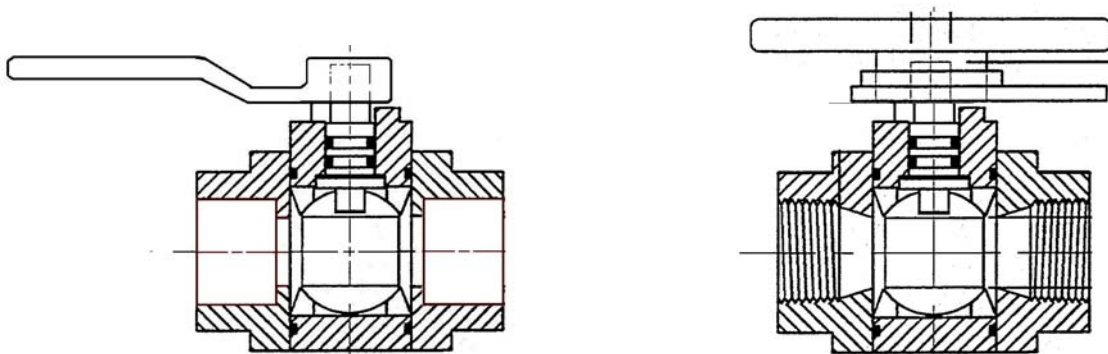




Installation, Maintenance and Operating Instructions

Nil-Cor Series 410

Threaded End Ball Valves
Socket-Weld End Ball Valves



Nil-Cor produces the world's only advanced composite three-piece threaded-end ball valves...utilizing a high-strength, high-temperature engineered composite material system for resistance to more than 1000 corrosive chemicals.

These composite valves offer high impact resistance and are tough enough for continuous duty cycles in corrosive industrial plant environments where external corrosion resistance can be as critical as resistance to the flowing media.

Nil-Cor 410 threaded end valves are rated to 275 psi service and for temperatures to 250°F. Threaded end sizes are 1/2", 3/4", 1", 1 1/2" and 2".

Socket-weld end-cap designs utilizing a variety of easily cemented thermoplastic polymers are available to simplify installation and upgrade valve performance and safety in thermoplastic piping systems.

Site Storage Precautions

1. For outside site storage ensure valves or containers are wrapped in plastic or otherwise protected from ingress of dust or blowing sand. Do not remove flange covers.
2. Actuated or gear operated valves should be kept dry.
3. Inside warehouse storage requires no special protections.

Installation

1. Fluid flow may be in either direction and the valve may be mounted in any position.
2. Pipe must be properly aligned and supported and provisions made to minimize stress from thermal expansion. Always review pipe and manufacturer's recommendations.
3. Threaded End Valves:
4. Using PTFE tape (pipe dope is specifically not recommended since solvents in some types may cause stress cracking of the threads, especially in the 410 series valve) hand thread valve ends onto pipe or pipe into the threaded end.
5. CAUTION: Tighten pipe into the end cap no more than 3/4 turn beyond hand tight to effect a seal. Tightening more than 3/4 turn may cause the end cap to crack.
6. The pipe wrench should always be on the end cap into which the pipe is being threaded to prevent twisting and misalignment of the three-piece assembly.
7. Socket Weld Valves:
8. Clean and prepare the pipe per manufacturer's recommendation. Use the same procedure to clean the I.D of the socket weld valve end cap.
9. Apply adhesive to pipe O.D. and I.D. of the socket-weld end.
10. CAUTION: Avoid allowing the cleaning medium or adhesive to come into contact with the polysulfone body or ball.
11. In one smooth motion, insert the pipe into the valve socket to the full depth of the socket and twist the pipe ¼ turn.
12. Allow the adhesive to cure for 2 minutes before handling the valve.
13. Do not exceed these pressure/temperature ratings:

