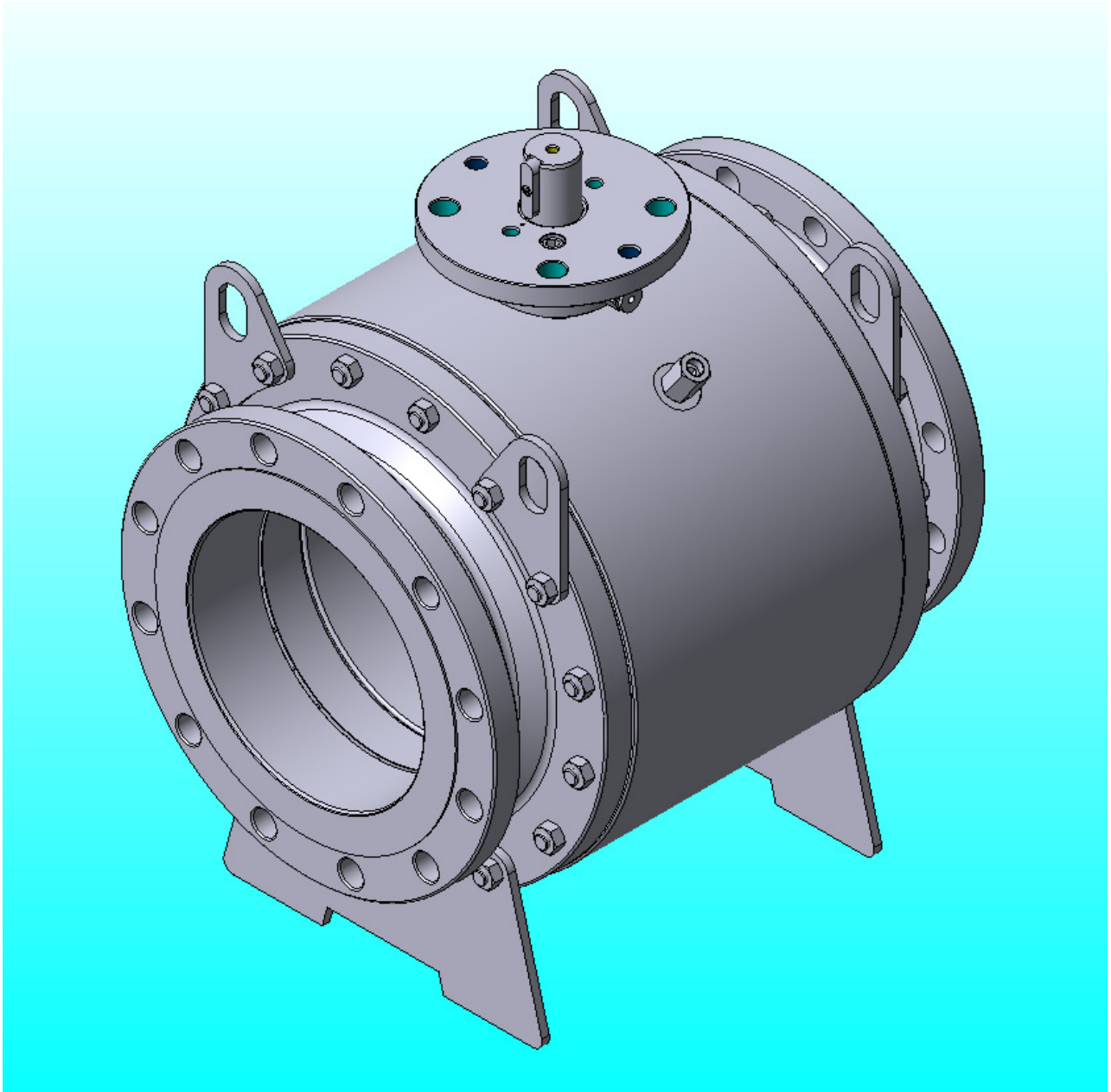


TRUNNION side entry ball valves S30T series



TECHNICAL MANUAL:
INSTRUCTIONS for: INSTALLATION, USE and MAINTENANCE

INDEX:

I - INTRODUCTION

MAIN SPECIFICATIONS

VALVE CONTROL

WARNING CONCERNING THE USE

II - INSTALLATION

GENERAL WARNINGS

GENERAL REQUIREMENTS

SPECIAL REQUIREMENTS

CONDITIONS OF USE

III - COMMISSIONING

PRESSURIZATION

INSPECTION OF THE EXTERNAL TIGHTNESS

INSPECTION OF THE INTERNAL TIGHTNESS

IV - MAINTENANCE

GENERAL INSTRUCTIONS

REPLACEMENT OF THE:

- 4.0 - O-RING (34) and GRAPHITE (73) OF THE STEM
- 4.1 - O-RING (35) and GRAPHITE (70) OF THE BONNET
- 4.2 - BEARINGS (28A) and THRUST WASCHER (25) of the stem
- 4.3 - SEATS (7)
- 4.4 - BEARINGS (28) and THRUST WASCHER (22) of the ball

V - LUBRICATION

VI - STORAGE

VII - SUGGESTED SPARE PARTS

For the items specified in this manual, refer to the drawing on page 6.

