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TB3

Trunnion Mounted
Quarter Turn Soft Seated
Ball Valves

(2 - 4 inch External Trunnion Design)

3 Piece 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.

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 three 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 II).

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 II). 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 body/Cap nuts and withdraw Caps. (17)(2)
Support body on body studs to prevent damaging the ball. (1)(15)(3)
Remove trunnion flange (trunnion) bolts and withdraw trunnion flange. (16)(8)
Support ball. (3)
Remove trunnion. (5)
Remove bonnet bolts and withdraw bonnet. (16)(7)
Remove ball from body. (3)(1)
Remove stem from inside the body. (4)(1)
Remove seat retainers from Caps (if seats are damaged). (9)(2)

NOTE: Do not remove glacier DU bushes unless damaged. (18)

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. (11)(9)(2)

Locate stem internally into body. (4)(1)

When fully located turn stem one complete revolution to ensure smooth action.

Support ball in the open position. (3)

Fit ball into body. (3)(1)

Fit trunnion into trunnion bore. (5)

Fit trunnion flange and flange bolting. (8)(16)

Fit bonnet and bonnet bolting. (7)(16)
Check stem and ball assembly for free and easy movement. (4)(3)

Fit 1st Cap and Cap/body nuts. (2)(17)

Turn body carefully over. (1)

Fit 2nd Cap and Cap/body nuts. (2)(17)
Torque all fasteners as per Section 11 of this manual.

Check stem 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
1 set of O Rings and Back-Up Rings
1 set of Fire Safe Seals.

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.

