

Model 5400/5450 Open Yoke & Close-Coupled Control (Dump) Valves

Features

- > Simple maintenance: Valve trim or the complete actuator assembly can be quickly changed by simply removing the hammer nut and lifting the actuator assembly off the valve body. Disassembly of the actuator or removing the valve from the line is not required. No special tools are required.
- > Compact, lightweight design enables quick, easy installation with minimum labor requirements.
- > Bonnet safety pressure relief: Special design of hammer nut provides warning indication if an attempt is made to remove the actuator while the valve body is still under pressure.
- > Hardened trim: Control valve trim is available in stainless steel (standard) or tungsten carbide (standard) to handle the most difficult applications.
- > Bi-directional flow: Valve can be installed for either "flow up" or "flow down" operation, whichever best suits the application.

Models 5400 open yoke and 5450 close-coupled control (dump) valves are designed to meet the high pressure and erosive applications common to the oil and gas industry. These valves are ideally suited for pressure, level, temperature, and flow control applications on separators, scrubbers, wellheads and other oilfield equipment. The ease of maintenance, rugged steel construction, flexibility to meet a wide variety of applications, and safety features make models 5400/5450 control valves the preferred choice of production operators worldwide.



Model 5450
w/tee body

Shown in "straight-through" flow configuration



Model 5400

Specifications

Available configurations

- Open yoke (model 5400)
- Fail-open or fail-close
- Close-coupled (model 5450)
- Fail-open or fail-close

Flow characteristic

- Modified percent (throttling)
- Quick opening (on/off)

Body styles

- Globe (1" & 2"), angle (2" only)
- & tee (1" only)

End connections

FNPT, flanged, socket weld & butt weld

Pressure ratings

4000 psig from -40 to 200°F (-40 to 93°C)
3540 psig at 500°F (260°C)

Assembled valve temperature range

Model 5400/5450: -40 to 500°F (-40 to 260°C)

Available trim sizes: 1/4", 3/8", 1/2", 3/4" & 1"

Shutoff classification: ANSI class IV

(Stainless steel or tungsten carbide trim)

Flow direction

Either direction, to suit the application
Flow up (under the seat) recommended for throttling applications

Air pressure to actuator

3-15 spring
0 to 20 psig control signal recommended
6-30 spring
0 to 35 psig control signal recommended

NOTE: Taylor Valve reserves the right to change product designs and specifications without notice.

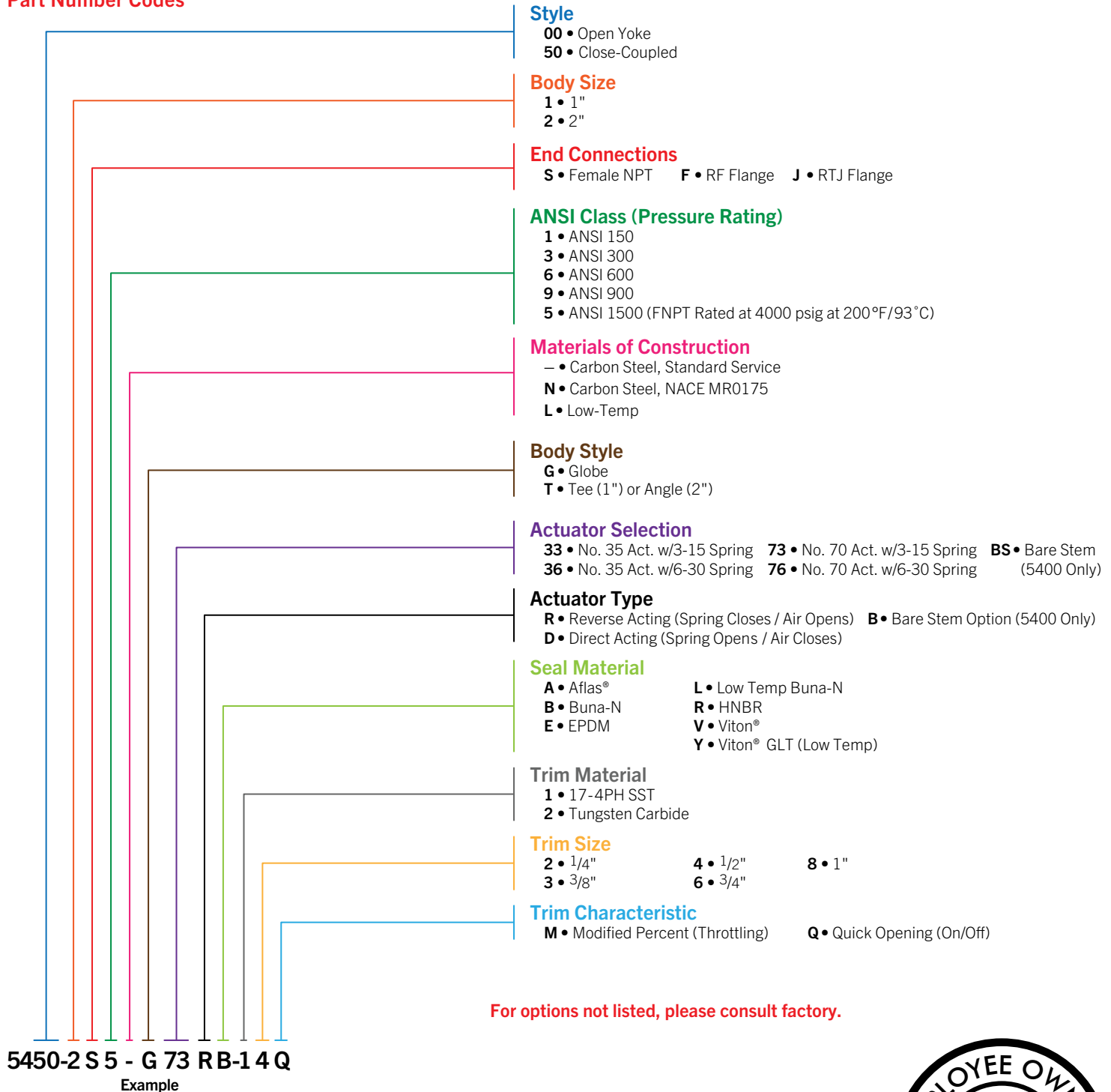
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Part Number Codes

