



FLOWSERVETM

***Valtek Valdisk 150
Control Valves***

Valtek Valdisk 150 Control Valves

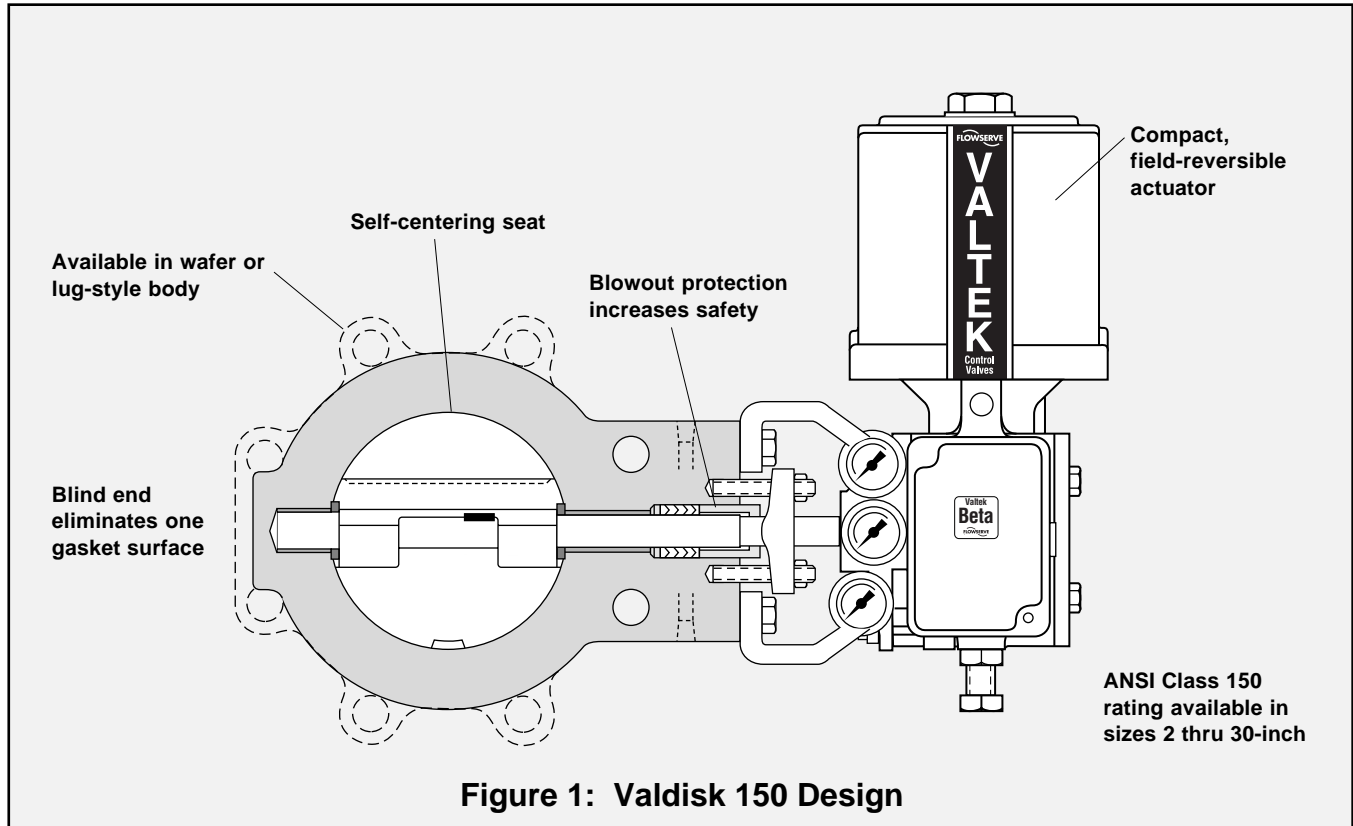


Figure 1: Valdisk 150 Design

The Valtek® Valdisk 150™ is a high-performance butterfly valve designed for controlling flow in most ANSI Class 150 applications. Available in a wafer or lug-style body, the Valdisk 150 is a low-cost valve that provides tight shutoff.

