

## FL-CS-100-150 & FL-SS-100-150, FL-CS-100-300 & FL-SS-100-300



### 1. Before Installation

#### 1.1 Fluid thermal expansion:

Pressure, built-up in the body cavity by heating volatile fluid, can damage the seats or the ball. The hole in the ball beneath the stem slot will equalize pressure between body cavity and the pipeline when valve is in the open position.

#### 1.2 Anti-Static device:

Jomar's Flange Series ball valves are provided with anti-static devices for ball-stem-body. When service conditions require electrical continuity to prevent static discharge, the user is responsible for specifying static grounding.

#### 1.3 Throttling service:

Ball valves are generally not recommended for throttling service, where both the fluid flow and the leading edge of the ball can damage or deform the resilient ball seats causing leakage. High fluid velocity or the presence of solid particles in suspension will further reduce seat life. These valves are not intended to be operated in a partially open position.

1.4 Do not open the bonnet or cap when valve is under pressure. Valve is not equipped with pressure access device.

1.5 Do not touch the surface of the valve on high temperature applications.

1.6 Not suitable for unstable fluid.

1.7 Locking device on the handle to avoid unauthorized operation is optional.

### 2. Installation and Operation

#### 2.1 Handling

During installation, larger valves require a hoist to lift both sides of the body.

#### 2.2 Cleaning

Even if valves were transported in a clean environment, installers must check for any foreign body or dust inside the bore. If any, clean thoroughly before installation. Installers to clean valves with water, compressed air, or steam (automated valves should be cleaned only with water or steam, compressed air is not allowed.) For cleaning, first step is to stand the valve with bore perpendicular to the ground and clean, ensuring all foreign matter is removed from the bore. Then check and clean the connecting pipe bores and flange faces.

#### 2.3 Valve Installation

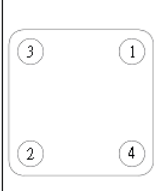

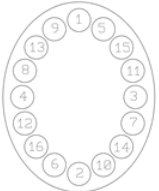

##### a. Direction

Ball valves are normally bi-directional, i.e. no preferred flow direction.

##### b. Position

The valves weight bearing ability and gradient are very important to the pipe installation. Do not allow the pipeline stress to be transmitted to valve flanges and cap. It could cause body deformation and seat leakage.

c. Bolt tightening of flanged ends. The force must be evenly spread. Tightening order for flanged ends is given below.

Square type 4 bolts	Round type Multi bolts	Oval type Multi bolts	Round type 4 bolts
			

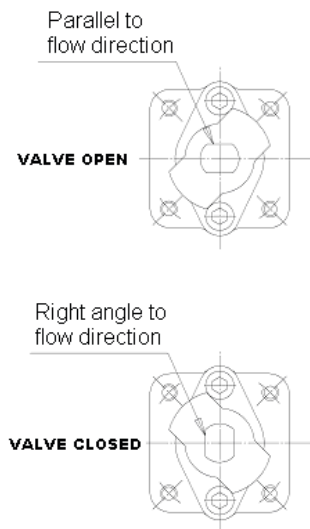
#### 2.4 Operation

a. For manual operation, turn the lever in counter clockwise to close and clockwise to open. If the handle is parallel to the pipeline, the

valve is open. If the handle is at right angles to the pipeline, the valve is closed.

b. When the valve is operated with removable handle, the user should ensure the position of the valve, whether open or closed. There is a mark at the top of stem for double "D" type stem. Refer Fig 1 below showing how to determine the valve's position.

**Fig-1**



### 3. Maintenance

#### 3.1 Maintenance frequency

The maintenance frequency is determined by the valve's application. User shall consider the time interval depending on fluid, flow velocity, operational frequency, high-pressure effect and high-temperature effect etc. Valves should be operated at a minimum twice a year.

#### 3.2 Disassembly

a. To disassemble the valve, please follow the procedure and drawings below.

- 1) Turn the valve fully open. Loosen No. 16-1 and 18, remove No. 14 handle and No. 15 flat washer.
- 2) Use pincer to take off snap ring. Turn ball until half open. Remove No. 12 stop plate.
- 3) Remove No. 11-1 gland bolts., remove No. 10 gland flange.

4) Remove No. 17 Bolts using a ring spanner. Remove No. 2 cap.

5) Take No. 6 body seal and No. 3-2 seat out. Fully close ball and remove No. 4 ball and 3-1 seat.

6) Take No. 5 stem out by pushing No. 5 stem downward. Remove No. 8 stem packing and No. 7 thrust washer.

