

**VANESSA SERIES 30,000 TRIPLE OFFSET VALVE (TOV)**  
 INSTALLATION, OPERATION AND MAINTENANCE MANUAL

Basic configuration - Body style double flanged, wafer, lug and butt weld



**APPLICABLE PRODUCT RANGE**

- Series 30,000 basic configuration, double flanged body style, which can be installed by connecting each valve flange to each pipe flange with the applicable bolting.
- Series 30,000 basic configuration, lug body style with threaded holes, which shall be bolted to both pipe flanges.
- Series 30,000 basic configuration, wafer body style, which can be installed between two pipe flanges with the applicable studs or bolts.
- Series 30,000 basic configuration, butt weld ends, which must be welded to the line.

**SAFETY INFORMATION**

- This document provides all the necessary safety information related to Handling and Storage, Installation, Use and Maintenance of Vanessa Series 30.000 Triple Offset Valves.
- Safety statements have been purposely placed throughout this manual whenever operating or maintenance procedures, practices or conditions are considered critical to the protection of personnel (WARNING) or to prevent valve damage (NOTICE and CAUTION).

**SECTION 1 - VALVE STORAGE**

**1.1 Preparation for shipment and preservation**

The valve is properly packed in order to protect the parts that could be subject to deterioration during transportation and storage on site. Whenever applicable the valve shall be stored within the original packaging. In case either the unpacking or the replacing of the original packaging become necessary (should for example an inspection be prescribed upon the arrival on site), the original protection conditions of the valve shall be preserved. Moreover the following precautions shall be taken:

1. The valve must be packed with the disc in the closed position. The flange sealing surfaces (raised faces) or the butt weld ends are protected with suitable protective grease (where applicable according to the valve material selection). The end faces of the valve must be protected with plastic or wooden discs fixed with straps.
2. In case of bare shaft valves the ends of the shaft must be protected with dedicated packaging.
3. An appropriate packaging shall be considered in case of a valve with "fail open" pneumatic or hydraulic actuator, where the valve disc is in the open position and protrudes beyond the face to face. An actuated valve must be securely and safely palleted or crated with special attention to ensure that parts of actuator (especially tubing and fittings or accessories) do not extend beyond the skid/crate.
4. The type of packaging must be defined in the customer's order and will be appropriate to ensure safe transportation to final destination and conservation before installation. The operators shall be specifically trained to avoid contamination.

**1.2 Handling requirements**

**A - Packaged valves**

**Crates:** The lifting and the handling of valves packed in crates shall be carried out by a forklift truck, by means of appropriate fork hitches.

**Cases:** The lifting of valves packed in cases shall be carried out from the lifting points and the center of gravity position which have been marked. The transportation of all packed material must be carried out safely and following local safety regulations.

**B - Non-packaged valves**

The lifting and the handling of these valves shall be carried out by using appropriate means and by respecting the carrying limits. The handling must be carried out on pallets, protecting the machined surfaces to avoid any damage.

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### CAUTION

For valve handling and/or lifting, the lifting equipment (fasteners, hooks, etc.) must be sized and selected by taking into account the valve weight indicated on the packing list and/or delivery note. Lifting and handling must be carried out only by qualified personnel.

Fasteners must be protected by plastic covers in sharp corner areas.

Caution must be given during handling to avoid that equipment passes over workers or any other place where a possible fall could cause damage. In any case, the local safety regulations must be followed.

### NOTICE

In the upper side always fasten the valve from the bracket.

Solutions A and C in figure 1 are applicable when the protrusion of the bottom hub from the flange or body is sufficient to position securely the lifting strap.

Solutions B and D in figure 1 are applicable when the protrusion of the bottom hub from the flange or body is NOT sufficient to position securely the lifting strap. In such cases use the flange holes close to the bottom hub and fasten the valve securely. For actuated valves refer to the product technical documentation provided with the relevant supply.

### 1.3 Storage and preservation before installation

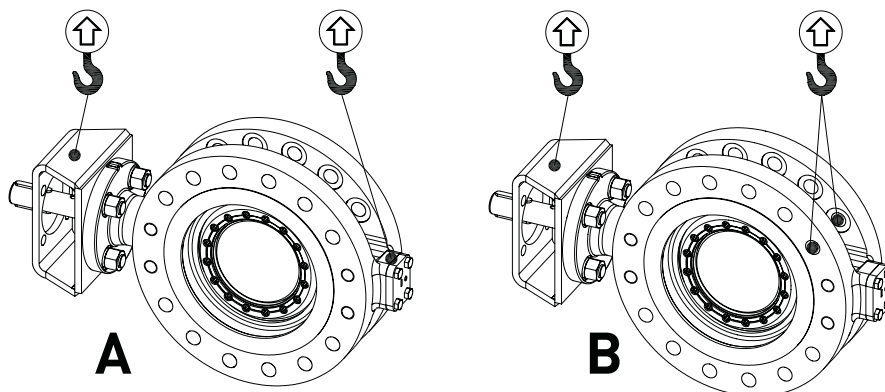
In case valves have to be stored before installation, the storage must be carried out in a controlled way and performed in accordance to the following criteria:

1. The valves must be stocked in a closed, clean and dry storage room.
2. The disc must be in the closed position, and the end faces must be protected with plastic or wooden discs fixed with straps. If possible, keep the original protection.
3. Periodical checks must be carried out in the storage area to verify that the above-mentioned conditions are maintained throughout.

### NOTICE

Storage in an open area for a limited period of time can be considered only in case the valves have appropriate packaging, are packed in cases lined with tarred paper, and contents are well protected with barrier sacks.

