

VxL[®] Control Valve

Body Sub-assembly

22



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Installation, Operation and Maintenance Instructions

1.1 - GENERAL INFORMATION

The following instructions are designed to assist in the installation, operation and maintenance of the VXL segmented ball control valves, as necessary. Users and maintenance personnel should read this bulletin carefully before the installation, operation or servicing of the valve, actuator, positioner or any other accessory installed on the valve.

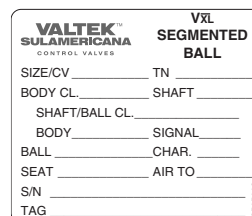


Figure 1 - Name Plate



WARNING

If it is necessary to store the products before field installation, Valtek Sulamericana recommends that valves be stored in dry, fresh, closed places. Do not store valves in places where relative humidity is higher than 85% or the room temperature is lower than 41°F or higher than 113°F (5 – 45°C). Environments containing excessive UV radiation, acid or alkaline mist or ozone sources must be avoided. Product storage in non-recommended places may void the manufacturer warranty.

1.2 - UNPACKING

- When removing the valve from its package, check the packing list or valve datasheet, comparing it with the received material. A specification sheet of the valve and assembled accessories is shipped inside each shipping container.
- When lifting the valve from shipping container, position the lifting straps properly in order to avoid damages to the valve tubings and accessories assembled in the valve. The VXL valves may be lifted by the lifting rings provided on the top of the actuators (only for sizes 25 and 50). In case there is no lifting ring provided, lift the valve using straps passing through to the yoke legs and the opposite body end.
- In case of damages during transport, immediately contact the shipper.
- In case of any problem, call your Valtek Sulamericana representative.

1.3 - IDENTIFICATION

All VXL valves have a stainless steel name plate (see Fig. 1). The name plate provides the following data:

- SIZE/CV: Valve size in inches / Rated Cv
- TN: Trim size
- BODY CL: Body rating (ANSI)
- SHAFT: Shaft material
- SHAFT/BALL CL: Shaft/ball rating
- SIGNAL: Instrument signal range
- BALL: Ball material
- CHAR: Flow characteristic
- SEAT: Seat material
- AIR TO: Air action (open/close)
- S/N: Serial number
- TAG: Customer identification



1.4 - SAFETY WARNINGS

To avoid potential injury and/or damage to the valve parts, WARNING and CAUTION notes must be strictly observed. Changing this product characteristics, using non-original spare parts or using maintenance procedures different from those presented herein may affect the performance of the valve, be hazardous to personnel and equipment and may void the manufacturer warranty.



WARNING

Standard industry safety practices must be applied when using this equipment. Industry safety standards for personal protection and for equipment handling must also be observed.



CAUTION

Removing the valve for maintenance: Piping must be completely depressu-

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rized and process fluid drained. In case of toxic, caustic or hazardous fluid services, the valve must be decontaminated to avoid accidents.



WARNING

It is the user responsibility the properly material selection of the fasteners necessary to install the valve in the process. User will take into account the material strength and its resistance to stress corrosion cracking. As with any mechanical equipment, periodic inspection and maintenance is required.

1.5 - INSTALLATION

- Before installing the valve, clean the piping to remove contaminants, scales and other foreign materials. Clean the flange gasket surfaces to assure that there is no leakage.

Table I: Piping Flange Bolting Specifications

Valve Size (in.)	ANSI Class	Studs Qty	Size (in./mm)	Torque* ft-lbs (Nm)	
				Low Strength	Intermed. Strength
1	150 300	4	1/2 M14	23 (30)	61 (82)
			5/8 M16	46 (62)	122 (165)
1.5	150 300	4	1/2 M14	23 (30)	61 (82)
			3/4 M20	82 (110)	218 (295)
2	150 300	8	5/8 M16	46 (62)	122 (165)
			5/8 M16	46 (62)	122 (165)
3	150 300	8	5/8 M16	46 (62)	122 (165)
			3/4 M20	82 (110)	218 (295)
4	150 300	8	5/8 M16	46 (62)	122 (165)
			3/4 M20	82 (110)	218 (295)
6	150 300	12	3/4 M20	82 (110)	218 (295)
			3/4 M20	82 (110)	218 (295)
8	150 300	12	3/4 M20	82 (110)	218 (295)
			7/8 M22	132 (180)	353 (480)

*Torque values are recommended for low and intermediate strength bolting according to ANSI B16.5 (paragraph 5.3.2). Higher torque can be applied to high strength bolting according to ANSI B16.5 (paragraph 5.3.1). In all cases, the user shall certify that the selected bolting have capacity to seat the gaskets under the specified operating conditions.

- Check the flow direction to assure that the valve is properly installed and aligned with piping. This alignment is very important to avoid fluid leakage.



CAUTION

When operating the valve, keep your hands, hair, clothes, etc. away from the ball and the seat. Failure to follow this warning may result in serious injury.

- Connect air supply and instrument signal (throttling control valves are generally equipped with positioners). The air ports are identified indicating the air supply and the instrument signal. The actuator can operate with air supply pressure up to 150 psi (10.3 Bar). Air filter is recommended, unless the supply air is clean and dry.

Note: Under special circumstances, the maximum air supply pressure must be limited to 80 or 100 psi depending on the actuator size and the positioner installed.



WARNING

For transport reasons, the air filter may be installed out of the vertical position. Before operating the valve, position the air filter pointing down.

- In order to obtain the proper sealing, apply the recommended torque values to the bolting that secure the valve to the piping flanges (see Table I).

1.6 - QUICK CHECK

Prior to start-up, check the control valve according to the following steps:



WARNING

Do not overtighten packing. This may cause excessive packing wear and increase the friction on the valve shaft, blocking its rotation.

- Check the full stroke making appropriate instrument signal change. Observe the valve position indicator located on the actuator transfer case. The valve ball must move smoothly, from its position.

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- Check all air connections for leaks. Tighten the packing nuts evenly with a torque slightly higher than the torque applied by fingers, adding 1/4 turn (only for PTFE).

After the valve is operating for a short period of time, check the packing nuts making sure they are just over finger-tight (retighten if necessary). If there is a leakage through the packing box, tighten the packing nuts just enough to avoid leakage through the valve shaft.

Note: in case of high temperature application, check and re-tighten bonnet, stationary post and packing fasteners after the temperature increment.

- Check the failsafe position in case of air supply lack. Position the valve in the middle of its stroke and shut off the air supply to the actuator or cut-off the instrument signal sent to positioner.

Observe the ball position indicator to confirm that the ball reaches the specified failsafe position. If specified failsafe position is not reached, refer to section "Reversing the Air Action".



WARNING

The V_{XL} valve shaft was not designed to withstand the full torque of the actuator. If the ball were seize and full torque continued, the shaft could twist and/or shear.

1.7 - PREVENTIVE MAINTENANCE

Check if the valve is working properly at least every six months following the preventive maintenance steps indicated below.