7) Do not remove No. 19 & No. 20. Static devices.

b. It is necessary to open the ball slightly to drain the body cavity slowly. Be aware of media trapped in the body cavity and take necessary precautions for safe handling and protect against exposure.

c. The ball cannot be taken out from valve body if the ball is in the open or semi-open position. The correct position to work on the valve is with the flange end down.

d. To separate the valve body and cap, undo the bolts symmetrically.

e. During and after assembly/disassembly, take precaution not to damage the surface of the ball.

3.3 Parts inspection, maintenance, and replacement:

a. Check the surface of ball for marks. If there is any damage on the surface, find out the root cause such as dirt, fluid...etc. It is important to avoid these damage factors wherever possible.

b. If the ball surface is damaged at the contact area of ball and ball seat the ball must be re-surfaced. If it is damaged heavily, and cannot be repaired, a new ball must be fitted.

c. Inspect the surface of soft seats, and replace if any damage or deformation is evident.

d. The stem seal must be replaced after disassembling the valve.

e. Repair kits are available by contacting Jomar.

### 3.4 Assembly

The assembly process, is opposite to the disassembly process. The ball must be at the closed position when assembling the body and end cap. The stop plate must be correctly positioned on the stem otherwise, the open and close operation will be reversed.

Final inspection of repaired valve. It is necessary to operate the valve open and closed to ensure all the parts are assembled correctly. Be sure the torque is the same during the open/close operation. If the torque is not the same during operation, it may have some parts positioned incorrectly or be experiencing interference. If this happens, it must be disassembled and re-assembled. The valve will be damaged if it is placed back in the pipeline while wrongly assembled and may be a safety hazard.

### 3.5 Tightening torque of gland bolts

Gland bolts can loosen after the valve is in use over a period of time, and cause leakage. It is necessary to check the gland bolts periodically. If the bolts are loose, tighten according to torque data given below.

## 4. Torque Data

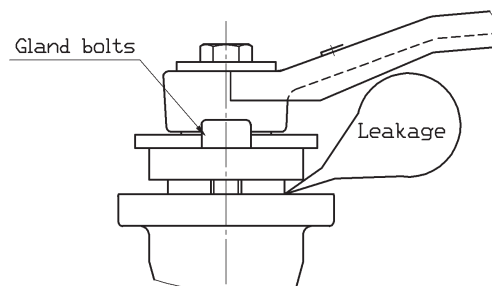
### PACKING GLAND

#### FL-CS-100-150 & FL-SS-100-150

SIZE	Bolt Size	N-m	(kgf-cm)	Tolerance
1/2"	1/4"-20UNC	2	20	+/- 10%
3/4"	1/4"-20UNC	2	20	
1"	5/16"-18UNC	4	40	
1-1/4"	5/16"-18UNC	4	40	
1-1/2"	3/8"-16UNC	10	100	
2"	3/8"-16UNC	10	100	
2-1/2"	3/8"-16UNC	10	100	
3"	W1/2"-12UNC	20	200	
4"	5/8"-11UNC	30	300	
8"	5/8"-11UNC	30	300	

#### FL-CS-100-300 & FL-SS-100-300

SIZE	Bolt Size	N-m	(kgf-cm)	Tolerance
1/2"	1/4"-20UNC	2	20	+/- 10%
3/4"	1/4"-20UNC	2	20	
1"	5/16"-18UNC	4	40	
1-1/2"	3/8"-16UNC	10	100	
2"	3/8"-16UNC	10	100	
3"	W1/2"-12UNC	20	200	
4"	5/8"-11UNC	30	300	
5"	5/8"-11UNC	30	300	
6"	5/8"-11UNC	30	300	



### BODY BOLTS

#### FL-CS-100-150 & FL-SS-100-150

SIZE	Bolt Size	N-m	(kgf-cm)	Tolerance
1/2"	5/16"-18UNC	25	250	+/- 10%
3/4"	5/16"-18UNC	25	250	
1"	3/8"-16UNC	40	400	
1-1/4"	3/8"-16UNC	40	400	
1-1/2"	7/16"-14UNC	45	450	
2"	7/16"-14UNC	45	450	
2-1/2"	7/16"-14UNC	45	450	
3"	1/2"-13UNC	75	750	
4"	1/2"-13UNC	75	750	
8"	3/4"-10UNC	350	3500	

#### FL-CS-100-300 & FL-SS-100-300

SIZE	Bolt Size	N-m	(kgf-cm)	Tolerance
1/2"	5/16"-18UNC	25	400	+/- 10%
3/4"	5/16"-18UNC	25	400	
1"	3/8"-16UNC	40	400	
1-1/2"	7/16"-14UNC	45	450	
2"	7/16"-14UNC	45	450	
3"	1/2"-13UNC	75	750	
4"	5/8"-11UNC	182	1850	
5"	3/4"-10UNC	350	3500	
6"	1"-8UNC	569	5800	