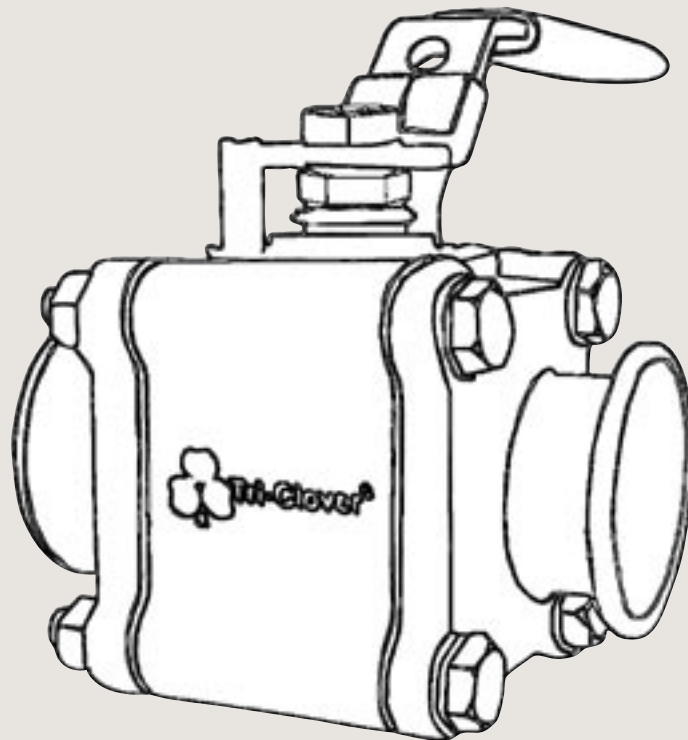


# Instruction Manual

5308 / 5309 Ball Valve



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The information contained herein is correct at the time of issue but may be subject to change without prior notice.

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## 1.1 Important information

### 1.2 Warning signs

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Unsafe practices and other important information are emphasized in this manual.  
Warnings are emphasized by means of special signs.

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**Always read the manual before using the valve!**

#### **WARNING!**

Indicates that special procedures **must** be followed to avoid severe personal injury.

#### **CAUTION!**

Indicates that special procedures **must** be followed to avoid damage to the valve.

#### **NOTE!**

Indicates important information to simplify or clarify practices.

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General warning.



Caustic agents.



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All warnings in the manual are summarized on this page.

Pay special attention to the instructions below so that severe personal injury or damage to the valve are avoided.

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**Installation:**

- **Always** observe the technical data (see chapter 5).
- **Always** release compressed air after use.

**Operation:**

- **Always** observe the technical data (see chapter 5).
- **Never** touch the valve or the pipelines when processing hot liquids or when sterilizing.
- **Always** handle lye and acid with great care.

**Maintenance:**

- **Always** observe the technical data (see chapter 5)
- **Always** release compressed air after use.
- The valve must **never** be hot when servicing it.
- The valve/actuator and the pipelines must **never** be pressurised when servicing the valve/actuator.
- **Never** stick your fingers through the valve ports if the valve is supplied with compressed air.



To disassemble a ball valve:

1. For a manual valve, remove the top handle nut (20) from the stem (4). Remove the handle (7).  
For actuated valves remove bracket mounting bolts and remove actuator/bracket and coupler.

Note:

If you are disassembling a 3 or 4 inch valve, you'll need to remove the actuator mounting bolts.

2. To remove the second stem nut you must first bend back the side tab of the stop washer (12). This can be done using a screw driver or punch.  
Once the stop washer side tab is flattened you can remove the stem nut (5).

Note:

3 and 4 inch valves will require a socket wrench to reach the nut recessed into the mounting bracket. 36mm.

3. Remove bevel washers (6) and gland bushing (9).
4. Remove four hex nuts (17) from one side of body bolts (14). For the 4 inch valve remove six hex nuts (17). Remove body bolts/studs to allow bodyends (2) to fall away.
5. Remove the front and rear ball seats (8).
6. Turn the stem (4) clockwise until the ball (3) is in the closed position, allowing the ball to fall free from the valve.
7. Press downward on the stem (4) until it presses through the inside of the valve body (1), and remove the stem and bottom stem seal (11) and the stem packings (10).
8. Remove the joint gasket (5) from valve body ends. (You will need to use a small instrument, such as a dental pick or small screw driver to pry the o-ring away from the body end. Be careful not to mar the body end in the process.)



