

## Model 32&33 SPLIT BODY CONTROL VALVES

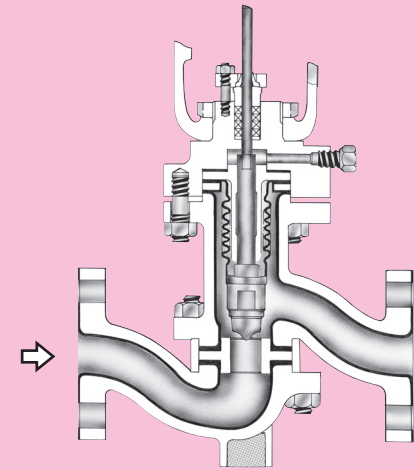
### Z-Valve

**Model 30** Series control valves are a so-called Split-body or Z type control valve whose body can be separated into two parts.

The features of these valves are as follows:

- Replacement of the seat-ring for changing the plug size, reversing the seat-ring or other purposes is easy.
- Flow pass inside of the body is smooth with no stagnation pockets.
- Highly suitable for viscous fluid and slurry services.
- Since the seat-ring is retained between body it is available to use glasses or nonmetallic materials. Seat-ring is not threaded or welded to the body.
- Body linings of glass, resin or other materials are available on request.
- It's simple construction makes maintenance easy.
- The actuators are designed compactly with multi-spring diaphragm operated type and permit high thrust.

Model 33



## 1. SPECIFICATIONS

**NOTE** : ETFE lining, PTFE trim and PTFE bellows seal are applicable to strategic materials in EXPORT TRADE CONTROL ORDER.

Valve Type		Diaphragm operated control valve		
Valve Model		3832	3833	
Materials of Lining		Glass	Resin	
Body Type		Model 32, 33 Split body		
Valve Sizes	(mm)	20	25	40
	(in.)	3/4	1	1 1/2
Pressure Rating		JIS 10K, ANSI/JPI 150*		
End Connections		Flanged end : FF		
Materials	Body	FC 200		
	Lining	Glass	ETFE Note (3)	
	Trim	PTFE		
Bonnet Types		PTFE Bellows seal		
Gland Type		Bolted gland		
Packing (Non Asbestos)		Braided packing		
Gaskets (Non Asbestos)		Flat gasket		
Guiding		Top guide		
Valve plug Action		Push-down close		
Seat Type		Single seated		

