

INSTALLATION & MAINTENANCE MANUAL

TRIAD - SERIES VS360

HIGH PRESSURE BALL VALVES



Prior to maintenance, carefully check that the valve does not contain harmful or dangerous gases or liquids.

INTRODUCTION

This manual provides instructions for storage, inspection, maintenance, installation and removing operation of the valves.

Triad Process Equipment, Inc. does not accept any liability for any damage caused by misapplication of the valves, unqualified operation/ maintenance or the noncompliance of safety regulations.

DURING MAINTENANCE BE AWARE OF THE FOLLOWING:

- The Graphite is very brittle: twisting or bending should be avoided.
- The internal parts of the valves (ball, stem and seats) should be handled with care to avoid scratches or other damages to their surfaces.
- All tools and equipment used to handle and support the internal parts should be covered by a soft material.

STORAGE

All the valves are supplied with end plugs, to protect the internal parts. These end plugs must not be removed during storage. If it is necessary for maintenance or inspection, care should be taken to replace them.

In the event of extended storage time, the valves should be inspected and checked as follows at least every 3 months:

- External surface inspection for any alteration of the valve.
- Inspection of the inside of the valve for dust and debris
- Cleaning and lubricating internal parts (best done using a nebulized lubricant).
- After cleaning and lubrication, open and close the valve manually.
- The ball must be kept in the fully open position.
- Replace the protective end plugs.

INSTALLATION

Remove the protective end plugs and carefully check the condition of the valve as indicated in point 2.

Valves are bidirectional and can be installed in either flow direction.

The valve should work in accordance with pressure and temperature design condition established in the purchase order.

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MAINTENANCE

Maintenance operations must be carried out by skilled personnel aware of the standard field techniques and follow the instructions contained in this manual.

Furthermore the personnel involved in maintenance operations shall be made aware of the basic safety procedures, mandatory for the protection of their own health and safety.

The valve has been properly designed and manufactured to operate with satisfactory performances without substantial maintenance for at least two years and is guaranteed for the contractual requested time if all the recommended actions are properly taken.

All necessary information and instructions for the valve maintenance are fully described in the next part of this manual. Before maintenance is started please read the manual in full.

The minimum inspection needed to be followed in order to maintain the valve performances during the operating life time, depends directly on the service conditions (media, temperature, pressure, etc.).

Possible issues that may occur during the valve life, and the possible resolutions:

- Leakage from the stem: replacement of stem O-Ring and Graphite\PTFE ring.
- Leakage from body/flange: replacement of ADAPTER/flange O-Ring and Graphite\PTFE ring.

DISASSEMBLY



Prior to maintenance of the valve, it is mandatory to perform the following safety actions:

- Ensure that the line is fully depressurized.
- Open and close the valve manually in order to avoid any pressure inside the body cavity.

INSPECTION AND MAINTENANCE

COMPONENTS TO VERIFY

This operation must be done with inactive pipeline.

- Particular care should be taken during tightening of packing gland nut during installation or after substitution of packing or during periodic inspection that we recommend.
- Our valves are in accordance with the actual requisition to prevent fugitive emission.
- Periodic inspection is necessary to check any alteration or replace the packing.
- Verify that the packing gland nut tightened to guarantee no leakage and to assure good maneuverability of valve. If there is leakage, replace the stem gland gasket.

Body:

- Carefully check and clean the inner part of the body.
- The surface should be free of rust, scale, etc.
- Carefully lubricate all the surfaces with a film of grease.



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Stem:

- Carefully check and clean the inner part of the stem.
- The surface should be free of rust, scale, etc.

Ball:

- Carefully check and clean the inner part of the ball.
- The surface should be free of rust, scale, etc.
- Any damage to the surfaces should require the replacement.

Seat:

- Carefully check and clean the inner part of the seats.
- The surface should be free of rust, scale, etc.
- Carefully lubricate all the surfaces with a film of grease.
- Any damage to the surfaces should require replacement with new ones.

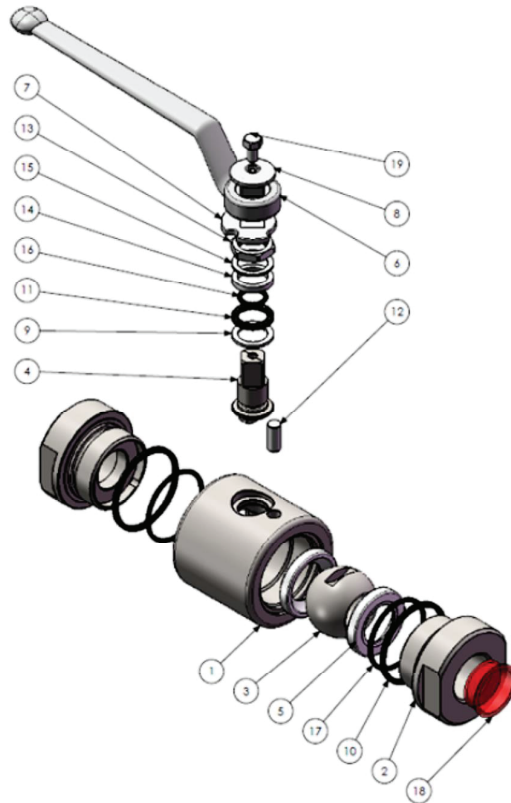
Adapter / Flange:

- Carefully check and clean the parts in contact with the seats.

COMPONENTS TO CHANGE:

Replace the gaskets and O-rings: the surfaces should not show any scratching or other damage. Once the stem and seats have been removed, the gaskets and O rings can be replaced.

1	BODY
2	ADAPTER / FLANGE
3	BALL
4	STEM
5	SEAT
6	HANDLE
7	SHAPED WASHER
8	WASHER
9	STEM RING
10	ADAPTER RING
11	STEM RING (GRAPHITE)
12	SPINE
13	STEM NUT
14	PRESS RING
15	SPRING
16	STEM O-RING
17	ADAPTER O-RING
18	CAPS
19	SCREW



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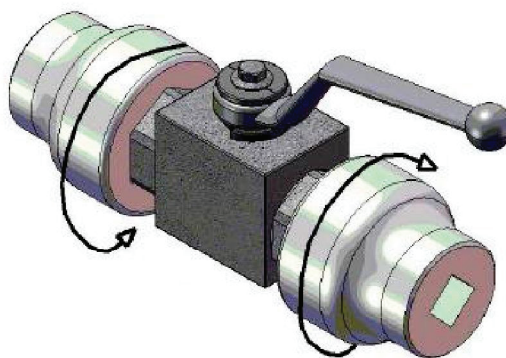
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TORQUE

Fitting / adapter torque:

- When installing the valves it is suggested to use a torque wrench.
- The following table provides proper installation torque

VALVE	TORQUE in / lbs
1/8"	708 +/- 62
3/8"	1062 +/- 62
1/2"	1328 +/- 62
3/4"	2479 +/- 115
1"	2655 +/- 115
1-1/4"	3983 +/- 115
1-1/2"	4426 +/- 115
2"	4735 +/- 115



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Stem nut torque

The stem nut is used to maintain the compression of graphite and must be fastened with a torque wrench set at:

VALVE	TORQUE in / lbs
1/8"	>18; < 80
3/8"	>18; < 80
1/2"	>35; < 106
3/4"	>44; < 177
1"	>62; < 248
1-1/4"	>133; < 265
1-1/2"	>221; < 354
2"	>310; < 443
2-1/2"	>354; < 575
3"	>443; < 619
4"	>531; < 796

