



## Electronic Globe Valve Guide Specifications

### Two and Three-Way Screwed Valves

Valves 1/2" through 2" shall be bronze body, NPT screw type, and shall be rated for ANSI Class 250 working pressure. The operating temperature range (of the controlled medium) shall be 20° to 250°F\*. Valve stems shall be stainless steel. Valve plugs shall be brass for water service and brass or stainless steel for steam service, depending on temperature and pressure requirements. Stem packing shall be EPDM O-ring or Teflon/EPDM, depending on temperature. 1/2" through 2" two-way valves shall be rated for 25 PSI differential for water applications and 15 PSI inlet for steam applications. 1/2" through 2" three-way valves shall be rated for 25 PSI differential. Optional trim materials are available for higher temperature/pressure applications. Flow type for two-way valves shall be equal percentage or modified equal percentage for water or steam applications. Flow type for three-way valves shall be linear. All screwed valves shall meet ANSI class IV leakage standards (not to exceed 0.01% of Cv).

### Two and Three-Way Flanged Valves

Valves 2-1/2" through 6" shall be cast iron or cast carbon steel body, flanged, and rated for ANSI Class 125 working pressure. The operating temperature range (of the controlled medium) shall be 20° to 250°F for water and/or low pressure steam applications (up to 15 PSI inlet pressure) with normal duty packing and up to 337°F maximum temperature with optional Teflon/EPDM V-ring packing for higher pressure steam and hot water. Valve stems shall be stainless steel. Valve plugs shall be brass or stainless steel. Stem packing shall be EPDM O-rings or optional Teflon/V-ring/EPDM O-ring. Two-way standard valves shall be rated for 25 PSI differential pressure for water applications and 15 PSI differential pressure for steam applications (50 PSI differential with optional stem packing and stainless steel trim). Three-way valves shall be rated for 25 PSI differential (optional trim for 50 PSI differential). Flow type for two-way valves shall be equal percentage or modified equal percentage for water applications. Flow type for three-way valves shall be modified equal percentage or linear. All flanged valves shall meet ANSI Class IV leakage standards (not to exceed 0.01% of Cv).

### Actuators

The valve actuator shall be capable of providing the minimum torque required for proper valve close-off for the required application. Each actuator shall have current limiting or stall detection circuitry incorporated into its design to prevent damage to the actuator. A gear release or manual override crank shall be provided on the motor to allow for manual override. Applications that require fail-safe operation of the valve assembly shall use actuators with mechanical spring return or the addition of a centralized battery backup module at the control panel for ease of maintenance. Capacitor type backup or individual battery backup within the motor housing is not acceptable. The actuator shall be modulating, floating (tri-state), or two-position with or without spring return as called out in the control sequence of operation. All modulating valves shall have positive positioning and respond to a 0-10 VDC or a 0-20 mA (with a dropping resistor) control signal. These modulating units will each have position feedback signal corresponding to the actual valve position which can be wired back to the control system. An optional feedback potentiometer or auxiliary switch shall be available, if required, for floating or two position type actuators. The actuator shall be powered by a 24 VAC, 120 VAC or 24 VDC power source. Actuators shall be UL listed.

### Metallic Linkages

All globe valve linkages must be high strength aluminum extrusions and have high strength adjustable tubular legs with self-aligning action. At 30 PSI inlet pressure or higher, the metallic linkage shall employ extra long legs to further isolate the actuator from heat. All linkages must have internal end-of-travel stops. All internal gear teeth and yokes shall be metallic. All linkages shall be linear so that the valve curve is not adversely affected. All actuators shall be mounted directly on the linkage drive shaft. Interface pieces are not acceptable.

### General

The manufacturer shall warranty the control valve assembly for a period of 2 years from the date of installation, not to exceed 30 months from the original date of shipment.

Control valves shall be provided by (DEI) Dodge Engineering and Controls, Inc., Chelmsford, MA USA.

*Note:*

\* For higher or lower temperature medium, contact DEI.