VALVE BODY

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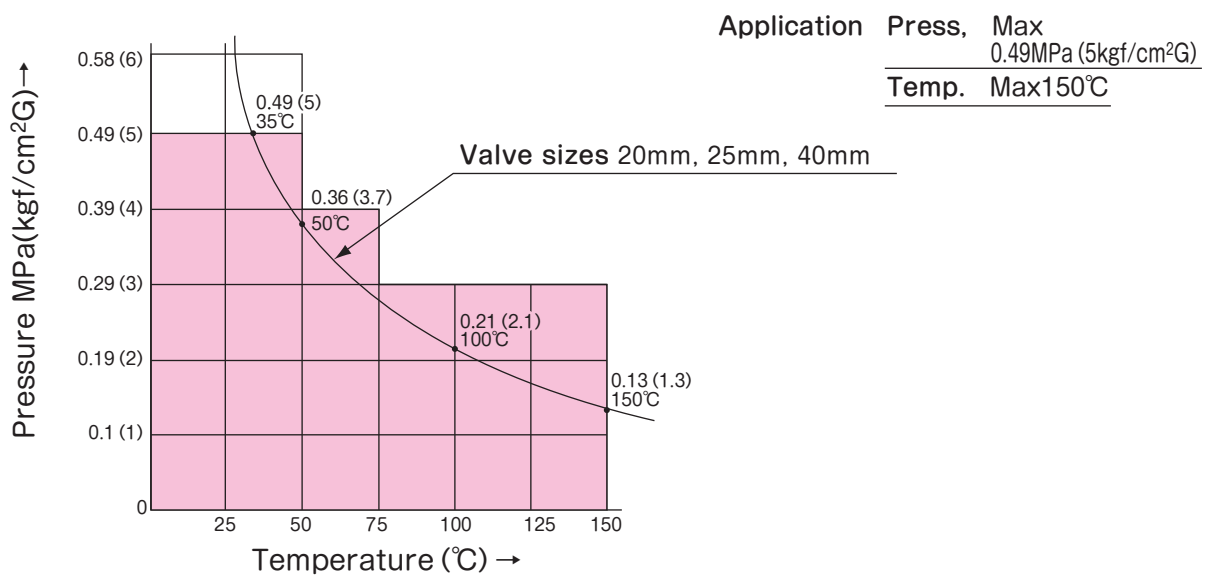
Valve Model		3832	3833		
VALVE BODY	Plug Types	Contoured plug (P), Quick opening (Q)			
	Plug Characteristics	Equal percentage, Linear, Quick opening			
ACTUATOR	Actuator Type	Model 3800 <small>Multi-spring type single acting diaphragm Actuator</small>			
	Actuator Sizes	N24	N28	N33S	
	Max. Stroke (mm)	25	38	38	
	Supply Air Press.	120 (1.2) , 240 (2.4) , 280 (2.8) , 300 (3.0) kPa (kgf/cm <sup>2</sup> G)			
	Spring Range	20~100 (0.2~1.0) , 40~200 (0.4~2.0) , 80~200 (0.8~2.0) kPa (kgf/cm <sup>2</sup> G)			
	Action	Direct action, Reverse action			
	Materials	(Diaphragm)Cloth reinforced chloroprene rubber, (Yoke) FC 200			
	Air Connection	Rc 1/4 (※NPT1/4)			
	Ambient Temperature	-20~+70°C (-50~-20°C, +70~+100°C※)			
	Painting Color	Silver			
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 Max. Pressure	0.98MPa (10kgf/cm <sup>2</sup> G) Bellows seal type bonnet ; 0.49MPa(5kgf/cm <sup>2</sup> G)(at the normal temp.)			
	Applicable Temperature	See page 3 "Characters of Lining Materials" Bellows seal type bonnet:150°C<(at 0.13MPa(1.3kgf/cm <sup>2</sup> ))			
	Allowable Differential Press.	See page 4, 5 "Allowable Shut-off Pressure"			
	Rated Cv Value	See page 4 "Rated Cv Value"			
	Flow Characteristics	See page 4 "Flow Characteristics"			
	Inherent Range ability	Contoured Plug	15 : 1 ~ 30 : 1		
	Allowable Seat Leakage Ratio	Metal Seat	Contoured Plug	0.02% of rated Cv    Tight shut off*, 25mm or less...0.001% of rated Cv (TSO)    40mm or less...0.002% of rated Cv	
			Quick Opening	25mm or less...0.001% of rated Cv 40mm or less...0.002% of rated Cv	
		Soft Seat	Contoured Plug	25mm or less...0.001% of rated Cv	
			Quick Opening	40mm or less...0.002% of rated Cv	
	Function Accuracy	Hysteresis Error (With positioner)	max.    2 % F.S.		
Linearity (With positioner)		max.    ±2 % F.S.			
OPTIONS※	Valve body	Special treatment for trim			
	Actuator	Handwheel (Top-mounted handwheel). Travel stop, Diaphragm material : Ethylene propylene rubber.			
	Accessories	Pneumatic positioner(PA92A), Electro-pneumatic positioner(EA91A, EA90A), Air pressure regulator(MR2000), Limit switch, Solenoid valve, Booster relay, Speed controller, Lock up valve, Pneumatic operated valve.			
	Others	Oil-free, Water-free, Sandproof, Dustproof, Anti-salt damage, Cold district spec, Tropical district spec, External exposure bolt & nut S. S, Optional painting color.			

