

Series D51: A Simple, Dependable Way to Divert Flow to Two Pipe Lines with Tight Shutoff to Either Line

Worcester's Series D51 is a standardized line of flanged diverter ball valves in sizes 2", 3", 4", 6", and 8" with ANSI Class 150 flanges.

D51 diverter valves are designed to accept media through a bottom inlet port and direct it out either of two outlet ports. They are commonly used for alternately diverting flow from a single source to two different lines; for example, dumping operations in which one outlet permits media to flow from a common source to the process while the other outlet alternately dumps or recirculates excess media.



Ball porting for D51 diverter valves is referred to as V1 (see illustration opposite) for 90° valve operation. Flow from the bottom inlet port cannot be shut off, only diverted to either of the two outlet ports. At either end of the valve stroke,

one port is wide open and the other is shut off bubble-tight. Relief slots assist in sealing and reduce torque. The ball is forced into the seat of the blocked port under pressure to affect and maintain a tight seal.

Series D51 Options

V2 porting for 180° full shutoff operations and T51 three-way valves for bidirectional flow applications are available through Custom Products.

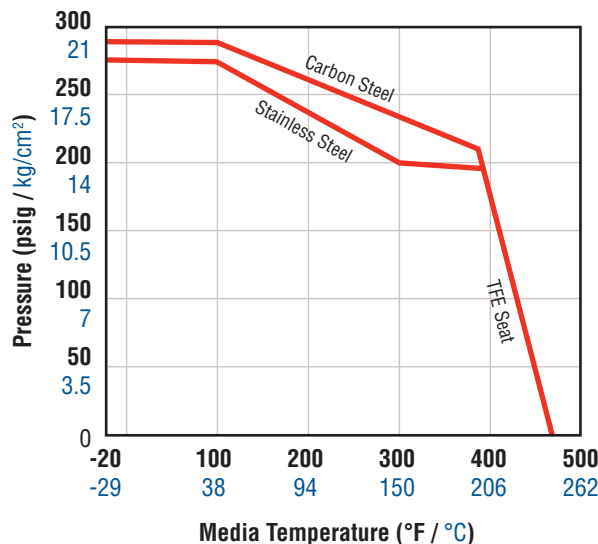
Automation

D51 flanged diverter valves may be automated with Series 75 electric actuators (refer to brochure WCABR1014) or Series 39 double piston pneumatic actuators (refer to brochure WCABR1003). Both actuators may be used in on/off or modulating applications. Limit switches, feedback potentiometers, 4-20 mA circuit boards providing remote indication of valve position and other accessories including a full line of advanced positioners are available.

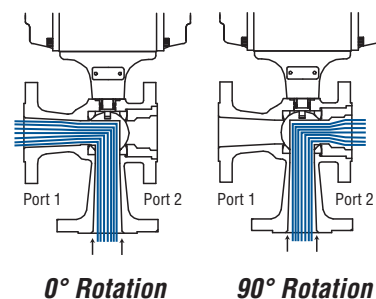
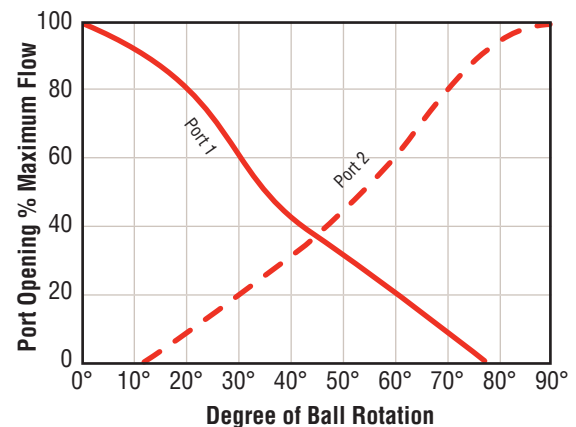
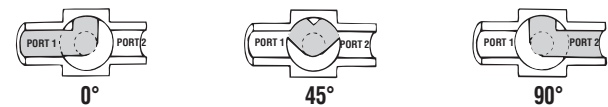
Flow Coefficient

