

# NORRISEAL SERIES 2400 CONTROL VALVE

The **Norriseal Series 2400 Control Valve** is ideal for oil and gas flow control. The Series 2400 is also a desirable selection where accurate travel indication is needed and positioners or limit switches are required. Temperature rating from -20°F to 400°F.

The **Series 2420** is the close coupled version of the Series 2400. If space and economy are important or a positioner is not required, this model will give the same dependable service as the Series 2400. Temperature rating from -20°F to 180°F.

## ► FEATURES

- 3/16" through 1¾" orifice sizes
- Modified percentage, quick opening, and equal percentage (3/16" trim only)
- Hammer nut entry
- Yoke-mounted or close-coupled, pressed steel actuators, direct or reverse action
- Teflon packaging



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products and services.

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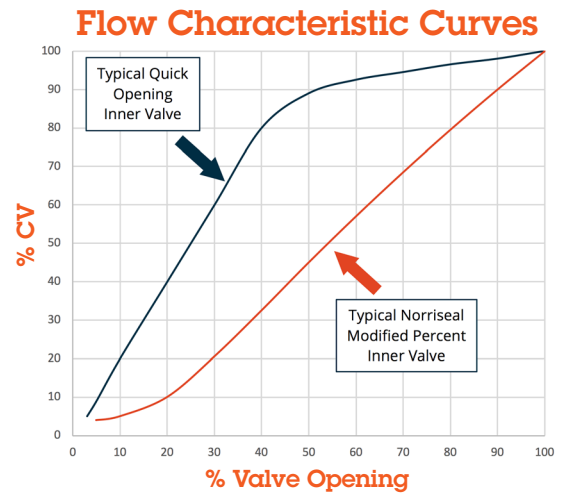
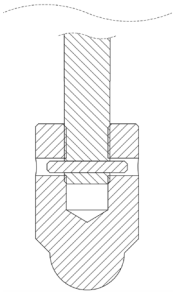
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## ▶ INNER VALVES

**Modified percentage plug** is offered by Norriseal-WellMark. It is a combination of linear and equal percentage plug. The advantage of combining these excellent contours is that the characteristics give exceptional control at 10 — 30% and 80 — 100% inner valve openings, as well as in the middle range.

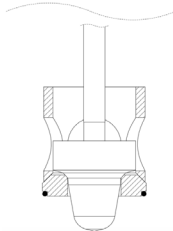
**Quick opening plug** is offered as optional for throttling service where rangeability is not required.

**Assembly** of both the modified percentage and quick opening plugs are the same. The plugs are screwed onto the stem. The hole in the plug body is oriented with the hole through the stem. A stainless steel (420 SST) roll pin prevents the plug from turning on the stem. The threads of the plug and stem bear the thrust load, yet some horizontal plug movement is possible to allow positive alignment with the seat. This ensures the most leakproof closure in metal to metal seating surfaces. See "Trim" in Specifications.



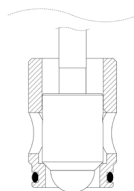
## ▶ CAGE AND SEATS

The cage has full opening flow capacity.

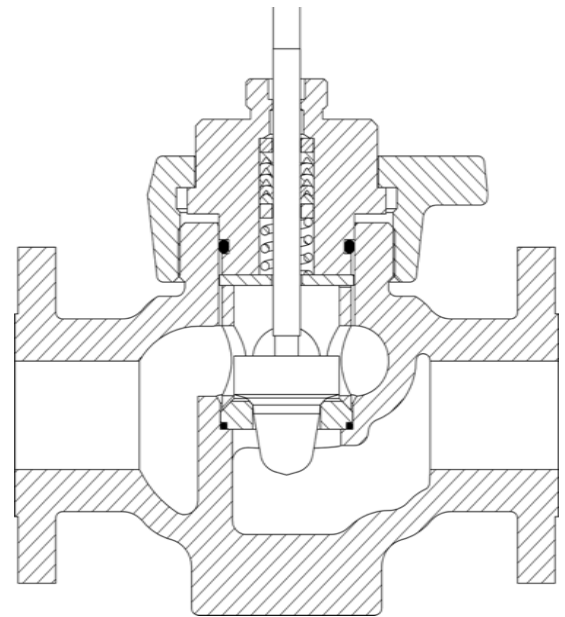


On valves with 1 1/4" travel the cage fits over the seat in a manner much like the plug fits the orifice — two beveled surfaces are meeting.

On valves with 5/8" travel, the seat and cage are manufactured as one piece.



The cage in both constructions guides the plug. These self-aligning features assure alignment of seating surfaces when the hammer nut closure is made tight.



