

CVS

Controls Ltd.

CVS Controls 1008 Manual Handwheel Actuator Size 40/50/80

The CVS 1008 Manual Handwheel Actuator is an ideal solution for almost all standard globe and angle style control valves that require a throttling type of control which may be manually operated and set.

The CVS 1008 Handwheel is easily adaptable to most globe and angle style valve bodies, making conversions from actuated to manual, and vice versa, effective in reduced down time and cost savings.

Accurate manual control of throttling the valve is easily achieved, and plug position is visually indicated on the travel scale of the actuator yoke.

Features:

Operation – The CVS 1008 is easily operated, as the handwheel direction is always clockwise to extend the stem, and counter-clockwise to retract. Handwheel rotation is assisted by bearings in the assembly. Unwanted rotation due to vibration is prevented with a spring loaded ball detent in the handwheel.



CVS 1008 Handwheel Actuator

Valve Plug Positioning – 1008 Actuator prevents the valve stem from revolving, ensuring proper seating with each full stroke. No direct forces are transmitted to the valve from handwheel operation due to the yoke construction.

Ease of installation – The CVS 1008 Handwheel actuator is simple to install, using a standard hammer locknut for sizes 40/50, and bolted to the valve body for size 80. The design's sealed mechanism makes it simple to maintain or service.

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Specifications

Handwheel Operation:

The CVS 1008 Handwheel Operation: Standard, Push Down To Close

-Clockwise rotation will extend the stem, while counter-clockwise rotation will retract the stem.

Approximate Weight:

Size 40: 35 lb (15.9kg)

Size 50: 45 lb (20.4kg)

Size 80: 100 lb (45.4kg)

Actuator Specifications and Size Selection:

Size	Stem Diameter		Yoke Boss Diameter		Max Stem Load		Max Travel	
	In	mm	In	mm	lbs	N	In	mm
40	1/2	13	2-13/16	71	2950	13122	2	51
50	3/4	19	3-9/16	90	6650	29581	4	102
80	1	25	5	127	11250	50042	3	76
	1-1/4	32			17000	75620		

Handwheel Specifications:

Size	Handwheel Revolution/Travel		Max Handwheel Force	
	Per/In	Per/mm	lbf	N
40	8	0.3	36	160
50	8	0.3	62	276
80 (1" Stem)	10	0.4	95	423
80 (1-1/4" Stem)			140	623

The CVS 1008 Handwheel Actuator is able to be installed in any direction, horizontally or vertically.

CVS Series 1008 Handwheel Actuator - Installation

Note: Ensure proper safety procedures are followed to avoid personal injury or property damage.

When shipped as a complete package with a valve, the actuator will be mounted prior to shipping. If the actuator is shipped separately, use the following instruction to install the actuator in an existing installation.

CVS 1008 Handwheel Actuator Installation

Install the actuator in a location which allows adequate room for service, maintenance and removal if required.

1. With the CVS 1008 Actuator set on the valve body bonnet, tighten the Yoke Locknut to secure the actuator to the bonnet.
2. Check the valve plug to verify that it is seated in the valve. (down position)
3. Center the Travel Indicator Scale
4. Screw the Stem Locknuts onto the valve plug stem, install the Travel Indicator Disc above the stem locknuts. Adjust as needed so that the travel indicator disc is marking the valve to be in the Closed position.
5. Attach the Stem Connector to the valve stem plug and tighten the Stem Connector Cap Screws.
6. Using the actuator handwheel, move the valve plug into the fully open position, verify by checking the travel indicator scale.
7. Disconnect the Stem Connector from the valve plug stem.
8. Once stem connector is removed, turn the actuator handwheel counter clockwise until it stops.
9. Reinstall the Stem Connector to the valve plug stem. The Stem Connector should be on or very close to touching the travel indicator disc. Tighten the Stem Connector cap screws.
10. Tighten the valve stem locknuts against the Stem Connector and Travel Disc.