LIFTING AND HANDLING OF VALVES INSTALLED IN HORIZONTAL PIPELINES



LIFTING AND HANDLING OF VALVES INSTALLED IN VERTICAL PIPELINES

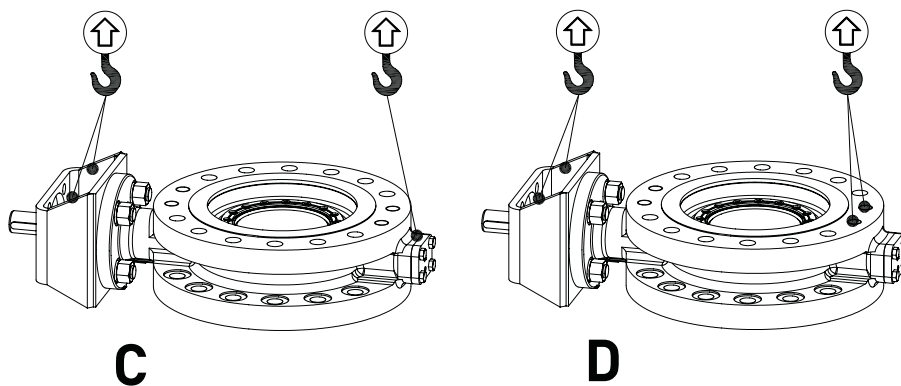


FIGURE 1

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### SECTION 2 - INSTALLATION

#### 2.1 Valve inspection

1. Carefully remove the valve from the shipping package (box or pallet) avoiding any damage to the valve or, in case of automated valves, to the electric or pneumatic/hydraulic actuator or instrumentation.
2. The valves are shipped with the ends protected with caps and a thin layer of protective grease (where applicable according to the valve material selection). Before installing the valve, remove the caps and clean carefully, then de-grease both surfaces with a solvent. Clean the inside of the valve using an air line. Ensure that there are no solid objects such as pieces of wood, plastic or packing materials inside the valve or on the valve seat.
3. Inspect the seal ring to ensure that it was not damaged during handling. This is especially important in case of valves shipped with the disc set in the open position and with "fail-open" actuators.
4. Ensure that the packing gland-adjusting nuts against the packing gland flange cannot be loosened by hand.

#### WARNING

Ensure that the materials of construction listed on the valve nameplate (refer to figure 12 on page 12) are appropriate for the service intended and conform to the contractual specifications/requirements. Also ensure that the valve pressure/temperature limits shown on the valve nameplate (refer to figure 12 on page 12) are suitable for the process conditions. If in doubt contact your nearest Emerson sales office.

#### 2.2 Valve installation

Vanessa double flanged, lug, wafer valves are suitable to be installed in accordance with ASME B16.5, ASME B16.47 or EN 1092.1 requirements, without limiting the applicability criteria.

Flange finish and face dimensions are fully in accordance with the applicable standard, without gasket seating surface interruptions (which are allowed by API 609 par. 5.7). In case of non-standard flanges the installation conditions are agreed during the flange dimensioning.

The optimal installation is setting the valve with the shaft in the horizontal plane. The second best option is to have the shaft at an angle to minimize problems associated with solid particles present in the fluid that otherwise could deposit in the lower bearing area.

Unless otherwise recommended, the valve should be installed with the disc in the closed position to ensure that the seal ring in the disc is not damaged during installation. Particular care should be given to those valves equipped with 'fail-open' actuators.

For operating temperatures above 200 °C (392 °F) thermal insulation of the valve body is recommended.

#### WARNING

If the valve has threaded tapped holes in the hub areas, it is recommended to use stud bolts with nut to connect the valve in this zone. The depth of the tapped holes in the bodies of all Series 30,000 valves is specified in the product technical documentation provided with the relevant supply. Failure to use the correct studs dimensions may result in serious injuries, flange leakage, damage to the valve thread.

#### NOTICE

It is recommended to perform piping flushing before installation of valve. When this is not possible, valves must be set with the disc in full open position before starting the flushing operation.

#### NOTICE

The valve trim is designed to withstand and to seal against the design differential pressure marked on the valve nameplate (refer to the nameplate template provided on page 12). When positive isolation is required including isolation for safe access to downstream line, as a minimum the valve shall be installed with high pressure facing the preferred isolation side of the valve, the so-called "positive isolation side" or "shaft side". The valve trim shall not be used as a sole protective mean against the hazard caused by the closed valve upstream pressure. Additional precautions against pressure hazard risks shall be taken into consideration by end users based on their own piping risk assessment.

If the valve has welded ends, perfectly clean and degrease the ends to be welded (of both valve and pipe), using a cloth with acetone or a similar product. Insert correctly the valve between the edges of the pipe to be welded by taking into consideration the plate that indicates the preferential side for sealing. Carry out an initial accurate spot welding verifying the perfect alignment of the edge and axis of the valve. Carry out the welding of the edge by proceeding in alternate way on both sides to reduce the tensions introduced by the welding. It is important to follow the relevant preheating and interpass temperature prescriptions.

Handling and lifting of the valves during installation MUST be performed by following the same criteria and instructions described in previous points "1.2 Handling requirements" and "1.3 Storage and preservation before Installation".

