INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS

TC-WL / TC-WT

3WAY REDUCED PORT 1000WOG BALL VALVE, THREADED, L & T PORT 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) During installation, ball valve is recommended to maintain at opening status in order to prevent any damage.

(2) Before installation, all threads should be filled with leakage prevention grease or packed with leakage prevention tape.

(3) After installation but before usage, the ball valve should be cycled at least 2 to 3 times.

(4) Ball valve can be installed in any position, but the operator shall consider the load of the pipe line system not to apply at the connection area. It will cause deformation and leakage.

(5) Select the correct specification of pipeline. Tight the ball valve to the pipeline adequately.

OPERATION

(1) 3-way ball valve is classified as L type and T type.

L type flow: two flow port shaped as “L “Letter

T type flow: three flow port shaped as “ T” Letter.

(2) These ball valves are 360° operation basis. the flow direction indicator should be shown on the handle.

(3) Full open or full close is recommended on the operation of soft seat valve. Operation conditions are subject to the Table of Pressure and Temperature (refer to Final Product Sketch). For any other operation conditions such as operated at different medium or different pressure range, please contact the Manufacturer or see attachment E “Recommended Materials of construction”.

- **Valves should not be used on unstable gases.**
- **Maximum working pressure at 20℃ is 1000 PSI (61.2 bar)**
- **Maximum working temperature is 160℃.**

(4) Any medium, which may cause solidification or crystallization or combination, should not be allowed in the cavities of ball valves. In case of medium found, DO not force the valve in either direction. Dismantling and cleaning should be first carried out before

re-operation.

(5) The breakaway torque of the ball valve is recommended as following, subject to the different medium, pressure and time.

Size	Recommended Break-away Torque
1/4” (DN8)	5-7 N-M
3/8” (DN10)	5-7 N-M
1/2” (DN15)	7-9 N-M
3/4” (DN20)	7-9 N-M
1” (DN 25)	20-23 N-M
1-1/4” (DN 32)	30-34 N-M
1-1/2” (DN40)	42-46 N-M
2” (DN 50)	65-70 N-M

The above data are obtained at the ambient temperature of 25℃ with the pressure of 80 PSI (7 bar) and the holding time of 24 hours.

(6) Concerning the mechanical structure of ball valve, only the stem packing can be adjusted. In case adjustment is required, the gland can be tightened but should not be more than one turn. Over tightening would result in higher torque and shortened life of sealing.

3. Maintenance

(1) The maintenance of every type includes three pieces of seats, one set of stem packing, one piece of thrust washer and three pieces of end seals.

(2) When ordering, the type, size and material specification for seal and seat should be confirmed.

(3) Maintenance is also applicable to the other parts or accessories of ball valves.

Warning

When closed the ball valve, there might be fluid contained inside the cavity of the ball. In case of the control of dangerous medium before dismantling, the cleaning should be first carried out to prevent pollution. For safe removal and dismantling concerns, the following steps are recommended.

--Releasing the piping pressure

--Partially open the ball valve and clean the piping to remove any dangerous medium from the ball valve.

--Every personnel involved in removal or dismantling of the ball valve should wear the protection cloth.(such as mask, gloves and etc.)

(4) Disassembly : (NOTE：If complete disassembly is necessary, replacement of all seats and seals is recommended.)

a. It doesn’t matter where the position of valve located is; usually it contained the seal up fluid, so operator must be very carefully when moving the valve on the

pipe. It must open the ball a little and let the fluid come out slowly, it also need to watch out the poisonous and inflammability objects if there is any.

b. It must turn the ball in the close position before dismantle the valve. The ball cannot be taken out from valve body if the ball is in the open or semi-open position. The right position for store the valve is put the flange end on the ground. If it is a valve with the hand wheel, than it must dismantle the hand wheel from the valve first than put the valve flange end on the ground. This procedure is protecting the surface of the ball.

c. It must turn the ball in the close position before dismantle the valve. The ball cannot be taken out from valve body if the ball is in the open or semi-open position. The right position for store the valve is put the flange end on the ground. If it is a valve with the hand wheel, than it must dismantle the hand wheel from the valve first than put the valve flange end on the ground. This procedure is protecting the surface of the ball.

d. To dismantle the valve body and end cap, release retainer with a special tool. It must be careful to dismantle the ball to avoid the seat retainer fall down from end cap.

e. To lift the ball by hoist, it must make the protection on corner to avoid the ball damaged by metal contacted.

(5) Parts inspection, maintenance, and replacement:

a. Check the surface of ball if it is scraped, use the PT for inspection if necessary. If there is any damage on the surface, then find out the root cause such as the dirt fluid…etc.. Avoid the damage factors as far as possible.

b. The damage of the ball surface, to gauge if it is locate on the contacting area of ball and ball seat. If it is the case, then the ball must take a fine milling. If it cause a heavy damaged, then it must welded and re-machined. If it cannot be repaired then change a new ball.