I - INTRODUCTION

Purpose of this manual is to provide essential information for the installation, commissioning and maintenance of the Trunnion ball valves **S30T** series. Below is a brief summary of the main characteristics of the ball valves.

MAIN SPECIFICATIONS

The S30T ball valves are cut-off devices fit for the use both on gaseous fluids and liquids for a wide range of pressures.

The main specifications of these valves are:

- steel body with tail pieces fit for the flanged coupling and with machining for butt welding;
- parts in direct contact with the fluid are available on request with treated nickel (or chromium)-based coating;
- soft insert on the seat for a better tightness also for uses on gaseous fluids

VALVE CONTROL

The valve opening and closing operations are performed with the lever control or with different types of controls (gear box, pneumatic actuator, etc.); please kindly refer to the specific use and maintenance instructions for these last ones.

WARNINGS AS REGARDS THEIR USE

The S30T ball valves are fit to be used completely opened or completely closed: therefore they shall not be used for lamination.

The position of the valve may be determined when the valve is assembled as follows:

- **valve with lever control:** the lever is in the direction of flow with open valve or perpendicular to the flow with closed valve
- **valve with handwheel control or different control:** the open and close position is specified by indicators placed on the control itself.

II - INSTALLATION

GENERAL WARNINGS

Before the installation, commissioning, or maintenance, the operators shall:

- examine the safety devices applicable to the installation where they have to work
- obtain the necessary authorizations to work, when required
- equip oneself with the necessary individual protections (helmet, goggles, etc..)
- make sure that the area where they have to work is equipped with the required collective protections and with the necessary safety signs.

The handling of the equipment and of its components shall be carried out after evaluating that the lifting devices are fit for the loads to be lifted (lifting capacity and functionality). The handling of the equipment shall be carried out by using the lifting eyes arranged on the equipment itself.

The use of motorized means is reserved to the personnel in charge of this.

In case the installation of the system and of its accessories requires the application of compression fittings, these shall be installed by following the instructions of the manufacturer of the compression fittings. The choice of the compression fittings shall be compatible with the use specified for the equipment and with the plant specifications, where required.

The commissioning shall be carried out by properly trained personnel.

During the commissioning, not strictly necessary personnel shall be moved away and the prohibition area shall be properly signaled (signs, barriers, etc...).

GENERAL INSTRUCTIONS

The valve installation shall be carried out in compliance with the prescriptions (laws or regulations) in force in the place of installation.

In particular the specifications of natural gas plants shall be in compliance with the law provisions or regulations in force in the place of installation, or at least in compliance with the EN 12186 or EN12279 regulations (we remind that the installation in compliance with such laws minimizes the risk of fire hazard).

The valve is delivered without external pressure limiting devices; therefore it shall be installed by making sure that the operating pressure of the unit where it is installed never exceeds the value of the permissible maximum pressure (PS). Only for limited periods of time peaks with value equal to **1.1 x PS** are permitted.

The user, in case he considers it necessary, shall install suitable pressure limiting devices;

The shall moreover arrange suitable venting or draining system to discharge the pressure and fluid inside the plant before carrying out any inspection or maintenance operation.

We wish to remind, however, that the special design of the seal seats allows discharging to the line any overpressure that may be generated in the body cavity among the seal seats.

SPECIAL INSTRUCTIONS

Before installing the valve it is necessary to be sure that:

- the valve may be inserted in the arranged space and it is sufficiently accessible for the following maintenance operations; see dimension drawings with dimensions and weights
- the upstream and downstream pipelines are at the same level as the inlet and outlet connections and they can support the weight of the valve
- the pipeline inlet/outlet flanges are parallel to the valve seal surfaces
- the inside of the valve is clean and the valve itself was not damaged during the transport
- the upstream pipeline was cleaned in order to expel residual impurities such welding slag, sand, varnish waste, water, etc.

The valve does not have a preferential flow direction, therefore it may be installed in any position (vertical or horizontal flow) Starting from DN 150, the valve is equipped with its own supports; the user shall manufacture the plant so that it may support the valve itself and not overload with further stresses the connections to the pipelines.

