

# Series 3500 Control Valves

Globe - 3 Way Mixing Valves

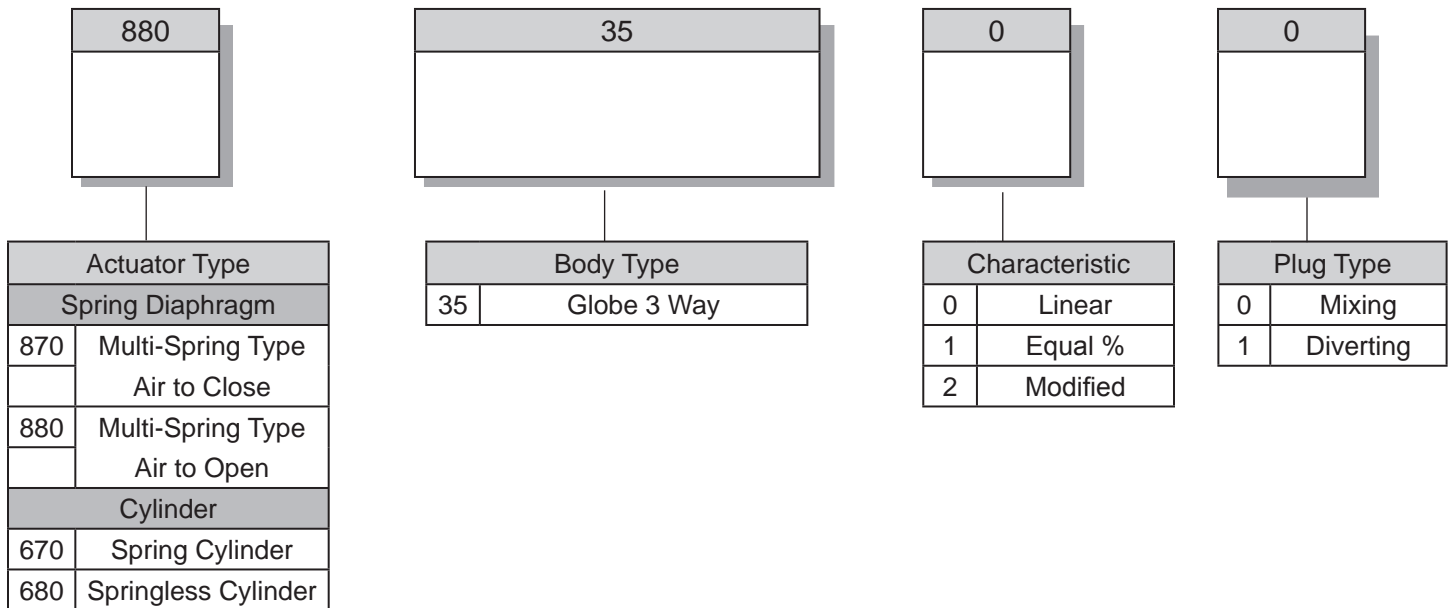
Globe - 3 Way Diverting Valves



Right Valve, Right Application, Right Now!

