

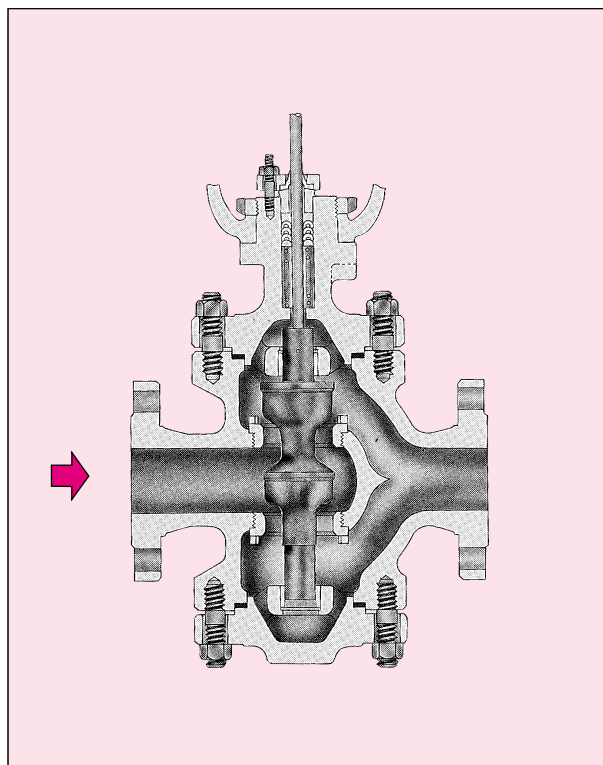
## Model 05

### GLOBE TYPE DOUBLE SEATED CONTROL VALVES

**Model 05** double seated control valves provide high performance for general fluid service applications such as steam and gasses.

Model 05 control valves having with top and bottom guide, double seat design, various flow characteristics, conform to ANSI seat leakage classes and are applicable for various service conditions.

With compactly designed multi-spring diaphragm actuator, Model 05 provides stable control performance with high thrust power.



05

## 1. SPECIFICATIONS

Type		Diaphragm operated control valve												
Model No.		3805						2805						
VALVE BODY	Body Type	Model 05 Globe type												
	Sizes	(mm)	25	40	50	65	80	100	125	150	200	250	300	350
		(in.)	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14
	Pressure Rating	JIS 10K, 20K, 30K, 40K, ASME/JPI Class 150, 300, 600												
	End Connections	Flanged end : FF, RF, RJ, Male and female, Tongue and groove (※ Welding end : SW, BW)												
	Body Materials	A48 Cl. 35, WCB, CF8, CF8M												
	Bonnet Types	Plain (− 17 °C to + 230 °C), Fin (− 20 °C to under − 17 °C, over + 230 °C) Extension (Light type : − 100 °C to under − 20 °C, Heavy type : − 196 °C to under − 100 °C), Bellows seal (See page 3)												
	Gland Type	Bolted gland												
	Packing (Non Asbestos)	Braided packing, Molded packing												
	Gaskets (Non Asbestos)	Flat gasket, Serrated gasket, Spiral wound gasket												
	Guiding	Top and bottom guide												
	Valve Plug Action	Push-down close						Push-down close, Push-down open						
Seat Type	Double seated													

VALVE BODY	Valve Plug Shapes	Contoured port (P)	V-Port (V)	Quick opening (Q)					
	Plug Characteristics	Equal percentage, Linear	Equal percentage	Quick opening					
	Trim Materials	SUS 304, SUS 316							
	Treatment of Trim	See page 3 "Main Materials"							
ACTUATOR	Actuator Type	Model 3800 Multi-spring type single acting diaphragm Actuator	Model 2800 Spring type single acting diaphragm Actuator						
	Actuator Size	N24	N28	N33S	N40	500S	500L	650S	650L
	Max. Stroke (mm)	25	38	38	65	65	100	65	130
	Supply Air Press. kPaG (kgf/cm <sup>2</sup> G)	120(1.2), 140(1.4), 240(2.4) 280(2.8), 300(3.0)				120(1.2), 140(1.4), 240(2.4), 280(2.8)			
	Spring Range kPaG (kgf/cm <sup>2</sup> G)	20 ~ 100(0.2 ~ 1.0), 40 ~ 200(0.4 ~ 2.0), 80 ~ 200(0.8 ~ 2.0)				20 ~ 100(0.2 ~ 1.0), 40 ~ 200(0.4 ~ 2.0), 60 ~ 220(0.6 ~ 2.2), 80 ~ 240(0.8 ~ 2.4)			
	Action	Direct action, Reverse action				Direct action			
	Materials	(Diaphragm) Cloth reinforced chloroprene rubber, (Yoke) FC 200							
	Air Connection	Rc 1/4, Rc 3/8 (only 650 <sup>S</sup> )							
	Ambient Temperature	- 20 °C ~ + 70 °C (※ - 50 °C ~ - 20 °C, + 70 °C ~ + 100 °C) <sup>(3)</sup>				- 30 °C ~ + 70 °C (※ - 50 °C ~ - 30 °C, + 70 °C ~ + 100 °C) <sup>(3)</sup>			
Painting Color	Silver, No painting on stainless steel								
VALVE CHARACTERISTICS AND PERFORMANCE (1)	Control Mode	Throttling control, On-off control							
	Valve Action	Direct action (Air-to close), Reverse action (Air-to open)							
	Applicable Press. Range	9.81MPaG(100kgf/cm <sup>2</sup> G) or less (Pressure limit conform to the standard of pressure-temperature rating)							
	Applicable Temp. Range	- 196 °C ~ + 550 °C (Temperature limit conform to the standard of pressure-temperature rating)							
	Allowable Differential Press.	See page 6 "Allowable Shut-off Pressure"							
	Rated Cv Value	See page 5 "Rated Cv Value"							
	Flow Characteristics	See page 5 "Flow Characteristics"							
	Inherent Range-ability	Contoured Port	30 : 1 (50 : 1※)						
		V-Port	50 : 1						
	Allowable Seat Leakage Rate	Metal Seat	Contoured Port, V-Port 0.5 % of rated Cv (ANSI/FCI Class II)						
		Soft Seat	Quick Opening 0.1 % of rated Cv (ANSI/FCI Class III)						
Soft Seat		Contoured Port, Quick Opening 0.1 % of rated Cv (ANSI /FCI Class III)							
Action Accuracy	Hysteresis Error (with Positioner)	Max. 2 % F.S.							
	Linearity (with Positioner)	Max. 2 % F.S.							
OPTIONS*	Valve Body	Jacket type. Drain plug, Special treatment for trim							
	Actuator	Handwheel (Top-mounted handwheel, Side-mounted handwheel), Travel stop, Oil dash pot (only for Model 2800), Diaphragm material : Ethylene propylene rubber, Yoke material : SCPH2							
	Accessories	Pneumatic positioner (PA92A), Electro-pneumatic positioner (EA91A, EA90A, EA10S), Air filter regulator (MR2000), Limit switch, Solenoid valve, Booster relay, Speed controller, Lock up valve, Pneumatic operated valve							
	Others	The High Pressure Gas Safety Law Certification, Oil-free, Water-free, Sandproof, Dustproof, Anti-salt damage, Vacuum service, Cold district spec. Tropical district spec. External exposure bolt & nut S.S. Optional painting color							

