

### ONE PIECE BALL VALVE

#### INSTALLATION · OPERATION & MAINTENANCE INSTRUCTIONS

TCI ball valves have been designed and engineered to provide you with long lasting trouble free service when used in accordance with the instructions and specifications mentioned herein.

#### INSTALLATION

1. TCI one piece ball valves are bi-directional and may be installed for flow in either direction. During installation it is recommended that the valve ball be in the open position in order to prevent any possible damage.
2. After installation, cycle valve several times before putting into service.
3. **Valves can't be used on unstable gases.**
4. **Max. working pressure is 2000 psi (137.9 bar) .**
5. **Max. working temperature is 200° C(392° F).**

#### OPERATION

1. A quarter turn of the handle clockwise closes the valve and a quarter turn counterclockwise fully opens the valve. Visual indication of the ball position is determined by the handle position: when the handle is in line with the piping the valve is open, crossline the valve is closed. Also, the stem flats indicate the direction of the ball port.
2. Soft seated ball valves perform best with the ball either fully open or fully closed in accordance with TCI Valve published pressure/temperature chart. Consult the factory regarding characteristics of the media or pressure drop for applications other than fully open or closed.
3. Any media that might solidify, crystallize or polymerize should not be allowed to stand in the ball valve cavities. In the event that this should happen, **DO NOT** force the valve in either direction; disassemble and clean before resuming service.
4. Force required to break-away (i.e., force which must be exerted to begin motion of ball) will vary depending on the media, pressure and length of time between cycles.

**The following data will act as a guide regarding break-away torques:**

VALVE SIZE	RECOMMENDED BREAK-AWAY TORQUE
DN8 (1/4" )	2.94 N-M
DN10 (3/8" )	2.94 N-M
DN15 (1/2" )	3.92 N-M
DN20 (3/4" )	4.90 N-M
DN25 (1" )	7.40 N-M
DN32 (1-1/4" )	9.80 N-M
DN40 (1-1/2" )	17.70 N-M
DN50 (2" )	24.50 N-M



The above figures were obtained at 25 degrees C., 7 bar after 24 hours.

5. The only mechanism of the valve that is adjustable is the stem packing. If adjustment is required, the adjustment of the handle nut should be no more than one quarter turn at a time. Over tightening will produce high torque and a shortened seal life.

### Rebuilding

#### **WARNING-** Ball Valves Can Trap Fluids in Ball Cavity When Closed

If the valve has been used to control hazardous media, it must be decontaminated before disassembly

. It is recommended that the following steps are taken for safe removal and disassembly:

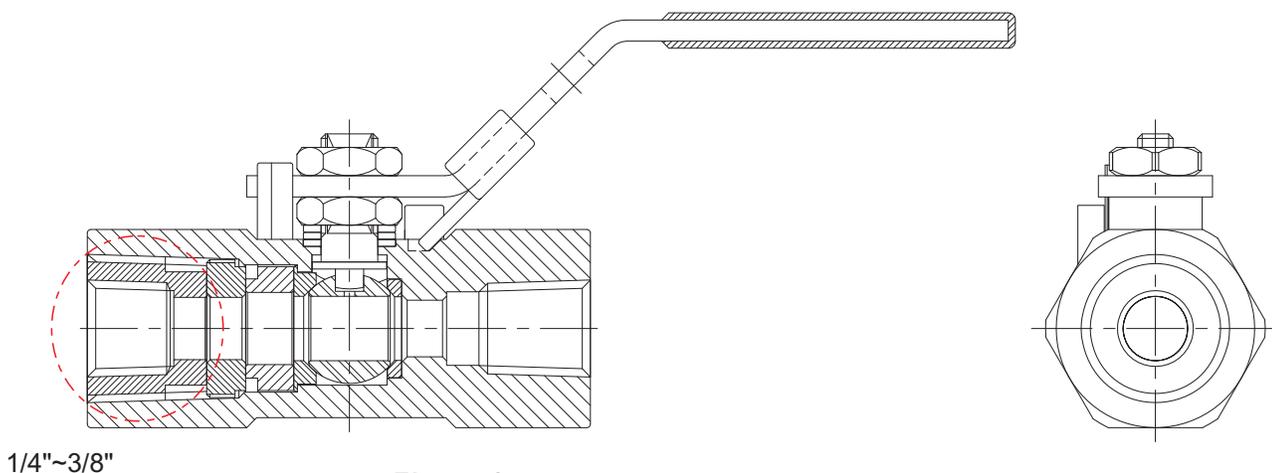
- Relieve the line pressure.
- Place the valve in half-open position and flush the line to remove any hazardous material from valve.
- All persons involved in the removal and disassembly of the valve should wear protective clothing such as face shield, gloves, apron, etc.
- A standard repair kit can be ordered which contains all necessary seats and seals to rebuild the valve. To order the repair kit, simply specify the valve size and figure number.
- If spare parts are necessary, include the complete valve code as given on the order, and then the part(s) that is (are) being ordered. For part description refer to the appropriate parts list.

**CAUTION:** Exercise caution that sealing and all surfaces are not damaged during disassembly, cleaning or reassembly.

1. Stem flats should be in line with valve body before valve is removed from line.
2. Remove valve from pipeline. Place valve on a clean surface and secure by clamping or bolting.
3. Unscrew and take body and end cap apart.
4. Remove end seal and cap seat.
5. With stem flats rotated perpendicular to valve body, remove body seat and ball.
6. If it is necessary to replace stem packing, remove handle nut, spring washer, handle and washers. Lower stem into body cavity and remove stem packing.
7. Clean and inspect all components to be sure they are free from foreign matter and pit marks, paying attention to areas that must maintain a seal (the surface against which the seats are installed, finished diameter on stem, inside pipe end surface, ball). These areas must be free from scratches and pitting.
8. Light marring from the action of the ball against the seats is normal and will not affect the operation.



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9. Once all components have been cleaned inspected and replaced as necessary, the valve may be rebuilt with the appropriate factory repair kit.
10. Slide new thrust washer over stem and insert assembly through ball cavity and fully up into stem hole recess.
11. Assemble new stem packing, washers, handle, spring washer and screw the handle nut. Adjust stem packing to feel firm. **DO NOT over-tighten.**
12. Lightly lubricate ball and seats with a lubricant compatible with the media for which the service is intended.
13. Put into new body seat.
14. Replace ball into cavity with stem flats in perpendicular position, making sure that port holes are in desired position for operation. Once ball is engaged with stem, rotate to in-line position to prevent ball from falling out during assembly.
15. Insert new seat and end seal into cap. Screw end cap into body and tighten sufficiently to ensure it is fully seated.
16. 1/4" ~3/8" is an end entry design with an internal insert as shown in **(Figure 1)**. The insert contains a hex or slot drive which can be identified by looking into the end of the valve before installation.
17. If practical, check leak tightness before reinstalling valve inline.
18. Routine maintenance consists of tightening the lower stem nut 1/4 turn periodically to compensate for the wear caused by the stem's turning against the resilient PTFE seal. Loosen the upper stem nut before tightening the lower stem nut. Retighten the upper stem nut after tightening the lower stem nut.



**Figure 1**



## TC-01BFS

No.	PART NAME	Q'TY
1	BODY	1
2	BODY INSERT	1
3	CAP	1
4	BALL	1
5	STEM	1
6	SEAT	2
7	GASKET	1
8	THRUST WASHER	1
9	PACKING	1
10	WASHER	1
11	CONCAVE WASHER	1
12	STEM NUT	2
13	HANDLE	1
14	PLASTIC COVER	1
15	LOCKING PLATE	1

