

Handwheels, Limit Stops and Lever Operators

LINEAR ACTUATOR HANDWHEELS

Valtek® linear actuators are available with two types of handwheel designs: the continuously connected handwheel and the push-only handwheel.

Continuously Connected Handwheels

Continuously connected handwheels can be used to retract or extend the actuator stem or to act as a high-limit or low-limit stop. The handwheel can easily be put in neutral for automatic operation of the actuator.

In operation, the handwheel is turned counter-clockwise to retract the actuator stem. Moving the handwheel clockwise forces the stem to extend. Returning the handwheel to the neutral position permits automatic operation of the actuator without interference from the handwheel. Adjusting the handwheel screw to a position other than neutral provides a limit stop to limit the stem travel in one direction or the other, but not both at the same time.

Side-mounted Handwheels are offered with 25, 50, 100 and 200 square-inch actuator sizes. This design features a modular handwheel that can easily be removed from the actuator for maintenance without affecting the operation of the actuator. Any size 25, 50, 100 and 200 cylinder actuator can be retrofitted with this design by adding a new yoke and actuator stem. Figure 18-1 shows this design.

Top-mounted Handwheels are also available in size 100 or larger actuators using a Limitorque design for longer stroke capability. This design, although similar in many respects to the side-mounted style, has a side-operated handwheel on top of the cylinder. This design is shown in Figure 18-2.

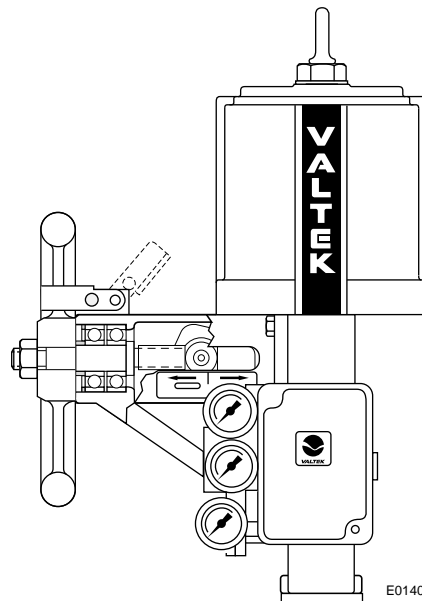


Figure 18-1: Size 25, 50, 100 and 200 Side-mounted, Continuously Connected Handwheel

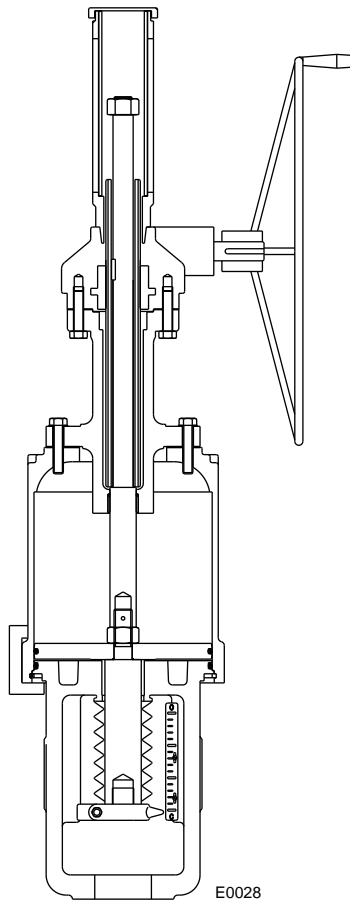


Figure 18-2: Top-mounted, Continuously Connected Handwheel

Push-only Handwheel

The push-only handwheel is top-mounted and is available in size 25 through 200 actuators. This handwheel is used in applications where it may be necessary to close the valve manually. Turning the handwheel clockwise extends the actuator stem downward. The push-only handwheel may also be used as a limit stop to limit the opening of the valve. This design is shown in Figure 18-3.

