9			4.9	5.9																	
		355	20	2.0	4.9	6.5		2.0	4.0			2.0	3.4				2.0	2.8				2.0					1.8				
			40			10.0	13.0		4.9	7.9			4.9	6.7				4.9	5.5				4.2				2.0	3.6			
			60				14.9			10.0	14.4			10.0	12.2				10.0				4.9	7.7				4.9	6.5		
		410	20												4.2		2.0	3.4				2.0	2.6			2.0	2.2				
			40												8.1			4.9	6.7				4.9				4.4			
			60												14.7				10.0	12.2			9.3				4.9	7.9		
		465	20													4.2					3.2					2.8				
			40													8.4					6.4					5.4				
			60													15.3					11.6					9.8				
		520	20																												
			40																												
			60																												
		645	20																												
			40																												
			60																												
Mass (kg) (※3)				60	65	70	80	65	70	75	100	70	75	90	115	175	100	105	115	145	120	105	115	135	180	270	120	135	150	195	95

(※1) As for face-to-face dimension, new face-to-face dimensions according to IEC are givev up to JIS 40 K (PN 100). However, for individual orders, please refer to the dimension indicated on the drawing for approval for the time being. When the same face-to-face dimension as that of a valve already delivered is required, please inform us the relevant serial namber of the valve.

(※2) H dimension gives the longest dimension of the valve with the standard type bonnet. However, in cases of fin type bonnet or handwheel installation, add the respective value shown in the table.



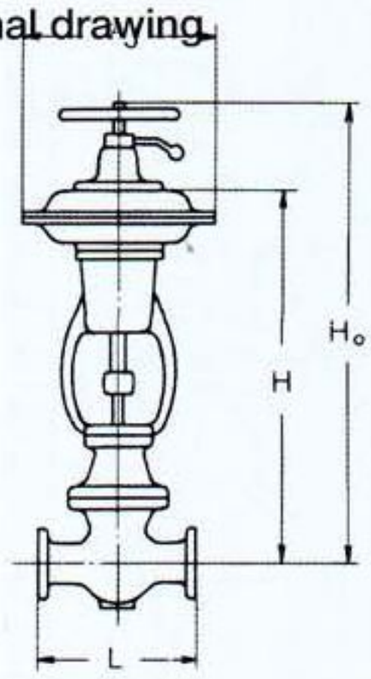
DY-DOO

SPECIFICATIONS

Type of valve body assembly	Double seated globe type valve of casting, with top and bottom guided plug.
Pressuere rating	JIS 5～63K or ANSI 125～1500
Normal bore	25～400A
Service temperature range	−196～550℃ (−321～1022°F)·
Standard materials (JIS)	• Valve body assembly FC200, FCD400, CAC403, CAC406, SCPH2, 11, 21, 32, 61, SCS13, 14
	• Trim See Table 5.4 "Standard trim materials valves".
	• Packing · Gasket (Asbestos Free) PTFE, graphite etc.
Cv valve	See the table below (Km value : 0.75)
Flow characteristics	Equal percentage, Parabolic, and Linear.
Performance	• Rangeability 30 : 1
	• Leakage at full closure Not more than 0.5% of the rated Cv value.
Maximum allowable pressure drop	Diaphragm type or cylinder type actuator can be mounted. Single action diaphragm type is normally used. Maximum allowable pressure drop is shown in the table below.
Dimensions and mass	See the table below

100A (4B)					125A (5B)					150A (6B)					200A (8B)					250A (10B)			300A (12B)			350A (14B)			400A (16B)		
5 10	16 20	30 40	63	(100)	5 10	16 20	30 40	63	(100)	5 10	16 20	30 40	63	(100)	5 10	16 20	30 40	63	(100)	5 10	16 20	30 40	5 10	16 20	30 40	5 10	16 20	—	5 10	16 20	—
125 150	300	600	900	1500	125 150	300	600	900	1500	125 150	300	600	900	1500	125 150	300	600	900	1500	125 150	300	600	125 150	300	600	125 150	300	—	125 150	300	—
10 16	25 40	64 100			10 16	25 40	64 100			10 16	25 40	64 100			10 16	25 40	64 100			10 16	25 40	64 100	10 16	25 40	64 100	10 16	25 40	—	10 16	25 40	—
155		190			250		310			390		470			500		720			950	1200		1200		1600	2200			2800		
125		155			190		250			310		390			310		500			950			1200								
352	368	394	445	550	403	425	457	510	690	451	473	508	565	770	543	568	610	675	870	673	708	752	737	775	819	889	927	—	1016	1057	—
230		252	242	275	290		305		345	334		350	352	400	434		442		402	510		605	588		605	696		—	735		—
968		995	1000	1145	1150			1155	1320	1190			1200	1370	1450		1440	1444	1368	1760		1775	1835		1860	2395		—	2430		—
92		130		156	114		158		155	102		158		150	85		172	175	138	85		182	100		185	116		—	120		—
276				330	330				522	330				522	522					528			528			528		—	528		—
1.8																															
2.0	3.6																														
4.9	6.5																														
2.0	2.2				1.6					1.2																					
4.4					2.0	3.2				2.0	2.5																				
4.9	82.0					4.9	5.9				4.6																				
			2.8		2.0			2.2		1.5			1.8		1.2																
			5.5			4.0		4.4	2.0	3.0			3.6	2.0	2.5																
			9.7		4.9	7.1		7.9		4.9	5.5		6.3		4.6																
								3.8					3.0	2.0	2.2		3.0		1.8			1.5			1.2			1.0		
								7.5					5.9		4.4		5.9	2.0	3.6		2.0	3.0		2.0	2.5			2.0		
								13.6					10.8		4.9	7.9	10.8		4.9	6.5		4.9	5.3		4.8			3.8		
130	190	230	295	445	305	320	384	540	810	370	385	470	685	1030	645	665	840	1100	1650	900	920	1280	1180	1200	1300	1400	1450		1800	1870	

Dimensional drawing



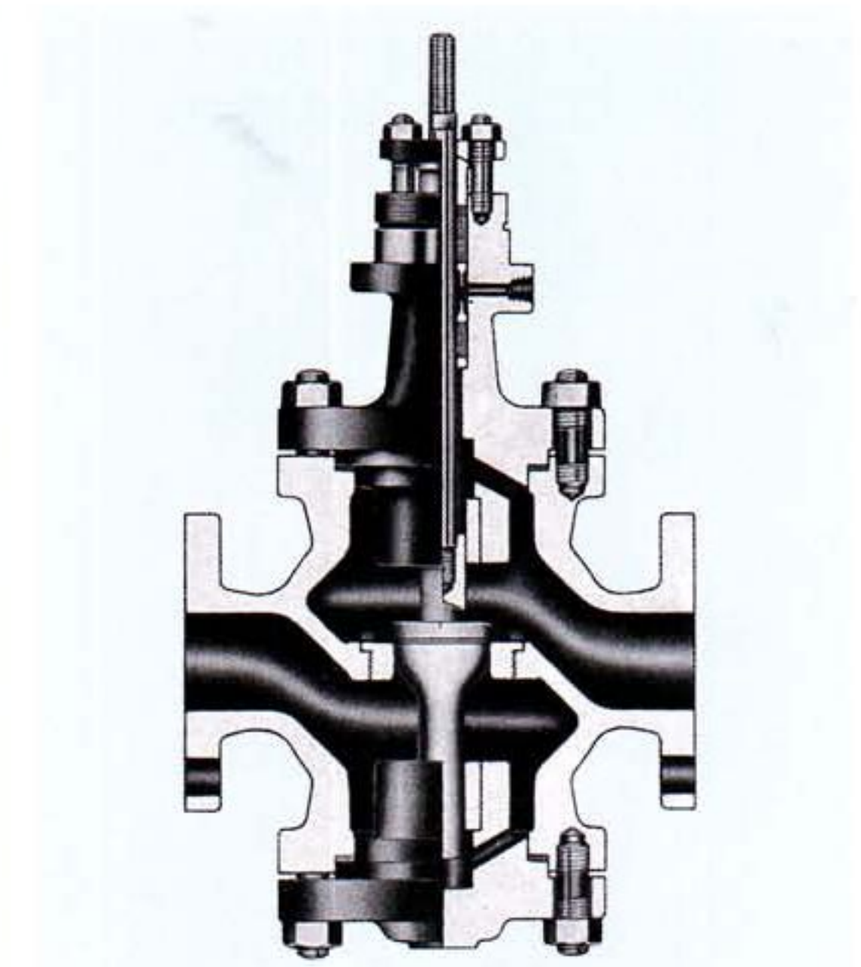
Ho=H+(additional value in table)

÷3 Mass indicated is that of a valve with fin type bonnet, handwheel and positioner (= maximum mass).
* IEC in the column of rating indicates the ratings of valve groups formed in terms of face-to-face dimension.

DY-S SINGLE SEATED CONTROL VAIVE

This control valve is our representative single seated valve with a top and bottom guided plug. This type is offered in a wide range of sizes, from small bore up to large bore, This valve is most suited to an application which requires to reduce the leakage at full closure to the minimum.

Valve plug types are direct one and reverse one. We recommend the use of the direct type for large bore valves for easier maintenance.