This sequence can be performed with the valve installed in the line and, in some cases, without disturbing operation. In case there is a potential problem inside the valve, refer to the section "Disassembly and Reassembly":

- Inspect signs of leakage in the body gaskets and in the piping flanges. Inspect the stationary post and valve bonnet checking if there is any leakage. Tighten flange bolting, if necessary.
- Observe if corrosive vapors or process fluid dripping is damaging the valve

- Clean valve and repaint areas of severe oxidation.
- Check tightness of the packing box nuts. Packing nuts must be tightened with a torque slightly over finger-tight; however, tighten just enough to avoid leakage through the valve shaft.
- If the valve is supplied with a lubricator, check the lubricant reservoir and add new lubricant, if necessary.
- If possible stroke the valve and, observing the ball position indicator, check if the valve travels its full stroke in a smooth and uniform way. An unsteady movement of the ball may indicate an internal problem of the valve (jerky motion is normal when graphite packing is used).
- Verify valve calibration, comparing the pressure indicated in the positioner gauges against the ball position indicator in the actuator. Make sure that the positioner is calibrated within the correct range. Refer to the positioner instructions for information about preventive maintenance.
- If possible, depressurize the actuator, remove actuator transfer case cover and make sure that the mechanical linkage with the positioner is connected in a safe way.



CAUTION

Never pressurize the actuator with the transfer case cover uninstalled. If this happens, unsupported shaft may cause damages.

- Make sure all accessories, brackets and bolts are properly tightened.
- If possible, shutoff air supply and observe on the ball position indicator if the specified failsafe position is reached.
- Apply a soap solution around the cylinder retaining ring and the adjusting screw to check if there are air leaks through the O-rings and gasket.
- Remove any contaminant or other foreign material from the exposed areas of the valve shaft.
- If an air filter is supplied, check and replace cartridge if necessary.

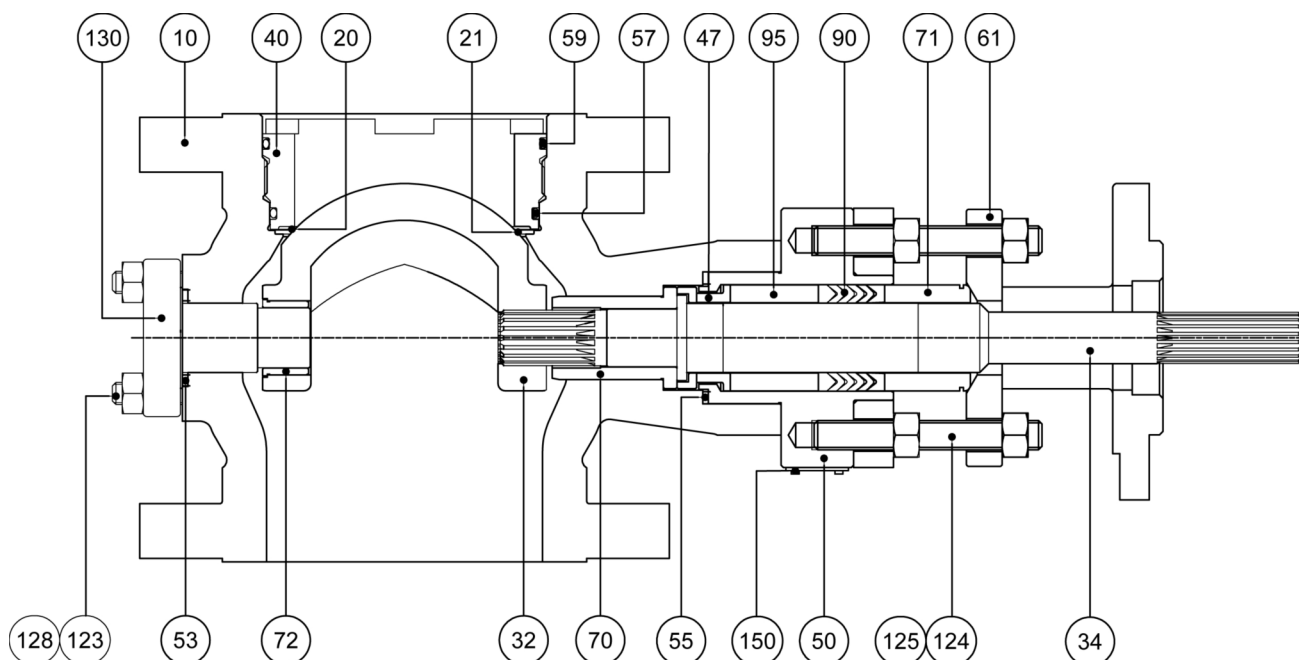


Figure 2: VxL Valve Body Sub-Assembly

DISASSEMBLY AND REASSEMBLY

1.8 - DISASSEMBLING THE BODY

For disassembling the VxL valve, refer to Figures 2, 3 and 4 and proceed as follows:

- Once the valve is removed from piping, hold the actuator by the lifting ring (or by the cylinder and yoke legs) before removing it from the valve assembly.
- With the valve over a workbench and keeping the actuator securely supported, loose the actuator adjusting screw to release spring pressure.
- Remove the transfer case cover bolts. Gently slide the cover from the end of the shaft.
- Loose the locking device of the actuator splined lever arm (if applicable).
- Remove the gland flange (Fig. 3).
- Remove the actuator from the valve body. This is done removing the yoke nuts and sliding the complete actuator off the valve shaft (Fig. 4). It is not necessary to remove the studs that secure the yoke.
- Remove the bonnet bolting.
- At this stage it is already possible to remove the

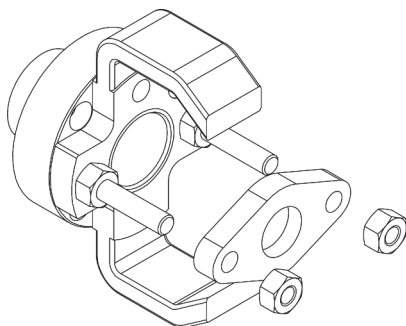


Figure 3

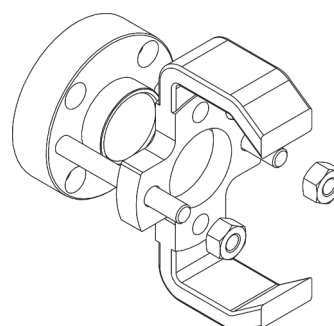
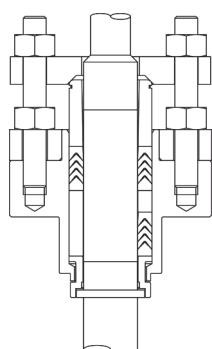
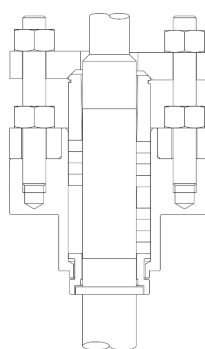


Figure 4

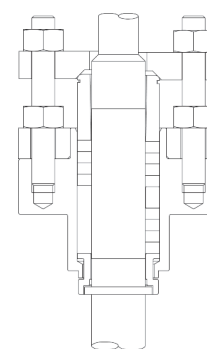
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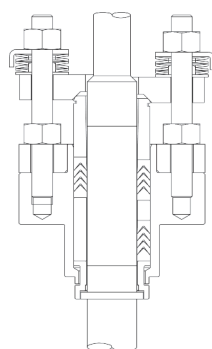
PTFE V-Rings
Standard – Twin



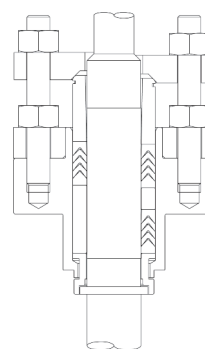
Braided PTFE
Standard – Twin



Graphite
Standard – Twin



PT
Standard – Twin



PTG
Standard – Twin

Figure 5 - VxL Typical Packing Configurations

bonnet, bonnet gasket, shaft and the components inside the packing box. These items will slide out from the bonnet bore as a single assembly, which will come apart as the shaft is removed.

