

# 3 PIECES BALL VALVES ASSEMBLY & MAINTENANCE PROCEDURES

## **REVIEW CONTROL**

### **PROCEDURE REF.: DOC.MMM3P**

<b>REV.</b>	<b>DATE</b>	<b>CARRIED OUT BY</b>	<b>APPROVED BY</b>	<b>DESCRIPTION</b>
0	14/01/2004	C. Gallardo	J. Tejedor	General up-date
1	27/01/2010	J. Rubio	J. Tejedor	Add bolting tightness torque chart

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**JC BALL VALVES ASSEMBLY AND MAINTENANCE PROCEDURE**  
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1.- INSPECTION ON RECEPTION AND STORAGE

All valves will be examined on reception, to ensure that they have not suffered any damages during transport, and the supplier will immediately be informed of any damages observed.

The valves leave the factory in open position as a measure of protection and to ensure that no foreign body can damage the ball, except fail to close actuated valves.

***WARNING!***

***The valves will be stored under cover and protected from inclement weather conditions and foreign bodies.***

The valves will not be unpacked until they are to be definitively installed, except for purposes of inspection. After inspection they will be packed again.

2.- DELIVERY CONDITION & STORAGE

Valves will leave the factory in open position as a measure of protection.

Valves will be examined on reception, to ensure that they have not suffered any damage during transport, and the supplier will immediately be informed of any damages observed.

Valves must be stored in an indoor warehouse to avoid dusts and other foreign objects. Do not expose the valves in an open space without putting a cover over.

Valves will not be unpacked until they are to be definitively installed, except for purposes of inspection. After inspection they will be packed again.

3.- INSTALLATION

The handling and transporting of the valves must be carried out with extreme precaution and using the necessary and adequate means on the basis of their size and weight, in this way avoiding any risks to the persons that handle them.

***WARNING!***

***Never use the wrench to hold the valve during handling, assembly or transport.***

Check the condition of the valve, firstly to detect any possible damages caused during their transport and/or handling.

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Likewise inspect the inside of the valve, as well as the interior of the pipe that connects up to the valve. It is of utmost importance that there are no foreign bodies that could damage the valve seats, insofar as these parts are fundamental to the correct operation of the valve.

Install the valve in the system using the proper size and type mating flanges and appropriate gaskets (for RF) or seal ring (for RTJ). The valve design allows for line flow in either direction.

**JC 3 pieces body ball valves** (6" & larger) are provided with mounting holes on a machined top cover for convenient actuator or gear operator mounting. Consult us for location and dimensions of these holes.

**JC** offers optional gear operator with handwheel which can be field mounted. Depending on size, some valves have gear operators mounted with exposed bolting, installation of a gear operator on these valves simply requires placing the operator over the stem, onto the top cover or bonnet and securing it with bolts.

**IMPORTANT!**

After attachment to the valve, you must adjust the threaded "OPEN" and "CLOSE" travel stops on the gear operator by observing ball port and stem key position. Complete assembly by installing covers. Failure to set maximum open and closed positions accurately may result in premature seat failure due to throttling or pinched flow condition.

4.- OPERATION

**JC 3 pieces body ball valves** are recommended for on-off service only. Throttling (partial opening) or "pinched flow" may cause excessive and non-uniform wear on the seats, preventing tight shut-off. 3 pieces body ball valve open by rotating the stem or gear operator handwheel in a counter-clockwise direction. Exact closed and open position is determined by the radial location of the stem key with respect to the fluid bore

Centerline of the body. When the keyway is perpendicular to the fluid bore the valve is closed. Positive stops and arrow indication are provided on gear operators.

5.- DOUBLE BLOCK & BLEED OPERATION

**JC 3 pcs body ball valves** are well suited for sealing fluids, concurrently, at both ends. The installation of a bleed valve (9) provides a safe and convenient method for checking closed valve seat sealing effectiveness, as required for block and bleed valves.

**CAUTION!**

Before opening the bleed valve, please note the orientation of the exhaust hole in the bleed valve body. Stand clear of this direction when opening the bleed valve. Never remove the bleed valve while valve is exposed to line pressure.