DY-S

DY-S single seated control valve

NOMINAL BORE mm (inch)				25A (1B)				32A (1¼B)				40A (1½B)				50A (2B)				65A (2½B)			
RATING	JIS (K)			5 10	16 20	30 40	63	5 10	16 20	30 40	63	5 10	16 20	30 40	63	5 10	16 20	30 40	63	5 10	16 20	30 40	63
	ANSI (Class)			125 150	300	600	900	125 150	300	600	900	125 150	300	600	900	125 150	300	600	900	125 150	300	600	900
	IEC * (PN-bar)			10 16	25 40	64 100		10 16	25 40	64 100		10 16	25 40	64 100		10 16	25 40	64 100		10 16	25 40	64 100	
RATED Cv VALUE	Flow characteristics	Eg % Para Linear		12.5				18		24		26		31		36		48		72		96	
DIMENSIONS (mm)	Face to Face L (※1)			184	197	210	235	200	213	229	275	222	235	251	295	254	267	286	310	276	292	311	365
	Height	G		102		112		110		118		122		126	130	146		176	150	172		195	165
		H (※2)		692		702	704	700		708	710	710		716	722	804		838	815	825		860	830
		Additional value to H	With fin	100		102		98		102		108		102		100		102		96		102	
			With hand-wheel	185				185				185				215				215			
	Actuator J			Refer to following (J)																			
ALLOWABLE PRESSURE DROP (MPa) (in case of single action diaphragm actuator)	Actuator size (J) mm	275	20	0.38				0.24				0.15											
			40	0.75				0.48				0.3											
			60	1.4				0.9				0.53											
		355	20	0.8				0.51				0.32				0.22				0.14			
			40	1.6				1.1				0.63				0.44				0.26			
			60	2.9				1.9				0.13				0.77				0.48			
		410	20													0.26				0.15			
			40													0.51				0.3			
			60													0.94				0.55			
		465	20																				
			40																				
			60																				
		520	20																				
			40																				
			60																				
		645	20																				
			40																				
			60																				
Mass (kg) (※3)				52	56	60	80	52	56	60	80	55	60	72	92	80	84	92	116	82	92	108	144

(※1) As for face-to-face dimension, new face-to-face dimensions according to IEC are given up to PN100. However, for individual orders, please refer to the dimension indicated on the drawing for approval for the time being. When the same face-to-face dimension as that of a valve already delivered is required, please inform us the relevant serial number of the valve.

(※2) H dimension gives the longest dimension of the valve with the standard type bonnet. However, in cases of fin type bonnet or handwheel installation, sdd the respective value shown in the table.

NAKAKITA

SPECIFICATIONS

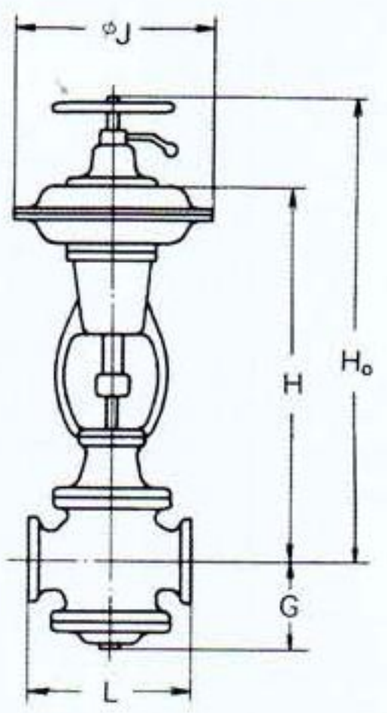
Type of valve body assembly	Single seated globe valve of casting, with top and bottom guided plug
Pressure rating	JIS 5～63k or ANSI 125～900.
Nominal bore	25～300mm(1～12inch)
Service temperature range	−196～550° C（−321～1022° F）
Standard materials (JIS)	・Valve body assembly FC200, FCD400, CAC403,406, SCPH32, SCPH11, SCPH11, SCPH21, SCPH32,61, SCS13, SCS14.
	・Trim gasket See Table 5.4 "Standard trim materials" .
	● Packing・Gasket (Asbestos Free) PTFE, graphite etc.

Cv value	See the table below.（Km value：0.7）
Flow characteristics	Equal percentage, Parabolic, Linear.
Performance	● Rangeability 30：1
	● Leakage at full closure Not more than 0.01% of the rated Cv value.
Maximum allowable pressure drop	Diaphragm type or cvlinder type actuator can be mounted. Single action diaphrsgm type is normally used. Max imum allowable pressure drop is shown in the table below
Dimensions and weight	See the table and the figure below.

	80A (3B)			100A (4B)			125A (5B)			150A (6B)			200A (8B)			250A (10B)		300A (12B)	
5 10	16 20	30 40	63	5 10	16 20	30 40	5 10	16 20	30 40	5 10	16 20	30 40	5 10	16 20	30 40	5 10	16 20	5 10	16 20
125 150	300	600	900	125 150	300	600	125 150	300	600	125 150	300	600	125 150	300	600	125 150	300	125 150	300
10 16	25 40	64 100		10 16	25 40	64 100	10 16	25 40	64 100	10 16	25 40	64 100	10 16	25 40	64 100	10 16	25 40	10 16	25 40
96		125		155	190		250	310		390	470		500	720		950	1200	1200	1600
298	317	337	375	352	368	394	403	425	457	451	473	508	543	568	610	673	708	737	775
135		204	218	240		245	292		310	312		342	378		425	420		500	
850		866	882	982		1000	1150		1155	1170		1182	1400		1425	1670		1750	
98		102		92		130	114		157	102		158	85		172	85		100	
215				276			330			330			522			528		528	
0.1																			
0.2																			
0.34																			
0.12				0.08															
0.24				0.16															
0.4				0.28															
				0.1			0.06			0.04									
				0.2			0.12			0.08									
				0.35			0.22			0.14									
							0.08			0.05			0.03						
							0.15			0.1			0.06						
							0.24			0.16			0.1						
													0.05			0.03		0.02	
													0.1			0.06		0.05	
													0.18			0.12		0.08	
98	108	120	156	142	152	184	240	256	308	290	308	376	510	532	672	715	736	940	960

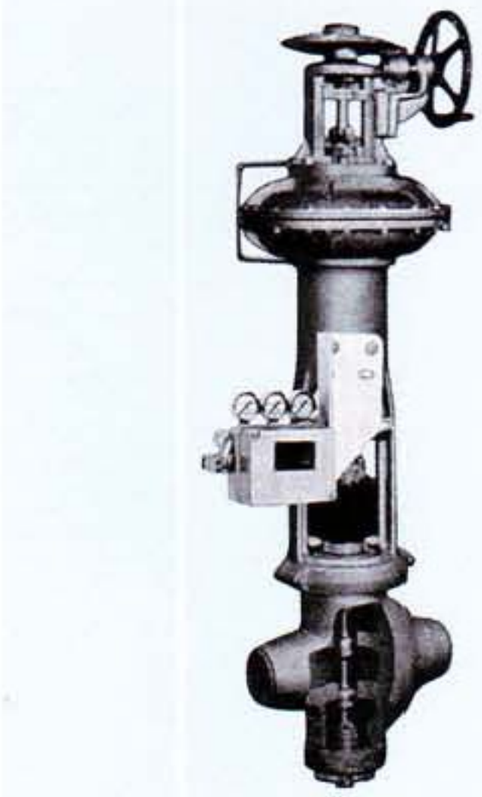
※3 Mass indicated is that of a valve with fin type bonnet, handwheel and positioner (=maximum mass).
＊ IEC in the column of rating indicates the ratings of vakve groups formed in terms of face-to-face dimension.

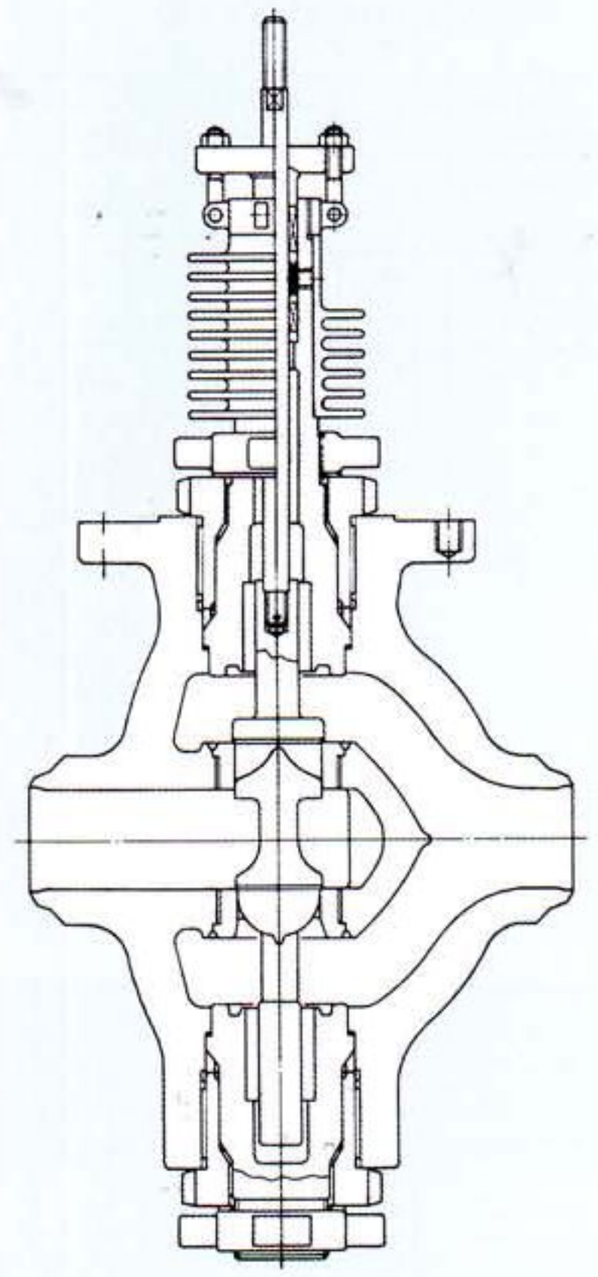
Dimensional drawing



Ho=H+(additional valu in table)

DY-P DOUBLE SEATED CONTROL VALVE FOR HIGH PRESSURE AND HIGH TEMPERATURE USE





DY-P

This control valve is for high pressure, high temperature (ANSI 1500 ~ 2500) and large capacity applications. The sealing of the joint between the body and the bonnet is the so-called self pressure seal type which tightly seals the joint with a metallic seal ring using the fluid pressure. this allows a compact size inspite of its large pressure and large capacity application.