[Notes] (1) ※ Manufactured and attached as option according to customer's request.  
 (2) For ambient temperature, denoted the extended temperature range as option.

## 2. MAIN MATERIALS

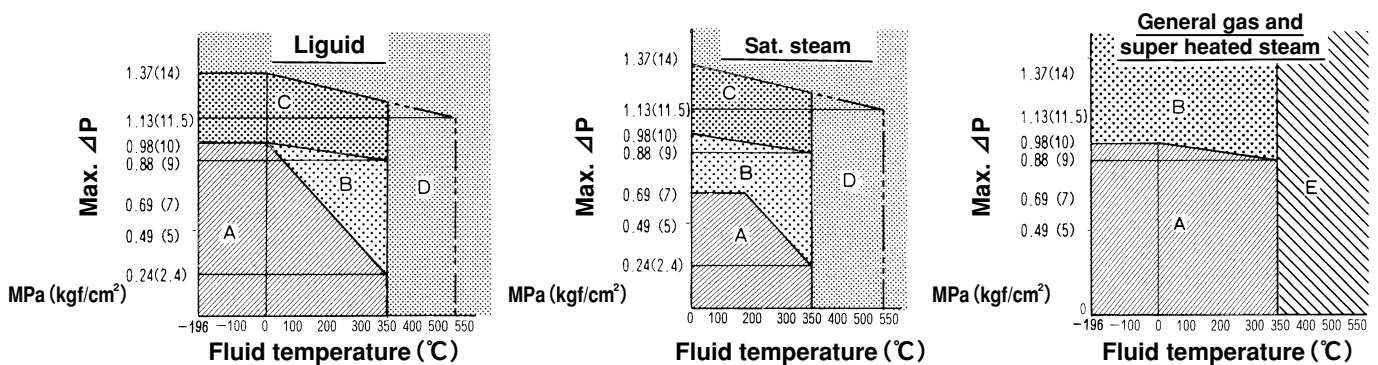
### 1 Typical Combination of Materials

Parts Name		Materials			
Body, Bonnet		A48 Cl. 35	WCB	CF8	CF8M
Trim	Seat Ring Valve Plug	Valve size $\leq$ 65mm : SUS 316 Valve size $\geq$ 80mm : SUS 304			SUS316
	Valve Stem	SUS316			
	Guide Bushing	SUS630			SUS316
Stud Bolts & Nuts		SS400	A193 GrB7/S45C(H) ○ Class 150 S45C(H)/S45C(N)	SUS 304 ○ Class 600 A193 GrB8 CL2/SUS304	

- [Notes]** (1) This table shows typical combination of materials. The combination maybe subject to change by pressure, temperature and kind of fluid.  
 (2) Material designation is represented by new JIS (SI Unit). Please be noted that drawing for approval and other documents may be represented by old material designation.  
 (3) Trim materials may be casting in stead of bar materials in some cases.

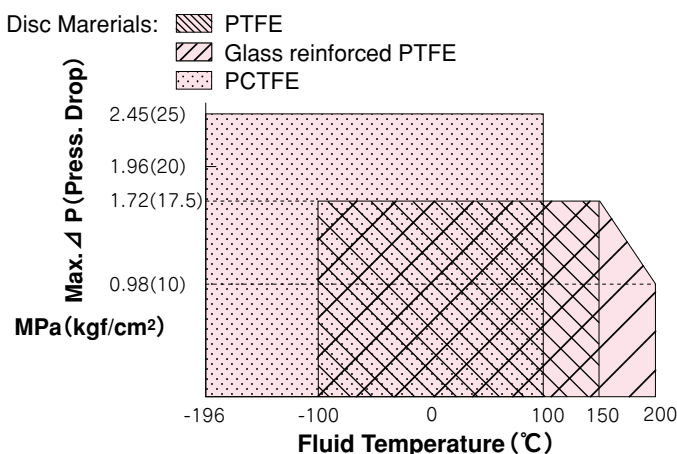
### 2 Pressure and Temperature Range for Hard Facing on Trim

A : CoCr Alloy is not required    B : CoCr Alloy seat    C : CoCr Alloy face  
 D : CoCr Alloy face + CoCr Alloy on guide bushing and guide post.  
 E : CoCr Alloy seat + CoCr Alloy on guide bushing and guide post.