The Valdisk 150 has an eccentric-cammed disc that rotates out of the seat upon opening. This double-offset disc design reduces seat wear and leakage and has a low breakout torque requirement. The valve design provides additional safety with its fail-safe action on loss of supply air or positioner signal.

The typical liquid pressure recovery factor (F_v) of the Valdisk 150 rotary valve is better than most butterfly valves, reducing cavitation or choked flow. The body has a blind end feature that reduces potential leakage by eliminating one gasket surface. Larger valve sizes (8 to 30-inch) are designed with blowout protection. Several packing options are available: a standard Teflon® V-ring configuration or Flowserve's SafeGuard™ and SureGuard™ fugitive emissions packing.

A floating self-centering seat is held in place by an internal seat retainer to increase sealing capacity as it

aligns with the disc. Shutoff is typically better than ANSI Class VI.

Carbon and stainless steels are standard materials for Valdisk 150 body and disc; other alloys are available for special applications. This makes the Valdisk 150 usable in more than 75 percent of all class 150 services in the flow control industry.

Maintenance is easy with the Valdisk 150 valve. The non-selective disc and shaft are easily interchanged with new parts, eliminating the need to replace whole assemblies for one component. The Valdisk 150 rotary valve uses a standard Valtek spring cylinder rotary actuator to provide high torque and high stiffness to accurately control the valve disc even while operating close to the seat.

The Valdisk 150 rotary valve is available in sizes 2 through 30-inches and has an operating temperature range of -100° to 400° F / -73° to 204° C. Modern engineering design and use with the Valtek spring cylinder rotary actuator make the Valdisk 150 rotary valve an economical and dependable control valve for today's ANSI Class 150 applications.

Valtek Valdisk 150

Features and Advantages

Features	Advantages
Double offset disc	Tighter shutoff Reduced seat wear Low breakout torque assures accurate throttling, even close to the seat Disc pulls out of seat immediately preventing seat wear Accurate throttling due to disc profile when rotating into seat
Self-centering seat	Allows seat to align with disc, increasing sealability
Integral disc stop	Prevents damage to seat due to overstroking
One-piece shaft	Tighter shutoff through reduced deflection
Bidirectional shutoff	Allows valve to be mounted with shaft upstream or downstream
Non-selective disc & shaft	Easier maintenance Reduced cost – replace part needed, not entire assembly
Wafer or lug-type body	Rugged and lightweight for easy handling and maintenance
Blind end	Reduced leakage possibility due to one less gasket surface
Concave disc	Increased flow capacity
High flow capacity	Greater capacity than globe, plug and cammed control valves
Non-clogging seat design	Increases sealability and reduces maintenance requirements No sediment build up in pockets

Valdisk 150 also capitalizes on established features of Flowserve’s other product lines:

Cylinder actuator	High torque for high-performance throttling Compact and lightweight for easier servicing and maintenance Fully interchangeable with Valdisk™ and ShearStream™ actuators Actuator air pressures allowable up to 150 psi / 1034 kPa
Fully enclosed, air-purged transfer case	Extra safety Prevents atmospheric corrosion of actuator internals Disc position indicator mounted on transfer case
Wide interchangeability	Spare parts stocking requirements minimized Inventory costs reduced
Available in variety of materials	Carbon steel, 316 stainless steel body and other alloys
Seat interchangeability	New seat easily installed
Spool-type four-way positioner	Convertible between I/P and P/P Calibration and maintenance easy due to fewer

The combined features designed into Valdisk 150 create a valve measurably superior to most other rotary valves. The information and specifications contained in the following pages are provided for comparison.

Valtek Valdisk 150 Seat

Poisson Effect

Poisson's ratio is based on the premise that no volume change occurs during elastic deformation. Therefore, if an elastomeric O-ring is deformed on one side due to pressure, the O-ring will bulge out on the side not subjected to the pressure.

O-rings can be used to pre-load the seat because of their resilient ability to return to their original shape. This type of design is effective in achieving tight shutoff.