<u>Temperature (°F)</u>	<u>Pressure (psig)</u>
-50 to 100	275
175	250
250	225

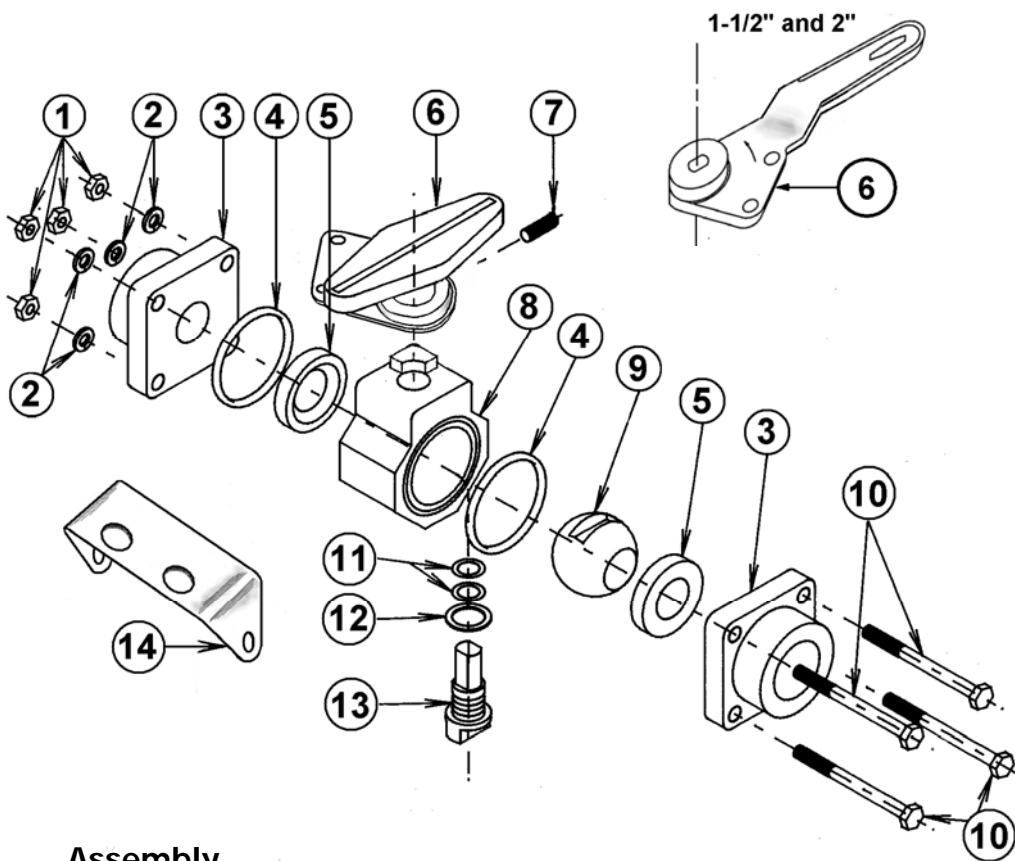
Removal

For your safety, it is important that these precautions be taken before removal of the valve from the line:

1. Wear protective clothing or equipment appropriate for the process fluid.
2. Depressurize the line and valve as follows:
 - a. Open valve and drain the line.
 - b. Before removal from the line, cycle (open and close) the valve to remove residual pressure in the body cavity.
 - c. After removal, cycle (open and close) the valve several times to clear it of fluid.
3. The entire valve may be removed from the line by unthreading the pipe from each end of the valve, or the body alone may be removed by removing the four bolts and sliding the body out from between the end caps. Socket-weld valves may also be removed by cutting the pipe if necessary.

Disassembly

1. Cycle (open and close) the valve several times to clear it of fluid.
2. Close valve completely and remove the handle.
3. Remove bolts, separate end caps from the body, and remove body o-ring seals.
4. With the ball in the closed position, push the ball and opposite seat out of the body. Push remaining seat out of the body.
5. Push the valve stem down into the valve body and withdraw it from the body. Remove the stem o-rings and thrust washer from the stem.



Item	Qty	Description
1	4	Hex Head Nut
2	4	Lock Washer
3	2	End Cap
4	2	Body O-Ring
5	2	Ball Seat
6	1	T-Handle or Lever (1-1/2 & 2")
7	1	Socket Head Set Screw
8	1	Body
9	1	Ball
10	4	Hex Head Cap Screw
11	2	Stem O-Ring
12	1	Thrust Washer
13	1	Stem
14	1	Locking Plate