#### Isolation applications

The installation direction affects valve operating torques and sealing performances. An indication plate "ΔP" (figure 2) is applied on the high pressure shutoff side when valve is closed as a

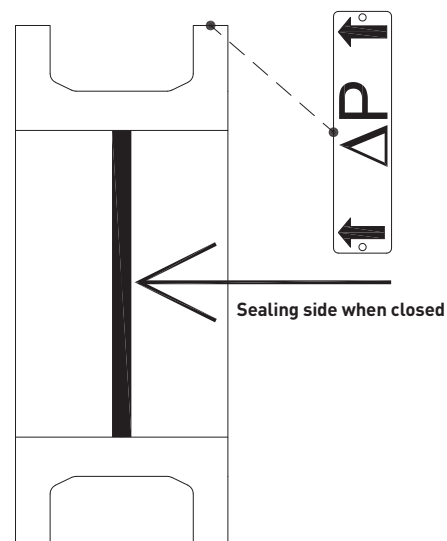


FIGURE 2

reference for the direction of the installation. The best sealing performance, also for bidirectional services, is ensured when pressure acts on the shaft side of the valve, and is recommended when the service tightness requirements are more stringent in one specific direction.

#### Control applications

Perfect sealing is not required. The "ΔP" plate may be fixed on either flange indicating the preferred direction. Adhere to the direction of installation indicated on the relevant flange as the selection of the actuator has been made for that specific direction of installation.

#### CAUTION

Whenever the pipe is internally lined, the disc must not come into contact with the lining during its stroke. Such verification is critical especially in case of lug and wafer body style in order to avoid any damage to the valve.

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### 2.3 Valve verification

1. Tighten the packing box enough to prevent shaft leakage. Over-tightening will decrease packing component life and increase operating torque.
2. Check the operability of the valve by stroking it to "full open" and "full close". To verify the valve orientation, the disc position indicator mark on the shaft (during the normal open to close cycle) should rotate clockwise from a position in line with the pipe (see figure 3A) to a position parallel to the pipe flanges (see figure 3B).

### 2.4 Commissioning

1. Whenever the piping system is pressurized with water for testing or in case it has been shut down after testing for a long time, the following recommendations should be adopted:
  - a. Use corrosion inhibitor with water to pressurize the piping system.
  - b. After testing, the piping system should be depressurized and the test water completely drained.
  - c. After testing, the valve must be operated through a complete opening/closing cycle and the disc should be left in half-open position. Apply a film of protective oil in the packing area by means of a paintbrush. The protective oil must fill the area between shaft and packing bushing.
2. The valve is fully metallic and typically withstands the cleaning agents used for metallic pipelines.

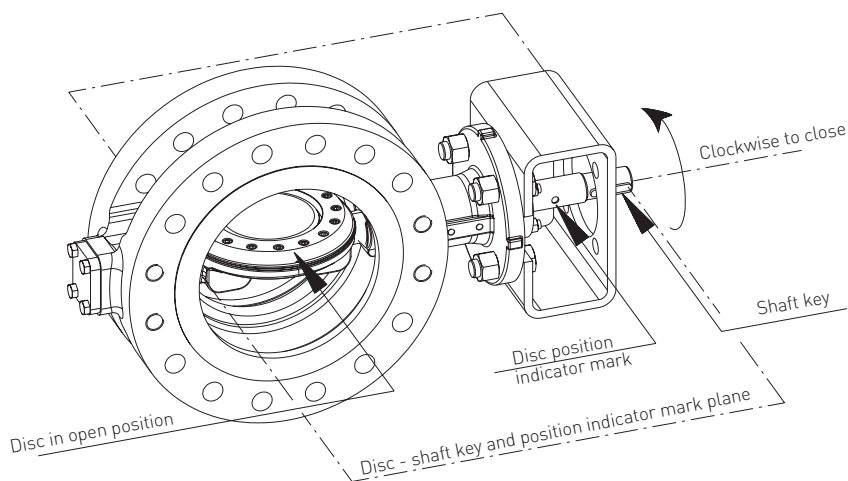


FIGURE 3A

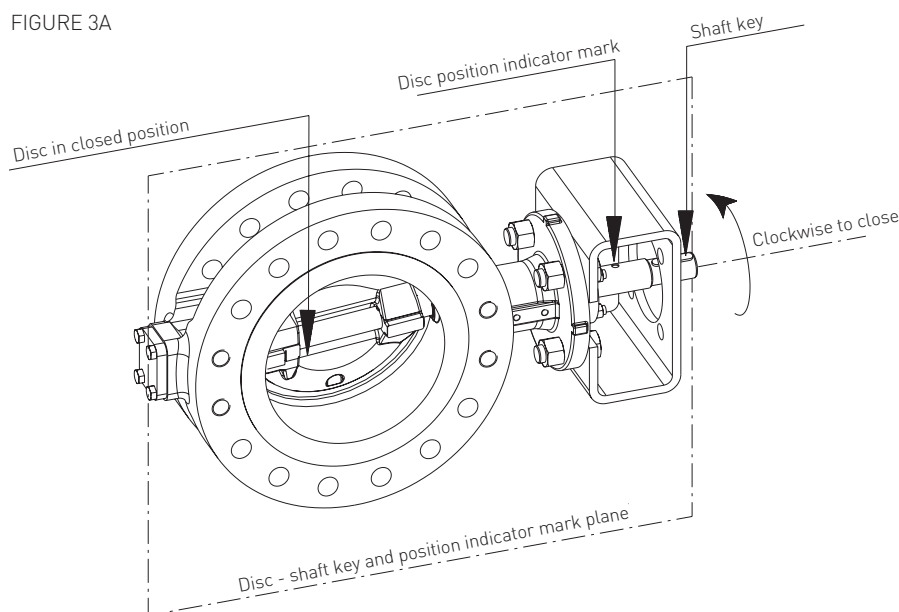


FIGURE 3B

# VANESSA SERIES 30,000 TRIPLE OFFSET VALVE (TOV)

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### SECTION 3 - USE

#### 3.1 Valve use

Vanessa Series 30,000 valves do not feature cavities where the process fluid may be trapped and isolated from the main line. Therefore, any overpressure is not possible as long as the system to which the valve is connected to remains protected against overpressure by a suitable device.

