

## W70 Series Mix Proof Valves

W71, W72RS, W72RSP, W73 (IN O.D. TUBING SIZES)

FORM NO.: 95-03087

REVISION: 10/2023

READ AND UNDERSTAND THIS MANUAL PRIOR TO OPERATING OR SERVICING THIS PRODUCT.





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[www.spxflow.com/en/assets/pdf/95-03087\\_w70mixproofv\\_wcb.pdf](http://www.spxflow.com/en/assets/pdf/95-03087_w70mixproofv_wcb.pdf)

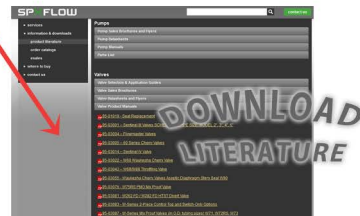
This interactive manual incorporates links to maintenance videos designated by this symbol



throughout the maintenance section of the manual, to help you better service your valve.

An internet connection is required for the video hyperlinks to be active.

This enhanced operation and maintenance manual shows you step by step videos on how to maintain your Waukesha Cherry-Burrell brand product. Creating these new tools shows our commitment to provide you with the most up-to-date maintenance technology available.



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## Warranty

LIMITED WARRANTY: Unless otherwise mutually agreed to in writing, (a) SPX FLOW US, LLC (SPX FLOW) goods, auxiliaries and parts thereof are warranted to the Buyer against defective workmanship and material for a period of twelve (12) months from date of installation or eighteen (18) months from date of delivery, whichever expires first, and (b) SPX FLOW services are warranted to Buyer to have been performed in a workman-like manner for a period of ninety (90) days from the date of performance. If the goods or services do not conform to the warranty stated above, then as Buyer's sole remedy, SPX FLOW shall, at SPX FLOW's option, either repair or replace the defective goods or re-perform defective services. If Buyer makes a warranty claim to SPX FLOW and no actual defect is subsequently found, Buyer shall reimburse SPX FLOW for all reasonable costs which SPX FLOW incurs in connection with the alleged defect. Third party goods furnished by SPX FLOW will be repaired or replaced as Buyer's sole remedy, but only to the extent provided in and honored by the original manufacturer's warranty. Unless otherwise agreed to in writing, SPX FLOW shall not be liable for breach of warranty or otherwise in any manner whatsoever for: (i) normal wear and tear; (ii) corrosion, abrasion or erosion; (iii) any good or services which, following delivery or performance by SPX FLOW, has been subjected to accident, abuse, misapplication, improper repair, alteration (including modifications or repairs by Buyer, the end customer or third parties other than SPX FLOW), improper installation or maintenance, neglect, or excessive operating conditions; (iv) defects resulting from Buyer's specifications or designs or those of Buyer's contractors or subcontractors other than SPX FLOW; or (v) defects resulting from the manufacture, distribution, promotion or sale of Buyer's products; (vi) damage resulting from the combination, operation or use with equipment, products, hardware, software, firmware, systems or data not provided by SPX FLOW, if such damage or harm would have been avoided in the absence of such combination, operation or use; or (vii) Buyer's use of the goods in any manner inconsistent with SPX FLOW's written materials regarding the use of such product. In addition, the foregoing warranty shall not include any labor, dismantling, re-installation, transportation or access costs, or other expense associated with the repair or replacement of SPX FLOW goods. THE WARRANTIES CONTAINED HEREIN ARE THE SOLE AND EXCLUSIVE WARRANTIES AVAILABLE TO BUYER AND SPX FLOW HEREBY DISCLAIMS ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ANY PERFORMANCE OR PROCESS OUTCOME DESIRED BY THE BUYER AND NOT SPECIFICALLY AGREED TO BY SPX FLOW. THE FOREGOING REPAIR, REPLACEMENT AND REPERFORMANCE OBLIGATIONS STATE SPX FLOW'S ENTIRE AND EXCLUSIVE LIABILITY AND BUYER'S EXCLUSIVE REMEDY FOR ANY CLAIM IN CONNECTION WITH THE SALE AND FURNISHING OF SERVICES, GOODS OR PARTS, THEIR DESIGN, SUITABILITY FOR USE, INSTALLATION OR OPERATIONS.

## Shipping Damage or Loss

If equipment is damaged or lost in transit, file a claim at once with the delivering carrier. The carrier has a signed Bill of Lading acknowledging that the shipment has been received from SPX FLOW in good condition. SPX FLOW is not responsible for the collection of claims or replacement of materials due to transit shortage or damages.

## Warranty Claim

Warranty claims must have a **Returned Material Authorization (RMA)** from the Seller or returns will not be accepted. Contact 800-252-5200 or 262-728-1900.

Claims for shortages or other errors must be made in writing to Seller within ten (10) days after delivery. This does not include transit shortage or damages. Failure to give such notice shall constitute acceptance and waiver of all such claims by Buyer.

## Safety

### READ AND UNDERSTAND THIS MANUAL PRIOR TO INSTALLING, OPERATING, OR SERVICING THIS EQUIPMENT

SPX FLOW recommends users of our equipment and designs follow the latest Industrial Safety Standards. At a minimum, these should include the industrial safety requirements established by:

1. Occupational Safety and Health Administration (OSHA)
2. National Fire Protection Association (NFPA)
3. National Electrical Code (NEC)
4. American National Standards Institute (ANSI)

#### **WARNING**

*Severe injury or death can result from electrical shock, burn, or unintended actuation of equipment. Recommended practice is to disconnect and lockout industrial equipment from power sources, and release stored energy, if present. Refer to the National Fire Protection Association Standard No. NFPA70E, Part II and (as applicable) OSHA rules for Control of Hazardous Energy Sources (Lockout-Tagout) and OSHA Electrical Safety Related Work Practices, including procedural requirements for:*

- Lockout-tagout
- Personnel qualifications and training requirements
- When it is not feasible to de-energize and lockout-tagout electrical circuits and equipment before working on or near exposed circuit parts

Before putting SPXFLOW equipment into operation, the operator shall analyze the application for all foreseeable risks, their likelihood to occur and the potential consequences of the identified risks as per ISO 31000 and ISO/IEC 31010 in their actual current version.

**Locking and Interlocking Devices:** These devices should be checked for proper working condition and capability of performing their intended functions. Make replacements only with the original equipment manufacturer's OEM renewal parts or kits. Adjust or repair in accordance with the manufacturer's instructions.

**Periodic Inspection:** Equipment should be inspected periodically. Inspection intervals should be based on environmental and operating conditions and adjusted as indicated by experience. At a minimum, an initial inspection within 3 to 4 months after installation is recommended. Inspection of the electrical control systems should meet the recommendations as specified in the National Electrical Manufacturers Association (NEMA) Standard No. ICS 1.3, Preventative Maintenance of Industrial Control and Systems Equipment, for the general guidelines for setting-up a periodic maintenance program.

**Replacement Equipment:** Use only replacement parts and devices recommended by the manufacturer to maintain the integrity of the equipment. Make sure the parts are properly matched to the equipment series, model, serial number, and revision level of the equipment.

Warnings and cautions are provided in this manual to help avoid serious injury and/or possible damage to equipment:

#### **DANGER**

*Immediate hazards which WILL result in severe personal injury or death.*

#### **WARNING**

*Hazards or unsafe practices which COULD result in severe personal injury or death.*

#### **CAUTION**

*Hazards or unsafe practices which COULD result in minor personal injury or product or property damage.*

## Care of Component Materials

**NOTE:** SPX FLOW recommends the use of an FDA-approved anti-seize compound on all threaded connections.

### WARNING

*Failure to comply with the Care of Component Materials could lead to bodily injury.*

### Stainless Steel Corrosion

Corrosion resistance is greatest when a layer of oxide film is formed on the surface of stainless steel. If film is disturbed or destroyed, stainless steel becomes much less resistant to corrosion and may rust, pit or crack.

Corrosion pitting, rusting and stress cracks may occur due to chemical attack. Use only cleaning chemicals specified by a reputable chemical manufacturer for use with stainless steel. Do not use excessive concentrations, temperatures or exposure times. Avoid contact with highly corrosive acids such as hydrofluoric, hydrochloric or sulfuric. Also avoid prolonged contact with chloride-containing chemicals, especially in presence of acid. If chlorine-based sanitizers are used, such as sodium hypochlorite (bleach), do not exceed concentrations of 150 ppm available chlorine, do not exceed contact time of 20 minutes, and do not exceed temperatures of 104°F (40°C).

Corrosion discoloration, deposits or pitting may occur under product deposits or under gaskets. Keep surfaces clean, including those under gaskets or in grooves or tight corners. Clean immediately after use. Do not allow equipment to set idle, exposed to air with accumulated foreign material on the surface.

Corrosion pitting may occur when stray electrical currents come in contact with moist stainless steel. Ensure all electrical devices connected to the equipment are correctly grounded.

### Elastomer Seal Replacement Following Passivation

Passivation chemicals can damage product contact areas of this equipment. Elastomers (rubber components) are most likely to be affected. Always inspect all elastomer seals after passivation is completed. Replace any seals showing signs of chemical attack. Indications may include swelling, cracks, loss of elasticity or any other noticeable changes when compared with new components.



## Introduction

*For control top information, please refer to publication 95-03083. For additional product information, please see our website at [spxflow.com/en/waukesha-cherry-burrell/resources/product-literature](http://spxflow.com/en/waukesha-cherry-burrell/resources/product-literature).*

## General Information

Information in this manual should be read by all personnel involved in installation, setup, operation and maintenance.

Always use installation tools and lubricants recommended by SPX FLOW. Waukesha Cherry-Burrell brand products are subject to intensive intermediate and final leakage and functional tests.

Waukesha Cherry-Burrell brand Mix Proof valves meet 3-A standards for sanitation, design, and style.

Double-Seat Mix Proof valves provide safe separation of dissimilar products within the same valve body. SPX FLOW offers several basic valve types in the W70 Series product line:

- W71 Series for standard shut-off service
- W73 Series for divert applications
- W71 and W72RS Tank Outlet Series
- W72RS and W72RSP Series for standard shut-off service. W72RS Mix Proof valves feature a lower radial seal for minimal spill operation when opening or closing.

## Factory Inspection

Each Waukesha Cherry-Burrell brand valve is shipped completely assembled, lubricated and ready for use. The valve must be cleaned before use.

## Models and Specifications

### Materials

- Product Wetted: ASTM 316L (UNS-S31603); (DIN-1.4404) AL6XN upon request
- Non-Product: ASTM 304 (UNS-S30400); (DIN-1.4301)
- Elastomers: EPDM (optional) FKM (standard) FFKM upon request

## Equipment Serial Number

Waukesha Cherry-Burrell brand valves are identified by a serial number found on the label on the actuator cylinder.

## Operating Parameters

### Temperature Range:

No special precautions are required for applications within a temperature range of 32°F to 180°F (0°C to 82°C).

For applications above 190°F (88°C), clearances can be affected by excessive thermal expansion when the valve is installed in compact fabrications or manifolds. Valve bodies have thicker cross-sections than tubing, but thermal expansion can affect clearances in interconnecting piping sections.

Operating valves above 180°F (82°C) could result in shortened life of elastomers and/or erratic valve operation.

If operating below 32°F (0°C):

- Control air must have an appropriately low dew point.
- Valve stems must be protected from icing to ensure long working life for valve stem seals.

Solenoid valves may not be used in the control module in room environments below 32°F (0°C) and over 140°F (60°C), as function cannot be guaranteed.

### Seal Compatibility

**Table 1: Seal Compatibility for FKM/EPDM Seals**

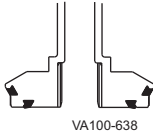
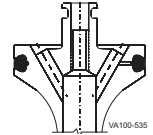
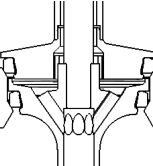
	<b>Fluorelastomer (FKM) Seals</b>	<b>EPDM Seals</b>
<b>Thermal Range of Application *</b>	32°F to 375°F * (0°C to 190°C)	0°F to 275°F * (-18°C to 135°C)
<b>Chemical Resistance</b>	Silicone oil and grease	Silicone oil and grease
	Ozone, aging and weather resistant	Ozone, aging and weather resistant
	Oils and fats	Hot water and steam up to 275°F (135°C)
	Aliphatic, chlorinated and aromatic hydrocarbons	Many organic and inorganic acids Cleaning agents, soda and potassium alkalis Many polar solvents (alcohols, ketones, esters)
<b>Not compatible with</b>	Superheated steam	Mineral oil products (oils, greases and fuels)
	Formic and acetic acids	

**\* NOTE:** The temperature listed is the rating for the elastomer only, in static condition.

Contact SPX FLOW Application Engineering for other fluid compatibility.

FKM and EPDM seals comply with FDA regulations.

## Seat Options

Seat Type		Material / Maximum Temp.	
	Tri Ring (TR) Compression Seal: Upper on W71/W72RS Lower on W71/W73	<b>EPDM</b>	Operation: 275°F (135°C) Sterile: 275°F (135°C)
	Radial: Lower on W72RS/W72RSP		or Operation: 375°F (190°C) Sterile: Consult Factory
	Seat Ring Insert Compression Seal Upper on W71/W73 Lower on W71/W73 Divert on W73	<b>Tef-Flow™ P</b> (gray in color)	Operation 280°F (137°C)

For higher temperature applications than those listed, please consult the factory.

Operating conditions such as flow rate and pressure must be considered when operating near the maximum temperature rating. Contact the Factory for FFKM.

## Pressure Ratings

Valve Size	Maximum Pressure at 70°F (21°C)
1.5" - 4"	150 psi (10.3 bar)
6"	Contact factory

## W70 Series Mix Proof Actuator Air Volumes

### Non-Seat Lifting Actuators

Size (dia.)	Open
1.5" - 2"	0.015 ft <sup>3</sup> (0.0004 m <sup>3</sup> )
2.5" - 4"	0.039 ft <sup>3</sup> (0.0011 m <sup>3</sup> )
6"	0.055 ft <sup>3</sup> (0.0016 m <sup>3</sup> )

### Seat Lifting Actuators

Size (dia.)	Open	Upper Seat Clean	Lower Seat Clean
1.5" - 2"	0.03 ft <sup>3</sup> (0.0008 m <sup>3</sup> )	0.004 ft <sup>3</sup> (0.0001 m <sup>3</sup> )	0.006 ft <sup>3</sup> (0.0002 m <sup>3</sup> )
2.5" - 4"	0.07 ft <sup>3</sup> (0.002 m <sup>3</sup> )	0.005 ft <sup>3</sup> (0.0001 m <sup>3</sup> )	0.08 ft <sup>3</sup> (0.002 m <sup>3</sup> )
6"	0.055 ft <sup>3</sup> (0.0015 m <sup>3</sup> )	0.011 ft <sup>3</sup> (0.0003 m <sup>3</sup> )	0.011 ft <sup>3</sup> (0.0046 m <sup>3</sup> )

## Installation

### ⚠ CAUTION

*When installing the valve, ensure that no foreign materials (e.g. tools, screws, welding wire, lubricants, cloths, etc.) are enclosed in the system.*

## Location

The valve must be in a vertical position to ensure that the vent/drain outlet system functions properly.

The vent/drain outlet at the bottom of the Mix Proof valve must not be obstructed. The unrestricted vent/drain outlet must allow leakages and cleaning/rinsing/sterilization fluids to go to atmosphere in order to guarantee mix proof safe separation. If hoses, pipes, or other components are mounted to the vent/drain outlet to prevent splashing of leakage and cleaning/rinsing/sterilization fluids, then they must be designed such that the fluids flow freely to atmosphere.

Locate the valve for easy access for inspection.

Ensure that the valves and pipe systems drain properly. The two-piece body option enables the positions of the connections to be adjusted in relation to each other.

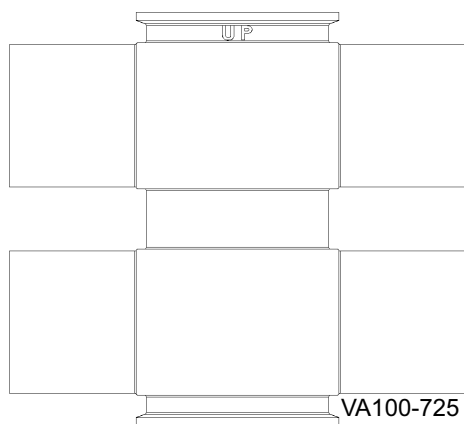
### ⚠ CAUTION

*Isolate products away from the valve prior to performing maintenance.*

## Welding Instructions

### ⚠ CAUTION

*Before attempting to butt weld an automatic valve into a line, disassemble the body from the actuator. Dissipate heat away from the valve body to prevent warping.*



**Figure 1 - Valve orientation**

Prior to installing, thoroughly inspect each valve. When using butt weld two-piece body valves, clamp connections must be used on either the upper or lower body to allow for servicing of the O-ring seal between the bodies. This does not apply to single-piece bodies.

Mix Proof valves with welded connections require the following to be performed before installation:

- Prior to installation, remove the stem actuator assembly and lower bearing carrier.
- Remove all seals from the body.
- Weld the body into position, ensuring that the connection is free of tension and distortion.

**NOTE:** Orient the valve so that the “UP” inscription (near the adapter-to-body connection) is pointed toward the actuator. See Figure 1.

### ⚠ CAUTION

*Welding must be carried out by qualified personnel.*

For manifold welding, fixture tables are recommended. Matrix manifold welding requires a controlled deliberate process to maintain the alignment of the parts.

## Air Supply

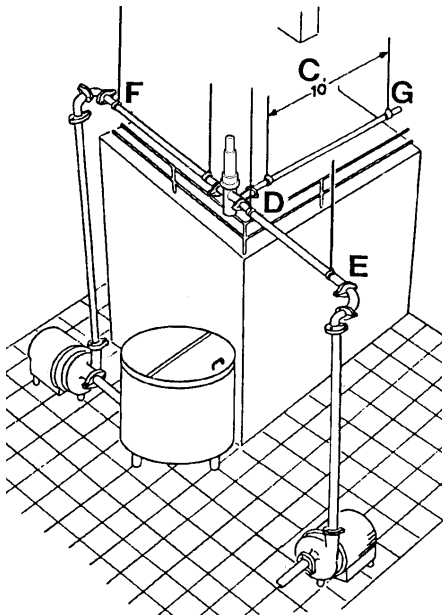
Install the valves using dry, filtered air. Lubrication is not required. If using lubricated air, refer to the solenoid manufacturer's specifications. The air supply must be 75 to 90 psi (5.2 to 6.2 bar).

## Flow Direction

The valves should be installed to close against the flow to prevent water hammer.

When using suitable fittings, Mix Proof valves with detachable connections can be installed in a pipe system per the fitting requirements. The valve must be installed free of tension. After the valve is installed in the pipe system, attach the control air hoses and connect the electrical supply.

Install adequate supports to prevent strain on the fittings, valves and equipment connections.



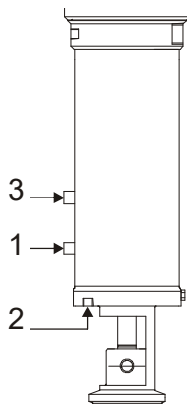
**Figure 2 - Pipeline Support**

1. Install supports at least every 10 feet on straight runs of piping. (Figure 2, item C).
2. Install supports on both sides of the valves as close as possible to the connections. (Figure 2, item D).
3. Install supports at each change of pipeline direction. (Figure 2, item E and F).
4. For pipelines passing through walls, floors or ceilings, provide at least 1 inch (25 mm) of clearance around the pipe to allow for expansion and contraction. (Figure 2, item G).

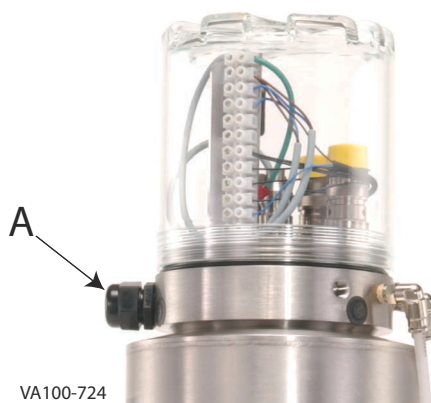
*In higher-temperature applications, ensure proper accommodation for thermal expansion in the pipeline design to minimize stresses on the valve bodies. Excessive mechanical and thermal stresses can distort and damage the valve bodies.*

Install automatic valve manifolds with a uniform pitch for proper drainage. Elevate one corner of the cluster and pitch 1/16" per foot (1.59 mm per meter) if desired. Arrange the supports for the floor-mounted valve manifolds to provide alignment of the inlet and outlet lines.

1. If solenoids are mounted in a control top, connect the air supply lines to “air in.” If solenoids are mounted externally from the control top, connect the air lines as explained in “Solenoid Valve Port Connections” on page 17.
2. Using caution, lift the actuator assembly and set the actuator in the body assembly.
3. Lower the valve slowly into the body, making sure the lower stem enters the lower bearing carrier.
4. Tightly clamp the yoke/body flange.
5. Connect the air lines to 1, 2 and 3, as shown in Figure 3, left, and Figure 10 on page 17.



**Figure 3 - Solenoid Valve Port Connections**



**Figure 4 - Control Top Wire Connection Point**

6. Connect the electrical control cord to the valve at location A (see Figure 4).

**NOTE:** Control tops are available with strain relief cord grip for hard wiring or threaded pin connectors for quick disconnect. Mating cables must be ordered separately.

7. Operate the valve through the available conditions (closed, open, upper seat cleaning and lower seat cleaning). See “Solenoid/Valve Position” on page 17.

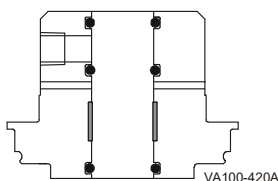
## Quality of Control Air to Control Module

Do not exceed the following values:

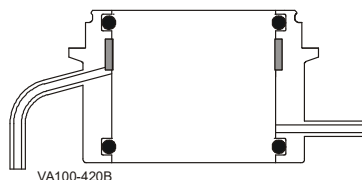
- Suspended solids content:  
Particle size: 5 microns max.  
Particle Density: 5 mg/m<sup>3</sup> max. (= quality class 3)
- Water content: Dewpoint +35°F (+1.6°C)  
(= quality class 3). For applications at great elevations or at low ambient temperatures, the dewpoint changes.
- Oil content (if possible, without oil): Up to 25mg/m<sup>3</sup> max. oil  
(= quality class 5).

