TRUNION BALL VALVE JC FLANGED

INSTALLATION AND OPERATING MANUAL

GENERAL GUIDELINES :

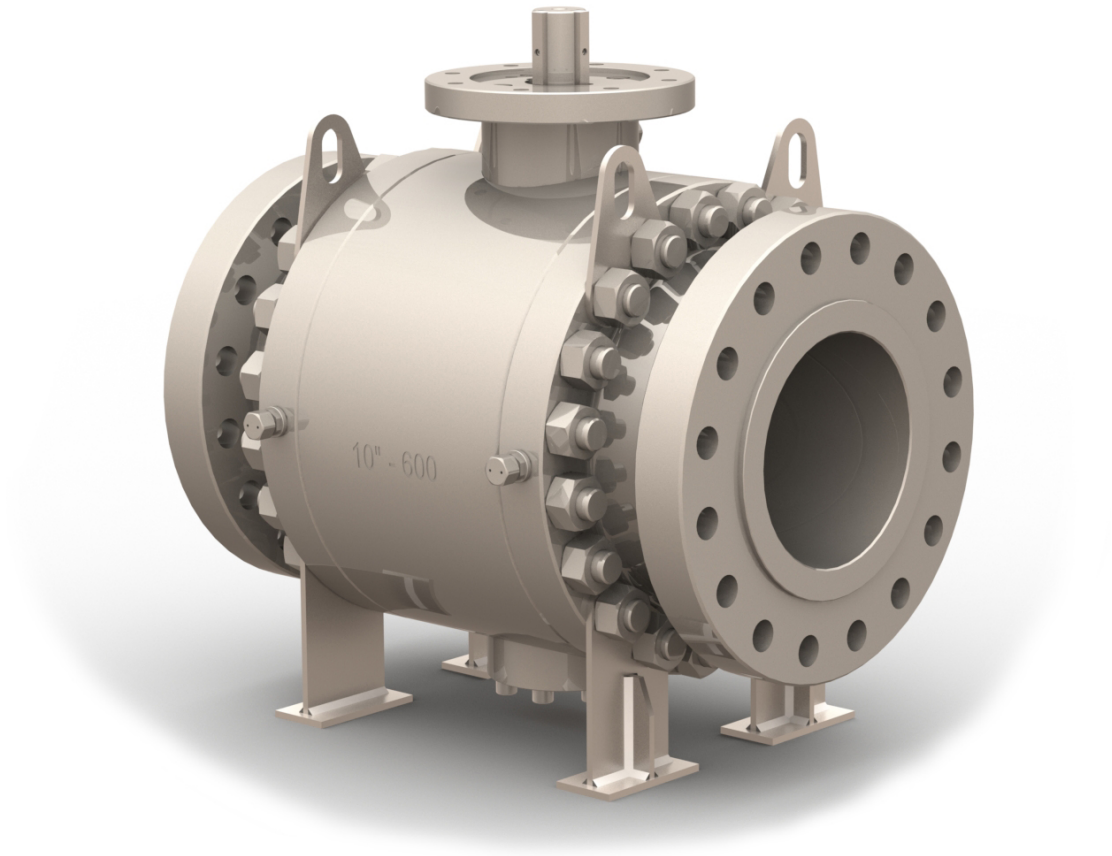
- Ensure that the valves to be used are appropriate for the conditions of the installation (type of fluid,pressure and temperature).
- Be sure to have enough valves to be able to isolate the sections of piping as well as the appropriate equipment for maintenance and repair.
- Ensure that the valves to be installed are of correct strenght to be able to support the capacity of their usage.
- **Installation of all circuits should ensure that their function can be automatically tested on a regular basis (at least two times a year).**

INSTALLATION INSTRUCTIONS :

- **Before installing the valves,clean and remove any objects from the pipes** (in particular bits of sealing and metal) which could obstruct and block the valves.
- **Ensure that both connecting pipes either side of the valve (upstream and downstream) are aligned (if they're not,the valves may not work correctly).**
- **Make sure that the two sections of the pipe (upstream and downstream) match,the valve unit will not absorb any gaps.Any distortions in the pipes may affect the thightness of the connection,the working of the valve and can even cause a rupture.**To be sure,place the kit in position to ensure the assembling will work.
- **If sections of piping do not have their final support in place,they should be temporarily fixed.This is to avoid unnecessary strain on the valve.**
- Tighten the bolts in cross.
- It's recommended to operate the valve (open and close) 1 to 2 times per year

- **For an installation in ATEX area, check the conductivity between the valve, the upstream pipe and the downstream pipe and make sure the pipe is connected to the earth.**

STF & STR TRUNNION BALL VALVE SERIES



API 6D and Fire Safe

Manufacturing program:

LICENSE NO. 6D-0197

II 2 G D

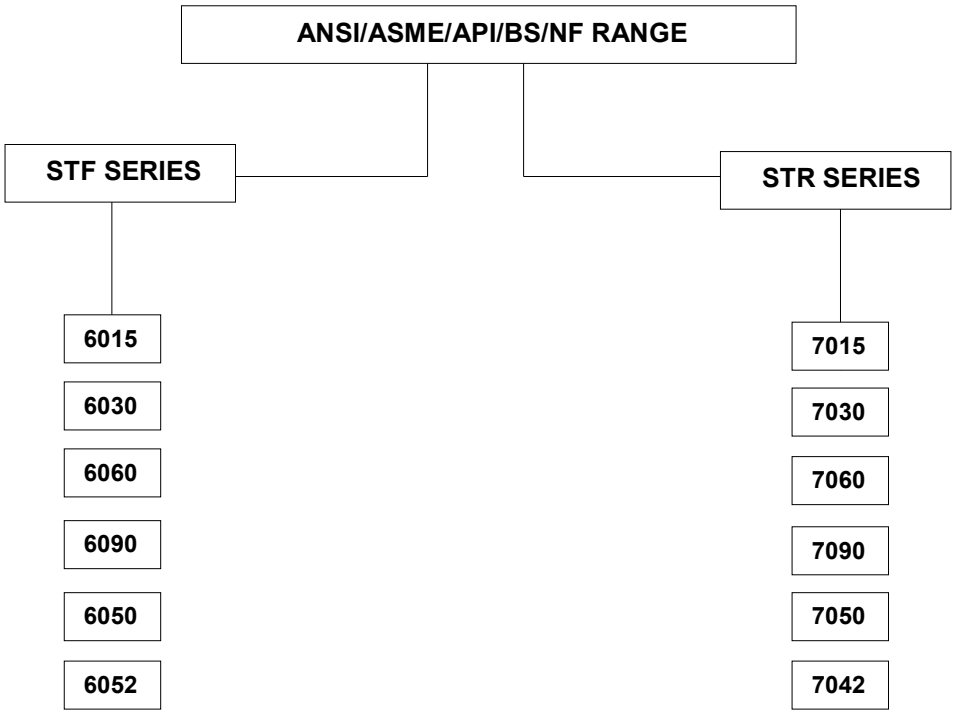
REVIEW CONTROL

PROCEDURE REF.: DOC.MMM6000E

REV.	DATE	CARRIED OUT BY	APPROVED BY	DESCRIPTION
0	24/09/2013	F. Zanuy	J. Tejedor	First edition
1	03/10/2013	F. Zanuy	J. Tejedor	General update
2	03/10/2013	F. Zanuy	J. Tejedor	General update
3	25/11/2013	F. Zanuy	J. Tejedor	General update
4	12/01/2017	F. Zanuy	J. Rubio	General update
5	16/10/2017	F. Zanuy	J. Rubio	Remove point 12
6	16/07/2021	D. Grau	J. Rubio	General update

CONTENTS

1.- APPLICABLE RANGE



2.- GENERAL INFORMATION

Applied Technical Standards:

Fire Safe Certificate:	ISO 10497 / API 607 / API 6FA
Valve Design:	API 6D / ASME B 16.34 / ISO 17292
Body Design:	ASME VIII Div. 1
Shell thickness:	ASME B 16.34 / EN 12516
Flanges:	ASME B 16.5 / EN 1092-1
Face to Face dimensions:	ASME B 16.10 / API 6D / EN 558
Parts in contact with the fluid and bolting:	NACE MR 01.75/MR0103
Marking:	EN 19 / API 6D / MSS SP-25
Pressure Testing:	API 598 / ISO 5208 / EN 12266 / API 6D
Actuator mounting flange:	ISO 5211

3.- 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.