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## Ordering Schematic



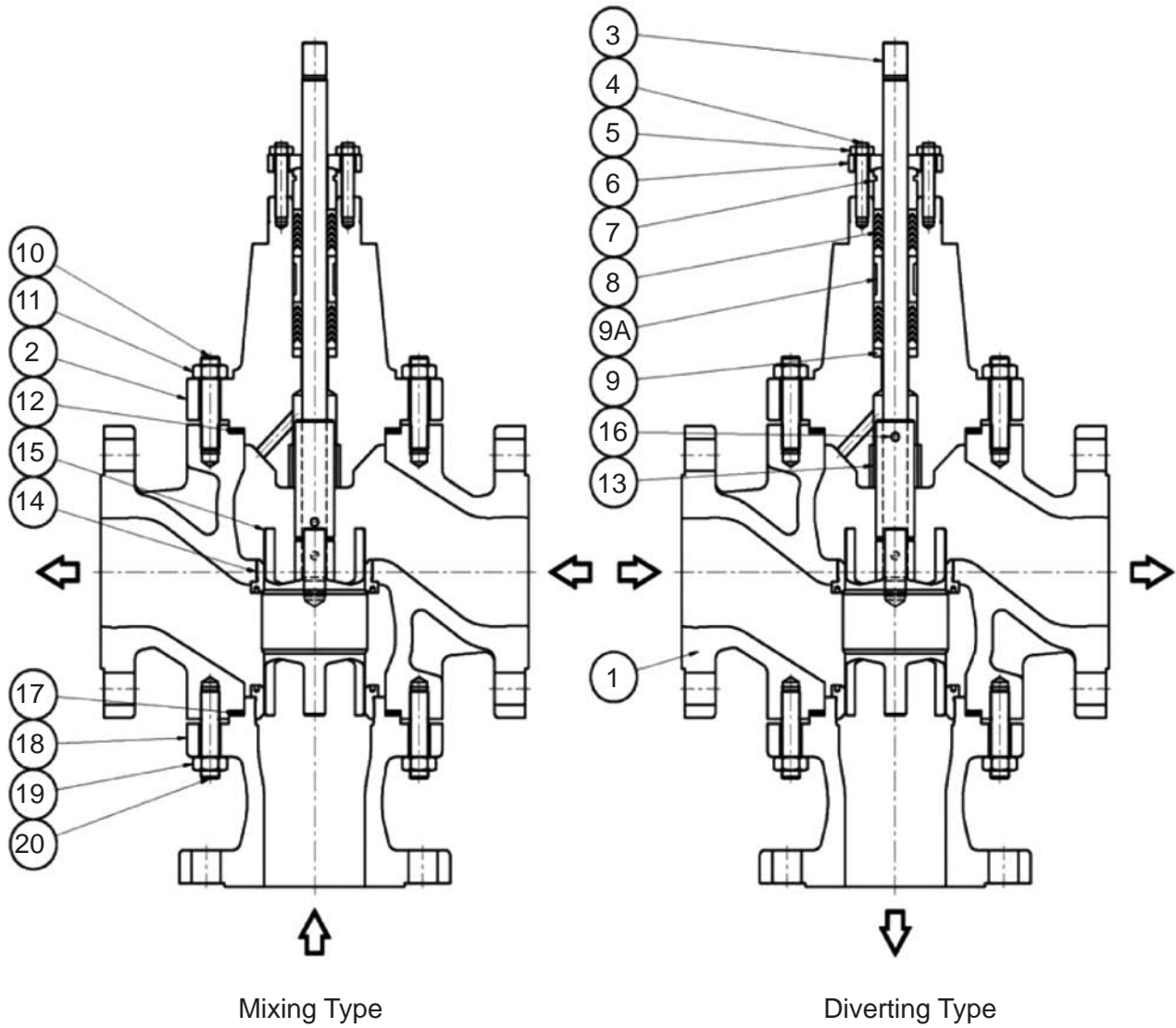
## Manufacturing Range

Description	Manufacturing Range	Remark
Body Size	1" – 10"	
Ratings	ANSI Class 150 – 600	
Connections	Flanged, Butt-Weld, Socket-Weld	
Body Material	A216 Gr-WCB, A351 Gr-CF8, CF8M, Alloy Steel Available	
Trim Material	304, 316SST, Alloy Steel Available	

## General Specifications

- Flow Direction: Mixing, Diverting
- Max. Fluid Temperature: 1049°F
- Minimum Fluid Temperature: -320°F
- Seat Leakages: ANSI B16.104 Class IV
  - Option 1: ANSI B16.104 Class V for Metal Seat Tight Shutoff
  - Option 2: ANSI B16.104 Class VI for Teflon Soft Seat & Seal (-22°F ~ 446°F)
- Body: Globe Single Seated Top Guide
- Bonnet Type: Stud Bolted
  - Standard Type: -0.4°F ~ 536°F
  - Extension Type: 538°F ~ 1049°F & under -0.4°F
- Flow Characteristics: Linear, Equal Percentage, Modified %
- Cv Ratio: 50:1
- Diaphragm actuators enclosed, heavy duty cylinders (spring-cylinder and double-cylinder) available
- Applicable for various instruments (positioner, SOV, Limit switch)

# Body Constructions



1	Body	8	Packing	14	Seat Ring
2	Bonnet	9	Packing Spacer	15	Plug
3	Plug Stem	9A	Lantern Ring	16	Plug Stem Pin
4	Packing Stud	10	Body Stud	17	Bottom Flange Gasket
5	Packing Nut	11	Body Nut	18	Bottom Flange
6	Packing Flange	12	Body Gasket	19	Bottom Flange Nut
7	Gland	13	Guide Bushing	20	Bottom Flange Stud