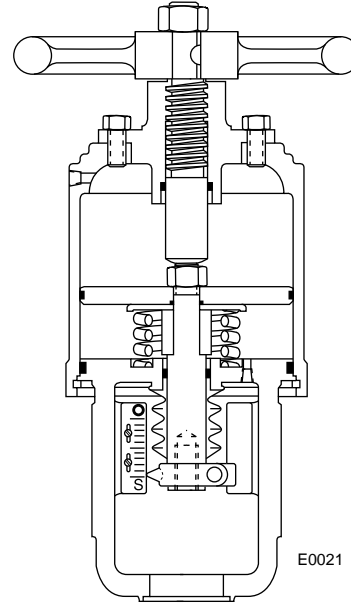


Figure 18-3: Top-mounted, Push-only Handwheel

Table 18-I: Side-mounted Continuously Connected Handwheel Specifications

Act. Size	Spud	HW Operator Size	HW Diameter		Turns per		Force Amplification Factor	Maximum Stroke		Weight	
			in	mm	in	mm		in	mm	lb	kg
25	2.00	25	9	230	5.3	.21	44:1	1.5	38	39	18
50	2.00	25	12	305	5.3	.21	58:1	3.0	76	85	39
50	2.62	50	12	305	6.7	.26	63:1	3.0	76	96	44
100 ⁽¹⁾	2.62	50	18	455	6.7	.26	95:1	4.0	102	198	90
100	2.88-4.75	100/200	24	610	8.0	.31	126:1	4.0	102	290	132
200	2.88-4.75	100/200	24	610	8.0	.31	126:1	4.0	102	395	179

Top-mounted Continuously Connected Handwheel Specifications

100	2.62-4.75	100/200	18	455	12	305	128:1	6.0/8.0	152/203	285	129
200	2.62-4.75	100/200	18	455	12	305	128:1	6.0/8.0	152/203	400	181

(1) 100 psi / 6.89 Bar maximum supply pressure when 50-inch HW Operator is used on a 100-inch actuator.

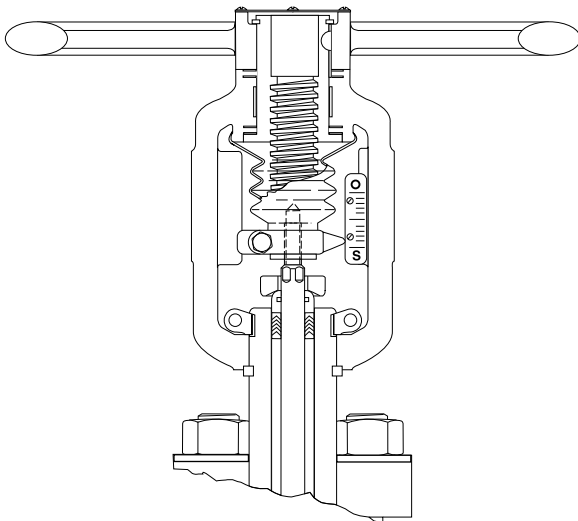
Example: if you apply 50 lb / 222 N rim pull on the 12-inch / 305-mm handwheel of a 50-inch HW operator, then the operator output will be: 50 lb / 222 N rim pull x 63 = 3150 lb / 14011 N output thrust.

TABLE 18-II: Manual Handwheel Specifications

Handwheel Type	Body Size (Class 150-600)	Handwheel Diameter		Thrust @ 50 lb/222N rim pull	
		in	mm	lb	N
HA	1/2 to 2-inch	9	230 (standard)	2024	9003
		12	305 (optional)	2699	12008
HB / HC	3 to 4-inch, 6-inch (Class 150)	12	305 (standard)	2187	9728
		18	455 (optional)	3280	14590
HD	6-inch (Class 300 and 600) to 8-inch	18	455 (standard)	2180	9697
		24	610 (optional)	2907	12931
B320-20	6-inch (Class 300, 600), 8, 10, 12 (Class 150)	18	455 (standard)	6400	28469
		24	610 (optional)	8500	37810