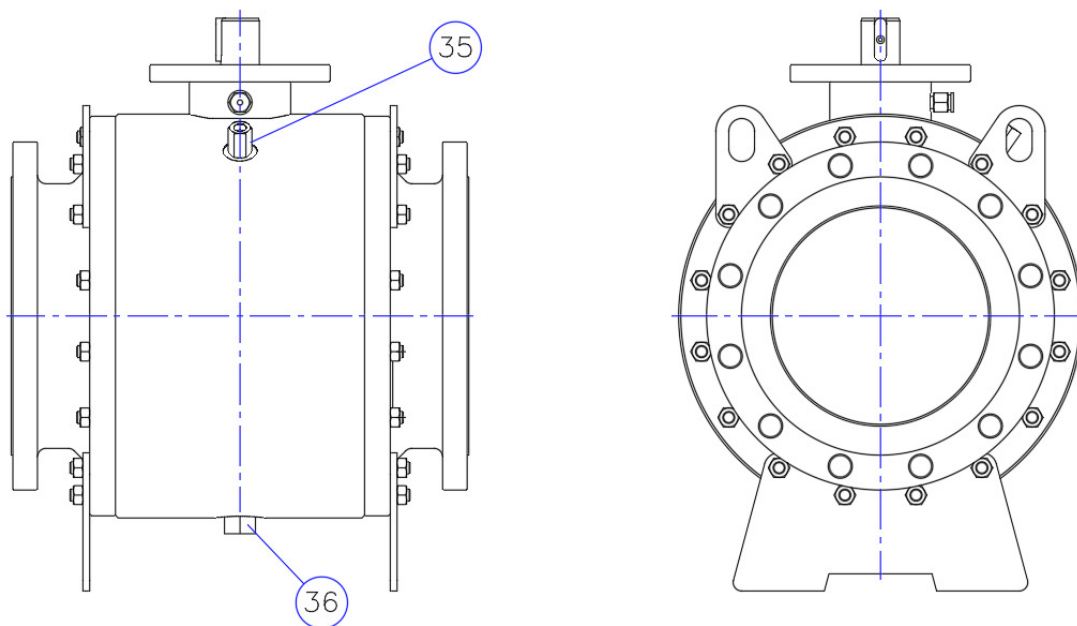
The connections to the inlet and outlet pipelines are carried out:

- by means of standardized flanges the sizes and types of which are showed on the data plate; the choice of the connecting screws and of the seal gaskets shall be made by the installer who shall consider such information and the conditions of use in the place of installation.
- by means of a butt welding; in this case the installer shall take the necessary precautions in order to avoid thermally stressing the valve during the welding operations. During the welding operations the valve temperature shall not exceed the 130 °C value.

We recommend, during the installation phase, to keep the ball in a fully open position, in order to prevent the seal seats and the ball surface from being damaged by foreign bodies or impurities.

After the installation, open and close the valve in order to check its correct operation.

SOME INFORMATION:
Regarding the DRAIN PLUG and the BLEEDER VALVE:

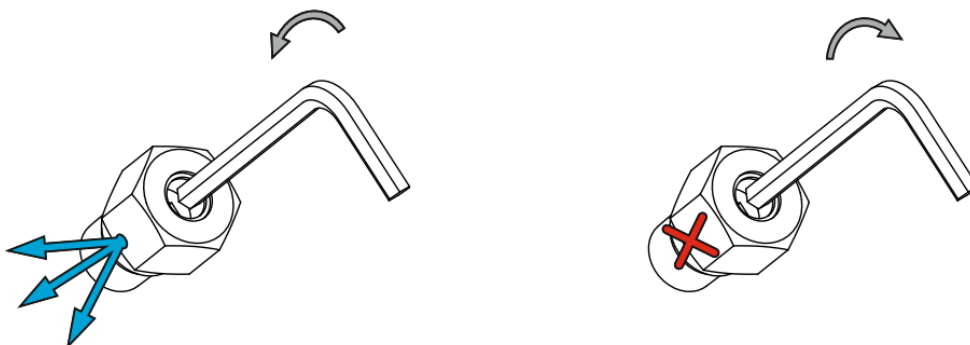


The S30T trunnion ball valve are equipped with a drain plug (36) and bleeder valve (35). These accessories are positioned on the valve body.

The **drain plug** is used to take out possible fluid residues. Unscrew the plug only if the valve and the pipe line are not pressurized, and only if the temperature of the fluid inside is such as not to cause scorchs or burns.

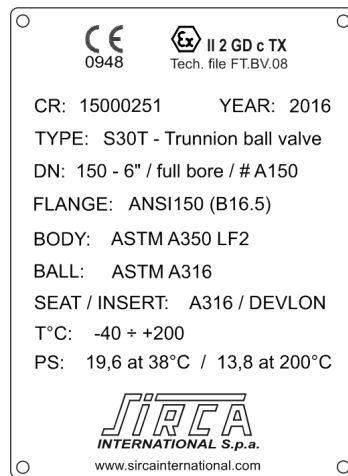
The **bleeder valve** allows to unload possible overpressures that can be form between the ball and valve body. You can make the vent by unscrewing the internal screw, using a hexagonal wrench.

IMPORTANT! If the valve remains for a long time in CLOSED position, it is recommended to open the bleeder valve so as to avoid excessive pressure between the ball and the body. But if the valve remains in OPEN position for a long time or working in ON-OFF service, make sure that the bleeder valve is fully closed.



