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TB3

Trunnion Mounted
Quarter Turn Soft Seated Ball Valves

(Internal Trunnion - Bearing Block Design)

3 Piece Bolted Valve
Storage, Installation, Operation
& Maintenance Manual

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SECTION 1 - STORAGE

1.1 Pre Despatch

Non corrosion resistant valves shall be primed and/or painted.

After testing and before shipment, valves shall be drained of test fluid and lubricated.

Parts and equipment shall have exposed bare metallic surfaces protected with a rust preventative which shall not become fluid and run at temperatures less than 125°F.

Exposed sealing surfaces shall be protected from mechanical damage for shipping.

Valves not destined for immediate use will be adequately prepared and packed before shipping in such a way as to avoid any possible damage during transport and during the subsequent storage period before use.

Relevant valve certification is always included in shipment.

1.2 Customer Storage Instruction

If possible it would be advisable to leave the valves in their own packing cases and/or pallets during the entire period of storage. In either case, to prevent damage, the protective covers on the flanges of every valve must not be removed. The valves must always remain in an OPEN position.

It is advisable that storage conditions be closed and dry. The valves should be stored in weatherproof conditions in a building with an adequate roof.

Gearboxes and actuators are supplied and shipped already assembled with their relative Valves and fitted with additional equipment (e.g. Limit Switches / Solenoids) as required by the customer contract. Caution must be taken to ensure that all protective covers on this equipment are not removed until installation.

2.1 Unpacking and Inspection

Care should be taken during unpacking of valves.

It is advisable to check valve exterior for shipping damage and any damage should be reported to the Quality Assurance Manager immediately.

All JAG flocomponents valves are supplied with the ball in the open position and protective covers on both ends.

Ensure end covers remain securely in place until the valve is ready for installation. This will prevent ingress of dirt and damage to ball surface and end connection surface finish.

Please also check that valve certification is correct to the requirements.

SECTION 3 - PRE-INSTALLATION

3.1 Pre Installation

Before installation check to ensure size, pressure rating, end connection and material of construction are suitable for required service conditions.

Remove dirt/debris that may have accumulated in the valve during long term storage and always maintain valve cleanliness during installation procedure.

In particular weld spatter should be kept clear of valve seats as this could result in damage to the soft seats and valve malfunction.

SECTION 4 - HANDLING

4.1 Handling

Where possible all ball valves are fitted with lifting lugs or eyebolts, which are fixed to the valve by the Cap studs and nuts or to the top of the valve stem.

On valves with restricted space between the flanges handling is achieved by slinging the valve on the neck diameter behind each of the pipe flanges.

NB. Webbed slings should be used at all times.

SECTION 5 - INSTALLATION

5.1 Installation

JAG flocomponents valves can be supplied with various end connections.

Ensure that the pipe work, flanges, etc., are square, true and that pipes are properly supported to prevent line buckling, which could result in excessive stress on the valve.

Dependent on the application, the joint/ gasket selection and bolting torques as recommended by the joint/gasket manufacturer[s] should be observed to maintain sound, tight joints.

Butt Weld End Valves - during welding all possible efforts should be taken to stop the ingress of weld slag into the pipeline.

5.2 In-Line Testing

Do not leave valves in the half open position as this could result in damage to the soft seat.

Ensure that after welding all valves are flushed out and left in the fully open or fully closed position.

Prior to line testing, the valve **must be in the half open position,** the valve is now ready for line testing.

Ensure that after testing all valves are flushed out and left in the fully open or fully closed position.

Do not leave valves in a half open position as this could result in damage to the soft seat.

SECTION 6 - OPERATION

6.1 Operation

JAG flocomponents (manual operation) trunnion mounted ball valves are operated by a simple quarter turn of the stem to the fully open or fully closed positions.

The valve position is indicated by the keyways on the top of the stem.

When keyways are **in line with the pipeline** the valve is in the **fully open position**. When keyways are **at right angles to the pipeline** the valve is in the **fully closed position**.

Trunnion mounted ball valves contain two spring loaded seats. Each seat consists of a steel seat retainer with a NYLON or similar material insert.

With little or no pressure in the line the springs ensure a positive seal on both the inlet and outlet sides of the valve.

As more pressure is applied a tighter seal is formed.

The valve position stops that are located in the manual gearbox are adjusted and factory set to give true alignment in both the open and closed positions.