## External Flush - Liquid Vent Cavity

**NOTE:** Liquid flush of the vent cavity is typically used in applications with high sugar content product that may crystallize if dried. Cavity flush is recommended after valve transitions to keep the seats and cavity moist.



**Figure 5 - Upper Stem Flush Adapter**



**Figure 6 - Lower Stem Flush Adapter**

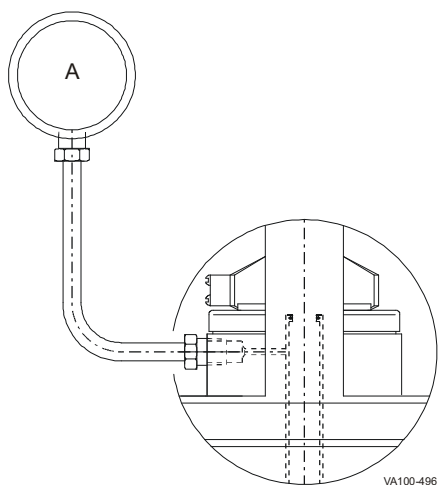
### Liquid Vent Cavity Only

Use Upper Stem Flush Adapter

### Liquid Vent Cavity and Lower Stem

Use both Upper Stem Flush Adapter and Lower Stem Flush/Steam Adapter.

Options allow for the liquid flush of the vent cavity and leakage channel alone or with the lower stem flush.



**Figure 7 - Connection of Flush Supply**

Connect the cavity cleaning supply to a suitable liquid supply to flush the vent/drain (Figure 7) during the operation of the processing system.

The flush supply line can be connected to the pipe system by 1/4" (6 mm) rigid or poly flow tubing. The flush supply is blocked when the valve is open.

Connect the supply line to the adapter connection with poly flow tubing (Figure 7).

**⚠ WARNING**

*During CIP cleaning and valve opening (W71/W73), fluid escapes from the drain port. Drain this off to prevent a possible hazard to personnel.*

Regulate the flush supply (Figure 7, item A) for pressures of 30 psi minimum, 50 psi maximum.

The maximum solution temperature is 180°F (60°C).

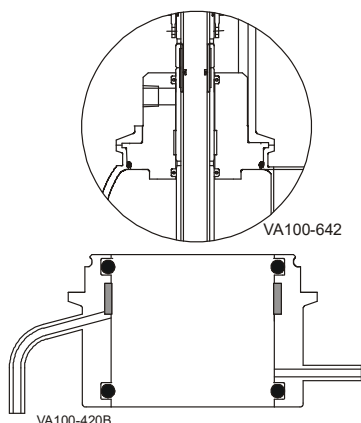
**⚠ WARNING**

*Cavity cleaning operation must fall within the fail-safe control system. See "Cleaning" on page 23.*

**⚠ WARNING**

*Take proper precaution to safeguard the flush water supply, such as installing backflow prevention devices.*

## External Flush - Steam Vent Cavity



**Figure 8 - External Steam Barrier - upper stem**

## Steam Vent Cavity, Upper and Lower Stem

Use both Upper Stem Steam Flush Adapter and Lower Stem Steam Adapter.

This option allows continuous steaming of the vent cavity (in both open and closed positions), upper and lower stems.

**⚠ DANGER**

*Valves equipped with the steam flush option for stem and vent cavity can produce high temperatures and steam hazards that may result in personal injury or death.*

To steam flush the upper and/or lower stem as well as the vent cavity, the Mix Proof Valve must be ordered with the Steam Flush for stem and vent cavity. This option (See Figure 9 on page 16) contains the following components:

- External flush connection, 1/4" NPT.
- Modified adapter with removed O-rings to flush the stem.
- Jacket with 1/4" Tube (S.S.) on lower balancer to flush the lower stem (balancer).
- EPDM gaskets for all seals in the wetted area.

**⚠ WARNING**

The W70 Series Mix Proof Valve equipped with the steam flush option for stem and vent cavity is designed **only** for **low-pressure, product-compatible saturated steam** with a maximum pressure of 10 psig (0.65 bar) = 240°F (115°C) temperature.

**⚠ DANGER**

The steam connection must be shut off and the valve must cool before servicing the valve.

**Table 2: Key for Figure 9**

- |   |
|---|
| A. Saturated Steam (wet steam)<br>Max 10 psig |
| B. Steam IN (Upper Stem Adapter)              |
| C. Product                                    |
| D. Steam IN (Lower Stem Adapter)              |
| E. Steam out of Lower Stem Adapter            |
| F. Steam out from vent cavity (leakage port)  |

## Installation

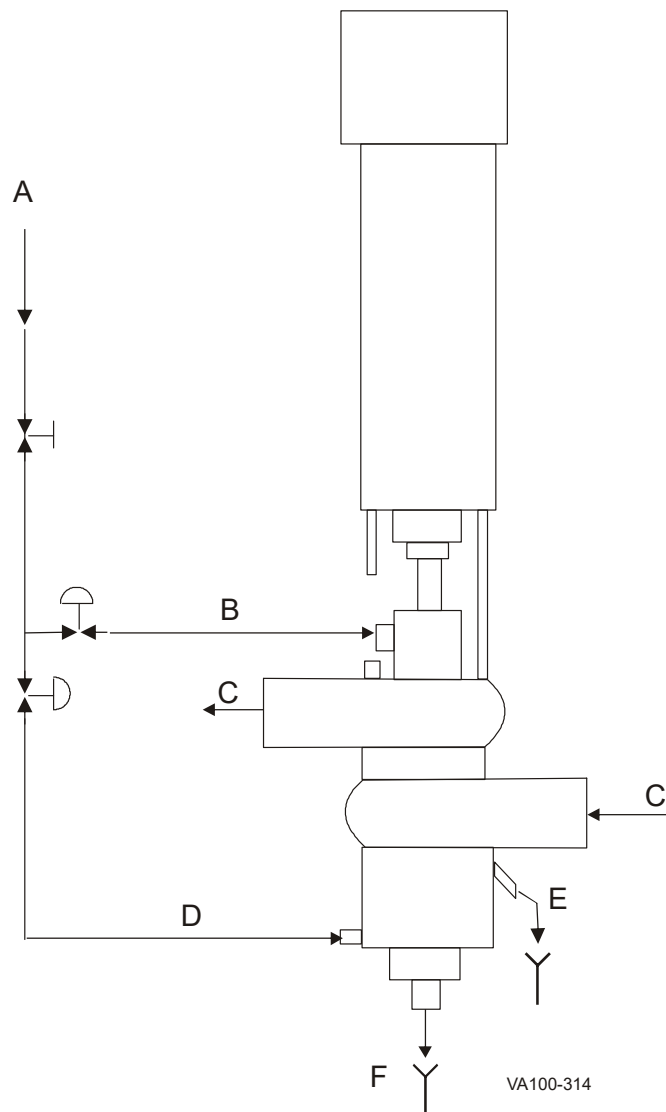
Installation of a steam flush system on a W70 Series Mix Proof Valve should be done only by a licensed Steam Fitter.

The valve must be installed vertically to drain out any steam/condensate and have a drain funnel placed directly below it. Refer to Figure 9 to see the shut-off valves in the supply lines.

## Function

The low pressure steam enters through port B of the upper stem steam flush adapter. Steam purges the outside and inside of the upper stem and the vent cavity. Steam exits out the leakage port F.

For steam flushing the outside of the lower stem (balancer), the low pressure steam enters port D and exits at port E.



**Figure 9 - Steam Flush Option for Stem and Vent Cavity Schematic**



## Operation

All functions of W70 Series Mix Proof valves are pneumatically controlled using a 75 min. to 90 max. psi (5.2 to 6.2 bar) clean air supply.

The valve contains a large and small spring in the valve actuator. The springs compress the valve seats to seal closed.

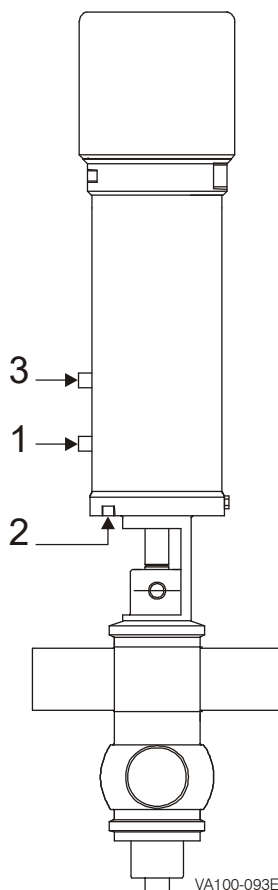
### Large Spring

- Located in top air chamber of cylinder.
- Holds valve in the closed position.

### Small Spring

- Located in the extended hub of the upper piston.
- When the valve is open, the spring acts on the upper seat stem to hold the upper and lower plugs together.

## Solenoid Valve Port Connections



**Figure 10 - Solenoid Valve Port Connections**

Up to three air supplies controlled by solenoid valves supply air to the valve actuator (Figure 10).

**Table 3: Solenoid/Valve Position**

Condition	Solenoid 1	Solenoid 2	Solenoid 3
Closed	OFF	OFF	OFF
Open	ON	OFF	OFF
Upper Seat Clean *	OFF	ON	OFF
Lower Seat Clean *	OFF	OFF	ON

1 = Valve Open Inlet Solenoid

2 = Upper Seat Clean Inlet Solenoid\*

3 = Lower Seat Clean Inlet Solenoid\*

ON = Solenoid energized (OPEN). LED is lit.

OFF = Solenoid de-energized (CLOSED). LED is off.

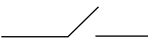
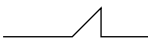
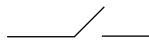
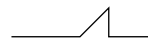
Solenoids are normally closed.

Air connections are 1/8" NPT x 1/4" push-to-connect poly tube fittings.

\* Seat lifting is an option which requires (2) two additional air supplies. Non-seat lifting valves (NSL) only have one air inlet (1).

For specific air-routing and solenoid porting, please refer to control module publication 95-03083.

## Automatic Fail-Safe System

<b>WCB 2-Piece Control Top</b>	<b>W71/W73</b>		<b>W72RS/W72RSP</b>	
<b>Valve Stem Detection Condition</b>	<b>Upper Sensor (NO)</b>	<b>Lower Sensor (NC)</b>	<b>Upper Sensor (NO)</b>	<b>Lower Sensor (NC)</b>
Sensor Symbol				
Valve Closed	0	1	0	1
Valve Open	1	0	1	0
Valve Closed with Upper Seat Clean *	0	1	0	0
Valve Closed with Lower Seat Clean *	0	0	0	1

1 = Energized, LED is lit; 0 = De-energized, LED is off

Upper Sensor: Sends an input signal when the valve is properly open.

Lower Sensor: Sends an input signal when the valve is properly closed.

Additional Sensor: A third yoke-mounted proximity sensor is available for additional signal feedback.

\* W71/W73 Valves: Seat lift during both upper and lower seat clean; indicator stem raises;  
W72RS/W72RSP Valves: Seat lift during upper seat clean; seat push during lower seat clean, indicator stem lowers.

<b>Bürkert 8681 Control Top</b>	<b>All W70 Series Valves</b>				
<b>Valve Stem Detection Condition</b>	<b>S1</b>	<b>S2</b>	<b>S3</b>	<b>S4*</b>	<b>Top LED Indication</b>
Valve Closed	1	0	0	0	Steady Red
Valve Open	0	1	0	1	Steady Green
Valve Closed with Upper Seat Clean	1	0	0	1	Fast Flashing Green
Valve Closed with Lower Seat Clean	0	0	1	0	Slow Flashing Green

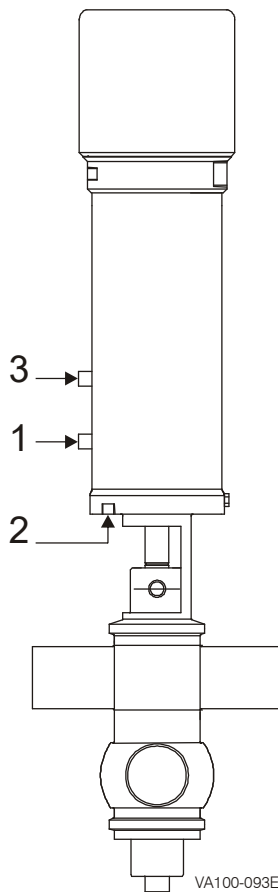
1 = Feedback; 0 = No Feedback

\* Normally Closed External Proximity Sensor; LED is opposite of feedback signal.

<b>CU4 Control Top</b>	<b>W71/W72RS/W73</b>	
<b>Valve Stem Detection Condition</b>	<b>Open Sensor (Upper)</b>	<b>Closed Sensor (Lower)</b>
Valve Closed	0	1
Valve Open	1	0
Valve Closed with Upper Seat Clean	0	1
Valve Closed with Lower Seat Clean	0	0

1 = Feedback; 0 = No Feedback

## Test Procedures



- 1 = Valve Open Inlet Solenoid  
2 = Upper Seat Clean Inlet Solenoid  
3 = Lower Seat Clean Inlet Solenoid

**Figure 11 - Solenoid Valve Port Connections**

## Positive Fail-Safe Detection Test

Perform a test to verify the fully closed fail-safe position. The valve stem feedback proximity sensors should be set for the fully opened and fully closed positions of the valve. See Figure 11 for port and corresponding chambers.

Decommission the system, drain the lines and lock out the pumps.

1. With the valve fully closed, confirm that the proximity sensors conform to the tables on page 18. Verify the sensor status on the PLC control system.
2. Pressurize air chamber 1 to open the valve. Confirm that the proximity sensors conform to the tables on page 18. Verify the sensor status on the PLC control system.
3. Vent air chamber 1 to close the valve.
4. If used, activate the upper seat lift either through the control system or by supplying air to port 2.
5. When the upper seat lifts, confirm that the proximity sensors conform to the values in the tables on page 18. If the yoke area does not have a limit sensor, visually confirm the upper seat lifting.
6. Vent the air in chamber 2 to deactivate the seat lift.
7. If used, pressurize air chamber 3 to activate the lower seat push.
8. Confirm that the proximity sensors conform to the tables on page 18. Verify the sensor status on the PLC control system.
9. Vent the air in chamber 3 to deactivate the seat lift.
10. Disconnect the air from the valve actuator, placing the valve in the fail-safe position. Verify that the proximity sensors register that the valve is fully closed.

## Corrective Action

If the double seat Mix Proof valve fails to respond as indicated above, immediately check the valve assembly and wiring to locate and correct the cause:

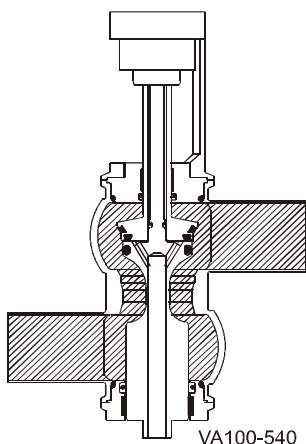
- First, check the proximity sensor adjustment.
- Check for the correct assembly and adjustment of the valve.
- For specific information on sensor setting, please refer to control module publication 95-03083.

## Valve Operating Conditions

See Figure 10 on page 17 for port and corresponding chambers.

### Valve Open

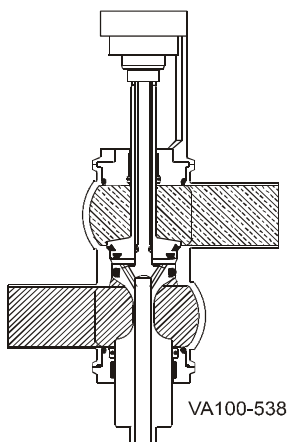
The valve is open when Chamber 1 is pressurized and Chambers 3 and 2 are vented. See Figure 12.



**Figure 12 - Valve Open**

### Valve Closed

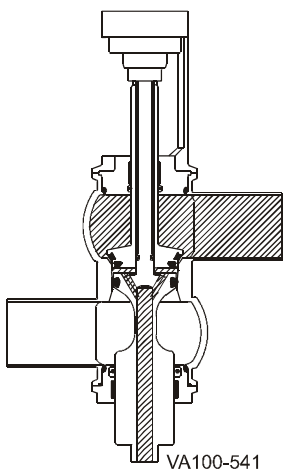
The valve is closed when Chambers 3, 1, and 2 are vented. The large spring closes the valve to the fail safe position. See Figure 13.



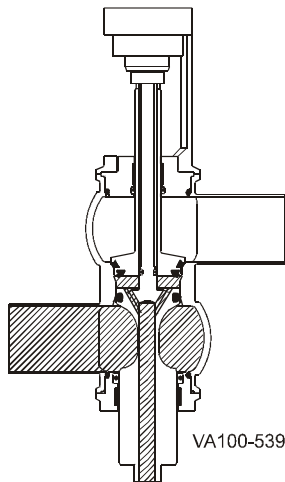
**Figure 13 - Valve Closed**

### Valve Closed, Upper Seat Lifted

For cleaning the upper seat on seat lifting models only. Chamber 2 is pressurized, and Chambers 3 and 1 are vented. See Figure 14.



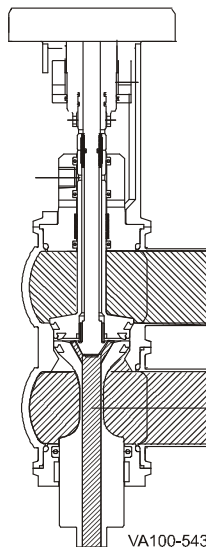
**Figure 14 - Valve Closed, Upper Seat Lifted**



**Figure 15 - Lower Seat Push for W72RS Series**

### **Valve Closed, Lower Seat Push (for W72RS/W72RSP Series Only)**

Chamber 3 is pressurized, and Chambers 1 and 2 are vented. See Figure 15. For W72RS/W72RSP Series valves, the lower seat is pushed down for seat cleaning.



**Figure 16 - Lower Seat Lift for W71/W73**

### **Valve Closed, Lower Seat Lift (for W71/W73 Series valves only)**

The lower seat is lifted for seat cleaning. See Figure 16.

**NOTE:** On W73 Series valves, the middle-to-lower port divert stem has single-seat protection and cannot perform an independent seat clean operation when the valve is closed or open.

## Maintenance

### Maintenance Intervals

Maintain adequate stock of replacement parts. See the items in bold beginning on page 41 for recommended spare parts.

Maintenance intervals should be determined by the user and specific application, based on the following conditions:

- Daily operation period
- Sensing frequency
- Application parameters, such as temperature, pressure, and flow
- Product type
- CIP time and temperature

Use the following recommendation as a rough guide:

- For fluid temperatures ranging from 180°F to 212°F (82°C to 100°C): approx. every 3 to 6 months
- For fluid temperatures of 140°F (60°C) and lower: approx. every 12 months

The values listed above are only general guidelines and do not apply, for example, to fluids which crystallize on contact with air. The values listed are subject to the chemical resistance of the seal material.

W70 Series Mix Proof valves operate best at temperatures below 180°F (82°C), regardless of seal type.

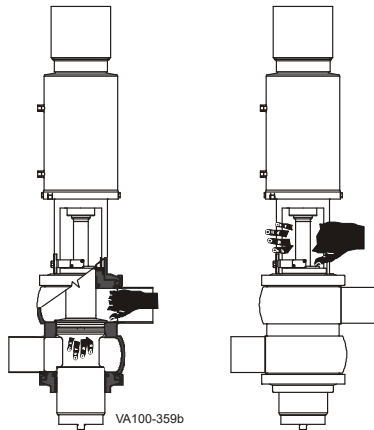
The maximum temperature of 280°F (138°C) listed for the seat seal type is the rating for the elastomers only, in a static condition. This is not the temperature rating for the valve in operation.

The 180°F (82°C) max. rating also applies to valves welded together in a manifold. Operating W70 Series Mix Proof valves at temperatures above 180°F (82°C) could result in shortened life of elastomers and/or erratic valve operation.

## Inspection

**⚠ DANGER**

*Do not put a hand into the yoke or body of a pneumatically-actuated valve.*



Inspect the following on a regular basis:

- Actuator connections for air leaks
- Valve body and stem O-rings
- Valve seats (If leakage occurs, see "Troubleshooting" on page 94.)
- Pneumatic connections:
  - Air pressure at supply connection
  - Air lines for kinks and leaks
  - Threaded connections for tight fit
  - Clean air filter at regular intervals
- Electrical connections secure on control module:
  - Wire connections tight on terminal strip
  - Electrical connections to control module
  - Threaded strain relief for tight fit.

## Lubrication

No lubrication is required other than as noted in the disassembly and assembly procedures. Use Dow Corning #7 or equivalent food grade non-petroleum (silicone) grease on seals and O-rings.

Apply Bostik Never-Seez® White Food Grade with PTFE or equivalent to all bolts and threaded stem parts.

## Cleaning

**⚠ CAUTION**

*Avoid splashing any liquid into the air vent of the actuator during clean up*

**NOTE:** Actuate each valve or use seat lifting to ensure effective cleaning and sanitizing. Expose all product-contact surfaces to the appropriate cleaning solutions.

### Cleaning-In-Place (CIP)

CIP methods can be used to clean installed automatic valves without disassembly. Select methods based on the specific requirements of sanitarians and each application. Check with local chemical suppliers for the most effective cleaning agents and procedures intended for the application, in order to properly dissolve the product residue. Ensure that the cleaning agent is compliant with the temperature range and elastomer material.

Mix Proof valves can be fitted with a 1/4 NPT flush connection for rinsing the area between the seats and the vent/drain port. The area can be flushed regularly in the event of long times between CIP cleanings. See "External Flush - Liquid Vent Cavity," starting on page 14.

**⚠ CAUTION**

*During valve opening and CIP cleaning, fluid escapes from the drain port. Drain it off to prevent any possible hazard to personnel.*

**NOTE:** *Seat cleaning is not recommended during the initial rinse.*

**Cleaning Procedure**

Mix Proof valves are designed to use a cleaning solution supplied by a CIP system. The vent outlet/cavity must be unobstructed to guarantee the leakage of fluid to atmosphere.

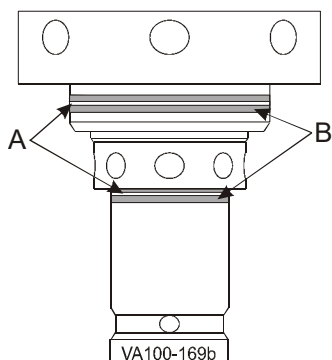
Establish cleaning procedures for each installation depending on product characteristics, operating parameters (temperature, velocity, valve cycles), and product velocities.