## Standard Globe Valve Specifications

1/2" to 2" Valves, Two and Three-Way			
Flow Characteristics:	Two-Way: Equal Percentage, Three-Way: Linear		
Valve Body Rating:	ANSI Class 250, ANSI Leakage Class IV*		
Maximum Recommended Inlet Pressure:	Two-Way: Water 365 PSI @ 250°F†, Steam: 15 PSI, 100 PSI for "-ST" only** Three-Way: Mixing 365 PSI @ 250°F†, Diverting 335 PSI @ 300°F		
Maximum Recommended Diff. Pressure:	Two-Way: Water 25 PSI, Steam: 15 PSI, 50 PSI for "-ST" only** Three-Way: Mixing 25 PSI, Diverting 50 PSI		
Maximum Close-off Pressure:	Refer to Valve Selection Chart (GV-3-5)		
Operating Temperature Range:	Two and Three-Way Mixing: 20°F to 250°F (-7°C to 121°C) Three-Way Diverting: 32°F to 300°F (0°C to 149°C)		
Materials:	Standard	"-SS"	"-ST"
Body	Bronze	Bronze	Bronze
Stem	Stainless Steel	Stainless Steel	Stainless Steel
Packing (Two and Three-Way Mixing)	EPDM O-Ring	EPDM O-Ring	Teflon / EPDM V-Ring
Packing (Three-Way Diverting)	TFE V-Ring	-	-
Trim	Bronze	Stainless Steel	Stainless Steel
Seat	Single, metal to metal	Single, metal to metal	Single, metal to metal
Connections:	Female NPT***		

Flanged: 2-1/2" to 6" Valves, Two and Three-Way			
Flow Characteristics:	Two-Way: Equal Percentage, Three-Way: Mod. Equal Percentage or Linear		
Valve Body Rating:	ANSI Class 125, ANSI Leakage Class IV* (ANSI 250 available)		
Maximum Recommended Inlet Pressure:	Two-Way: Water 150 PSI @ 250°F†, Steam: 15 PSI, 100 PSI for "-ST" only** Three-Way: Mixing 150 PSI @ 250°F†, Diverting (2-1/2" to 5") 140 PSI @ 300°F (6" to 8") 140 PSI @ 150°F		
Maximum Recommended Diff. Pressure:	Two-Way: Water 25 PSI, Steam: 15 PSI, 50 PSI for "-ST" only** Three-Way: Mixing 25 PSI, Diverting 50 PSI		
Maximum Close-Off Pressure:	Refer to Valve Selection Chart (GV-3-5)		
Operating Temperature Range:	Two and Three-Way Mixing: 20°F to 250°F (-7°C to 121°C) Three-Way Diverting: (2-1/2" to 5") 32°F to 300°F (0°C to 149°C), (6" to 8") 32°F to 150°F (0°C to 66°C)		
Materials:	Standard	"-SS"	"-ST"
Body	Cast Iron	Cast Iron	Cast Iron
Stem	Stainless Steel	Stainless Steel	Stainless Steel
Packing (Two and Three-Way Mixing)	EPDM O-Ring	EPDM O-Ring	Teflon / EPDM V-Ring
Packing (Three-Way Diverting)	TFE V-Ring	-	-
Trim	Bronze	Stainless Steel	Stainless Steel
Seat	Single, metal to metal	Single, metal to metal	Single, metal to metal
Connections:	Flanged Ends		

Notes:

- \* Diverting valves are ANSI leakage class II.
- \*\* Special models available for higher inlet pressures, differential pressures and extreme temperatures. Call DEI.
- \*\*\* Special connections are available.
- † Higher inlet pressures possible at lower medium temperatures. Call DEI.