When high pressure steam is decompressed, excessive fluid velocity at the delivery side will generate noise. To avoid this nois generation, the delivery side bore is made to be the same size or twice of the inlet side bore.

DY-P double seated control valve for high pressure and high temperature use

NOMINAL BORE mm (inch)					50A (2B)		65A (2½B)		80A (3B)		100A (4B)		125A (5B)		150A (6B)		200A (8B)	
RATED	ANSI (Class)				1500 2500													
	IEC (PN-bar)				—													
RATED Cv VALUE	Floe Charac-teristics	Para Eg %			24	14	31	20	36	26	96	56	125	72	155	96	310	190
DIMENNSIONS (mm)	Fsce to face L				425		425		425		450		600		650		74	
	Height	G			280		305		315		380		430		470		520	
		H			1190		1210		1325		1460		1515		1555		1610	
		With handwheel: additionalvalve to H			330						522							
		Actuator J			Refer to follwoing													
ALLOWABLE PRESSURE DROP (MPa) (in case of single action diaphragm actuator)	Actuator size (J) mm	465	Off Balance (kPa)	20	4.8		4.4		3.6	4.4								
				40	9.5		8.7		7.1	8.7								
				60	17.2		15.3		12.8	15.3								
		520		20	5.5		4.9		4.2	4.9	3.4	3.8	2.6	2.8	2.4	2.6	1.6	2.0
				40	11.0		9.8		8.3	9.8	6.7	7.5	5.3	5.5	4.8	5.3	3.2	4.0
				60	20.1		18.2		15.1	18.2	12.0	13.8	9.7	10.3	8.9	9.7	5.9	7.1
		645		20							5.7	6.5	4.6	4.8	4.2	4.6	2.8	3.4
				40							11.4	13.0	9.1	9.5	8.3	9.1	5.5	6.7
				60							20.6	23.6	16.7	17.7	15.2	16.7	10.2	12.3
Mass (kg) (※1)					290		370		425		590		915		1070		1700	

(※1) Msss indicated is that of the valve with fin type bonnet, handwheel and positioner (=maximum mass).

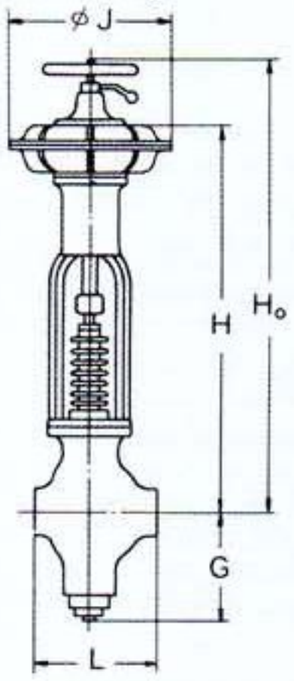
NAKAKITA

DY-DF DY-PF DY-SF CONTROL VALVE WITH FLASHING GUARDS

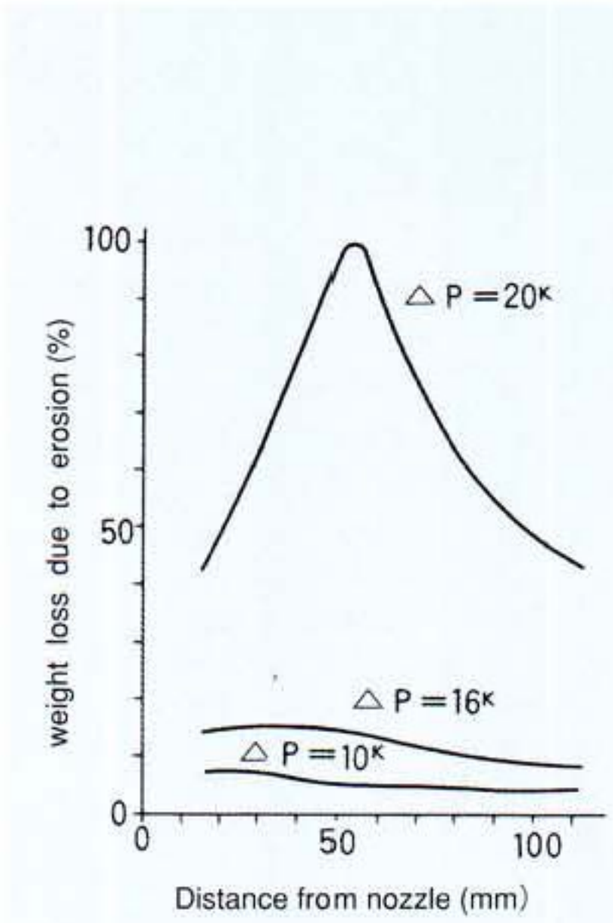
SPECIFICATIONS

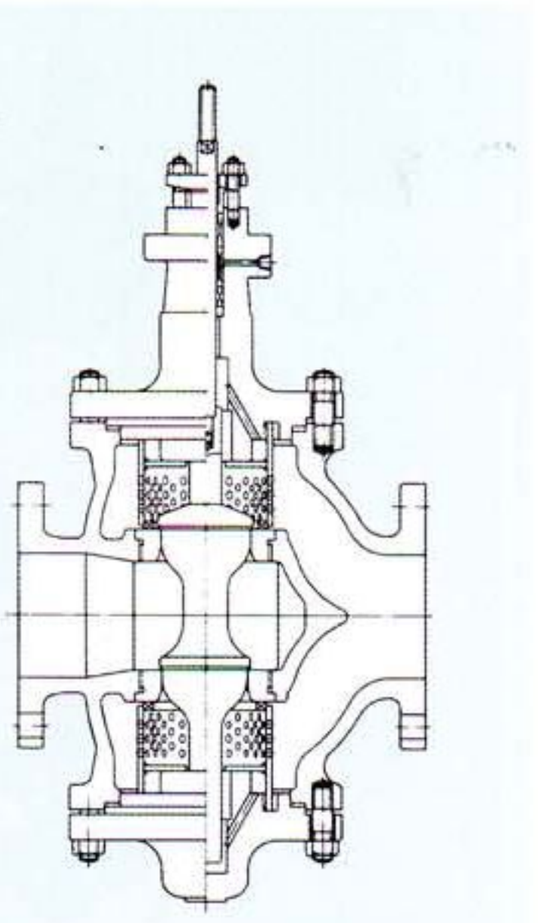
Type of valve body	For hige temperature and high pressure use. Double seated giobe valve of casting, with top and bottom guided plug
Pressure rating	ANSI 1500 and 2000
Nominal bore	50 ~ 200A (2~8inch)
Service temperature range	Not exceding 700° C.(1292° F)
Standard materials JIS	• Valve body assembly SCPH2, SCPH11, SCPH21, SCPH32, SCPH61, SCS13, SCS14. • Trim see table 5.4 "Standard Trim materials" • Paking gasket (Asbestos Free) PTFE grphite etc.
Cv value	• See the table in the left. (Km valve: 0.75)
Flow characteristics	Equal percntage and parabolic
Performance	• Rangeability 30 : 1 • Leakage at full closure Not more than 0.5% of the rated Cv value.
Maximum allowable pressure	Disphragm type or cylinder type actuator n be mounted. Single action diaphragm type is normally used. Maximum allowable pressure drop is shown in the table ontheleft
Dimensions and Mass	See the table on the left and the figure below.

Dimensional drawing



Ho=H+(additional valve in table)





DY-DF

This contorol valve is the standard DY-D, DY-P or DY-S control valve equipped with flashing guards inside the valve body. The flashing guard is used to prevent erosion of the inner wall of the body due to flashing fluid.

High temperature drain such as that of a drain valve of feedwater heater flows in and flashes out of the throttle at an extremely high velocity. Water droplets in the steam collide on the inner wall of the body and accelerate erosion of that portion. According to our erosion tests, the relationship of loss in weight due to erosion, distance between the throttle and the inner wall of the body, and pressure drop at the throttle is as shown in the figure above.

The flashing guard to be fitted in the body is a cylinder with many holes. The guards are fixed to the bonnet and the cover.

The jet of the flashing fluid coming out of the throttle is dispursed in these guards, and the energy of the jet is locally disipated by the friction due to small holes. As the fluid slowly flows out of the small holes in the circumference of the guard, the direct effect of high energy of the jet out of the throttle is minimized, and the inner wall of the body is thus protected from erosion.