CONDITIONS OF USE

We recommend checking, before commissioning, that the conditions of use are in compliance with the equipment specifications. Such specifications are reported on the identification plates of each valve. The following is an example of nameplate:



(example marking label)

Moreover, the user shall check that the used materials and the applied surface treatments, if any, are compatible with the expected use. Considering the valve geometric specifications, during the design phase no stresses due to traffic, wind, or seismic events were taken into consideration; therefore, the user shall take proper precautions in order to limit the effects of such events on the assembly, when these are expected.

III - COMMISSIONING

PRESSURIZATION

After the installation, check that the connections to the line are correctly executed and that the vents and drainages on the plant, if any, are closed.

Slowly pressurize the plant (or the plant section) by means of the upstream process valve or of other systems arranged for this.

CONTROL OF THE EXTERNAL TIGHTNESS

The tightness test of the valve connections to the plant shall be carried out according to the provisions in force in the place of installation.

The external tightness is ensured when coating the element under pressure with a foaming agent, no bubbles appear.

In case of liquids, the tightness is ensured where there are no visible leaks from the connections.

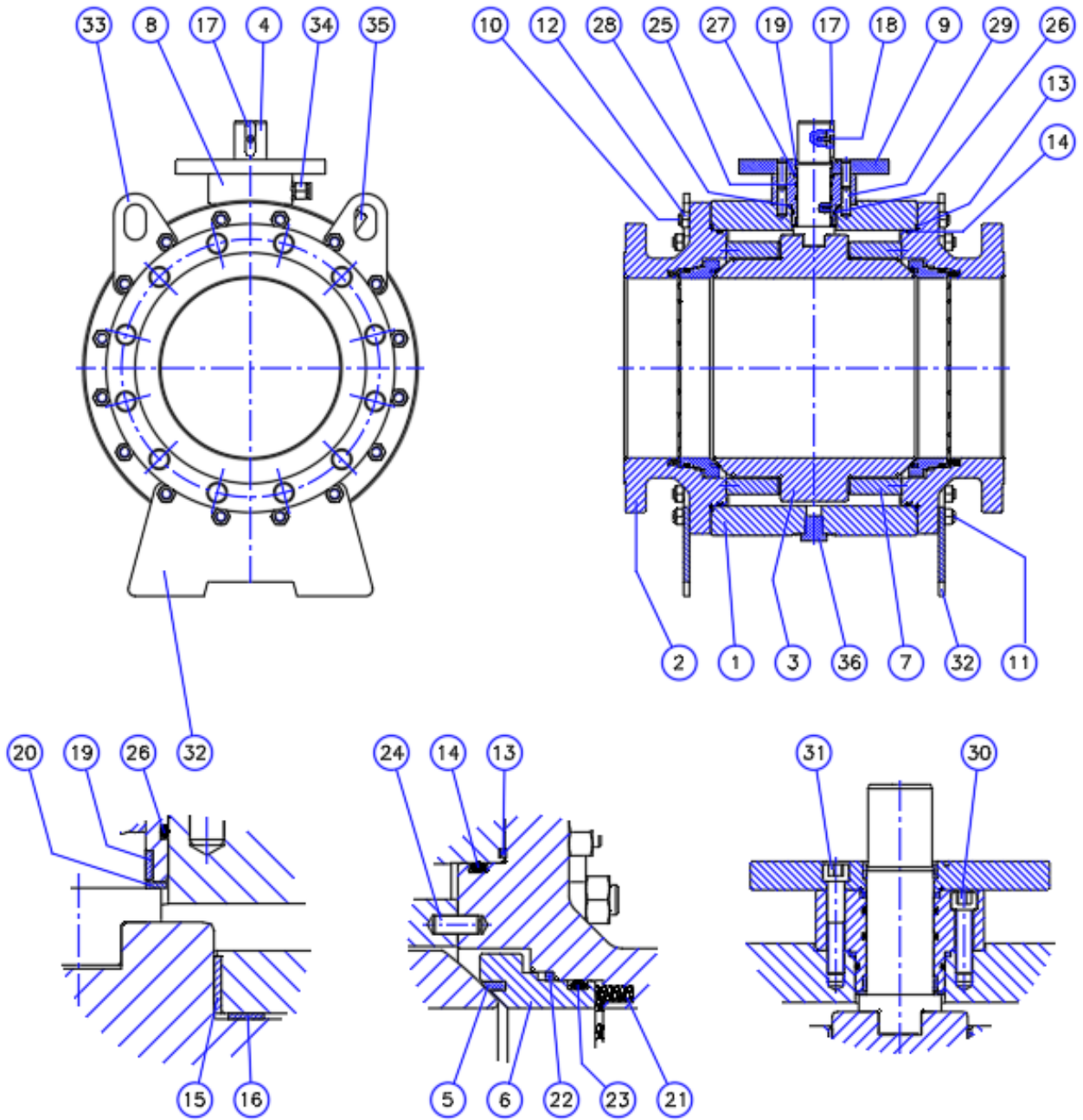
CONTROL OF THE INTERNAL TIGHTNESS

It is possible to check the internal tightness without disassembling the valve from the plant and without depressurizing the line where the valve is installed.