## Control Valve Selection Chart (Type A Actuators)

Screwed Globe Valves with Zone Linkages							
Size (NPT)	Two-Way Valve		Three-Way Mixing Valve		Close-off (PSI)		
	Cv	Model	Cv	Model	EN44-NP	EN44	EN88
1/2"	1.0	GS2A-1.0	1.0	GS3A-1.0	143	143	>250
1/2"	1.6	GS2A-1.6	1.6	GS3A-1.6	143	143	>250
1/2"	2.5	GS2A-2.5	2.5	GS3A-2.5	143	143	>250
1/2"	4.0	GS2A-4.0	4.0	GS3A-4.0	143	143	>250
3/4"	6.3	GS2A-6.3	6.3	GS3A-6.3	83	83	167
1"	10	GS2A-10	10	GS3A-10	59	59	118
1-1/4"	16	GS2A-16	16	GS3A-16	39	39	78
1-1/2"	25	GS2A-25	25	GS3A-25	27	27	53
2"	40	GS2A-40	40	GS3A-40	–	–	33

Screwed Globe Valves									
Size (NPT)	Two-Way Valve		Three-Way Mixing Valve		Close-off (PSI)				
	Cv	Model	Cv	Model	ES62	EN88	EN132	ES142	EN221
1/2"	1.0, 1.6, 2.5, 4.0	GS2A-Cv	1.0, 1.6, 2.5, 4.0	GS3A-Cv	201	>250	>250	>250	–
3/4"	6.3	GS2A-6.3	6.3	GS3A-6.3	117	167	250	>250	–
1"	10.0	GS2A-10	10.0	GS3A-10	83	118	177	190	>250
1-1/4"	16.0	GS2A-16	16.0	GS3A-16	55	78	117	127	197
1-1/2"	25.0	GS2A-25	25.0	GS3A-25	38	53	79	86	133
2"	40.0	GS2A-40	40.0	GS3A-40	23	33	49	54	84

Flanged Globe Valves											
Size	Two-Way Valve		Three-Way Mixing Valve		Three-Way Diverting Valve		Close-off (PSI)				
	Cv	Model	Cv	Model	Cv	Model	ES142	EN221	EN310	Dual ES142	Dual EN310
2-1/2"	63	GF2A-63	63	GF3A-63	68	GFD3A-68	41	63	89	81	178
3"	100	GF2A-100	100	GF3A-100	85	GFD3A-85	26	41	58	52	115
4"	160	GF2A-160	160	GF3A-160	160	GFD3A-160	10	14	21	19	42
5"	250	GF2A-250	250	GF3A-250	195	GFD3A-195	–	–	14	12	27
6"	400	GF2A-400	400	GF3A-400	270	GFD3A-270	–	–	9	9	19

Notes:

- See valve specifications (GV-2) for maximum differential for modulating applications.
- Valves are available with higher close-off pressures for specific sizes (call DEI).



## Control Valve Selection Chart (Type B Actuators)

Screwed Globe Valves with Zone Linkages						
Size (NPT)	Two-Way Valve		Three-Way Mixing Valve		Close-off (PSI)	
	Cv	Model	Cv	Model	EN35	EN53
1/2"	1.0	GS2A-1.0	1.0	GS3A-1.0	114	172
1/2"	1.6	GS2A-1.6	1.6	GS3A-1.6	114	172
1/2"	2.5	GS2A-2.5	2.5	GS3A-2.5	114	172
1/2"	4.0	GS2A-4.0	4.0	GS3A-4.0	114	172
3/4"	6.3	GS2A-6.3	6.3	GS3A-6.3	66	100
1"	10	GS2A-10	10	GS3A-10	47	71
1-1/4"	16	GS2A-16	16	GS3A-16	31	47

Screwed Globe Valves										
Size (NPT)	Two-Way Valve Model	Three-Way Mixing Valve Model	Cv (for Two or Three-Way)	Close-off (PSI)						
				ES53	ES89	ES177	EN70	EN140	EN210	EN280
1/2"	GS2A-Cv	GS3A-Cv	1.0, 1.6, 2.5, 4.0	172	>250	>250	228	>250	>250	>250
3/4"	GS2A-6.3	GS3A-6.3	6.3	100	168	>250	132	>250	>250	>250
1"	GS2A-10	GS3A-10	10.0	71	120	236	94	187	>250	>250
1-1/4"	GS2A-16	GS3A-16	16.0	47	79	158	62	125	187	249
1-1/2"	GS2A-25	GS3A-25	25.0	32	53	107	42	85	127	168
2"	GS2A-40	GS3A-40	40.0	20	33	67	26	53	80	106