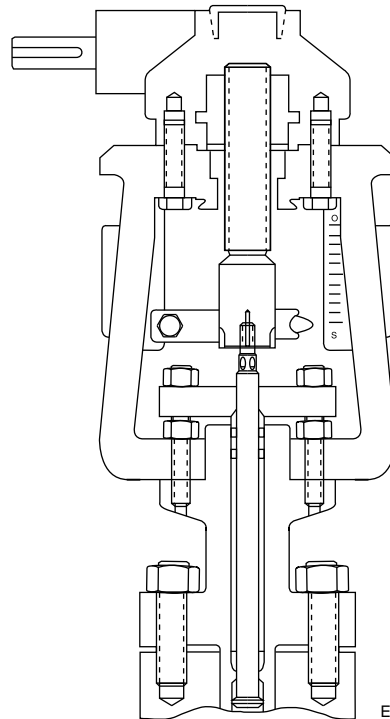
Manual Handwheels

Valtek manual handwheels provide high performance manual operation of Valtek globe valves. This handwheel is a rising stem design and is interchangeable with Valtek cylinder or diaphragm actuators. The design is shown in Figures 18-4 and 18-5 and the specifications are included in Table 18-II.



E0123

Figure 18-4: Manual Handwheel



E0022

Figure 18-5: Limitorque Manual Handwheel

Actuator Limit Stops

Simple actuator stops are available to limit either valve opening or closing. Locknuts are included to maintain precise setting of the selected limit stop position. The push-only design limits the opening of the actuator, while the pull-only design limits the closing of the actuator (see Figures 18-6 and 18-7).

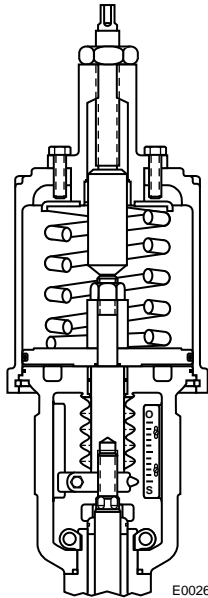


Figure 18-6: Limit Stop, Push-only Style (Limit Opening)

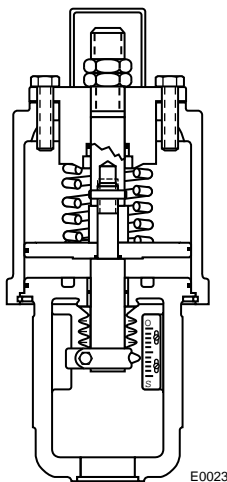


Figure 18-7: Limit Stop, Pull-only Style

Lever Operators

Lever operators (see Figure 18-8) can be attached to size 25 and 50 Valtek cylinder actuators to automatically position dampers, louvers and variable pitch fans. They can also be used to make other mechanical adjustments to process machinery. Table 18-III outlines the forces available at various cylinder pressures.