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6.- MAINTENANCE

Routine maintenance of **JC 3 pieces body ball valve** consists of periodic grease injection through the 2 body injection fittings (38). This should be done about twice per year. The stem journals are permanently lubricated at the factory and require no routine maintenance.

**Note:** The stem journal fitting is for sealant injection only and should be for lubrication purposes. This fitting allows for temporary sealing in the event of stem seal failure. Also, in the event of internal seat/ball interface leakage, sealant may be injected through the 2 body tube fittings to provide temporary sealing.

**CAUTION!**

The use of traditional “plug valve sealant” may result in failure of seat and/or stem seals, is not recommended.

7.- RECONDITIONING

**IMPORTANT!**

Prior to disassemble, the valve must first be isolated from pressure and flow. Also, with the valve set at approximately half open, internal pressure must be bled to 0 psig through the ball cavity bleed valve (9). Finally, as a safety precaution, remove the bleed valve entirely.

After observing the above precautions, remove the valve from the pipeline. Operate the valve to the “CLOSED” position. Remove the handle, retainer and stop plate. If the valve is equipped with an actuator or gear operator, remove it as well. Also, remove the stem key (26). Remove any accessories or hydraulic tubing.

Stand the valve on end, resting on one of the adapters. Care should be taken during this step to avoid scarring the raised sealing portion or ring groove of the flange. Loosen the top cover, the bonnet and trunnion capscrews (6,24). Remove the gland (29). Pull the connector (31) off, over the stem. Take the stem (28) out of the valve. Remove the trunnion (7) against 12” and less sizes.

Remove the nuts (15) from the studs (14) on the uppermost adapter. Carefully lift the adapter (16) off from the body.

Place a Nylon lifting strap or rope through the ball port and lift the ball (17) straight out of the body (8). Care must be exercised to prevent the ball from being banged or scraped during this procedure. Set the ball down on a clean surface free of anything which might scar the ball surface.

Remove the trunnion block (7) (only for 14” FB and over sizes) from the ball (17).

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Remove the nuts from the lower adapter. Then, pull the body (8) off of the lower adapter. Remove the seat retainer (3) and seat spring from adapters. Take all the seals and back-up rings of the valve components. Clean the parts and inspect them for damage, wear or corrosion. Replace seals and other parts, as required.

Re-assemble in reverse order. Put on grease on all seals and machined mating surfaces. Fill the relief area between the o-ring grooves with grease on the stem and trunnion. A quality thread lubricant should be used when making up the adapter nuts.

8.- TIGHTNESS TORQUE CHARTS FOR BODY/TAILPIECE UNION STUDS AND HEX-NUTS. VALUES IN MKG.