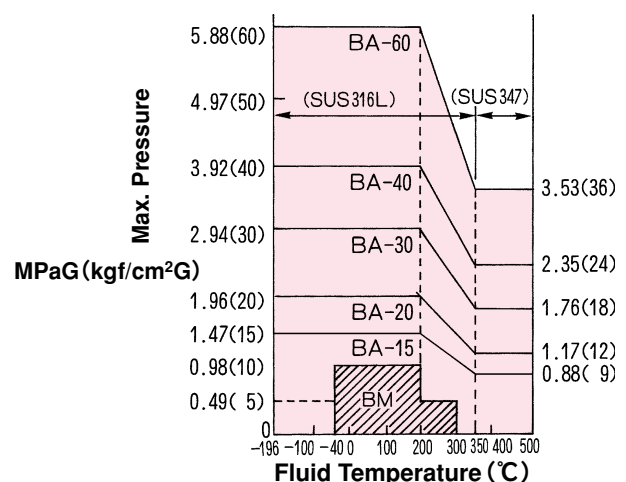
- CoCr Alloy seat or higher surface treatment is required for On-Off and Tight-Shut-Off (T.S.O.) valves.
- SUS440B Trim material is recommended for flashing or cavitation conditions or saturated steam in temperature range from  $-20^{\circ}\text{C}$  to  $400^{\circ}\text{C}$ .
- CoCr Alloy face or higher grade surface treatment is required for the flashing services.
- Irrespective of service fluids, CoCr Alloy hard facing treatment is required on guide bushing and guide post.
- On V-port trim, CoCr Alloy seat is the only applicable hard facing.
- Pressure rating JIS 30k, ASME Class 400 or higher, CoCr Alloy seat is required as minimum.

### 3 Pressure and Temperature Range of Resilient Disc



**[Note]** Polychlorotrifluoroethylene

### 4 Pressure and Temperature Range of Bellows Seal Bonnet



BA shows the welding bellows and BM shows the formed bellows.  
 BA : Welding Bellows  
 BM : Formed Bellows

## 3. SCOPE OF PRODUCTION

### 1 Combination of Valve Body and Actuator

Valve Model No.		3805				2805			
Actuator Size		N24	N28	N33S	N40	500S	500L	650S	650L
Valve Size									
(mm)	(inch)								
25	1	●	●	●					
40	1½	●	●	●	●	●			
50	2	●	●	●	●	●			
65	2½	●	●	●	●	●			
80	3		●	●	●	●		●	
100	4		●	●	●	●		●	
125	5				●	●		●	
150	6				●	●		●	
200	8				●	●		●	
250	10					●		●	
300	12						●		●
350	14								●

### 2 Scope of Port

Port Size (mm)		25	32	40	50	65	80	100	125	150	200	250	300	350
Valve Size														
(mm)	(inch)													
25	1	●												
40	1½	◆	◆	●										
50	2	◆	◆	◆	●									
65	2½		◆	◆	◆	●								
80	3			◆	◆	◆	●							
100	4				◆	◆	◆	●						
125	5					◆	◆	◆	●					
150	6						◆	◆	◆	●				
200	8							◆	◆	◆	●			
250	10									◆	◆	●		
300	12										◆	◆	●	
350	14											◆	◆	●

● : Full port

◆ : Reduced port

[Note] Reduced port for V-port is not available.

## 4. FLOW CHARACTERISTICS

### 1 Rated Cv Value

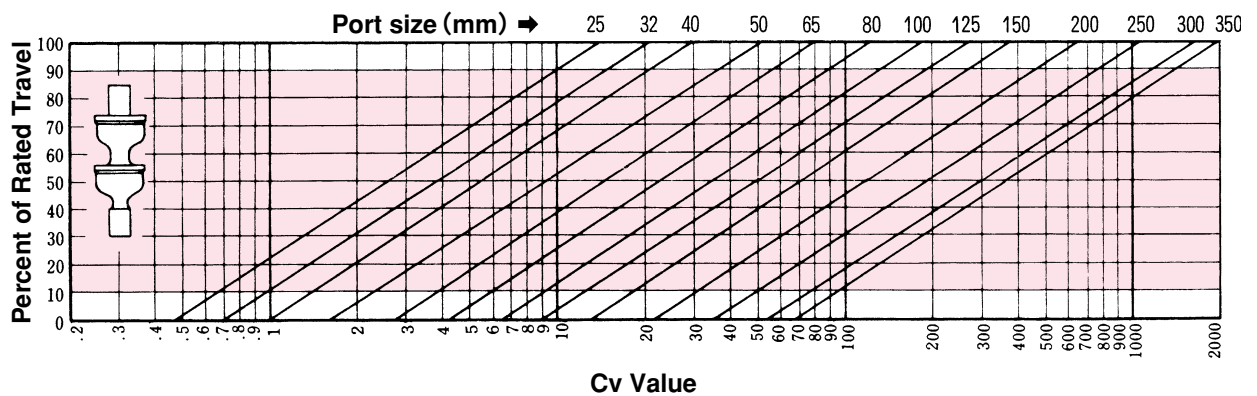
Port Size		Rated Travel (mm)	Port Shapes		
(mm)	(in.)		Contoured (P)	V-Port (V)	Quick opening (Q)
25	1	15	14.5	12	15
32	1 1/4	20	21	18	24
40	1 1/2		30	28	33
50	2	25	52	48	60
65	2 1/2		81	72	90
80	3	38	125	100	140
100	4		192	165	250
125	5	50	275	250	360
150	6		390	360	540
200	8	65	675	640	980
250	10		1050	1000	1550
300	12	90	1620	1440	2200
350	14	100	2000	1960	3000
Inherent Rangeability			30 : 1	50 : 1	—

[Note] Rated travel is determined by the port size regardless of valve size.