The following statements are intended as suggestions or guidelines for cleaning procedures and will vary by application:

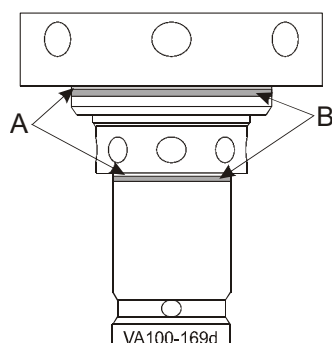
- For seat lifting valves, when the upper or lower body is in CIP, seat movement should occur. Seat cleaning positions are factory-set and marked in the yoke area. Seat cleaning will produce visible leakage from the vent outlet. Brief multiple lifts should occur for each step in the CIP program, excluding the initial rinse.
- Maximum Solution Temperature is 180°F (82°C).
- Maximum line pressure during seat cleaning is 90 psi (6.2 bar).
- Minimum cleaning solution velocity is 5 ft/s (0.3 m/s).
- Cleaning time is dependent on the inlet pressure. The recommended cycle time is 3 to 5 seconds per cycle after the valve achieves the seat clean position. This seat clean cycle time of each valve should be visually confirmed during commissioning.
- Typical cleaning procedures include pulsing the seat during cleaning until the valve has been demonstrated to be clean. This is usually accomplished in 3 to 5 consecutive pulses per step in the CIP program; however, each installation and product varies, so pulsing should continue until all product/debris is removed.
- For the optional external flush of the vent cavity, water flush can be activated during the final rinse.
- Every few months of operation, remove and inspect one valve in the system to ensure that complete cleaning is being achieved.



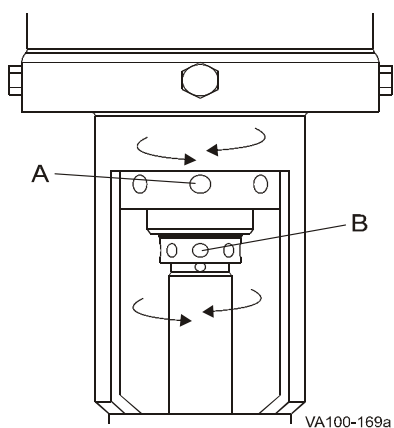
## Seat Cleaning Adjustment



**Figure 17 - Adjustment zones with scribe lines**



**Figure 18 - Bottom edges align with scribe lines**



- A. Adjusting nut, upper seat  
B. Adjusting nut, lower seat

**Figure 19 - Location of Adjusting Nut**

Seat lifting models are factory set. See Figure 17 and Figure 18. Scribe lines (item A) within the acid-etched adjustment zone (item B) provide a visual indication of the correct factory-set adjustment. Screw the adjusting sleeve and adjusting nut until the bottom edges align with the scribe line as shown in Figure 18, item A.

**NOTE:** Always adjust the lower seat clean first.

### ⚠ WARNING

Do not adjust the seat clean collars with pliers, vice-grips or adjustable jaw pliers (channel locks).

If required, adjust the seat movement. With the valve closed, using a 3/16" diameter pin spanner or Allen wrench, adjust the movement of the seats to the factory settings or within the adjustment zone (Figure 17 and Figure 18, item B). Once a successful seat movement is established, clearly mark where the bottom edges of the adjusting sleeve and adjusting nut align, to ensure proper resetting after disassembly.

**NOTE:** For W72RSP valves built prior to November 2014, the seat clean stroke is fixed at 0.12" upper and 0.28" lower. Confirm the stroke length after proper assembly; tighten both stems clockwise until they are stopped metal-to-metal.

### Lower seat

Operate the lower seat clean cycle multiple times. Observe the indicator stem movement at the top of the actuator, or at the balancer on the bottom of the valve.

To adjust the movement of the lower seat for cleaning, rotate the adjusting sleeve in the yoke (Figure 19, item B):

- W71/W73: Rotate right to increase; left to decrease.
- W72RS: Rotate left to increase; right to decrease. See also "W72RS Lower Stem Measurement" on page 26.

### Upper seat

Operate the upper lift cycle multiple times. Observe the outer stem movement by watching the adjusting nut in the yoke (Figure 19, item A).

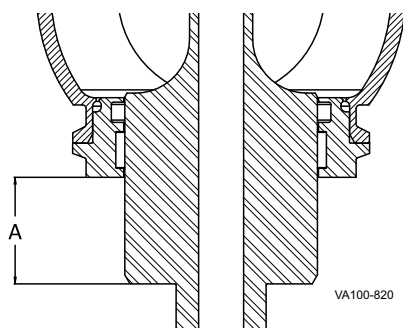
- To adjust the movement of the upper seat, rotate the adjusting nut (Figure 19, item A) left to increase; right to decrease.

**Table 4: Proper Seat Movement: W71/W73**

Valve Size	Lower Seat	Upper Seat
1-1/2" - 4"	1/16" (1.59 mm)	1/16" (1.59 mm)

**Table 5: Proper Seat Movement: W72RS**

Valve Size	Lower Seat	Upper Seat
1-1/2" and 2"	1/8" (3.175 mm)	1/8" (3.175 mm)
2-1/2" - 4"	1/4" (6.35 mm)	1/8" (3.175 mm)



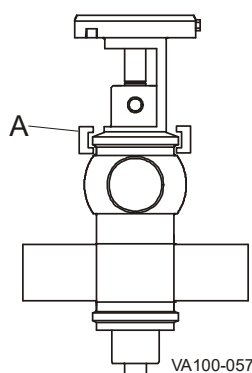
W72RS Size	Dim. "A"
2"	1-1/3" (33.87 mm)
2-1/2" and 3"	1-3/4" (44.45 mm)
4"	2-1/8" (53.98 mm)

**Figure 20 - W72RS Lower Stem**

## Removing Valve from System

**NOTE:** If the valve has a control module with a solenoid, the air and electric can remain ON to assist with removal of the valve from the body.

**NOTE:** On seat lifting model valves, clearly mark on the other stem and adjusting threads where the bottom edges of the adjusting sleeve and adjusting nut align to ensure proper resetting of seat movements after disassembly.




**Figure 21 - Location of Adapter Clamp**

 **Maintenance Video 2: Re-install valve into body**

## W72RS Lower Stem Measurement

For the W72RS models, the location of the lower stem is more critical than the stem travel. Confirm the proper location of the lower stem by measuring the distance from the lower seal retainer to the lower shoulder of the stem (Figure 20, dimension "A") when the valve is static.


- To increase this measurement distance and allow more cleaning of the lower seat, turn the adjustment sleeve to the left.
- To decrease the distance and allow less cleaning of the lower seat, turn the adjustment sleeve to the right.

 **This icon indicates a link to a maintenance video available online. To access the PDF online, go to: [www.spxflow.com/en/assets/pdf/95-03087\\_w70mixproofv\\_wcb.pdf](http://www.spxflow.com/en/assets/pdf/95-03087_w70mixproofv_wcb.pdf).**

### **⚠ WARNING**

**Before removing the actuator/valve stem assembly from the valve body, drain all product lines connected to the body.**

1. Clean, rinse, and drain the pipe system elements attached to the valve. Remove or block the fluid and gas lines to prevent material from entering the pipe system elements attached to the valve. If present, disconnect the flush water supply connection. If supplied, seat lifts can be used to check for pressurization of the pipeline.
2. Disconnect the external flush if used.
3. Supply air to open the valve.
4. Remove the clamp between the yoke and the adapter (Figure 21, item A).

 **Maintenance Video 1: Remove valve from body**

5. Remove the air pressure to cycle the valve closed, lifting the valve approximately 3/8" (9.5 mm) out of the body. Shut off and disconnect the air supply.
6. Disconnect and lock out electrical power to the valve.
7. Lift the complete valve actuator and stems out of the valve body, being careful not to damage the stems or internals.
8. Move the valve to a work station.
9. Re-install in reverse order. Keep in mind that air must be applied to cycle the valve open and lower the valve insert approximately 3/8", in order to completely reseat the valve in the body.
10. Re-fasten the clamp between the yoke and the adapter (Figure 21, item A), then remove the air pressure to cycle the valve closed.

Disassembly of Valve Stems

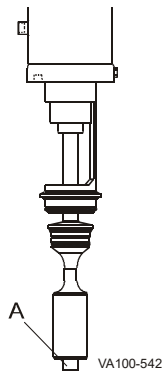


Figure 22 - Valve Stem Removal

Disassembly of the valve stems is required for seat ring replacement. (For "Reassembly of Valve Stems," turn to page 39.)

**NOTE:** (For seat lifting valves) Before disassembly, note the position of the upper and lower seat lifting adjustment nuts. See Figure 19 on page 25.

**NOTE:** Seals, seal grooves, and contact surfaces are precision parts and must not be damaged.

- 1. Lower stem removal: Using an open end wrench, remove the lower stem (Figure 22, item A) from the actuator by turning it counter-clockwise.

⚠ WARNING

Handle the lower stem with care to prevent bending the inner stem. A bent inner stem will cause the valve to operate incorrectly.

 [Maintenance Video 3: Remove lower stem](#)

- 2. Upper stem removal: Hold the adjusting sleeve stationary with a spanner wrench, turn the stem (Figure 23, item B) counter-clockwise, and remove it from the actuator. If the adapter (Figure 23, item C) comes out of the yoke, handle it with care.

 [Maintenance Video 5: Remove upper stem](#)

⚠ WARNING

Do not pressurize the actuator with the stems removed, as internal O-ring damage will result.

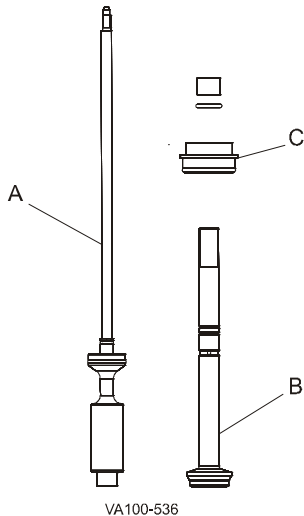
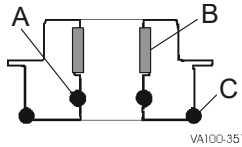


Figure 23 - Stem Removal

Table 6: Key for Figure 23

A = Lower Stem
B = Upper Stem
C = Upper Adapter (Bonnet)

## Adapter Bearings and O-rings



**Figure 24 - Standard Top Adapter**

**NOTE:** The bearing will be damaged during removal and must be replaced with a new bearing.

## Inner O-ring and Bearing Replacement

1. Remove the valve stem assembly from the actuator and slide the adapter off the outer stem.
2. Remove and replace the O-ring(s) (Figure 24, item A) inside the adapter. For the flush/steam barrier adapters, see Figure 5 on page 14 and Figure 8 on page 15, respectively.



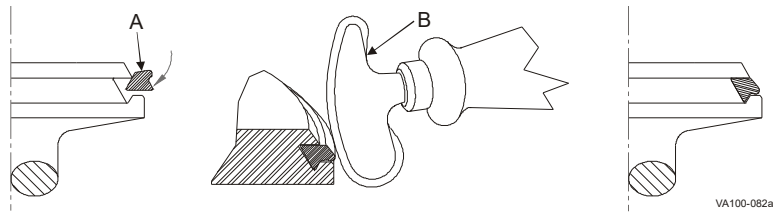
[Maintenance Video 7: Adapter O-rings and bearing removal and replacement](#)

3. Check the split bearing (Figure 24, item B) inside the adapter by feeling the amount protruding from the adapter wall. If the bearing is flush with the wall, replace the bearing.
4. Place a screwdriver or pick behind the bearing and pry it away from the wall of the adapter. A needle-nose pliers can be used to grip the bearing for removal. Be careful not to scratch or damage the metal surfaces.
5. To install a new bearing, coil the bearing to a size smaller than the inside diameter of the adapter and insert it into the proper location.
6. Using your finger, ensure that the bearing is properly seated. Visually inspect the seating.
7. If necessary, push the actuator stem into the adapter to help properly seat the bearing.

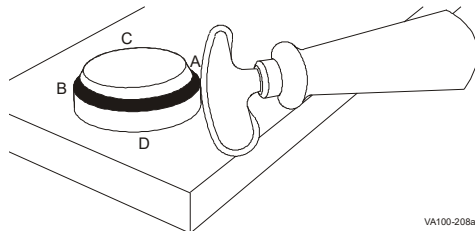
## Outer O-ring Replacement

1. Remove the valve stem assembly from the actuator and slide the adapter off the outer stem.
2. Slide or cut the outer O-ring (Figure 24, item C) off the adapter. Do not nick or scratch the O-ring groove.
3. Lubricate the new O-ring with grease and install it.

## Tri Ring Seat Replacement



**Figure 25 - Installing New Tri Ring Seat**



**Figure 26 - Pressing Tri Ring Into Plug**

1. Remove the Tri Ring seat by carefully cutting or using an O-ring tool or pick to pull the seat out of the groove. Do not scratch or nick the metal seating surface.



[Maintenance Video 8: Upper stem Tri Ring removal](#)

2. Clean the Tri Ring groove after removing the seat.
3. Lubricate the new Tri Ring (Figure 25, item A) with hot soapy water (never use lubricants).
4. Place the stem through a 1-1/8 inch (30 mm) hole bored through a board, or secure it with a vise with copper or aluminum jaws.
5. Start the Tri Ring as shown in Figure 25.



[Maintenance Video 9: Upper stem Tri Ring replacement](#)

6. Using the installation tool, part number 102797+ (Figure 25, item B), press the Tri Ring into the plug at locations A, B, C, and D (Figure 26). If this tool is not available, a dull, flat tool can be used. DO NOT use a knife or any other sharp item that will tear or cut the Tri Ring.
7. To finish installation, press small sections of the seal, alternating from side to side (A-B-C-D), avoiding large loops of seal.
8. When properly installed, the Tri Ring seat lip will protrude slightly from the seat edge as shown in Figure 25.



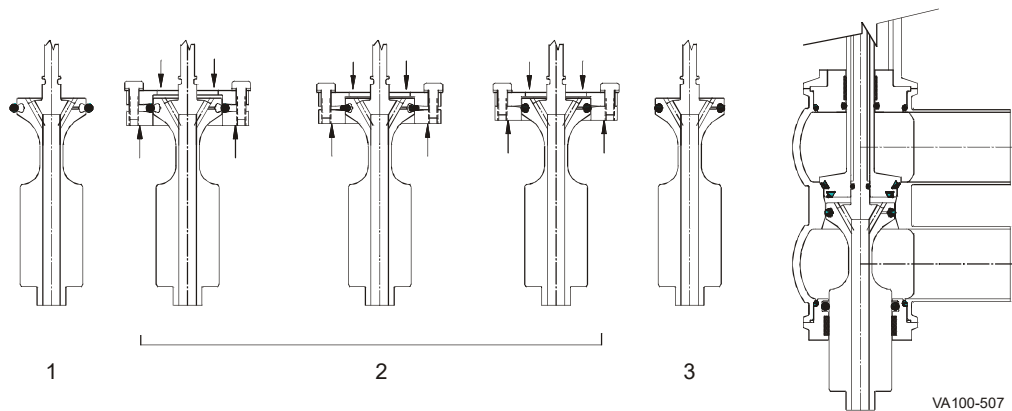
[Maintenance Video 10: Lower stem O-ring and Tri Ring replacement \(W71/W73\)](#)

**Radial Seat Ring  
Replacement (for W72RS  
Lower Stem)**

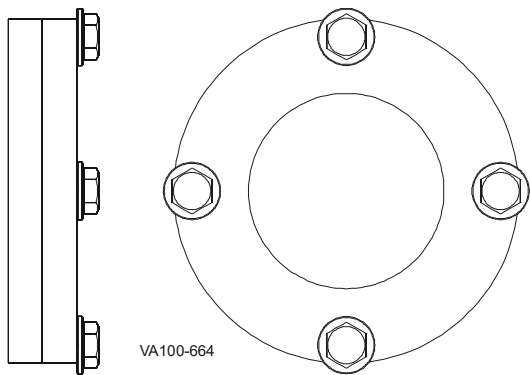
1. Remove the lower stem radial seal by carefully prying up and cutting the O-ring. Do not scratch or nick the metal seating surface.
2. Clean the radial seal groove after removal.
3. Ensure that the vent port in the back of the groove is clean and unblocked.
4. Lubricate the O-ring seal and expand it over the stem groove.
5. Place the assembly tool over the stem, ensuring proper tool orientation. Extrude the O-ring seal into the groove by evenly tightening the cap screws on the installation tool.
6. Remove the tool. The dovetail groove permanently retains the O-ring seal.

 [Maintenance Video 11: Radial Seal Removal](#)

For a list of installation tools, see Figure 28 below and “Installation Tools” on page 90.



**Figure 27 - Radial Seal Installation**

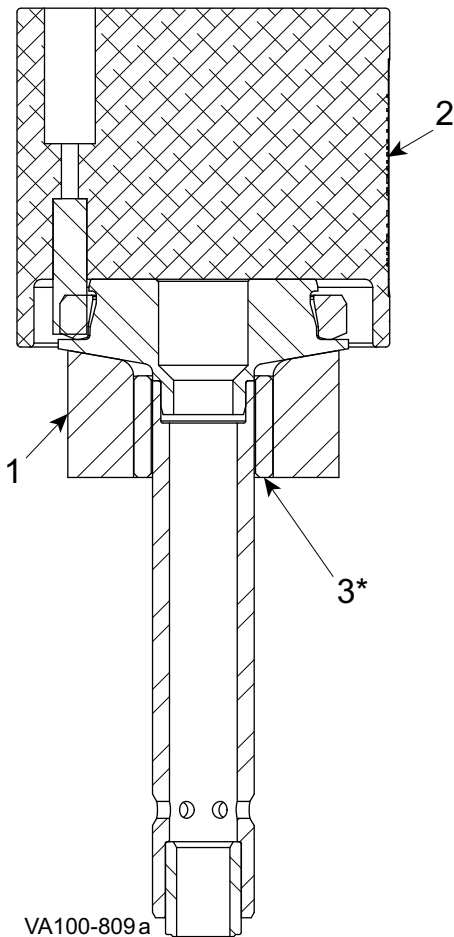


Valve Size	1-1/2"	2"	2-1/2"
Part No.	120048+	120049+	120051+
Valve Size	3"	4"	6"
Part No.	120053+	120055+	120057+

\* W72RSP Valves only require the 4" tool.

**Figure 28 - Radial Seal Insertion Collar Tool (for W72RS and W72RSP Valves)**

## Tef Flow® P Seat Replacement with W71 Stems



**Figure 29 - Upper Stem Tef Flow® P Seat Removal (Kit # 132990+)**

\* used with 2" W71 ODT valves only

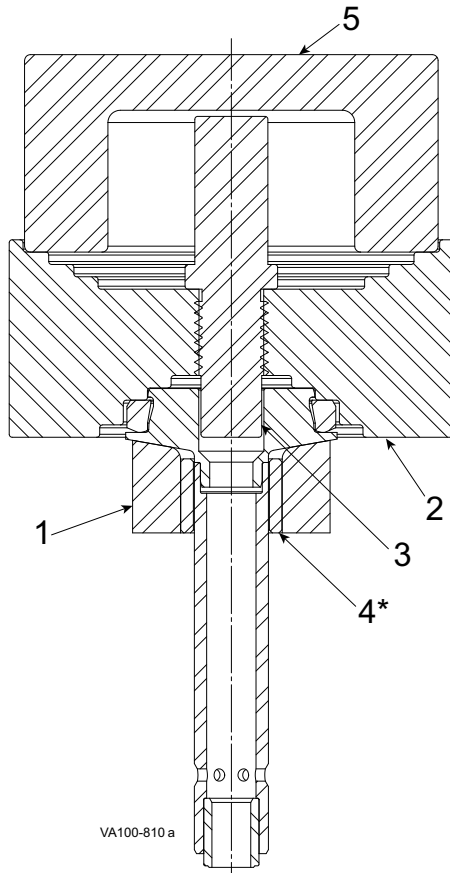
## Upper Stem Tef Flow® P Seat Removal

### W71 Upper Stem Tef Flow® P Seat Removal

1. With the upper stem in hand, take note of the orientation of the Tef Flow® P seat.
2. (Applies to 2" valves only) Install the stem sleeve plug (item 3\*) over the stem.

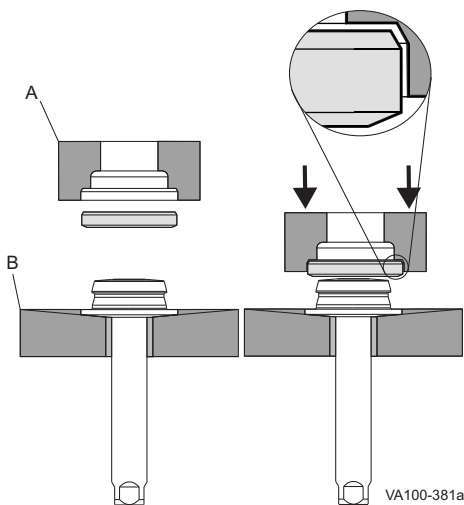
**NOTE:** Item 3\* is only required for correct fit on 2" valves.

3. Place the PTFE installation base (item 1) over the stem, making sure that the chamfered side rests on top of the stem plug and the flat side of the base faces away from the stem plug.
4. Hold the installation base in place on the stem in one hand, then take the aluminum Tef Flow® P seat removal tool (item 2) and carefully set it on the existing seat ring. Make sure that the removal tool's pins rest only on the seat, not directly on the stem plug, as this can damage the metal stem plug itself.
5. With the stem facing down, carefully place the stacked components onto an arbor press, with the aluminum seat removal tool (item 2) on top.
6. Using an arbor press, apply even pressure directly to the removal tool until the seat is cut into three pieces.
7. Remove the stacked components from the arbor press, and carefully remove the tools and seat pieces from the stem.
8. Inspect the stem and stem plug for damage. Clean up any minor scratches with an emory cloth, if needed.