**DIN THREAD ASSEMBLY (\*)**

**ANSI ASSEMBLY UNC THREAD (\*\*)**

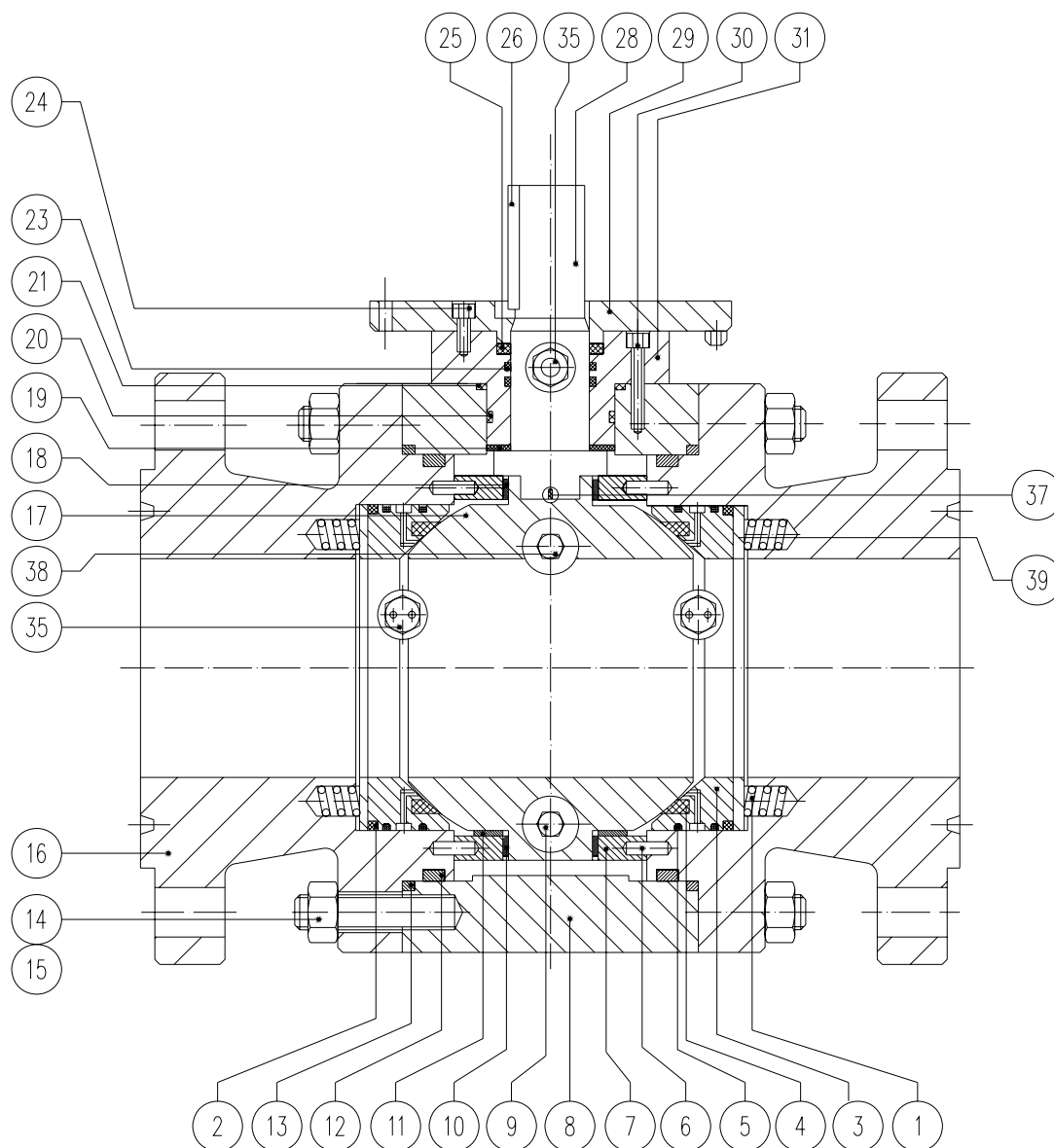
Elastic limit 0.2% (Kg/mm <sup>2</sup> )			Elastic limit 0.2% (Kg/mm <sup>2</sup> )				
	30	64		21	55	72.4	55
Material	5.6	A4.70	Material	B8/B8M	L7M	B7	B7M
Stud Ø			Stud Ø				
M.6	0.61	0.9	3/8"	1.57	4	5.44	4
M.8	1.48	2.2	7/16"	2	5.5	7.4	5.5
M.10	2.94	4.4	1/2"	2.6	7	9.5	7
M.12	4.27	6.4	9/16"	4.2	11	15	11
M.14	8.2	12.3	5/8"	6.3	16.5	22.5	16.5
M.16	12	18	3/4"	10	27	37	27
M.18	17	15.5	7/8"	16.8	44	59	43
M.20	34	51	1"	25	65	87	72
			1.1/8"	35	93	125	93
			1.1/4"	48	128	171	128
			1.3/8"	70	167	223	167
			1.1/2"	95	247	330	247

(\*) LUBRICATION WITH SAE 10 AND A LOAD NO HIGHER THAN 80% OF THE ELASTIC LIMIT IS ASSUMED.

(\*\*) A FRICTION COEFFICIENT OF 0.12 AND 75% OF THE ELASTIC LIMIT IS ASSUMED

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9.- GENERAL VIEW 3 PIECE BALL VALVE







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