At this point of disassembly, the valve ball, supported only by the stationary post, still remains inside the valve. Special care must be taken to avoid the ball drop in the bottom of valve body and be damaged.

- Remove stationary post nuts and carefully pull the assembly out of the body bore. It is not necessary to remove the post studs that are secured to the body. Special care must be taken to avoid damaging the ball that, after this operation, will become loose inside the body.
- Remove the ball from the body.
- Clean completely the bearings and all sealing surfaces.

1.9 - REASSEMBLING THE BODY

To reassemble the VxL valve body (except the seat), refer to figures 2, 3, 4 and 5 and proceed as follows:

- Position the valve in a vise securing it in the vertical position.
- When reassembling the valve, use new gaskets and packing set.
- Clean completely the shaft, the bonnet bore and the body gasket surfaces (before reassembling it is important to remove any contamination from these sealing surfaces).
- Make sure that all bearing surfaces have been cleaned.
- The stationary post bearing is pressed into the ball; lubricating these components will make the assembly easier.
- Lower and position the ball in the body, with the splined hole side first, towards the body back

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side. Rotate the ball surface to the front side of the body so that the splined hole is positioned toward the packing box.



WARNING

Special care must be taken to avoid scratching or damaging the ball sealing surface during the assembly and disassembly. Any scratch may cause excessive leakage and trim wear.

- Position the stationary post gasket and introduce the stationary post into the body flanged orifice. As the stationary post is being inserted into the body, position the ball so that the smaller diameter tip of the stationary post fits into the bearing pressed into the ball.
- Install the stationary post studs (if applicable) and nuts. Tighten the nuts evenly to finger-tight.
- Install the shaft bearing, positioning it on the limiting shoulder of the body (See Figure 2).
- Slide the thrust bearing through the shaft until it touches the shaft shoulder.
- Gently insert the shaft into the body, positioning it on the ball splines.
- Position the spacers, the packing set and the packing follower in the bonnet as illustrated in Figures 2 and 5.

- Position the bonnet gasket. Then, push the bonnet carefully into its place on the body.
- Install the bonnet bolts and the yoke/packing studs. Tighten these bolts/studs evenly to finger-tight.
- Apply torque to the bonnet bolts and to the stationary post nuts, according to values indicated in Table II.
- Install the actuator as indicated in the section

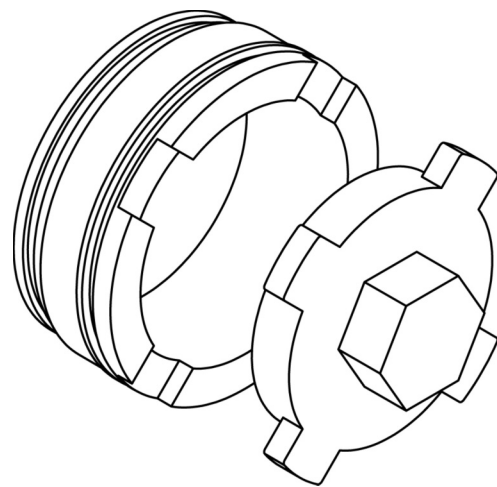


Figure 6: Seat Retainer Tool

Table II: Stud Torque Values

Valve Size (in.)	Bolting Material			
	ASTM 193 - B8		ASTM 193 - B8 Class 2	
	Ft-lbs	Nm	Ft-lbs	Nm
1	10	13.5	7.5	10
1.5 - 2	10	13.5	7.5	10
3 - 4	35	47	27	36.5
6 - 8	46	62	35.5	47.8

Table III: Retainer Tools/ Torque Values

Valve Size (in.)	Retainer tool (Part Number)	Retainer torque values		
		Ft-lbs	Nm	Kgfm
1	2244010	150/175	203/237	21/24
1.5	2244012	150/175	203/237	21/24
2	2244014	150/175	203/237	21/24
3	2244016	250/300	339/406	34/42
4	2244018	550/600	746/813	76/83
6	2244020	550/600	746/813	76/83
8	2244022	650/700	882/949	90/97

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"Reassembling the Actuator". Do not forget to position the gland flange properly once the actuator yoke starts to pass through the shaft tip.

- Check if packing follower and gland flange are correctly positioned. Then, tighten the packing nuts uniformly to slightly over finger-tight.
- Install the seat as indicated in the section "Seat Replacement".
- Install the valve in the piping as indicated in the section "Installation".

1.10 - SEAT REPLACEMENT

To reinstall the VxL valve seat, see Figures 2, 6 and 7 and proceed as follows:

- Place the valve over a flat surface, with the body threaded side (retainer side) upwards.
- Loosen the retainer, turning it counterclockwise and remove it from body (a special tool may be purchased for this purpose, see Figure 6). Remove the metal seat(s) and, if applicable, remove also the soft seat.
- Make sure the ball sealing surface is turned upwards and that the ball centering in relation to the inside diameter of the body is the best possible (the connection between the ball and the shaft is not a tight connection; valve design includes a play between the ball and shaft).
- Replace the soft seat and/or the metal seats as