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**Seat(s)**

Carefully examine the PTFE valve ball seats for cracking, checking or excessive wear. Leakage past the seat(s) may result from these types of irregularities.

**Surface Finish**

Inspect the bore of the ball and the valve stem in the valve upper body for signs of galling. Replace both if galling exists. Galling will continue to occur if only one part is replaced and the other is damaged.

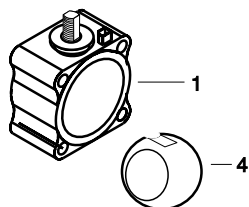
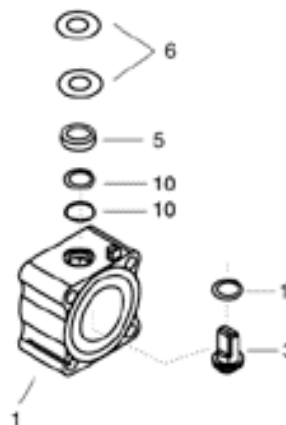
Inspect the inside surface of each body end for marring. Replace the end if damaged. Leakage may occur from this kind of damage.

**Gaskets/O-ring(s)**

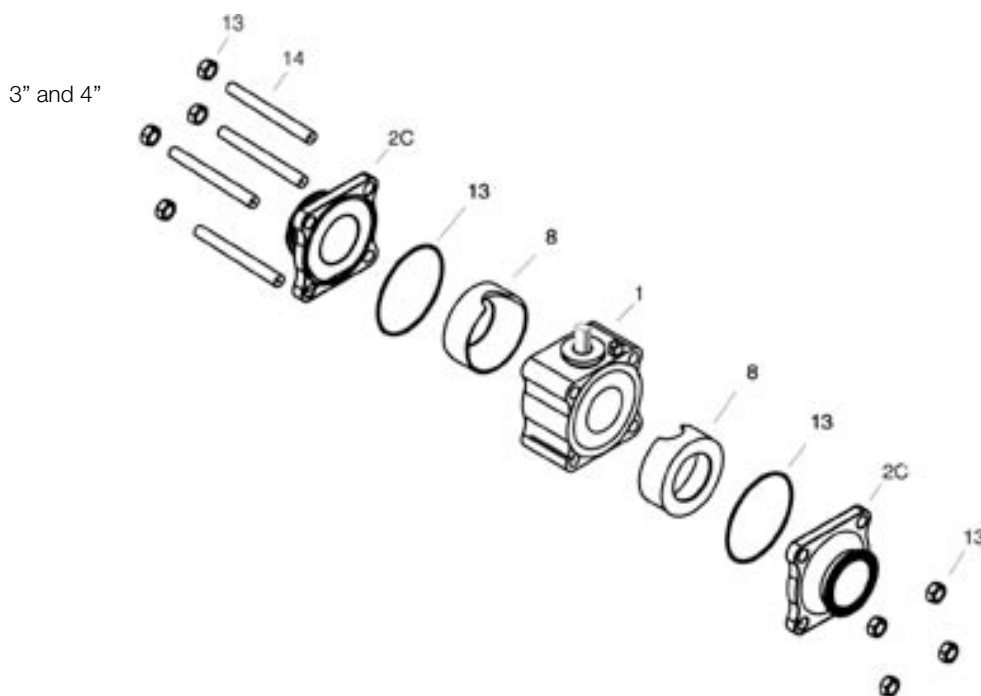
Inspect for cracks, cuts, abrasions, flat spots or other damage that would cause leakage or ineffective cleaning. Replace as necessary.

To assemble a ball valve:

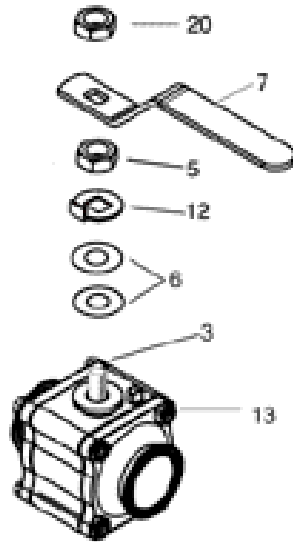
1. Place the lower packing ring (11) on the valve stem (4) and slide the stem into the stem hole in the upper body of the valve.
2. Press the upper packing rings (10) onto the stem (4) until it is seated against the base of the body.
3. Press the packing retainer (9) onto the stem (4) until it is seated against the upper packing ring (10).
4. Turn the stem (4) until the flat surfaces are parallel to the port centerline.
5. Place a ball seat (8) inside one end of the valve body (1) so that the tapered side of the seat faces inward and the other side lies flush against the outer surface of the valve body.
6. Seat the ball (3) inside the valve so that the stem base is seated inside the bore of the ball.