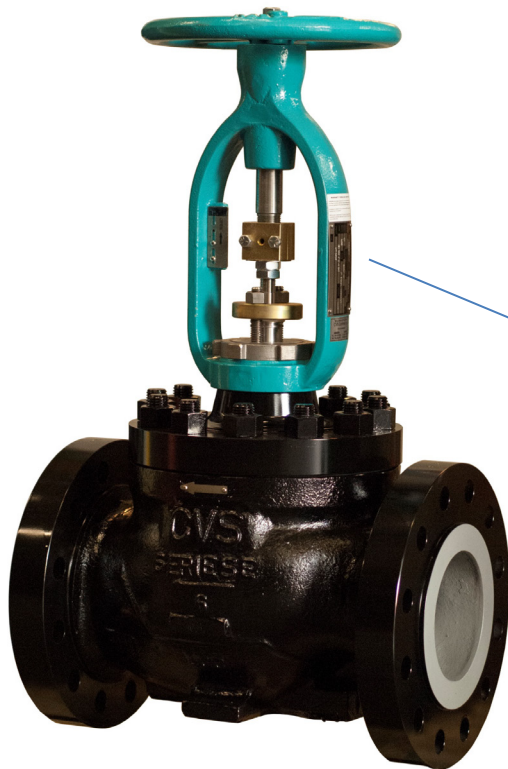
Stem Connections:

****Use proper tools to avoid damaging the valve plug stem during travel adjustments. Should the stem connections not be made properly in the stem connector, thread damage, or improper operation may occur. The amount of each stem pressed in the stem connector should be equal to or greater than the diameter of the stem itself. DO NOT loosen the stem connector cap screws unless all pressure or force has been removed from the stems.**

CVS Series 1008 Handwheel Actuator - Installation

CVS 1008 Handwheel Actuator Installation

11. Finalize installation by rotating the CVS 1008 Handwheel clockwise to close the valve until the valve plug seats.
12. Make Travel Indicator Scale adjustments as required to mark the Closed Position on the scale in relation the travel indicator disc.



Typical Stem Connection

CVS 1008 Handwheel Actuator
installed on a 6" CVS Series E Valve

CVS Series 1008 Handwheel Actuator - Maintenance

Certain operating conditions may require increased inspection and maintenance intervals.

Note: Ensure proper Safety and Lockout procedures are followed prior to inspection.

Relieve all pressure to the actuator and disconnect air supply line to avoid sudden open or close action of the valve.

Shut off process to the valve or use bypass to isolate and relieve process from both sides of the valve installation.

Lubrication

Should the CVS Handwheel Actuator become difficult to rotate, lubrication may be required to ensure proper operation. Certain operating conditions may require increased lubrication schedule with a quality grease/gear lubricant. There is a Grease Zerk fitting (12), located on the Actuator Yoke.

Disassembly – Size 40/50

1. Verify the control valve is bypassed, pressure is relieved, and proper safety procedures are followed.
2. Remove the stem connector assembly.
3. Handwheel Removal – Remove the Jam Nut (6), then remove the Washer (8), and Lockwasher (7).
4. Lift off the HandWheel (5) from the Stem Assembly (15). ****Be Careful to retain the Spring (10) and Ball (9) as the Handwheel is removed.**
5. Loosen the Set Screw (11), this will allow for removal of the Bearing Retainer (4).
6. The Stem Screw Assembly (15), Thrust Bearings (3), and Nut (16), may be removed from the actuator yoke.
7. To gain access to the remaining parts, remove the Nut from the Stem Screw Assembly.

Inspect parts for visible wear or damage and replace/lubricate as required.

CVS Series 1008 Handwheel Actuator - Maintenance

Disassembly – Size 80

1. Verify the control valve is bypassed, pressure is relieved, and proper safety procedures are followed.
2. Remove the stem connector assembly.
3. Remove the 6 Cap Screws (23), that secure the Gear Case Cover
4. Remove the Gear Case Cover (1)
5. Remove the 2 Cap Screws (21), then remove the Retaining Flange (4)
6. Remove the Bearing and Gear Retainer (6)
7. The Stem Screw Assembly (3) may now be removed.
9. Remove the Thrust Bearings (8), and Worm Gear (7) from the Stem Assembly.
**Be Careful to retain the Spring (30) and Ball (29) as the Handwheel is removed.
10. The Worm Shaft (26) may be removed by:
 - A. First remove the Set Screw from the Handwheel Cap (32)
 - B. Remove the Handwheel Cap (unscrew counterclockwise) and Handwheel (31)
 - C. Loosen the Set Screw (27) closest to the threaded end of the Worm Shaft (26)
 - D. Unscrew the Front Worm Retainer (28)
 - E. After removing the Ball Bearing (29), you may now remove the Worm Shaft.

Inspect parts for visible wear or damage and replace/lubricate as required.

Assembly – Size 40/50

1. Install the Thrust Bearings (3) and Bearing Seat (2) onto the Stem Screw Assembly (15)
2. Screw the Nut (16) onto the Stem Screw Assembly.