**2" SERIES 2400 BODY ASSEMBLY WITH 1 3/4" TRIM**

### FLOW COEFFICIENTS (Cv)

NORRISEAL MODIFIED PERCENT & QUICK OPENING

Orifice Size	VALVE OPENING - PERCENT TOTAL TRAVEL										Q. O. MAXIMUM
	10	20	30	40	50	60	70	80	90	100	
1/4 MP	.09	.16	.34	.53	.71	.9	1.1	1.3	1.5	1.6	1.7
3/8 MP	.20	.36	.77	1.2	1.6	2.0	2.4	2.9	3.3	3.6	3.8
1/2 MP	.34	.61	1.3	2.0	2.7	3.5	4.2	4.9	5.6	6.1	6.8
3/4 MP	.74	1.3	2.9	4.4	6.0	7.6	9.1	10.7	12.2	13.4	13.7
1 MP	.98	1.8	3.9	5.9	7.9	10.0	12.1	14.2	16.2	17.8	24.0
1-1/4 MP	1.6	3.0	6.3	9.8	13.3	16.8	20.2	23.7	27.2	29.8	29.8
1-1/2 MP	2	3.5	7.6	12.0	16.3	20.7	24.2	27.3	31.4	34.0	34.0
1-3/4 MP	2.1	3.8	8.1	12.6	17.0	21.4	25.8	30.3	34.8	38.1	38.1

## MAXIMUM DIFFERENTIAL PRESSURE (PSIG)

Spring Range (PSI) Press to Diaphragm (PSIG)		FLOW UNDER SEAT				FLOW OVER SEAT			
		3 - 15	6 - 30	3 - 15	6 - 30				
Orifice Size	Diaphragm Action	18	24	30	33	18	24	30	33
1/4	*DIR	2900	3600	3600		1800	3600	3600	
	**REV	2850	3600	3600		1760	3600	3600	
3/8	DIR	1230	3600	3600		1950	3600	3600	
	REV	1200	3600	3600		2910	3600	3600	
1/2	DIR	650	2100	3600		3600	3600	3600	
	REV	620	2030	3600		3600	3600	3600	
3/4	DIR	255	910	1690		3600	3600	3600	
	REV	230	870	1660		3300	3600	3600	
1	DIR	120	490	930		1560	2220	2790	
	REV	100	470	910		1380	1940	2510	
1-1/4	DIR	60	350	650	300	1020	1440	1800	1920
	REV	70	370	690	340	900	1260	1670	1730
1-1/2	DIR	30	240	450	200	670	930	1180	1260
	REV	40	260	470	225	590	820	1060	1135
1-3/4	DIR	20	170	320	140	480	670	840	900
	REV	25	190	340	160	420	590	760	810

\*DIRECT — NORMALLY OPEN VALVE — AIR TO CLOSE  
 \*\* REVERSE — NORMALLY CLOSED VALVE — AIR TO OPEN

SPECIFICATIONS	
Valve Body	
Material	Cast Steel ASTM A216-WCC
Size	2 inch
Style	Globe
End Connection	Screwed; Flanged (RF or RJ)
Rating	Screwed — 3750 PSIG @ 100°F Flanged — ANSI 150, 300, 600, or 1500 lb.
Temperature	2400 Valve from -20°F to 400°F 2420 Valve from -20°F to 180°F
Trim (Plug and Seat)	
Material	17-4 SST, 316 SST, STL6/316, Carbide/316
Orifice Size	3/16, 1/4, 3/8, 1/2, 3/4, 1, 1¼, 1½, 1¾
Type	Norriseal Modified %, Quick Opening, & Equal % (0.19" Only)
Stem	
Material	Nitronic 50
Cage	
Material	17-4 SST or 316 SST
Bonnet	
Material	Packing Plug — Carbon Steel Bright 2 in. Plate Hammer Nut — Forged Steel
Yoke	
Material	Ductile Iron ASTM A 395, GR 60-40-18
Actuator Case	
Material	Pressed Carbon Steel
Size	No. 12 (70 sq. in. Nominal Effective Area)
Action	Direct — (Spring Opens — Air Closes) Reverse — (Spring Closes — Air Opens)
Connection	¼ NPT
Rating	30 PSIG Normal — 50 PSIG Maximum
Diaphragm	
Material	Buna N Molded with Nylon insert or Neoprene (sold in Canada)
Spring	
Material	Tempered Carbon Steel
Range	3-15 PSI & 6-30 PSI
Travel	
5/8" for 3/16" through 1" Orifice	
1¼" for 1¼" through 1¾" Orifice	