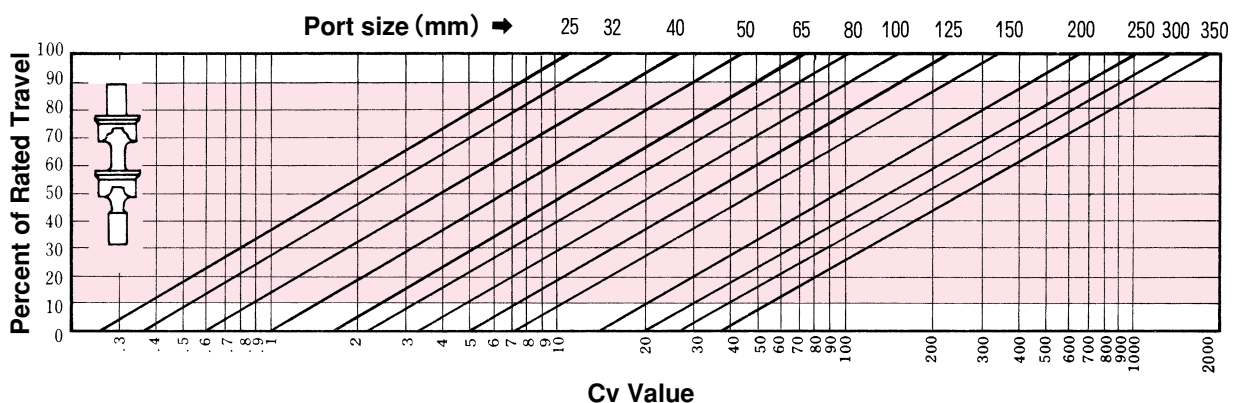
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### 2 Flow Characteristics

#### ■ Contoured Port Equal percentage (P)



#### ■ V-Port Equal percentage (V)



[Note] Colored zone represents proper control range.

# 5. ALLOWABLE DIFFERENTIAL PRESSURE

## 1 Off-balance Classification

Unit : kPaG (kgf/cm<sup>2</sup>G)

Action			Spring Range		Supply Air Pressure	Off-balance	Positioner
			Actuator Size				
			N24 ~ N40	500, 650			
Contoured Port V-Port	Direct Action		20 ~ 100(0.2 ~ 1.0)		120(1.2)	20(0.2)	without
			40 ~ 200(0.4 ~ 2.0)		140(1.4)	40(0.4)	with
			—	60 ~ 220(0.6 ~ 2.2)	240(2.4)	60(0.6)	
	Reverse Action		40 ~ 200(0.4 ~ 2.0)		280(2.8)	80(0.8)	with
			—	40 ~ 200(0.4 ~ 2.0)	300(3.0)	100(1.0)	
			20 ~ 100(0.2 ~ 1.0)		280(2.8)	80(0.8)	without
Quick Opening	Direct Action		40 ~ 200(0.4 ~ 2.0)		240(2.4)	40(0.4)	without
			—	60 ~ 220(0.6 ~ 2.2)	280(2.8)	60(0.6)	
			40 ~ 200(0.4 ~ 2.0)	40 ~ 200(0.4 ~ 2.0)	280(2.8)	80(0.8)	without
	Reverse Action		40 ~ 200(0.4 ~ 2.0)		240(2.4)	40(0.4)	without
			—	60 ~ 220(0.6 ~ 2.2)	280(2.8)	60(0.6)	
			80 ~ 200(0.8 ~ 2.0)	80 ~ 240(0.8 ~ 2.4)	280(2.8)	80(0.8)	without

## 2 Allowable Shut-off Pressure

(1) Contoured, V-port

The upper column : Allowable Shut-off press.  
The lower column : Allowable intermediate diff. press.

Unit : MPa (kgf/cm<sup>2</sup>)

Port Size		25(mm)	40	50	65	80	100	125	150	200	250	300	350
Actuator Size	Off-balance	1 (inch)	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14
N24	20 (0.2)	2.45 (25)	1.47 (15)	1.07 (11)	0.88 (9.0)								
		0.41 (4.2)	0.17 (1.8)	0.10 (1.1)	0.08 (0.9)								
	40 (0.4)	5.00 (51)	2.94 (30)	2.15 (22)	1.76 (18)								
		1.66 (17)	0.73 (7.5)	0.43 (4.4)	0.35 (3.6)								
	80 (0.8)	9.80(100)	5.88 (60)	4.31 (44)	3.53 (36)								
		1.17 (12)	0.54 (5.6)	0.32 (3.3)	0.26 (2.7)								
	100 (1.0)	9.80(100)	7.35 (75)	5.49 (56)	4.41 (45)								
		1.66 (17)	0.73 (7.5)	0.43 (4.4)	0.35 (3.6)								
N28	20 (0.2)	3.23 (33)	1.86 (19)	1.37 (14)	1.07 (11)	0.83 (8.5)	0.62 (6.4)						
		0.53 (5.5)	0.31 (3.2)	0.23 (2.4)	0.18 (1.9)	0.08 (0.9)	0.06 (0.7)						
	40 (0.4)	6.47 (66)	3.72 (38)	2.84 (29)	2.25 (23)	1.66 (17)	1.17 (12)						
		2.15 (22)	1.17 (12)	0.94 (9.6)	0.76 (7.8)	0.36 (3.7)	0.27 (2.8)						
	80 (0.8)	9.80(100)	7.55 (77)	5.68 (58)	4.51 (46)	3.33 (34)	2.45 (25)						
		1.57 (16)	0.95 (9.7)	0.70 (7.2)	0.56 (5.8)	0.27 (2.8)	0.20 (2.1)						
	100 (1.0)	9.80(100)	9.51 (97)	7.06 (72)	5.68 (58)	4.11 (42)	3.13 (32)						
		2.15 (22)	1.17 (12)	0.94 (9.6)	0.76 (7.8)	0.36 (3.7)	0.27 (2.8)						
N33	20 (0.2)	4.80 (49)	2.74 (28)	2.05 (21)	1.66 (17)	1.17 (12)	0.92 (9.4)						
		0.79 (8.1)	0.46 (4.7)	0.34 (3.5)	0.26 (2.8)	0.19 (2.0)	0.14 (1.5)						
	40 (0.4)	9.61 (98)	5.58 (57)	4.11 (42)	3.33 (34)	2.45 (25)	1.76 (18)						
		3.14 (32)	1.86 (19)	1.37 (14)	1.07 (11)	0.81 (8.3)	0.61 (6.3)						
	80 (0.8)	9.80(100)	9.80(100)	8.33 (85)	6.76 (69)	4.90 (50)	3.62 (37)						
		2.35 (24)	1.37 (14)	0.98 (10)	0.84 (8.6)	0.60 (6.2)	0.46 (4.7)						
	100 (1.0)	9.80(100)	9.80(100)	9.80(100)	8.43 (86)	6.08 (62)	4.60 (47)						
		3.13 (32)	1.86 (19)	1.37 (14)	1.07 (11)	0.81 (8.3)	0.61 (6.3)						