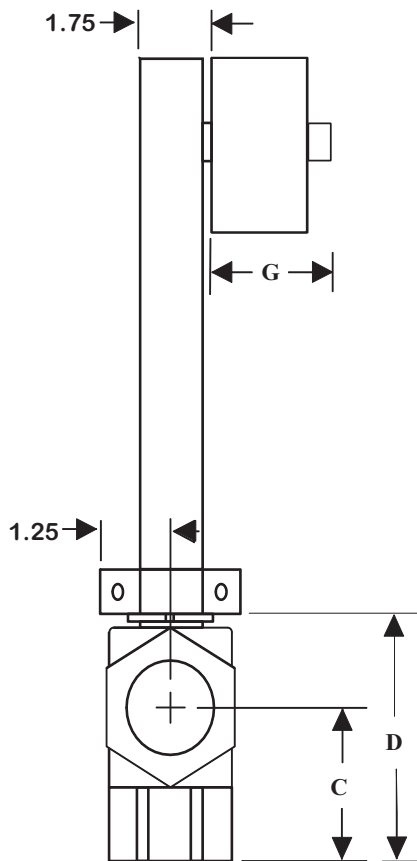
Flanged Globe Valves												
Size	Two-Way Valve		Three-Way		Three-Way		Close-off (PSI)					
	Cv	Model	Cv	Model	Cv	Model	ES177	EN140	EN210	EN280	Dual ES177	Dual EN280
2-1/2"	63	GF2A-63	63	GF3A-63	68	GFD3A-68	51	40	60	79	101	159
3"	100	GF2A-100	100	GF3A-100	85	GFD3A-85	33	26	39	51	65	103
4"	160	GF2A-160	160	GF3A-160	160	GFD3A-160	11	-	14	18	23	37
5"	250	GF2A-250	250	GF3A-250	195	GFD3A-195	-	-	9	12	15	24
6"	400	GF2A-400	400	GF3A-400	270	GFD3A-270	-	-	-	-	11	17

**Notes:**

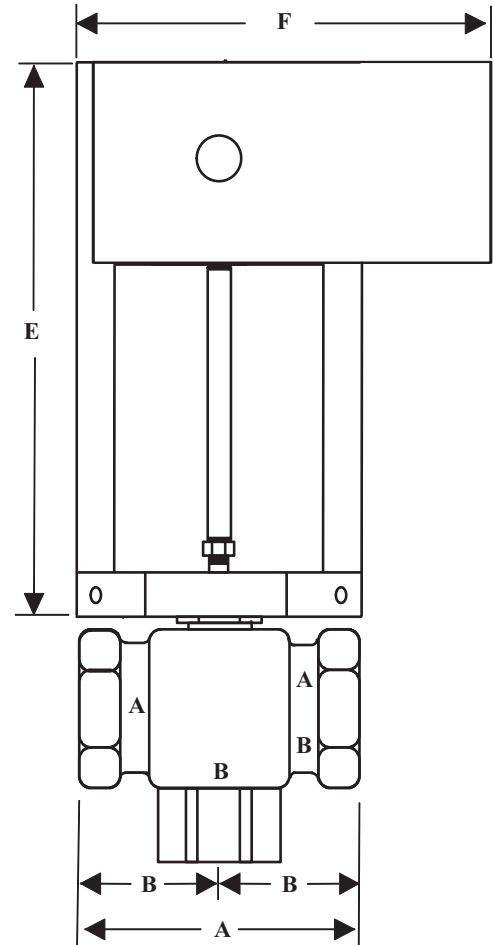
- See valve specifications (GV-2) for maximum differential for modulating applications.
- Valves available with higher close-off pressures for specific sizes (call DEI).



## Dimensions for Two-Way and Three-Way Control Valves: 1/2" to 2"



Note: Actuator can be mounted vertically or horizontally (on medium linkage only). See GVR-2 for dimensions.