**Figure 30 - Upper Stem Tef Flow® P Seat Installation (Kit # 132356+)**

\* for 2" W71 ODT valves only



**Figure 31: Tef Flow® P Seat**

## Upper Stem Tef Flow® P Seat Installation

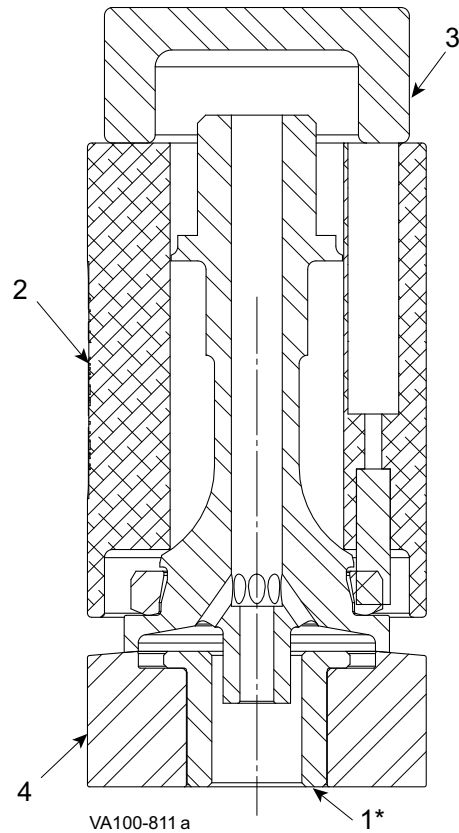
### W71 Upper Stem Tef Flow® P Seat Installation

1. (Applies to 2" valves only) Install the stem sleeve plug (item 4\*) over the stem.

**NOTE:** Item 4\* is only required for correct fit on 2" valves.

2. Place the PTFE installation base (Figure 30, item 1; Figure 31, item B) over the stem, making sure that the chamfered side rests on top of the stem plug and the flat side of the base faces away from the stem plug.
3. Take the aluminum seat installation tool (Figure 30, item 2; Figure 31, item A) and install the aluminum locator pin (Figure 30, item 3) by threading it into the seat installation tool, orienting it so that the locator pin fits into the seat plug and the correct size shoulder matches the seat that is being installed.
4. Place the new Tef Flow® P Seat in the aluminum seat installation tool (Figure 30, item 2; Figure 31, item A), orienting the seat so that the side with the chamfered edge is facing into the installation tool as shown in Figure 31.
5. Carefully set the stem on the seat and installation tool so that the locating plug fits into the plug stem.
6. With the stem facing down, carefully set the stacked components onto an arbor press.
7. Set the protective installation tool puck (Figure 30, item 5) over the top of the locating pin and installation tool.
8. With the arbor press, apply even pressure to the top of the installation tool puck (Figure 30, item 5) until the seat snaps into place on the stem plug.
9. Carefully remove the stem stack from the arbor press, removing the installation tools in reverse order.
10. Inspect the seat for correct orientation. The seat ring should spin freely on the plug if it is installed correctly.
11. Inspect the stem and stem plug for damage. Clean up any minor scratches with an emory cloth, if needed.





**Figure 32 - Lower Stem Tef Flow® P Seat Removal (Kit # 132947+)**

\* for 2" W71 ODT valves only

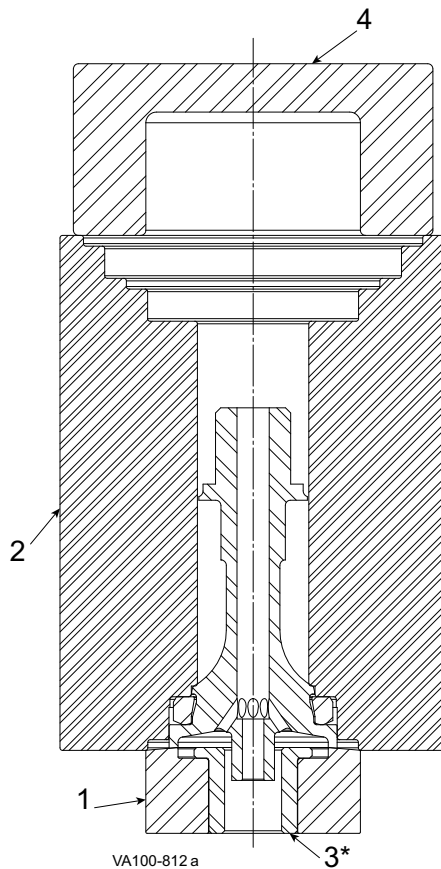
## Lower Stem Tef Flow® P Seat Removal

### W71 Lower Stem Tef Flow® P Seat Removal

1. With the lower stem in hand, take note of the orientation of the Tef Flow® P seat.
2. Remove the balancer from the bottom of the stem.
3. (Applies to 2" valves only) Place the stem sleeve plug (item 1\*) over the stem.

**NOTE:** Item 1\* is only required for correct fit on 2" valves.

4. Install the PTFE installation base (item 4) over the stem, positioned so that the chamfered side of the base rests snugly on top of the lower stem plug. Make sure the flat side of the base faces away from the plug.
5. Invert the stem so that it is oriented with the stem facing toward the floor.
6. While holding the installation base (item 4) in place on the stem, carefully set the pins of the Tef Flow® P seat removal tool (item 2) on the existing seat ring. Make sure that the pins rest only on the Tef Flow® P seat, not the seat plug, as this can cause damage to the metal plug.
7. Place the protective puck (item 3) on top of the removal tool (item 2). With the stem facing down, carefully place the components on an arbor press.
8. Apply even pressure to the top of the protective puck (item 3) until the seat is cut into three pieces.
9. Carefully retrieve the stack from the arbor press, removing the tools and seat pieces from the stem in reverse order.
10. Inspect the stem and stem plug for damage. Clean up any minor scratches with an emory cloth, if needed.



**Figure 33 - Lower Stem Tef Flow® P Seat Installation (Kit # 132357+)**

\* for 2" W71 ODT valves only

## Lower Stem Tef Flow® P Seat Installation

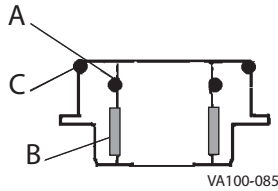
### W71 Lower Stem Tef Flow® P Seat Installation

1. (Applies to 2" valves only) Place the stem sleeve plug (item 3\*) into the PTFE installation base (item 1).

**NOTE:** Item 3\* is only required for correct fit on 2" valves.


2. With the lower stem in hand, install the PTFE installation base (item 1) over the stem, positioning it so that the chamfered side of the base rests snugly on top of the lower stem plug. Make sure the flat side of the base faces away from the stem plug.
3. Invert the stem so that it is oriented with the stem facing toward the floor, then carefully set the new Tef Flow® P seat onto the stem plug, positioned so that the chamfered angle faces away from the plug base, and is centered.
4. Carefully place the aluminum Tef Flow® P seat installation tool (item 2) over the seat, so that the matching shoulder rests snugly over the seat.
5. With the stem facing down, carefully place the stem stack on an arbor press. Set the protective puck (item 4) on top of the installation tool.
6. Apply even pressure directly on the protective puck until the seat snaps onto the stem plug.
7. Carefully remove the stem stack from the press, then remove the tools in reverse order.
8. Inspect the seat for correct installation. The seat ring should spin freely on the plug, with the chamfered edge visible.
9. Closely inspect the stem and plug for damage and clean any small scratches or dings with an emery cloth.
10. Reinstall the lower stem balancer with o-ring seal.

## Lower Bearing Carrier O-ring and Bearing Replacement



**Figure 34 - Standard Lower Bearing Carrier**

**NOTE:** The bearing will be damaged during removal and must be replaced with a new bearing.

1. Remove and replace the O-ring(s) (Figure 34, item A) located inside the lower bearing carrier. For the flush/steam barrier adapter, see Figure 6 on page 14.
-  [Maintenance Video 13: Lower bearing carrier; removal and replacement of O-ring and bearings](#)
2. Check the split bearing (Figure 34, item B) inside the lower bearing carrier by feeling the amount protruding from the lower bearing carrier wall. If the bearing is flush with the wall, replace the bearing.
3. Place a screwdriver or pick behind the bearing and pry it away from the wall of the lower bearing carrier. A needle-nose pliers can be used to grip the bearing for removal.
4. To install the new bearing, coil the bearing to a size smaller than the inside diameter of the lower bearing carrier and insert it into the proper location.
5. Push the lower stem into the lower bearing carrier to help seat the bearing properly.
6. Using your finger, ensure that the bearing is properly seated. Visually inspect the seating.
7. To remove the outer O-ring (Figure 34, item C), slide or cut the O-ring off the lower bearing carrier. Do not nick or scratch the O-ring groove.
8. Lubricate the new O-ring with grease and install it.
9. Re-install the lower bearing carrier into the body prior to re-installing the entire valve.

## Actuator O-ring and Bearing Replacement

### ⚠ CAUTION

The valve stems and actuator must be removed from the valve body before servicing the actuator components.

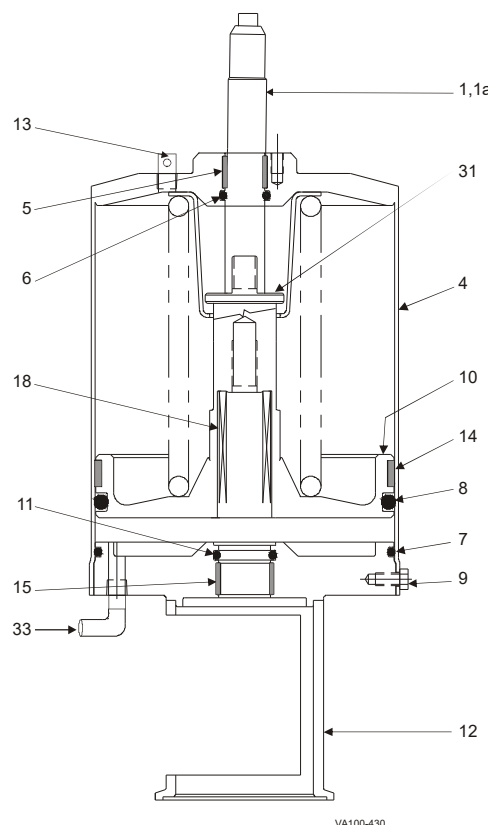
### ⚠ CAUTION

Although WCB fully-maintainable actuators are designed with a contained spring for safety, always use caution when handling any piston/spring assembly as any compressed coil spring can be extremely dangerous.

**NOTE:** Do not pressurize the actuator with air when the stems are removed. This may tear the O-rings and cause the actuator to leak air when it is re-assembled.

**NOTE:** If present, the control module must be removed to replace the O-rings and bearings in the top of the cylinder assembly. Please refer to control module publication 95-03083.

**NOTE:** For larger drawings and complete part lists, see "W71/W73 Non-Seat Lift Actuator" on page 84 and "W72RS Non Seat Lift Actuator" on page 88.



**Figure 35 - W71/W73 Actuator Assembly (Non-Seat Lift Valve)**

**NOTE:** The bearing will be damaged during removal and must be replaced with a new bearing.

**NOTE:** Installation of the piston and spring assembly on 4" actuators requires a special sleeve to contain the bearing on the piston while installing the assembly. See Figure 37 and Figure 38 on page 38.

## Removal of O-rings and Bearings, Non-Seat Lifting Actuators

### Non Seat Lifting Actuators

1. For non-seat lifting valves, remove the cap screws (Figure 35, item 9) and remove the yoke (item 12) from the cylinder assembly. Set the yoke aside.

 [Maintenance Video 14: Actuator disassembly; lower cartridge removal](#)

2. Pull the piston and spring assembly (Figure 35, item 10) from the cylinder assembly.
3. Inspect the four O-rings (Figure 35, items 6, 7, 8, and 11). Replace them if they are worn or damaged.

 [Maintenance Video 16: Removal of main piston, lower seat lift piston](#)

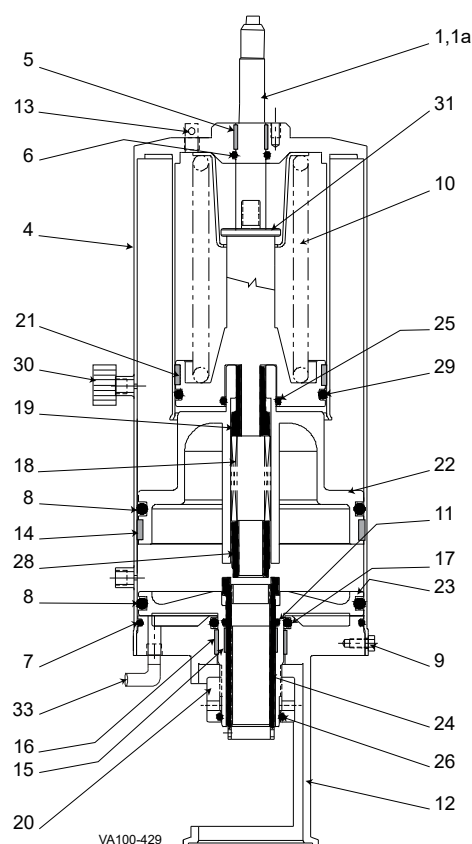
4. Inspect the three bearings (Figure 35, items 5, 14, and 15). If the bearing does not extend slightly above the edge of the metal surface, replace the bearing.
5. The bearing is split to allow its removal from the groove. Place a screwdriver or pick behind the bearing and pry it away from the wall of the yoke or cylinder cap. A needle-nose pliers can be used to grip the bearing for removal.

 [Maintenance Video 17: Main piston O-ring removal](#)

 [Maintenance Video 18: Main piston O-ring replacement with bearing](#)

6. Assemble the stack components as shown in Figure 35. Install the yoke and cap screws.

 [Maintenance Video 22: Using insertion sleeve for W71/W73 Actuators](#)



**Figure 36 - W71/W73 Actuator Assembly (Seat Lift Valve)**

[Maintenance Video 17: Main piston O-ring removal](#)

[Maintenance Video 18: Main piston O-ring replacement with bearing](#)

[Maintenance Video 19: Can top bearing and O-ring; removal and replacement](#)

[Maintenance Video 20: Main piston bearing](#)

[Maintenance Video 21: Lower seat lift piston reassembly](#)

[Maintenance Video 23: Reassembly of actuator: spacers and inner spring](#)

[Maintenance Video 24: Reassembly of lower cartridge O-rings and bearings](#)

[Maintenance Video 25: Re-installation of lower cartridge](#)

## Removal of O-rings and Bearings, Seat Lifting Actuators

**NOTE:** For larger drawings and complete part lists, see “W71/W73 Seat Lift Actuator” on page 82 and “W72RS/W72RSP Seat Lift Actuator” on page 86.

1. For seat lifting valves, remove the cap screws (Figure 36, item 9) and remove the lower cartridge (yoke, item 12; adjusting nut, item 20; adjusting sleeve, item 24; and upper seat piston, item 23).

[Maintenance Video 14: Actuator disassembly; lower cartridge removal](#)

2. To disassemble the cartridge, remove the adjusting nut (item 20) and separate the parts.

[Maintenance Video 15: Adjusting Nut removal](#)

3. Remove the small spring (Figure 36, item 18). On W71/W73 valves, also remove the bushing (Figure 35, item 28).

4. Pull out the upper cartridge (main piston, item 22; lower seat spring and piston, item 10), by carefully threading in the lower stem to pull it. Do not bend the lower stem.

Alternate method: Flip the canister right-side up and gently tap it on the table (or push down the indicator stem) until the air vacuum releases and the upper cartridge slides out the open end.

[Maintenance Video 16: Removal of main piston, lower seat lift piston](#)

5. Inspect the nine O-rings (Figure 36, items 6, 7, 8, 11, 17, 25, 26, and 29) and replace them if they are worn or damaged.
6. Inspect the five bearings on W71/W73 (Figure 36, items 5, 14, 15, 16, and 21) or four bearings on W72RS actuators (items 5, 14, 15, and 16). If the bearing does not extend slightly above the edge of the metal surface, replace it.
7. The bearing is split to allow its removal from the groove. Place a screwdriver or pick behind the bearing and pry it away from the wall of the yoke. A needle-nose pliers can be used to grip the bearing for removal.

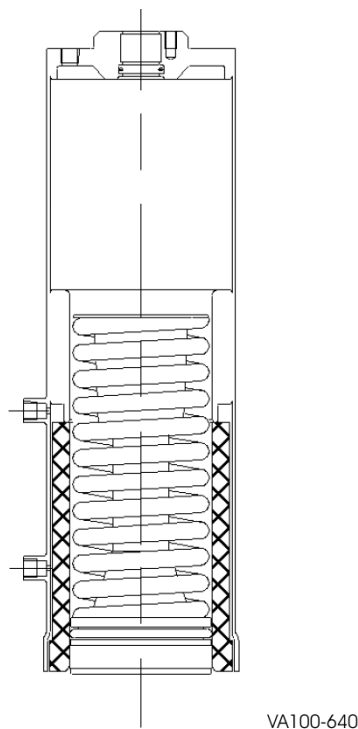
**NOTE:** The bearing will be damaged during removal and must be replaced with a new bearing.

8. Assemble the stack components as shown. Make sure that the upper cartridge components are fully inserted. Install the yoke and adjustment nut.

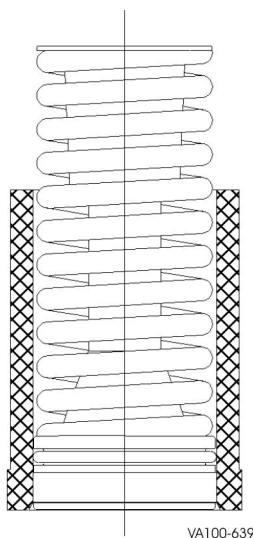
**NOTE:** Installation of the piston and spring assembly on 4" actuators requires a special sleeve to contain the bearing on the piston while installing the assembly. See Figure 37 and Figure 38 on page 38.

[Maintenance Video 22: Using insertion sleeve for W71/W73 Actuators](#)

## Installation of Piston and Spring Assembly Using Insertion Sleeve for W71/W73 4" Diameter Actuators



**Figure 37 - Installation of Piston and Spring Assembly Using Insertion Sleeve**

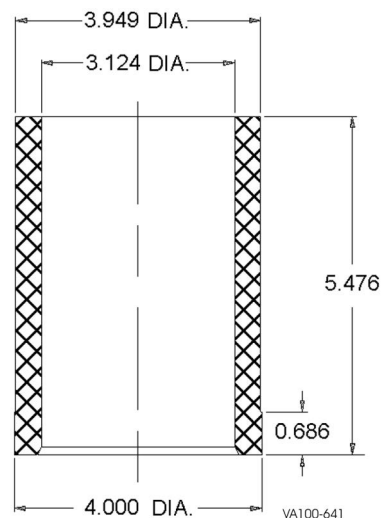


**Figure 38 - Piston and Spring Assembly Installed in Insertion Sleeve**

See Figure 37 and Figure 38. On 4" diameter actuators, the installation of the piston and spring assembly in the cylinder requires a special sleeve to contain the bearing on the piston during installation. See Figure 39 below and on page 90 for part number and dimensional details.

- Push the insertion sleeve up into the cylinder assembly.
- When the sleeve is stopped, push the piston and spring assembly up into the cylinder assembly.

 [Maintenance Video 22: Using insertion sleeve for W71/W73 Actuators](#)



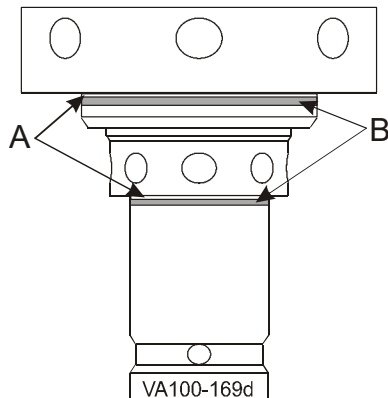
**NOTE:** The insertion sleeve is available using the part number below, or it can be created by most machine shops using #6 nylon round stock. See insertion sleeve dimensions shown above.

- Material is #6 nylon round stock.
- Bevel the inside and outside end corners.

4" Actuator Rebuild Insertion Sleeve	111840+
PL5027-CH90	

**Figure 39 - 4" Diameter Actuator Rebuild Insertion Sleeve (for W71 / W73 Valves)**

## Reassembly of Valve Stems



**Figure 40 - Assembly**

**NOTE:** Perform maintenance on stems and adapter bearings and O-rings while the stems are removed from the actuator and before reassembly.

### Upper Stem Assembly

1. Apply Bostik® Never-Seez White Food Grade with PTFE or equivalent to the threads of the upper stem.
2. Screw the upper stem clockwise into the actuator. Hold the adjusting sleeve stationary with a spanner or Allen wrench.
3. Screw the upper stem in until the scribe line (Figure 40, item A) within the etch mark adjustment zone (item B) aligns with the bottom of the adjustment sleeve. This is the factory-set lower seat clean position. See "Seat Cleaning Adjustment" on page 25 for instructions on modifying the seat clean movement.



[Maintenance Video 6: Upper stem reassembly into valve](#)

#### **⚠ WARNING**

Do not screw the upper stem all the way into the actuator, as internal O-ring damage may result.