Valves are supplied in open position as a protection measure and to ensure that no foreign body can damage the ball, except for valves operated by a spring return actuator. In this case the valve will be in the actuator fail position (normally open or normally closed).

WARNING!

Valves will be stored under cover and protected from inclement weather conditions and foreign bodies.

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

4.- INSTALLATION

The handling and transport 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.

Likewise inspect the inside of the valve, as well as the inside 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 essential for the correct operation of the valves.

WARNING!

When it is known or assumed that the valve has to be installed at a waste collection point, such as welding slag, rust or scale, ***it is necessary to install filters or protective screens, temporarily or permanently (depending on the installation), upstream, before the connection to the valve.***

The valve must be installed in such a way that it is accessible for the necessary periodic inspection and maintenance required guaranteeing the performance levels for which it has been designed.

The installation of the STF and STR JC Standard Series up to –29ºC, 46°C (carbon steel) and -50ºC (stainless steel) has been designed without preference of flow direction: **"They are Bidirectional"**.

The valve can be installed with the stem in any position, although the vertical position, with the stem upwards, is recommended and we recommend to avoid as far as possible with the stem down.

WARNING!

Valves must not withstand stress from the pipes, the installation must be carried out ensuring correct alignment and parallelism in order to ensure that it is not subject to any unexpected stress.

When installing the valve, make sure that the flange seal is correctly fitted, according to the manufacturer's instructions. Also, ensure that it is compatible with the fluid that circulates in the pipeline.

Install the valve in the line using the correct size and type of coupling flanges and the appropriate gaskets (for RF) or sealed gaskets (for RTJ). The design of the valve allows the direction of the fluid to be in any direction.

The JC three piece Trunnion valves are supplied with a plate drilled according to ISO 5211 for mounting actuators, gearboxes and / or stem extension spools. Check the data sheet or contact the supplier for the dimensions of the stem output.

IMPORTANT!

After installation run a final check on the valve, opening and closing it to make sure that it works perfectly.

WARNING!

Make sure that the fluid used in the cleaning operations and the way in which the cleaning is carried out are compatible with the installed valve.

Once the final cleaning operations have been completed before the valve is on-line, the filters can be removed if they have been installed. On the other hand, if the user considers that rust or scale has been formed in the installation, filters should be left as permanent.

IMPORTANT!

When ball valves are intended for end of line, the hydrostatic test pressure of the line must be limited to 1.1 the Rating pressure.

IMPORTANT!

After fixing the valve, the "OPEN" and "CLOSED" travel stops must be adjusted to the actuator taking into account the diameter of the ball and the position of the stem key.

5.- ON-OFF SERVICE

The JC three piece Trunnion valves are only recommended for ON-OFF service.

Valves close by turning the stem or handwheel of the gearbox clockwise. The exact open and closed position is determined by the radial location of the stem key with respect to the fluid flow. If the key is in line with the fluid flow the valve will be in open position and if the key is perpendicular to the fluid flow, the valve will be closed.

If the valve is operated by means of a handle, the position of the valve can be determined in the same way as with the key. Handle in a position perpendicular to the fluid flow means that the valve is in closed position.

Gearboxes are marked with open / closed position arrows.

6.- DOUBLE BLOCK & BLEED

The JC three piece Trunnion valves are suitable for sealing different fluids at both ends.

The installation of a vent / drain valve provides a safe and convenient method of verifying the sealing efficiency of the valve seats, as required by the Double Block & Bleed function.

7.- PREVENTIVE MAINTENANCE

Preventive maintenance operations essentially consist of periodic inspections to ensure that the valve is working correctly.

Valves must be opened and closed at least once every 6 months and, if necessary based on the fluid or the valve application and its importance, it will be necessary to establish opening and closing verification plans for shorter periods.

The user will be responsible for establishing appropriate action plans for the working conditions and the fluids used.

WARNING!

Valves should never be left in same position (open or closed) for a long period of time.

A very high increase in torque can be due to the inclusion of foreign particles in the seats. It is important not to force the valve. Proceed with the inspection of the seats to avoid damaging the ball.

8.- MAINTENANCE OPERATIONS

PRECAUTIONS BEFORE DISASSEMBLY

Make sure that the line has been closed and depressurised.

Open and close the valve several times to release pressure and drain the valve cavity.

WARNING!

Wear protective clothing suitable for the circulating fluid. (Follow the safety guidelines defined by the Company).

The replacement of parts must be done with original JC spare parts.

The manufacturer will not be responsible for the malfunctioning of the valve if original JC parts are not used.

Once pressure is released, the valve must be drained in half-open position with 0 psig through the drain plug (50).

It is recommended that when it is necessary to replace the gaskets and packing, body connector gaskets and graphite gaskets of the rest of the valve are also replaced.

9.- REASONS FOR PARTS REPAIR OR REPLACEMENT

9.1 LEAKAGE THROUGH THE STEM AREA (UPPER AND LOWER STEM)

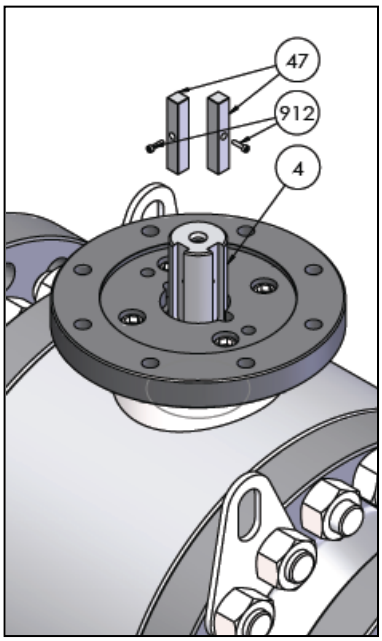
9.1.1. If leakage is detected through the stem area, replace all the graphite gaskets of the affected area. Follow the instructions of paragraph 9.3.1 and 9.3.2. for the upper stem and 9.4 for the lower stem.

9.2 LEAKAGE THROUGH THE BODY SEAL

9.2.1 If leakage is detected through the O-ring (52) or body seal (13), these part have to be replaced. Follow the instructions of paragraph 9.5.

9.3 REPLACEMENT OF THE GRAPHITE GASKETS OF THE UPPER STEM AREA

It is recommended that when it is necessary to replace the graphite gaskets of the stem area, the body connector gaskets, the seat gaskets and stem thrust washers are also replaced.



9.3.1 REPLACEMENT IN SOFT SEAT VALVES AND METAL SEAT (NON SPLIT SEAT)

9.3.1.1 Make sure that the installation is not under pressure.

Remove the valve from the line. If the circulating fluid is noxious or inflammable precautions should be taken to avoid any accidents.

9.3.1.2 Remove the handle or actuator. Remove the key(s) (47) and its bolt(s) from the stem (4).

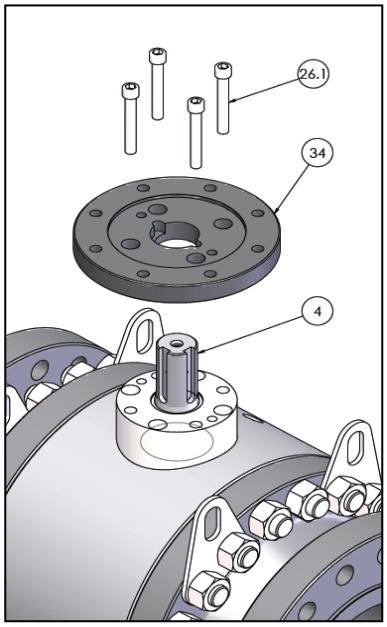
9.3.1.3 Unscrew the bolts (26.1) from the ISO plate (34). Remove the ISO plate (34).