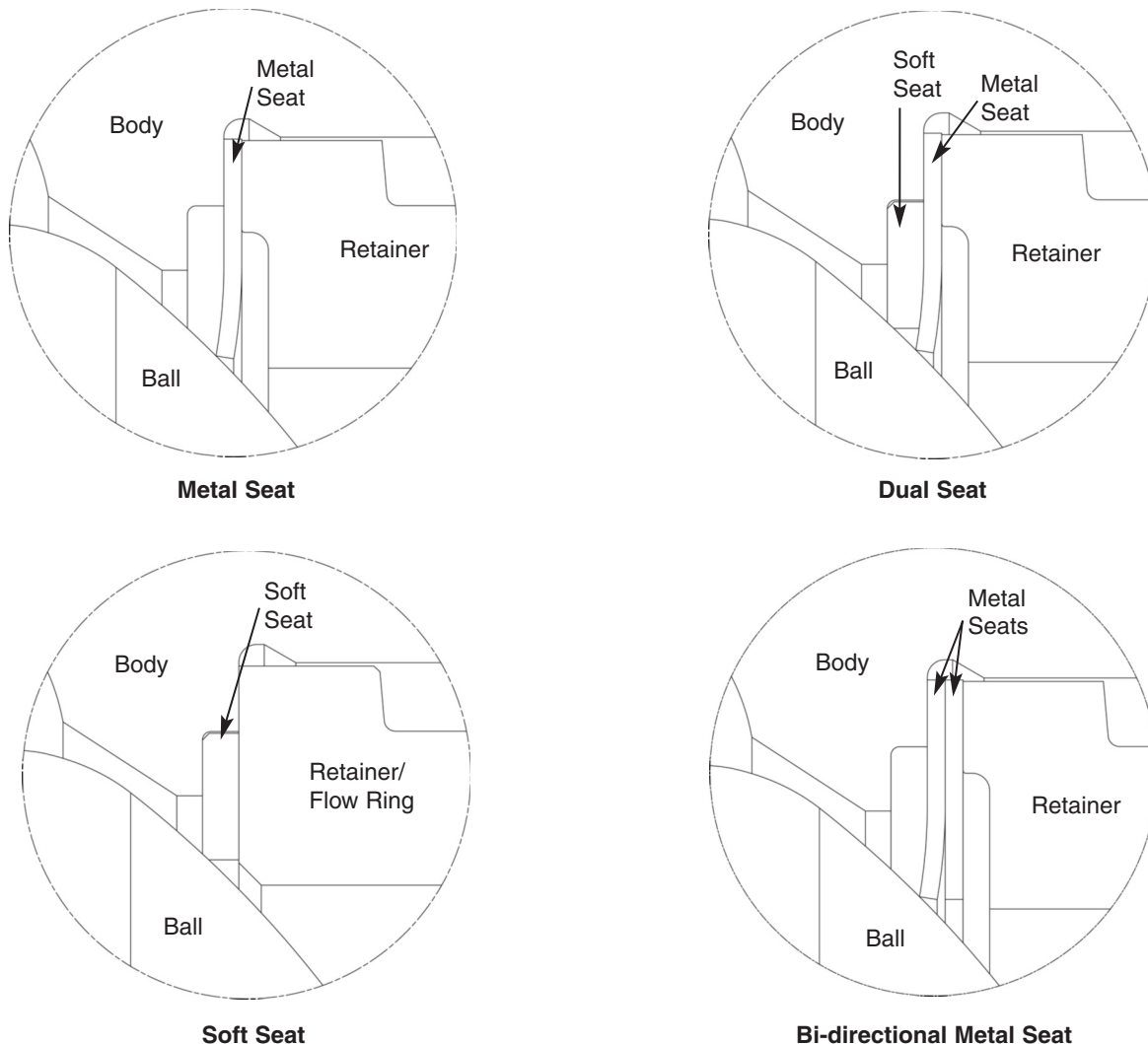


Figure 7 - VxL Valve Seat Configurations

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indicated for the specific application (see Figure 7).

For soft sealed versions, insert the polymer seat into the body, followed by the metal seat (there is no metal seat for 1" and 1-1/2" valves).

For metal sealed versions, insert the metal seat(s) into the body (there is only one metal seat for 1" and 1-1/2" valves).

- Remove used O-rings and clean the retainer, removing fluid and lubricant residues from the threaded areas (high temperature valves do not use O-rings). Assemble new O-rings on the retainer. Lubricate the threads and the retainer O-rings and reassemble them in the front side of the body, applying the torque recommended in table III.
- After the seat retainer is tightened, tighten the packing nuts uniformly to slightly over finger-tight. Packing nuts must be tightened just enough to avoid leakage through the shaft.



WARNING

Do not overtighten packing. This may cause excessive packing wear and increase the friction on the valve shaft, blocking its rotation.

1.11 - REASSEMBLING THE ACTUATOR

Before coupling a VXL valve to a rotary actuator, verify if the ball rotation is compatible with the actuator rotation and if the ball position complies with the required failsafe position. To assemble the actuator, follow the procedure below:

- Pass the actuator yoke through the shaft tip, position the gland flange properly and align the yoke holes with the yoke studs assembled on valve bonnet. To assure a complete rotation of the ball, the mark existing in the shaft end must be aligned as illustrated in Figure 8.
- Bolt the yoke to the valve bonnet.
- Position the actuator lever arm on the shaft so the actuator stem remains centered in the transfer case. For those versions equipped with locking device, firmly tighten the locking device bolt.

- Assemble the transfer case cover, making sure that the position indicator is correctly positioned in order to precisely indicate the valve rotation.



CAUTION

Never pressurize the actuator with the transfer case cover uninstalled. If this happens, unsupported shaft may cause damages.

- Adjust the actuator stroke stop bolts until the ball is properly seated.
- The actuator stroke stop bolts must be properly adjusted to prevent the ball from overstroking.
- Certify that the packing follower is in the correct position. Then, assemble the gland flange and tighten the packing nuts uniformly to slightly over finger-tight.
- If the valve is supplied with positioners and/or accessories as limit switches and solenoids, verify if these items are connected to the actuator in a safe and secure way. Check if it is required to adjust or to calibrate the accessories assembled in the valve prior to release the valve for operation.
- If an air filter is supplied, check and replace cartridge if necessary. Check also if the air filter is pointing down.
- Install the valve in the piping as indicated in the section "Installation".

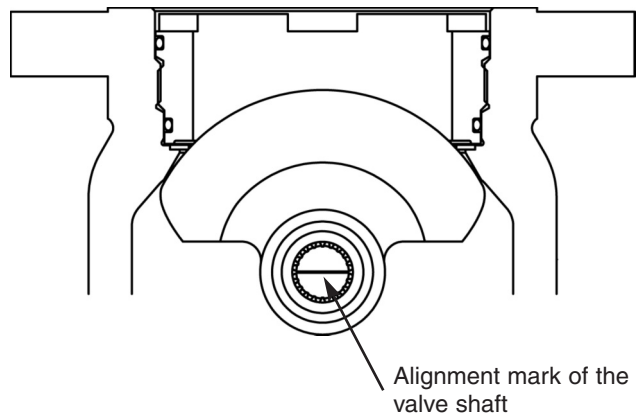


Figure 8: Shaft Alignment

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1.12 - V $\overline{\text{X}}$ L Valve Troubleshooting Chart

Problem	Probable Cause	Corrective Action
Valve moves to failsafe position, there is excessive air bleeding from transfer case	<ul style="list-style-type: none"> • Failure of actuator O-ring • Failure of actuator sliding seal assembly 	<ul style="list-style-type: none"> • Replace actuator stem O-ring • Repair or replace sliding seal assembly
Jerky shaft rotation movement	<ul style="list-style-type: none"> • Overtightened Packing • Lever arm improperly adjusted • Cylinder wall with no lubricant • Worn piston O-ring, allowing piston rub against the cylinder wall • Worn actuator stem O-ring, making the actuator stem rub against the sliding collar • Packing follower, thrust bearings, shaft/post bearings worn (or damaged) 	<ul style="list-style-type: none"> • Tighten packing nuts to slightly over finger-tight for V-ring packings. For braided PTFE, the usual torque is 14 ft-lbs (19 Nm) • Refer to "Reassembling the Actuator" section • Lubricate cylinder inner wall with the proper grease • Replace O-ring; If galling has occurred, replace the damaged parts • Replace O-ring; if actuator stem is galled, replace it • Disassemble the valve and check these parts. Replace all worn or damaged parts
Excessive leakage through the valve seat	<ul style="list-style-type: none"> • Incorrect adjustment of the stroke stop bolts • Seat incorrectly adjusted • Worn or damaged seat • Damaged ball seating surface. • Incorrect adjustment of the manual hand-wheel, which actuates as limit stop 	<ul style="list-style-type: none"> • Refer to "Reassembling the Actuator" section • Refer to the "Seat Replacement" section • Replace seat • Replace ball • Adjust handwheel until ball seats correctly
Leakage through piping flanges	<ul style="list-style-type: none"> • Gasket seating surfaces are dirty • Incorrect tightening of flange bolting • Misalignment of flanges or piping 	<ul style="list-style-type: none"> • Clean gasket surfaces and reinstall the valve • Tighten flange bolting in a uniform way, using the proper torque (Refer to Table I) • Verify flanges and piping and correct the misalignment
Leakage through packing box	<ul style="list-style-type: none"> • Loose packing nuts • Worn or damaged packing • Packing dirty or corroded 	<ul style="list-style-type: none"> • Tighten packing nuts to slightly over finger-tight for V-ring packings. For braided PTFE, the usual torque is 14 ft-lbs (19 Nm) • Replace packing • Clean bonnet bore. If necessary, replace packing
Valve slams, does not open or causes severe water hammer	<ul style="list-style-type: none"> • Valve installed incorrectly 	<ul style="list-style-type: none"> • Refer to the step 2 in "Installation" section and correct flow direction
Shaft rotates, but ball remains in the same position	<ul style="list-style-type: none"> • Shaft broken 	<ul style="list-style-type: none"> • Replace shaft
The actuator operates, but the shaft does not rotate	<ul style="list-style-type: none"> • Internal parts of the actuator broken 	<ul style="list-style-type: none"> • Refer to actuator IOM
Leakage through bonnet or stationary post gaskets	<ul style="list-style-type: none"> • Loosen bolting or damaged gaskets 	<ul style="list-style-type: none"> • Clean gasket seating surfaces, replace gaskets and tighten the bolting as indicated in Table II