Valve Size	C _v	Equivalent Length of Schedule 40 Pipe (feet)
2"	36	95
3"	135	62.5
4"	230	81
6"	330	312
8"	605	387

Seat Pressure/Temperature Rating

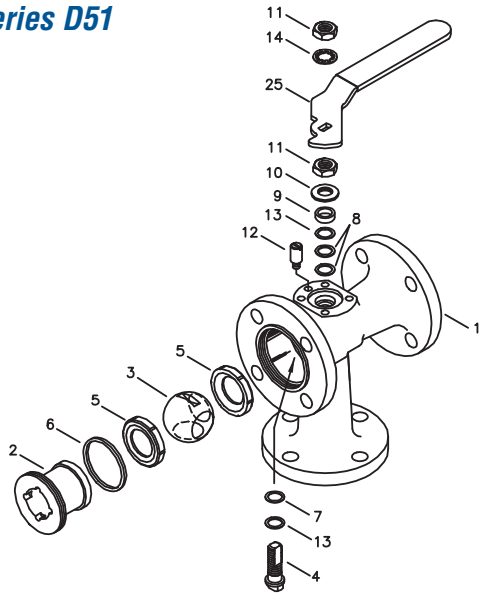


Flow Characteristic Curves for Diverter Valve V1 Porting, 90° Operation

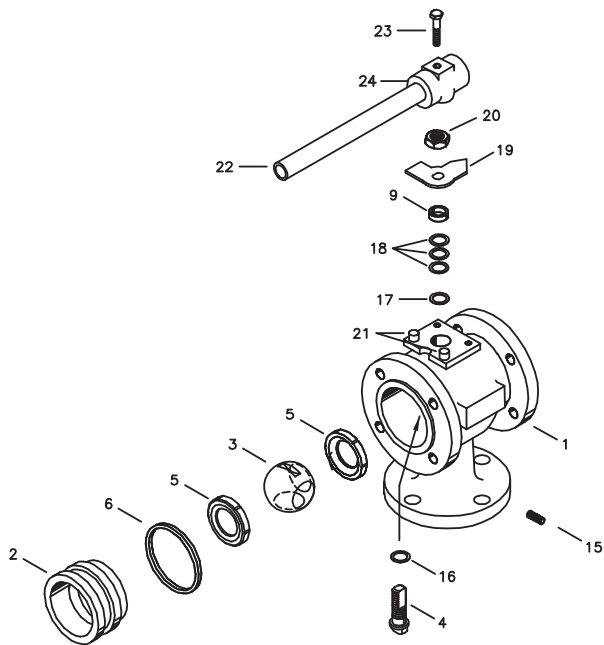


Parts Identification and Materials Specifications

Series D51



2" D51

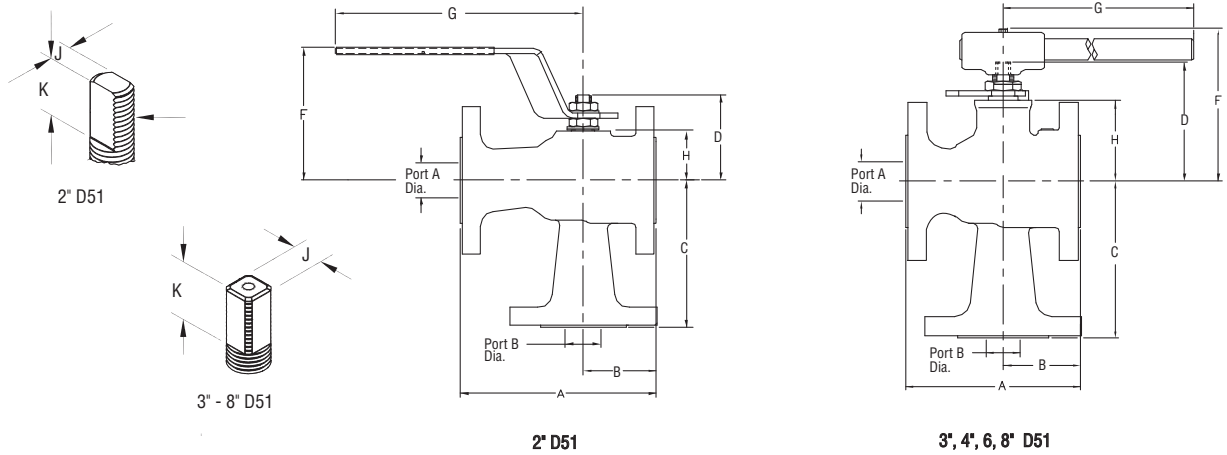


3", 4", 6", 8" D51

Part	Part Name	Qty.	Materials
1	Body	1	Carbon Steel - ASTM 216 – WCB Stainless Steel - ASTM A351 CF8M
2	End Plug	1	Carbon Steel - ASTM A108 Stainless Steel - ASTM A479 - 316, Cond. A
3	Ball	1	Stainless Steel - ASTM A479 - 316, Cond. A
4	Stem	1	Stainless Steel - ASTM A479 - 316, Cond. A
5	Seats	2	TFE
6	Body Seal	1	TFE
7	Thrust Bearing	1	Polyfill®
8	Stem Seal	2	Polyfill®
9	Follower	1	Stainless Steel - ANSI 316L
10*	Belleville Washers	2	Carbon Steel - Zinc Plated Stainless Steel 301
11*	Handle & Ret. Nuts	2	Carbon Steel - Zinc Plated Stainless Steel - ANSI 300 Series
12	Stop Screw	1	Carbon Steel - Black Oxide Coated
13	Thrust Bearing/ Seal Protector	2	PEEK
14	Lockwasher	1	Carbon Steel - Zinc Plated Stainless Steel - ANSI 300 Series
15	Shipping Screw	4-12	Stainless Steel - ANSI 304
16	Thrust Bearing	1	RTFE - Reinforced
17	Centering Washer	1	Carbon Steel - Black Oxide Coated Stainless Steel - ANSI 316
18	Stem Seals	3	RTFE - Reinforced