## Contoured, V-port Continued from P. 6

Unit : MPa (kgf/cm<sup>2</sup>)

Port Size		25(mm)	40	50	65	80	100	125	150	200	250	300	350
Actuator Size	Off-balance	1 (inch)	1½	2	2½	3	4	5	6	8	10	12	14
N40	20 (0.2)		3.92 (40)	2.94 (30)	2.35 (24)	1.66 (17)	1.27 (13)	0.91 (9.3)	0.76 (7.8)	0.50 (5.2)			
			0.65 (6.7)	0.49 (5.0)	0.39 (4.0)	0.28 (2.9)	0.21 (2.2)	0.14 (1.5)	0.12 (1.3)	0.05 (0.6)			
	40 (0.4)		7.84 (80)	5.88 (60)	4.70 (48)	3.43 (35)	2.54 (26)	1.76 (18)	1.47 (15)	0.98 (10)			
			2.54 (26)	1.96 (20)	1.56 (16)	1.07 (11)	0.87 (8.9)	0.60 (6.2)	0.50 (5.2)	0.25 (2.6)			
	80 (0.8)		9.80(100)		9.51 (97)	6.86 (70)	5.19 (53)	3.62 (37)	3.04 (31)	[1.96(20)]			
			1.96 (20)	1.47 (15)	1.17 (12)	0.86 (8.8)	0.64 (6.6)	0.45 (4.6)	0.38 (3.9)	0.18 (1.9)			
100 (1.0)		9.80(100)			8.62 (88)	6.47 (66)	4.51 (46)	3.83 (39)	2.45 (25)				
		2.54 (26)	1.96 (20)	1.56 (16)	1.07 (11)	0.87 (8.9)	0.60 (6.2)	0.50 (5.2)	0.25 (2.6)				
500	20 (0.2)				3.92 (40)	2.84 (29)	2.15 (22)	1.47 (15)	1.27 (13)	0.84 (8.6)	0.66 (6.8)	0.48 (4.9)	
					0.65 (6.7)	0.48 (4.9)	0.36 (3.7)	0.25 (2.6)	0.20 (2.1)	0.13 (1.4)	0.10 (1.1)	0.07 (0.8)	
	40 (0.4)				7.94 (81)	5.68 (58)	4.31 (44)	3.04 (31)	2.54 (26)	1.66 (17)	1.27 (13)	0.96 (9.8)	
					2.64 (27)	1.86 (19)	1.37 (14)	0.98 (10)	0.85 (8.7)	0.55 (5.7)	0.44 (4.5)	0.31 (3.2)	
	60 (0.6)				9.80(100)	8.62 (88)	6.47 (66)	4.51 (46)	3.82 (39)	2.45 (25)	1.96 (20)	1.37 (14)	
					2.64 (27)	1.86 (19)	1.37 (14)	0.98 (10)	0.85 (8.7)	0.55 (5.7)	0.44 (4.5)	0.31 (3.2)	
80 (0.8)				9.80(100)	8.72 (89)	6.08 (62)	5.09 (52)	3.33 (34)	2.64 (27)	1.86 (19)			
				2.64 (27)	1.86 (19)	1.37 (14)	0.98 (10)	0.85 (8.7)	0.55 (5.7)	0.44 (4.5)	0.31 (3.2)		
650	20 (0.2)							—	—	—	—	—	—
	40 (0.4)							5.29 (54)	4.41 (45)	2.84 (29)	2.25 (23)	1.66 (17)	1.27 (13)
								1.76 (18)	1.47 (15)	0.97 (9.9)	0.77 (7.9)	0.55 (5.7)	0.43 (4.4)
	60 (0.6)							7.94 (81)	6.57 (67)	4.31 (44)	3.43 (35)	2.45 (25)	1.86 (19)
								1.76 (18)	1.47 (15)	0.97 (9.9)	0.77 (7.9)	0.55 (5.7)	0.43 (4.4)
80 (0.8)							9.80(100)	8.82 (90)	5.78 (59)	4.60 (47)	3.33 (34)	2.54 (26)	
							1.76 (18)	1.47 (15)	0.97 (9.9)	0.77 (7.9)	0.55 (5.7)	0.43 (4.4)	

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## (2) Quick Opening

Unit : MPa (kgf/cm<sup>2</sup>)

