JC BALL VALVES

ASSEMBLY AND MAINTENANCE MANUAL

DOC. MMM1500I

SBF AND SBR SERIES (Split body, Semi trunnion, Full and Reduced bore)

Figs. 1510, 1516, 1525, 1540, 1515, 1530, 1615 & 1630

FULL BORE

PN 10 & PN 16:	DN 250 – DN 300
PN 25 & PN 40:	DN 200 – DN 300
CLASS 150:	DN 10” - DN 12”
CLASS 300:	DN 8” - DN 12”

REDUCED BORE

PN 10 & PN 16:	DN 300 – DN 350
PN 25 & PN 40:	DN 250 – DN 350
CLASS 150:	DN 12” - DN 14”
CLASS 300:	DN 10” - DN 14”

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Revision: 3.1 - December 1999

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JC BALL VALVES SERIES SBF and SBR
REV. 3.1 - December 1999

1.- GENERAL INFORMATION

1.1 SUPPLY

1.1.1 All JC® valves are supplied packed, and with the ends protected.

1.1.2 The inlet and outlet flanges of the valves must continue to be protected with the original packaging until they are assembled.

1.1.3 The valves are transported in the open position in order to avoid damage to the sealing surfaces.

1.1.4 Attention must be paid to all of the warning signs attached to the valves and actuators.

1.2 IDENTIFICATION

1.2.1 The consignment documentation, identifying the valves, is attached to each valve.

1.2.2 The body of the valves is marked with: the JC make, DN and PN, the body material, casting number and model number.

2.- INSPECTION ON RECEPTION AND STORAGE

2.1 All valves will be examined on reception, to make sure that they have not been damage during transport. The supplier of the valve will be immediately informed of any evidence of damage found.

2.2 The valves will be stored under cover, protected from inclement weather and foreign bodies.

2.3 The valves will not be unpacked until their definitive installation, except for inspection purposes.

3.- INSTALLATION

3.1 Thoroughly clean the valve connections after removing the protection.

3.2 The valves can be installed in any position. The connections are according to DIN 2501 or ANSI B16.5.

3.3 The counterflanges must be parallel, with their centres aligned. The distance between them must be sufficient for the fitting of the valve and the gaskets, without subjecting the body of the valve to forces of traction or compression.

4.- INSTALLATION HYDROSTATIC TEST

4.1 If a hydrostatic test has to be carried out, it must be done with the valve in the half-open position.

5.- PACKING LEAKS

5.1 If a packing leak is observed, tighten the gland clamp (10.1) by making up the bolts (26) (only in DN>=12" FB or 14" RB), or the press nut (7) by 1/8 of a turn in the lower parts, if the leak does not stop repeat the operation until parts (10.1) or (10) come into contact with (1). Should the leak still continue, then replace the packing.

6.- BODY GASKET LEAKS

6.1 Should a body gasket (13) leak be observed, then the gasket must be changed, following point 8.

7.- CHANGING THE PACKING

We recommend that when a change of packing is necessary, that all of the seats, body gaskets and the cap, the shaft friction sockets and ball supports are also changed. However, if due to the requirements of production it is not possible to remove the valve from the line, then follow the sequence below:

STRIPPING DOWN

7.1 Make sure that the installation is not under pressure.

7.2.a With valves equal to or greater than DN 12" FB or 14" RB: Remove the worm gear, the key (47), the stop (9) ,marking the top side for the assembly, the retaining washer (471), the spring protector (58), the spring (59), the gland (10A) and the gland ring (10).

7.2.b With valves less than DN 12" FB or 14" RB: Remove the wrench (6) or the worm gear, the gland nut locking washer (46), the gland nut (7), the disk springs (8) and the spacer (41), should there be one.

Remove the stop plate (9), marking the top side for the assembly, the PTFE thrust washer, packed with glass fibre (18) and the gland ring(10).

7.3 Remove the packing (11) without damaging the shaft.

7.4 Fit the new packing (11).

ASSEMBLY

7.5.a With valves that are equal or greater than DN 12" FB or DN 14" RB : fit the gland ring(10), make up the gland (10.1) to the original point of tightness. Fit the spring (59), the spring protector (58), the retaining washer (471) and the stop (9) marked on the top side.

7.5.b With valves less than DN 12" FB or 14" RB: Fit the gland ring (10), the new PTFE thrust washer, packed with glass fibre(18), the stop plate (9), marked on the top side, the spacer (41), should there be one, the disk springs (8), the gland nut locking washer (46), and tighten the gland nut (7) to the torque specified in section 11.

7.6 Before fitting the wrench or the worm gear, test the valve under pressure to make sure that the packing is leak-tight. Should you detect a leak then consult section 5.

7.7 Re-assemble the wrench or the worm gear.

8.- CHANGING SEATS, PACKING AND GASKETS

8.1 Make sure that the installation is not under pressure.

8.2 Strip down the valve, removing it from the line. If the circulating medium is noxious or inflammable, every precaution must be taken to avoid accidents.

8.3 Undo the nuts (28) which attach the body to the lateral, bearing in mind that fluid could be trapped in the body chamber, separate the lateral (2) from the body (1). Do not misplace the ball support cotter pins (43).