** Ensure the Key () fits properly into the slot on the Yoke () before assembling

3. Set the Stem Screw Assembly into the Yoke (1)
4. Install the Bearing Retainer (4), tighten, check to verify that the Thrust Bearings (3) are able to move freely, then secure by tightening the Set Screw (11).
5. Set the Ball (9) into one of the indentations of the Yoke (1), place the Spring (10) over the Ball (9), then place the Handwheel (5) above.
6. Install the Washer (8), then Lockwasher (7) onto the Stem Screw Assembly. Fasten using the Nut (6).

CVS Series 1008 Handwheel Actuator - Maintenance

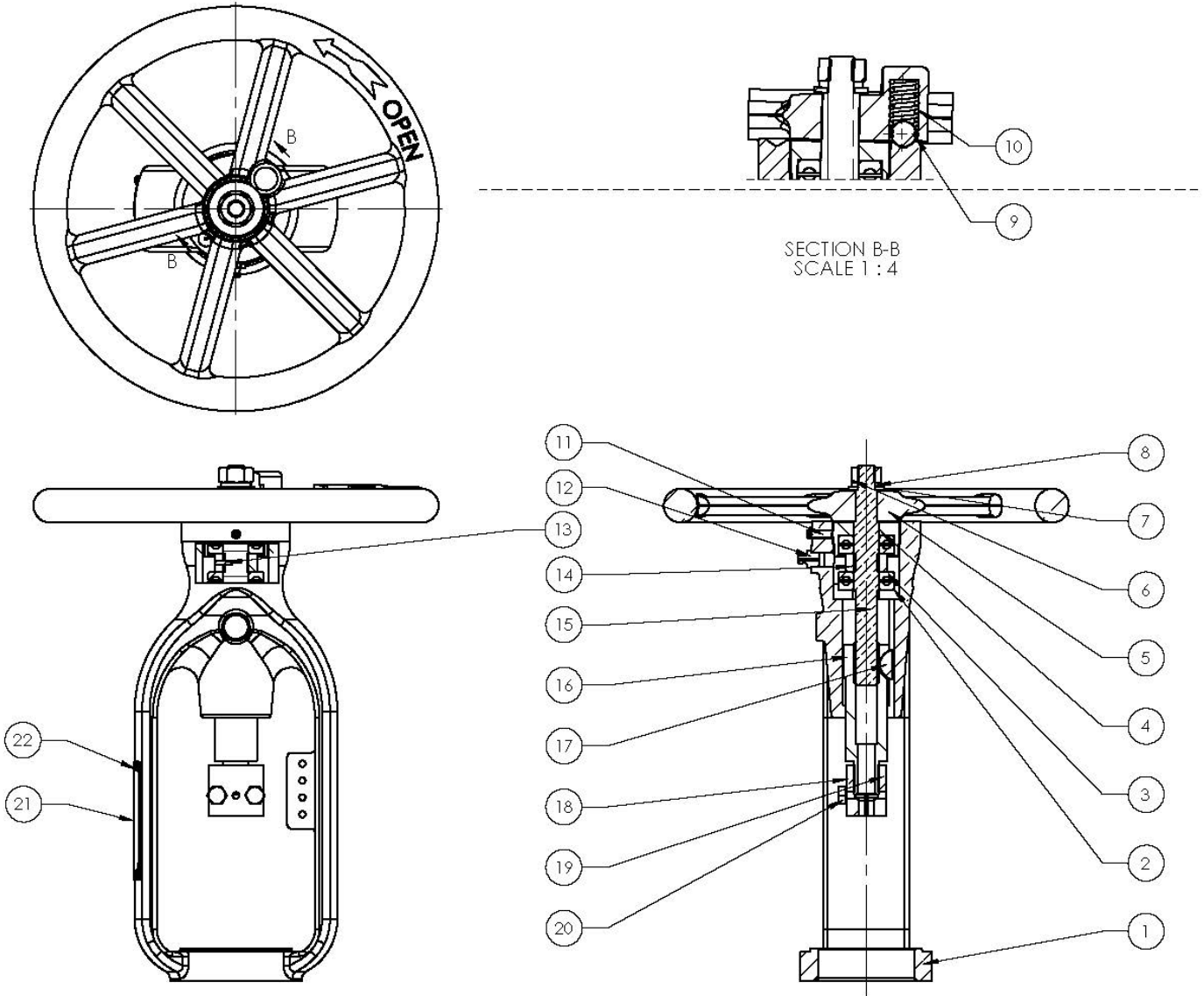
Assembly – Size 80

1. Replacing the Worm Shaft (26) if removed:
 - A. Install the Worm Shaft (26) with the Ball Bearing (29), and install the Front Worm Retainer (28).
 - B. Tighten the Front Worm Retainer so to eliminate end to end play in the Worm Shaft, but still maintaining adequate movement to allow the Worm Shaft to rotate.
 - C. Once set, secure by tightening the Set Screw (27).
2. Install the Ball (29), Spring (30), and the Handwheel (31). Secure using the Handwheel Cap (32), and tighten the Set Screw.