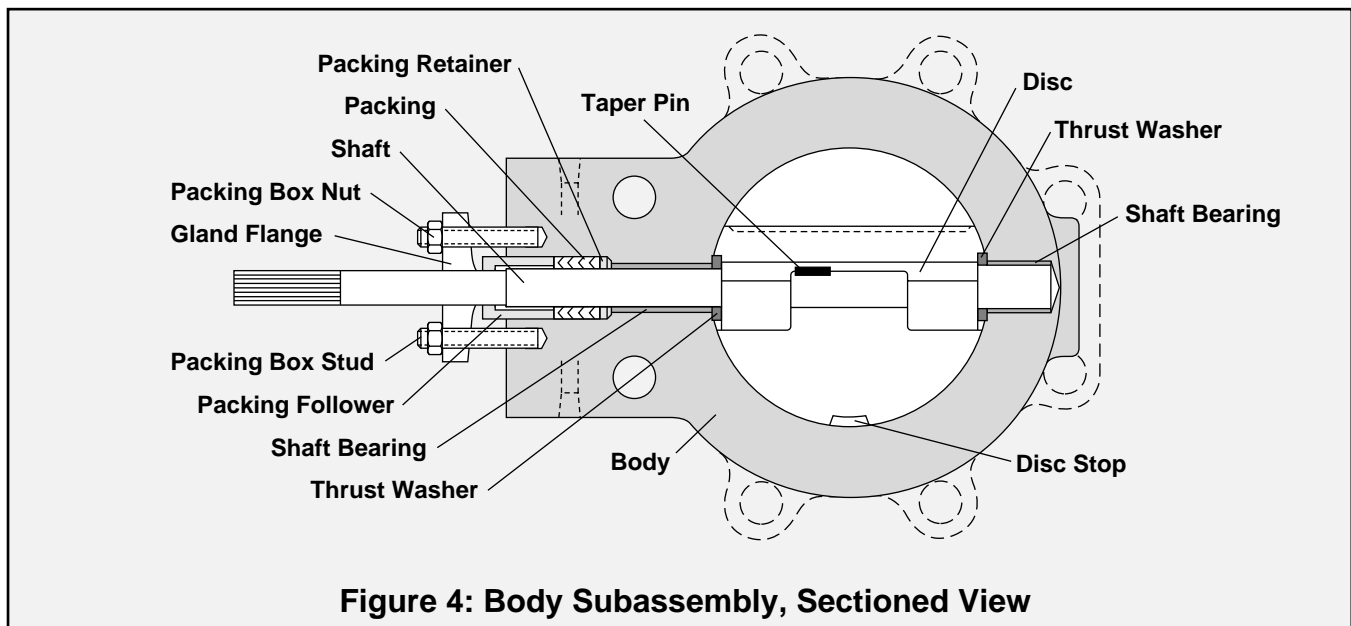
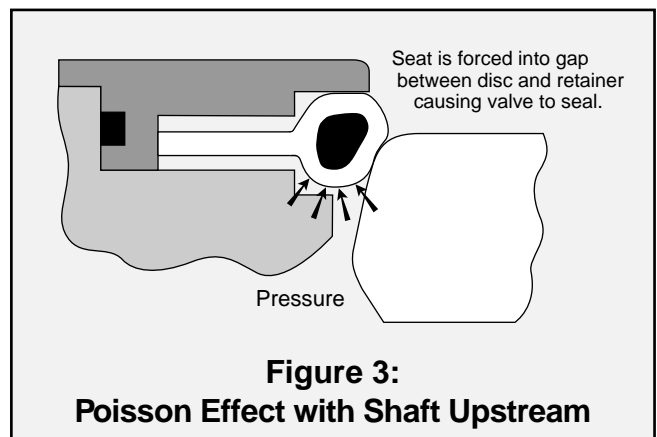
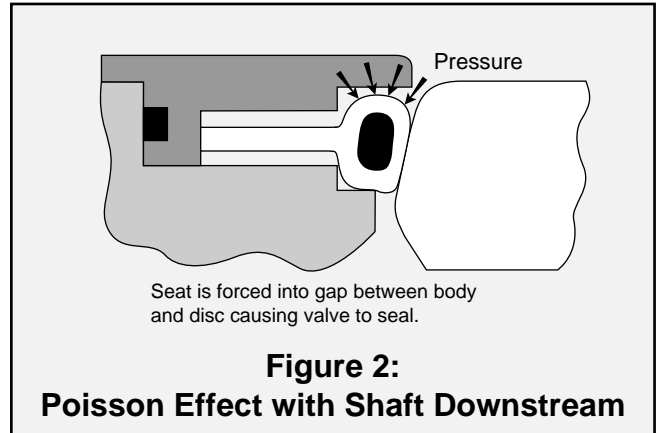
Valdisk 150 Seat

The Valdisk 150 uses the Poisson effect in its seat design by encasing a Viton® O-ring with Teflon. The design provides a tight shutoff that usually exceeds an ANSI Class VI shutoff.