After placing the valve in a fully open or closed position, keep the pressure in the line, open the bleeder valve (35) and check that there is no constant fluid leak from it.

IV - MAINTENANCE

NOTE: For the items shown in the following instructions, please refer to the drawing below.
The drawing refers to a S30T trunnion ball valve, std configuration.



ITEM	COMPONENTS	Carbon Steel	Stainless Steel	C.S. with S.S. Trim	Q.ty
01	BODY	ASTM A350 LF2	ASTM A479 gr F316L	ASTM A350 LF2	1
02	CLOSURE/BONNET	ASTM A350 LF2	ASTM A479 gr F316L	ASTM A350 LF2	2
03	BALL	ASTM A350 LF2+E.N.P.	ASTM A479 gr F316L	ASTM A479 gr F316L	1
04	STEM	ASTM A564 gr. 830	ASTM A479 gr 316L	ASTM A479 gr 316L	1
05 (*)	SEAT	ASTM A350 LF2 + ENP	ASTM A479 gr 316L	ASTM A479 gr 316L	2
06 (*)	INSERT	DELTRIN	DELTRIN	DELTRIN	2
07	BEARING RETAINER	ASTM A515 gr. 70	ASTM A479 gr 316L	ASTM A479 gr 316L	2
08	STUFFING PLATE	ASTM A350 LF2	ASTM A479 gr 316L	ASTM A350 LF2	1
09	TOP MOUNTING PLATE	ASTM A350 LF2	ASTM A479 gr 316L	ASTM A350 LF2	1
10	STUD BOLT	ASTM A193 B7	ASTM A193 B8	ASTM A193 B7	16
11	STUD BOLT	ASTM A193 B7	ASTM A193 B8	ASTM A193 B7	16
12	NUT	ASTM A194 2H	ASTM A194 gr.8	ASTM A194 2H	32
13 (*)	BODY GASKET	GRAPHITE	GRAPHITE	GRAPHITE	2
14 (*)	BODY O-RING	VITON AED	VITON AED	VITON AED	2
15 (*)	SLIDING BEARINGS	AISI316 / PTFE	AISI316 / PTFE	AISI316 / PTFE	2
16 (*)	THRUST WASHER	AISI316 / PTFE	AISI316 / PTFE	AISI316 / PTFE	2
17	STEM KEY	AISI 1040	Steel PR80 (36SMnPb14)	AISI 1040	1
18	SCREW	CARBON STEEL 8.8+N.P.	STAINLESS STEEL	CARBON STEEL 8.8+N.P.	1
19 (*)	SLIDING BEARINGS	AISI316 / PTFE	AISI316 / PTFE	AISI316 / PTFE	2
20 (*)	THRUST WASHER	AISI316 / PTFE	AISI316 / PTFE	AISI316 / PTFE	2
21	SPRING	INCONEL X-750	INCONEL X-750	INCONEL X-750	48
22 (*)	SEAT GASKET	GRAPHITE	GRAPHITE	GRAPHITE	2
23 (*)	SEAT O-RING	VITON AED	VITON AED	VITON AED	2
24	PIN	Steel PR80 (36SMnPb14)	STAINLESS STEEL	Steel PR80 (36SMnPb14)	4
25 (*)	STEM O-RING	VITON AED	VITON AED	VITON AED	2
26 (*)	STUFFING PLATE O-RING	VITON AED	VITON AED	VITON AED	1
27	TOP PLATE GASKET	GRAPHITE	GRAPHITE	GRAPHITE	1
28	STUFFING PLATE GASKET	GRAPHITE	GRAPHITE	GRAPHITE	1
29	PIN	Steel PR80 (36SMnPb14)	STAINLESS STEEL	Steel PR80 (36SMnPb14)	4
30	SCREW	CARBON STEEL 8.8+N.P.	STAINLESS STEEL A2.70	CARBON STEEL 8.8+N.P.	2
31	SCREW	CARBON STEEL 8.8+N.P.	STAINLESS STEEL A2.70	CARBON STEEL 8.8+N.P.	2
32	VALVE SUPPORT	ASTM A515 gr. 70	STAINLESS STEEL AISI304	ASTM A515 gr. 70	4
33	LIFT PLATE	ASTM A515 gr. 70	STAINLESS STEEL AISI304	ASTM A515 gr. 70	4
34	STEM GREASE INJECTOR	ASTM A350 LF2 ZINC PLATED	AISI 316L	ASTM A350 LF2 ZINC PLATED	1
35	BLEEDER VALVE	ASTM A350 LF2 ZINC PLATED	AISI 316L	ASTM A350 LF2 ZINC PLATED	1
36	DRAIN PLUG	ASTM A350 LF2 ZINC PLATED	AISI 316L	ASTM A350 LF2 ZINC PLATED	1

Note: item 10,11,12,21 quantity indicated varies according to the DN and Class

(*) Spare parts for maintenance, only on request.