Two-Way Valve						
Size	Cv	Model No.	A	B	C	D
1/2"	*	GS2A-Cv	2.75	1.38	1.13	2.94
3/4"	6.3	GS2A-6.3	3.25	1.63	1.00	3.94
1"	10.0	GS2A-10	3.75	1.88	1.50	3.75
1-1/4"	16.0	GS2A-16	5.00	2.50	1.63	4.13
1-1/2"	25.0	GS2A-25	5.06	2.53	2.00	4.28
2"	40.0	GS2A-40	6.13	3.06	2.44	4.56

Three-Way Valve (Mixing)						
Size	Cv	Model No.	A	B	C	D
1/2"	*	GS3A-Cv	2.88	1.44	2.13	4.31
3/4"	6.3	GS3A-6.3	3.25	1.63	2.19	4.31
1"	10.0	GS3A-10	3.88	1.94	2.38	4.50
1-1/4"	16.0	GS3A-16	4.88	2.44	2.63	4.63
1-1/2"	25.0	GS3A-25	5.19	2.59	2.88	4.63
2"	40.0	GS3A-40	6.25	3.13	3.31	4.75

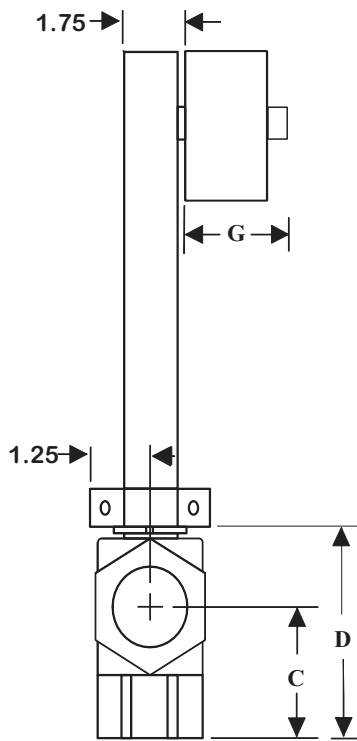
Notes:

- \* Specify Cv when ordering (i.e., 1.0, 1.6, 2.5, or 4.0).
- All NEMA 2 actuator assemblies are available with optional NEMA 4/4X type enclosures. See accessories section page AS-1 for details.
- Unless otherwise specified, actuator will be mounted off to the side.

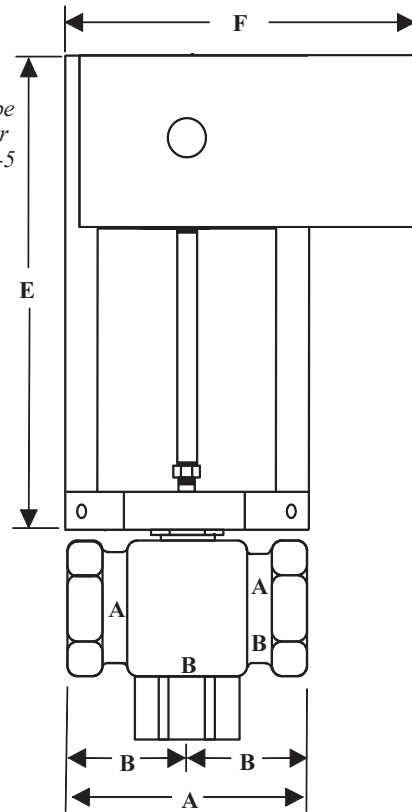
- All dimensions are in inches.
- For dual actuator assemblies, add 3.85" to opposite side of assembly.
- See GV-6 for "E", "F" and "G".



## Actuator and Linkage Dimensions for Two-Way and Three-Way Control Valves: 1/2" to 2"



Note: Actuator can be mounted vertically or horizontally. See GV-5 for dimensions.