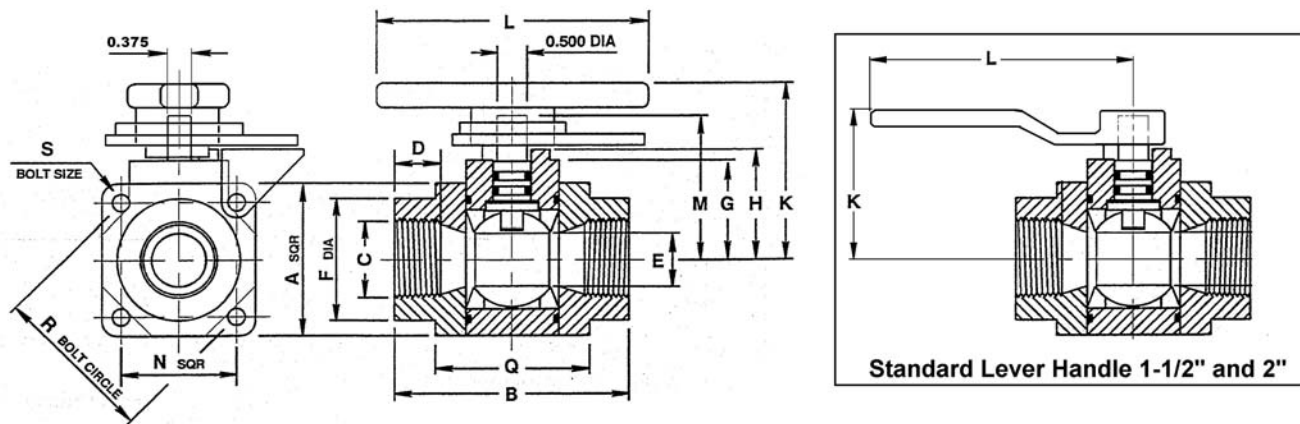
Assembly

1. Inspect and clean all parts to make sure they are free of dust, grit, or other material. New o-rings and ball seats should be used after the valve has been in service and is being reassembled.
2. A good lubricant compatible with the fluid service, such as a silicone grease, should be applied lightly to seats, o-rings, and the ball.
3. Assemble thrust washer and stem o-rings on the stem. Carefully insert upper end of stem into the body of the valve and maneuver into the opening in the top of the valve. Push the stem upward until thrust washer is seated.
4. Rotate stem so that the stem bottom is lined up axially with the bore of the body. Insert the ball (in closed position) into the body, sliding the stem bottom into the slot in the ball.
5. Rotate stem and ball to open position so that the ball cannot fall out. Press seats into the body against the ball.
6. Insert body o-rings into grooves on the body and bolt the end caps to the body-hand tight. Body bolt torques should be tightened in cross rotation to the torque values shown on the table on page 4.
7. Install valve handle and cycle the valve open and closed to turn the ball slowly with a gentle back-and-forth motion, building gradually to a full quarter turn. By rotating slowly, the seat lips will assume a permanent seal shape against the ball and prevent damage to the seals.

Maintenance

Periodic observation is recommend to ensure the valve is functioning normally. Frequency of observation depends on the application. High temperature thermal cycles may require retorquing of bolts. With either the Threaded-end or Socket-weld design, In-Line maintenance, such as seat and shaft replacement, may be performed by removing three of the four body bolts and swinging the valve clear of the line.

Threaded End Ball Valve Dimensional Data and Operating Torque



Valve Size	A	B	C NPT (Note 2)	C SWE (Note 2)	D NPT (Note 2)	D SWE (Note 2)	E	F	G	H	K	L	M	N	Q	R	S Body Bolts	Body Bolt Torque (in-lbs)	Actuation Torque (in-lbs)
1/2"	2.50	3.88	1/2	CF	0.56	CF	0.66	2.00	1.63	1.88	3.10	4.50	2.36	1.88	2.54	2.65	1/4-20	25	140
3/4"	2.50	3.88	3/4	CF	0.63	CF	0.87	2.00	1.63	1.88	3.10	4.50	2.36	1.88	2.54	2.65	1/4-20	25	140
1"	2.50	3.88	1	CF	0.75	CF	0.88	2.00	1.63	1.88	3.10	4.50	2.36	1.88	2.54	2.65	1/4-20	25	140
1-1/2"	3.50	5.13	1-1/2	CF	0.78	CF	1.25	2.75	2.38	2.63	3.44	6.25	3.11	2.50	3.53	3.54	3/8-16	50	190
2"	4.38	5.63	2	CF	0.81	CF	1.50	3.25	2.94	3.19	4.00	6.25	3.81	3.00	4.14	4.24	1/2-13	100	230

Note:

1. T-Handle standard on 1/2" - 1". Lever handle standard on 1-1/2" and 2"
2. Consult factory for end cap dimensions for the Socket Weld Design