Port Size		25(mm)	40	50	65	80	100	125	150	200	250	300
Actuator Size	Off-balance	1 (inch)	1½	2	2½	3	4	5	6	8	10	12
N24	40 (0.4)	2.45 (25)	1.66 (17)	0.98 (10)	0.78 (8.0)							
	80 (0.8)	5.00 (51)	3.43 (35)	1.96 (20)	1.56 (15)							
	100 (1.0)	6.17 (63)	4.21 (43)	2.45 (25)	1.96 (20)							
N28	40 (0.4)		2.15 (22)	1.27 (13)	0.98 (10)	0.67 (6.9)	0.52 (5.4)					
	80 (0.8)		4.41 (45)	2.54 (26)	1.96 (20)	1.27 (13)	0.98 (10)					
	100 (1.0)		5.49 (56)	3.13 (32)	2.54 (26)	1.66 (17)	1.27 (13)					
N33	40 (0.4)					0.98 (10)	0.77 (7.9)					
	80 (0.8)					1.96 (20)	1.47 (15)					
	100 (1.0)					2.45 (25)	1.86 (19)					
N40	40 (0.4)							0.87 (8.9)	0.73 (7.5)	0.46 (4.7)		
	80 (0.8)							1.66 (17)	1.47 (15)	[0.92 (9.4)]		
	100 (1.0)							2.15 (22)	1.76 (18)	1.07 (11)		
500	40 (0.4)									0.77 (7.9)	0.61 (6.3)	0.44 (4.5)
	60 (0.6)									1.07 (11)	0.93 (9.5)	0.66 (6.8)
	80 (0.8)									1.47 (15)	1.17 (12)	0.89 (9.1)
650	40 (0.4)											0.77 (7.9)
	60 (0.6)											1.07 (11)
	80 (0.8)											1.47 (15)

- [Notes] (1)  Frame represents standard combination of body size at full port and actuator size.  
 (2) Unit of off-balance is kPaG (kgf/cm<sup>2</sup>G).  
 (3) Off-balance 100kPaG (1.0kgf/cm<sup>2</sup>G) is available only for direct action control.  
 (4) On Contoured and V-port plug table, upper column shut-off pressure applies to both plugs and lower column applies only for Contoured plugs. (There is no limitations for intermediate differential pressure on V-port plug)  
 (5) Allowable intermediate differential pressure shall be applied for fluid of liquid a not steam.  
 (6) Allowable shut-off pressure in [ ] on the table on actuator size N40, off-balance 80kPaG (0.8kgf/cm<sup>2</sup>G), is only applicable for direct action, not for reverse action.  
 (7) This table shows available shut-off pressure only for combination with standard gland packing (P4519 + V7010)  
 (8) Allowable shut-off pressure for bellows seal bonnet valve differs from the blue above.

# 6. MAIN DIMENSIONS AND WEIGHT

## 1 Face-to-face Dimensions of Valve Body

Unit : mm

Valve Size	Press. Rating	Face-to-face Dimension F			
		JIS 10K ASME 150RF	JIS 20K ASME 300RF	JIS 30K 40KRF ASME 300RJ 600RF	ASME 600RJ
		(mm)	(in.)	(mm)	(in.)
25	1	184	197	210	210
40	1½	222	235	251	251
50	2	254	267	286	289
65	2½	276	292	311	314
80	3	298	317	337	340
100	4	352	368	394	397
125	5	403	425	457	460
150	6	451	473	508	511
200	8	543	568	610	613
250	10	673	708	752	755
300	12	737	775	819	822
350	14	889	927	972	975

- (Notes) (1) Face-to-face dimension in shaded zone conform to IEC60534-3-1 (JIS B2005-3-1) and ANSI/ISA-S75.08.01.  
 (2) Face-to-face dimension of male and female, tongue and groove flange for JIS 10K-30K (ASME 150, ASME 300) is coincident with JIS 30K RF.

## 2 Weight

Following table shows standard weights for complete valve assembly (Body A'ssy + Actuator) without accessories. Please contact Motoyama or Representative sales office on special valves.

Unit : kg

Valve Size	25		40		50		65		80		100		125		150		200		250		300		350				
	(mm)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	(in.)	(mm)	(in.)			
	Press. Rating	10K ASME 150	20,30 ASME 300,600	10K ASME 150	20,30 ASME 300,600	10K ASME 150	20,30 ASME 300,600	10K ASME 150	20,30 ASME 300,600	10K ASME 150	20,30 ASME 300,600	10K ASME 150	20,30 ASME 300,600	10K ASME 150	20,30 ASME 300,600	10K ASME 150	20K ASME 300	30, 40K ASME 600	10K ASME 150	20K ASME 300	30, 40K ASME 600	10K ASME 150	20K ASME 300	30, 40K ASME 600	10K ASME 150	20K ASME 300	30, 40K ASME 600
N24	24	30	30	36	36	42	42	49																			
N28	27	33	33	39	39	45	45	52	53	72	85	104															
N33S	36	42	42	48	48	54	54	61	62	81	94	113															
N40									87	106	119	139	149	169	184	209	284	329	497								
500S																320	365	535	440	510	810						
500L																—	—	—	—	—	—	660	840	1095			
650S																505	550	720	625	695	995	—	—	—			
650L																						850	1030	1285	1005	1220	1530

[Note] The weight of actuator size 500S/L, 650S/L shows for direct action.