Vanessa Series 30,000 does not generate hot / cold surfaces through their own operating function. Hot or cold surfaces of the valve are generated by the process temperature of the system, where the valve is installed. Hence their protection shall follow the requirements of the system itself. The valve bracket does not need to be protected.

The valve body is more resistant than the pipe to which it is connected, being of simple cylindrical-shape with outward cylindrical branches and thickness much higher than the pipe itself. Therefore, the valve body cannot be taken as a limiting factor for the maximum allowable loads transmitted by the pipe.

#### 3.2 Operating Procedures

A Vanessa Series 30,000 needs either an actuator or manual gear operator to be operated.

Follow the applicable instructions provided by the actuator or gear manufacturer.

The valve closes by turning the shaft clockwise when observed from the bracket top end.

#### 3.3 TROUBLESHOOTING GUIDE

Symptom	Possible cause	Resolution
Valve does not rotate	<ol style="list-style-type: none"><li>1. Packing is too tight</li><li>2. Actuator has failed</li><li>3. Valve packed with debris</li><li>4. Shaft key has sheared</li><li>5. Fluid solidification between bearings and shaft</li></ol>	<ol style="list-style-type: none"><li>1. Loosen gland nuts</li><li>2. Replace or repair</li><li>3. Flush or clean valve to remove debris</li><li>4. Determine cause of shearing and correctly replace shaft key</li><li>5. Flush bearings by flushing holes (if present)</li></ol>
Shaft packing leaking	<ol style="list-style-type: none"><li>1. Packing gland flange nuts too loose</li><li>2. Packing box damaged</li></ol>	<ol style="list-style-type: none"><li>1. Tighten packing gland flange nuts</li><li>2. Replace packing box - see Paragraph 4.1</li></ol>
Bottom flange gasket leaking	<ol style="list-style-type: none"><li>1. Bottom flange bolting loose</li><li>2. Spiral wound gasket damage</li></ol>	<ol style="list-style-type: none"><li>1. Tighten bottom flange bolting</li><li>2. Replace gasket - see Paragraph 4.3</li></ol>
Valve leaking	<ol style="list-style-type: none"><li>1. Valve not fully closed</li><li>2. Debris trapped in valve</li><li>3. Actuator mechanical stops improperly set</li><li>4. Seal ring damaged</li></ol>	<ol style="list-style-type: none"><li>1. Close valve</li><li>2. Cycle and flush (with valve open) to remove debris</li><li>3. Remove the stop for closure and reset properly</li><li>4. Replace seal ring - see Paragraph 4.2</li></ol>
Jerky operation	<ol style="list-style-type: none"><li>1. Packing box is too tight</li><li>2. Air supply inadequate</li><li>3. Actuator/shaft adapter misaligned</li></ol>	<ol style="list-style-type: none"><li>1. Loosen packing gland nuts, cycle valve, retighten</li><li>2. Increase air supply pressure and/or volume</li><li>3. Remove actuator mounting and realign</li></ol>

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### SECTION 4 - MAINTENANCE

#### WARNING

Depressurize the line before starting any maintenance. Failure to do so may result in serious personnel injury and/or equipment damage.

#### 4.1 Packing box maintenance

If shaft leakage is observed through the packing box, tighten the gland nuts slowly and evenly until the leakage stops.

#### CAUTION

Do not over-tighten packing gland nuts. Over-tightening will increase the torque required to operate the valve.

When tightening the gland nut, use half-turn increments until leakage stops.

Refer to figure 4.

To replace the packing rings proceed as follows:

1. Remove the gear/actuator and relevant connecting keys (4f). Keep record of the gear/actuator position in relation to the valve position for a later correct re-assembly of the gear/actuator.
2. Remove gland nuts (5d). If present, remove belleville springs (5n), and keep record of their quantity and assembly configuration to reassemble them correctly (point 7).
3. Remove packing gland flange (5f), anti blow-out ring if present (5g), and gland bushing (5c).
4. Remove packing rings (5a). If the valve features packing flush option, remove lantern ring also (5h).
5. Carefully clean the packing cavity and shaft (4a).

6. Apply a thin film of lubricant on each new packing ring (5a) surfaces (lubricant should be in accordance with Table 3). Insert new packing rings, being mindful of inserting the two braided rings at the bottom and top of the entire packing. If the valve features a packing flush option, insert the lantern ring (5h) in the same original sequence (or as indicated in figure 4). If the packing rings are of the split type, install with splits staggered at 180° from each other.
7. Reassemble packing bushing (5c), anti blow-out ring if present (5g), and gland flange (5f). If present, assemble the belleville springs (5n), following the assembly configuration noted in the previous point 2, then assemble by hand the gland nuts (5d) without tightening (after applying a thin film of lubricant on the threads of the stud bolts, in accordance with Table 3).
8. Reassemble keys (4f) on the upper shaft end.
9. Reassemble gear/actuator and close the valve.

#### CAUTION

Do not force actuator on the shaft! This should be a loose fit.

10. Tighten gland nuts (5d) in accordance to Table 1 (Torque values for gland nuts).
11. Cycle the valve.
13. If a leakage is detected, tighten the gland nuts slowly and evenly until the leakage stops.