### Lower Stem Assembly

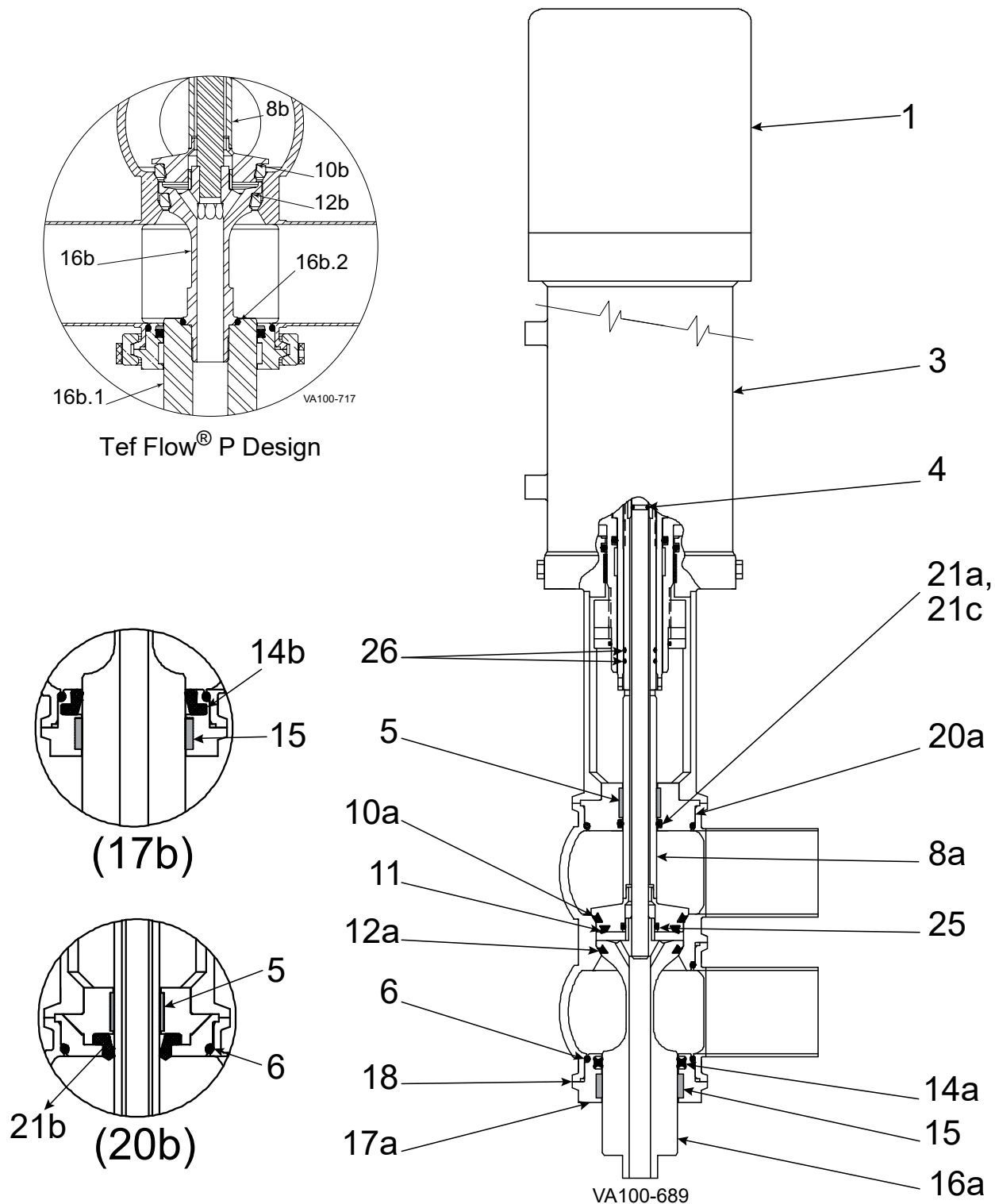
1. Apply Bostik® Never-Seez White Food Grade with PTFE or equivalent to the threads of lower stem.
2. If the valve has external flush, slide the spray bushing onto the inner stem of the lower stem.
3. Screw the lower stem clockwise into the actuator until metal-to-metal contact stops.
4. Using an open-end wrench and rubber hammer, rap the lower stem to lock the threads into place within the actuator.



[Maintenance Video 4: Lower stem reassembly into valve](#)

## Parts Lists

### W71 Mix Proof Seat Lift Valve





**W71 Mix Proof Seat Lift Valve**

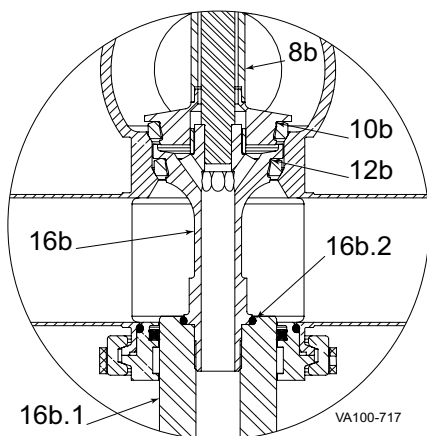
Item #	Part Description		1-1/2"	2"	2-1/2"	3"	4"	6"	Notes
1	Control Top		Contact Factory						
3	Actuator		See actuator parts list						
* 4	O-ring, Inner Stem	Nitrile	N70010	N70010	N70111	N70111	N70111	N70111	
* 5	Bearing, Upper Adapter		102757+	102757+	106047+	106047+	106047+	101995+	
* 6	O-ring, Body	EPDM	E70223	E70228	E70232	E70236	E70244	E70258	2
		FKM	V70223	V70228	V70232	V70236	V70244	V70258	
8a	Stem, Upper		111042+	111014+	111052+	111022+	111049+	POA	
8b	Stem, Upper, Tef Flow® P Design		134824+	130422+	130423+	130421+	132241+	POA	3
* 10a	Seat Ring -Tri Ring, Upper	EPDM	106031+	102736+	107048+	102488+	102491+	102738+	
		FKM	107990+	107980+	107982+	107974+	107977+	108020+	
* 10b	Seat Ring Insert- Upper	Tef Flow® P	130231+	130232+	130233+	130234+	130235+	POA	3
* 11	Seat Ring -Tri Ring, Vent	EPDM	106041+	107693+	107696+	107697+	102490+	102737+	
		FKM	107992+	107984+	107987+	107988+	107976+	108019+	
* 12a	Seat Ring -Tri Ring, Lower	EPDM	106036+	107693+	102487+	102489+	102492+	102739+	
		FKM	107991+	107984+	107973+	107975+	107978+	108021+	
* 12b	Seat Ring Insert - Lower	Tef Flow® P	130243+	130244+	130245+	130246+	130247+	POA	3
* 14a	Quad Ring, Lower	EPDM	122689+	35413+	34429+	117561+	116952+	122350+	
		FKM	122690+	35414+	35415+	117562+	116953+	122351+	
* 14b	Wiping Stem Seal, Lower	EPDM	116186+	116188+	116190+	116195+	116199+	POA	
		FKM	116187+	116189+	116191+	116196+	116200+	POA	
* 15	Bearing, Lower Seal Retainer		101947+	102000+	106049+	106048+	102003+	102004+	
16	Stem, Lower Assembly		118247+	118248+	118249+	118250+	118251+	POA	7
16b	Stem, Lower, Tef Flow® P Design		131694+	131695+	131696+	130420+	131697+	POA	
16b.1	Lower Balancer, Tef Flow® P Design		128919+	128920+	128921+	127704+	128923+	POA	
16b.2	O-Ring, Tef Flow® P Design	EPDM	E70210	E70217	E70217	E70217	E70217	POA	
		FKM	V70210	V70217	V70217	V70217	V70217	POA	
17a	Seal Retainer, Quad Ring		106066+	106067+	106068+	106069+	106070+	125047+	
17b	Seal Retainer, Wiping Stem Seal		117444+	117445+	117446+	117447+	117448+	POA	
18	Clamp		119-30	119-33	119-34	119-51	119-87	119-123	2
20a	Adapter, O-ring or Quad Ring		111043+	111017+	111196+	111026+	111029+	123970+	
20b	Adapter, Wiping Stem Seal		117840+	117841+	117842+	117843+	117878+	POA	
* 21a	O-ring, Upper Stem	EPDM	E70210	E70210	E70214	E70214	E70214	N/A	
		FKM	V70210	V70210	V70214	V70214	V70214	N/A	
* 21c	Quad Ring, Upper Stem	EPDM	121300+	121300+	124163+	124163+	124163+	114221+	
		FKM	124088+	124088+	121299+	121299+	121299+	114223+	
* 21b	Wiping Stem Seal, Upper	EPDM	116183+	116183+	116184+	116184+	116184+	POA	
		FKM	115626+	115626+	116185+	116185+	116185+	POA	
* 25	O-ring, Non-Flush	EPDM	E70115	E70115	E70121	E70121	E70121	E70121	
		FKM	V70115	V70115	V70121	V70121	V70121	V70121	
* 26	O-ring, outer stem (qty 2)	Nitrile	N90016	N90016	N90020	N90020	N90020	N90020	

PL5027-CH49

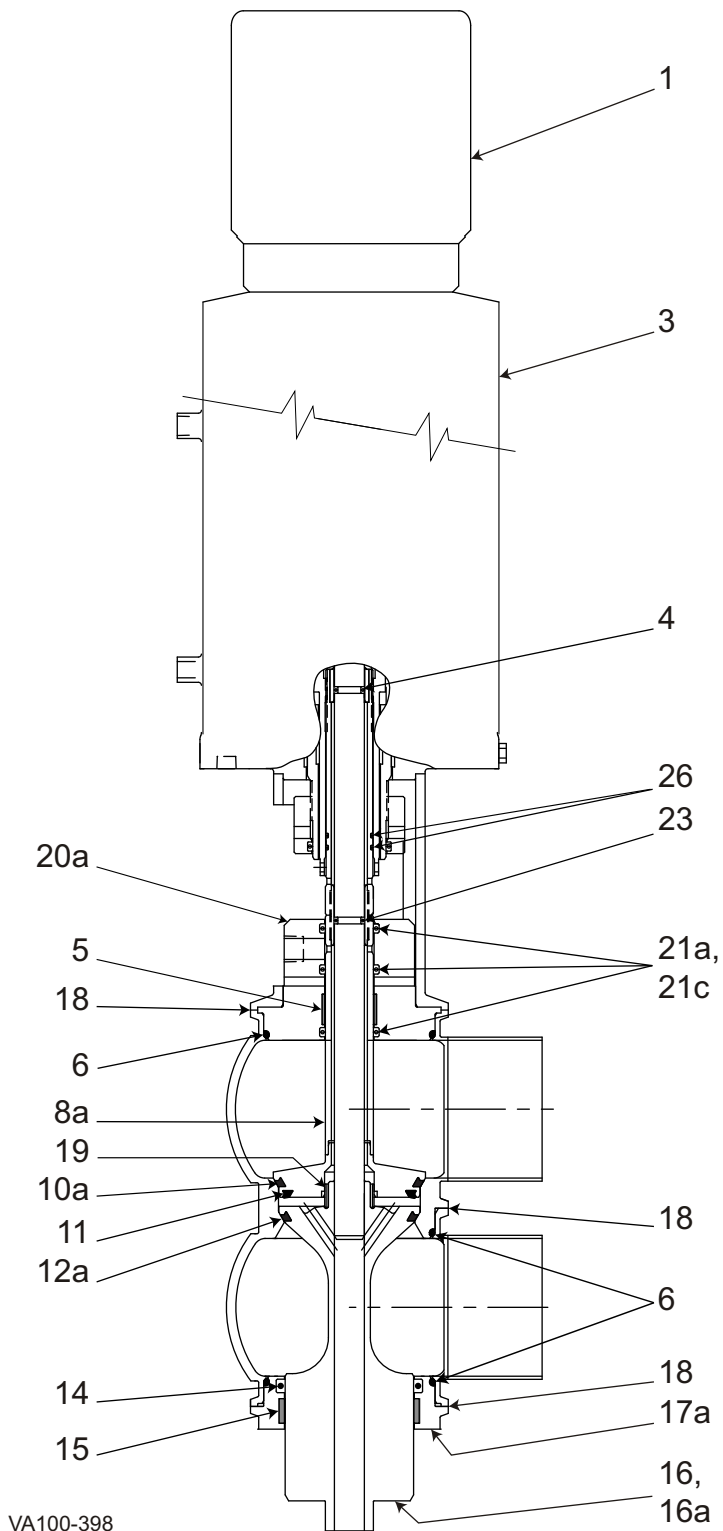
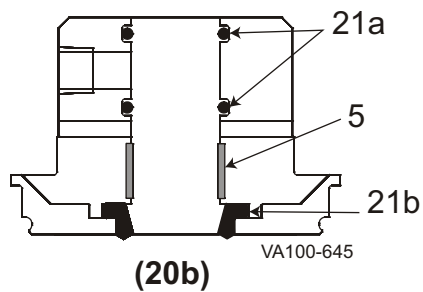
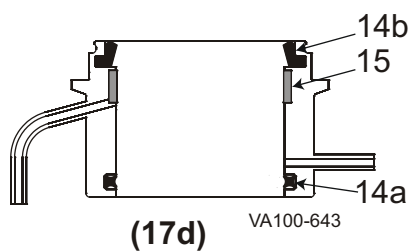
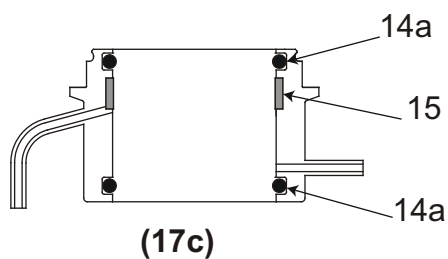
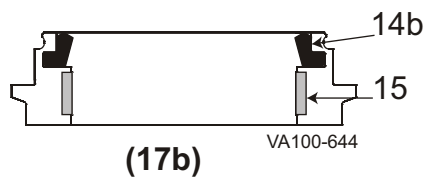
## Notes:

\* Recommended Spare Parts

- For one-piece body, qty. 2 are required for item 6 and item 18; for a clamped body, qty. 3 are required.
- For valve with Tef Flow® P design stem only.
- Unless otherwise noted, quantity required is 1.
- POA = Part # on availability; N/A = not available with this design.
- Part number includes lower stem and stem bushing, which are assembled together.

**W71 Mix Proof Seat Lift Valve with External Flush**

Tef Flow® P Design



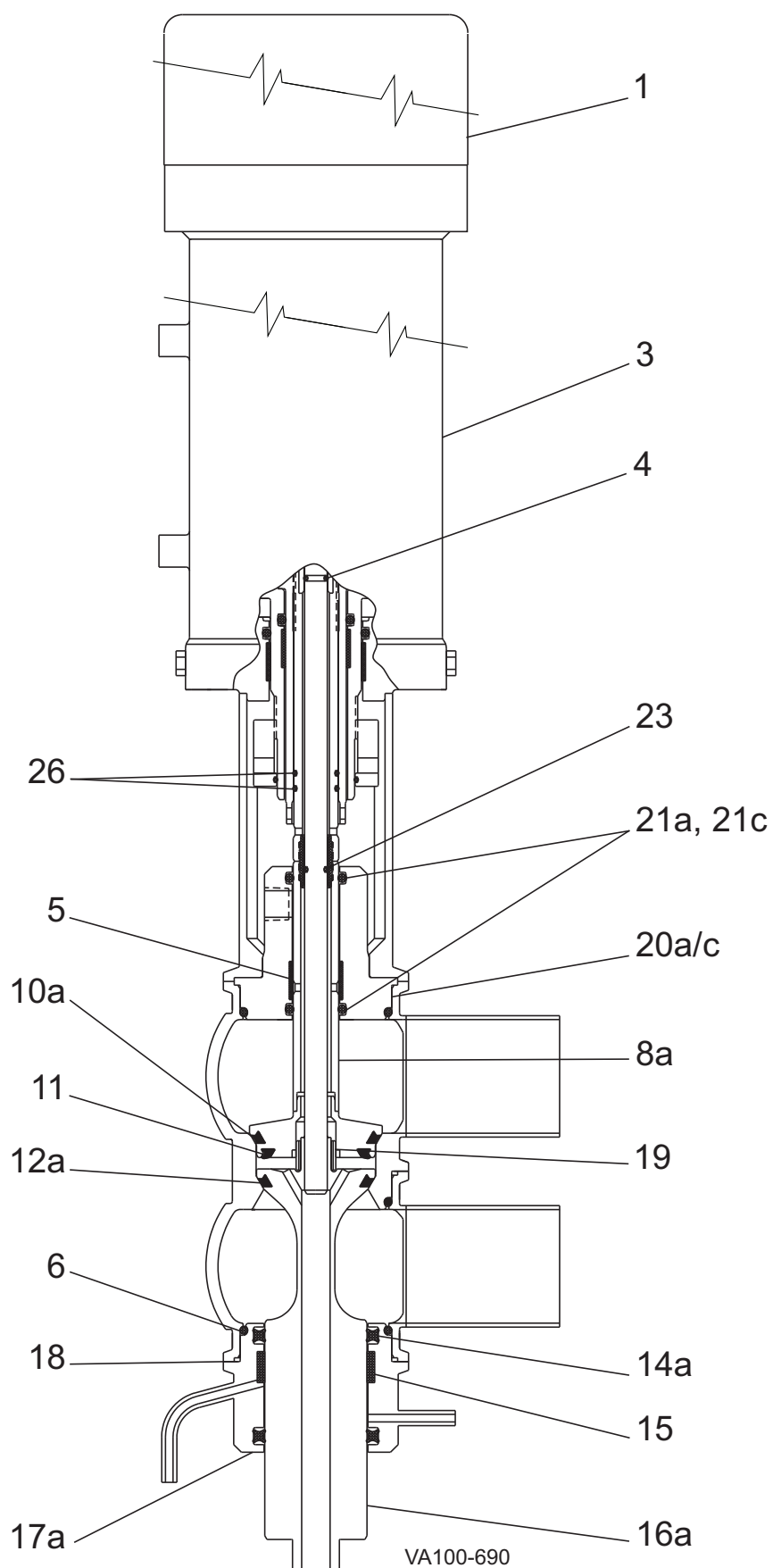
**W71 Mix Proof Seat Lift Valve with External Flush**

Item #	Part Description		1-1/2"	2"	2-1/2"	3"	4"	6"	Notes
1	Control Top		Contact Factory						
3	Actuator		See actuator parts list						
* 4	O-ring, Outer Stem (qty 2)	Nitrile	N70010	N70010	N70111	N70111	N70111	N70111	
* 5	Bearing, Upper Adapter	Std.	102757+	102757+	106047+	106047+	106047+	101995+	
		Tef Flow® P design					102002+	N/A	3
* 6	O-ring, Body	EPDM	E70223	E70228	E70232	E70236	E70244	E70258	2
		FKM	V70223	V70228	V70232	V70236	V70244	V70258	
8a	Stem, Upper Assembly		119199+	119200+	119201+	119202+	119203+	128647+	11
8b	Stem, Upper, Tef Flow® P Design		134844+	131680+	131682+	131684+	132242+	POA	3
* 10a	Seat Ring -Tri Ring, Upper	EPDM	106031+	102736+	107048+	102488+	102491+	102738+	
		FKM	107990+	107980+	107982+	107974+	107977+	108020+	
* 10b	Seat Ring Insert- Upper	Tef Flow® P	130231+	130232+	130233+	130234+	130235+	POA	3
* 11	Seat Ring -Tri Ring, Vent	EPDM	106041+	107693+	107696+	107697+	102490+	102737+	
		FKM	107992+	107984+	107987+	107988+	107976+	108019+	
* 12a	Seat Ring -Tri Ring, Lower	EPDM	106036+	107693+	102487+	102489+	102492+	102739+	
		FKM	107991+	107984+	107973+	107975+	107978+	108021+	
* 12b	Seat Ring Insert - Lower	Tef Flow® P	130243+	130244+	130245+	130246+	130247+	POA	3
* 14a	Quad Ring, Lower	EPDM	122689+	35413+	34429+	117561+	116952+	122350+	
		FKM	122690+	35414+	35415+	117562+	116953+	122351+	
* 14b	Wiping Stem Seal, Lower	EPDM	116186+	116188+	116198+	116195+	116199+	POA	
		FKM	116187+	116189+	116191+	116196+	116200+	POA	
* 15	Bearing, Lower Seal Retainer		101947+	102000+	106049+	106048+	102003+	114232+	
16	Stem, Lower Assembly		111499+	111513+	111519+	111520+	111524+	POA	9
16a	Stem, Lower Assembly (used with 17c/17d)		118241	118409	118243	118244	118245	N/A	9, 12
16b	Stem, Lower, Tef Flow® P Design		131694+	131695+	131696+	130420+	131697+	POA	3
16b.1	Lower Balancer, Tef Flow® P Design		128919+	128920+	128921+	127704+	128923+	POA	3
16b.2	O-Ring, Tef Flow® P Design	EPDM	E70210	E70217	E70217	E70217	E70217	POA	3, 5
		FKM	V70210	V70217	V70217	V70217	V70217	POA	
17a	Seal Retainer, Quad Ring		106066+	106067+	106068+	106069+	106070+	125047+	
17b	Seal Retainer, Wiping Stem Seal		117444+	117445+	117446+	117447+	117448+	POA	
17c	Seal Retainer, Lower Flush, Quad Ring		121374+	117728+	122609+	117736+	118364+	POA	
17d	Seal Retainer, Lower Flush, Wiping Stem Seal		119050+	119035+	118226+	117559+	118253+	POA	
18	Clamp		119-30	119-33	119-34	119-51	119-87	119-123	2
19	Spray Bushing		106030+	106030+	107950+	107950+	107950+	107950+	
20a	Adapter (External Flush), O-ring or Quad Ring		106020+	106021+	106022+	106023+	106024+	128651+	
20b	Adapter, Wiping Stem Seal		119467+	119468+	119469+	119470+	119471+	POA	
* 21a	O-ring, Upper Stem	EPDM	E70210	E70210	E70214	E70214	E70214	N/A	
	(qty 3 required)	FKM	V70210	V70210	V70214	V70214	V70214	N/A	
* 21c	Quad Ring, Upper Stem	EPDM	121300+	121300+	124163+	124163+	124163+	114221+	
	(qty 3 req)	FKM	124088+	124088+	121299+	121299+	121299+	114223+	
* 21b	Wiping Stem Seal, Upper	EPDM	116183+	116183+	116184+	116184+	116184+	POA	
		FKM	115626+	115626+	116185+	116185+	116185+	POA	
* 23	O-ring, Flush	EPDM	E70010	E70010	E70111	E70111	E70111	E70111	
		FKM	V70010	V70010	V70111	V70111	V70111	V70111	
* 26	O-ring, Outer Stem (qty 2)	Nitrile	N90016	N90016	N90020	N90020	N90020	N90020	

PL5027-CH50

Notes:\* Recommended Spare Parts

- For one-piece body, qty. 2 are required for item 6 and item 18; for a clamped body, qty. 3 are required.
- For valve with Tef Flow® P design stem only.
- Unless otherwise noted, quantity required is 1.
- EPDM recommended on all steam-contact seals.
- POA = Part # on availability; N/A = not available with this design.
- Part number includes lower stem and inner stem, which are assembled together.
- Part number includes upper stem, outer stem and coupling sleeve, which are assembled together.
- This stem used for valves with lower external flush and lower seal retainer item 17c or 17d.