## Body Materials: Carbon Steel or Alloy Steel

Part No.	Description	Material
1	Body	ASTM A216 Gr-WCB / Alloy Steel Available
2	Bonnet	ASTM A216 Gr-WCB / Alloy Steel Available
3	Plug Stem	316 Stainless Steel
4	Packing Stud	316 / 304 Stainless Steel
5	Packing Nut	316 / 304 Stainless Steel
6	Packing Flange	316 / 304 / 303 Stainless Steel
7	Gland	316 / 304 / 303 Stainless Steel
8	Packing	PTFE Carbon Fiber / Graphite / Grafoil + Graphite
9	Packing Spacer	316 / 304 / 303 Stainless Steel
9A	Lantern Ring	316 / 304 / 303 Stainless Steel
10	Body Stud	A193 B7
11	Body Nut	A194 2H
12	Body Gasket	316 SST with Grafoil Filler
13	Guide Bushing	Solid Stellite / 440C Stainless Steel
14	Seat Ring	316 Stainless Steel
15	Plug	316 Stainless Steel
16	Plug Stem Pin	316 Stainless Steel
17	Bottom Flange Gasket	316 Stainless Steel with Grafoil Filler
18	Bottom Flange	ASTM A216 Gr-WCB / Alloy Steel Available
19	Bottom Flange Nut	A194 2H
20	Bottom Flange Stud	A193 B7

## Body Materials: Stainless Steel

Part No.	Description	Material
1	Body	ASTM A351 Gr-CF8 / A351 Gr-CF8M
2	Bonnet	ASTM A351 Gr-CF8 / A351 Gr-CF8M
3	Plug Stem	316 Stainless Steel
4	Packing Stud	316 / 304 Stainless Steel
5	Packing Nut	316 / 304 Stainless Steel
6	Packing Flange	316 / 304 / 303 Stainless Steel
7	Gland	316 / 304 / 303 Stainless Steel
8	Packing	PTFE Carbon Fiber / Graphite / Grafoil + Graphite
9	Packing Spacer	316 / 304 / 303 Stainless Steel
9A	Lantern Ring	316 / 304 / 303 Stainless Steel
10	Body Stud	A193 B7
11	Body Nut	A194 2H
12	Body Gasket	316 SST with Grafoil Filler
13	Guide Bushing	Solid Stellite / 440C Stainless Steel
14	Seat Ring	316 Stainless Steel
15	Plug	316 Stainless Steel
16	Plug Stem Pin	316 Stainless Steel
17	Bottom Flange Gasket	316 Stainless Steel with Grafoil Filler
18	Bottom Flange	ASTM A351 Gr-CF8 / A351 Gr-CF8M
19	Bottom Flange Nut	A194 2H
20	Bottom Flange Stud	A193 B7

## Flow Coefficients – Rated Cv

Valve Size	Travel (inches)	Orifice Diameter	Cv
1"	0.98	1.06	9
1-1/2"	1.57	1.50	21
2"	1.97	2.01	36
3"	3.15	2.64	75
4"	3.94	3.50	124
6"	5.91	5.24	270
8"	7.87	7.01	480
10"	9.84	8.74	750

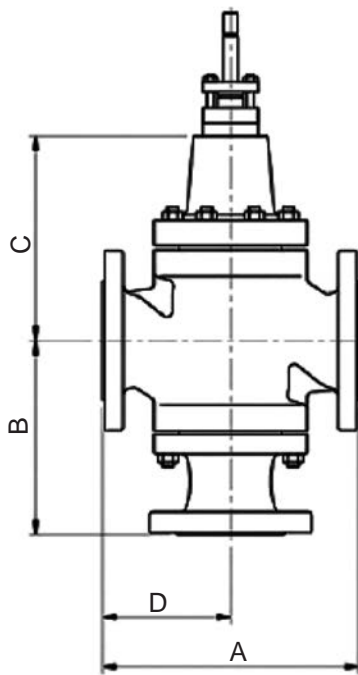
The Cv values shown are for reference only.

J Flow Controls, LLC can design and modify the seat design to meet different customer requirements.