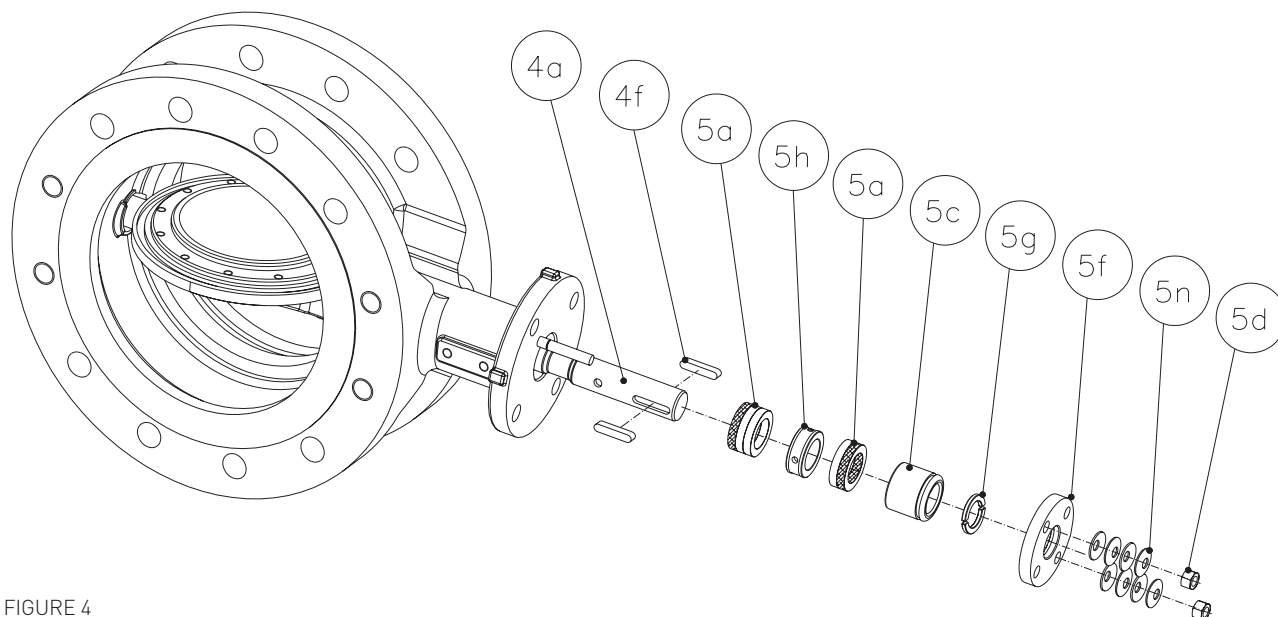


FIGURE 4

# VANESSA SERIES 30,000 TRIPLE OFFSET VALVE (TOV)

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### 4.2 Sealing elements maintenance

To replace the sealing elements proceed as follows (refer to figure 5):

#### WARNING

*Depressurize the line before starting any maintenance. Failure to do so may cause serious personnel injury and/or damage to the valve.*

1. Remove the valve with the disc in the closed position from line. Clean the valve according to proper cleaning procedure as outlined by the plant or according to a recommended procedure.
2. Open the valve a few degrees.
3. Loosen the seal retainer flange screws (2c). If screws are secured, unbend the bevel.
4. Open valve to full open position.

#### NOTICE

In small size valves it may be easier to remove the actuator and rotate the disc beyond the full-open position to provide more space to work with components.

5. Carefully remove the seal retainer flange screws (2c) with security washers (2d) if present, then remove the seal retainer flange (2b).
6. Remove seal ring (3a) and spiral wound gasket (3b).
7. Inspect the body seat. Clean it, if necessary, with fine abrasive cloth (No. 600 or finer), after having cleaned it perfectly with solvent.
8. Inspect and clean the disc seal ring area and spiral wound gasket groove. No foreign particles must be present before spiral wound gasket and seal ring assembly.

9. Apply a thin film of lubricant on the surface area of the disc (2a) where seal ring (3a) and spiral wound gasket (3b) will be located (lubricant should be in accordance with Table 3).

#### CAUTION

*Apply only a thin film of lubricant where indicated. Failure to do so will hinder the assembly and may cause damage to the valve.*

10. Assemble the new spiral wound gasket (3b) in the disc groove, without forcing and taking care not to damage it.
11. Replace seal ring (3a) on the disc through the shaft side of the body. To properly locate the seal ring refer to figure 6: align the internal slot of the seal ring (3a) to the reference pin (F).
12. Assemble the seal retainer flange (2b). Refer to figure 6: make sure that the slot on the edge of the seal retainer flange (B) is in correspondence with reference pin (F).
13. Hand tighten all the fastening screws (2c), with relevant lock washers (2d) if present, after applying Loctite® 270 or equivalent on the bottom side of the threads (ensure they are perfectly clean with a solvent before applying Loctite®). Then, verify that the seal ring can be moved freely by hand without rotating it.
14. Apply a thin film of lubricant to the body seat and to the external edge (sealing conical surface) of the seal ring (3a). Lubricant should be in accordance with Table 3.

15. Seat and unseat the valve twice.
16. Keep the valve in the closed position without applying torque. Tighten at least two retaining screws (2c) to avoid the seal ring moving from the position found.
17. Open the disc a few degrees and tighten, using a torque wrench, all screws (2c). Use a torque value from Table 2 (refer to figure 6). It is recommended to use a cross-pattern tightening sequence to tighten all retaining screws.