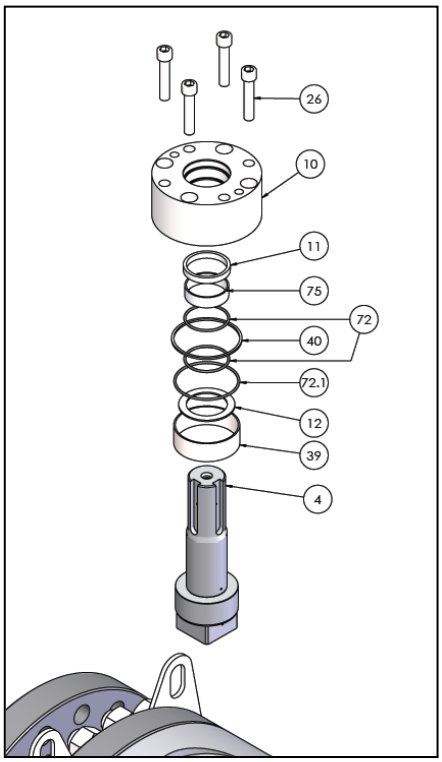
9.3.1.4 Unscrew the bolts (26) from the gland (10). Remove the gland (10).

9.3.1.5 Remove the stem (4) from the valve. If the stem has the "anti blow-out" ring at the bottom, leave the stem in its original position.

The “anti blow-out” ring is not visible, it is located in the internal chamber of the valve. You will notice the “anti blow-out” ring because you will not be able to remove the stem from its position.

9.3.1.6 Clean the parts and examine to see if there is wear or corrosion.





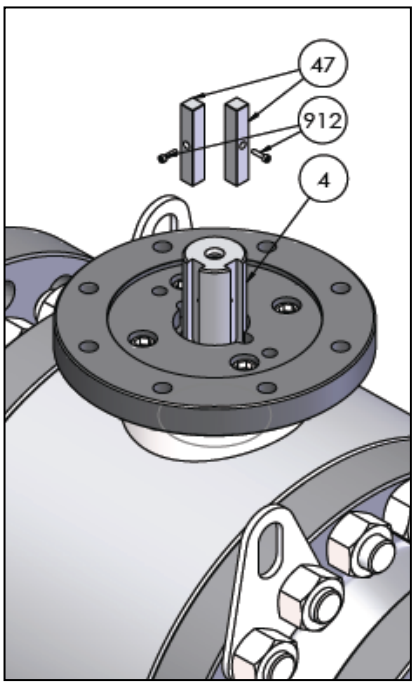
9.3.1.7 Replace all valve stem area gaskets with original JC spare parts.

11. Graphite
12. Stem thrust washer
39. Stem bushing
40. Graphite
72. Gasket (Qty. 2)
72.1. Gasket
75. Stem bushing

Grease all the parts before assembly.

9.3.1.8 Assembly in the reverse order.

9.3.2 REPLACEMENT IN SPLIT METAL SEAT VALVES



9.3.2.1 Make sure that the installation is not under pressure. Remove the valve from the line. If the circulating fluid is harmful or flammable, precautions must be taken to avoid accidents.

9.3.2.2 Remove the handle or actuator. Remove the key (47) from the stem (4).

9.3.2.3 Unscrew the bolts (26.1) from the ISO plate (34).

Remove the ISO plate (34).

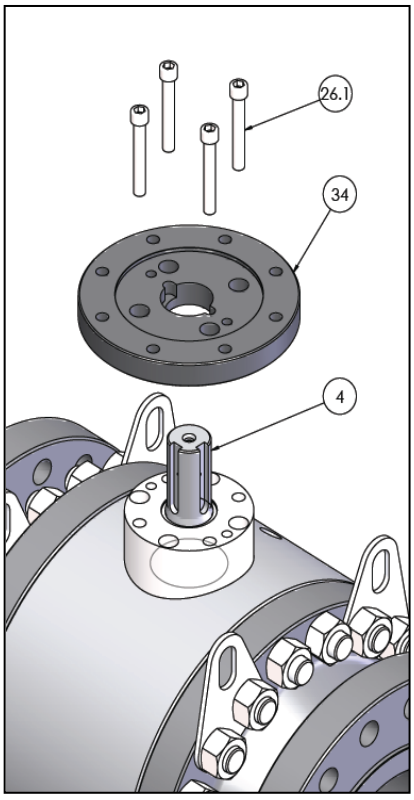
9.3.2.4 Remove the thrust ring (10.2), the disc spring (8), the gland (10.1), the packing (11) and the stem bearing (75) if necessary.

9.3.2.5 Unscrew the bolts (26) from the gland (10). Remove the gland (10).

9.3.2.6 Remove the stem (4) from the valve. If the stem has the "anti blow-out" Ring at the bottom, leave the stem in its original position. The “anti blow-out” ring is not visible, it is located in the internal chamber of the valve. You will notice the “antiblow-out” ring because you will not be able to remove the stem from its position.

9.3.2.7 Clean the parts and examine to see if there is wear or corrosion.

9.3.2.8 Replace all valve stem area gaskets with original JC spare parts.



8.	Disk Spring
11.	Packing
12.	Stem Thrust Washer
39.	Lower Stem bearing
40.	Gasket
72.	Gasket (Qty: 2)
72.1.	Gasket
75.	Upper Stem bearing

Grease all the parts before proceeding to the assembly.

9.3.2.9 Assembly in the reverse order.

9.4 REPLACEMENT OF THE GRAPHITE GASKETS OF THE LOWER STEM AREA (ONLY FOR EXTERNAL TRUNNION CONSTRUCTIONS)

It is recommended that when it is necessary to replace the graphite gaskets from the stem area, the body-connector gaskets, the seat gaskets and stem thrust washers should also be replaced.

Make sure that the installation is not under pressure. Remove the valve from the line. If the circulating fluid is harmful or flammable, precautions must be taken to avoid accidents.

9.4.1 Unscrew the bolts (25) from the lower cap (61). Remove the lower cap (61) (or directly stem (57) if it is a single piece).

9.4.2 Remove the lower stem (57), the gasket (42) and the lower stem gasket (49) the bearing (23) and the trunnion bearing (22).

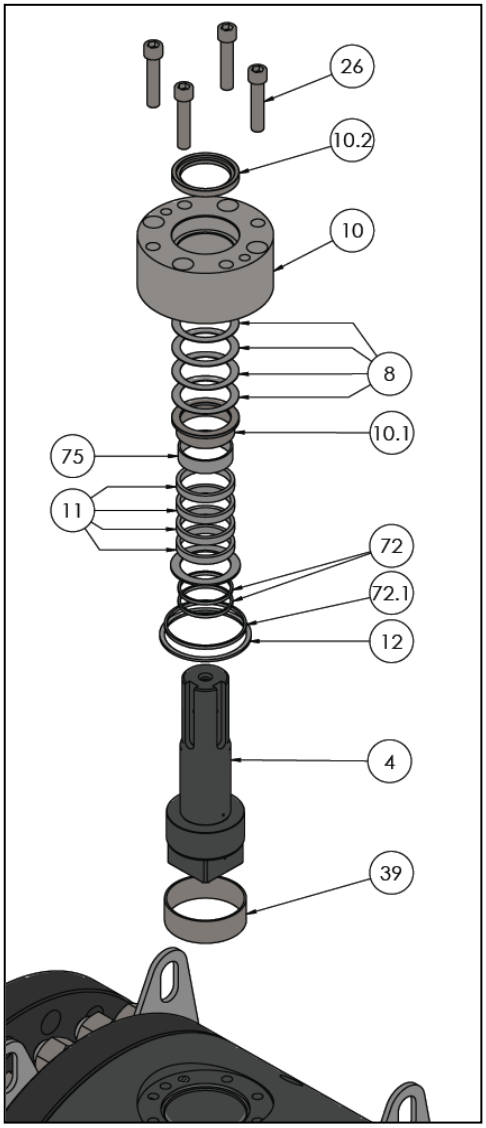
9.4.3 Clean the parts and examine them to see if there is wear or corrosion.