05



## 3 Standard Dimensions

Unit : mm

Valve Size (mm) (in.)		Actuator Size	D	E	Plain Bonnet		Finned Bonnet				Extension Bonnet				Bellows Seal Bonnet				
					G	C	10K		20K and over		Light Type		Heavy Type		Formed		Welded		
							G	C	G	C	G	C	G	C	G	C	G	C	
25	1	N24	240	105	139	440	480	183	480	196	495	444	745	704	1005	625	398	695	
		N28	280			480	520		535		780		1040		665	735			
		N33S	330			530	575		590		840		1100		720	790			
40	1 1/2	N24	240	125	161	460	510	213	550	229	570	461	800	728	1065	399	740	445	785
		N28	280			500	550		570		800		1065		740	785			
		N33S	330			555	605		620		855		1120		790	840			
50	2	N24	240	140	176	475	525	228	565	244	580	476	815	739	1080	410	750	489	830
		N28	280			515	565		580		815		1080		750	830			
		N33S	330			570	620		640		879		1130		805	880			
65	2 1/2	N24	240	150	187	485	540	239	580	255	595	487	825	750	1090	421	760	500	840
		N28	280			525	580		595		825		1090		760	840			
		N33S	330			580	630		650		880		1145		815	895			
80	3	N28	280	185	222	560	615	277	615	303	640	565	905	814	1150	574	910	606	945
		N33S	330			615	670		695		960		1210		970	1000			
		N40	400			770	810		835		749		1265		905	1420	664	1180	686
100	4	N28	280	215	252	590	645	307	700	333	725	592	930	841	1180	601	940	633	970
		N33S	330			645	700		725		985		1235		995	1025			
		N40	400			800	840		865		776		1295		932	1450	691	1210	713
125	5	N40	400	275	338	855	890	375	1110	402	1140	800	1320	956	1475	802	1320	863	1380
		500S	500			1075	1110		1140		1535		1690		1540	1600			
150	6	N40	400	290	351	870	905	388	1125	415	1150	820	1340	976	1495	815	1330	876	1395
		500S	500			1090	1125		1150		1555		1710		1550	1610			
200	8	N40	400	360	421	940	980	463	1200	493	1010	973	1490	1123	1640	975	1490	1059	1575
		500S	500			1160	1200		1230		1710		1860		1710	1795			
		650S	650			1455	1525		1525		2005		2155		1000	2035	1084	2115	
250	10	500S	500	390	451	1190	1260	523	1260	523	1260	1003	1740	1153	1890	1005	1740	1089	1825
		650S	650	405	451	1485	1555		1555		2035		2185		1030	2065	1114	2145	
300	12	500L	500	525	587	1410	1490	667	1480	667	1490	-	-	-	-	-	-	-	-
		650L	650		579	1720	1800		658		1800		1790		-	-	-	-	-
350	14	650L	650	575	641	1775	1845	712	1845	712	1845	-	-	-	-	-	-	-	

- [Notes]** (1) Dimension C represents in case of direct action. The dimension C of actuator size N24-N40 for reverse action is to be added 25mm to the numerical value of above table.  
 (2) Lower column dimensions in this table with ※ mark, only applies for JIS 40k (ASME Class 600).  
 (3) Bellows seal Bonnet Type with body size 300mm shall be equipped with actuator 650L or more.

### Plain Bonnet Type Fin Bonnet Type

### Extension Bonnet Type

### Bellows seal Bonnet Type

Actuator Size  
N24 ~ N40

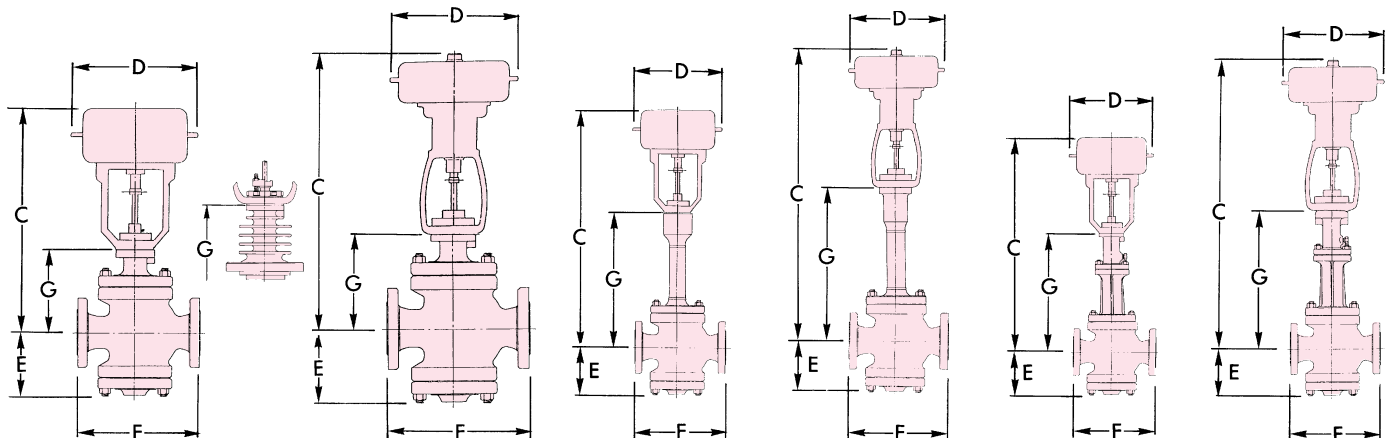
500, 650

N24 ~ N40

500, 650

N24 ~ N40

500, 650



## 7. JACKET BODY (option)

Jacketed valve body is most suitable for high viscous fluid services.

Jacketed valve body is available for pressure rating up to JIS 40k or ASME 600 and lower.

To mount series 3800 diaphragm actuator with hand wheel, only top handle is applicable.

### 1 Full Jacket ..... Type B

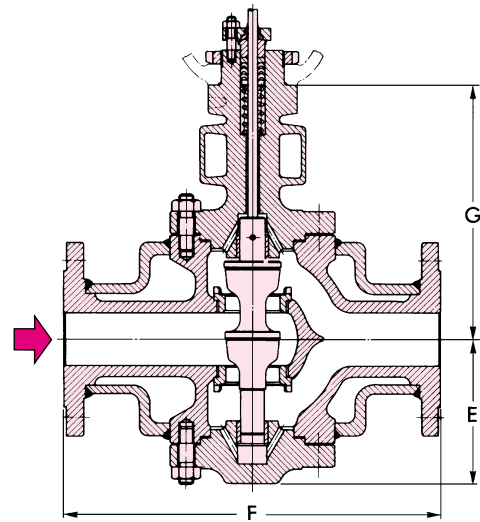
Connection flange size is two size larger than valve body size for full jacket body.