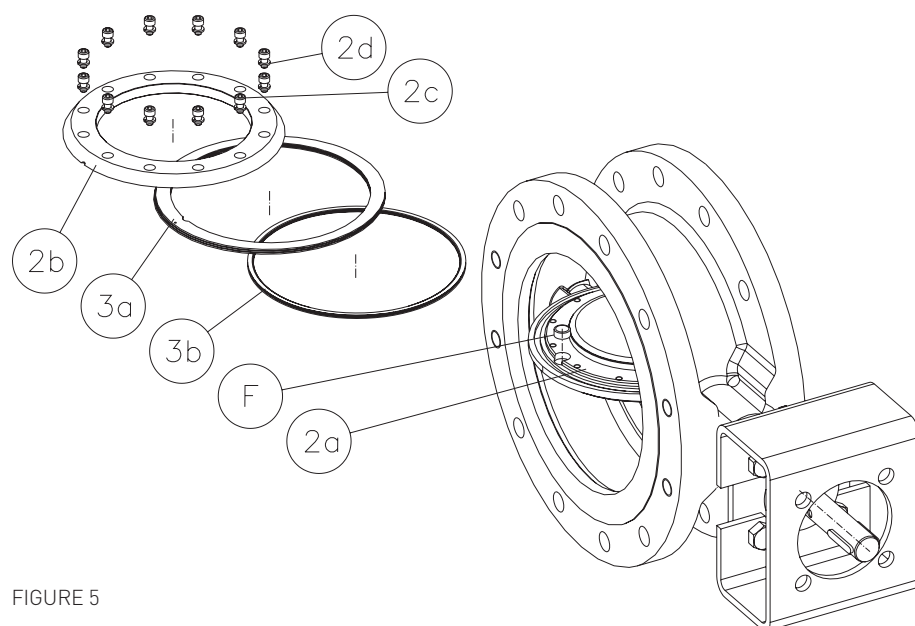


FIGURE 5



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### IMPORTANT

Refer to figure 6:

The seal ring is supplied with an index marking (A).

After the complete assembling, verify that the index marking (A) can be seen in the slot (B) of the seal retainer flange.

Slot (B) and marking (A) have to be perfectly aligned.

If not visible or not aligned, loosen the retaining screws, re-align the index marking and start again the procedure from point 12.

18. If the seal retainer flange screws were secured by bevels (on the retainer flange near each screw holes), use peening tool to re-bend the bevels over each screw and ensure correct and safe screw locking (refer to figure 7).

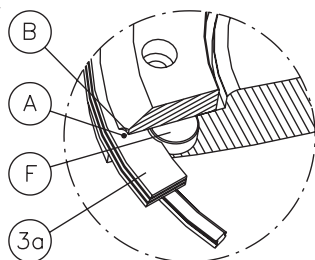


FIGURE 6

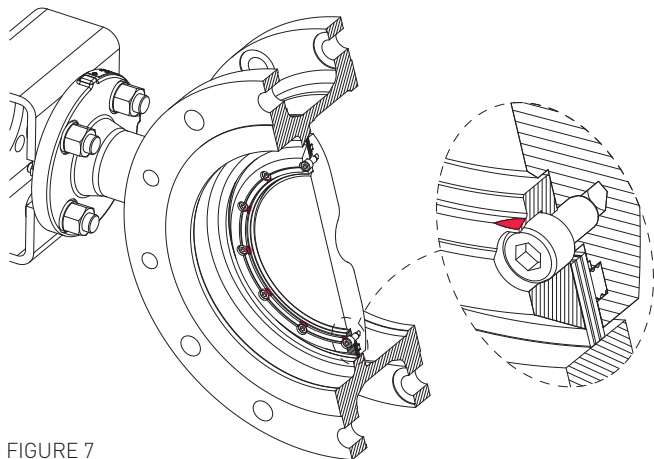


FIGURE 7

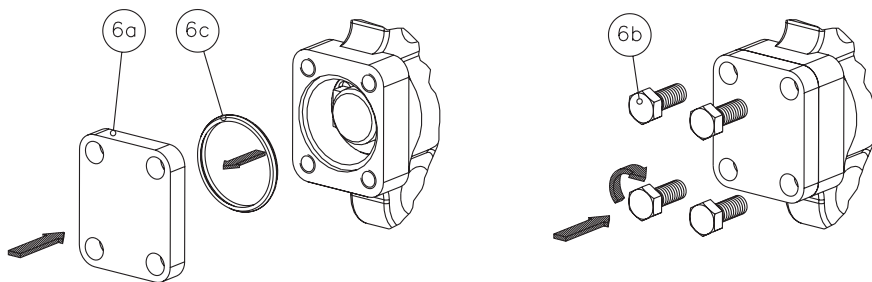


FIGURE 8

### 4.3 Bottom flange gasket maintenance

If it is necessary to replace the bottom spiral wound gasket, proceed as follows (see figure 8):

1. Remove the bottom flange (6a).
2. Remove the spiral wound gasket (6c).
3. Inspect and clean the groove of the spiral wound gasket in the body and in the bottom flange.
4. Apply a thin film of lubricant on the bottom spiral wound gasket (6c), then insert it on the bottom flange (6a), centering and positioning all on the body bore (lubricant should be in accordance with Table 3). Rotate the bottom flange to accommodate the correct position and center the holes with the threaded holes on the body.
5. Apply a thin film of lubricant on the threads of the screws (6b), then introduce and tighten them using a torque value from Table 2 (lubricant should be in accordance with Table 3).



**SECTION 5 - STANDARD OPTIONS**

This section is referred only to Vanessa products configured with the following options:  
 - bearing and packing flushing,  
 - live loaded packing.