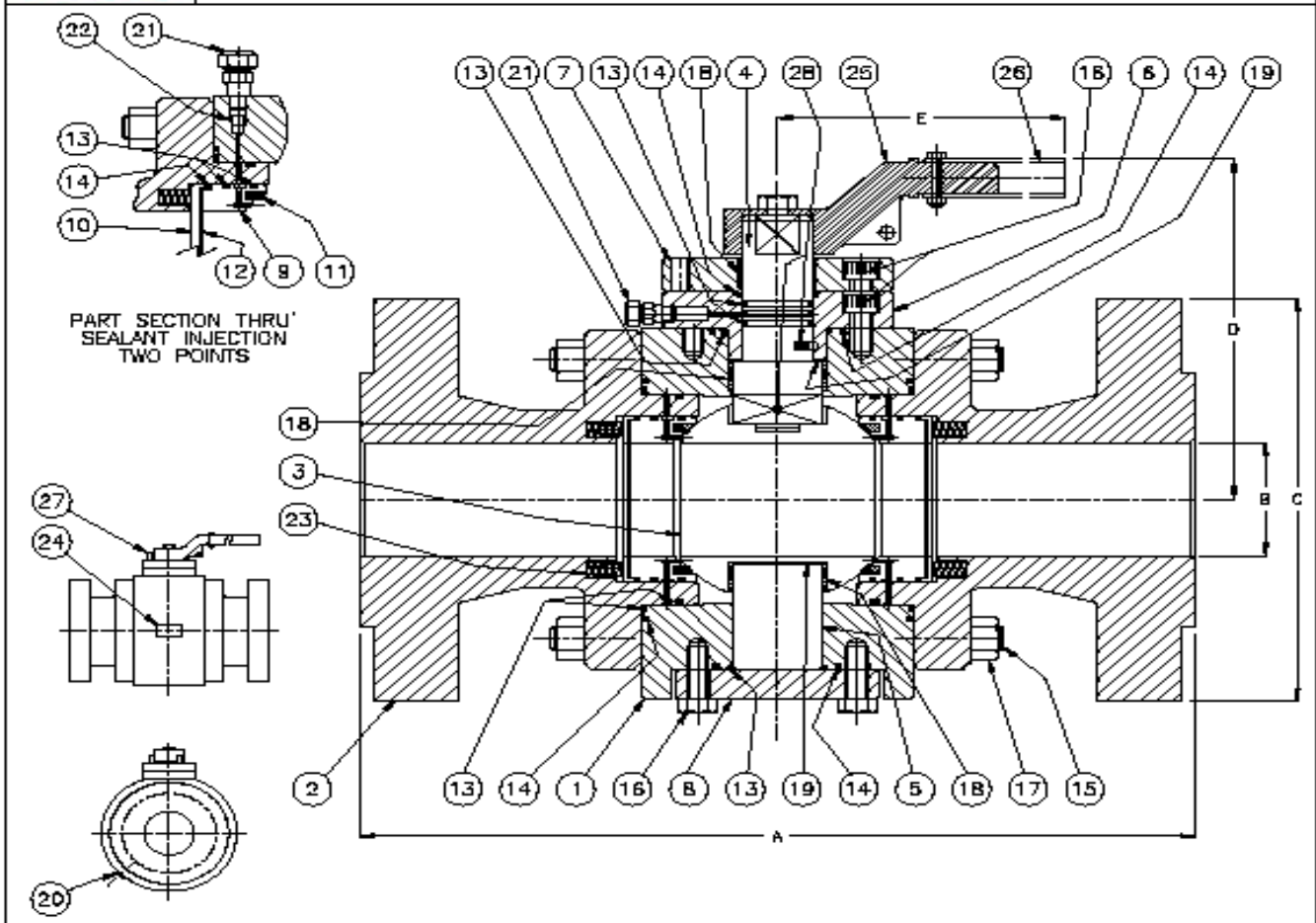
SECTION 11 - VALVE FASTENERS

11.1 Valve Fasteners - Approximate Torque Values

Bolt Size		Material B7/L7	Material B7M/L7M
3/8”	16 UNC	33.50 ft/lbs	25.50 ft/lbs
1/2”	13 UNC	73.80 ft/lbs	36.40 ft/lbs
5/8”	11 UNC	149.00 ft/lbs	110.75 ft/lbs
3/4”	10 UNC	279.00 ft/lbs	210.00 ft/lbs
7/8”	9 UNC	414.74 ft/lbs	317.00 ft/lbs
1”	8 UN	614.00 ft/lbs	469.00 ft/lbs
1.1/8”	8 UN	849.00 ft/lbs	683.00 ft/lbs
1.1/4”	8 UN	1800.00 ft/lbs	1054.00 ft/lbs
1.3/8”	8 UN	1900.00 ft/lbs	1451.00 ft/lbs
1.1/2”	8 UN	2473.00 ft/lbs	1889.00 ft/lbs
1.5/8”	8 UN	3202.00 ft/lbs	2446.00 ft/lbs
1.3/4”	8 UN	4012.00 ft/lbs	3065.00 ft/lbs
1.7/8”	8 UN	5028.00 ft/lbs	3841.00 ft/lbs
2”	8 UN	6159.00 ft/lbs	4705.00 ft/lbs
2.1/4”	8 UN	7957.00 ft/lbs	6079.00 ft/lbs
2.1/2”	8 UN	9968.00 ft/lbs	7629.00 ft/lbs

JAG flocomponents

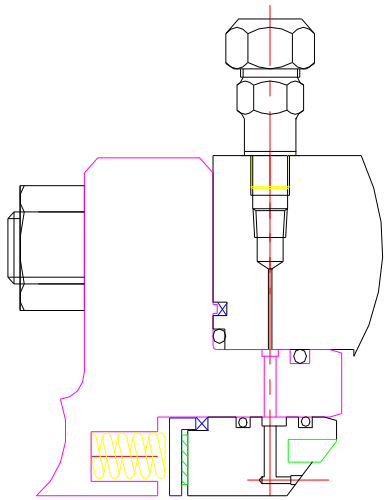
2" FULL BORE FLANGED RF CL600 TRUNNION MOUNTED LEVER OPERATED



STANDARD			
	FACE TO FACE OR END TO END		API 6D CL600 RF
	DIMENSIONS OF FLANGE		ASME B16.5 CL600
	FIRE SAFE DESIGN		API 607 LATEST
ALL MATERIALS TO NACE STD MR.01.75 LATEST REVISION			
30	---	---	---
29	---	---	---
28	ANTI-STATIC	316 ST.ST.	---
27	STOP PINS	316 ST.ST.	---
26	LEVER TUBE	A106N	---
25	LEVER HEAD	A216 WCB	---
24	NAMEPLATE	A182 F316	---
23	SPRINGS	INCONEL X-750	---
22	CHECK VALVE	316 ST.ST.	---
21	SEALANT FITTING	316 ST.ST.	---
20	BLEED PLUG	316 ST.ST.	---
19	THRUST BEARING	STEEL/PTFE	---
18	BEARING BUSH	STEEL/PTFE	---
17	NUTS	ASTM A194 2HM	ZINC PLATED
16	SCREWS	ASTM A193 B7M	ZINC PLATED
15	STUDS	ASTM A193 B7M	ZINC PLATED
14	FIRESAFE SEAL	GRAPHITE	---
13	'O' RING SEAL	VITON B	SHORE 90
12	SEAT SPACER	NYLON	---
11	SEAT	NYLON	---
10	SEAT FOLLOWER	ASTM A105N	+ 0.075mm ENP
9	SEAT RETAINER	ASTM A105N	+ 0.075mm ENP
8	TRUNNION FLANGE	ASTM A105N	---
7	BONNET FLANGE	ASTM A105N	---
6	BONNET	ASTM A105N	---
5	TRUNNION	ASTM A29 4140	+ 0.075mm ENP
4	STEM	ASTM A29 4140	+ 0.075mm ENP
3	BALL	ASTM A105N	+ 0.075mm ENP
2	CAP	ASTM A105N	---
1	BODY	ASTM A105N	---
No	DESCRIPTION	MATERIALS	CONDITION

DIMENSIONS in Millimetres and Kilograms								
SIZE	A	B	C	D	E	WT	ITEM	QTY
2"	292	50.0	165.1	192.0	492.0	54	---	---

DRAWN	K.Craig
DATE	23/08/'11
APPROVED	D.McSorley
DATE	23/08/'11
DRG. No.	K0628T021L
REVISION	0



PART SECTION THRU SEALANT INJECTION
TWO POINTS(IF REQUIRED)