Actuator/Linkage				
Actuator Type	Linkage Type	E*	F	G
<b>Type A Actuators</b>				
<b>Spring Return</b>				
ES62	Low	11.3	11.5	3.5
ES75	Low	11.3	11.5	3.5
ES142	Low	11.3	11.5	3.5
<b>Non-Spring Return</b>				
EN44/88	Zone	9.5	7.5	3.5
EN132	Low	11.3	11.5	3.5
EN177	Low	11.3	11.5	3.5
EN310	Med	13.5	11.5	3.5

Actuator/Linkage				
Actuator Type	Linkage Type	E*	F	G
<b>Type B Actuators</b>				
<b>Spring Return</b>				
ES53	Low	11.3	11.5	3.5
ES140	Low	11.3	11.5	3.5
<b>Non-Spring Return</b>				
EN35	Zone	9.5	7.5	3.5
EN53	Low	11.3	11.5	3.5
EN70	Low	11.3	11.5	3.5
EN140	Low	11.3	11.5	3.5
EN210	Med	13.5	11.5	3.5
EN280	Med	13.5	11.5	3.5

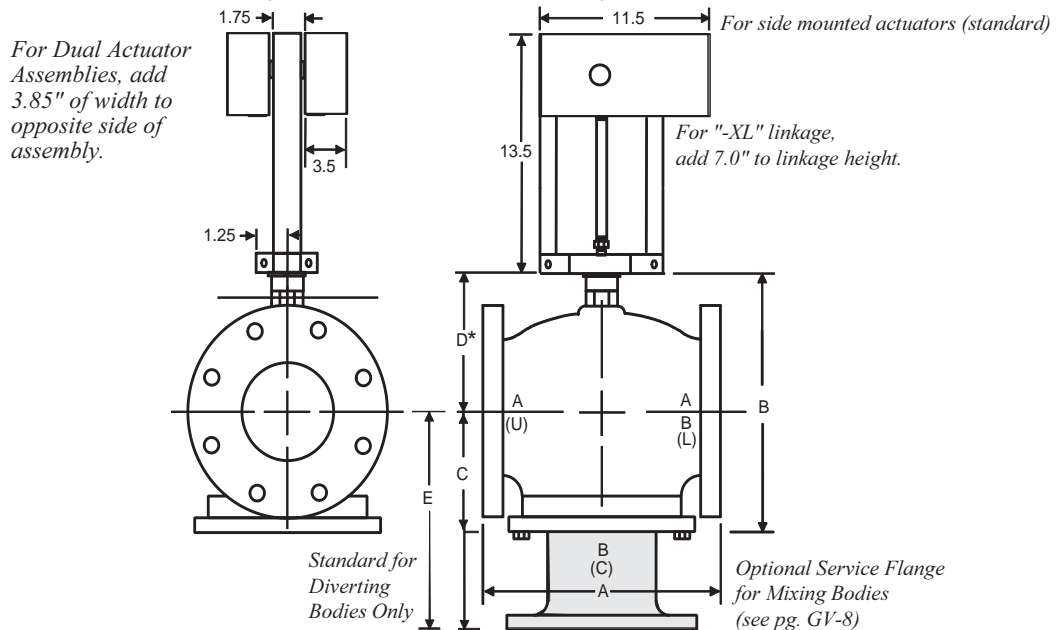
Notes:

- \* For "-XL" linkages, add 7.0" to dimension "E".
- Most NEMA 2 actuator assemblies are available with optional NEMA 4/4X type enclosures. See accessories section page AS-1 for details.

- Unless otherwise specified, actuator will be mounted off to the side.
- All dimensions are in inches.
- For dual actuator assemblies, add 3.85" to opposite side of assembly.



## Dimensions for Two-Way and Three-Way Control Valves: 2-1/2" to 6"



Two-Way Valve												
Size	Cv	Model No.	A	B	C	Flanges		Drilling		Machine Bolts		
						Dia.	Thick.	DBC**	Dia.	Qty.	Dia.	Lgth.
2-1/2"	63	GF2A-63	10-7/8	11	4-7/8	7	3/4	5.5	3/4	4	5/8	2.5
3"	100	GF2A-100	11-3/4	12-1/4	5-5/16	7-1/2	7/8	6.0	3/4	4	5/8	2.5
4"	160	GF2A-160	13-7/8	13-9/16	6-5/16	9	1	7.5	3/4	8	5/8	3
5"	250	GF2A-250	15-3/4	15-3/16	7	10	1	8.5	7/8	8	3/4	3
6"	400	GF2A-400	17-3/4	16-3/4	7-7/8	11	1	9.5	7/8	8	3/4	3.25