3. Install one of the Thrust Bearings (8) in the Gear Case (9). Ensure the bearing race with the smaller inside diameter is adjacent to the worm gear web.
4. Install the Worm Gear (7) onto the Stem Screw Assembly (3), and set into the Gear Case (9)
5. Install the second Thrust Bearing (8) on the Worm Gear (7)
6. Replace the Bearing and Gear Retainer (6)
7. The Retaining Flange (4) may now be installed. Note that the Key(5) fits into the Retaining Flange Slot.
8. Use a thread sealant on the 6 Set Screws (22) prior to installing them. Adjust as need to eliminate end play in the Thrust Bearings, but still allow for adequate movement.
9. Install the Gear Case Cover (1) and secure using 6 Cap Screws (23).
10. Install the Stem Connector Assembly (11)

Finalize assembly by reconnecting the Stem Connector Assembly as outlined in the Installation portion of this manual.

CVS Series 1008 Handwheel Actuator - Assembly

CVS Series 1008 Size 40/50



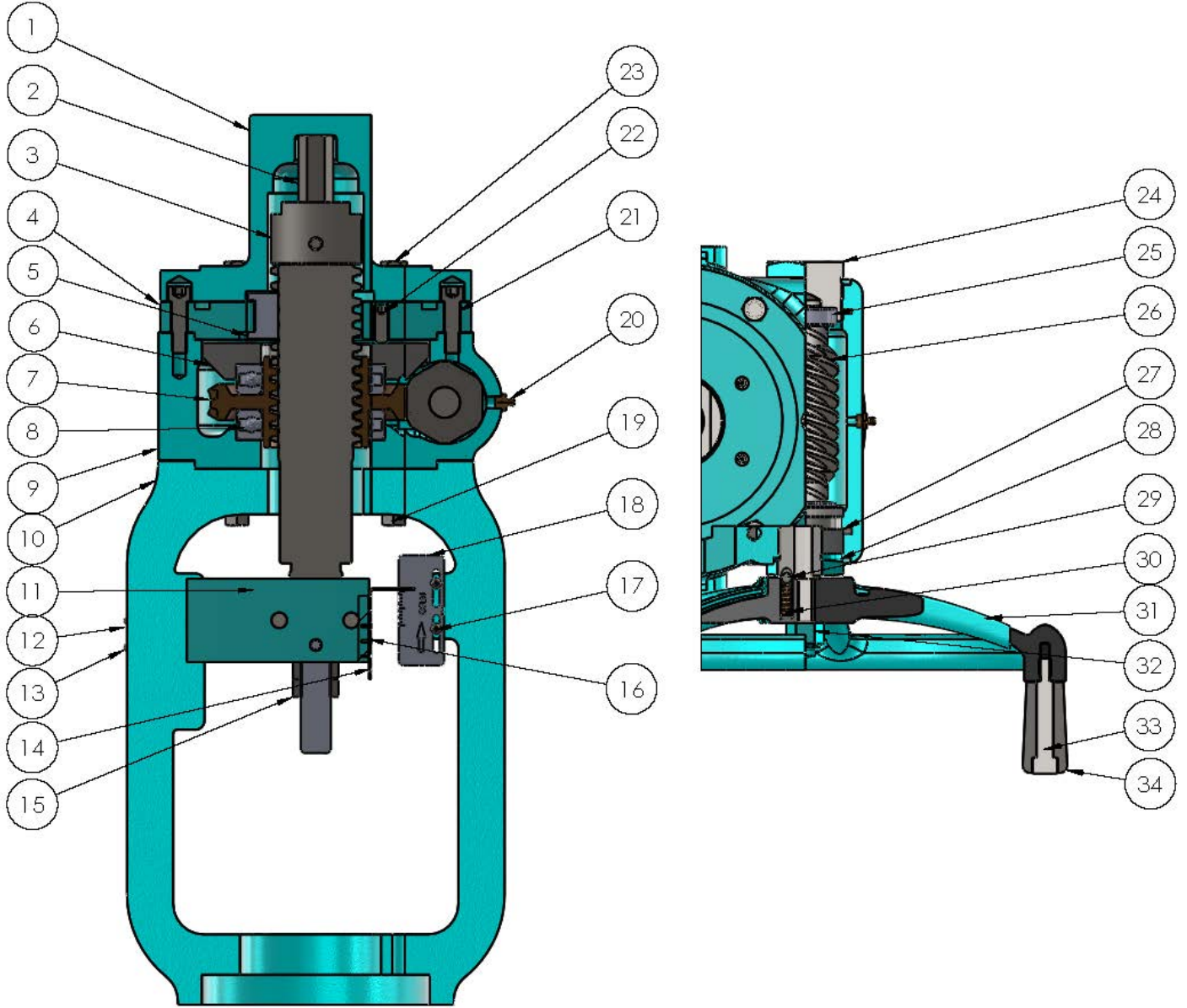
CVS Series 1008 Handwheel Actuator - Assembly