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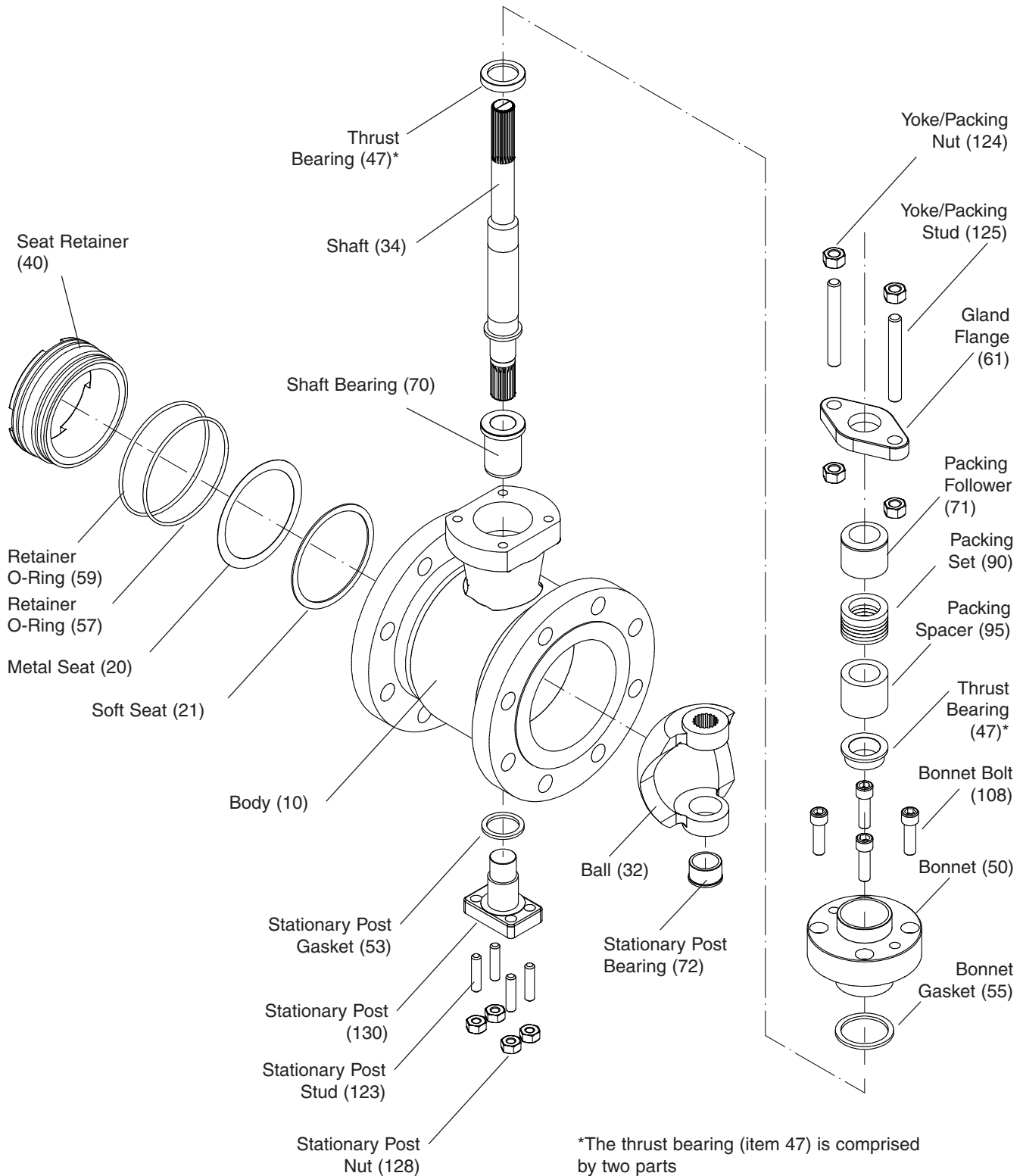


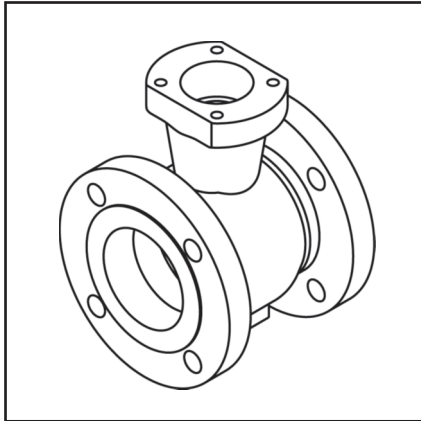
Figure 9 – VXL Exploded Body Sub-Assembly

¹ Item numbers above correspond directly to the valve's bill of material.

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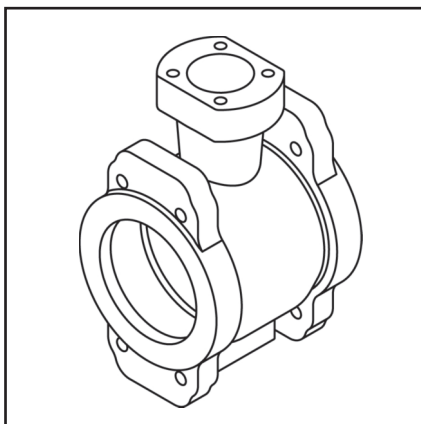
1.13 - SPARE PARTS LIST

ITEM 10 - BODY, FLANGED ENDS, 125-250 Ra SPIRAL GROOVES



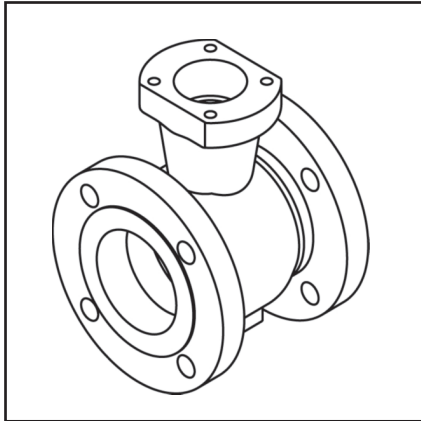
Valve Size (in.)	ANSI Class	Part Number
1	150	9510010
	300	9510011
1.5	150	9510020
	300	9510021
2	150	9510030
	300	9510031
3	150	9510040
	300	9510041
4	150	9510050
	300	9510051
6	150	9510060
	300	9510061
8	150	9510070
	300	9510071