Figure 2 shows the "deformation" of the seat into the gap between the disc and valve body as pressure is applied to the seat side of the disc.

Figure 3 shows the seat forced into the gap between the disc and seat retainer as pressure is applied to the shaft side of the disc.

Extensive testing has proven that the Valdisk 150 seat design is effective not only in ensuring tight shutoff, but in reducing wear on the sealing parts. The design also reduces breakout torque and maintenance requirements.



Valtek Valdisk 150

Specifications

Table I: Body Specifications

Sizes (inches)	2, 3, 4, 6, 8, 10, 12, 14, 16, 18, 20, 24, 30
Body Forms	Wafer, lug
Body rating	ANSI Class 150
Shutoff rating	ANSI Class VI
Operating temperature	-100° to 400° F / -73° to 204° C (-20° F / -29° C for carbon steel)
Fire seat rating	API 607
Actuator	Pneumatic (sq.in.): 25, 50, 100, 200; Manual
Positioner signals	Pneumatic: 3-15, 6-30 psi / .2 - 1.0, .4 - 2.0 bar electro-pneumatic: 4-20, 10-50 mA

Table IV: Materials of Construction

Body, disc, retainer	Carbon steel, stainless steel, Alloy 20, Hastelloy C, Inconel, Monel, nickel
Shaft	17-4 PH (std.), stainless steel, Alloy 20, Hastelloy C, Inconel, Monel, Nitronic 50
Bearing	Ryload (rolled stainless steel with Teflon insert)
Packing 2 thru 12-inch	Teflon V-ring (std.), Graphite Safeguard, SureGuard
Packing 14 thru 30-inch	Teflon V-ring, Graphite
Seat	Teflon energized with Viton O-ring

Table II: Flow Coefficients

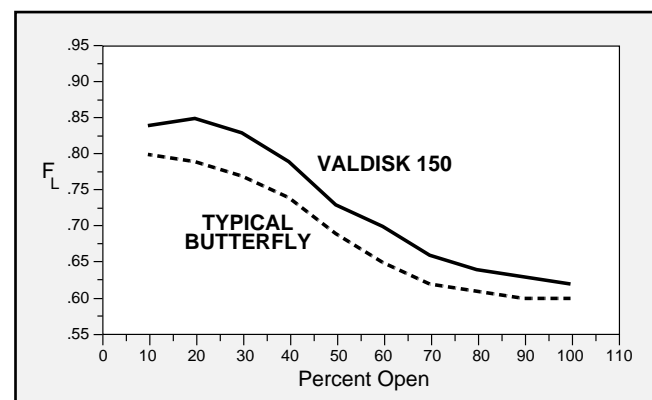
Body Size (inches)	Flow Coefficient (C _v at 90° rotation)	
	Shaft Up	Shaft Down
2	39	40
3	141	116
4	294	277
6	966	901
8	1672	1604
10	3500	3680
12	4860	4590
14	6800	6800
16	8800	8800
18	11500	11500
20	14000	14000
24	20500	20500
30	31000	31000

Table V: Estimated Shipping Weight (lbs / kg)
(with standard actuator and positioner)

Valve Size (inches)	Wafer Body		Lug Body	
	lbs	kg	lbs	kg
2	44	20	44	20
3	48	22	50	23
4	52	24	58	26
6	98	44	103	47
8	119	54	129	59
10	149	68	163	74
12	280	127	353	160
14	397	180	447	203
16	472	214	547	248
18	547	248	647	293
20	614	279	771	350
24	812	368	1027	466
30	1197	543	1572	713

Table III: Valve / Actuator Compatibility

Actuator Size (sq. in.)	Spring Size	Valve Size (inches)												
		2	3	4	6	8	10	12	14	16	18	20	24	30
25	STD.													
25	EXTD.													
50	STD.													
50	EXTD.													
100	STD.													
100	DUAL													
200	STD.													
200	DUAL													


Figure 5: Typical Valdisk 150 F_L Curves*

*Actual pressure recovery values may vary with valve size and shaft orientation.