**W71 Mix Proof Seat Lift Valve with Steam Adapter**

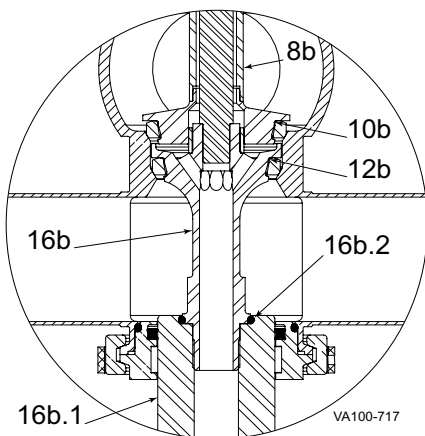
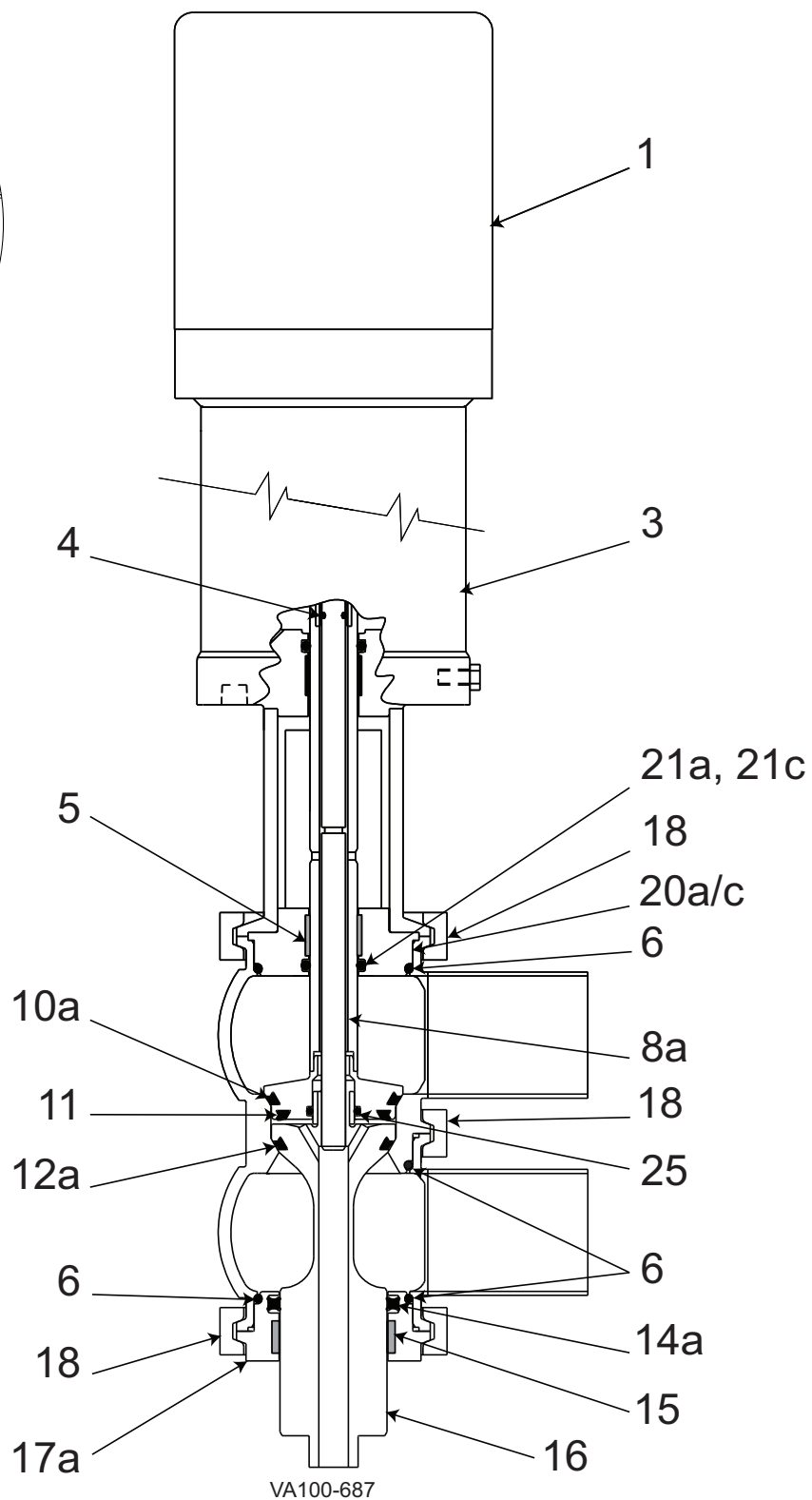
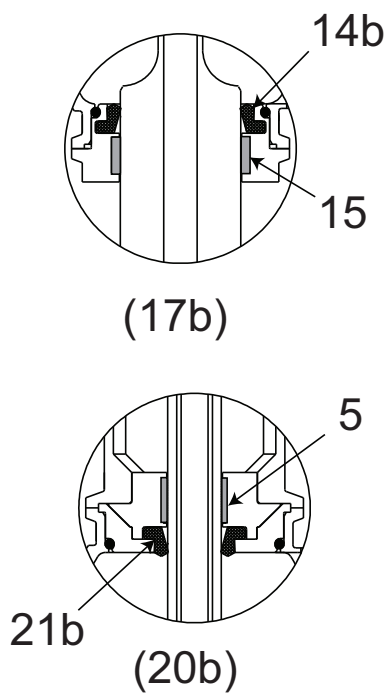
**W71 Mix Proof Seat Lift Valve with Steam Adapter**

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"	6"	Notes
1	Control Top	Contact Factory						
3	Actuator	See actuator parts list						
* 4	O-ring Nitrile	N70010	N70010	N70111	N70111	N70111	N70111	
* 5	Bearing, Upper Adapter	102757+	102757+	106047+	106047+	106047+	101995+	
* 6	O-ring, Body EPDM	E70223	E70228	E70232	E70236	E70244	E70258	2
	FKM	V70223	V70228	V70232	V70236	V70244	V70258	
8a	Stem, Upper Assembly	POA	POA	POA	POA	POA	N/A	11
* 10a	Seat Ring -Tri Ring, Upper EPDM	106031+	102736+	107048+	102488+	102491+	102738+	
	FKM	107990+	107980+	107982+	107974+	107977+	108020+	
* 11	Seat Ring -Tri Ring, Vent EPDM	106041+	107693+	107696+	107697+	102490+	102737+	
	FKM	107992+	107984+	107987+	107988+	107976+	108019+	
* 12a	Seat Ring -Tri Ring, Lower EPDM	106036+	107693+	102487+	102489+	102492+	102739+	
	FKM	107991+	107984+	107973+	107975+	107978+	108021+	
* 14a	Quad Ring, Lower EPDM	E70322	E70327	E70331	E70335	E70342	N/A	
	(qty 2 req.) FKM	V70322	V70327	V70331	V70335	V70342	N/A	
* 15	Bearing, Lower Seal Retainer	101947+	102000+	106049+	106048+	102003+	POA	
16a	Stem, Lower Assembly	118241	118409	118243	118244	118245	N/A	9
17a	Seal Retainer, Lower Flush, Quad Ring	POA	117728+	122609+	117736+	118364+	POA	
18	Clamp	119-30	119-33	119-34	119-51	119-87	119-123	2
19	Spray Bushing	106030+	106030+	107950+	107950+	107950+	107950+	
20a/c	Adapter, O-ring or Quad Ring	POA	117741+	114925+	117742+	114927+	POA	
* 21a	O-ring, Upper Stem EPDM	E70210	E70210	E70214	E70214	E70214	N/A	
	(qty 2 req.) FKM	V70210	V70210	V70214	V70214	V70214	N/A	
* 21c	Quad Ring, Upper Stem EPDM	121300+	121300+	124163+	124163+	124163+	114221+	
	(qty 2 req.) FKM	124088+	124088+	121299+	121299+	121299+	114223+	
* 23	O-ring, Flush EPDM	E70010	E70010	E70111	E70111	E70111	E70111	
	FKM	V70010	V70010	V70111	V70111	V70111	V70111	
* 26	O-ring, Outer Stem (qty 2 req) Nitrile	N90016	N90016	N90020	N90020	N90020	N90020	

PL5027-CH87a

## Notes:

- For one-piece body, qty. 2 are required for item 6 and item 18; for a clamped body, qty. 3 are required.
- For valve with TFM design stem only.
- Unless otherwise noted, quantity required is 1.
- EPDM recommended on all steam-contact seals.
- POA = Part # on availability; N/A = not available with this design.
- Part number includes lower stem and inner stem, which are assembled together.
- Part number includes upper stem, outer stem and coupling sleeve, which are assembled together.

**W71 Mix Proof Non-Seat Lift Valve****Tef Flow® P Design**

**W71 Mix Proof Non-Seat Lift Valve**

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"	6"	Notes
1	Control Top	Contact Factory						
3	Actuator	See actuator parts list						
* 4	O-ring, Inner Stem Nitrile	N70010	N70010	N70111	N70111	N70111	N70111	
* 5	Bearing, Upper Adapter Std. Tef Flow® P design	102757+	102757+	106047+	106047+	106047+	101995+	
						102002+	N/A	3
* 6	O-ring, Body EPDM	E70223	E70228	E70232	E70236	E70244	E70258	
	FKM	V70223	V70228	V70232	V70236	V70244	V70258	2
8a	Stem, Upper	116615+	115788+	115663+	115648+	115793+	POA	
8b	Stem, Upper, Tef Flow® P Design	134818+	130248+	130249+	130250+	132241+	POA	3
* 10a	Seat Ring -Tri Ring, Upper EPDM	106031+	102736+	107048+	102488+	102491+	102738+	
	FKM	107990+	107980+	107982+	107974+	107977+	108020+	
* 10b	Seat Ring Insert- Upper Tef Flow® P	130231+	130232+	130233+	130234+	130235+	POA	3
* 11	Seat Ring -Tri Ring, Vent EPDM	106041+	107693+	107696+	107697+	102490+	102737+	
	FKM	107992+	107984+	107987+	107988+	107976+	108019+	
* 12a	Seat Ring -Tri Ring, Lower EPDM	106036+	107693+	102487+	102489+	102492+	102739+	
	FKM	107991+	107984+	107973+	107975+	107978+	108021+	
* 12b	Seat Ring Insert - Lower Tef Flow® P	130243+	130244+	130245+	130246+	130247+	POA	3
* 14a	Quad Ring, Lower EPDM	122689+	35413+	34429+	117561+	116952+	122350+	
	FKM	122690+	35414+	35415+	117562+	116953+	122351+	
* 14b	Wiping Stem Seal, Lower EPDM	116186+	116188+	116190+	116195+	116199+	POA	
	FKM	116187+	116189+	116191+	116196+	116200+	POA	
* 15	Bearing, Lower Seal Retainer	101947+	102000+	106049+	106048+	102003+	102004+	
16a	Stem, Lower Assembly	118150+	118151+	118152+	118153+	118154+	POA	7
16b	Stem, Lower, Tef Flow® P Design	131823+	131824+	131825+	131826+	131827+	POA	3
16b.1	Lower Balancer, Tef Flow® P Design	128919+	128920+	128921+	127704+	128923+	POA	3
16b.2	O-Ring, Tef Flow® P Design EPDM	E70210	E70217	E70217	E70217	E70217	POA	3
	FKM	V70210	V70217	V70217	V70217	V70217	POA	3
17a	Seal Retainer, Quad Ring	106066+	106067+	106068+	106069+	106070+	125047+	
17b	Seal Retainer, Wiping Stem Seal	117444+	117445+	117446+	117447+	117448+	POA	
18	Clamp	119-30	119-33	119-34	119-51	119-87	119-123	2
20a/c	Adapter, O-ring or Quad Ring	111043+	111017+	111196+	111026+	111029+	123970+	
20b	Adapter, Wiping Stem Seal	117840+	117841+	117842+	117843+	117878+	POA	
* 21a	O-ring, Upper Stem EPDM	E70210	E70210	E70214	E70214	E70214	N/A	
	FKM	V70210	V70210	V70214	V70214	V70214	N/A	
* 21c	Quad Ring, Upper Stem EPDM	121300+	121300+	124163+	124163+	124163+	114221+	
	FKM	124088+	124088+	121299+	121299+	121299+	114223+	
* 21b	Wiping Stem Seal, Upper EPDM	116183+	116183+	116184+	116184+	116184+	POA	
	FKM	115626+	115626+	116185+	116185+	116185+	POA	
* 25	O-ring, Non-Flush EPDM	E70115	E70115	E70121	E70121	E70121	E70121	
	FKM	V70115	V70115	V70121	V70121	V70121	V70121	

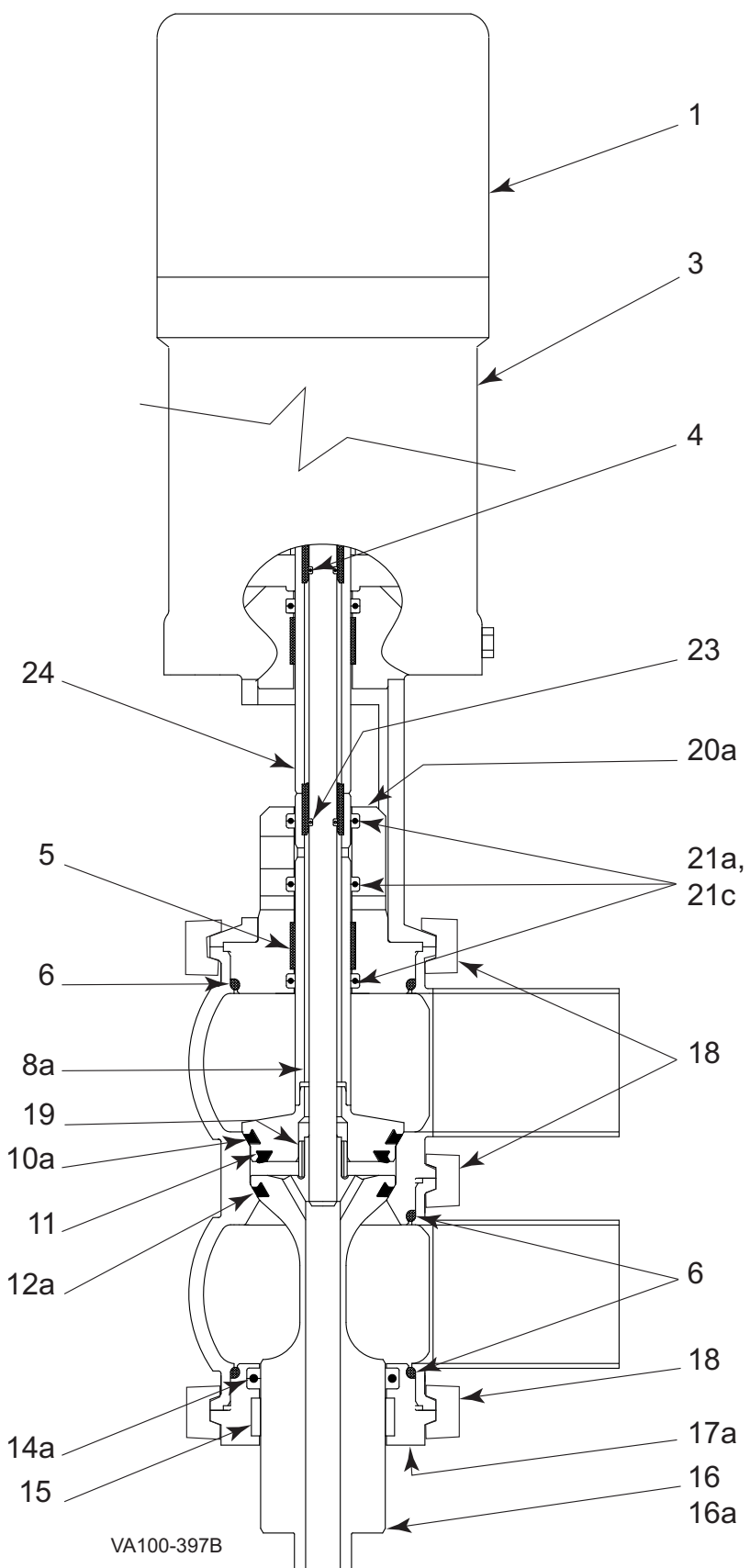
PL5027-CH47

## Notes:

- \* Recommended Spare Parts
- 2. For one-piece body, qty. 2 are required for item 6 and item 18; for a clamped body, qty. 3 are required.
- 3. For valve with Tef Flow® P design stem only.
- 4. Unless otherwise noted, quantity required is 1.
- 6. POA = Part # on availability; N/A = not available with this design.
- 7. Part number includes lower stem and stem bushing, which are assembled together.

(17b)

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**W71 Mix Proof Non-Seat Lift Valve with External Flush**

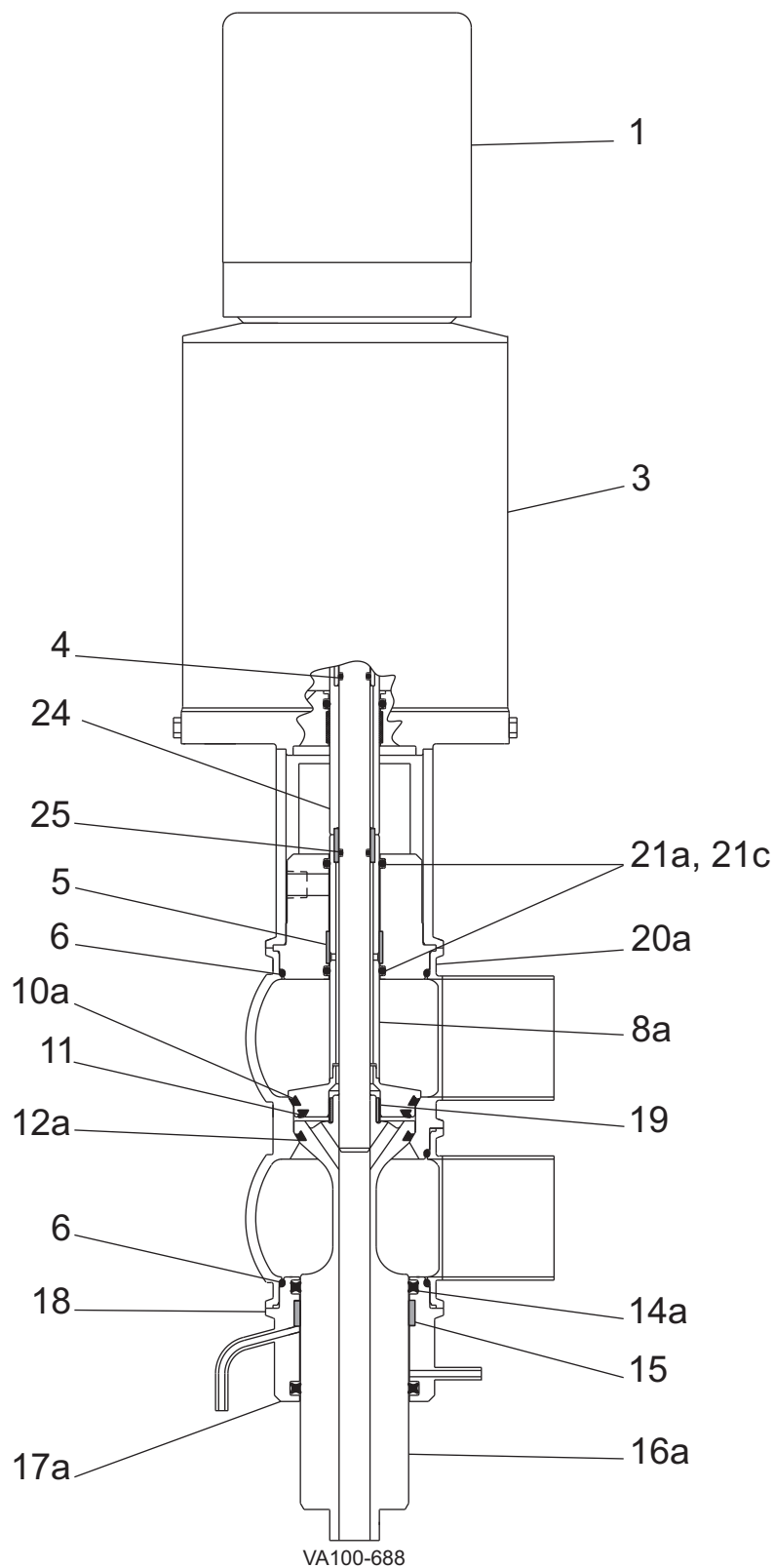
Item #	Part Description		1-1/2"	2"	2-1/2"	3"	4"	6"	Notes
1	Control Top		Contact Factory						
3	Actuator		See actuator parts list						
* 4	O-ring, Inner Stem	Nitrile	N70010	N70010	N70111	N70111	N70111	N70111	
* 5	Bearing, Upper Adapter	Std. Tef Flow® P design	102757+	102757+	106047+	106047+	106047+	101995+	
							102002+	N/A	3
* 6	O-ring, Body	EPDM	E70223	E70228	E70232	E70236	E70244	E70258	
		FKM	V70223	V70228	V70232	V70236	V70244	V70258	2
8a	Stem, Upper Assembly		106015+	106016+	106017+	106018+	106019+	128647+	8, 10
8b	Stem, Upper, Tef Flow® P Design		131838+	131840+	131842+	131848+	132242+	POA	3
* 10a	Seat Ring -Tri Ring, Upper	EPDM	106031+	102736+	107048+	102488+	102491+	102738+	
		FKM	107990+	107980+	107982+	107974+	107977+	108020+	
* 10b	Seat Ring Insert- Upper	Tef Flow® P	130231+	130232+	130233+	130234+	130235+	POA	3
* 11	Seat Ring -Tri Ring, Vent	EPDM	106041+	107693+	107696+	107697+	102490+	102737+	
		FKM	107992+	107984+	107987+	107988+	107976+	108019+	
* 12a	Seat Ring -Tri Ring, Lower	EPDM	106036+	107693+	102487+	102489+	102492+	102739+	
		FKM	107991+	107984+	107973+	107975+	107978+	108021+	
* 12b	Seat Ring Insert - Lower	Tef Flow® P	130243+	130244+	130245+	130246+	130247+	POA	3
* 14a	Quad Ring, Lower	EPDM	122689+	35413+	34429+	117561+	116952+	122350+	
		FKM	122690+	35414+	35415+	117562+	116953+	122351+	
* 14b	Wiping Stem Seal, Lower	EPDM	116186+	116188+	116190+	116195+	116199+	POA	
		FKM	116187+	116189+	116191+	116196+	116200+	POA	
* 15	Bearing, Lower Seal Retainer		101947+	102000+	106049+	106048+	102003+	114232+	
16	Stem, Lower Assembly		106051+	106052+	106053+	106054+	106055+	129719+	9
16a	Stem, Lower Assembly (used with 17c/17d)		114933+	114934+	114935+	114936+	114937+	POA	9, 12
16b	Stem, Lower, Tef Flow® P Design		131823+	131824+	131825+	131826+	131827+	POA	
16b.1	Lower Balancer, Tef Flow® P Design		128919+	128920+	128921+	127704+	128923+	POA	
16b.2	O-Ring, Tef Flow® P Design	EPDM	E70210	E70217	E70217	E70217	E70217	POA	3, 5
		FKM	V70210	V70217	V70217	V70217	V70217	POA	3
17a	Seal Retainer, Quad Ring		106066+	106067+	106068+	106069+	106070+	125047+	
17b	Seal Retainer, Wiping Stem Seal		117444+	117445+	117446+	117447+	117448+	POA	
17c	Seal Retainer, Lower Flush, Quad Ring		114918+	117728+	114920+	117736+	118364+	POA	
17d	Seal Retainer, Lower Flush, Wiping Stem Seal		119050+	119035+	118226+	117559+	118253+	POA	
18	Clamp		119-30	119-33	119-34	119-51	119-87	119-123	2
19	Spray Bushing		106030+	106030+	107950+	107950+	107950+	107950+	
20a/c	Adapter, O-ring or Quad Ring		106020+	106021+	106022+	106023+	106024+	128651+	
20b	Adapter, Wiping Stem Seal		119467+	119468+	119569+	119470+	119471+	POA	
* 21a	O-ring, Upper Stem	EPDM	E70210	E70210	E70214	E70214	E70214	N/A	
	(qty 3 required)	FKM	V70210	V70210	V70214	V70214	V70214	POA	
* 21c	Quad Ring, Upper Stem	EPDM	121300+	121300+	124163+	124163+	124163+	114221+	
	(qty 3 required)	FKM	124088+	124088+	121299+	121299+	121299+	114223+	
* 21b	Wiping Stem Seal, Upper	EPDM	116183+	116183+	116184+	116184+	POA	POA	
	(qty 3 required)	FKM	115626+	115626+	116185+	116185+	POA	POA	
* 23	O-ring, Flush	EPDM	E70010	E70010	E70111	E70111	E70111	E70111	
		FKM	V70010	V70010	V70111	V70111	V70111	V70111	
24	Stem, Actuator, NSL Flush		107790+	107756+	107949+	107949+	107949+	129703+	

PL5027-CH48

Notes:\* Recommended Spare Parts

- For one-piece body, qty. 2 are required for item 6 and item 18; for a clamped body, qty. 3 are required.
- For valve with Tef Flow® P design stem only.
- Unless otherwise noted, quantity required is 1.
- EPDM recommended on all steam-contact seals.
- POA = Part # on availability; N/A = not available with this design.
- Part number includes upper stem and coupling sleeve, which are assembled together.
- Part number includes lower stem and inner stem, which are assembled together.
- A separate actuator stem (item 24) mates with item 8.
- This stem used for valves with lower external flush and lower seal retainer item 17c or 17d.