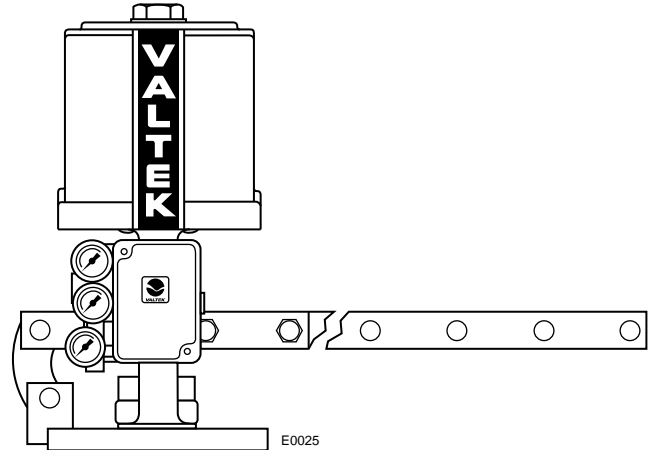


Figure 18-8: Lever Operator

TABLE 18-III: Lever Operator Force

Cylinder Size	Lever Travel		Available Force (lb / N) at Supply Pressure Psig / Barg					
	in	mm	80	5.5	100	6.9	150	10.3
25	4	102	621	2762	776	3452	1164	5178
	5	127	496	2206	621	2762	932	4146
	6	152	414	1842	518	2304	776	3452
	7	178	355	1579	444	1975	665	2958
	8	203	311	1383	388	1726	582	2589
	9	229	276	1228	345	1535	518	2304
	10	254	248	1103	311	1383	466	2073
	11	279	226	1005	282	1254	423	1882
50	12	305	207	921	259	1152	388	1726
	6	152	1311	5832	1639	7291	2458	10934
	7	178	1124	5000	1405	6250	2107	9372
	8	203	983	4373	1229	5467	844	8203
	9	229	874	3888	1093	4862	1639	7291
	10	254	787	3501	983	4373	1475	6561
	11	279	715	3180	894	3977	1341	5965
100	12	305	656	2918	819	3643	1229	5467
	12	305	1428	6352	1852	8238	2913	12958
	16	406	1071	4764	1389	6179	2184	9715
	20	508	857	3812	1111	4942	1747	7771
	24	610	714	3176	926	4119	1457	6481

ROTARY ACTUATOR HANDWHEELS

Declutchable Handwheel Actuator

Valtek's rotary declutchable handwheel is designed to override the actuator in case of air failure. If manual operation is desired, this unit has a special worm gear that develops torque sufficient to operate most valves. It can be bottom or side-mounted on any Valtek rotary actuator, depending on the orientation of the gear box.

NOTE: This handwheel is not designed to act as a stroke limitation device.

TABLE 18-IV: Declutchable Manual Handwheel Specifications

Actuator Size	Handwheel Diameter		Output Torque at 50 lb / 222 N Rim Pull	
	in	mm	in lb	Nm
25	10	255	2850	322
50	12	305	3700	418
100	18	455	7100	802
200	18	455	7100	802