7. Turn the stem 90° so that the valve is in the open position. This keeps the ball from falling out of the valve.
8. Place the other ball seat (8) inside the end of the valve body (1) so that the tapered side of the seat faces inward and the other side lies flush against the outer surface of the valve body.



9. Assemble the valve body ends (2), with gaskets (13) in place, to each end of the valve body (1). 1/2" through 2" size use 4 bolts (14) and 4 bolt nuts (17). 3" and 4" size, use 4 studs (14) and 8 stud nuts (17). Refer to Table 1 for proper torques.
10. Place spring washers (6) together so that their curved surfaces are facing outward, in opposite directions, and place them over the stem (4).
11. Place stop washer (12) onto stem (4). Making sure the stop washer lock tab is flat. Instal stem nut (5) onto valve stem (4). Refer to table 2 for stem nut tightening torque.  
Once stem nut is properly tightened, bend tab of lock washer (12) up against the stem nut (5) using a screwdriver or punch.  
Instal handle (7) over valve stem (4) and secure with handle nut (20). Be sure the handle locking devise (18) will align with both locking notches in valve body (1).  
If you are using an electric or pneumatic valve, place the actuator/bracket assembly on the upper body of the valve, and secure it to the valve with two mounting bracket screws.



**Bolting Torque Data for Sanitary Ball Valves**

Table 1

Valve Size	For Body Bolting		
	Size	in-lb	NM
1/2"	1/4" - 20unc	80	9
3/4"	1/4" - 20unc	80	9
1"	5/16" - 18unc	110	12
1 1/2"	3/8" - 16unc	170	19
2"	7/16" - 14unc	230	26
3"	5/8" - 11unc	570	64
4"	5/8" - 11unc	600	68

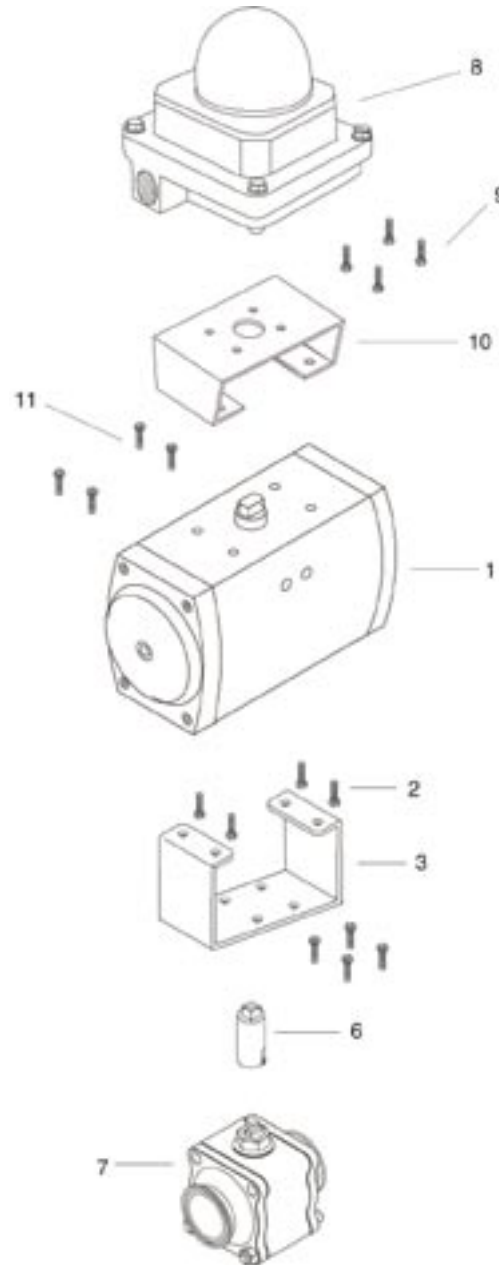
Table 2

Valve Size	For Stem Nut		
	Size	in-lb	NM
1/2"	3/8" - 24unf	87	9.8
3/4"	3/8" - 24unf	87	9.8
1"	3/8" - 24unf	87	9.8
1 1/2"	7/16" - 20unf	122	13.7
2"	9/16" - 18unf	165	18.6
3"	M24	191	21.6
4"	M24	191	21.6



### Attaching the Switch to the Actuator

1. Remove the position indicator on the top of the actuator (1).
2. Attach the bracket (10) to the top of the actuator using four bolts (11).
3. Insert the switch stem through the center hole in the bracket (10) and align with the slot in the actuator shaft.
4. Attach the top of the bracket (10) to the switch using four bolts (9).