## W71 Mix Proof Non-Seat Lift Valve with Steam Adapter



**W71 Mix Proof Non-Seat Lift Valve with Steam Adapter**

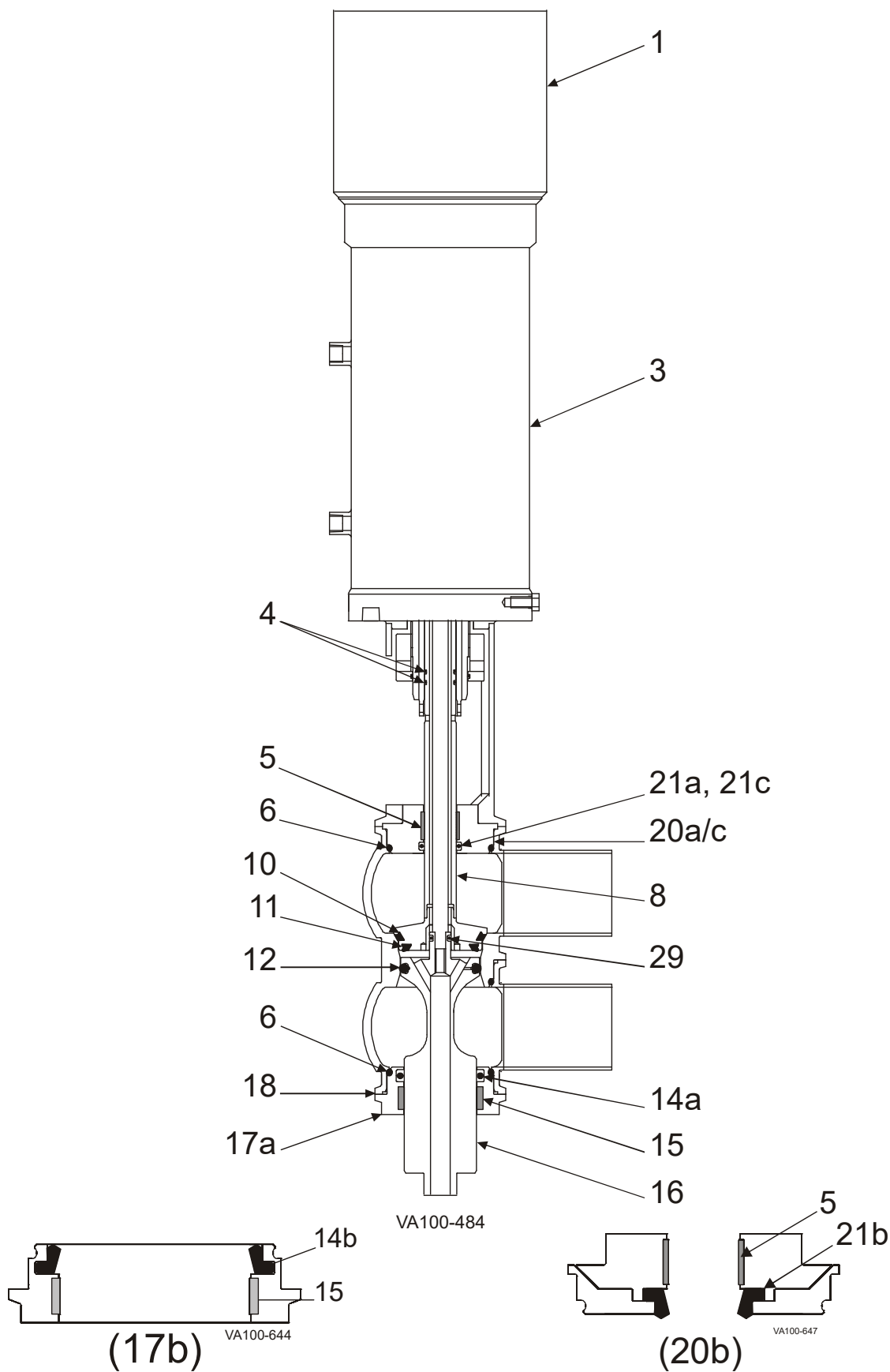
Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"	6"	Notes
1	Control Top	Contact Factory						
3	Actuator	See actuator parts lists						
* 4	O-ring, Inner Stem	Nitrile	N70010	N70010	N70111	N70111	N70111	
* 5	Bearing, Upper Adapter		102757+	102757+	106047+	106047+	106047+	101995+
* 6	O-ring, Body	EPDM	E70223	E70228	E70232	E70236	E70244	E70258
		FKM	V70223	V70228	V70232	V70236	V70244	V70258
8a	Stem, Upper Assembly		130673+	126218+	POA	122284+	POA	POA
* 10a	Seat Ring -Tri Ring, Upper	EPDM	106031+	102736+	107048+	102488+	102491+	102738+
		FKM	107990+	107980+	107982+	107974+	107977+	108020+
* 11	Seat Ring -Tri Ring, Vent	EPDM	106041+	107693+	107696+	107697+	102490+	102737+
		FKM	107992+	107984+	107987+	107988+	107976+	108019+
* 12a	Seat Ring -Tri Ring, Lower	EPDM	106036+	107693+	102487+	102489+	102492+	102739+
		FKM	107991+	107984+	107973+	107975+	107978+	108021+
* 14a	Quad Ring, Lower (qty 2 req)	EPDM	122689+	35413+	34429+	117561+	116952+	122350+
		FKM	122690+	35414+	35415+	117562+	116953+	122351+
* 15	Bearing, Lower Seal Retainer		101947+	102000+	106049+	106048+	102003+	102004+
16a	Stem, Lower Assembly		114933	114934	114935	114936	114937	POA
17a	Seal Retainer, Lower Flush, Quad Ring		POA	117728+	122609+	117736+	118364+	POA
18	Clamp		119-30	119-33	119-34	119-51	119-87	119-123
19	Spray Bushing		106030+	106030+	107950+	107950+	107950+	107950+
20a	Adapter, O-ring or Quad Ring		POA	117741+	114925+	117742+	114927+	POA
* 21a	O-ring, Upper Stem	EPDM	E70210	E70210	E70214	E70214	E70214	N/A
	(qty 2 required)	FKM	V70210	V70210	V70214	V70214	V70214	POA
* 21c	Quad Ring, Upper Stem	EPDM	121300+	121300+	124163+	124163+	124163+	114221+
	(qty 2 required)	FKM	124088+	124088+	121299+	121299+	121299+	114223+
* 23	O-ring, Flush	EPDM	E70010	E70010	E70111	E70111	E70111	E70111
		FKM	V70010	V70010	V70111	V70111	V70111	V70111
24	Stem, Actuator, NSL Flush		107790+	107756+	107949+	107949+	107949+	129703+

PL5027-CH86a

Notes:\* Recommended Spare Parts

- For one-piece body, qty. 2 are required for item 6 and item 18; for a clamped body, qty. 3 are required.
- Unless otherwise noted, quantity required is 1.
- EPDM recommended on all steam-contact seals.
- POA = Part # on availability; N/A = not available with this design.
- Part number includes upper stem and coupling sleeve, which are assembled together.
- Part number includes lower stem and inner stem, which are assembled together.

## W72RS Mix Proof Seat Lift Valve



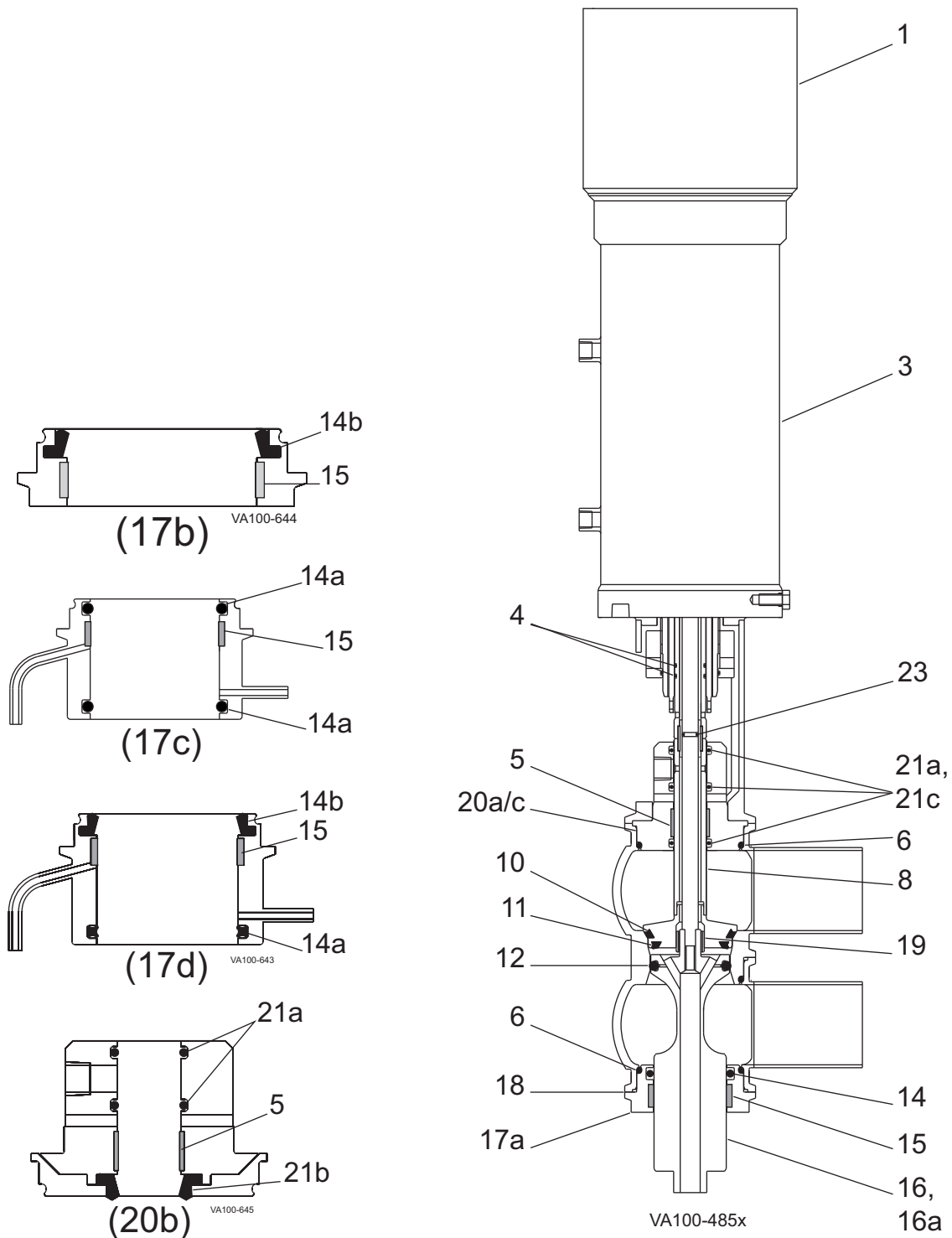
**W72RS Mix Proof Seat Lift Valve**

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"	6"	Notes
1	Control Top	Contact Factory						
3	Actuator	See actuator parts list						
* 4	O-ring, Outer Stem (qty 2 req)	Nitrile	N90016	N90016	N90020	N90020	N90020	
* 5	Bearing, Upper Adapter		102757+	102757+	106047+	106047+	106047+	101995+
* 6	O-ring, Body	EPDM	E70223	E70228	E70232	E70236	E70244	E70258
		FKM	V70223	V70228	V70232	V70236	V70244	V70258
8	Stem, Upper Assembly		113390	113091	113263	113102	113265	POA
* 10	Seat Ring - Tri Ring, Upper	EPDM	106031+	102736+	107048+	102488+	102491+	102738+
		FKM	107990+	107980+	107982+	107974+	107977+	108020+
* 11	Seat Ring - Tri Ring, Vent	EPDM	106041+	107693+	107696+	107697+	102490+	102737+
		FKM	107992+	107984+	107987+	107988+	107976+	108019+
* 12	Seat Ring - O-ring, Lower	EPDM	E80319	E80325	E80329	E80333	E80340	E80354
		FKM	V80319	V80325	V80329	V80333	V80340	V80354
* 14a	Quad Ring, Lower	EPDM	122689+	35413+	34429+	117561+	116952+	122350+
		FKM	122690+	35414+	35415+	117562+	116953+	122351+
* 14b	Wiping Stem Seal, Lower	EPDM	116186+	116188+	116190+	116195+	116199+	POA
		FKM	116187+	116189+	116191+	116196+	116200+	POA
* 15	Bearing, Lower Seal Retainer		101947+	102000+	106049+	106048+	102003+	102004+
16	Stem, Lower Assembly		119436	119437	119438	119439	119440	POA
17a	Seal Retainer, Quad Ring		106066+	106067+	106068+	106069+	106070+	125047+
17b	Seal Retainer, Wiping Stem Seal		117444+	117445+	117446+	117447+	117448+	POA
18	Clamp		119-30	119-33	119-34	119-51	119-87	119-123
20a/c	Adapter, O-ring or Quad Ring		111043+	111017+	111196+	111026+	111029+	123970+
20b	Adapter, Wiping Stem Seal		119441+	119442+	119443+	119444+	119445+	POA
* 21a	O-ring, Upper Stem	EPDM	E70210	E70210	E70214	E70214	E70214	N/A
		FKM	V70210	V70210	V70214	V70214	V70214	N/A
* 21c	Quad Ring, Upper Stem	EPDM	121300+	121300+	124163+	124163+	124163+	114221+
		FKM	124088+	124088+	121299+	121299+	121299+	114223+
* 21b	Wiping Stem Seal, Upper	EPDM	116183+	116183+	116184+	116184+	116184+	POA
		FKM	115626+	115626+	116185+	116185+	116185+	POA
* 29	O-ring, Non-Flush	EPDM	E70109	E70109	E70113	E70113	E70113	E70113
		FKM	V70109	V70109	V70113	V70113	V70113	V70113

PL5027-CH53

## Notes:

- \* Recommended Spare Parts
- 2. For one-piece body, qty. 2 are required for item 6 and item 18; for a clamped body, qty. 3 are required.
- 4. Unless otherwise noted, quantity required is 1.
- 6. POA = Part # on availability; N/A = not available with this design.
- 9. Part number includes lower stem and inner stem, which are assembled together.

**W72RS Mix Proof Seat Lift Valve with External Flush**

**W72RS Mix Proof Seat Lift Valve with External Flush**

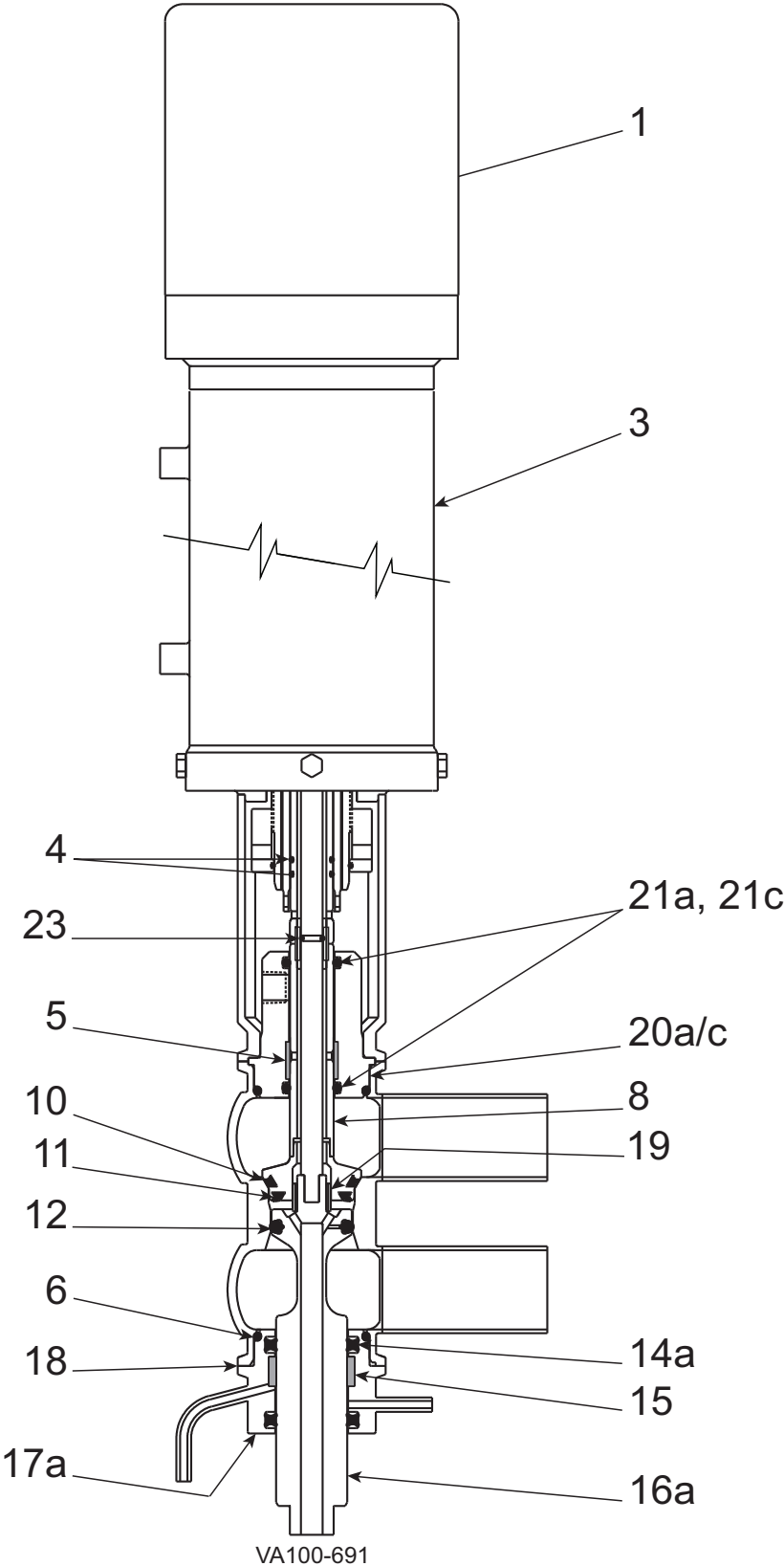
Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"	6"	Notes
1	Control Top	Contact Factory						
3	Actuator	See actuator parts list						
* 4	O-ring, Outer Stem (qty 2 req) Nitrile	N90016	N90016	N90020	N90020	N90020	N90020	
* 5	Bearing, Upper Adapter	102757+	102757+	106047+	106047+	106047+	101995+	
* 6	O-ring, Body EPDM	E70223	E70228	E70232	E70236	E70244	E70258	2
	FKM	V70223	V70228	V70232	V70236	V70244	V70258	
8	Stem, Upper Assembly	119447	119448	119449	119450	119451	POA	11
* 10	Seat Ring - Tri Ring, Upper EPDM	106031+	102736+	107048+	102488+	102491+	102738+	
	FKM	107990+	107980+	107982+	107974+	107977+	108020+	
* 11	Seat Ring - Tri Ring, Vent EPDM	106041+	107693+	107696+	107697+	102490+	102737+	
	FKM	107992+	107984+	107987+	107988+	107976+	108019+	
* 12	Seat Ring - O-ring, Lower EPDM	E80319	E80325	E80329	E80333	E80340	E80354	
	FKM	V80319	V80325	V80329	V80333	V80340	V80354	
* 14a	Quad Ring, Lower EPDM	122690+	35413+	34429+	117561+	116952+	122350+	
	FKM	122689+	35414+	35415+	117562+	116953+	122351+	
* 14b	Wiping Stem Seal, Lower EPDM	116186+	116188+	116190+	116195+	116199+	POA	
	FKM	116187+	116189+	116191+	116196+	116200+	POA	
* 15	Bearing, Lower Seal Retainer	101947+	102000+	106049+	106048+	102003+	102004+	
16	Stem, Lower Assembly	119457	119458	119459	119460	119461	POA	9
16a	Stem, Lower Assembly	119462	119463	119464	119465	119466	POA	9, 12
17a	Seal Retainer, Quad Ring	106066+	106067+	106068+	106069+	106070+	125047+	
17b	Seal Retainer, Wiping Stem Seal	117444+	117445+	117446+	117447+	117448+	POA	
17c	Seal Retainer, Lower Flush, Quad Ring	114918+	117728+	114920+	117736+	118364+	POA	
17d	Seal Retainer, Lower Flush, Wiping Stem Seal	119050+	119036+	118226+	117559+	118253+	POA	
18	Clamp	119-30	119-33	119-34	119-51	119-87	119-123	2
19	Spray Bushing	106030+	106030+	118210+	118210+	118210+	118210+	
20a/c	Adapter, O-ring or Quad Ring	106020+	106021+	106022+	106023+	106024+	128651+	
20b	Adapter, Wiping Stem Seal	119467+	119468+	119469+	119470+	119471+	POA	
* 21a	O-ring, Upper Stem EPDM	E70210	E70210	E70214	E70214	E70214	N/A	
	(qty 3 required) FKM	V70210	V70210	V70214	V70214	V70214	N/A	
* 21c	Quad Ring, Upper Stem EPDM	121300+	121300+	124163+	124163+	124163+	114221+	
	(qty 3 required) FKM	124088+	124088+	121299+	121299+	121299+	114223+	
* 21b	Wiping Stem Seal, Upper EPDM	116183+	116183+	116184+	116184+	116184+	POA	
	FKM	115626+	115626+	116185+	116185+	116185+	POA	
* 23	O-ring, Flush EPDM	E70010	E70010	E70111	E70111	E70111	E70111	
	FKM	V70010	V70010	V70111	V70111	V70111	V70111	

PL5027-CH54

## Notes:

- \* Recommended Spare Parts
- 2. For one-piece body, qty. 2 are required for item 6 and item 18; for a clamped body, qty. 3 are required.
- 4. Unless otherwise noted, quantity required is 1.
- 5. EPDM recommended on all steam-contact seals.
- 6. POA = Part # on availability; N/A = not available with this design.
- 9. Part number includes lower stem and inner stem, which are assembled together.
- 11. Part number includes upper stem, outer stem and coupling sleeve, which are assembled together.
- 12. This stem used for valves with lower external flush and lower seal retainer item 17c or 17d.