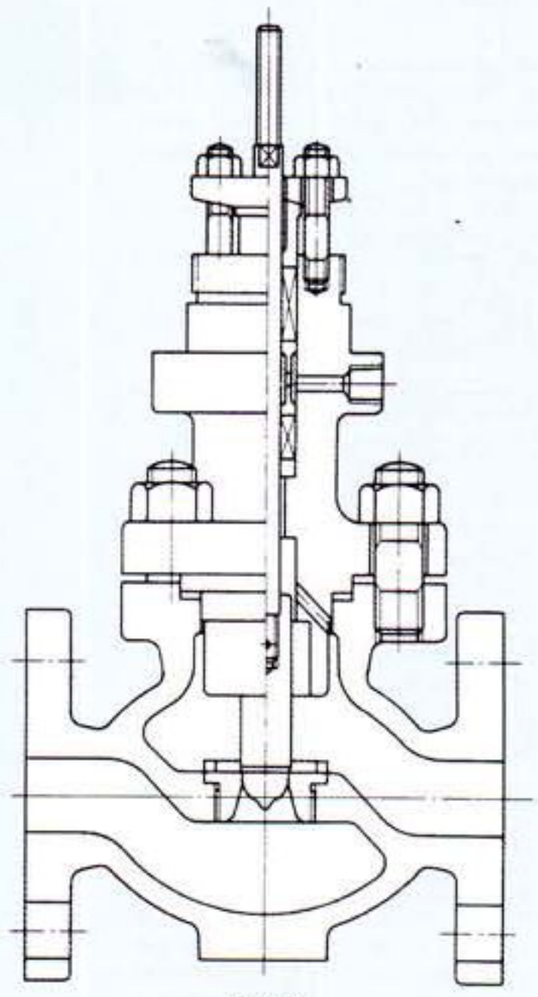
SPECIFICATIONS

For the detailed specifications, see those of DY-D, DY-S, and DY-P control valves. (Page 29, 31, and 33) Cv values are as shown in the following table.

Cv value of control valve with flashing guards

Nominal bore mm / (inch)	50A (2B)		65A (2½B)		80A (3B)		100A (4B)		125A (5B)		150A (6B)		200A (8B)	
Cv value	36	26	72	56	96	72	155	125	250	190	390	310	500	310

DY-G SINGLE SEATED CONTROL VALVE



DY-G

DY-G control valve is a small size single seated valve with top guided plug. In combination with a variety of reduced valve plugs and actuators, it can meet a wide range of services such as large pressure drop and very small flow rate.

SPECIFICATIONS

Type of valve body assembly	Single seated globe valve of casting, with top guided plug.
Pressure rating	JIS 5 ~ 63K or ANSI 125 ~ 1500
Nominal bore	20^A and 25^A
Service temperature range	−196~550℃(−321~1022°F)
Standard materials (JIS)	• Valve body assembly FC200、FCD400、CAC403、CAC406、SCPH2、11、21、32、61、SCS13、14
	• Trim See Table 5.4 "Standard trim materials".
	• Packing・Gasket Asbestors free PTFE, graphite, etc.

Cv value	See the table on the right page. (It is possible to produce down to the minimum Cv value of 0.07.) (Km value：0.8)
Flow characteristics	Equal percentage, parabolic, and linear.
Performance	• Rangeability 20：1 ~30：1
	• Leakage at full closure Not more than 0.01% of the rated Cv value.
Maximum allowable pressure drop	Diaphragm type or cylinder type actuator can be mounted. Single action diaphragm type is normally used. Maximum allowable pressure drop is shown in the table (page 36).
Dimensions and Mass	See the table and the dimensional drawing on the right page.

DY-G single seated control valve

NOMINAL BORE mm (inch)				20A (3/4B)					25A (1B)				
RATING	JIS (K)			5, 10	16,20	30,40	63	(100)	5, 10	16,20	30,40	63	(100)
	ANSI (Class)			125, 150	300	600	900	1500	125, 150	300	600	900	1500
	IEC * (PN-bar)			10, 16	25,40	64,100			10, 16	25,40	64,100		
RATED Cv VALUE	Flow Characteristics	Eq %											(※1)
		Para											
		Linear		0.23	0.44	0.8	1.1	1.7	2.3	3.2	4.2	5.4	7.2	9.5	11
DIMENSIONS (mm)	Face to Face L (※2)			187	194	206	256	274	184	197	210	235	274
	Height	H (※3)		678		708	810	915	678		708	810	915
		Additional value to H	With fin	105		100	115	125	105		100	115	125
			With hand wheel	185		185	215	276	185		185	215	276
	Actuator J			Refer to following (J)									
ALLOWABLE PRESSURE DROP (in case of single action diaphragm actuator)	Actuator size (J) mm	275	20	8.4		4.8	3.8	1.8	1.5	1.2	0.9	0.7	0.6
			40	16.7		9.5	5.9	3.5	3.0	2.4	1.8	1.5	1.2
			60	25.0		16.7	10.8	6.4	5.5	4.4	3.4	2.8	2.4
		355	20	16.7		9.7	6.1	3.8	3.2	2.4	2.0	1.6	1.4
			40	25.0		19.2	12.3	7.5	6.3	4.8	4.0	3.2	2.6
			60			25.0	22.6	13.3	11.6	8.9	6.9	5.7	4.8
		410	20	20.6		11.3	7.4	4.4	3.8	3.0	2.4	2.0	1.6
			40	25.0		23.1	14.7	8.7	7.5	5.9	4.6	3.8	3.2
			60			25.0		15.7	13.8	10.8	8.4	6.9	5.7
		465	20	25.0		14.6	9.4	5.5	4.8	3.8	3.0	2.4	2.0
			40	25.0			18.7	11.0	9.7	7.3	5.9	4.7	4.0
			60				25.0	20.2	17.5	13.4	10.6	8.7	7.1
Mass (kg) (※4)				38	40	55	70	90	42	45	60	75	100

※1 In this type, a valve of 25A bore can adopt the rated Cv of a valve of 20A bore as reduced valve plug.

※2 As for face-to-face dimension, new face-to-face dimensions according to IEC are given up to PN100. However, for individual orders, please refer to the dimension indicated on the drawing for approval for the time being. When the same face-to-face dimension as that of a valve already delivered is required, please inform us the relevant serial number of the valve.

※3 H dimension gives the longest dimension of the valve with the standard type bonnet. However, in cases of fin type bonnet or handwheel installation, add the relevant value shown above.

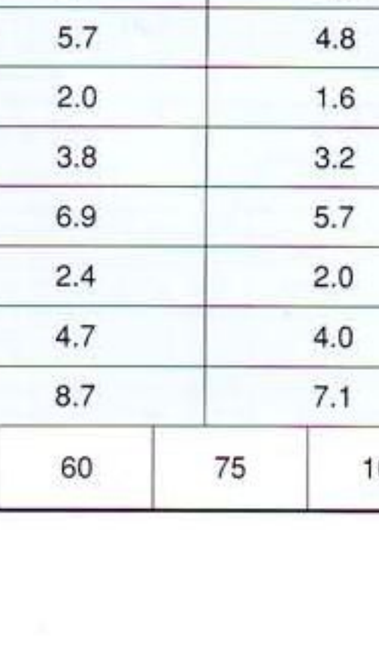
※4 Mass indicated is that of a valve with fin type bonnet, handwheel and positioner (=maximum mass).

* IEC in the column of rating indicates the ratings of valve groups formed in terms of face-to-face dimension.

Remarks]

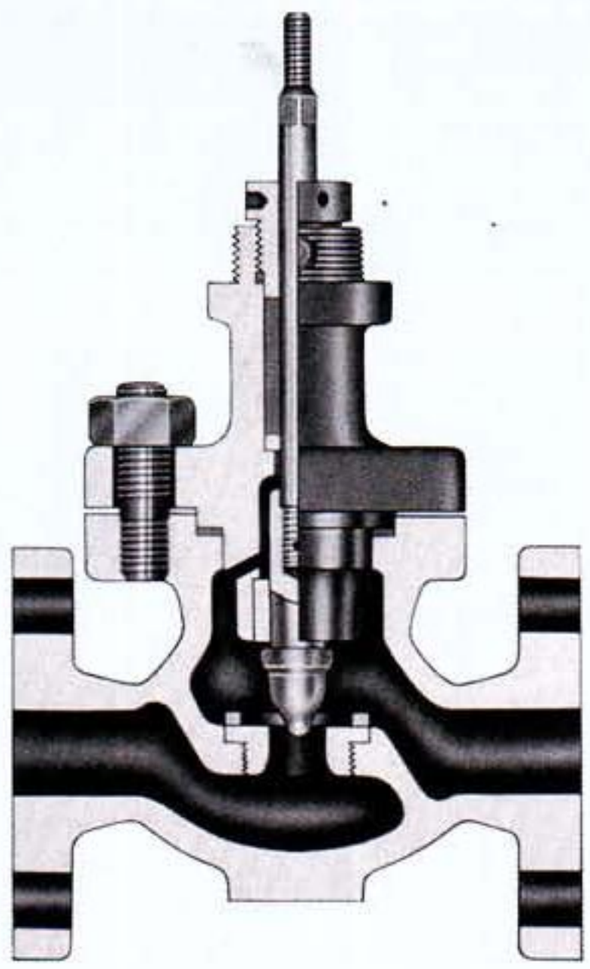
1. In the table above, the dimensions correspond to the ratings of the rating column.
2. In the table above, the allowable pressure drop values correspond to Cv values of the rated Cv value column.(For example, when Cv =3.2, if the actuator size is (J) 275 and the off balance pressure is 40 kPa, the maximum allowable pressure drop is 3.5 MPa.

Dimensional drawing



Ho=H+ (additional in table)

DY-GOZ SINGLE SEATED CONTROL VALVE



DY-GOZ control valve is a sister type of DY-G control valve (page 35). It is a simple small-size single seated valve using a smallsize diaphragm type actuator. This type is popular for applications of JIS 5～20K ratings.