CVS Series 1008 Size 40/50 Parts Listing

Item	Part Number		Description	Qty
	Size 40	Size 50		
1	CVS 3J366319312	CVS 3J366419312	Yoke	1
2	CVS 1F879724092	CVS 1F879724092	Bearing Seat, Carbon Steel	1
3	CVS 1D361399012	CVS 1D361399012	Bearing, Steel	2
4	CVS 1F658014012	CVS 1F658014012	Bearing Retainer, Brass	1
5	CVS 2D358519052	CVS 2D358519052	Handwheel	1
6	CVS 1A352424122	CVS 1A352424122	Jam Nut, 1/2-13 UNC, Carbon Steel	1
7	CVS 1A518925072	CVS 1A518925072	Lockwasher, 1/2" Steel	1
8	CVS 1A355828982	CVS 1A355828982	Washer, 1/2" Steel	1
9	CVS 1A342732992	CVS 1A342732992	Ball, Steel	1
10	CVS 0D005916012	CVS 0D005916012	Spring, Bronze	1
11	CVS 1A344724182	CVS 1A344724182	1/4" x 1.25 Set Screw, Steel	1
12	CVS 1A700999012	CVS 1A700999012	Zerk Fitting, 1/8" NPT	1
13	CVS 1F8795000A2-3	CVS 1F8795000A2-3	Pin \varnothing 0.125x0.50, 316 SST	1
14	CVS 1F8795000A2-2	CVS 1F8795000A2-2	Bearing Spacer, 1020	1
15	CVS 1F8795000A2-1	CVS 1F8795000A2-1	Stem, Brass	1
16	CVS 1J365935132	CVS 1J366235132	Nut, Size 40	1
17	CVS 1J343838992	CVS 1J343838992	Woodruff Key, 1045	1
18	CVS 1E8033000A-1	CVS 1E833700012	Connecting Block 1	1
19	CVS 1E8033000A-2	CVS 1E833700022	Connection Block 2	1
20	CVS 1E8033000A-3	CVS 1E833700032	5/16 x18 x 1.25 Bolt	2
21	CVS 1H765311992	CVS 1H765311992	Name Plate, 302 SST	1
22	CVS 1A368228982	CVS 1A368228982	Drive Screw/Rivet Pin	4