(Notes) (1) Valve performance is represented under the condition of standard packing.  
 (2) ※ Manufactured and mounted as option on customer's request.  
 (3) ETFE: Polyethylene-Tetrafluoroethylene  
 (4) Stud Bolt connection is applied for ANSI/JPI 150 flange end.

## 2. CHARACTERS OF LINING MATERIALS

Lining	Methods of Lining	Thickness (mm)	Temperature Range(°C)	Features
Glass	GL	1	0~200	Excellent chemical and abrasion resistance, Minimum fluid friction
ETFE	Melt process	2~3	0~150	Excellent chemical, abrasion and shock resistance, High strength

## 3. APPLICABLE PRESS. AND TEMP. OF PTFE BELLOWS



## 4. SCOPE OF PRODUCTION

### 1 Combination of Valve Body and Actuator

Valve Model		3832 & 3833		
Body Model	Actuator size	N24	N28	
	Valve size			
32 33	20(mm)	3/4 (inch)	○	
	25	1	○	
	40	1 1/2	○	○

### 2 Scope of Plug

Plug size (mm)		6	7	8	10	15	20	25	32	40
Valve size	Plug size (mm)									
20(mm)	3/4 (inch)	◆	◆	◆	◆	◆	●			
25	1	◆	◆	◆	◆	◆	◆	●		
40	1 1/2						◆	◆	◆	●

● : Full port    ◆ : Reduced port

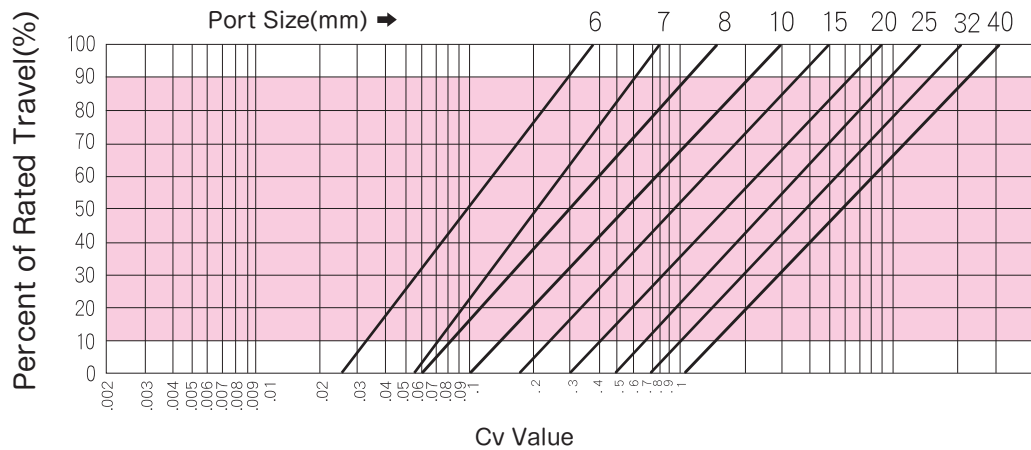
## 5. FLOW CHARACTERISTICS

### 1 Rated Cv Value

Plug size		Rated Travel (mm)	Plug Type		Inherent Rangeability (Contoured plug)
(mm)	(inch)		Contoured	Quick opening	
6	1/8	15	0.4	—	15 : 1
7	3/16		0.8	—	
8	1/4		1.5	2	
10	3/8		3.0	3.5	30 : 1
15	1/2		5.2	5.6	
20	3/4		9.0	9.5	
25	1	14	14		
32	1 1/4	20	21	21	
40	1 1/2		32	32	

### 2 Flow Characteristics

■ Contoured plug Equal percentage(P)



(Note)  Colored zone represents proper control range.