SPECIFICATIONS

Type of valve body assembly (JIS)	Single seated globe valve of casting,with top guided plug.
Pressure rating	JIS 5～20K or ANSI 125～300.
Normal bore	20 and 25 mm (3/4, 1inch)
Service temperature range	0～200℃ (32～392°F)
Standard materials (JIS)	• Valve body assembly FC200, FCD400, CAC403, CAC406, SCPH2, 11, 21, 32, 61, SCS13, 14
	• Trim See Table 5.4 " Standard trim materials".
	• Packing・Gasket (Asbestors Free) PTFE, graphite, etc.

Cv Value	See the table below. (Km value：0.8)
Flow characteristics	Equal percentage, parabolic and linear.
Performance	• Rangeability 20：1～30：1
	• Leakage at full closure Not more than 0.01% of the rated Cv value.
Maximum allowable pressure drop	See the table below.
Dimensions and mass	See the table and the drawing below. Lubricator or positioner can not be fitted on this control valve.

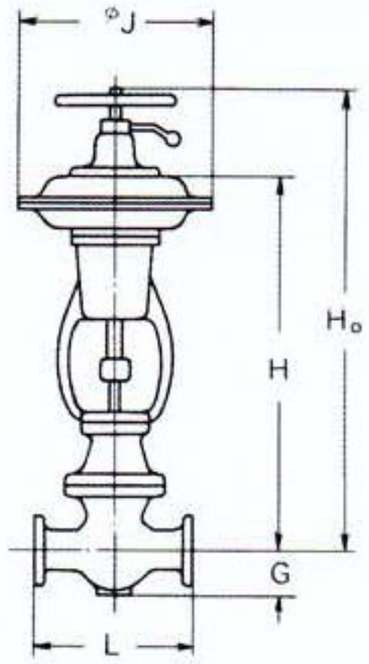
Cv value/Maximum allowable pressure drop

Nominal bore mm (inch)	20A (3/4B)						25A (1B)
Rated Cv value	0.23	0.44	0.8	1.7	3.2	5.4	9.5
Max. allowable pressure drop (Mpa)	5			2.5	1.5	1.0	0.64

Rating/Dimensions

Norminal bore mm (inch)			20A (3/4B)		25A (1B)	
Rating	JIS (K)		5, 10	16, 20	5, 10	16, 20
	ANSI (Class)		125, 150	300	125, 150	300
	IEC＊(PN-bar)		10, 16	25, 40	10, 16	25, 40
Dimensions (mm)	L (※2)		187	194	184	197
	Height	H	400			
		With handwheel: additional value	135			
	Actuator J		200			
Mass (kg)			17 (20 with handwheel)			

Dimensional drawing

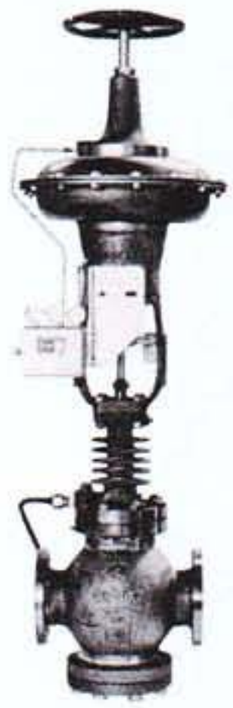


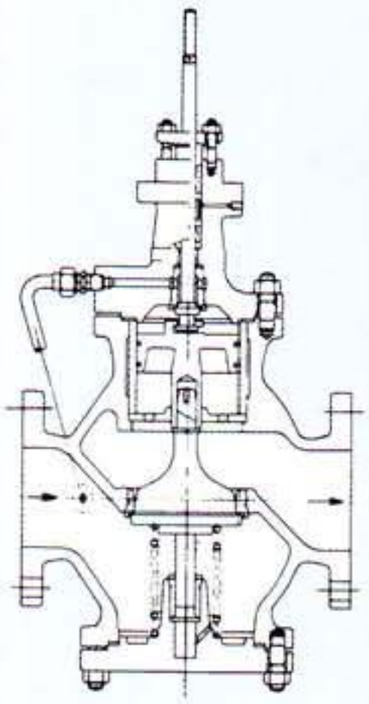
Ho=H+(additional value in table)

See page 36.

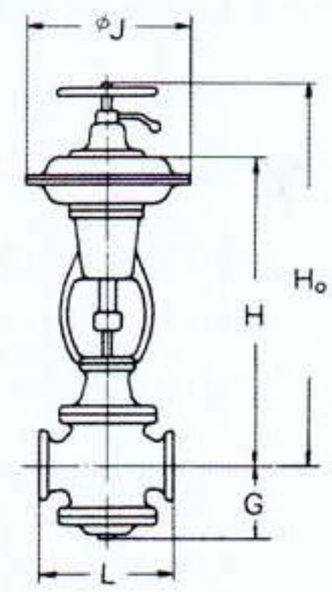
NAKAKITA

DY-U BALANCE PISTON TYPE CONTROL VALVE





DY-U



Ho=H+(additional value in table)

This control valve is a single seated valve with a top and bottom guided plug. As the valve is equipped with a piston type balancing mechanism, it has the merit of the single seated valve (low leakage) as well as the property of the double seated valve (small thrusting force on the valve stem). The valveis more suitable to control of fluid of large pressure drop than DY-S single seated valve.

SPECIFICATIONS

	Balance piston type single seated globe valve of casting, with top and bottom guided plug.
Pressure rating	JIS 5～20K or ANSI 125～300.
Nominal bore	40～300mm($1\frac{1}{2}$～12inch)
	−196～550℃ (−321～1022°F)
Standard materials (JIS)	• Valve body assembly FC200、FCD400、CAC403、CAC406、SCPH2、11、21、32、61、SCS13、14
	• Trim SUS403・304・316、or SUS304・316 with stellite building.SCS13・14 or SUS13・14with stellite building.
	• Packing・Gasket (Asbestos Free) PTFE, graphite, etc.

Cv value	See the table belpw. (Km value：0.7)
Flow characteristics	Equal percentage, parabolic, and linear.
Performance	• Rangeability 20：1
	• Leakage at full closure Not more than 0.01% of the rated Cv value.
Maximum allowable pressure drop	Diaphragm type or cylinder type actuator can be mounted. Single action diaphragm type is nomally used. Maximum allowable pressure drop is within 6 times of that of DY-S single seated valve.

DY-U balance piston type control valve

NOMINAL BORE mm (inch)			40A (1½B)		50A (2B)		65A (2½B)		80A (3B)		100A (4B)		125A (5B)		150A (6B)		200A (8B)		250A (10B)		300A (12B)	
RATING	JIS (K)		5 10	16 20	5 10	16 20	5 10	16 20	5 10	16 20	5 10	16 20	5 10	16 20	5 10	16 20	5 10	16 20	5 10	—	5 10	—
	ANSI (Class)		125 150	300	125 150	300	125 150	300	125 150	300	125 150	300	125 150	300	125 150	300	125 150	300	125 150	—	125 150	—
	IEC * (PN-bar)		10 16	25 40	10 16	25 40	10 16	25 40	10 16	25 40	10 16	25 40	10 16	25 40	10 16	25 40	10 16	25 40	10 16	—	10 16	—
RATED Cv VALUE	Flow character-istics	Eq % Para Linear	26		40		72		110		170		250		390		650		950		1400	
DIMENSIONS (mm)	Face to Face L (※1)		222	235	254	267	276	292	298	317	352	368	403	425	451	473	543	568	673	—	737	—
	Height G		155		160		180		190		220		240		280		340		455		465	
	Height H (※2)		764		842		868		890		1000		1156		1192		1420		1758		1820	
	Height Additional value to H	With fin	100										120				130		146		138	
		With hand-wheel	185		215						276		330				522		528			
	Actuator J		275	355	355	410					410	465	465	520			520	645	645			
ALLOWABLE PRESSURE DROP (MPa) (in case of single action diaphragm actuator)			Within 6 times of that of DY-S single seated valve.																			
Mass (kg) (※3)			62	66	90	95	100	105	115	120	160	165	265	275	310	330	560	580	780	800	1050	1100

※1 As for face-to-face dimension, new face-to-face dimensions according to IEC are given. For individual orders, however, please refer to the dimension indicated in the drawing for approval. When the same face-to-face dimension as that of a valve already delivered is required, please inform us the relevant serial number of the valve.

※2 H dimension gives the longest dimension of the valve with the standard type bonnet. In cases of fin type bonnet or handwheel installation, add the respective value shown above.

※3 Mass indicated is that of the valve with fin type bonnet, handwheel and positioner (=maximum mass).

* IEC in the column of rating indicates the ratings of valve groups formed in terms of face-to-face dimension.

NAKAKITA CONTROL VALVES 1

FEATURES

NAKAKITA'S CONTROL VALVES ARE WIDELY ADOPTED IN MANY PLANTS ALL OVER THE WORLD !