Valtek Valdisk 150

Dimensions

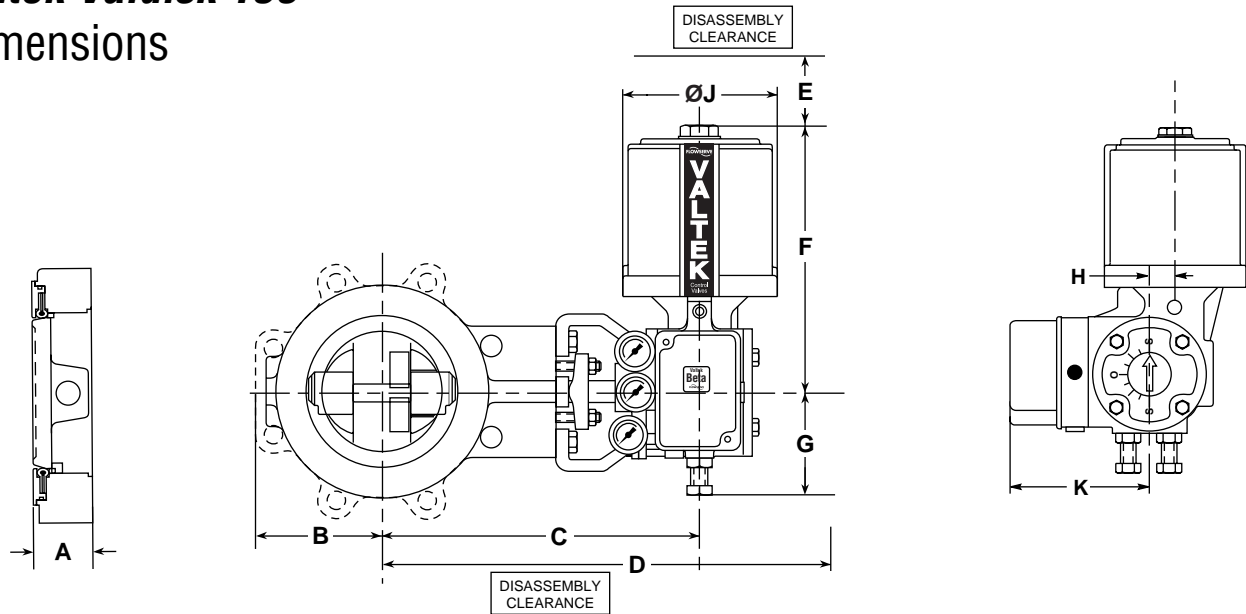


Table VI: Valdisk 150 Dimensions (inches / mm)