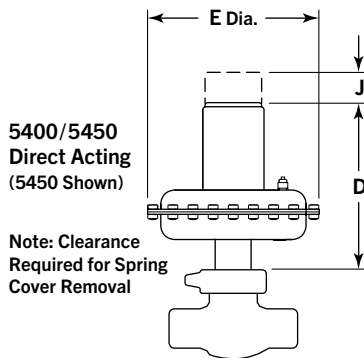
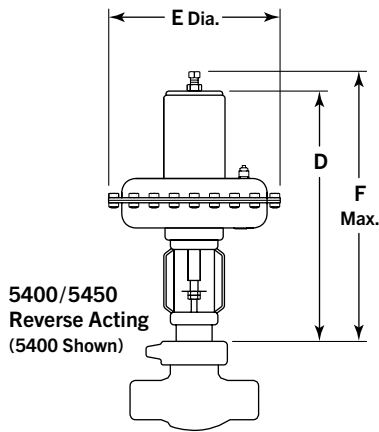


For options not listed, please consult factory.

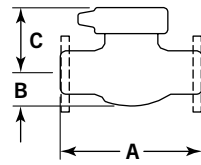
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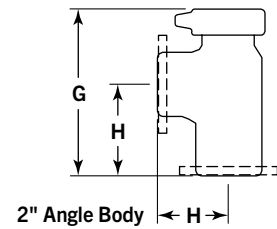
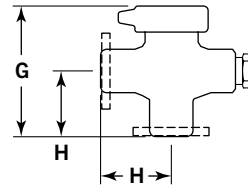
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1" & 2" Globe Body



1" Tee Body



Valve & Actuator Dimensional Data (in., mm)

End Connection	Dimension (in.)									
	1" Globe Body			2" Globe Body			1" Tee Body		2" Angle Body	
	A	B	C	A	B	C	G	H	G	H
NPT	6.25	1.56	3.69	7.50	1.69	3.69	6.82	3.13	7.44	3.75
150RF	7.25	1.56	3.69	10.00	1.69	3.69	7.32	3.63	8.69	5.00
300RF	7.75	1.56	3.69	10.50	1.69	3.69	7.57	3.88	8.94	5.25
600RF	8.25	1.56	3.69	11.25	1.69	3.69	7.82	4.13	9.31	5.63
600RTJ	8.25	1.56	3.69	11.38	1.69	3.69	7.82	4.13	9.38	5.69
900/1500RF	9.38	1.56	3.69	12.88	1.69	3.69	8.38	4.69	10.13	6.44
900/1500RTJ	9.38	1.56	3.69	13.00	1.69	3.69	8.38	4.69	10.19	6.50
End Connection	Dimension (mm)									
	1" Globe Body			2" Globe Body			1" Tee Body		2" Angle Body	
	A	B	C	A	B	C	G	H	G	H
NPT	158.8	39.6	93.7	190.5	42.9	93.7	173.2	79.5	189.0	95.3
150RF	184.2	39.6	93.7	254.0	42.9	93.7	185.9	92.2	220.7	127.0
300RF	196.9	39.6	93.7	266.7	42.9	93.7	192.3	98.6	227.1	133.4
600RF	209.6	39.6	93.7	285.8	42.9	93.7	198.6	104.9	236.5	143.0
600RTJ	209.6	39.6	93.7	289.1	42.9	93.7	198.6	104.9	238.3	144.5
900/1500RF	238.3	39.6	93.7	327.2	42.9	93.7	212.9	119.1	257.3	163.6
900/1500RTJ	238.3	39.6	93.7	330.2	42.9	93.7	212.9	119.1	258.8	165.1