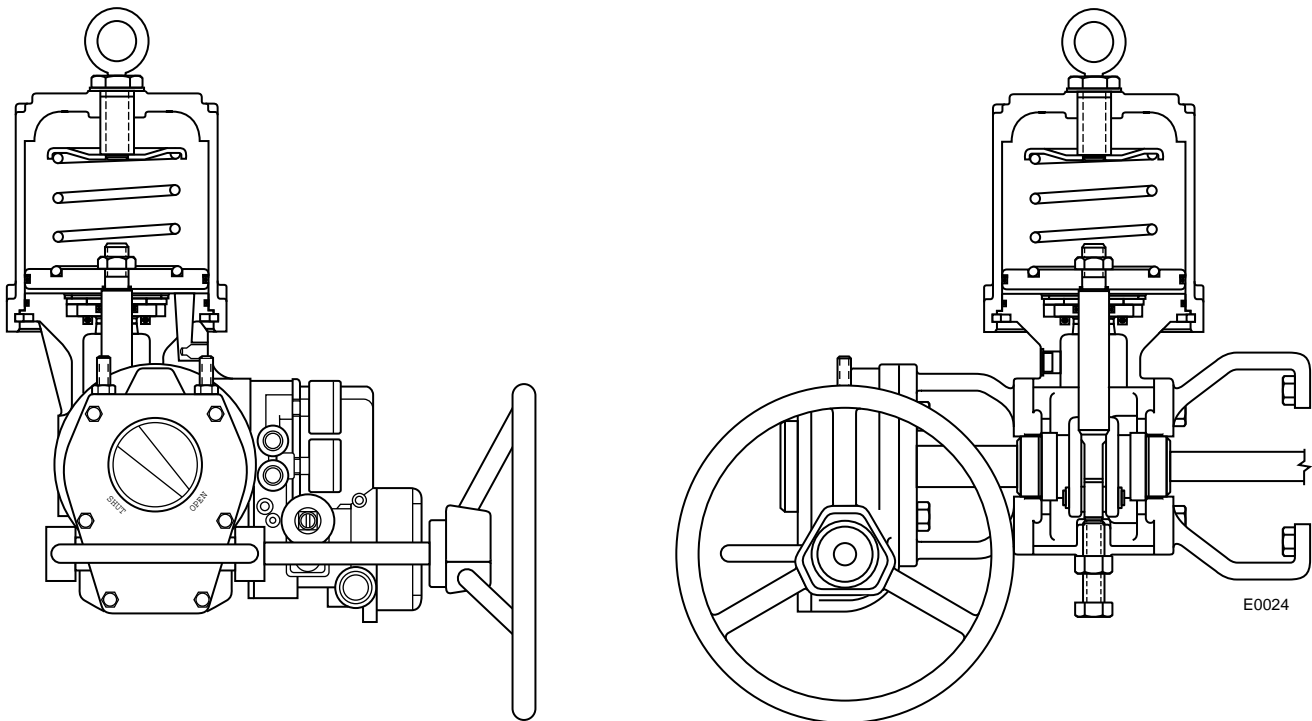


Figure 18-9: Rotary Declutchable Handwheel

Handlever

The Valtek handlever is constructed of ductile iron for high corrosion and impact resistance. It features a special hammer-blow device for freeing the valve under rusty or freezing conditions. This model comes in two sizes: A 15-inch / 381-mm lever for sizes 2 thru 6-inch rotary motion valves, and a 22-inch / 559-mm lever for sizes 8 thru 10-inch rotary-motion valves.

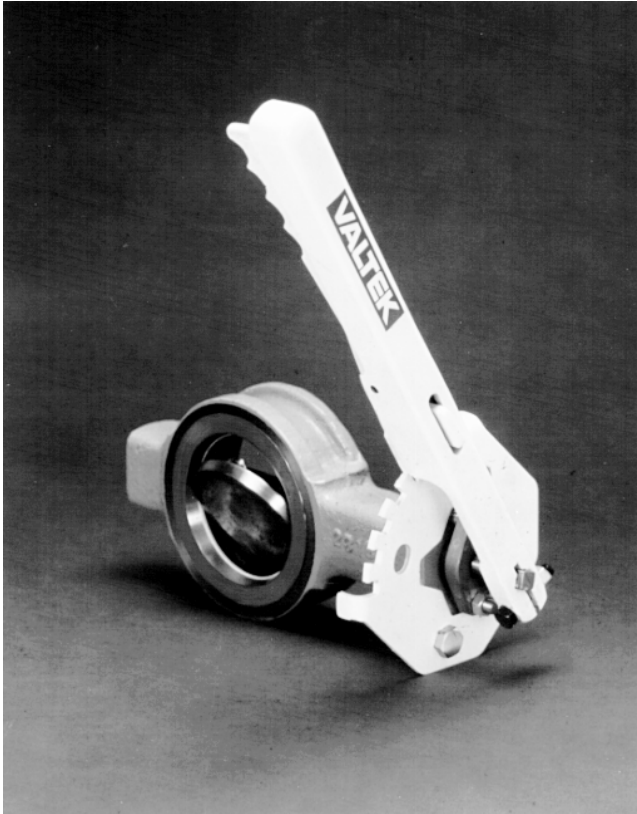


Figure 18-10: Rotary Handlever

Manual Handwheel Actuator

This geared actuator is used when manual operation of the rotary-motion valve is desired. It works well on high pressure drops, or if the valve is too large for handlever use. Many parts are interchangeable with the declutchable handwheel actuator. It features a stroke stop for positive seat positioning and an adjustable stroke.

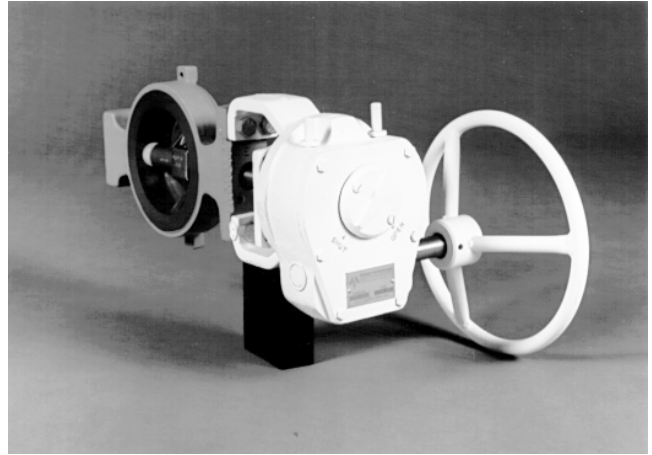


Figure 18-11: Rotary Manual Handwheel



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