**5.1 Bearing and packing flushing**

*Bearing flushing*

The bearing flushing option is obtained by adding two tapped holes, one in the bottom flange and one in the neck of the valve (see figure 9). This option includes the introduction of a lantern ring at the bottom of the valve packing. Bearing flushing is recommended when the valve is installed in a service where the particles present in the fluid or the line fluid itself can migrate into the shaft/bearing area causing problems. A typical example is sulphur recovery services, where the sulphur in a liquid or gaseous state may enter this area and crystallize as a consequence of the plant shutdown.

This crystallisation may result in an increase in the torque requirement of the valve. Another example may be a fluid that contains particles (e.g. catalyst) that may cause similar problems to those highlighted above.

In these types of situations the bearing flushing may be used to introduce an inert fluid compatible with the process via the bearing flush taps (see figure 10) to create a pressure barrier which prevents the introduction of the unwanted product from the line into the shaft/bearing area. The pressure of the flushing fluid must be slightly higher than the line pressure (i.e.  $P_1 + \text{approx } 5\%$ ). This acts as a safety measure and a positive contribution to increase the life expectancy of the valve, as well as maintaining the constant torque requirement and hence operability of the valve.

The bearings may be continuously flushed, this is recommended for critical services such as described above. Periodic flushing may be used for less critical services in order to clean the bearing/shaft interface or in order to prepare the valve for a shutdown of the process.

The bearing flush taps may also be used to introduce a lubricant compatible with the process to the bearing areas for high cycle or dry gas service. The presence of the bearing protector drastically reduces the consumption of the flushing or lubricant by reducing the amount of fluid required to give efficient service (see figure 9A).

Contact your nearest Emerson sales office for further information.

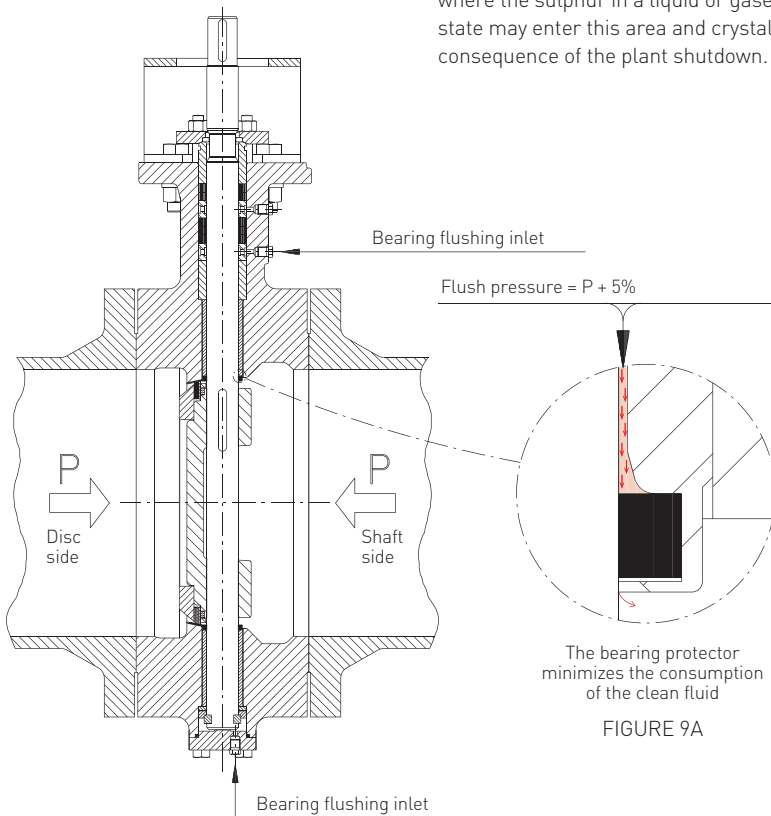


FIGURE 9

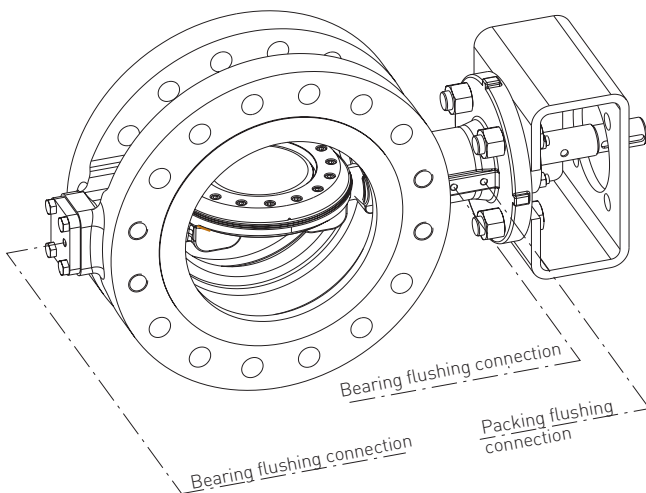


FIGURE 10

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### *Packing flushing*

The packing flushing option is obtained by the introduction of a tapped hole that communicates directly to the packing box in the neck of the valve via a lantern ring. This option can be used to monitor the rate of emission of the line fluid toward the atmosphere. This flush tap may also be used to capture and evacuate line fluid to prevent any atmospheric loss, with the lantern ring and split packing configuration acting as a double block and bleed unit.

A suitable fluid may also be introduced via the packing flush tap into the packing area so as to eliminate any possible fugitive emissions (see figure 10). By keeping the fluid pressurized at a pressure that is higher with respect to the line pressure, the passage of any line fluid towards the atmosphere can be effectively blocked giving the valve excellent fugitive emissions control. However, the fluid used must be compatible with the line fluid as it may have the possibility of finding its way into the line as well as toward the atmosphere.