ITEM 10 - BODY, FLANGELESS, 125-250 Ra SPIRAL GROOVES



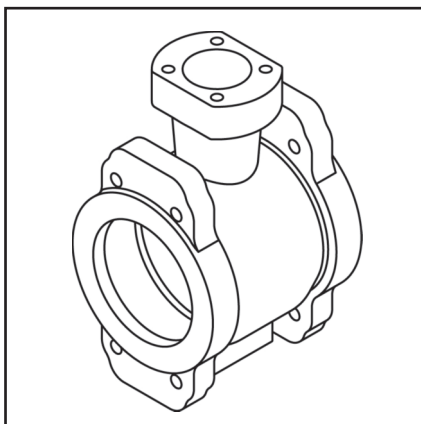
Valve Size (in.)	ANSI Class	Part Number
1	150	9510012
	300	9510012
1.5	150	9510022
	300	9510022
2	150	9510032
	300	9510033
3	150	9510042
	300	9510043
4	150	9510052
	300	9510052
6	150	9510062
	300	9510063
8	150	9510072
	300	9510073

ITEM 10 - BODY, FLANGED ENDS, 250-500 Ra SPIRAL GROOVES



Valve Size (in.)	ANSI Class	Part Number
1	150	9510110
	300	9510111
1.5	150	9510120
	300	9510121
2	150	9510130
	300	9510131
3	150	9510140
	300	9510141
4	150	9510150
	300	9510151
6	150	9510160
	300	9510161
8	150	9510170
	300	9510171

ITEM 10 - BODY, FLANGELESS, 250-500 Ra SPIRAL GROOVES



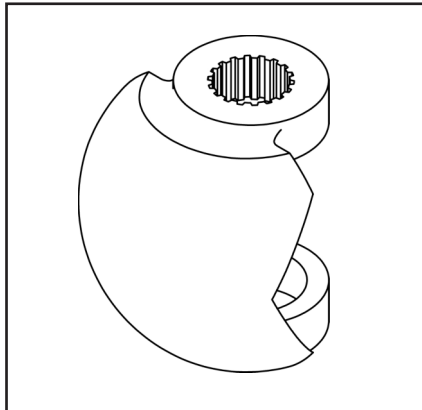
Valve Size (in.)	ANSI Class	Part Number
1	150	9510112
	300	9510112
1.5	150	9510122
	300	9510122
2	150	9510132
	300	9510133
3	150	9510142
	300	9510143
4	150	9510152
	300	9510152
6	150	9510162
	300	9510163
8	150	9510172
	300	9510173

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ITEM 20/ 21/ 27 – KIT, SEAT

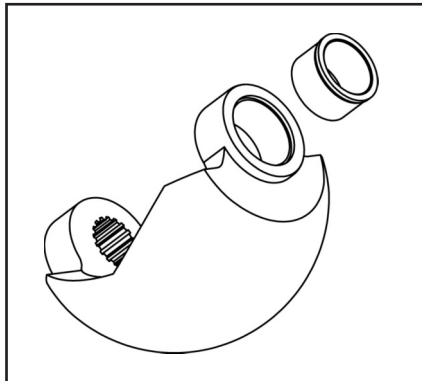
Valve Size (in.)	Kit item 20	Metal Seat	Kit item 20	Bi-directional Metal Seat	Kit item 21	Soft Seat	Kit item 27	Dual Seat (Single)	Kit item 27	Dual Seat (Double)
	One Metal Seat		Two Metal Seats		One Soft Seat		One Soft Seat and one Metal Seat		One Soft Seat and two Metal Seats	
	Part Number		Part Number		Part Number		Part Number		Part Number	
1	4020010		Not available		4021010		Not available		Not available	
1.5	4020020		Not available		4021020		Not available		Not available	
2	4020030		4020032		4021030		4027030		4027032	
3	4020040		4020042		4021040		4027040		4027042	
4	4020050		4020052		4021050		4027050		4027052	
6	4020060		4020062		4021060		4027060		4027062	
8	4020070		4020072		4021070		4027070		4027072	

ITEM 32 - BALL



Valve Size (in.)	Part Number
1	4032010
1.5	4032020
2	4032030
3	9532040
4	9532050
6	9532060
8	9532070

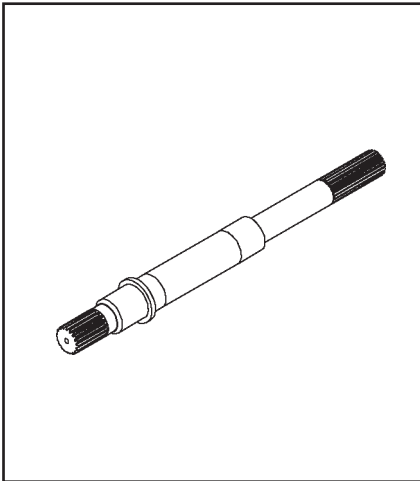
ITEM 33/72 – KIT, BALL & STATIONARY POST BEARING



Valve Size (in.)	Part Number		
	Materials		
	317 SS/MBT	317 SS/Ultimet	Alloy #6/Ultimet
1	9532511	9532512	9532513
1.5	9532521	9532522	9532523
2	9532531	9532532	9532533
3	9532541	9532542	9532543
4	9532551	9532552	9532553
6	9532561	9532562	9532563
8	9532571	9532572	9532573

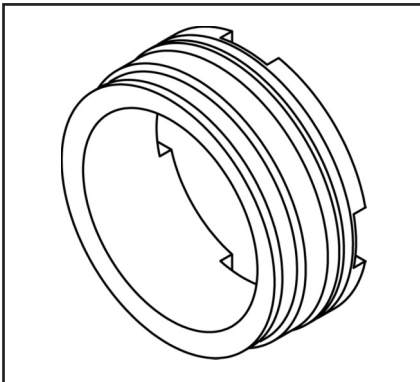
Installation, Operation and Maintenance Instructions

ITEM 34 – SHAFT



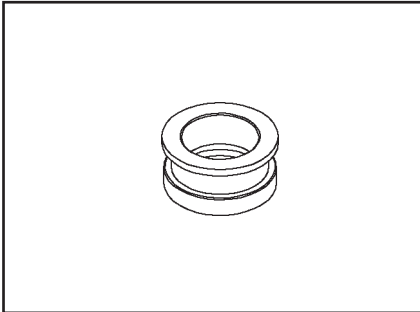
Valve Size (in.)	Actuator Size	Part Number
1	25	9134010
1.5	25	9134020
2	25	9134020
3	25	9134032
	50	9134032
4	25	9134032
	50	9134032
6	50	9134040
	100	9134041
8	50	9134040
	100	9134041