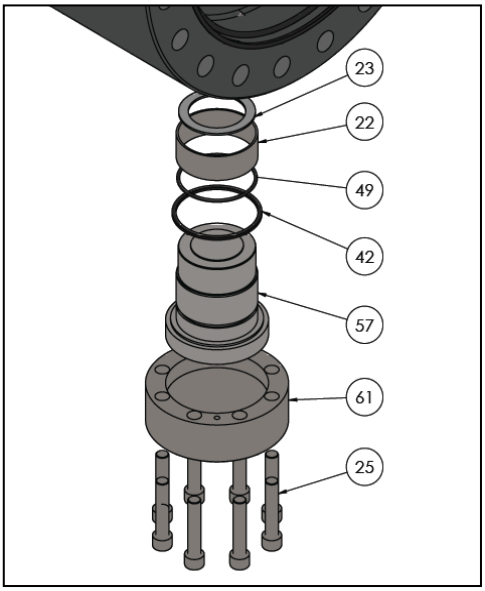
9.4.4 Replace all gaskets from the stem area of the valve with original JC parts:

22. Trunnion bearing
23. Bearing
42. Gasket
49. Lower stem seal

Grease all the parts before proceeding to the assembly.

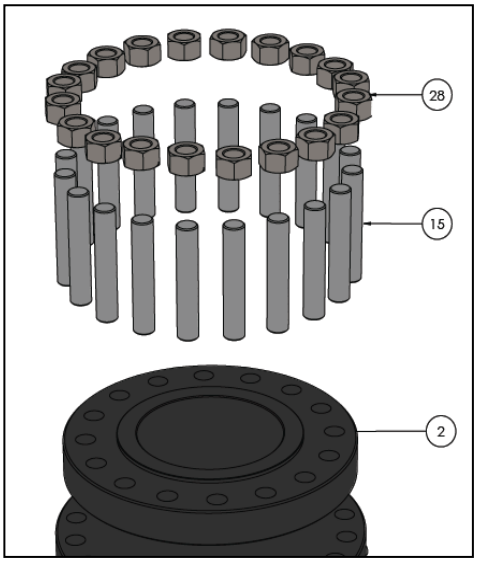
9.4.5 Assembly in the reverse order.





9.5 REPLACEMENT OF THE BODY GASKETS AND SEAT GASKETS

9.5.1 REPLACEMENT IN SOFT SEAT CONSTRUCTIONS



9.5.1.1 Make sure that the installation is not under pressure. Remove the valve from the line. If the circulating fluid is harmful or flammable, precautions must be taken to avoid accidents.

9.5.1.2 Remove the handle or actuator.

9.5.1.3 Remove the key (47) from the stem (4).

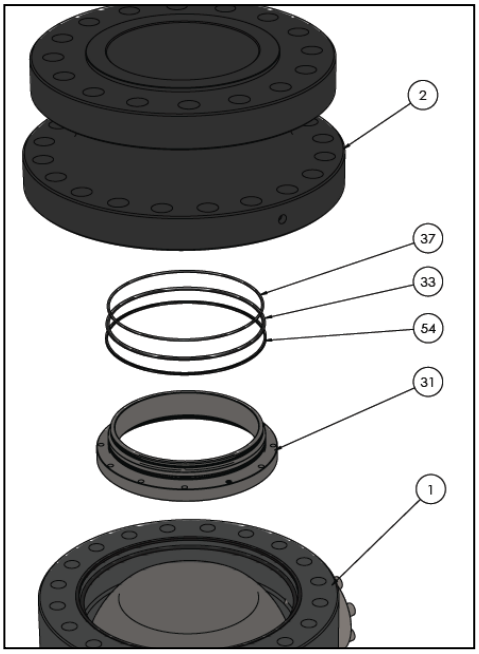
9.5.1.4 Lean the valve on one of the body connectors. Be careful not to damage the flange.

9.5.1.5 Remove the nuts (28) from the threaded studs (15) of the body connector (2).

9.5.1.6 Carefully remove the body connector (2) from the body (1).

9.5.1.7 Remove the seat carrier (31).

9.5.1.8 Clean the parts and examine them to see if there is wear or corrosion.



9.5.1.9 Replace the following parts:

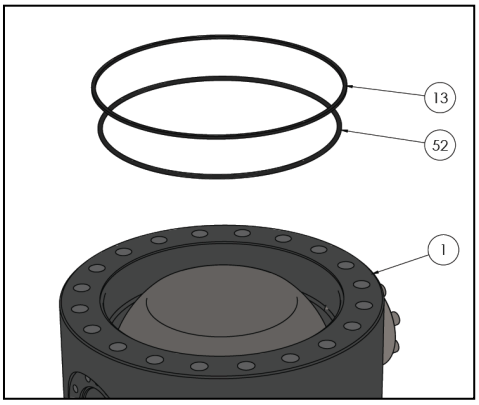
31. Seat carrier
33. Gasket
37. Gasket (in case of a Sealing Injection Valve)
54. Graphite

9.5.1.10 Replace the body connector gasket (13) and the gasket (52).

9.5.1.11 Assembly in the reverse order.

9.5.1.12 Do the same steps for the other body connector.

9.5.2 REPLACEMENT IN METAL SEAT CONSTRUCTIONS (NON SPLIT SEAT)



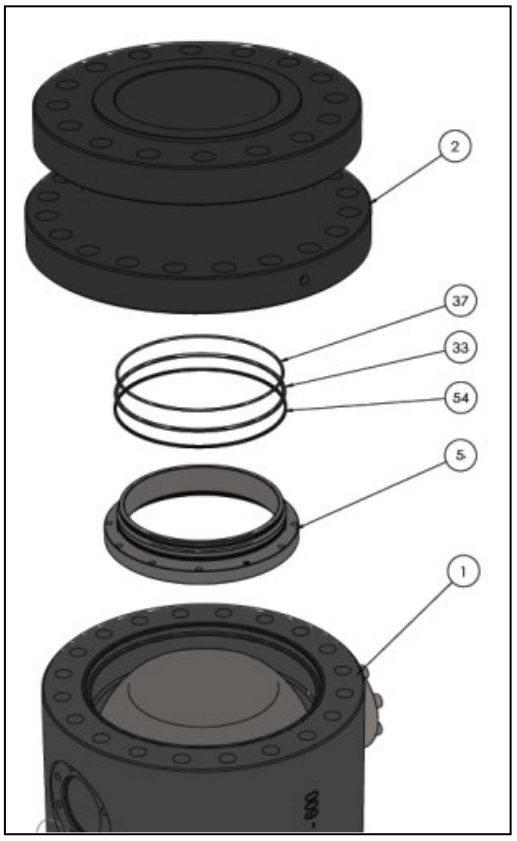
9.5.2.1 Make sure that the installation is not under pressure. Remove the valve from the line. If the circulating fluid is harmful or flammable, precautions must be taken to avoid accidents.

9.5.2.2 Remove the handle or actuator.

9.5.2.3 Remove the key (47) from the stem (4).

9.5.2.4 Lean the valve on one of the body connectors.
Be careful not to damage the flange.

9.5.2.5 Remove the nuts (28) from the threaded studs (15) of the body connector (2).



9.5.2.6 Carefully remove the body connector (2) from the body (1).

9.5.2.7 Remove the seat (5).

9.5.2.8 Clean the parts and examine them to see if there is wear or corrosion.

9.5.2.9 Replace the following parts:

5. Seat
33. Gasket
37. Gasket (In case of a sealing injection valve)
54. Graphite

9.5.2.10 Replace the body connector gasket (13) and the gasket (52).

9.5.2.11 Do the same steps for the other body connector.

9.5.3 REPLACEMENT IN SPLIT METAL CONSTRUCTIONS

9.5.3.1 Make sure that the installation is not under pressure. Remove the valve from the line. If the circulating fluid is harmful or flammable, precautions must be taken to avoid accidents.