Diaphragm Effective Area & Housing Max. Pressure

Actuator Size	Diaphragm Effective Area	Housing Max. Pressure
No. 35	35 in. ²	50 psig
No. 70	70 in. ²	35 psig

Actuator Size	Dimension (in.)											
	5400 Direct			5400 Reverse			5450 Direct			5450 Reverse		
	D	E	J ¹	D	E	F	D	E	J ¹	D	E	F
No. 35	17.06	9.50	5.50	14.31	9.50	16.31	11.44	9.50	5.50	8.69	9.50	10.69
No. 70	18.56	12.50	7.00	15.44	12.50	17.44	12.94	12.50	7.00	9.81	12.50	11.81
Actuator Size	Dimension (mm)											
	5400 Direct			5400 Reverse			5450 Direct			5450 Reverse		
	D	E	J ¹	D	E	F	D	E	J ¹	D	E	F
No. 35	433.3	241.3	139.7	363.5	241.3	414.3	290.6	241.3	139.7	220.7	241.3	271.5
No. 70	471.4	317.5	177.8	392.2	317.5	443.0	328.7	317.5	177.8	249.2	317.5	300.0

¹ Clearance required for spring removal.

Approximate Weights (lbs., kg)

End Connection	Model 5400 / Weights (lbs., kg)															
	No. 35 Actuator								No. 70 Actuator							
	1" Globe lbs.	1" Globe kg	1" Tee lbs.	1" Tee kg	2" Globe lbs.	2" Globe kg	2" Angle lbs.	2" Angle kg	1" Globe lbs.	1" Globe kg	1" Tee lbs.	1" Tee kg	2" Globe lbs.	2" Globe kg	2" Angle lbs.	2" Angle kg
NPT	29	13.2	32	14.5	36	16.3	36	16.3	44	20.0	47	21.3	51	23.1	51	23.1
ANSI 150	34	15.4	38	17.2	46	20.9	46	20.9	49	22.2	53	24.0	61	27.7	61	27.7
ANSI 300	37	16.8	41	18.6	50	22.7	50	22.7	52	23.6	56	25.4	65	29.5	65	29.5
ANSI 600	39	17.7	43	19.5	52	23.6	52	23.6	54	24.5	58	26.3	67	30.4	67	30.4
ANSI 900/1500	46	20.9	51	23.1	80	36.3	80	36.3	61	27.7	66	29.9	95	43.1	95	43.1
End Connection	Model 5450 / Weights (lbs., kg)															
	No. 35 Actuator								No. 70 Actuator							
	1" Globe lbs.	1" Globe kg	1" Tee lbs.	1" Tee kg	2" Globe lbs.	2" Globe kg	2" Angle lbs.	2" Angle kg	1" Globe lbs.	1" Globe kg	1" Tee lbs.	1" Tee kg	2" Globe lbs.	2" Globe kg	2" Angle lbs.	2" Angle kg
NPT	25	11.3	28	12.7	32	14.5	32	14.5	40	18.1	43	19.6	47	21.3	47	21.3
ANSI 150	30	13.6	34	15.4	42	19.1	42	19.1	45	20.4	49	22.2	57	25.9	57	25.9
ANSI 300	33	15.0	37	16.8	46	20.9	46	20.9	48	21.8	52	23.6	61	27.7	61	27.7
ANSI 600	35	15.9	39	17.7	48	21.8	48	21.8	50	22.7	54	24.5	63	28.6	63	28.6
ANSI 900/1500	42	19.1	47	21.3	76	34.5	76	34.5	57	25.9	62	28.1	91	41.3	91	41.3

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Actuator Maximum Allowable Shutoff Pressure Drops, Reverse Acting (Fail Close)