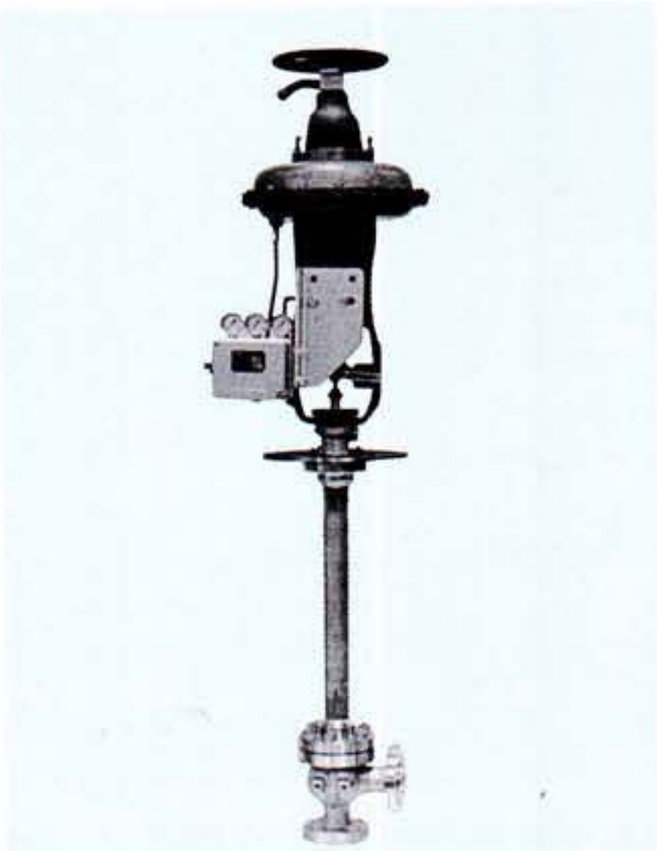
DY SERIES CONTROL VALVES { CAGE TYPE CONTROL VALVES / GENERAL PURPOSE TYPE CONTROL VALVES / BUTTERFLY TYPE CONTROL VALVES

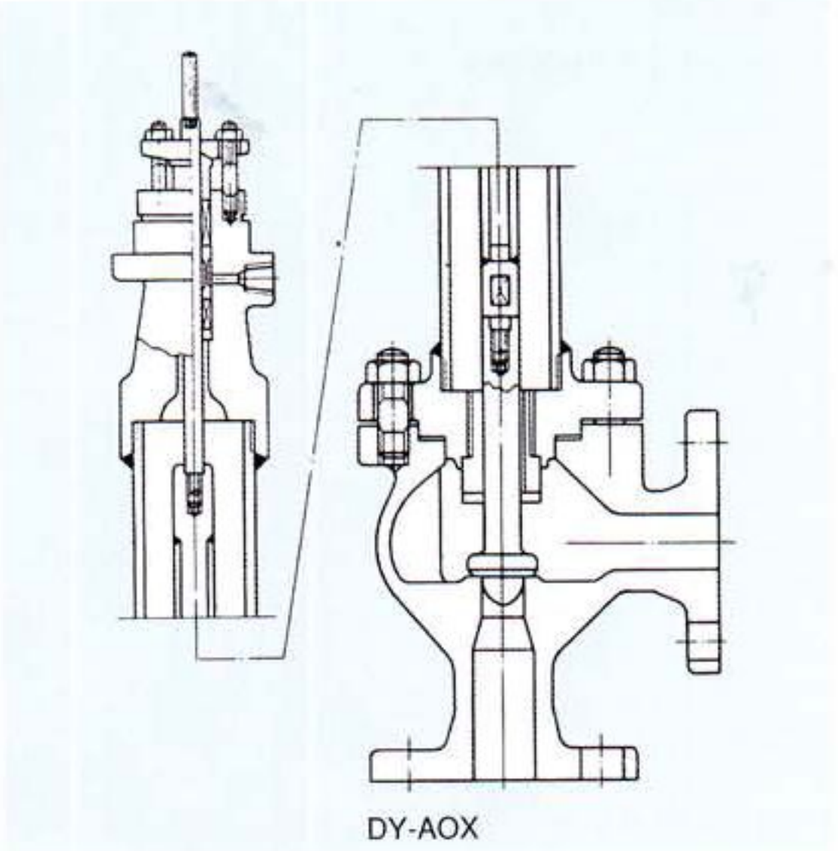
FEATURES

1	RICH SELECTIONS	• [NAKITA control valves] have been adopted as optimum products of high quality for services ranging from high temperature & high pressure to cryogenic temperature & vacuum in all types of industrial facilities such as nuclear power, thermal power, iron and steel making, chemical plants, and ships.
2	HIGH RELIABILITY	• [NAKITA control valves] are designed with high level technical standards. The production of valves in series has been established on the basis of high reliability of individual valves which has been confirmed by verification tests conducted by our highly competent technical staff using the latest facilities.
3	STABLE QUALITY	• Every production process is thoroughly contorolled by competent NAKAKITA-men well trained for quality control.They are assisted by fully rationaliezed facilities including NC machines and by carefully maintained measuring instruments. From general purpose valves to special ones, NAKAKITA assures stable and reliable quality. (ISO9001)
4	ECONOMICAL MECHANISM	• [NAKITA's technical capability] nurtured by numerous past performances and persistent research and development efforts is utilized in every detail of individual products and systems. The economical mechanisms thus created contribute much to saving energy and lowering costs.
5	EASY MAINTENANCE	• Every type is designed with due consideration given to maintenace. [NAKAKITA cage type] pursuing further ease in maintenance is now in production in series. • Our nationwide network of after-sale service promises quick and satisfactory services after delivery, including supply of parts and field service. [After-delivery management] of our products is exercised by each serial number.
6	COMPREHENSIVE ENGINEERING	• Since NAKAKITA executes integrated production, from design to manufacture, of valves and their accessories for automatic control systems, including control valves, as tha core, and various pneumatic indicating controllers, we provide you with the optimum planning for automation of various systems.
7	CERTIFICATION OF PUBLIC AGENCIES	• We are certified to produce high pressure gas valves for services of 500K and under, and of ranges from high temperature down to ultra-low temperature, by the Minister of International Trade and Industry in accrdance with the High Pressure Gas Control Act. We have many actual results in various high pressure gas facilities including LNG facilities. • Our prorudcts have passed the environmental tests for unmanned machinery space system given by each classification society, and have lived up to the customers' expectation on the seas.
8	ADVANCES INTO NEW TECHNICAL FIELDS	• With our reliable engineering capability based on numerous past performances and competent engineers, we are actively challenging to meet the new and severe needs including nuclear power generation, gas turbine generator low temperature plant, coal & oil mixture fuel, and saline water conversion plant. We are fully prepared to meet the customers' requirements.

DY-C□□□X
DY-DOX
DY-GOX
DY-SOX
DY-AOX

CONTROL VALVE FOR LOW TEMPERATURE USE





DY-AOX

The demands for control valves for so-called low temperature range services like handling LNG (liquiefied natural gas), oxygen, nitrogen or helium are now increasing. And their service requirements are becoming severer.
The valves indicated here are control valves each of which consists of a standard valve body assembly and an extension type bonnet. Many types are provided to control fluids of low and very low temperature ranges and to meet the diversifying low temperature specifications.

- The length of the extension type bonnet is determined according to temperature as shown in the table on the right page.
- As to the gland packing, complete sealing is assured by our special combination developed and demonstrated by many low temperature experiments.

DY-AOX control valve for low temperature use

NOMINAL BORE mm (inch)					15A (1/2B)				20A (3/4B)		25A (1B)		32A (1 1/4B)		40A (1 1/2B)		50A (2B)		65A (2 1/2B)		80A (3B)	
RATED Cv VALUE					1.1	1.7	2.3	3.2	4.2	5.4	7.2	9.5	18	24	26	31	36	48	72	96	96	125
DIM ENSIONS (mm)	Face to Face L1 × L2				100×110								120×110		120×130				140×140		170×170	
	Height	H (※1)			1590												1670					
		Additional value; with handwheel			185												215					
	Actuator J				Refer to following (J)																	
ALLOWABLE PRESSURE DROP (MPa) (in case of single action diaphragm actuator)	Actuator size (J) mm	275	Off Balance (kPa)	20	2.0	1.5	1.0		0.9	0.74	0.61	0.51	0.26	0.24	0.2	0.15						
				40	2.0				1.8	1.5	1.23	1.02	0.51	0.46	0.4	0.3						
				60					2.0		2.0	1.9	0.94	0.84	0.75	0.55						
		355		20					1.9	1.6	1.3	1.1	0.53	0.48	0.42	0.32	0.24	0.2	0.15	0.13	0.13	0.09
				40					2.0		2.0		1.06	0.95	0.83	0.63	0.48	0.4	0.3	0.26	0.26	0.18
				60									2.0	1.8	1.6	1.2	0.87	0.75	0.55	0.47	0.47	0.32
		410		20													0.29	0.25	0.18	0.15	0.15	0.1
				40													0.57	0.5	0.36	0.3	0.3	0.2
				60													1.04	0.9	0.64	0.55	0.55	0.38
		465		20																		
				40																		
				60																		
		520		20																		
				40																		
				60																		
		645		20																		
				40																		
				60																		
Mass (kg) (※2)					60				62		65		68		75		95		115		140	

(※1) H dimension gives the longest dimension of the valve with bonnet of 1000 mm in length. In case of the valve with a handwheel, add the respective value shown in the table.
(※2) Mass indicated is that of the valve with a handwheel and a positioner (=maximum mass).

NAKAKITA

SPECIFICATIONS

In the following specifications, those marked ☆ describe DY-AOX. For other types, see the pages of the relevant type.

Type of valve body assembly

Type of valve body	Description
DY-C□□□X	DY-C valve（pagw 19 to 24）combined with an extension type bonnet.
DY-AOX	DY-A valve（single seated angle valve of casting, with top guided plug) combined with an extension type bonnet.
DY-DOX	DY-D valve（page 29) combined with an extension type bonnet.
DY-GOX	DY-G valve（page 35) combined with an extension type bonnet.
DY-SOX	DY-S valve（page31）combined with an extension type bonnet.