9.5.3.2 Remove the handle or actuator.

9.5.3.3 Remove the key (47) from the stem (4).

9.5.3.4 Lean the valve on one of the body connectors. Be careful not to damage the flange.

9.5.3.5 Remove the nuts (28) from the threaded studs (15) of the body connector (2).

9.5.3.6 Carefully remove the body connector (2) from the body (1).

9.5.3.7 Remove the seat (5), the seat carrier seal (54), the spring carrier (35) and the seat springs (32).

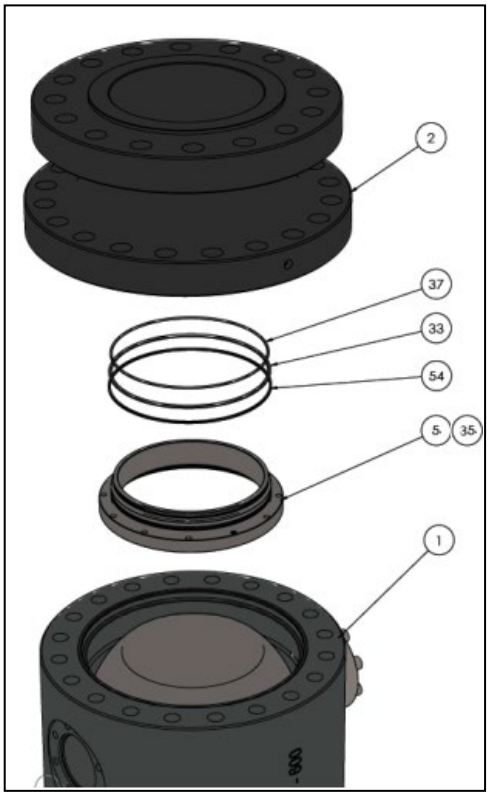
9.5.3.8 Clean the parts and examine them to see if there is wear or corrosion.

9.5.3.9 Replace the carrier seal (54).

9.5.3.10 Replace the body connector gasket (13).

9.5.3.11 Assembly in the reverse order.

9.5.3.12 Do the same steps for the other body connector.



10.- SEALING INJECTORS

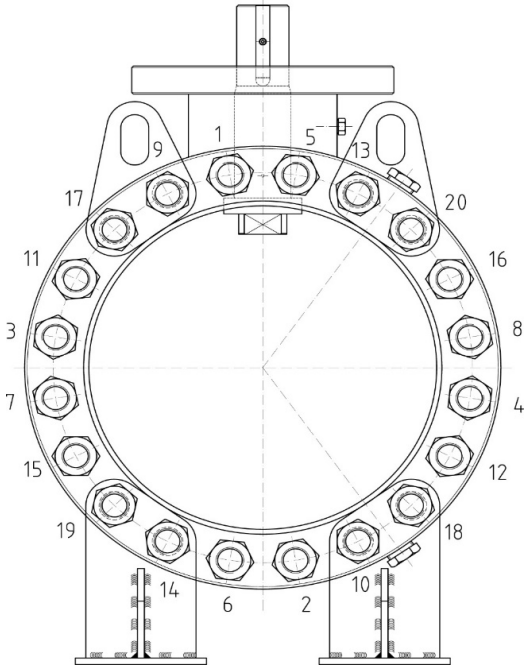
Sealing injectors are emergency sealing devices used to seal valve leaks until a repair intervention can be performed.
In case that the valve assembles these sealing devices, they will be placed in two different areas, on the stem and on the seats.
• The "sealing injector" assembled on the stem serves to seal possible leaks to the outside through the stem line.
• The "sealing injectors" assembled on the seats serve to seal internal leaks through the valve seats.
Products used for emergency sealing must be applied with an injection pump appropriate for the type of injector and the working pressure of the valve.
Before applying the sealing grease, the valve must be in the desired position (open or closed) and must not be manipulated once the grease has been injected.

WARNING!
Once the sealing grease has been injected, it is recommended not to manipulate the valve until it is repaired.

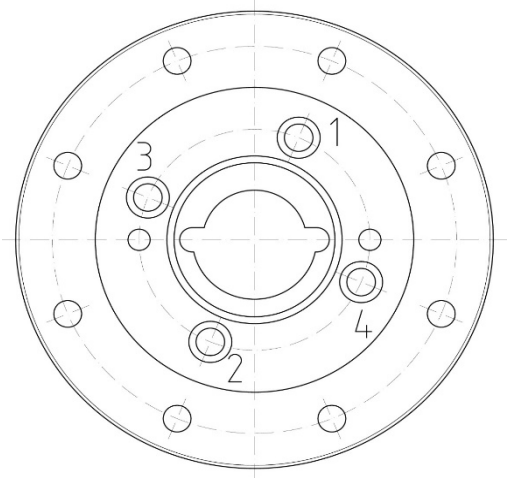
JC recommends the use of MOLIKOTE brand products for emergency sealing.

11.- TIGHTENING TORQUE PROCEDURE FOR BODY, BODY CONNECTOR STUDS AND HEX-NUTS AND BOLTS OF ISO PLATE AND GLAND FLANGE.

Follow the order indicated in these pictures. First, tighten the bolts to half the value shown in the tables of Appendix 1: PS05-I26.
Once all bolts have been tightened, tighten them again following the same order as before with the total value indicated in the tables of Appendix 1: PS05-I26.