Size (in.)	Actuator Size (sq.in.)	Splines Size (in.)	A		B		C		D		E		F		G		H		J		K	
			in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
2	25	0.62	1.75	44.5	2.5	64	11.5	292	22.1	561	5.3	135	13.3	338	4.5	114	1.1	28	6.5	165	6.5	165
2	50	0.62	1.75	44.5	2.5	64	11.5	292	22.3	566	7.5	191	18.3	465	5.8	147	2.0	51	9.1	231	7.4	188
3	25	0.62	1.88	47.8	3.1	79	12.2	310	22.8	579	5.3	135	13.3	338	4.5	114	1.1	28	6.5	165	6.5	165
3	50	0.62	1.88	47.8	3.1	79	12.2	310	23.0	584	7.5	191	18.3	465	5.8	147	2.0	51	9.1	231	7.4	188
4	25	0.62	2.13	54.1	4.2	107	12.7	323	23.3	592	5.3	135	13.3	338	4.5	114	1.1	28	6.5	165	6.5	165
4	50	0.62	2.13	54.1	4.2	107	12.7	323	23.5	597	7.5	191	18.3	465	5.8	147	2.0	51	9.1	231	7.4	188
6	50	0.88	2.25	57.2	5.2	132	13.7	348	24.5	622	7.5	191	18.3	465	5.8	147	2.0	51	9.1	231	7.4	188
6	100	0.88	2.25	57.2	5.2	132	13.7	348	28.0	711	8.5	216	22.9	582	7.5	191	2.4	61	12.5	318	8.4	213
8	50	1.12	2.44	62.0	6.3	160	15.0	381	25.8	655	7.5	191	18.3	465	5.8	147	2.0	51	9.1	231	7.4	188
8	100	1.12	2.44	62.0	6.3	160	15.0	381	29.3	744	8.5	216	22.9	582	7.5	191	2.4	61	12.5	318	8.4	213
8	200	1.12	2.44	62.0	6.3	160	15.0	381	31.8	808	9.0	229	23.4	594	7.5	191	2.4	61	17.5	445	8.4	213
10	50	1.12	2.93	74.4	7.8	198	16.7	424	27.5	699	7.5	191	18.3	465	5.8	147	2.0	51	9.1	231	7.4	188
10	100	1.12	2.93	74.4	7.8	198	16.7	424	31.0	787	8.5	216	22.9	582	7.5	191	2.4	61	12.5	318	8.4	213
10	200	1.12	2.93	74.4	7.8	198	16.7	424	33.5	851	9.0	229	23.4	594	7.5	191	2.4	61	17.5	445	8.4	213
12	100	1.50	3.31	84.1	9.3	236	18.7	475	33.0	838	8.5	216	22.9	582	7.5	191	2.4	61	12.5	318	8.4	213
12	200	1.50	3.31	84.1	9.3	236	18.7	475	35.5	902	9.0	229	23.4	594	7.5	191	2.4	61	17.5	445	8.4	213
14	100	1.38	3.75	95.3	14.0	356	20.3	516	36.0	914	8.5	216	22.9	582	7.5	191	2.4	61	12.5	318	8.4	213
14	200	1.38	3.75	95.3	14.0	356	20.3	516	38.5	978	9.0	229	23.4	594	7.5	191	2.4	61	17.5	445	8.4	213
16	100	1.50	4.13	104.9	15.9	404	22.0	559	36.3	922	8.5	216	22.9	582	7.5	191	2.4	61	12.5	318	8.4	213
16	200	1.50	4.13	104.9	15.9	404	22.0	559	38.8	986	9.0	229	23.4	594	7.5	191	2.4	61	17.5	445	8.4	213
18	100	1.75	4.63	117.6	17.9	455	23.8	605	38.1	968	8.5	216	22.9	582	7.5	191	2.4	61	12.5	318	8.4	213
18	200	1.75	4.63	117.6	17.9	455	23.8	605	40.6	1031	9.0	229	23.4	594	7.5	191	2.4	61	17.5	445	8.4	213
20	100	1.75	5.13	130.3	24.3	617	24.6	625	38.9	988	8.5	216	22.9	582	7.5	191	2.4	61	12.5	318	8.4	213
20	200	1.75	5.13	130.3	24.3	617	24.6	625	41.4	1052	9.0	229	23.4	594	7.5	191	2.4	61	17.5	445	8.4	213
24	100	1.75	6.19	157.2	27.5	699	34.7	881	49.0	1245	8.5	216	22.9	582	7.5	191	2.4	61	12.5	318	8.4	213
24	200	1.75	6.19	157.2	27.5	699	34.7	881	51.5	1308	9.0	229	23.4	594	7.5	191	2.4	61	17.5	445	8.4	213
30	100	1.75	7.50	190.5	32.3	820	39.2	996	53.5	1359	8.5	216	22.9	582	7.5	191	2.4	61	12.5	318	8.4	213
30	200	1.75	7.50	190.5	32.3	820	39.2	996	56.0	1422	9.0	229	23.4	594	7.5	191	2.4	61	17.5	445	8.4	213

All dimensions are to be used for estimation only. Certified drawings will be supplied upon request. Face-to-Face, MSS SP68