JAG flocomponents recommends that the position stops should not be tampered with as it may affect the operational efficiency of the valve.

The valve closes in a clockwise direction.

Where manual operation is not required an actuator may control the valves.

No stops are fitted to the valve, as they are normally part of the actuator or gearbox. Actuator operation shall be in accordance with the actuator manufacturers Installation, Operation and Maintenance Instruction.

Note: Like any other piece of precision machinery, JAG flocomponents ball valves should not be immobilised for long periods of time. Where possible, the valve should be cycled at periodic intervals to ensure continued correct operation.

Tight closure valves are intended to be either FULLY OPEN or FULLY CLOSED. Leaving the ball in some intermediate position can rapidly cause severe damage and / or failure.

SECTION 7 - MAINTENANCE

7.1 Maintenance

All JAG flocomponents ball valves are designed with an anti-blow out stem.

JAG flocomponents ball valves do not require lubrication.

There are only two moving parts and maintenance is seldom required.

If necessary, the valves may be refurbished by relatively unskilled labour using a small number of parts, none of which require matching on site.

The only parts likely to require attention are Ball, Seats, Stem, 'O' Rings and Fire Safe Seals.

JAG valves are designed for ease of service and assembly in the field. The following checks should, however, help to extend the operational life of the valve.

Stem Leakage: If there is stem leakage it will be necessary to dismantle the valve. Although a temporary seal can be achieved by injecting valve sealant, directly to the stem seal area.
(Ref Appendix I).

Leakage at Body Joint: This is invariably due to damage to the cap 'O' Ring seal and it will be necessary to dismantle the valve.

In-Line Leakage: Check that the valve is fully closed. If the valve is fully closed, then leakage will be due to damaged seat or ball sealing surface. Further maintenance on seat or ball necessitates dismantling the valve. Although a temporary seal can be achieved by injecting valve sealant directly to the ball sealing area. (Ref Appendix I). This is sometimes necessary in the event of damage to seats caused by debris in the line.

Note: Auxiliary sealant fittings should not be removed if there is pressure in the line.

Leakage at Pipeline Joint: Test for tightness of flange bolting. If slack, tighten bolting to gasket/bolting manufacturer's recommended torque. Ensure pipe work flanges etc., are square, true and that piping is properly supported to prevent line buckling.

Note: Over tightened bolts can cause flange leaks as excessive force can cause flanges to bow.

7.2 Dismantling the Valve

Remove actuator or gearbox.
Remove the stem key screw and the stem key. (25)(43)
Remove bonnet flange bolts and withdraw bonnet flange. (8)(24)
Remove bonnet bolts and withdraw bonnet C/W the stem. (23)(7)(4)
Remove body/cap nuts and withdraw the top cap. (21)(2)
Remove body/cap nuts from the bottom cap and withdraw the body. (21)(1)
Remove ball C/W the bearing plates from the bottom cap. (3)(6)(1)
Remove seat retainers from caps (if seats are damaged). (5)(2)

NOTE: Do not remove glacier DU bushes unless damaged. (27)(28)

The valve has now been dismantled. It can be cleaned and checked for wear and damage. Damaged seats must be replaced and therefore a new set of seats complete with seat retainers fitted in body of cap. New sets of 'O' Rings and firesafe seals should be fitted and any other defective parts replaced.

7.3 Assembling the Valve

Replace seats complete with seat retainers in both Caps. (5)(2)
Fit ball C/W the bearing plates to the bottom cap. (3)(6)(2)
Fit body to bottom cap and body/cap nuts. (1)(2)(21)
Fit top cap to body and body/cap nuts. (2)(1)(21)
Fit bonnet C/W the stem to body and bonnet bolts. (7)(4)(1)(23)
Fit bonnet flange and bonnet flange bolts. (8)(24)
Fit key and the stem key screw to the stem. (43)(25)(4)
Torque all fasteners as per Section 11 of this manual.
Check stems action. (4)
Fit gearbox/actuator and check stops.
Always maintain valve cleanliness during assembly procedure.
The valve has now been assembled ready for test.