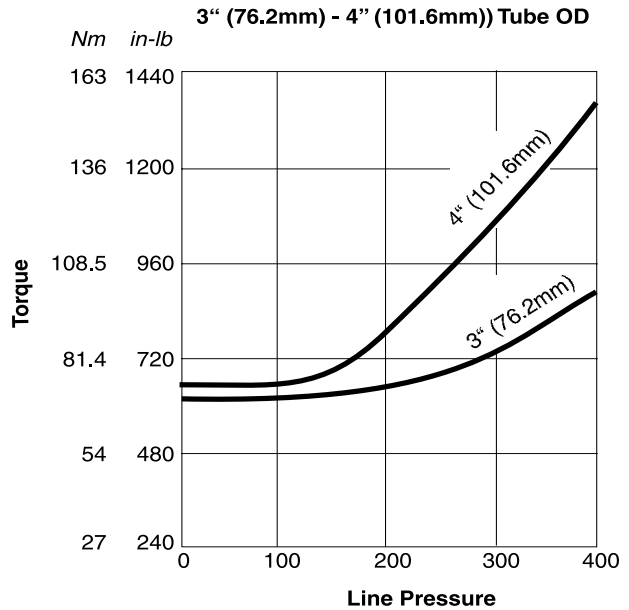
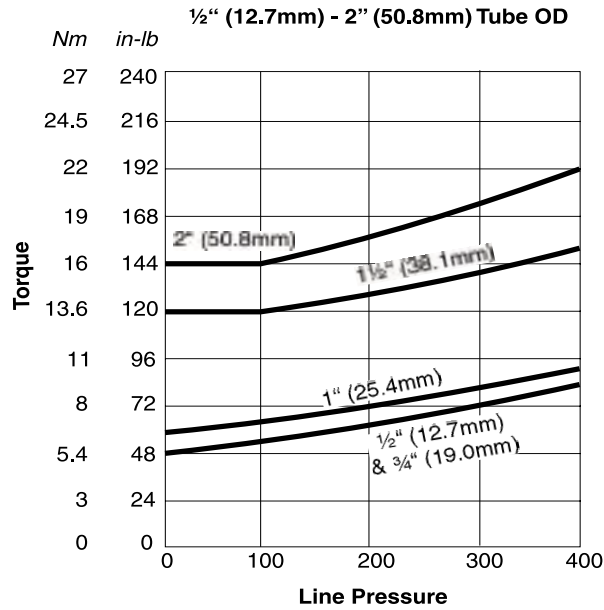
### Attaching the Actuator to the Valve

These instructions describe how to attach an assembled actuator to a Tri-Clover Ball Valve. For information on servicing your electric or pneumatic actuator, refer to the service manual that comes with the actuator. To attach the actuator to the valve:

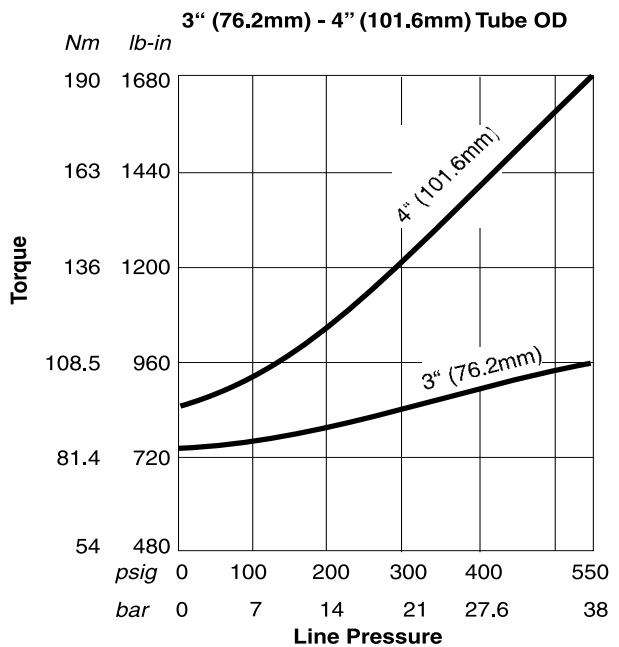
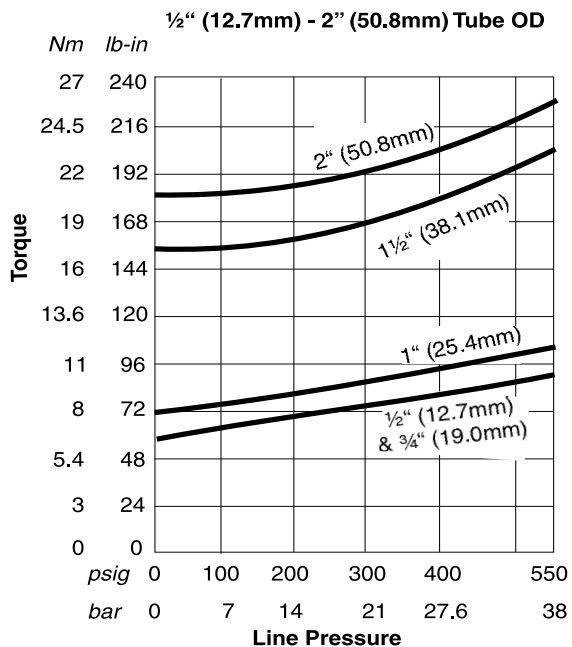
1. Remove handle nut and handle.
2. Sizes 1/2" through 2", attach actuator bracket to valve body using 4 bolts provided in kit.
3. Place actuator coupler onto the valve stem.
4. Place actuator on the mounting bracket. (on sizes 3" and 4" valves the bracket is included on all valves as part of the body) Be sure to line up coupler with actuator. Tighten all bolts.
5. Install 4 actuator mounting bolts through bracket and into the bottom of the actuator. Tighten all bolts.

As the amount of pressure in a ball valve increases, so does the amount of torque required to open and close it. Use the charts below to determine the type of actuator, if any, that is required for your application.

**PTFE Seat Material**



**Reinforced PTFE Seat Material**



#### 4.1 Ball Valves Models 5308 1/2" - 2"

#### 4. Parts List

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Key #	Description	Material	Qty.
1	Body	CF3M	1
2	Tri-Clamp Ends	CF3M	2
3	Ball	SUS316L	1
4	Stem	SUS316L	1
5	Stem Nut	SUS304	1
6	Bevel Washer	SUS301	2
7	Handle	SUS304	1
8	Seat	PTFE	2
9	Gland	SUS304	1
10	Stem Packing	PTFE	2
11	Stem Seal	PTFE	1
12	Stop Washer	SUS304	1
13	Joint Gasket	PTFE	2
14	Bolt	SUS304	4
15	Stop Pin	SUS304	1
16	Handle Sleeve	Vinyl	1
17	Bolt Nut	SUS304	4
18	Locking Device	SUS304	1
20	Handle Nut	SUS304	1