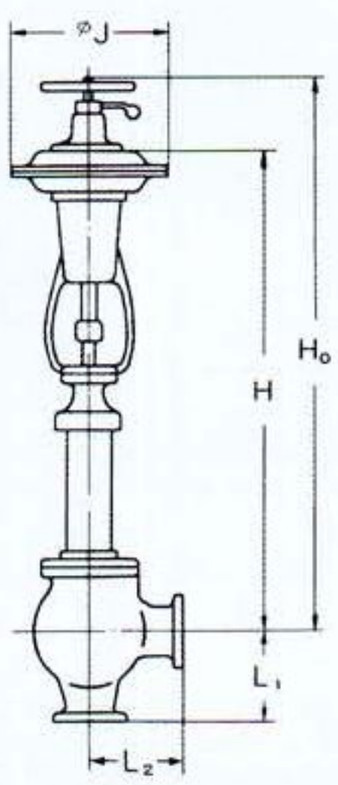
Pressure rating	JIS 5～40K, or ANSI 125～900.
Nominal bore	15～300A
Standard materials (JIS)	• Valve body assembly CAC403、CAC406、SCPL1・11・21・31、SCS13・14
	• Trim （SUS304・316、or SUS304・316 SCS13・14、or SCS13・14
	• Packing・Gasket (Asbestos Free) PTFE, graphite, etc.
☆ Cv value	See the DY-AOX table below.（Km value：0.7）
Flow characteristics	Equal percentage, parabolic, and linear.
☆ Performance	• Rangeability 30：1
	• Leakage at full closure Not more than 0.01% of the rated Cv value.
☆ Maximum allowable pressure drop	Diaphragm type or cylinder type actuator can be mounted. Single action diaphragm type is normally used. Maximum allowable pressure drop is shown in the table below.
☆ Dimensions and mass	See the table and the drawing below.

100A (4B)		125A (5B)		150A (6B)		200A (8B)		250A (10B)		300A (12B)	
155	190	250	310	390	470	500	720	950	1200	1200	1600
180×180				200×200		250×250		280×280		320×320	
1750		1850				2010		2230			
276		330				522		528			
0.08	0.08										
0.16	0.15										
0.3	0.28										
0.1	0.09	0.07	0.06	0.05							
0.2	0.18	0.14	0.12	0.09							
0.38	0.35	0.26	0.22	0.16							
		0.08	0.07	0.05		0.04	0.03				
		0.17	0.14	0.1		0.07	0.06				
		0.31	0.26	0.2		0.12					
						0.06	0.05	0.04	0.04	0.03	0.03
						0.11	0.1	0.08	0.07	0.06	0.05
						0.2	0.19	0.15	0.14	0.1	0.09
190		335		425		640		730		850	

Length of extension type bonnet

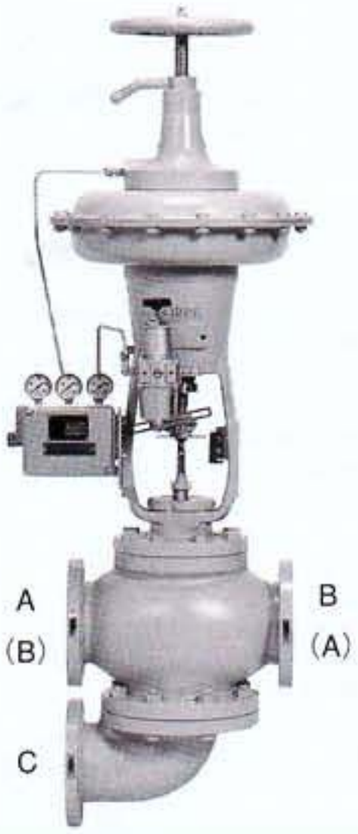
Temperature range (℃)	Lenght (mm)
−100 and over, and less than −20.	150 and over.
−196and over, and less than −100.	350 and over.

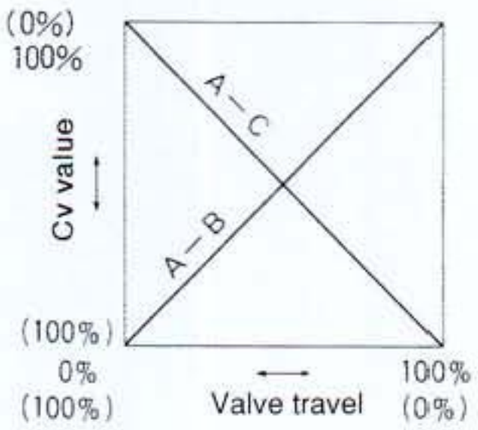
Dimensional drawing



Ho=H+(additional value in table)

DY-T 3-WAY CONTROL VALVE



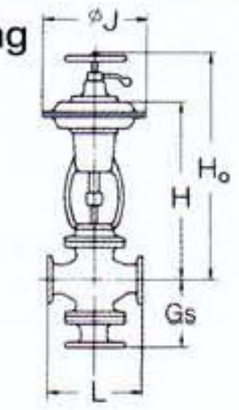


This control valve is mainly used for temperature control of cooling water fed to large-size diesel engine or speed reducer, or of lubricating oil system.
Depending on the direction of the flow of the fluid, the valve can be used for mixing (from two ways to one way) as well as stream splitting (from one way to two ways). However, the valve is normally used for blending which gives better controllability.
The bottom side connection is available in two types, bend type and straight type, to suit the application.

SPECIFICATIONS

Type of valve body assembly	Single seated 3-way valve of casting, with top and bottom guided plug.
Pressure rating	JIS 5K and 10K, or ANSI 125 and 150.
Nominal bore	25～350mm (1～14 inch)
Service temperatue range	0～220℃ (32～428 F)
Standard materials (JIS)	• Valve body assembly FC200、CAC403、SCPH2、SCS13・14 • Trim SUS304・316 or SCS13・14 • Packing・Gasket (Asbestos Free) PTFE, graphite, etc.
Cv value	See the table below. (Km value: 0.72)
Floe characterstic	Linear
Performance	• Rangeability 30 : 1 • Leakage at full cloaure Not more than 0.1% of the rated Cv value
Maximum allowabe Pressure drop	Diaphragm type or cylinder type actuator can be mounted. Single action disphragm type is normally used. Maximum allowable pressure drop is shown in the table below.
Dimensions and mass	See the table and the figure

Dimensional drawing



Ho=H+(additional value in table)

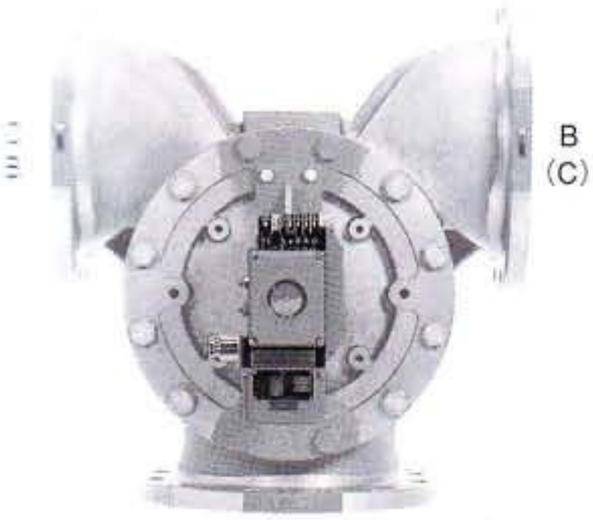
DY-T 3-Way Control Valve

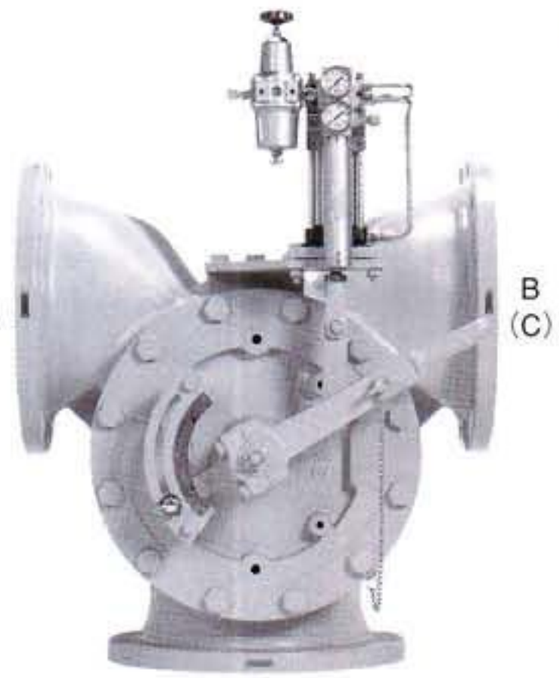
NOMINAL BORE mm (inch)				25A (1B)		40A (1½B)		50A (2B)		65A (2½B)		80A (3B)		100A (4B)		125A (5B)		150A (6B)		200A (8B)		250A (10B)		300A (12B)		350A (14B)	
RATING	JIS (K)			5	10	5	10	5	10	5	10	5	10	5	10	5	10	5	10	5	10	5	10	5	10	5	10
	ANSI (Class)			125	150	125	150	125	150	125	150	125	150	125	150	125	150	125	150	125	150	125	150	125	150	125	150
	IEC * (PN-bar)			10	16	10	16	10	16	10	16	10	16	10	16	10	16	10	16	10	16	10	16	10	16	10	16
RATED Cv VALUE	Flow characteristic	Linear		9.5		33		48		86		115		180		270		400		630		950		1400		1900	
DIMENSIONS (mm)	L	JIS (FC20)		162	170	260	268	260	268	300	308	316	324	350	358	420	428	480	488	570	574	740	748	860	868	900	908
		ANSI (FC20)		158		258					310	318	328	358		428		488		580		750	868		910	
	Gb Bend type			150		221		221		181		196		219 (※3 (250))		275		321		370		459		520		581	
	Gs Straight type					210		215		225		240		265		300		340		375		430		480		530	
	H (※1)			678		682		750		745		752		755		842		985		1158		1395		1440		1492	
	Additional value	With handwheel		185				215								276		330		522		528					
	Actuator J			Refer to following (J)																							
ALLOWABLE PRESSURE DROP (MPa) (in case of single action diaphragm actuator)	Actuator size (J)	Off Balance (kPa)	20	0.57	0.21																						
	275		40	1.14	0.42																						
			60	1.71	0.62																						
	355		20	1.2	0.44	0.24		0.16		0.12		0.08															
			40	2.4	0.87	0.48		0.32		0.24		0.16															
			60	3.6	1.1	0.71		0.48		0.36		0.24															
	410		20			0.32		0.19		0.15		0.1		0.07													
			40			0.63		0.38		0.3		0.2		0.14													
			60			0.95		0.56		0.45		0.3		0.21													
	465		20											0.08		0.06											
			40											0.16		0.12											
			60											0.24		0.18											
	520		20													0.07		0.05									
			40													0.14		0.1									
			60													0.21		0.15									
	645		20															0.09		0.05		0.04		0.03			
			40															0.18		0.1		0.08		0.06			
			60															0.27		0.15		0.11		0.08			
Mass (kg) (※2)				60		110		135		145		155		215		275		340		530		805		880		980	