Trim Size (in.)	Flow Direction	Signal to No. 35 Actuator				Signal to No. 70 Actuator			
		3-15 Spring		6-30 Spring		3-15 Spring		6-30 Spring	
		3-15 psig	0-20 psig	6-30 psig	0-35 psig	3-15 psig	0-20 psig	6-30 psig	0-35 psig
.25	Up	3800	4000	4000	4000	4000	4000	4000	4000
.38		2050	3280	3410	4000	3210	4000	4000	4000
.50		1100	1680	1830	2300	1650	3190	4000	4000
.75		320	560	690	950	530	940	2020	2800
1		110	220	320	490	230	420	960	1460
.25	Down	4000	4000	4000	4000	4000	4000	4000	4000
.38		4000	4000	4000	4000	4000	4000	4000	4000
.50		3350	4000	4000	4000	4000	4000	4000	4000
.75		1580	2300	2530	3270	2080	2800	3780	4000
1		770	1100	1240	1680	970	1460	2510	2950

Actuator Maximum Allowable Shutoff Pressure Drops, Direct Acting (Fail Open)

Flow Direction (Up/Down)						Thrust Force				
Trim Size (in.)	Flow Direction	Signal to No. 35 Act!		Signal to No. 70 Act!		Trim Size Inches	PSI			
		3-15 Spring	6-30 Spring	3-15 Spring	6-30 Spring		500	1000	1500	2000
.25	Up	4000	4000	4000	4000	.25	25 lbf	50 lbf	75 lbf	100 lbf
.38		2700	4000	4000	4000	.38	58 lbf	115 lbf	173 lbf	230 lbf
.50		1370	2880	2540	4000	.5	100 lbf	200 lbf	300 lbf	400 lbf
.75		410	1080	730	2020	.75	225 lbf	450 lbf	673 lbf	900 lbf
1		140	520	230	960	1	400 lbf	800 lbf	1200 lbf	1600 lbf
Trim Size (in.)	Flow Direction	Signal to No. 35 Act!		Signal to No. 70 Act!		NOTE: (lbf = Pound Force)				
		3-15 Spring	6-30 Spring	3-15 Spring	6-30 Spring					
.25	Down	4000	4000	4000	4000					
.38		4000	4000	4000	4000					
.50		3800	4000	4000	4000					
.75		1750	1940	4000	4000					
1		860	940	1840	2790					

NOTE: (lbf = Pound Force)

¹Actual signal pressure to actuator includes an additional 5 psig (0.3 bar) of supply pressure to the controller.

Flow Coefficients (C_v), Modified Percent & Quick Opening

Body Size (in.)	Orifice Size (in.)	Body Style / Valve Opening (% Travel)											
		Modified Percent										Quick Opening	
		10	20	30	40	50	60	70	80	90	100	Angle 100	Globe 100
1	0.25	.284	.506	.657	.767	.875	.989	1.10	1.20	1.32	1.40	1.64	1.68
	0.38	.311	.621	.942	1.28	1.64	2.07	2.51	2.93	3.35	3.70	4.23	3.82
	0.50	.502	1.05	1.59	2.09	2.61	3.14	3.72	4.27	4.96	5.62	6.61	5.70
	0.75	.882	1.76	2.76	3.82	4.93	6.17	7.49	8.85	10.0	11.0	15.1	11.6
	1.00	1.01	2.02	3.44	5.07	6.78	8.42	10.3	12.4	14.3	15.4	20.8	15.5
2	0.25	.284	.506	.657	.767	.875	.989	1.10	1.20	1.32	1.40	1.66	1.68
	0.38	.311	.621	.942	1.28	1.64	2.07	2.51	2.93	3.35	3.70	4.35	3.82
	0.50	.592	1.17	1.76	2.34	2.95	3.70	4.57	5.50	5.95	6.08	6.90	6.19
	0.75	.882	1.81	2.98	4.11	5.74	7.03	8.49	10.1	11.5	12.9	15.2	13.0
	1.00	1.08	2.12	3.58	5.43	7.46	9.27	11.4	13.7	15.8	17.1	21.1	18.0

Bonnet Safety Pressure Relief

The valve on the left shows the hammer nut in the “locked” position during normal operation. The valve on the right illustrates “Bonnet Safety Pressure Relief”. The O-Ring clears the packing plug while the hammer nut is still engaged (threaded) onto the valve body. At this point, if the valve assembly is under pressure, process fluid will escape through the weep hole to indicate a warning to the service person that the valve is still under pressure, thereby prompting release of line pressure before proceeding, thus preventing the actuator assembly from blowing out.