Three-Way Mixing Valve												
Size	Cv	Model No.	A	B	C	Flanges		Drilling		Machine Bolts		
						Dia.	Thick.	DBC**	Dia.	Qty.	Dia.	Lgth.
2-1/2"	63	GF3A-63	10-7/8	9-3/8	3-3/4	7	11/16	5.5	3/4	4	5/8	2.50
3"	100	GF3A-100	11-3/4	10-3/4	4-3/8	7-1/2	3/4	6.0	3/4	4	5/8	2.50
4"	160	GF3A-160	13-7/8	12-1/2	5-1/8	9	15/16	7.5	3/4	8	5/8	3.00
5"	250	GF3A-250	15-3/4	13-3/4	5-3/4	10	15/16	8.5	7/8	8	3/4	3.00
6"	400	GF3A-400	17-3/4	15-1/2	6-5/8	11	1	9.5	7/8	8	3/4	3.25

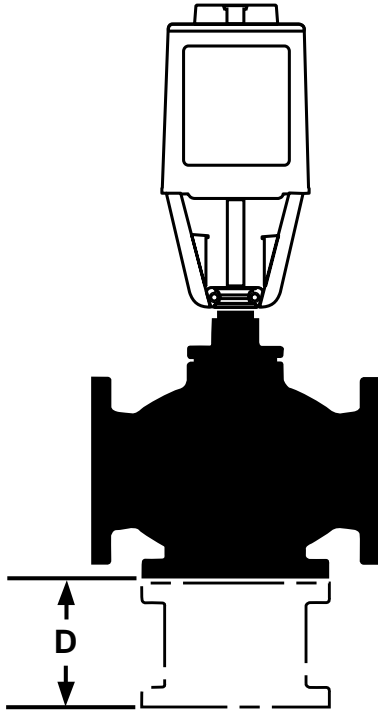
Three-Way Diverting Valve												
Size	Cv	Model No.	A	D	E	Flanges		Drilling		Machine Bolts		
						Dia.	Thick.	DBC**	Dia.	Qty.	Dia.	Lgth.
2-1/2"	68	GFD3A-68	9	5-1/2	7-1/8	7	11/16	5.5	3/4	4	5/8	2.50
3"	85	GFD3A-85	10	6-1/8	8	7-1/2	3/4	6.0	3/4	4	5/8	2.50
4"	160	GFD3A-160	13	7-1/8	9-7/8	9	15/16	7.5	3/4	8	5/8	3.00
5"	195	GFD3A-195	12	7-1/2	10-1/2	10	15/16	8.5	7/8	8	3/4	3.00
6"	270	GFD3A-270	14-1/8	7-7/8	11-1/8	11	1	9.5	7/8	8	3/4	3.25

Notes:

- \* "D" dimension applies to three-way diverting bodies only.
- \*\* DBC = Diameter of Bolt Circle.
- \*\*\* For applications with limited height restrictions, call DEI.
- Most NEMA 2 actuator assemblies are available with optional NEMA 4/4X type enclosures. See accessories section page AS-1 for details.
- All dimensions are in inches.
- Unless otherwise specified, linkage will be mounted off to the side.
- (U), (L) and (C) are Diverting Port Designs.



## Dimensions for Optional Service Flange for Three-Way Mixing Valves



<b>Three-Way Mixing Valve (ANSI 125) (Optional Service Flange)</b>					
Size	Cv	Model No.	D	Flange Bolts (Cap Screw)	Quantity Per Flange
2-1/2"	63	GF3A-63	6.5	5/8-11 x 1-1/2"	4
3"	100	GF3A-100	7.0	5/8-11 x 1-3/4"	4
4"	160	GF3A-160	7.5	5/8-11 x 2"	8
5"	250	GF3A-250	8.5	3/4-10 x 2"	8
6"	400	GF3A-400	9.5	3/4-10 x 2"	8

Note:

– "D" dimension is in inches.