## 6. ALLOWABLE DIFFERENTIAL PRESSURE

### 1 Off-balance Classification

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

Action		Spring Range Actuator Size N24~N28	Supply Air Pressure	Off-balance	Positioner
Contoured Plug	Direct Action	20~100 (0.2~1.0)	120 (1.2)	20 (0.2)	Without
			140 (1.4)		
	Reverse Action	40~200 (0.4~2.0)	240 (2.4)	40 (0.4)	With
			280 (2.8)		
Quick Opening	Direct Action	40~200 (0.4~2.0)	300 (3.0)	80 (0.8)	Without
			100 (1.0)		
	Reverse Action	80~200 (0.8~2.0)	240 (2.4)	40 (0.4)	With
			280 (2.8)		

## 2 Allowable Shut-off Pressure

### Model 32 & 33

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

Plug Types		Contoured Plug				Quick Opening			
Plug Size		15(mm)	20	25	40	15(mm)	20	25	40
Actuator Size	Off-Balance	1/2(inch)	3/4	1	1 1/2	1/2(inch)	3/4	1	1 1/2
N24	20 (0.2)	—	—	—	—	0.54 (5.6)			
	40 (0.4)	0.98 (10)				0.98 (10)			
	80 (0.8)	0.98 (10)				0.98 (10)			
	100 (1.0)	0.98 (10)				0.98 (10)			
N28	20 (0.2)	—	—	—	—	0.71 (7.3)			
	40 (0.4)	0.98 (10)				0.98 (10)			
	80 (0.8)	0.98 (10)				0.98 (10)			
	100 (1.0)	0.98 (10)				0.98 (10)			

(Notes) (1)   Frame represents standard combination of valve body size(at full port)and actuator size.  
 (2) Unit of Off-balance is kPa(kgf/cm<sup>2</sup>G).  
 (3) Regarding Press. & Temp. limit of PTFE-bellows type bonnet, see page 3 Paragraph3.

# 7. MAIN DIMENSIONS AND MASSES

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

Unit : mm

Body Model		32	33
Materials of Lining		Glass	ETFE
End Connections		Face-to-face Dimensions	
Valve Size	JIS 10K		
	(mm)	(inch)	
20	3/4	220	222
25	1	250	252
40	1 1/2	290	292

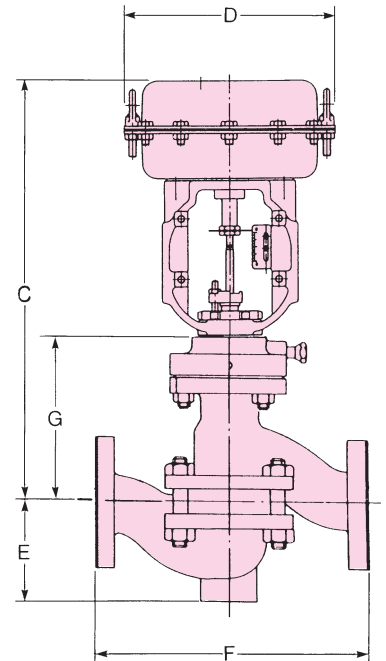
### 2 Standard Dimensions

#### Model 32 & 33

Unit : mm

Valve Size		Actuator Size	D	E	G	C
(mm)	(inch)					
20	3/4	N24	240	75	158	455
25	1	N24	240	85	158	455
40	1 1/2	N24	240	110	219	520
		N28	280			560

(Note) Dimension C represents in case of direct action.  
 IN case of reverse action, please add 25mm to the numerical value of the above table.



### 3 Masses

Following table shows standard mass of completed valve with actuator except accessories.  
 As to the masses not represented in this table, please contact your nearest MOTOYAMA's sales office.

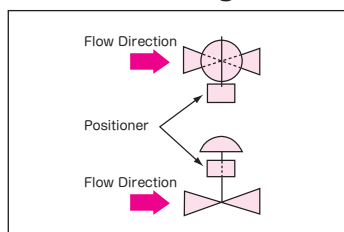
#### Model 32 & 33

Unit : kg

Valve Size	(mm)	20	25	40
	(inch)	3/4	1	1 1/2
Pressure Rating	10K			
Actuator Size	10K			
N24		27	31	36
N28		30	34	39

# 8. MOUNTING ORIENTATIONS

Standard mounting orientations are as follows.



32  
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