CVS Series 1008 Handwheel Actuator - Assembly

CVS Series 1008 Size 80



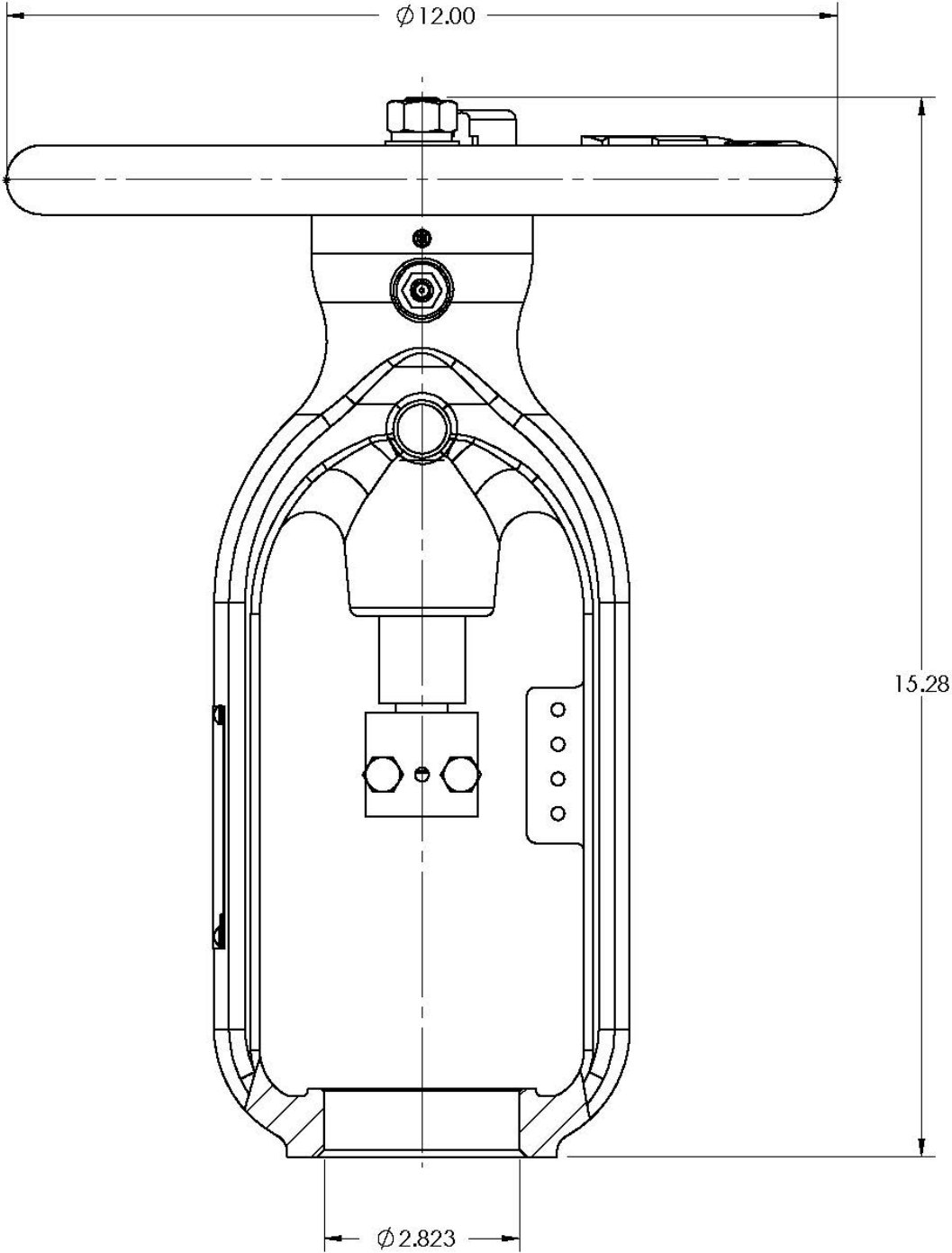
CVS Series 1008 Handwheel Actuator - Assembly

CVS Series 1008 Size 80 Parts Listing

Item Number	Part Number	Description	Quantity
1	CVS 2J219219042	Gear Case Cover	1
2	CVS 1J219024092	Travel Stop	1
3	CVS 2V3080x00A2	Stem Screw Assembly	1
4	CVS 2H733725012	Retaining Flange	1
5	CVS 1H734425092	Key	1
6	CVS 1H735024392	Bearing and Gear Retainer	1
7	CVS 2H735512052	Worm Gear	1
8	CVS 1H735499012	Bearing, AETNA E45	2
9	CVS 3H735319042	Gear Case	1
10	CVS 3K407919042	Yoke	1
11	CVS 1K3536000A	Stem Connector Assembly	1
12	CVS 18A5089X0A2	Name Plate, 302 SST	1
13	CVS 1A368228982	3/32 Rivet Pin	4
14	CVS 1H736438992	Travel Indicator	1
15	CVS 1C635224122	1-12 UNF, Hex Jam Nut	2
16	CVS 1H736528982	Screw, #5x40	2
17	CVS 1A343128982	Screw, 10-24X0.50	2
18	CVS 1H745838992	Travel Indicator Scale	1
19	CVS 1H2151X0012	Hex Screw, 1/2x13, 2.20" Long	6
20	CVS 1A700999012	Zerk Fitting, 1/8 NPT	1
21	CVS 1H734732992	Rd Head Cap Screw, 1/2-x13, 1.75 Long	2
22	CVS 1H734628992	Set Screw, 1/2x13, 1.25 Long	6
23	CVS 1A913024052	Cap Screw, 1/2x13, 2.70 Long	6
24	CVS 1H736124092	Back Worm Retainer	1
25	CVS 1H735999012	Bearing, Nice 515	2
26	CVS 2H735731092	Worm Shaft	1
27	CVS 1A710328992	Set Screw, 1/4x20, 0.38 Long	2
28	CVS 1H736024092	Front Worm Retainer	1
29	CVS 1A342732992	Ball, 1/2 Dia.	1
30	CVS 0D005916012	Spring, Bronze	1
31	CVS 3H734319052	Handwheel	1
32	CVS 1A780528992L	Handwheel Cap	1
33	CVS 0U077424092	Hand Grip Bolt	1
34	CVS 0U075624092	Hand Grip	1