Valtek Valdisk 150

Dimensions, Ordering Information

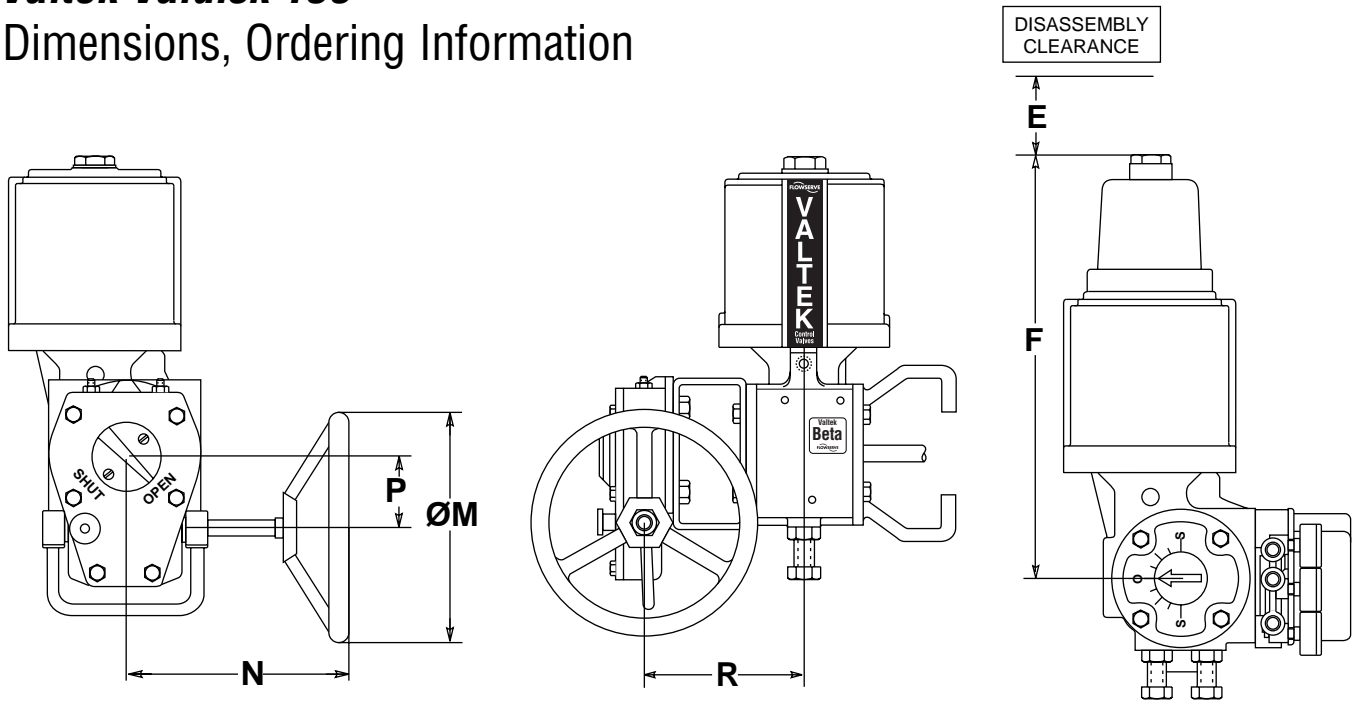


Table VII: Valdisk 150 – Handwheel and Extended Spring Dimensions (inches / mm)

Actuator Size	E		F		M		N		P		R	
25	9.3	236	17.3	439	9.8	249	9.8	249	2.6	66	6.9	175
50	9.8	249	23.8	605	12.0	305	10.3	262	3.2	81	9.1	231
100	8.5	216	22.9	582	18.0	457	13.0	330	5.4	137	11.0	279
200	9.0	229	23.4	594	18.0	457	13.0	330	5.4	137	11.0	279

Ordering Information

The following information must be provided when ordering a Valdisk 150 control valve:

1. Preferred body size and critical dimensions
2. Start-up and operating conditions: inlet and outlet pressures, temperature, flow rate, fluid's specific gravity or molecular weight, vapor pressure or gas compressibility
3. Maximum operating temperatures and pressures
4. Body and disc pressure rating
5. Materials required: body, disc, shaft, packing, and bearings

6. Line size and schedule
7. Actuator requirements: type (pneumatic or manual), failure position, size and minimum air supply
8. Actuator: mounting and orientation (Figure 6)
9. Accessories required

Valdisk 150 Sizing

Procedures and data to size Valdisk 150 valves including determining actuator size, are contained in *Performance!* valve selection software.