ONLY ON REQUEST

37	SEAT GREASE INJECTOR	ASTM A350 LF2 ZINC PLATED	2
38	CHECK VALVE	AISI 316L	1

ATTENTION!!!

FOR ANY MAINTENANCE OPERATIONS
WE RECOMMENDED TO REMOVE THE BALL VALVE FROM THE PIPE LINE.

GENERAL INSTRUCTIONS

The inspection and maintenance interventions are strictly linked to the quality of transported fluid. It is therefore advisable to perform a preventive maintenance, of which periodicity, if not established by the regulations, is relevant to:

- the quality of the transported fluid
- the cleanness and preservation state of the pipelines in the plant; in general, after the first start of the plants, more frequent maintenance services are required because of the poor cleanness inside the pipelines

- the usury of the O-rings, of the graphite and of the seats, depends on the type of conditions under which the valve is subjected. If the working conditions are more severe, the time between maintenance operations is shorter
- in case of leakage, difficult operating, locking of the ball, it is necessary to make a maintenance operation

The periodical maintenance concerns also the state of the external surfaces of the valve. In particular the surface protections shall be restored (usually the varnishing) in case they are worn.

Before performing any intervention, make sure that the plant section where you operate has been upstream and downstream cut-off and that the pressure in the concerned pipeline section has been discharged. Besides, we recommend discharging the pressure from the valve body through the drain plug placed on the body of the valve itself (pos. 36). Moreover, make sure to have a series of recommended spare parts. The spare parts shall be **SIRCA INTERNATIONAL S.p.A.** genuine spare parts.

NOTE:

The use of NOT ORIGINAL spare parts relieves the manufacturer from any liability.

REPLACEMENT OF THE:

4.0 - GRAPHITE (27) (28) O-RING (25) (26) of the stem and bonnet

Check that the valve is completely closed (or open). Discharge the pressure from valve body by leaving the vent bleeder valve is open (35).

Remove the control and the adapter, if equipped.

ATTENTION!!! Before removing the control, to ensure that the operator is switched off and is not powered pneumatically or electrically. Also use appropriate lifting systems.

Unloose the screws (31), remove the top mounting flange (09). After removing the flange, remove the cylindrical pin (29).

Unloose the screws (30), remove the stuffing plate (08). After remove the cylindrical pin (29).

Now you can replace mounting flange and bonnet seal graphite (27, 28), the inside stem O-ring (25) and (26). Check the conditions of the stem thrust washer (20) and the stem bearing (19). If damaged, replace it.

For mounting proceed as follows:

Clean very well and lubricate all the seal graphite and the O-rings. Clear all the housing (slot). Now insert the seal and the O-rings in their housing.

Insert the stuffing plate (08) by slightly turning and pushing it down, if you need help with a rubber mallet. The bonnet must be aligned and positioned using the cylindrical pins (29).

Insert and tighten the screws (30).

Insert the top mounting flange (09) by slightly turning and pushing it down, if you need help with a rubber mallet. The flange must be aligned and positioned using the cylindrical pins (29). Now, insert and tighten the screws (31). At the end check that all screws are tightened. Make an opening-closing movement, the ball should move easily. After the valve installation, make a pressure test of the same, making sure there are no leakage.

If ok, proceed to the installation of the adapter and the control.

4.1 - GRAPHITE (13) O-RING (14) of the closure

Bring the valve to the closing position and discharge the pressure from the pipeline both upstream and downstream.

Discharge the pressure from the body leaving the vent bleeder valve open (35).

Remove the control and the adapter, if equipped.

ATTENTION!!!: before removing the control, to ensure that the operator is switched off and is not powered pneumatically or electrically. Also use appropriate lifting systems.

Remove the valve from the pipeline and place it on the workbench with the closure (02) upwards. Fix the valve so that it does not move.

Remove the nuts (12). Lift the closure (02) with a proper lifting system.

Place the closure on the table and remove the O-ring (14) and seal graphite (13) damaged.

Clean very well and lubricate all the seal graphite and the O-rings. Clear the housing (slot). Now first insert the new seal graphite (13) and then the O-ring (14) in their housing.

Lift and insert the closure (02) on the stud bolts (10) so that the closure itself is inserted on the body (01) and that the closure is inserted on the housing.

Verify the correct alignment of the closure respect to the cylindrical pin (24) of the bearing retainer. When they are aligned, to go down slowly the closure.

Gradually and evenly tighten the nuts (12). We recommended to follow a sequence of cross closing, using a torque wrench. The tightening torque is defined according to the material of the screw.

In order to replace the second side, overturn the valve and carry out the above operations.