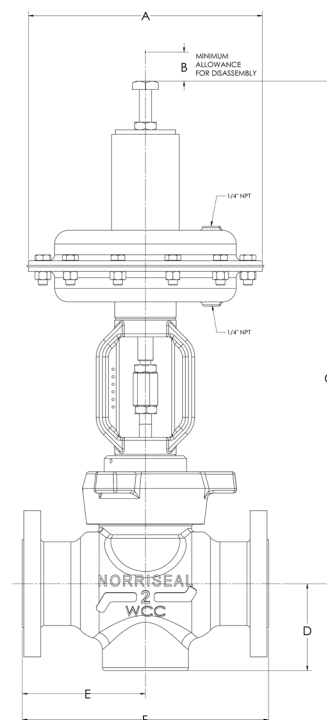
## DIMENSIONS

### ACTUATOR DIMENSION (INCHES)

STYLE	A	B	C	
			2400	2420
DIRECT	12-1/2	9	27	23
REVERSE		4-3/8	26-5/8	21

### BODY FACE TO FACE DIMENSIONS (INCHES)

END CONNECTION		D	E	F	
SCREWED (NPT)					
WELD (BUTT OR SOCKET)		3-3/8	4-1/8	8-1/4	
SCREWED (NPT)			4-1/8	8-1/4	
FLANGED	150		RF	5	10
			RJ	5-3/16	10-3/8
	300		RF	5-1/4	10-1/2
			RJ	5-1/2	11
	600		RF	5-5/8	11-1/4
			RJ	5-11/16	11-3/8
1500	RF		4-1/4	7-3/8	14-3/4
	RJ		7-7/16	14-7/8	



BODY END CONNECTIONS	
Type	Code
Flanged Raised Face	RF
Flanged Ring Type Joint	RJ
Threaded – NPT Female	S

BODY SIZE	
Size (Inches)	Code
2	2

VALVE SERIES	
Series	Code
Open Yoke	2400
Close Coupled	2420

SPECIAL COMPONENTS	
Body/Bonnet Material	Code
WCC/A216	-
NACE	N <sup>(1)</sup>

BODY RATING	
ANSI Class	Code
150	02
300	07
600	14
1500	36

ACTUATOR ACTION	
Type	Code
Pneumatic Reverse Acting (Fail Closed)	T
Pneumatic Direct Acting (Fail Open)	B
Manual Handwheel	F
Electric (Fail in Last Position)	E

BODY STYLE	
Type	Code
Globe	G

SEAL MATERIAL		
Diaphragm	Wetted	Code
Buna	Buna	A
Buna	Viton	V
Neoprene	HSN	7 <sup>(2)</sup>

TRIM MATERIAL				
Code	Plug or Butt Material	Plug Insert Material	Seat or Seat/Cage Material	Seat Insert Material
17-4	17-4 SST	-	17-4 SST	-
316	316 SST	-	316 SST	-
STL6	STL6/316	-	STL6/316	-
CARB	316 SST	Carbide	316 SST	Carbide

Note: • 3/16"-1" trim requires a 316 Adapter Seat  
 • For 1¼"-1¾" trim, the Seat is 17-4 SST and the Cage is 316 SST. Use Code "17-4".

## 2-2400 S-36TGA-12HA 0.38 AQ CARB

TRIM GEOMETRY & CHARACTERISTIC				
Code <sup>1</sup>	Trim Characteristic	Seating Geometry	Trim Sizes	Trim
AE	Angular	Equal % (0.19 only)	0.19"	Steel or Stellite
AP	Angular	Modified %	0.25"-1"	Carbide
AQ	Angular	Quick Open		
BE	Spherical	Equal %	0.25"-0.75"	Steel or Stellite
BP	Spherical	Modified %	0.25"-1.75"	
BQ	Spherical	Quick Open	0.19"-1"	

TRIM ORIFICE SIZE	
Code	Nominal Size
0.19	3/16"
0.25	1/4"
0.38	3/8"
0.50	1/2"
0.62	5/8"
0.75	3/4"
1.00	1"
1.25	1-1/4"
1.50	1-1/2"
1.75	1-3/4"

ACTUATOR SPRINGS	
Code	Spring Range (PSIG)
HA	3-15
WM	6-30
OO	None

ACTUATOR SIZE	
Code	Number
"00"	None
12	12
EO	Electric

PACKING		
Code	Material	Temp.
-	PTFE V-Ring	-120°+400°F -84°+204°C
N <sup>(1)</sup>	PTFE V-Ring	-120°+400°F -84°+204°C
L <sup>(1)</sup>	Viton/PTFE	-15°+400°F -26°+204°C

(1) Suitable for NACE - includes Inconel X750 Packing Spring and other NACE internals  
 (2) Sold in Canada only

### Accessories

Positioners (Electro-Pneumatic, Pneumatic and Digital), Airlock, Limit Switches, Solenoid Valve, Booster Relay, Filter Regulators, I/P Transducers, Pressure Controllers, Temperature Controllers, etc.

Contact Norriseal-WellMark today for more information about products and services

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