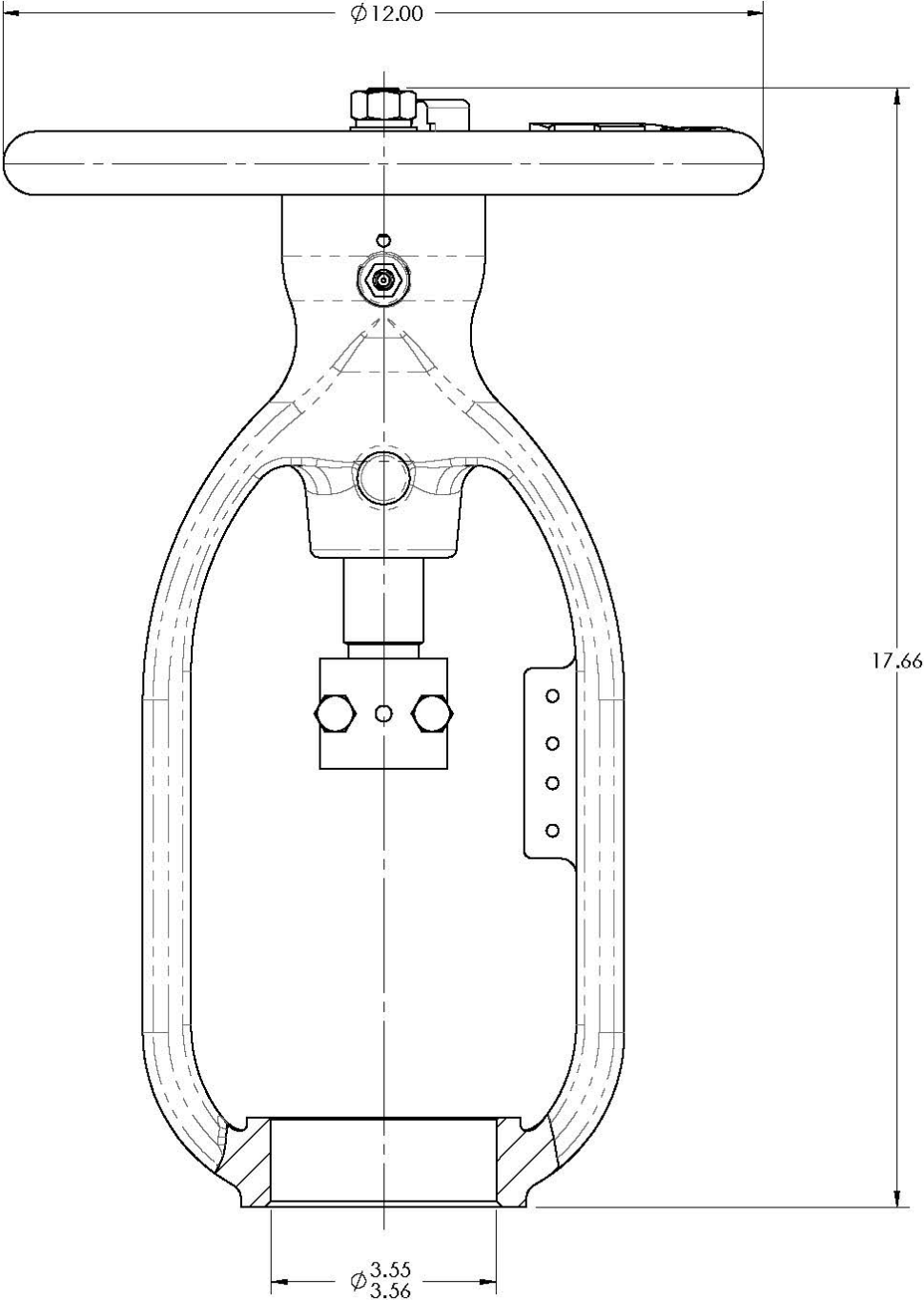
CVS Series 1008 Handwheel Actuator – Dimensions (in)