Make an opening-closing movement, the ball should move easily. After the valve installation, make a pressure test of the same, making sure there are no leakage.

If ok, proceed to the installation of the adapter and the control.

4.2 – THE SEATS+INSERT (06+05)

Bring the valve to the closing position and discharge the pressure from the pipeline both upstream and downstream.

Discharge the pressure from the body leaving the vent bleeder valve open (35).

Remove the control and the adapter, if equipped.

ATTENTION!!!: before removing the control, to ensure that the operator is switched off and is not powered pneumatically or electrically. Also use appropriate lifting systems.

Remove the valve from the pipeline and place it on the workbench with the closure (02) upwards. Fix the valve so that it does not move.

Remove the nuts (12). Lift the closure (02) with a proper lifting system.

REMOVING THE CLOSURE, EVEN REMOVING THE SEAT (the seat is positioned within the enclosure).

Now it is possible to remove the seat (06+05) with the seat springs (21) the O-ring (23) and graphite seat gasket (22) ATTENTION: the seat springs (21) must remain in their housings. Clean and lubricate the new O-ring and insert the same in to the slot. Do the same for the graphite seal ring.

Check that all springs are in its housing, if necessary grease them slightly.

Clean and lubricate the surface of the closure where the seat will be insert.

Positioning the seat (06+05) on the closure (02), perfectly in axis.

Manually push the seat into the housing of the closure, if necessary help themselves with a rubber mallet.

The seat must enter straight.

Now lift and insert the closure (02) on the stud bolts (10) so that the closure itself is inserted on the body (01) and that the closure is inserted on the housing.

Verify the correct alignment of the closure respect to the cylindrical pin (24) of the bearing retainer. When they are aligned, to go down slowly the closure.

Gradually and evenly tighten the nuts (12). We recommended to follow a sequence of cross closing, using a torque wrench. The tightening torque is defined according to the material of the screw.

In order to replace the second seat, overturn the valve and carry out the above operations.

Make an opening-closing movement, the ball should move easily. If ok, proceed to the installation of the adapter and the control. After the valve installation, make a pressure test of the same, making sure there are no leakage.

4.3 – THE BEARING (15) and THE THRUST WASHER (16) of the ball

Bring the valve to the closing position and discharge the pressure from the pipeline both upstream and downstream.

Discharge the pressure from the body leaving the vent bleeder valve open (35).

Remove the control and the adapter, if equipped.

ATTENTION!!!: before removing the control, to ensure that the operator is switched off and is not powered pneumatically or electrically. Also use appropriate lifting systems.

Remove the valve from the pipeline and place it on the workbench with the closure (02) upwards. Fix the valve so that it does not move.

Put the ball in the close position.

Unloose the screws (31), remove the top mounting flange (09). After removing the flange, remove the cylindrical pin (29).

Unloose the screws (30), remove the stuffing plate (08). After remove the cylindrical pin (29).

Remove the stem (04).

Now, remove the nuts (12). Lift the closure (02) together the seat, with a proper lifting system. After, lift the ball along with two bearing retainer plate (07).

Place the ball on the bench taking care not to scratch it.

Slide off the bearing retainer. Remove the ball thrust washer (16).

Remove the bearing (15) from the bearing retainer plate (07).

Take the new bearing and insert them into the bearing retainer plate.

ATTENTION!!!: the cutting of bearings must be perpendicular to the flow direction (or thrust direction)

Now, after cleaning the ball accurately, insert the new ball thrust washer (16). Insert the bearing retainer plate (07) with new bearing (15). Positioning the bearing retainer plate perpendicular with the hole of the ball.

Lift the ball and slowly bring it above the valve body. Align the cylindrical pin of the bearing retainer plate with the hole of the closures. Slowly lower the ball up to insert it completely into the body. The ball must be in close position.

Now lift and insert the closure (02) on the stud bolts (10) so that the closure itself is inserted on the body (01) and that the closure is inserted on the housing.

Verify the correct alignment of the closure respect to the cylindrical pin (24) of the bearing retainer. When they are aligned, to go down slowly the closure.

Screw the nuts by hand, but do not tighten.

Place the valve horizontally.

Positioning the stem into the slot. Verify that the key is aligned with the hole of the ball.

Insert the stuffing plate (08) by slightly turning and pushing it down, if you need help with a rubber mallet. The bonnet must be aligned and positioned using the cylindrical pins (29).

Insert and tighten the screws (30).

Insert the top mounting flange (09) by slightly turning and pushing it down, if you need help with a rubber mallet. The flange must be aligned and positioned using the cylindrical pins (29). Now, insert and tighten the screws (31).

Gradually and evenly tighten the nuts (12). We recommended to follow a sequence of cross closing, using a torque wrench. The tightening torque is defined according to the material of the screw.

In order to replace the second seat, overturn the valve and carry out the above operations.

Make an opening-closing movement, the ball should move easily. After the valve installation, make a pressure test of the same, making sure there are no leakage.