## Globe Valve Temperature/Pressure Ratings

<b>Screwed Bronze Valve Body (1/2" to 2") Temperature/Pressure Ratings</b>	
Temperature °F(°C)	Pressure PSIG (kPa)
	ANSI Class 250
-20 to 150 (-30 to 66)	400 (2758)
200 (93)	385 (2655)
250 (121)	365 (2586)
300 (149)	335 (2300)
350 (177)	300 (2068)

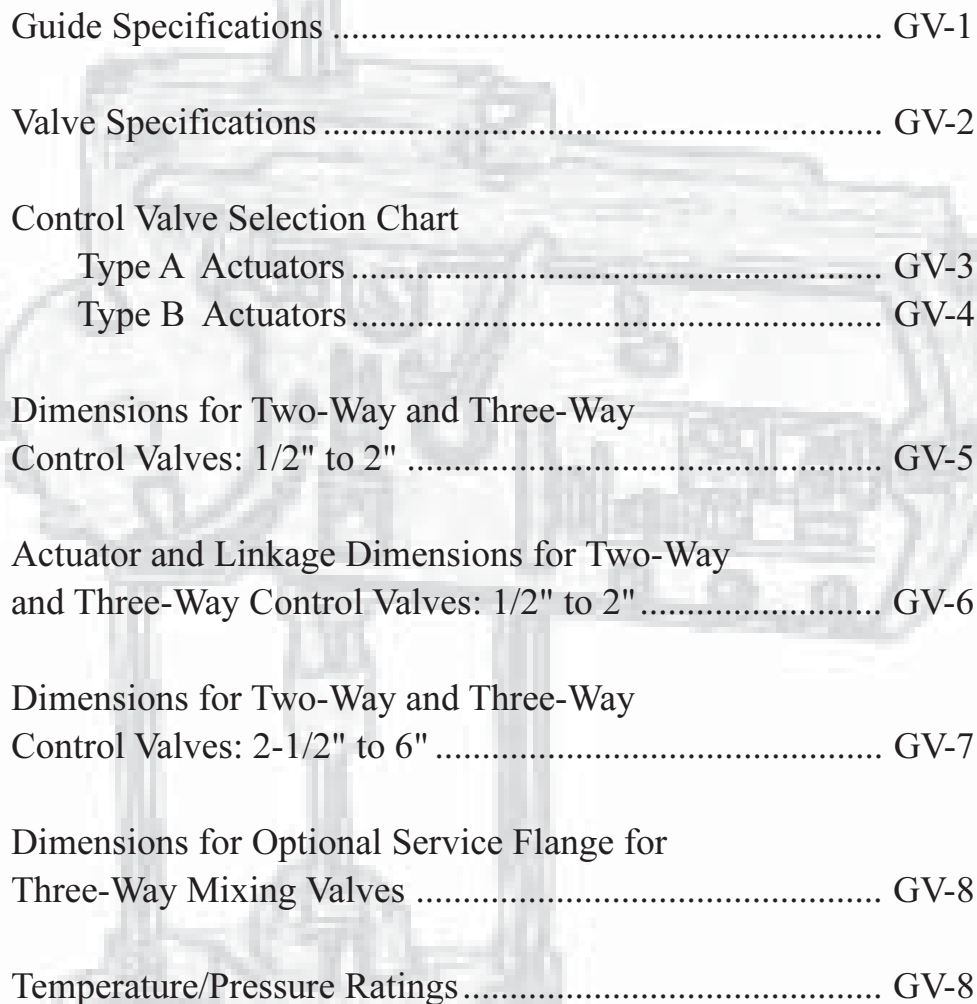
<b>Flanged Cast Iron Valve Body (2-1/2" to 6") Temperature/Pressure Ratings</b>		
Temperature °F(°C)	Pressure PSIG (kPa)	
	ANSI Class 125	ANSI Class 250
-20 to 150 (-30 to 66)	200 (1387)	500 (3447)
200 (93)	190 (1310)	460 (3171)
250 (121)	175 (1206)	415 (2861)
300 (149)	165 (1137)	375 (2585)
400 (204)	140 (965)	290 (1999)
450 (232)	125 (861)	250 (1723)

Note:

– ANSI 250 bodies are available upon request.  
Standard flanged valves are ANSI Class 125.



## Electronic Globe Valves



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