SECTION 8 - MAINTENANCE KITS

8.1 Maintenance Kits

Maintenance kits are available from JAG flocomponents and consist of the following:
2 off Seat Retainer's C/W Inserts (5)(9)
1 set of O Rings and Back-Up Rings (10-14)
1 set of Fire Safe Seals (15-18)

RECOMMENDED SPARES FOR ONE-YEAR OPERATION

No. Of Valves In Service	1 - 10	11 - 25	26 - 50	51 - 100
Spare Kits	1	2	3	6
Additional Items				
Ball	0	1	2	6
Stem	0	1	2	6
Bleed Valves	0	1	2	4
Set of Springs	0	1	2	4

In event of valves requiring repair rather than maintenance, additional spare parts are available from JAG flocomponents.

These parts will consist of the additional items listed as typical recommended spares.

If additional parts other than this list are required it may be recommended that the complete valve is replaced.

IMPORTANT

Spare parts from different valve types should not be interchanged. This will ensure that the valve remains capable of being used for its original design and construction purpose. There can be no risk to health and safety when the valve is properly used.

JAG flocomponents shall not be liable for any Failure/Damage/Injury where valve parts are not of the Company's original design or specification.

SECTION 9 - SAFETY PRECAUTIONS

BEFORE REMOVING VALVE FROM PIPELINE

9.1 Safety Precautions - Before removing valve from Pipeline

Media flowing through a valve may be corrosive, toxic, inflammable or of a contaminant nature.

Where there is evidence of harmful fluids in the valve pipeline the utmost care must be taken.

It is suggested that the following safety precautions should be taken when handling valves of this nature.

Always wear eye protectors.
Always wear gloves and overalls.
Always wear protective footwear.
Always wear protective headgear.
Ensure that running water is readily available.
Ensure suitable fire extinguisher is readily available.
Ensure that no pressure exists on either the upstream or downstream sides of the valve; ask responsible pipeline personnel, to check pipeline pressure gauges to ascertain pressure is zero before handling valves.
Ensure that any trapped media is released by slowly operating the valve to the half open position. Leave valve in the fully open position before removing from the pipeline.

SECTION 10 - SAFETY PRECAUTIONS AFTER REMOVING VALVE FROM PIPELINE

10.1 Safety Precautions - After removing valve from Pipeline

If, after removing the valve from pipeline, it is discovered the valve is closed and not in the fully open position, ensure that any trapped media is released by slowly operating the valve to the half open position.

The safest place to stand when opening the valve is away from the end of the stem, and to one side of the valve.

Leave valve in the fully open position prior to dismantling.

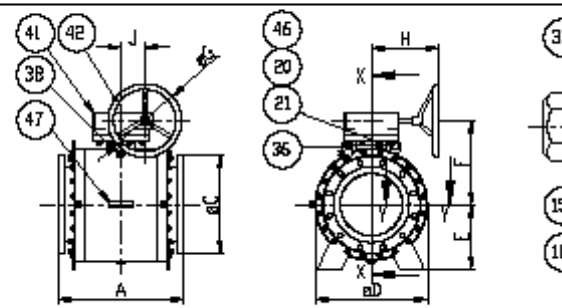
SECTION 11 - VALVE FASTENERS

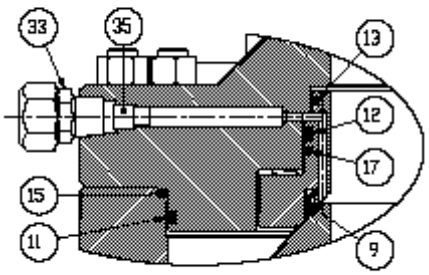
11.1 Valve Fasteners - Approximate Torque Values