## Flow Characteristics: LINEAR

Valve Size	Percent of Valve Travel																					
	0%		10%		20%		30%		40%		50%		60%		70%		80%		90%		100%	
1"	0	9	0.9	8.1	1.8	7.2	2.7	6.3	3.6	5.4	4.5	4.5	5.4	3.6	6.3	2.7	7.2	1.8	8.1	0.9	9	0
1-1/2"	0	21	2.1	18.9	4.2	16.8	6.3	14.7	8.4	12.6	10.5	10.5	12.6	8.4	14.7	6.3	16.8	4.2	18.9	2.1	21	0
2"	0	36	3.6	32.4	7.2	28.8	10.8	25.2	14.4	21.6	18	18	21.6	14.4	25.2	10.8	28.8	7.2	32.4	3.6	36	0
3"	0	75	7.5	67.5	15	60	22.5	52.5	30	45	37.5	37.5	45	30	52.5	22.5	60	15	67.5	7.5	75	0
4"	0	124	12.4	111.6	24.8	99.2	37.2	86.8	49.6	74.4	62	62	74.4	49.6	86.8	37.2	99.2	24.8	111.8	12.4	124	0
6"	0	270	27	243	54	216	81	189	108	162	135	135	162	108	189	81	216	54	243	27	270	0
8"	0	480	48	432	96	384	144	336	192	288	240	240	288	192	336	144	384	96	432	48	480	0
10"	0	750	75	675	150	600	225	525	300	450	375	375	450	300	525	225	600	150	675	75	750	0

## Dimensions



### Mixing

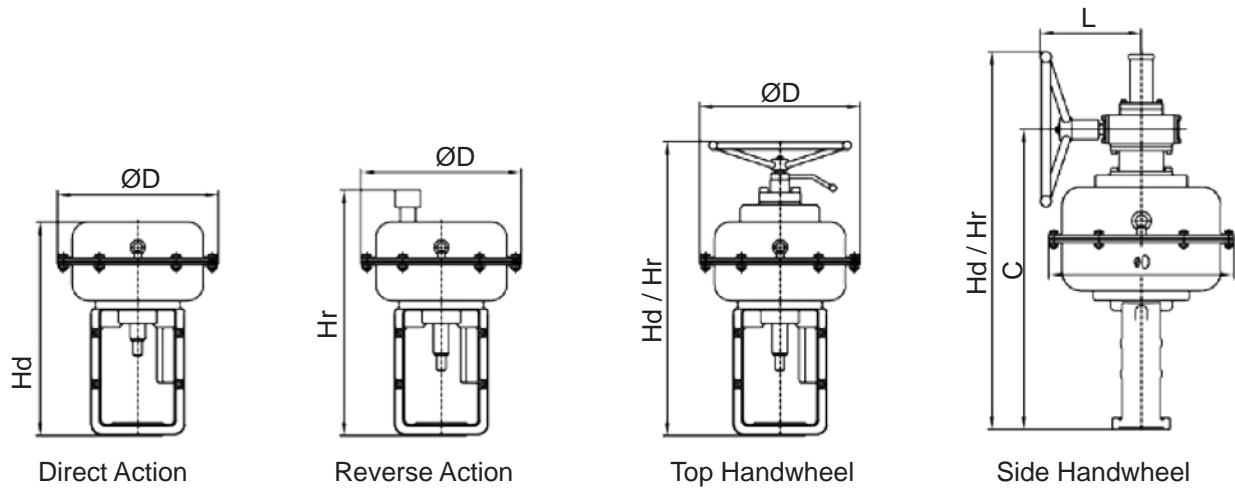
Valve Size	A			B			C	D		
	ANSI Class 150	ANSI Class 300	ANSI Class 600	ANSI Class 150	ANSI Class 300	ANSI Class 600		ANSI Class 150	ANSI Class 300	ANSI Class 600
1"	7.24	7.76	8.27	5.51	5.51	5.51	5.12	3.62	3.90	3.90
1-1/2"	8.74	9.25	9.88	6.26	6.26	6.26	5.24	4.37	4.65	4.65
2"	10.0	10.5	11.3	6.61	6.61	6.61	6.26	5.00	5.28	5.28
3"	11.7	12.5	13.3	7.99	7.99	8.62	7.99	5.87	6.26	6.26
4"	13.9	14.5	15.5	9.0	9.02	10.1	8.39	6.97	7.24	7.24
6"	17.8	18.6	20.0	11.4	11.4	12.4	11.0	8.90	9.33	9.33
8"	21.4	22.4	24.0	13.3	13.3	14.3	12.6	10.7	11.2	11.2
10"	24.6	26.0	27.8	15.4	15.4	16.4	13.11	12.3	13.0	13.0