Valtek Valdisk 150 Mounting Orientations

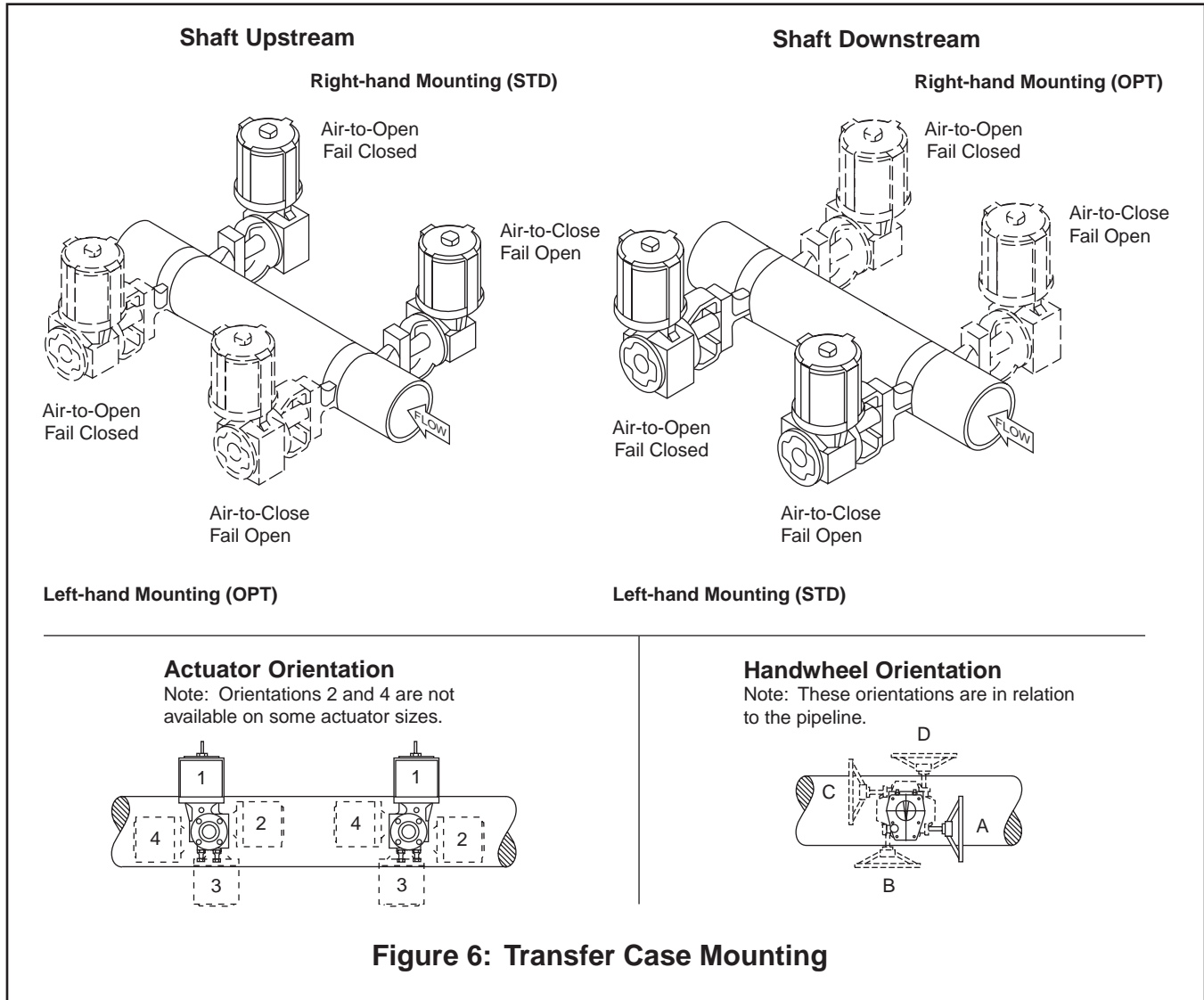


Figure 6: Transfer Case Mounting

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