If ok, proceed to the installation of the adapter and the control.

V – LUBRIFICATION

The valves are already lubricated during the assembly phase (with the most suitable product for the operation if it is specified in the order) for the following reasons:

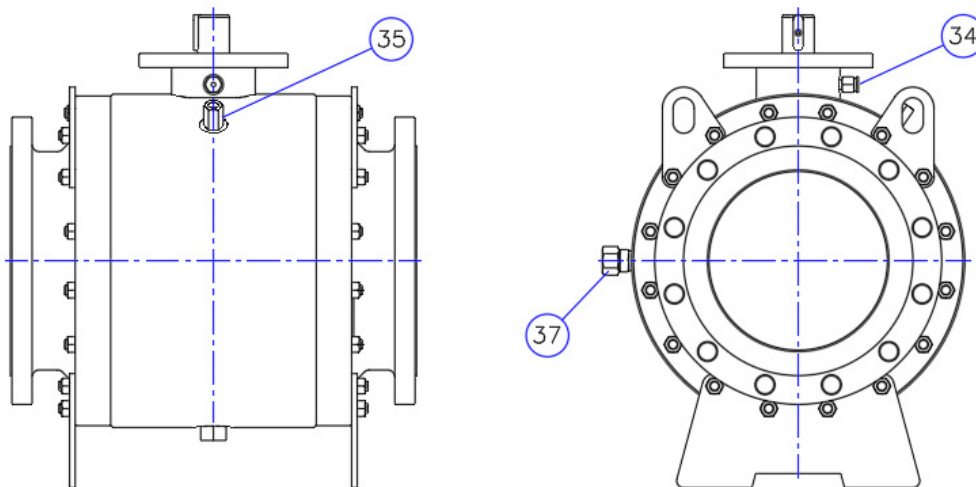
- 1) ease the components assembly
- 2) improve maneuverability
- 3) ease the preservation in case of warehouse storage.

As regards the choice of lubricants, it is necessary to pay attention to the type of fluid to be cut-off, we suggest using the following listed lubricants in the below mentioned cases:

- a) **for oxygen:** we suggest DuPont™ Krytox® grease (or similar special greases certified for oxygen service).
ATTENTION!!! Other lubricants or greases may generate explosive mixtures.
- b) **for food products:** Vaseline or similar not-toxic materials.

In all other cases, use products compatible with the expected conditions of use (temperatures) following the manufacturers' suggestions and paying attention not to use corrosive products damaging the rubber parts. For special applications we suggest to require information specifying in detail the type of fluid to be cut-off and the operating conditions.

ADDITIONAL LUBRICATION:



The S30T ball valve is equipped with grease injector on the neck for stem (34). And can be equipped on request with grease injector (37) on closure for the seals. With special ducts the grease gets to lubricate all moving parts. **Grease fittings (37) are on the opposite side of bleeder valve so the operator can work in total safety.**

To inject the grease into the emergency lubricator you must unloose the plug with a 360° rotation; inject the grease with a **special injection pump**.

In order to inject the grease, it is necessary to use a pump with a max. operating pressure higher than 20 bar of the valve max. operating pressure at the moment of lubrication.

In normal working conditions it is recommended to lubricate the valve every 6 months. If the valve remains open or closed for a long time, we suggest the lubrication once a month, making even an operation of opening and closing.

Grease injector (34) and (37) can be positioned on the opposite side to bleeder valve (35), this to operate in total safety.

VI – STORAGE

The S30T Trunnion ball valves of Sirca International, do not require specific precautions in case of storage for long periods; anyway it is recommended to pay attention to:

- The condensation must be avoided through suitable warming and ventilation system
- The store must be dry and undusty, the ambient temperature shall avoid freezing events and the temperature greater value shouldn't be more 30°C
- The stored materials consumption shall be managed in order to avoid a long store time
- keep the valves in the original packing
- keep the protections applied in the factory on the flanged connections. (The valves are supplied with a protective film on the flange sealing surface, and with appropriate protective plastic caps)
- keep the valve in the closed position to safeguard the state of the tightness and valve seats
- store the rubber parts away from direct sun light, in order to avoid a fast aging
- protect the tightness seat from dust or other material. In case this happens, before installing it, carefully clean the tightness and ball seats

VII – SUGGESTED SPARE PARTS

For the S30T Trunnion ball valves, the suggested spare parts are usually:

- the gaskets of the various joints (O-ring)
- the graphite rings

NOTE:

- the seal+insert only on request.

When ordering the spare parts, to mention:

- Type of valve (primarily: DN, class, flange drilling, materials)
- CR n°
- Year of manufacture
- Type of fluid used and work conditions
- Part no. (item shown on the exploded view or sectional drawing)
- Quantity



THE DATA ARE INDICATIVE. WE RESERVE THE RIGHT TO MAKE MODIFICATIONS WITHOUT PRIOR NOTICE.