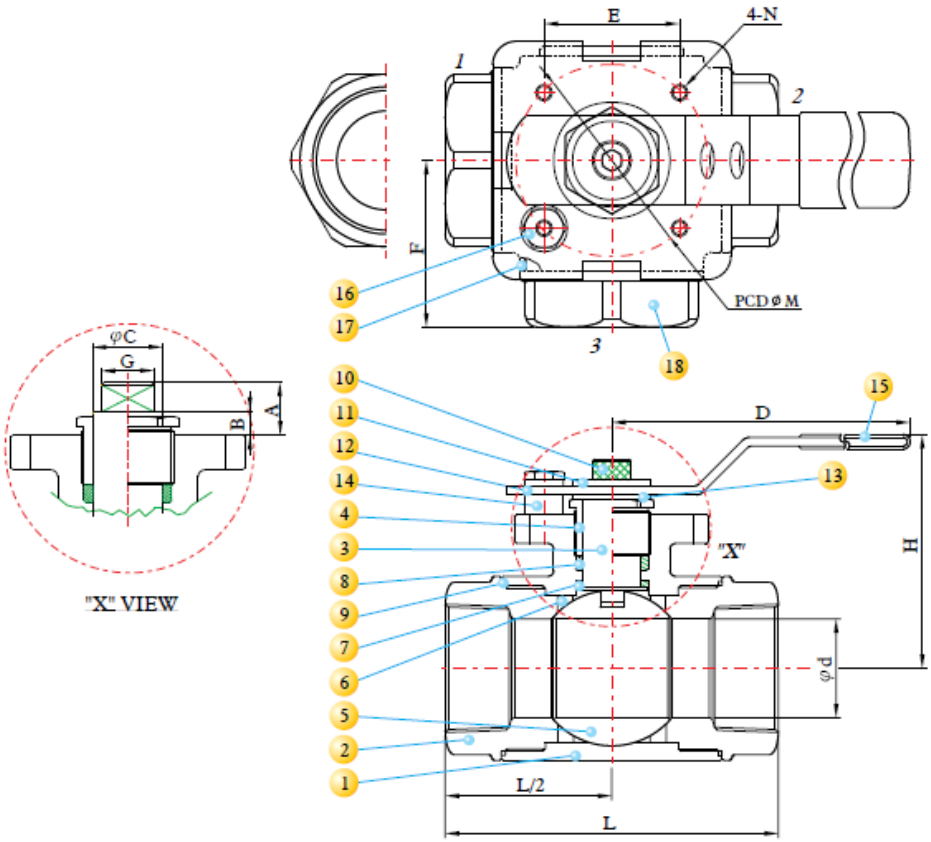
c. If the scraped area is not at the location described in the item (2) above, then it must re-fine milling the damage area again. Otherwise, the ball will damage the soft seat during the open and close operation or it will dig out the ball seat and cause a heavy damage to ball and seat.

d. To inspect the surface of soft seat, if there is it any scrap mark, concave, dust (including weld dregs, iron bit, sands…etc.), abrasion, abnormal press scrape, and a tiny scrap. Usually, the scrape mark and damage by dust will occur in the same time with ball damage. It is the root cause for leakage. If the leakage occurs before the repairing, then this is suggest to change a new soft seat. The mark from press or fine scrap happen in an abnormal operation pressure. It must be reconsider to choose a new valve.

e. To do the final inspection for a valve, 10 times of open and close operating must be done to ensure all the parts are assembled correctly. To ensure the torque is in a same value during the open/close operation. If the torque is not the same in operation, then there may has some parts NOT in a correct position. Please

dismantle and re-assembly. Otherwise, the valve will get damaged easily when working on pipeline under higher pressure.

(6) Assembly : For assembly process, it takes the opposite way of dismantle process. The must in the close position during assembling the body and end cap, the stopper must be located at the right place; otherwise, the open and close operation will be opposite.



MATERIALS LIST

NO.	PART NAME	MATERIAL	Q'TY
1	BODY	ASTM A351 Gr.CF8M	1
2	CAP2	ASTM A351 Gr.CF8M	2
3	STEM	ASTM A276 Gr.316	1
4	GLAND NUT	SS304	1
5	BALL	ASTM A351 Gr.CF8M	1
6	SEAT	PTFE+15% G/F	4
7	THRUST WASHER	PTFE	1
8	PACKING	PTFE	1
9	JOINT GASKET1	PTFE	2
10	STEM BOLT	SS304	1
11	WASHER	SS304	1
12	HANDLE	SS304	1
13	STEM WASHER	SS304	1
14	SET SCREW	SS304	1
15	HANDLE SLEEVE	VINYL GRIP	1
16	SET BOLT	SS304	1
17	JOINT GASKET	PTFE	1
18	CAP1	ASTM A351 Gr. CF8M	1