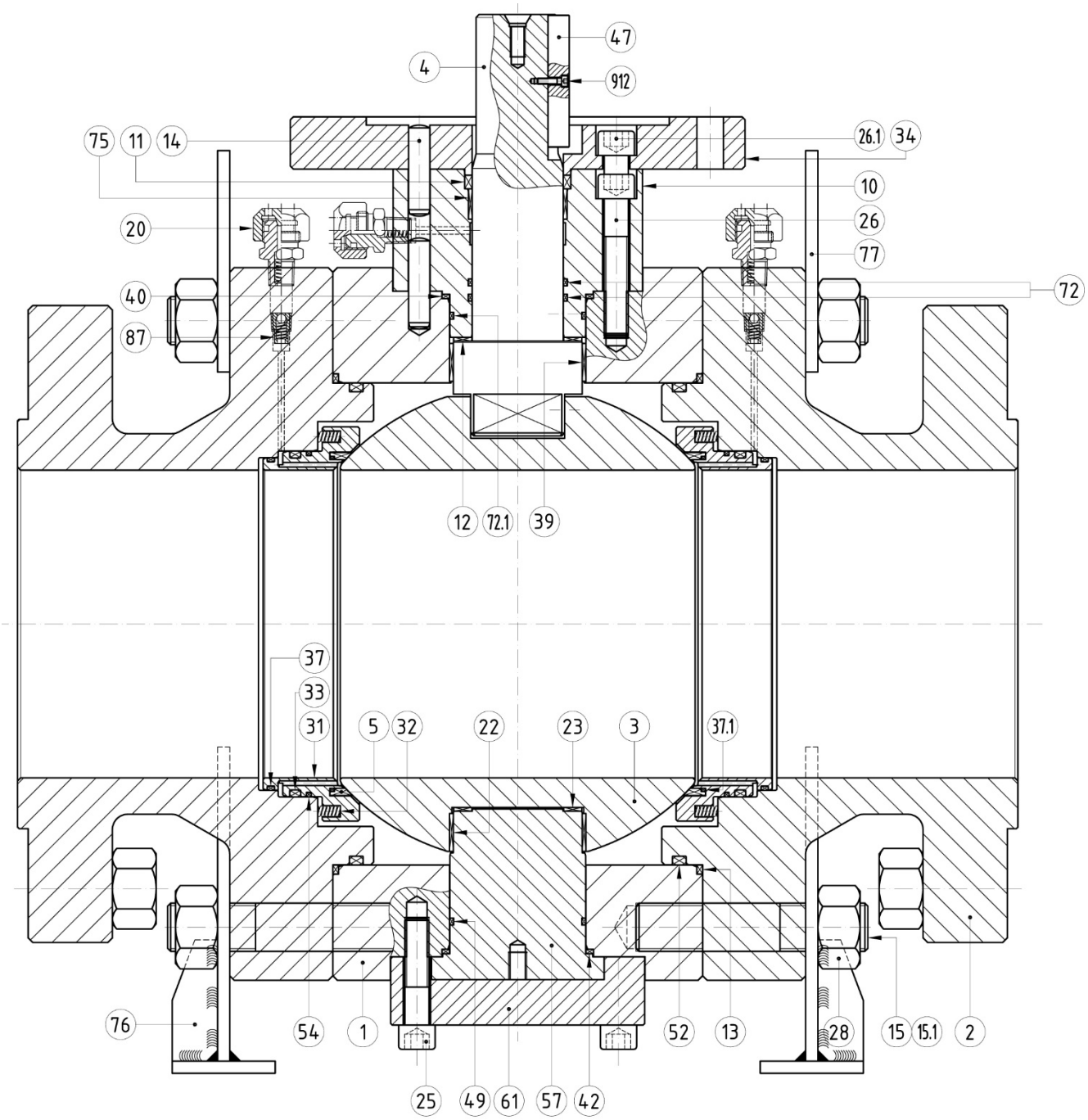
BODY & BODY CONNECTOR BOLTS



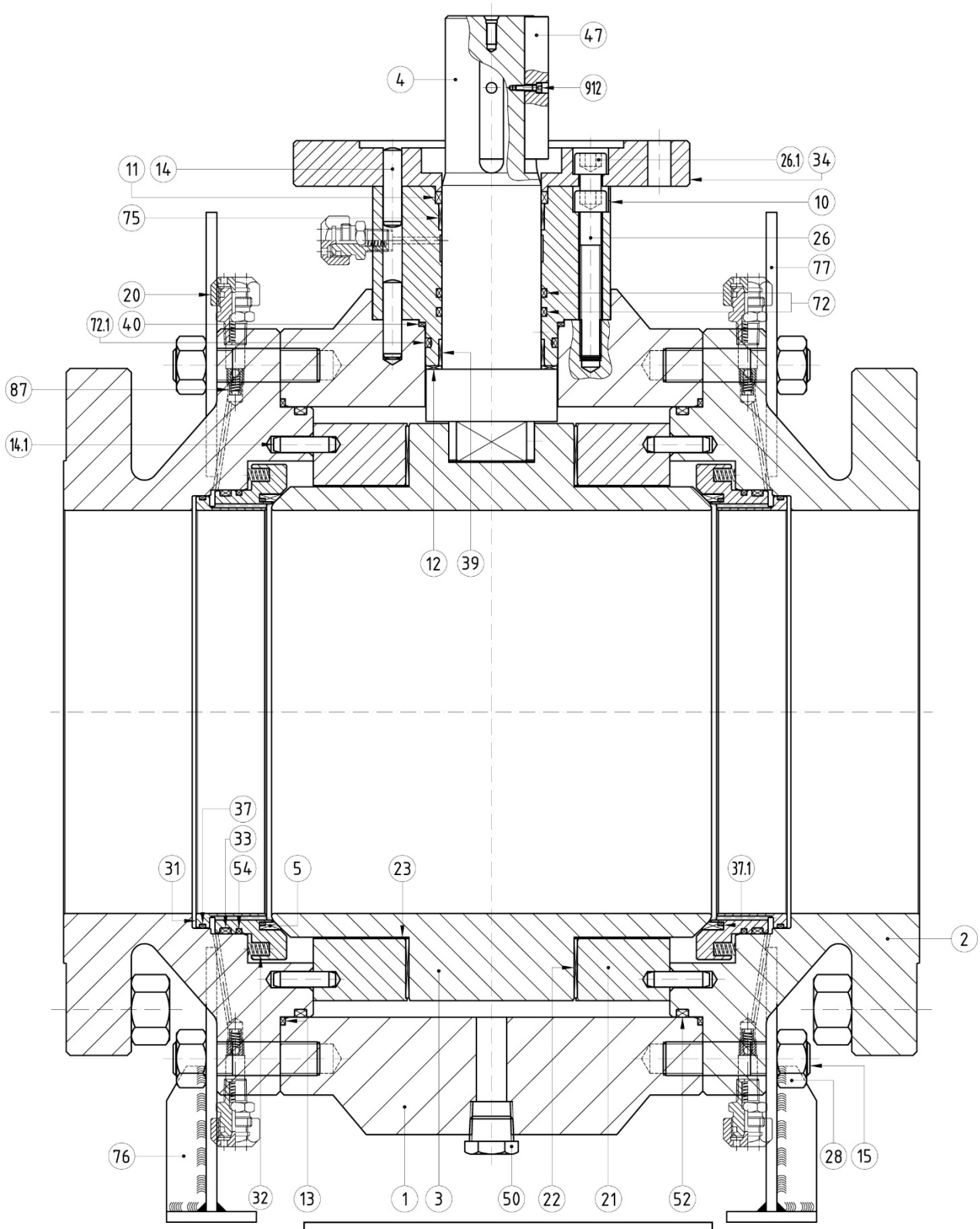
ISO PLATE BOLTS & GLAND FLANGE

12.- JC THREE PIECE TRUNNION VALVE CROSS-SECTION VIEW

12.1.- JC THREE PIECE TRUNNION VALVE SOFT SEAT

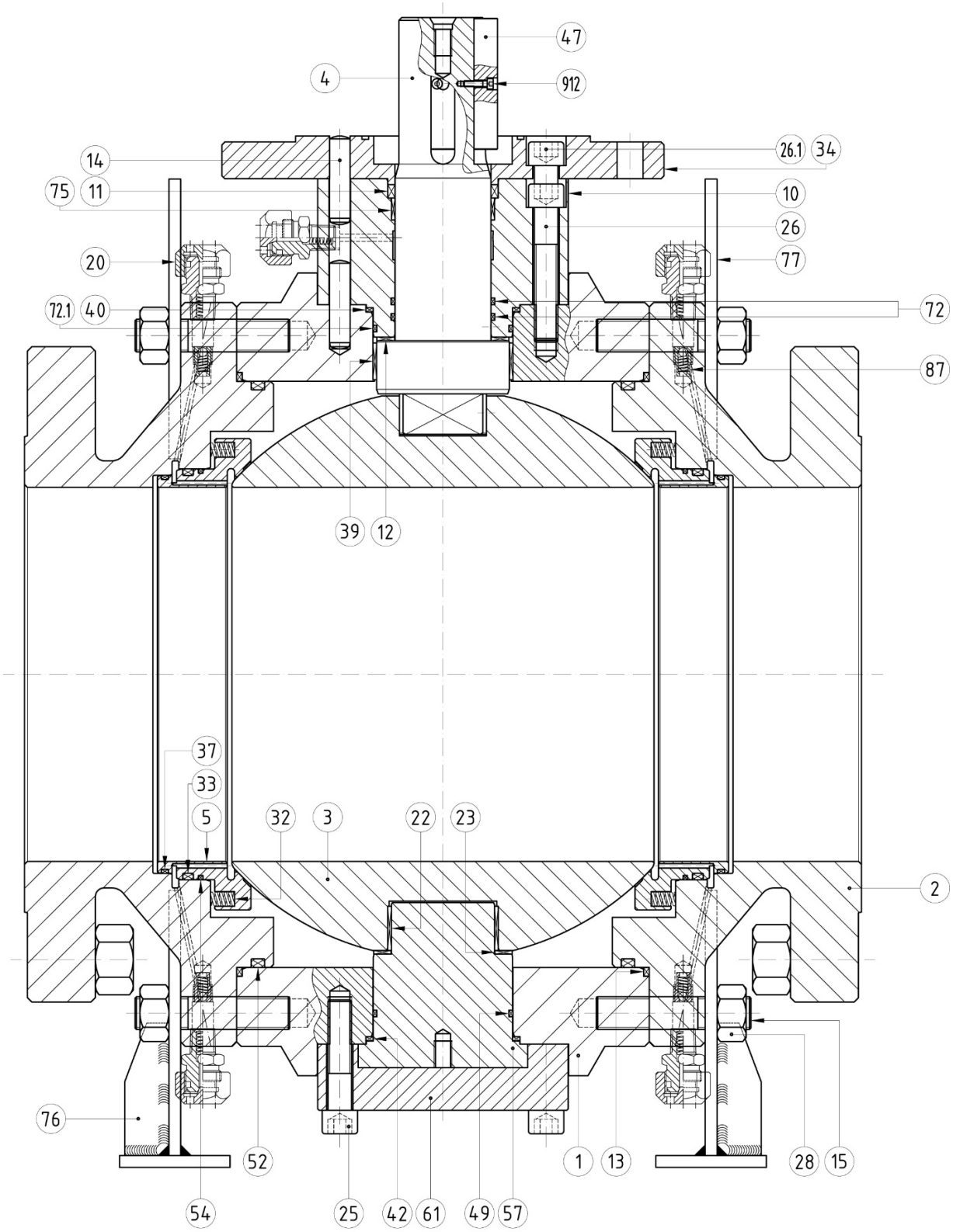


EXTERNAL TRUNNION

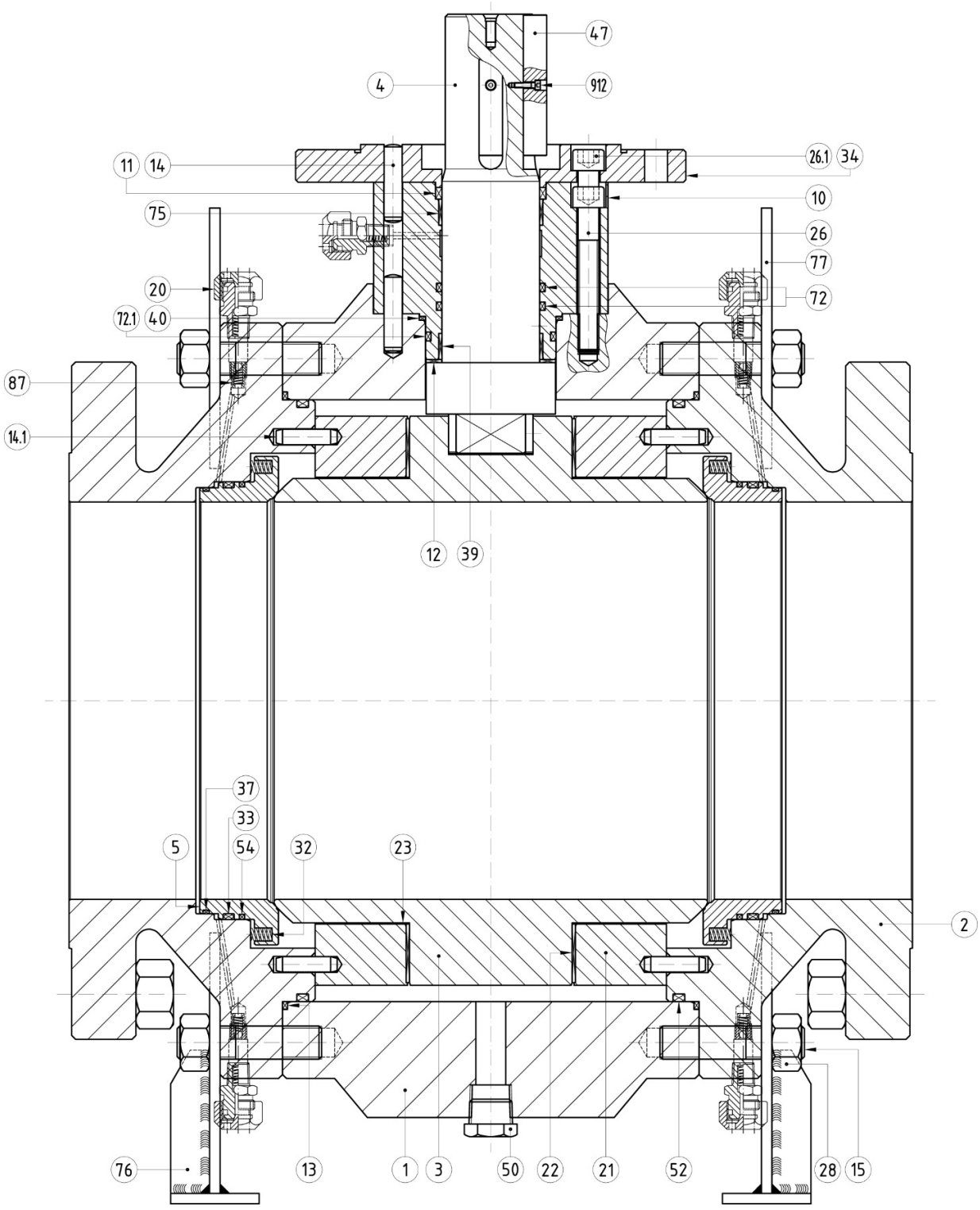


INTERNAL TRUNNION

12.2.- JC THREE PIECE TRUNNION VALVE METAL SEAT

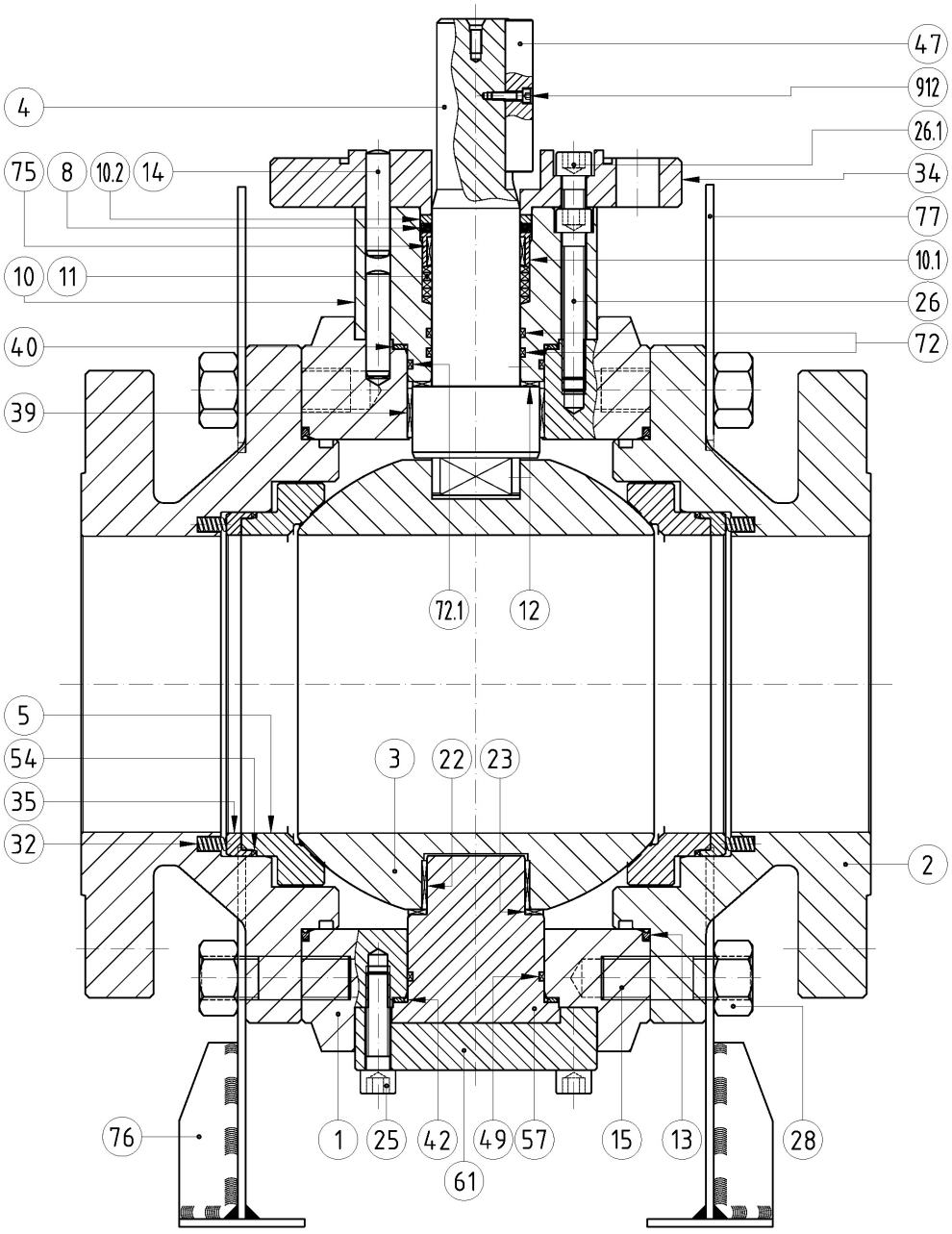


EXTERNAL TRUNNION

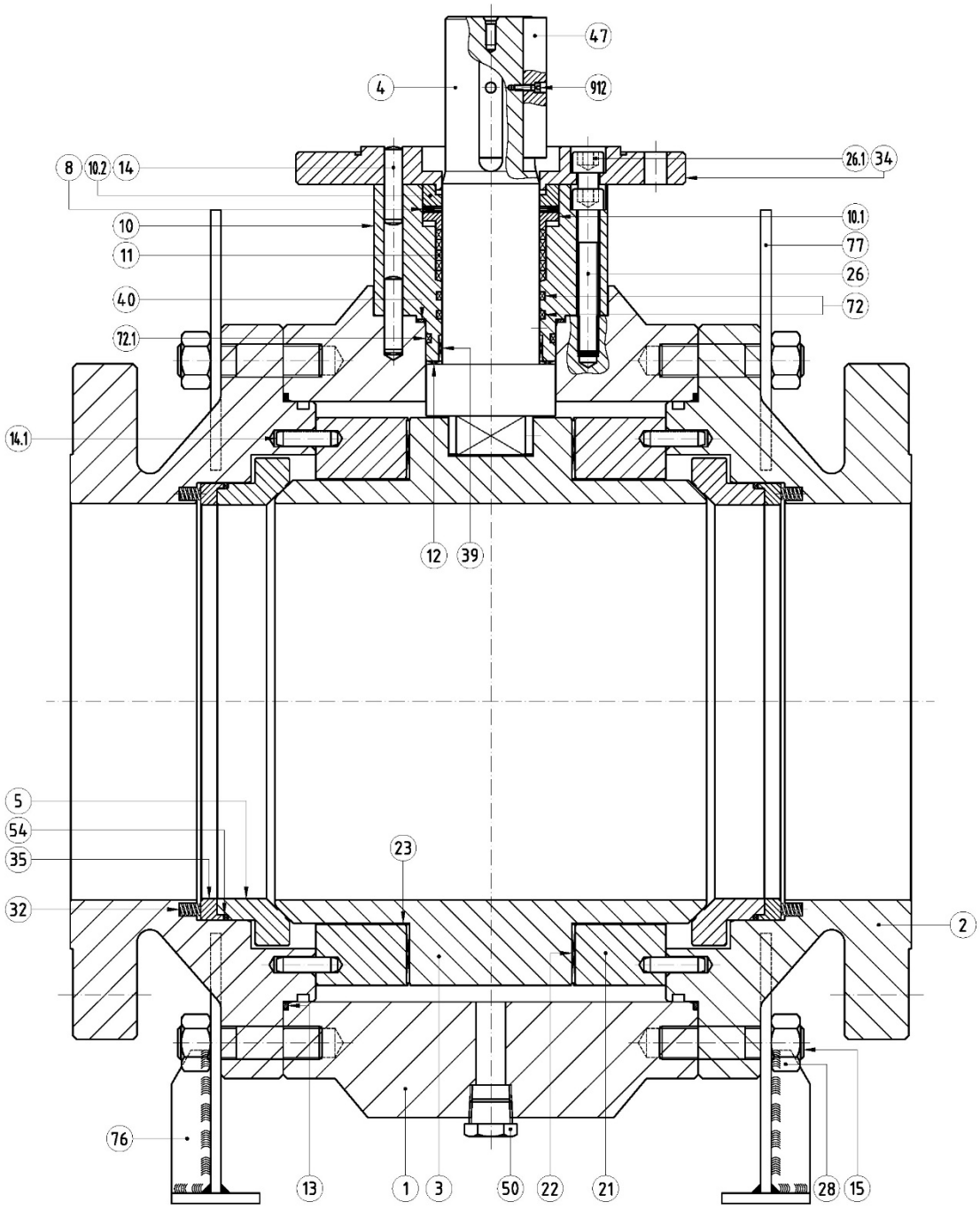


INTERNAL TRUNNION

12.3.- JC THREE PIECE TRUNNION VALVE SPLIT METAL SEAT



EXTERNAL TRUNNION



INTERNAL TRUNNION

APPENDIX 1: PS05 I26 ASSEMBLY DINAMOMETRIC WRENCH TABLE

5.6 MATERIAL						
			DINAMOMETRIC			
THREAD	TORQUE (Nm)	WRENCH	326 (10-100)	96 (20-100)	324 (20-200)	325 (75-400)
M6	6	10				
M8	14	14				
M10	28	17				
M12	49	19				
M14	77	22				
M16	121	24				
M20	235	30				

MATERIAL 8.8 (640)						
			DINAMOMETRIC			