19	Stop Plate	1	Carbon Steel - Zinc Plated
20	Retaining Nut	1	Carbon Steel - Zinc Plated Stainless Steel - ANSI 300 Series
21	Stop Screw	2	Carbon Steel - Black Oxide Coated
22	Wrench Extension	1	Carbon Steel - ASTM A53/Galv.
23	Wrench Assy. Bolt.	1	Carbon Steel - SAE J429 GR.2
24	Wrench Block	1	Malleable Iron - ASTM A47, Black Oxide Coated
25	Handle	1	Carbon Steel - Zinc Plated, Vinyl Coated Stainless Steel - ANSI 300 Series, Vinyl coated

* **NOTE:** Four Belleville washers, and a lock nut (in place of handle and retaining nuts) are used if the valve is automated with a pneumatic or electric actuator.

Series D51



Dimensions

inches / millimeters

Valve Size	Ball Port A Dia.	Ball Port B Dia.	A	B	C	D	F	G	H	J	K	Weight lb. / kg
2"	1.44	1.44	7.00	2.68	5.00	3.06	4.77	8.10	1.92	.343	.60	26.5
	36.6	36.6	178.0	68.1	127.0	77.8	121.2	205.7	48.8	8.71	15.24	12.0
3"	2.50	2.00	8.00	3.63	6.00	5.69	7.22	22.00	3.88	.745	.65	52.6
	63.5	50.8	203.2	92.2	152.4	144.5	183.4	559.0	98.6	18.92	16.51	23.6
4"	3.25	2.50	9.00	4.00	7.13	6.31	7.84	22.00	4.48	.745	.65	80.7
	82.6	63.5	228.6	101.6	181.1	160.3	199.1	559.0	113.8	18.92	16.51	36.6
6"	3.94	3.00	10.50	4.25	9.85	8.96	11.21	26.00	6.19	1.12	1.03	137.8
	100.1	76.2	266.7	108.0	250.2	227.6	284.7	660.0	157.2	28.45	26.16	62.5
8"	5.69	4.00	11.50	5.69	11.00	10.08	12.31	26.00	7.28	1.12	1.03	204.0
	144.5	101.6	292.0	144.5	279.4	256.0	312.7	660.0	184.9	28.45	26.16	92.5