Repair Kit contains items 8, 10, 11, and 13



**CSI**

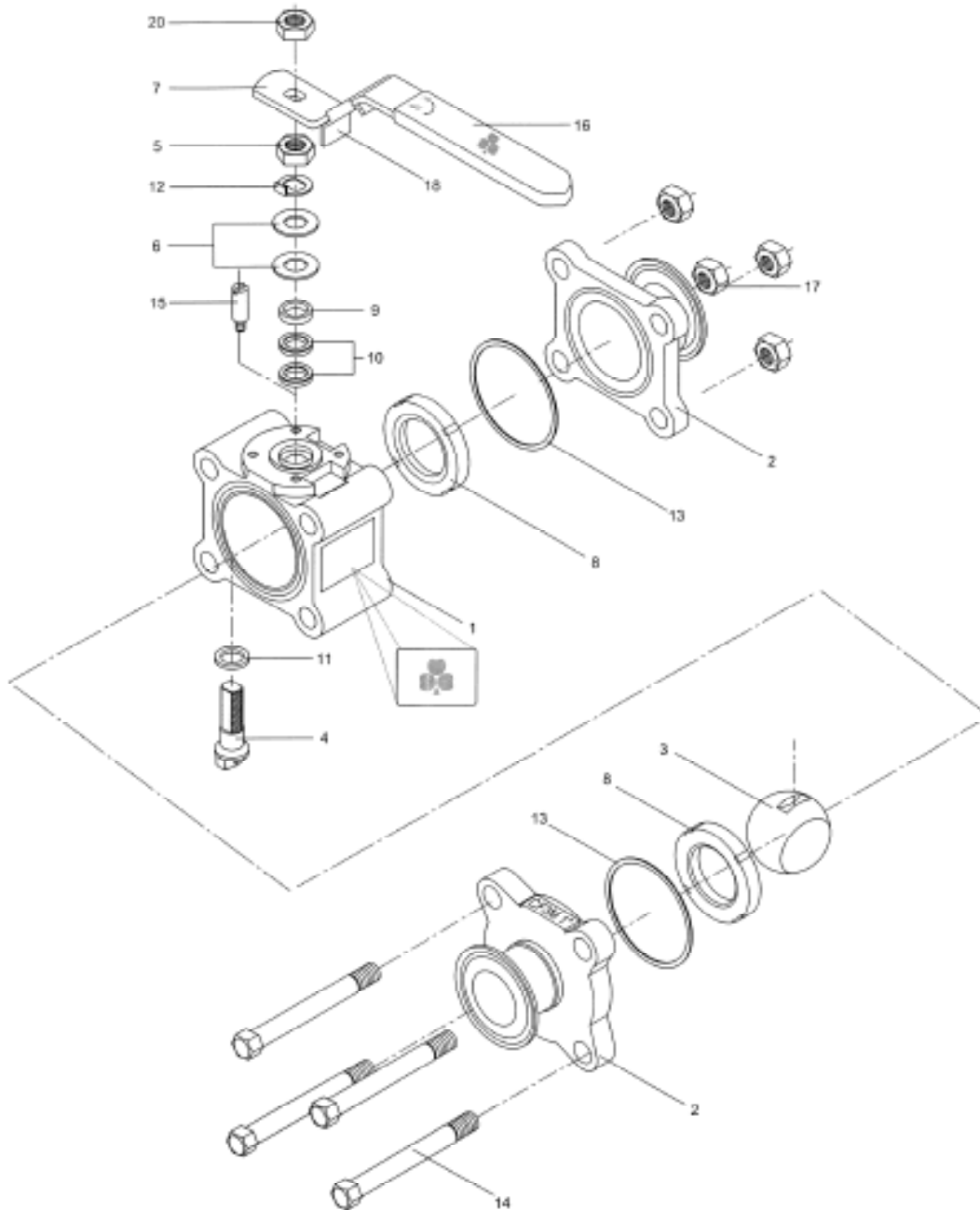
CONTACT CSI FOR MORE INFORMATION | [CSIDESIGNS.COM](http://CSIDESIGNS.COM) | [SALES@CSIDESIGNS.COM](mailto:SALES@CSIDESIGNS.COM) | 417.831.1411

**BALL VALVE**

All orders for repair parts must contain the following data.

1. Complete model number, including size.
2. Description and part number.

The following exploded view and accompanying parts list facilitate ordering repair parts from the factory. All parts illustrated are indexed to the parts list by key numbers.



Key #	Description	Material	Qty.
1	Body	CF3M	1
2	Tri-Clamp Ends	CF3M	2
3	Ball	SS316L	1
4	Stem	SS316L	1
5	Stem Nut	SUS304	1
6	Bevel Washer	SUS301	2
7	Handle	SUS304	1
8	Seat	PTFE	2
9	Gland	SUS304	1
10	V-Ring Packing	PTFE	1 set
11	Stem Seal	PTFE	1
12	Stop Washer	SUS304	1
13	Body Gasket	PTFE	2
14	Studs	SUS304	*
15	Stop Pin	SUS304	1
16	Handle Sleeve	Vinyl	1
17	Stud Nuts	SUS304	*
18	Spacer	SUS304	1
19	Thrust Washer	2% Glass Fiber Filled PTFE	1
20	Locking Device	SUS304	1
22	Stop Washer	SUS304	2
23	Stop Pin Nut	SUS304	1
24	Handle Nut	SUS304	1

Repair Kit contains items 8, 10, 11, and 13

- \* For 3" - 4 pcs, For 4" - 6 pcs.
- \* For 3" - 8 pcs, For 4" - 12 pcs.



**BALL VALVE**

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