THREAD	TORQUE (Nm)	WRENCH	326 (10-100)	96 (20-100)	324 (20-200)	325 (75-400)
M6	12	10				
M8	30	14				
M10	59	17				
M12	104	19				
M14	165	22				
M16	257	24				
M20	502	30				

A4-70 MATERIAL						
			DINAMOMETRIC			
THREAD	TORQUE (Nm)	WRENCH	326 (10-100)	96 (20-100)	324 (20-200)	325 (75-400)
M6	9	10				
M8	21	14				
M10	42	17				
M12	73	19				
M14	116	22				
M16	181	24				
M20	353	30				

B7M / L7M MATERIAL						
			DINAMOMETRIC			
THREAD	TORQUE (Nm)	WRENCH	326 (10-100)	96 (20-100)	324 (20-200)	325 (75-400)
3/8"	40	17				
7/16"	55	18				
1/2"	70	22				
9/16"	110	22				
5/8"	165	24				
3/4"	270	28/32				
7/8"	430	36				
1"	720	41				
1-1/8"	930	42				
1-1/4”	1280	--				
1-3/8”	1670	--				
1-1/2”	2470	--				

B8 / B8M MATERIAL						
			DINAMOMETRIC			
THREAD	TORQUE (Nm)	WRENCH	326 (10-100)	96 (20-100)	324 (20-200)	325 (75-400)
3/8"	16	17				
7/16"	20	18				
1/2"	26	22				
9/16"	42	22				
5/8"	63	24				
3/4"	100	32				