ITEM 40 – SEAT RETAINER



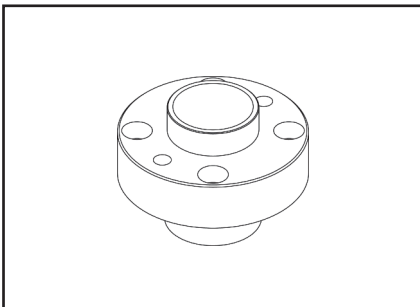
Valve Size (in.)	Part Number	
	All seats, except soft seat	Soft Seat
1	4040010	4040011
1.5	4040020	4040021
2	4040030	4040030
3	4040040	4040040
4	4040052	4040052
6	4040060	4040060
8	4040070	4040070

ITEM 47 – KIT, THRUST BEARING



Valve Size (in.)	Carbon Steel Body	Stainless Steel Body
	Part Number	Part Number
1	9147010	9147011
1.5 & 2	9147020	9147021
3 & 4	9147030	9147031
6 & 8	9147040	9147041

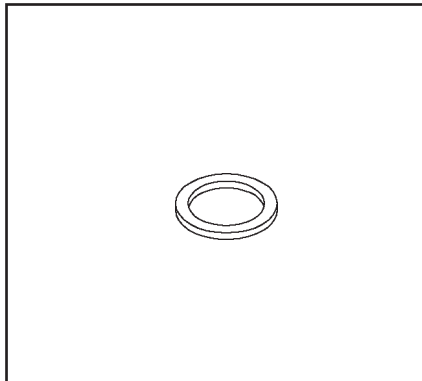
ITEM 50 – BONNET



Valve Size (in.)	Part Number
1	9150010
1.5 & 2	9150020
3 & 4	9150030
6 & 8	9150040

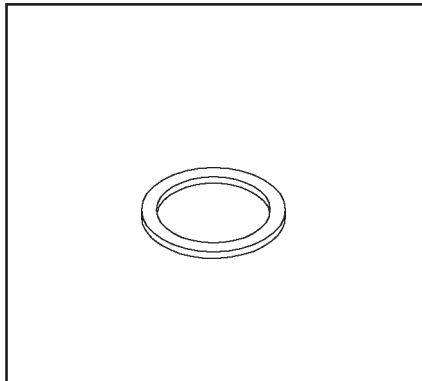
Installation, Operation and Maintenance Instructions

ITEM 53 – STATIONARY POST GASKET



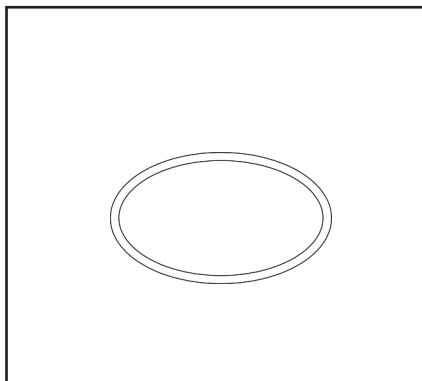
Valve Size (in.)	Part Number	
	Materials	
	PTFE	316 SS / Graphite
1	9153010	9153011
1.5 & 2	9153020	9153021
3 & 4	9153030	9153031
6 & 8	9153040	9153041

ITEM 55 – BONNET GASKET



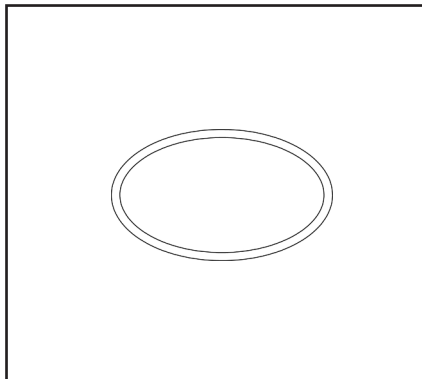
Valve Size (in.)	Part Number	
	Materials	
	PTFE	316 SS / Graphite
1	9155020	9155021
1.5 & 2	9155020	9155021
3 & 4	9155030	9155031
6 & 8	9155040	9155041

ITEM 57 – RETAINER O-RING



Valve Size (in.)	Part Number
1	N/A
1.5	N/A
2	N/A
3	9950160
4	9950169
6	9950180
8	9950186

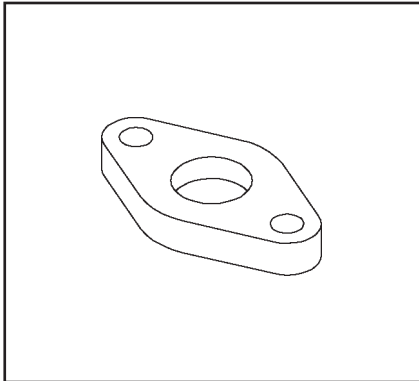
ITEM 59 – RETAINER O-RING



Valve Size (in.)	Part Number
1	N/A
1.5	9950075
2	9950076
3	9950162
4	9950171
6	9950182
8	9950189

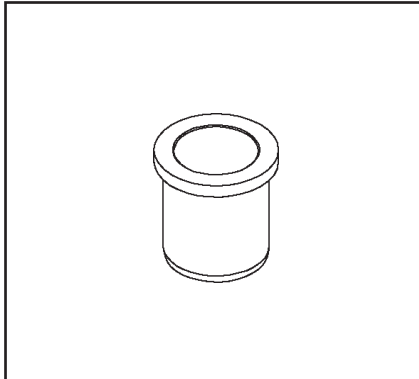
Installation, Operation and Maintenance Instructions

ITEM 61 – GLAND FLANGE



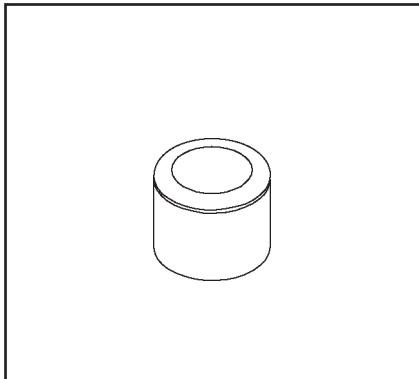
Valve Size (in.)	Part Number
1	9161010
1.5 & 2	9161020
3 & 4	9161030
6 & 8	9161040

ITEM 70 – SHAFT BEARING



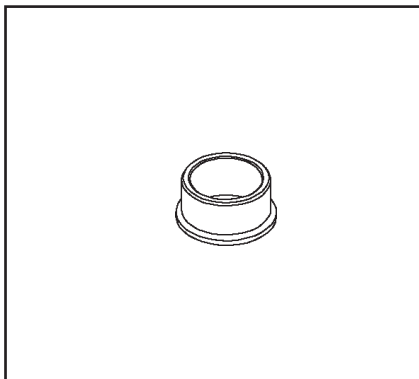
Valve Size (in.)	Part Number	
	MBT	Ultimet
1	9570011	9570010
1.5 & 2	9570021	9570020
3 & 4	9570031	9570030
6 & 8	9570041	9570040

ITEM 71 – PACKING FOLLOWER



Valve Size (in.)	Part Number
1	9171010
1.5 & 2	9171020
3 & 4	9171030
6 & 8	9171040