### Diverting

Valve Size	A			B			C	D		
	ANSI Class 150	ANSI Class 300	ANSI Class 600	ANSI Class 150	ANSI Class 300	ANSI Class 600		ANSI Class 150	ANSI Class 300	ANSI Class 600
1-1/2"	8.74	9.25	9.88	7.01	7.01	7.01	6.10	4.06	4.29	4.65
2"	10.0	10.5	11.3	7.76	7.76	7.76	7.24	4.65	4.88	5.24
3"	11.7	12.5	13.3	9.37	9.37	9.88	9.25	5.51	5.51	5.51
4"	13.9	14.5	15.5	10.63	10.63	11.1	9.37	6.57	6.89	7.36
6"	17.8	18.6	20.0	13.0	13.0	14.0	12.6	7.64	8.07	8.74
8"	21.4	22.4	24.0	15.4	15.4	16.4	14.8	8.54	9.06	9.88
10"	24.6	26.0	27.8	18.0	18.0	19.3	16.4	9.92	10.6	11.6

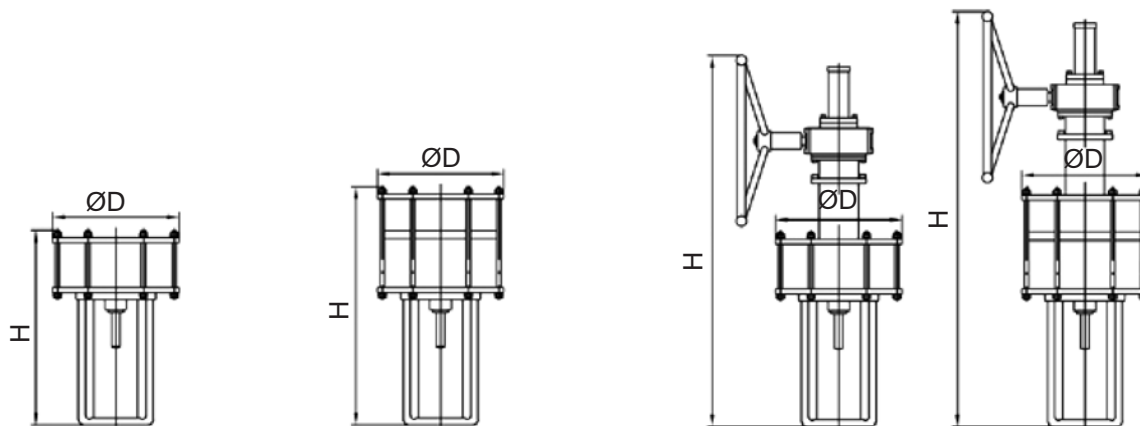
# Actuator and Handwheels

## Model 870 / 880 Diaphragm Actuators



Actuator Size	D	Without Handwheel		With Handwheel				
		DA Hd	RA Hr	Handwheel Type	DA Hd	RA Hr	C	L
#25	9.8	13.1	13.9	Top	17.7	18.6	-	-
#29	11.4	14.5	16.5	Top	21.0	22.4	-	-
#37	14.6	16.1	18.1	Top	22.6	24.4	-	-
#48	18.9	24.8	26.7	Side	38.5	38.5	30.7	10.2
#55	21.7	26.7	28.7	Side	43.2	43.2	33.4	11.8
#55H	21.7	28.7	30.6	Side	45.2	45.2	33.4	11.8

## Model 670 / 680 Cylinder Actuators



without Volume Chamber

with Volume Chamber

with optional Handwheel

## Weight

### Body Sub-Assembly

Valve Size	Flanged	
	150~300	600
1"	44	71
1-1/2"	90	99
2"	126	139
3"	220	234
4"	300	328
6"	525	615
8"	774	934
10"	1717	2087

### Actuator

Actuator Size	Standard	With Handwheel	
		Top	Side
#25	22	29	33
#29	42	55	60
#37	82	101	108
#48	203	238	247
#55	256	309	320
#55H	265	318	331

### Accessories

- Positioners
  - Smart, E/P, P/P Positioners for Single / Double Acting
- Instrument Valves
  - Transfer (Trip) Valves, Volume Booster Relay
  - Air Regulators (Air Set), Speed Control Valves
- Limit Switches
- Solenoid Valves



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