As with the bearing flushing option this may also be used to introduce a lubricant compatible with the process.

The selection of the most appropriate type of lubricant for flushing is under the user's responsibility. Contact your nearest Emerson sales office for further details or process specific information.

### **5.2 Live loaded packing**

The live loaded packing option is designed to supplement the standard characteristics of the Vanessa valve packing. This option guarantees a constant compression of the packing set. The fact that the packing is subject to a near constant force supplied by the Belleville springs reduces the maintenance frequency required by the packing (see figure 11).

Care should be given in replacing the Belleville springs as their order (parallel or in series) should be understood and kept.

The packing flange nuts should be tightened in accordance with Table 1.

The drawing in figure 11 shows typical set ups for the live loaded packing option.

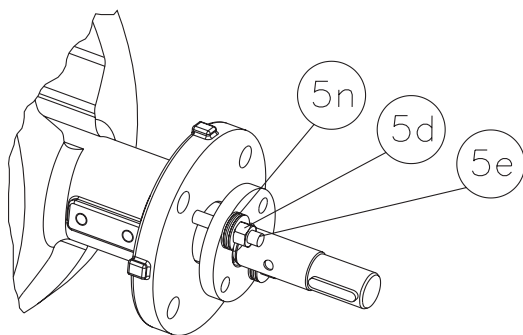


FIGURE 11

# VANESSA SERIES 30,000 TRIPLE OFFSET VALVE (TOV)

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**TABLE 1 - TORQUE VALUES FOR PACKING FLANGE NUTS**

Bolt dimensions	Nominal pressure			
	ASME CLASS 150 - 300 EN PN 10 - 16 - 25 - 40		ASME CLASS 600 - 900 - 1500 EN PN 63 - 100 - 110 - 150 - 260	
	Torque		Torque	
mm	Nm	ft-lb	Nm	ft-lb
M10	10	7	20	15
M12	15	11	25	18
M14	20	15	45	33
M16	25	18	60	44
M18	30	22	65	48
M20	80	59	200	148
M24	180	133	340	251
M27	210	155	375	277
M30	290	214	495	366
M33	310	229	700	517
M42	-	-	1250	923

**NOTE**

Tighten the packing flange nuts slowly and evenly until the leakage stops. The torque values are max suggested value.

**TABLE 2 - General torque values for retainer flange and bottom flange bolting**

Bolt dimensions (mm)	Torque values	
	Torque (Nm)	Torque (ft-lb)
M6	10	7
M8	20	15
M10	45	33
M12	70	52
M14	110	81
M16	175	129
M18	235	173
M20	335	247
M22	370	273
M24	460	339
M27	595	439
M30	760	561
M33	785	579
M36	1010	745
M39	1315	970
M42	1625	1199
M45	2035	1501

**TABLE 3 - Lubrication**

Type	Component to lubricate
Light mineral oil	<ol style="list-style-type: none"> <li>Packing rings (5a)</li> <li>Disc surface areas (2a) for seal ring and spiral wound gasket location</li> <li>Spiral wound gasket (6c)</li> </ol>
Molykote® - P74 (grease) or equivalent	<ol style="list-style-type: none"> <li>Stud bolts/nuts (5d)</li> <li>Screw (6b)</li> </ol>
Molykote® spray - 321 R (dry lubricant) or equivalent	<ol style="list-style-type: none"> <li>Seal ring (3a)</li> <li>Body seat</li> </ol>

## SECTION 6 - DECOMMISSIONING

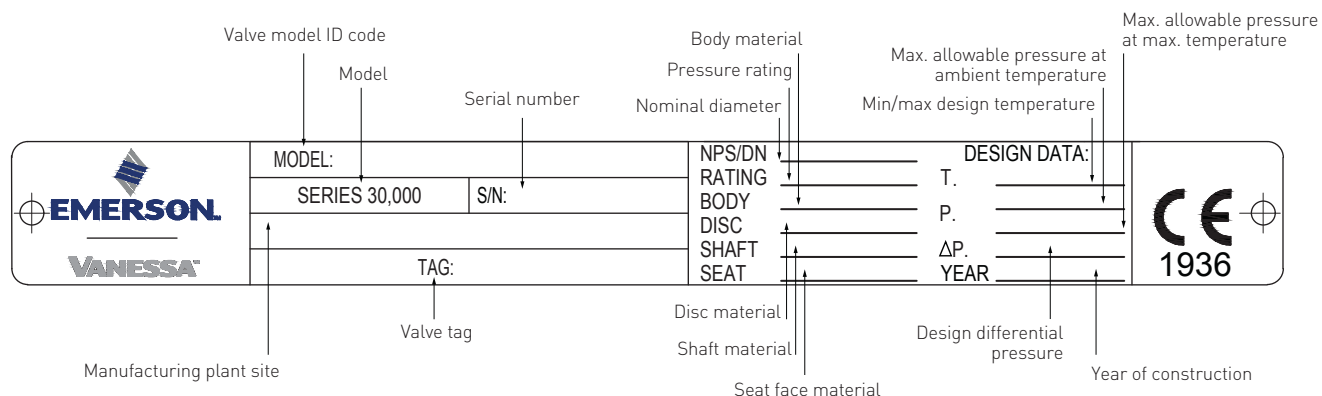
### Instruction for decommissioning

Comply with the national regulations for disposal and recycling.  
The comprehensive list of materials is available in the relevant technical literature.

# VANESSA SERIES 30,000 TRIPLE OFFSET VALVE (TOV)

## INSTALLATION, OPERATION AND MAINTENANCE MANUAL

FIGURE 12



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