Valve body and bonnet is covered by Jacket except bottom cover.

#### Standard Dimensions

Unit : mm

Valve Size		Flange Size		F	E	G
(mm)	(in.)	(mm)	(in.)			
80	3	125	5	410	185	303
100	4	150	6	460	215	333
125	5	150	6	520	275	402
150	6	200	8	615	290	415
200	8	250	10	700	360	493



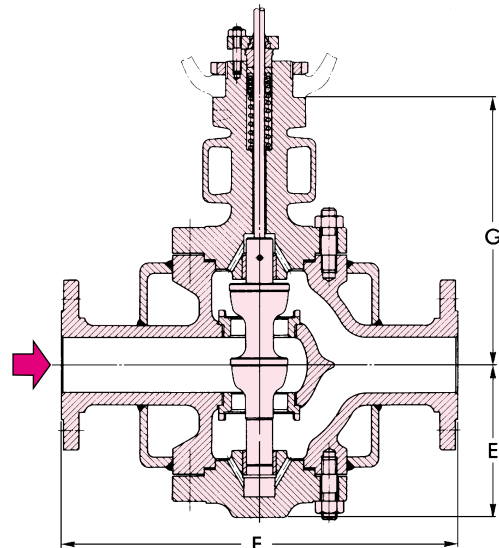
### 2 Semi-Jacket ..... Type G

Connection flange size is the same as valve body size.

#### Standard Dimensions

Unit : mm

Valve Size		Flange Size		F	E	G
(mm)	(in.)	(mm)	(in.)			
80	3	80	3	410	185	303
100	4	100	4	460	215	333
125	5	125	5	520	275	402
150	6	150	6	615	290	415
200	8	200	8	700	360	493



### 3 Piping Specifications

MOTOYAMA assembles the piping between the valve body and bonnet.  
Standard connection to the customer's jacket piping is as follows.

#### (1) Heating by Hot Water or Steam

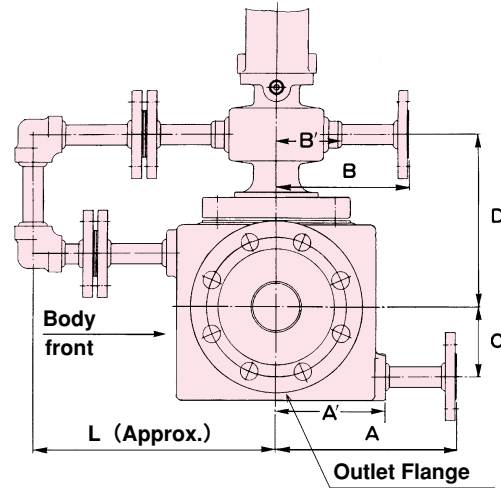
Inlet and Outlet Connection : Rc 1/2 Screwed  
Piping on Valve : STPG 370, 15 mm, JIS 10 KRF

#### (2) Heating by Heating medium

Inlet and Outlet Connection : Flange,  
JIS 20 K, 15 mm  
Piping on Valve : STPG 370, 15 mm, JIS 20 KRF

#### (3) Option

Inlet and Outlet Connection : 20 mm flange  
(JIS, ASME, JPI)  
Piping within Valve : 15 mm  
(JIS, ASME, JPI)  
10 K, 20 K, Class 150,  
300, Rc 3/4, NPT 1/2,  
NPT 3/4

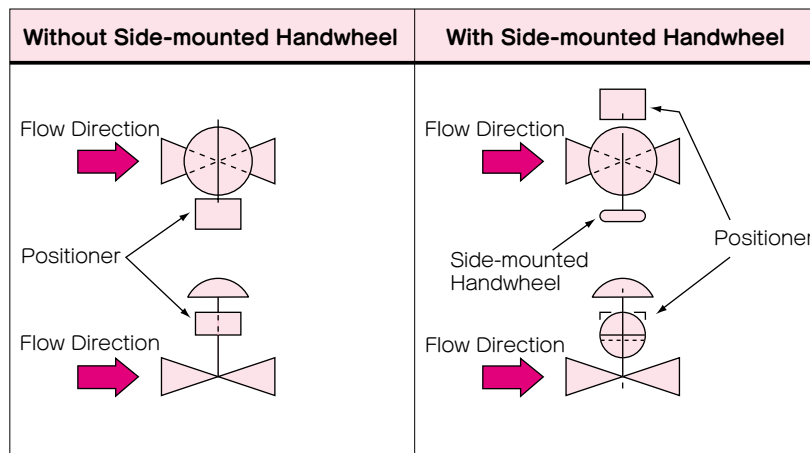


Top		A	A'	~ N33S		N40,500		C	~ N33S		L (Approx.)
Valve Size (mm)	(in.)			B	B'	B	B'		D	D	
80	3	226	146	150	69	175	95	91	237	245	276
100	4	251	171	162	82	175	95	117	269	285	300
125	5	295	215			175	95	150		326	345
150	6	321	241			188	107	165		337	370
200	8	372	292			226	146	215		404	422

[Notes] (1) Table shows the dimensions when 1/2inch JIS10KRF flange is applied as jacket piping.  
(2) A' and B' means dimensions when Rc1/2" (NPT1/2") connection is applied.

## 8. MOUNTING ORIENTATIONS

Standard mounting orientations are as follows.





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