8.4 Remove the seat (5) from the lateral and the body-lateral gasket (13).

8.5 Strip down the packing, as indicated in sections 7.2 and 7.3.

8.6 Turn the ball (3) to the closed position and remove it from the body. The trunnion bearings (22) and the guides (21) are mounted on the ball trunnions, check them to make sure they have not seized.

Clean the exterior surface, of the port and the slot, making sure that the pressure release hole at the bottom of the same is not blocked.

Make sure that the exterior surface of the ball, particularly the part which comes into contact with the seats and the transition radius, between the exterior surface and the port. If the surface or the slot of the ball are damaged, replace the ball with a new one.

8.7 Strip down the stem. For this operation follow sections 7.2. and 7.3., subsequently take the stem out through the interior of the body. Remove the stem thrust seal (12) and the stem "O" rings (72), where applicable: if it is a question of a design for gas then the stem will incorporate one or two (as in the figures) "O" rings, which must be replaced.

8.8 Remove the seat (5) from the body.

8.9 Clean the inside surfaces of the body and the lateral, and also the supports, particularly the seat housing areas, gaskets, sockets and the packing.

8.10 Clean and check the shaft. Make sure that the anti-static device is working by pressing the ball-bearings into their housing, ensuring that they return to their position. If any of the bearings are locked, or if the surface of the shaft is damaged, replace the shaft with a new one.

9.- ASSEMBLING THE VALVES

9.1 Before assembling the parts, make sure that they have not been damaged, and that both the parts and the interiors of the valves are completely clean

9.2 Make sure that the replacement parts are JC® originals, of the same materials and with the same dimensions as the parts they are replacing. For valves manufactured before 1983 the replacement parts may be different from the ones originally fitted. Should you have any doubts consult your usual supplier.

9.3 Fit the body seat (5) in place.

9.4 The stem thrust seal (12) is fitted onto the stem (4). In the spare parts set there are two thrust seals. In certain of the rated dimensions these are the same: should they be different then the stem thrust seal will be the one with the larger gauge.
Fit the “O” ring (72) (two in the figures) over the stem slot, in the case of gas designed valves

9.5 Introduce the stem into its housing.

9.6 Assemble the gland and the rest of the parts, as described in sections 7.4. and 7.5.

9.7 Turn the stem to the closed position so that it can be inserted into the ball slot. Assemble the ball (3) in the closed position, with the ball trunnion guides (21) mounted, making sure there is no give between the slot and the stem. Fit the body connector cotter pins (43).

9.8 Locate the seat (5) in the lateral, the gasket (13) in the housing in the body and assemble the lateral (2), making sure that the milled edges of the lateral coincide with the cotter pins (43).

9.9 Fit the nuts (28) and make them up, following the correct sequence.

9.10 Before re-assembling the valve in the line, check that it is in the half-open position, so as to ensure the leak-tightness of the packing and the gaskets, and then close it and check the leak-tightness of the seats.

9.11 Reassemble the actuator.

10.- MAINTENANCE

10.1 One of the distinguishing factors of ball valves is that they do not need any maintenance. However, after they have initially been brought on line, after every adjustment, or when they have been stripped down, they need checking over to make sure that there are no leaks caused by the possible presence of foreign matter in the piping, which could damage the seats. This check is not necessary if you are absolutely certain that the installation has been thoroughly cleaned.

10.2 The state of the paint-work on the carbon steel of the valves must be regularly checked to avoid oxidation of the areas lacking in surface protection.

10.3 Any replacement of parts must be done with JC® spare parts.

10.4 When asking for spare parts, specify whether the valves are DIN or ANSI, or whether they differ in any way from our standard manufactured products.

11.- TIGHTENING TORQUE OF THE GLAND SEAL NUT

RATED DIAMETER (1)	TIGHTNESS TORQUE IN m.Ko	
	PACKING PTFE	GRAPHITE
250	21	23
300	clearance between gland (10.1) and body 3 to 4 mm.	

(1) See BORE DIAMETER for valves with a reduced diameter.

NOTE:
For DN>=12" FB , or DN 14" RB and his equivalent Din valves the system for tightening the packing is by bolted press.

12.- **BODY NUT TIGHTENING TORQUE (M.KG).**

- THREAD METRIC (*)

YIELD POINT 0.2%				
(Kg/mm²)	30	64	108	45
Material	5.6	8.8	12.9	A.2
ØBolt				
M.6	0.61	1.26	2.06	0.95
M.8	1.48	3.06	5.0	2.3
M.10	2.94	6.06	10	4.55
M.12	4.27	10.5	17	7.9
M.14	8.2	17	27	12
M.16	12	26	43	20
M.18	17	36	59	27
M.20	25	54	86.5	40
	34	70	114	52

- THREAD UNC (**)

YIELD POINT 0.2%				
(Kg/mm²)	21	55	72.4	55
Material	B8/B8M	L7M	B7	B7M
ØBolt				
3/8"	1.57	4	5.44	4
7/16"	2	5.5	7.4	5.5
1/2"	2.6	7	9.5	7
9/16"	4.2	11	15	11
5/8"	6.3	16.5	22.5	16.5
3/4"	10	27	37	27
7/8"	16.8	44	59	43
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

(*) It is assumed: Lubrication with SAE 10 and load lower than 80% of Yield Point.
(**)It is assumed: Coefficient of friction 0.12 and load lower than 75% of Yield point.