7/8"	168	36				
1"	250	41				
1-1/8"	350	42				
1-1/4”	480	--				
1-3/8”	700	--				
1-1/2”	950	--				

L7 / B7 MATERIAL						
			DINAMOMETRIC			
THREAD	TORQUE (Nm)	WRENCH	326 (10-100)	96 (20-100)	324 (20-200)	325 (75-400)
3/8"	48	17				
7/16"	78	18				
1/2"	118	22				
9/16"	167	22				
5/8"	231	24				
3/4"	400	28/32				
7/8"	651	36				
1"	970	41				
1-1/8"	1421	42				
1-1/4”	2300	--				
1-3/8”	3020	--				
1-1/2”	4010	--				

MATERIAL L7 / B7 (720)						
			DINAMOMETRIC			
THREAD	TORQUE (Nm)	WRENCH	326 (10-100)	96 (20-100)	324 (20-200)	325 (75-400)
M6	11	10				
M8	28	14				
M10	55	17				
M12	94	19				
M14	150	22				
M16	235	24				
M20	457	30				

- To convert Nm to mKg you must divide by 10.
- For A4-80 materials use the same values as A4-70.

JC®
Fábrica de válvulas, s.a.

Av. Siglo XXI, 75 - Pol. Ind. Can Calderón
08830 Sant Boi de Llobregat
Barcelona (España)
Tel. (+34) 936 54 86 86
Fax (+34) 936 54 86 87
www.jc-valves.com
info@jc-valves.com