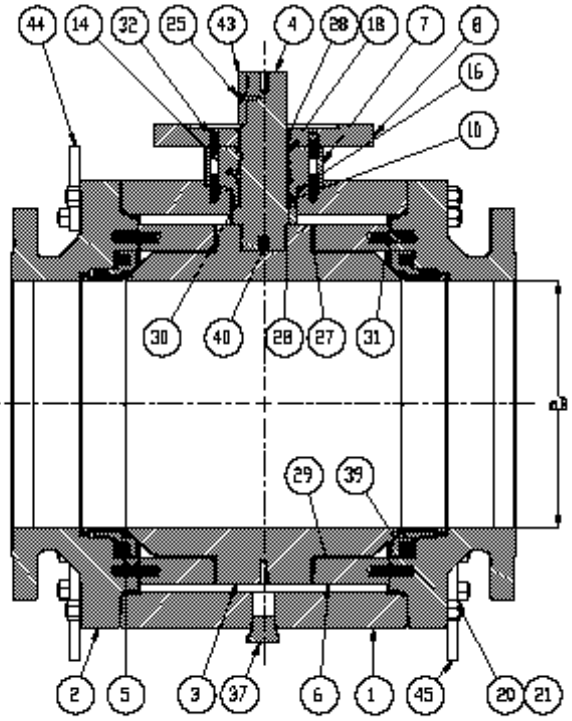
Bolt Size	Across Flats	Materials B7, L7, B7M, L7M & DUPLEX (Nm)	Materials B8 & B8M (Nm)
M12	19	56	28
M14	22	89	45
M16	24	138	70
M18	27	190	97
M20	30	270	137
M22	32	366	186
M24	36	466	237
M27	41	680	347
M30	46	925	470
M33	50	1260	640
M36	55	1700	870
M39	60	2209	1225
M42	65	2795	1420
M45	70	3465	1765
M48	75	4224	2150
M52	80	5434	2765
M56	85	6590	3355
M60	90	8184	4165
M64	95	10032	5105
M68	100	12117	6170

APPENDIX I - VALVE GA

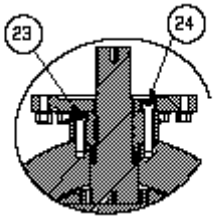
IF IN DOUBT ASK







DESIGN STANDARDS
FACE TO FACE : API 6D LATEST
END CONNECTIONS : ASME B16.5 LATEST
FIRE SAFE : API 607 LATEST
MATERIALS : NACE MR-01-75 LATEST
ISO F16 MOUNTING PAD
ANTISTATIC DESIGN



ITEM No.	DESCRIPTION	MATERIAL
1	Body	ASTM A105N
2	Cap	ASTM A105N
3	Ball	ASTM A105N +0.075mmENP
4	Gear Stem	ASTM A29 4140 +0.075mmENP
5	Seat Retainer	ASTM A105N +0.075mmENP
6	Bearing Plate	ASTM A105N
7	Bonnet	ASTM A105N
8	Bonnet Flange	ASTM A105N
9	Seat Insert	RPTFE
10	Bonnet O Ring	Viton B
11	Cap O Ring	Viton B
12	Retainer O Ring	Viton B
13	Sealant O Ring	Viton B
14	Stem O Ring	Viton B
15	Body FireSafe Seal	GraFoil
16	Bonnet FireSafe Seal	GraFoil
17	Retainer FireSafe Seal	GraFoil
18	Stem FireSafe Seal	GraFoil
20	Stud	ASTM A193 B7M Zinc Plated
21	Nut	ASTM A194 2HM Zinc Plated
23	Bonnet Cap Screw	ASTM A193 B7M Zinc Plated
24	Bonnet Fl'g Cap Screw	ASTM A193 B7M Zinc Plated
25	Cap Screw	ASTM A193 B7M Zinc Plated
27	DU Bush	Steel/PTFE
28	DU Bush	Steel/PTFE
29	Thrust Washer	Steel/PTFE
30	Thrust Washer	Steel/PTFE
31	Dowel Pin	ASTM A564 630
32	Dowel Pin	ASTM A564 630
33	Sealant Fitting Body	ASTM A182 F316
35	Check Valve	ASTM A182 F316
36	Sealant Fitting Stem	ASTM A182 F316
37	Drain Plug	ASTM A182 F316
38	Vent Plug	ASTM A182 F316
39	Spring	Inconel X 750
40	Anti Static Spring	Inconel X 750
41	Gearbox	Cast Steel
42	Handwheel	Cast Steel
43	Key	Key Steel
44	Lifting Lug	Carbon Steel
45	Support Feet	Carbon Steel
46	Spring Washer	Stainless Steel
47	Name Plate	Stainless Steel

DIMENSIONS IN MILLIMETRES AND KILOGRAMS

SIZE	A	ØB	ØC	ØD	E	F	ØG	H	J	WT	ITEM	QTY
6"	394	152	279.4	325	200	282	460	224	77.5	168	--	--

REV.	DATE	BY/INITIALS
A	23/08/11	KC

DRAWN: K. Craig
DATE: 23/08/11
APPROVED: D. McSorley
DATE: 23/08/11

TITLE: GA Drawing 6" FB Cl 150 RF

DRG. No. KD126B061G

DO NOT SCALE