CVS Series 1008 Size 40



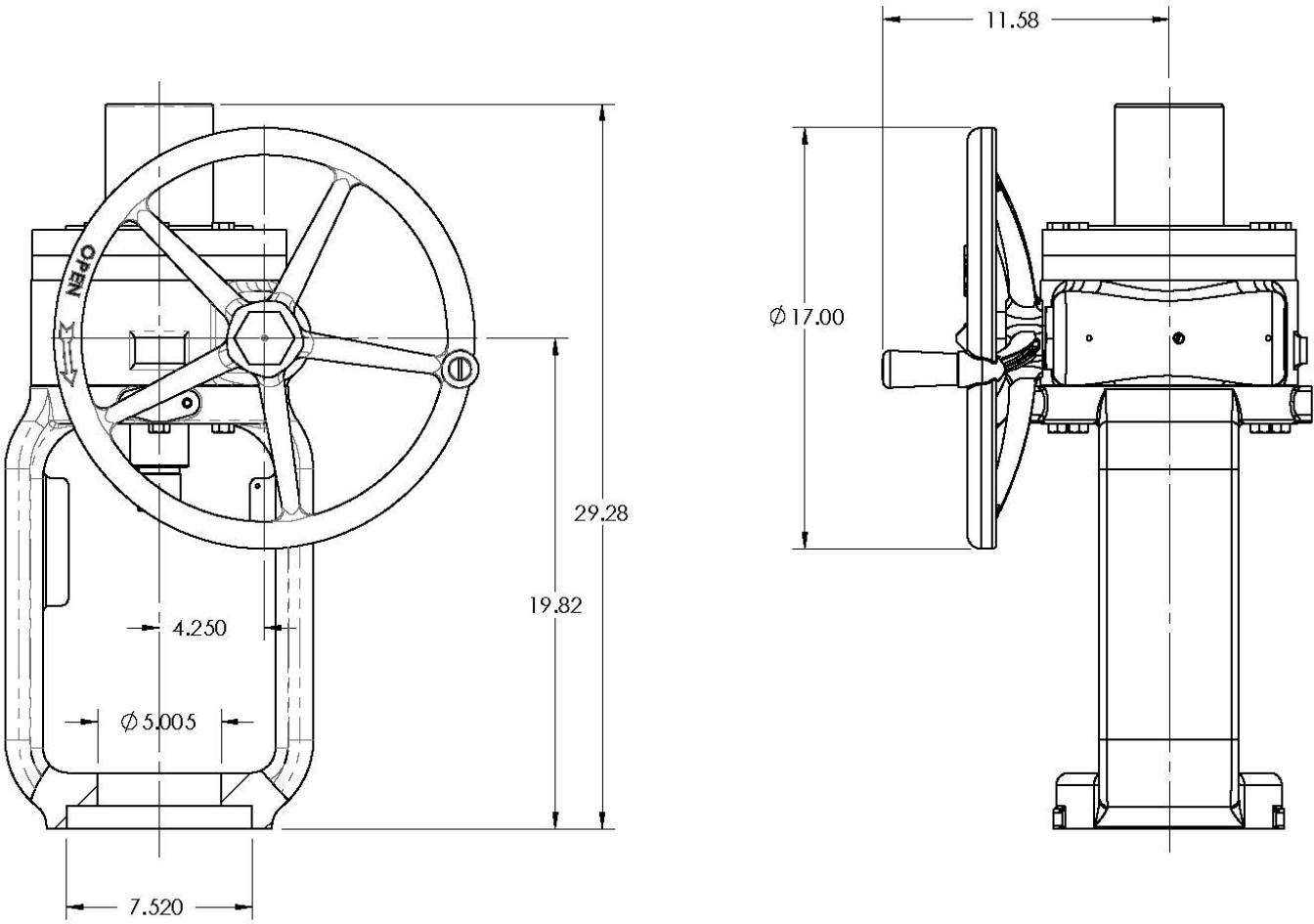
CVS Series 1008 Handwheel Actuator – Dimensions (in)

CVS Series 1008 Size 50



CVS Series 1008 Handwheel Actuator – Dimensions (in)

CVS Series 1008 Size 80



Notes:

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