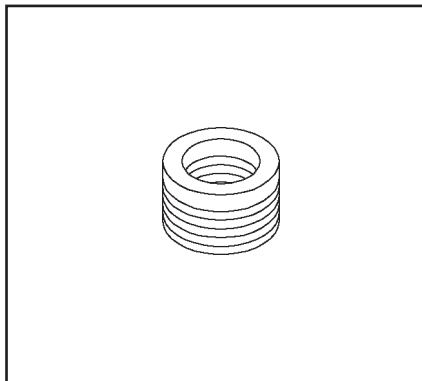
ITEM 72 – STATIONARY POST BEARING



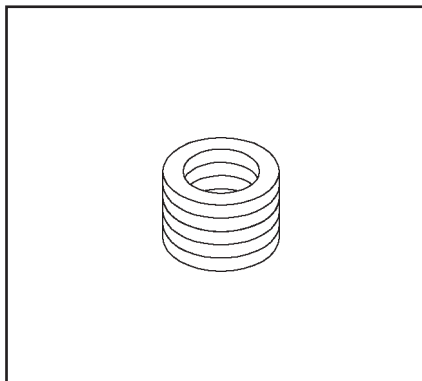
Valve Size (in.)	Part Number	
	MBT	Ultimet
1	4072011	4072010
1.5 & 2	4072021	4072020
3	9572031	9572030
4	9572041	9572040
6 & 8	9572051	9572050

Installation, Operation and Maintenance Instructions

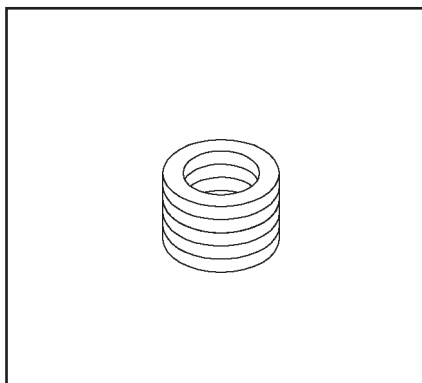
ITEM 90 – PACKING SET



Valve Size (in.)	Part Number			
	PTFE V-Rings Standard	PTFE V-Rings Twin	Braided PTFE Standard	Braided PTFE Twin
1	9190010	9190011	9191010	9191011
1.5 & 2	9190020	9190021	9191020	9191021
3 & 4	9090030	9090031	9091030	9091031
6 & 8	9090040	9090041	9091040	9091041

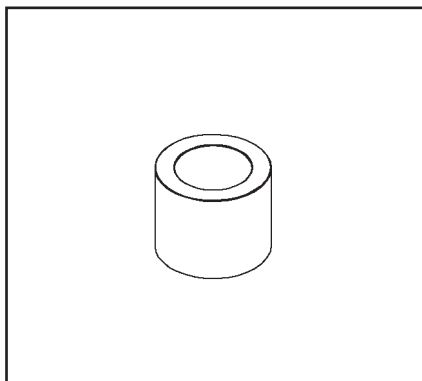


Valve Size (in.)	Part Number			
	Graphite Standard	Graphite Twin	PT Standard	PT Twin
1	9191012	9191013	9192010	9192011
1.5 & 2	9191022	9191023	9192020	9192021
3 & 4	9091032	9091033	9092030	9092031
6 & 8	9091042	9091043	9092040	9092041



Valve Size (in.)	Part Number			
	PTG Standard	PTG Twin	PTG XT Standard	PTG XT Twin
1	9193010	9193011	9193012	9193013
1.5 & 2	9193020	9193021	9193022	9193023
3 & 4	9093030	9093031	9093032	9093033
6 & 8	9093040	9093041	9093042	9093043

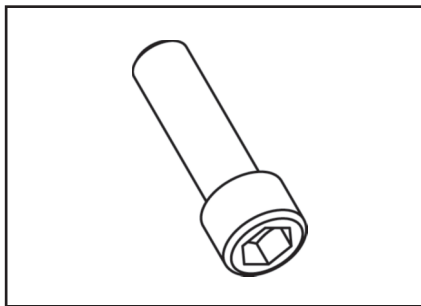
ITEM 95 – PACKING SPACER



Valve Size (in.)	Part Number			
	Standard V-Rings	Twin V-Rings	Standard Square Rings	Twin Square Rings
1	9195010	9195011	9195010	9195011
1.5 & 2	9195020	9195021	9195020	9195021
3 & 4	9195030	9195031	9195030	9195031
6 & 8	9195040	9195041	9195042	9195043

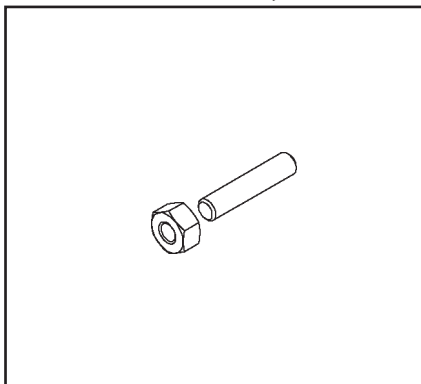
Installation, Operation and Maintenance Instructions

ITEM 108 – KIT, BONNET BOLTING



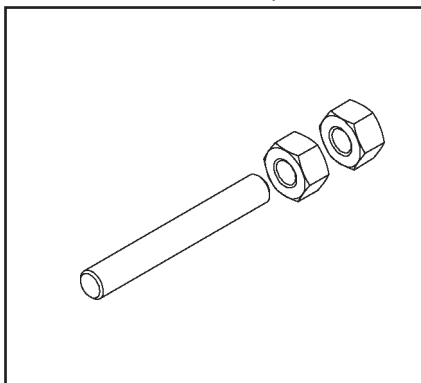
Valve Size (in.)	Part Number
1	9110810
1.5 & 2	9110820
3 & 4	9110830
6 & 8	9110840

ITEM 123/128 – KIT, STATIONARY POST STUDS & NUTS



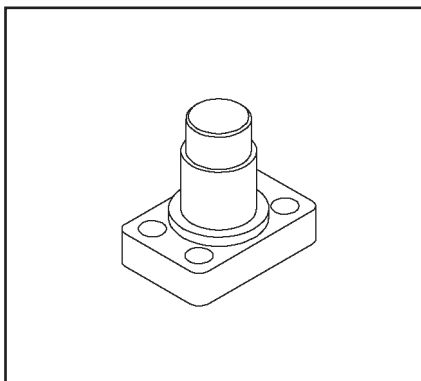
Valve Size (in.)	Part Number
1, 1.5 & 2	9012320
3 & 4	9012330
6 & 8	9012340

ITEM 125/124 – KIT, YOKE / PACKING STUDS & NUTS



Valve Size (in.)	Part Number
1, 1.5 & 2	9112520
3 & 4	9112530
6 & 8	9112540


ITEM 130 – STATIONARY POST



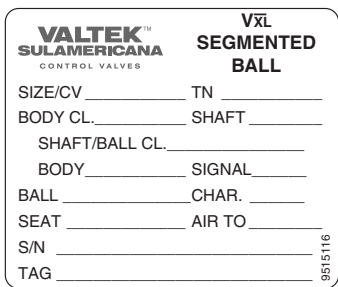
Valve Size (in.)	Part Number
1	9513010
1.5 & 2	9513020
3 & 4	9513030
6 & 8	9513040

Installation, Operation and Maintenance Instructions

ITEM 150 – PLATE, FLOW ARROW

	Valve Size (in.)	Part Number
	1 - 8	9015012

ITEM 151 - NAME PLATE

	Valve Size (in.)	Part Number
	1 - 8	9515116

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