(※1) H dimension gives the longest dimension of the valve with the standard bonnet type. For the valve with a handwheel, add the value shown above.
(※2) Mass indicated is that of the valve with handwheel and positioner (=maximum mass).
(※3) Gb dimension in the table indicates those of ANSI flanged valves.
* IEC in the column of rating indicates the ratings of valve groups formed in terms of face-to-face dimensions.

DY-M 3-WAY MIXING CONTROL VALVE WITH ROTARY PLUG

NAKAKITA

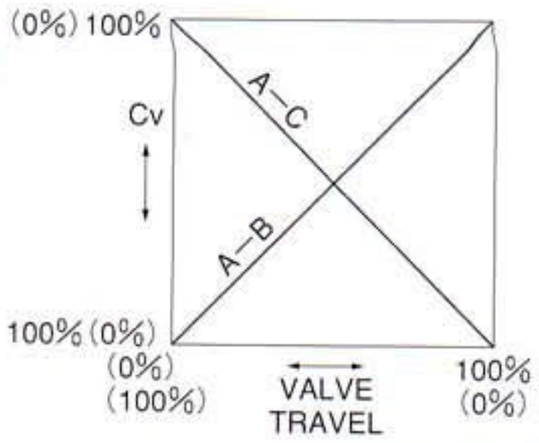




SPECIFICATIONS

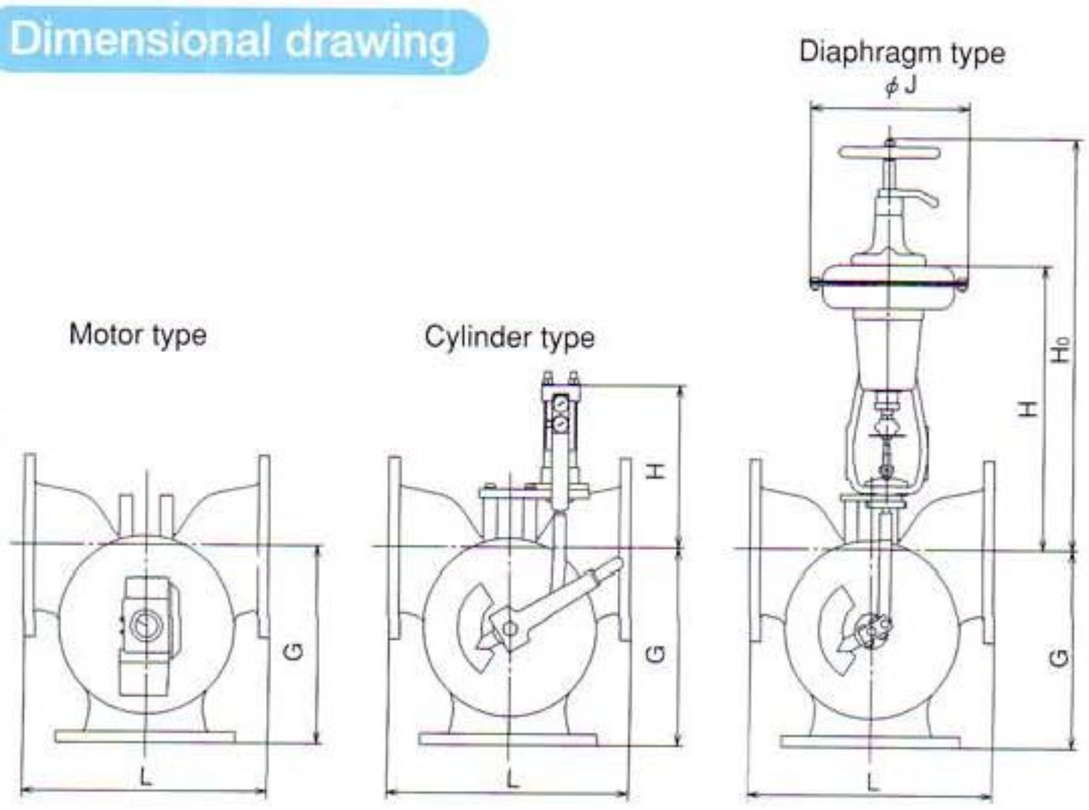
Type of valve body	Rotary plug type 3-way valve of casting
Pressure rating	JIS5K,10K、ANSI 125,150
Nominal bore	80～650A
Service temperature range	0～100℃
Standard material (JIS)	● Valve body FC、FCD、CAC403、SCPH2、SCS13 ● Trim CAC403、CAC406、SCS13、SCS14 ● Gasket Asbestos free
Cv value Flow characteristic	See the table below (Km:0.8) Linear
Flow direction	Mixind type (550A～650A Mixing type only) divideing type
Performance	● Rangeability 30 : 1 ● Maximum seat leakage 2% of rated Cv (Max.)
Actuator	Cylinder type,Diaphragm type or Motor type

Inherent flow characteristic



The applications and function of this control valve are the same as those of DY-T 3-way control valve already mentioned, however this valve is more suited to larger capacity or lager bore applications. The construction is simple with a small number of components. It's a rotary plug type 3-way valve where the flow channel is altered by turning the valve plug. For handling corrosive fluids such as sea water, it is possible to apply corrosion-resistant rubber lining or other coating onto the inner wall of the body. As the turning torque of the valve stem is small size actuator can be used, and the required space can be small. The valve can be mainpulated by mean of the level.

Dimensional drawing



DY-M 3-way mixing control valve

NOMINAL BORE mm (inch)			80A (3B)		100A (4B)		125A (5B)		150A (6B)		200A (8B)		250A (10B)		300A (12B)		350A (14B)		400A (16B)		450A (18B)		500A (20B)		550A (22B)	600A (24B)	650A (26B)
RATING	JIS (K)		5	10	5	10	5	10	5	10	5	10	5	10	5	10	5	10	5	10	5	10	5	10	5	5	5
	ANSI (Class)		125	150	125	150	125	150	125	150	125	150	125	150	125	150	125	150	125	150	125	150	125	150	125	125	125
	ISO * (PN-bar)		10	16	10	16	10	16	10	16	10	16	10	16	10	16	10	16	10	16	10	16	10	16	10	10	10
RATED Cv	Characterristics Linear		125		190		310		470		720		1200		1600		2200		2800		3900		4800		5400	6600	7800
DIMENSION (mm) ※3	Face to face L	JIS	286	294	290		320	328	360		450	454	550	558	660		730	738	820	832	960	976	1024	1040	1090	1200	1300
		ANSI	288	298	298	298	328	328	368	368	460	460	560	560	668	668	740	742	834	834	980	980	1048	1048	—	—	—
		ISO	294	294	298		332	332	368		454	462	564	582	660		730	742	824	836	964	980	1028	1044	—	—	—
	Hight G	JIS	215	219	215		250	254	285		365	367	435	439	510		565	569	625	631	725	733	781	789	882	996	1052
		ANSI	216	221	219	219	254	254	289	289	370	370	440	440	514	514	570	571	632	632	735	735	792	792	—	—	—
		ISO	219	219	219		256	256	289		367	371	437	441	510		565	571	627	633	727	735	783	791	—	—	—
CYLINDR TYPE	Size (mm)		63												80								100		125		
	Hight H (mm)		556				542		527		492		463		465		477		476		475		500		360	385	413
	Mass (kg)		50	50			60		85		110		180		250		310		440		603		750		1080	1300	1600
DIAPHRAGM TYPE	Size J (mm)		355 410										410 465		465		520		520 645		645				—	—	—
	Hight H (mm) (※1)		600						584				630		714				840		1055				—	—	—
	Additional value:with handwheel		270										332		385				540						—	—	—
	Mass (kg) (※2)		87	92			100		125		150		240		375		435		630		765		910		—	—	—

※1 H dimension indicates the longest dimension. However when the valve is fitted with the handwheel, add the respective value shown in the table abobe.
※2 Weight indicated is that of the valve with a handwheel and positioner. (=maximum mass)
※3 Motor type of hight add to a half of flange diameter.
* ISO in the column of rating indicates the ratings of valve groups formed in terms of face to face dimension.