W72RS Mix Proof Seat Lift Valve with Steam Adapter





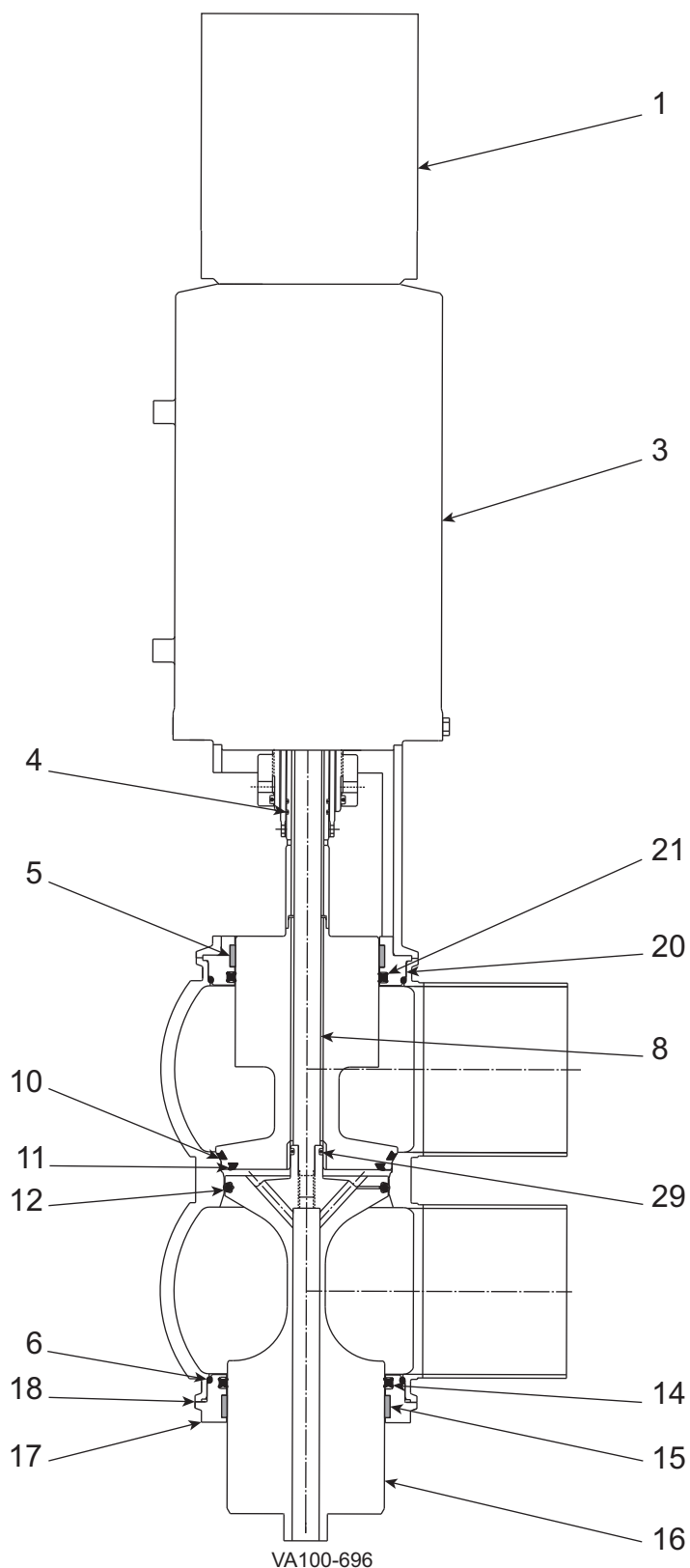
**W72RS Mix Proof Seat Lift Valve with Steam Adapter**

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"	6"	Notes
1	Control Top	Contact Factory						
3	Actuator	See actuator parts list						
* 4	O-ring, Outer Stem (qty 2) Nitrile	N90016	N90016	N90020	N90020	N90020	N90020	
* 5	Bearing, Upper Adapter	102757+	102757+	106047+	106047+	106047+	101995+	
* 6	O-ring, Body EPDM	E70223	E70228	E70232	E70236	E70244	E70258	2
		FKM	V70223	V70228	V70232	V70236	V70244	V70258
8	Stem, Upper Assembly	119452	119453	119454	119455	119456	POA	11
* 10	Seat Ring - Tri Ring, Upper EPDM	106031+	102736+	107048+	102488+	102491+	102738+	
		FKM	107990+	107980+	107982+	107974+	107977+	108020+
* 11	Seat Ring - Tri Ring, EPDM	106041+	107693+	107696+	107697+	102490+	102737+	
		FKM	107992+	107984+	107987+	107988+	107976+	108019+
* 12	Seat Ring - O-ring, EPDM	E80319	E80325	E80329	E80333	E80340	E80354	
		FKM	V80319	V80325	V80329	V80333	V80340	V80354
* 14a	Quad Ring, Lower EPDM	122690+	35413+	34429+	117561+	116952+	122350+	
		FKM	122689+	35414+	35415+	117562+	116953+	122351+
* 15	Bearing, Lower Seal Retainer	101947+	102000+	106049+	106048+	102003+	POA	
16a	Stem, Lower Assembly	119462	119463	119464	119465	119466	POA	9
17a	Seal Retainer, Lower Flush, Quad Ring	114918+	117728+	114920+	117736+	118364+	POA	
18	Clamp	119-30	119-33	119-34	119-51	119-87	119-123	2
19	Spray Bushing	106030+	106030+	118210+	118210+	118210+	118210+	
20a/c	Adapter, O-ring or Quad Ring	114923+	114924+	114925+	117742+	114927+	POA	
* 21a	O-ring, Upper Stem EPDM	E70210	E70210	E70214	E70214	E70214	N/A	
		FKM	V70210	V70210	V70214	V70214	N/A	
* 21c	Quad Ring, Upper Stem EPDM	121300+	121300+	124163+	124163+	124163+	114221+	
		FKM	124088+	124088+	121299+	121299+	114223+	
* 23	O-ring, Flush (qty 2 required; only 1 shown) EPDM	E70010	E70010	E70111	E70111	E70111	E70111	
		FKM	V70010	V70010	V70111	V70111	V70111	

PL5027-CH89

## Notes:

- \* Recommended Spare Parts
- 2. For one-piece body, qty. 2 are required for item 6 and item 18; for a clamped body, qty. 3 are required.
- 4. Unless otherwise noted, quantity required is 1.
- 5. EPDM recommended on all steam-contact seals.
- 6. POA = Part # on availability; N/A = not available with this design.
- 9. Part number includes lower stem and inner stem, which are assembled together.
- 11. Part number includes upper stem, outer stem and coupling sleeve, which are assembled together.

**W72RS Mix Proof Seat Lift Valve with Upper Balancer Option**

**W72RS Mix Proof Seat Lift Valve with Upper Balancer Option**

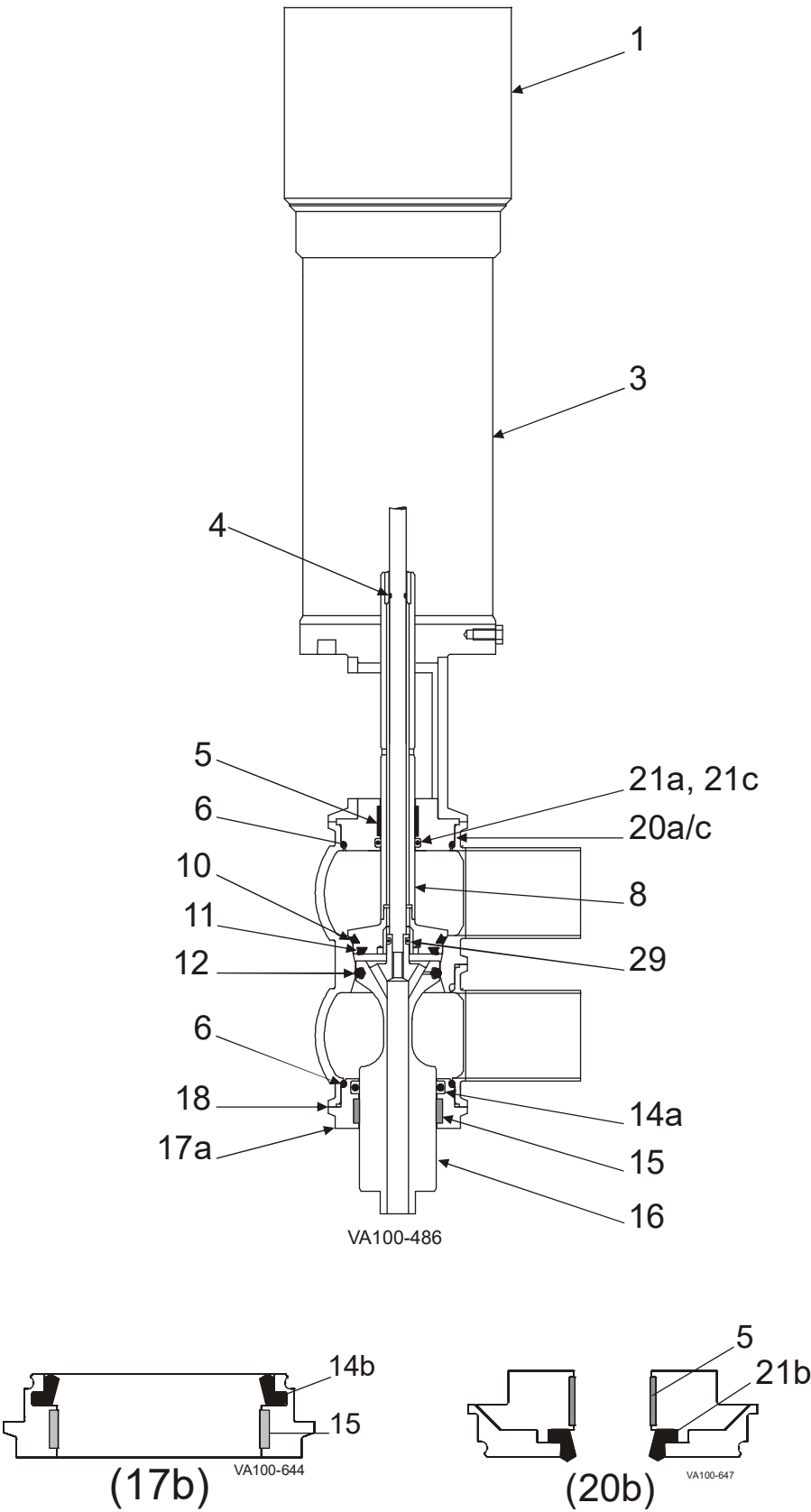
Item #	Part Description	2"	2-1/2"	3"	4"	Notes
1	Control Top	Contact Factory				
3	Actuator	See actuator parts list				
* 4	O-ring, Outer Stem	Nitrile	N90016	N90020	N90020	
* 5	Bearing, Upper Adapter		126066+	126771+	102002+	126069+
* 6	O-ring, Body	EPDM	E70228	E70232	E70236	E70244
		FKM	V70228	V70232	V70236	V70244
8	Stem, Upper		126052+	POA	126043+	126059+
* 10	Seat Ring - Tri Ring, Upper	EPDM	102736+	107048+	102488+	102491+
		FKM	107980+	107982+	107974+	107977+
* 11	Seat Ring - Tri Ring, Vent	EPDM	107693+	107696+	107697+	102490+
		FKM	107984+	107987+	107988+	107976+
* 12	Seat Ring - Radial O-ring, Lower	EPDM	E80325	E80329	E80333	E80340
		FKM	V80325	V80329	V80333	V80340
* 14a	Quad Ring, Lower	EPDM	122689+	35415+	117561+	116952+
		FKM	122690+	35429+	117562+	116953+
* 15	Bearing, Lower Seal Retainer		102000+	106049+	106048+	102003+
16	Stem, Lower Assembly		119437+	119438+	119439+	119440+
17a	Seal Retainer, Quad Ring		106067+	106068+	106069+	106070+
18	Clamp		119-33	119-34	119-51	119-87
20a	Adapter, O-ring or Quad Ring		126041+	128440+	126050+	126057+
* 21a	Quad Ring, Upper Stem	EPDM	126065+	128579+	116954+	126071+
		FKM	126064+	128580+	116955+	126070+
* 29	O-ring, Non-Flush	EPDM	E70109	E70113	E70113	E70113
		FKM	V70109	V70113	V70113	V70113

PL5027-CH135

## Notes:

- \* Recommended Spare Parts
- 2. For one-piece body, qty. 2 are required for item 6 and item 18; for a clamped body, qty. 3 are required.
- 4. Unless otherwise noted, quantity required is 1.
- 9. Part number includes lower stem and inner stem, which are assembled together.

W72RS Mix Proof Non-Seat Lift Valve



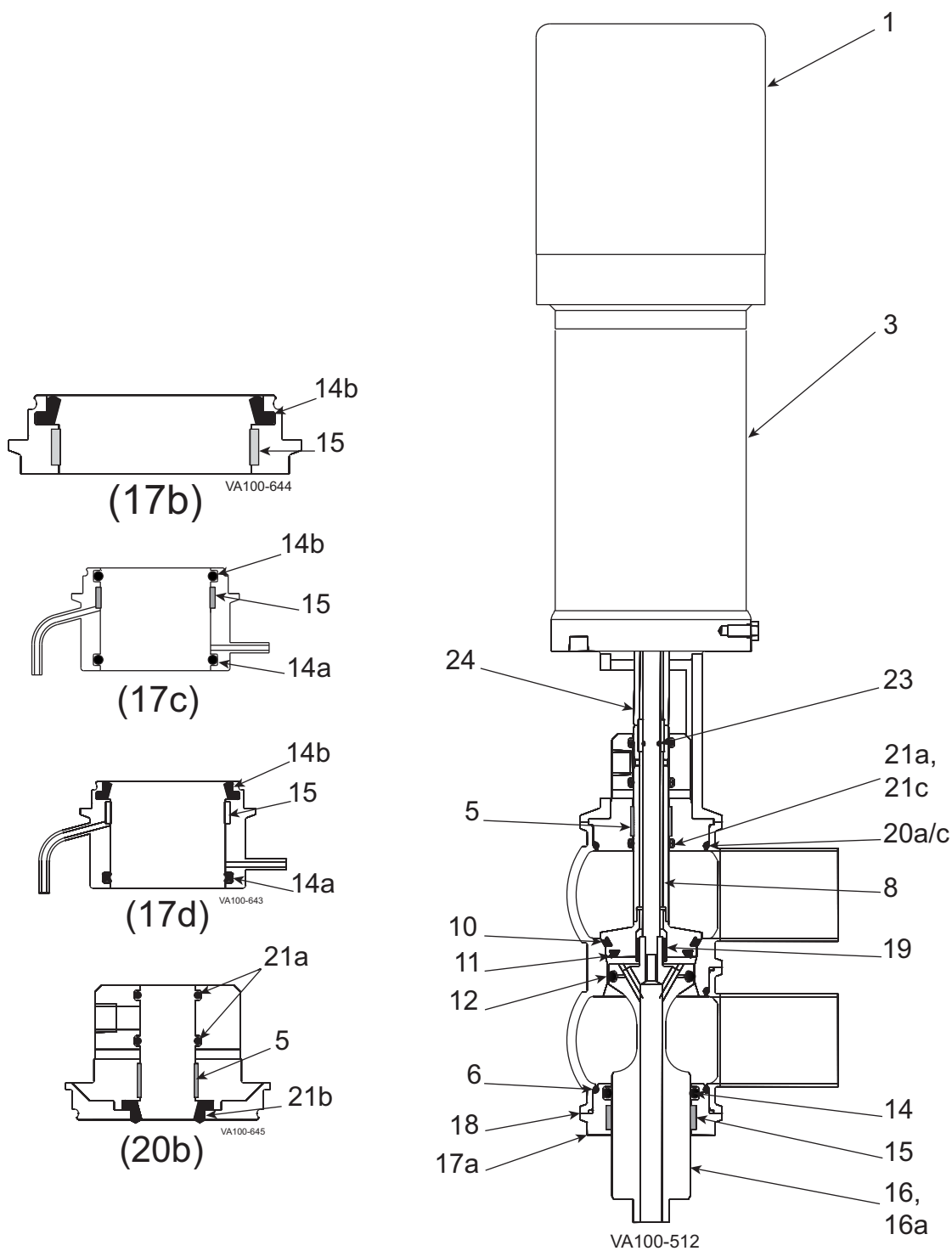
**W72RS Mix Proof Non-Seat Lift Valve**

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"	6"	Notes
1	Control Top	Contact Factory						
3	Actuator	See actuator parts list						
* 4	O-ring, Inner Stem	Nitrile	N70010	N70010	N70111	N70111	N70111	
* 5	Bearing, Upper Adapter		102757+	102757+	106047+	106047+	101995+	
* 6	O-ring, Body	EPDM	E70223	E70228	E70232	E70236	E70244	E70258
		FKM	V70223	V70228	V70232	V70236	V70244	V70258
8	Stem, Upper		119268+	118484+	119281+	118534+	119346+	POA
* 10	Seat Ring - Tri Ring, Upper	EPDM	106031+	102736+	107048+	102488+	102491+	102738+
		FKM	107990+	107980+	107982+	107974+	107977+	108020+
* 11	Seat Ring - Tri Ring, Vent	EPDM	106041+	107693+	107696+	107697+	102490+	102737+
		FKM	107992+	107984+	107987+	107988+	107976+	108019+
* 12	Seat Ring - Radial O-ring, Lower	EPDM	E80319	E80325	E80329	E80333	E80340	E80354
		FKM	V80319	V80325	V80329	V80333	V80340	V80354
* 14a	Quad Ring, Lower	EPDM	N/A	N/A	34429+	117561+	116952+	122350+
		FKM	N/A	35414+	35415+	117562+	116953+	122351+
* 14b	Wiping Stem Seal, Lower	EPDM	116186+	116188+	116190+	116195+	116199+	POA
		FKM	116187+	116189+	116191+	116196+	116200+	POA
* 15	Bearing, Lower Seal Retainer		101947+	102000+	106049+	106048+	102003+	102004+
16	Stem, Lower Assembly		119477+	119478+	119479+	119480+	119481+	POA
17a	Seal Retainer, Quad Ring		106066+	106067+	106068+	106069+	106070+	125047+
17b	Seal Retainer, Wiping Stem Seal		117444+	117445+	117446+	117447+	117448+	POA
18	Clamp		119-30	119-33	119-34	119-51	119-87	119-123
20a/c	Adapter		111043+	111017+	111196+	111026+	111029+	123970+
20b	Adapter, Wiping Stem Seal		119482+	119483+	119484+	119485+	119486+	POA
* 21a	O-ring, Upper Stem	EPDM	E70210	E70210	E70214	E70214	E70214	N/A
		FKM	V70210	V70210	V70214	V70214	V70214	N/A
* 21c	Quad Ring, Upper Stem	EPDM	121300+	121300+	124163+	124163+	124163+	114221+
		FKM	124088+	124088+	121299+	121299+	121299+	114223+
* 21b	Wiping Stem Seal, Upper	EPDM	116183+	116183+	116184+	116184+	116184+	POA
		FKM	115626+	115626+	116185+	116185+	116185+	POA
* 29	O-ring, Non-Flush	EPDM	E70109	E70109	E70113	E70113	E70113	E70113
		FKM	V70109	V70109	V70113	V70113	V70113	V70113

PL5027-CH51

## Notes:

- \* Recommended Spare Parts
- 2. For one-piece body, qty. 2 are required for item 6 and item 18; for a clamped body, qty. 3 are required.
- 4. Unless otherwise noted, quantity required is 1.
- 6. POA = Part # on availability; N/A = not available with this design.
- 9. Part number includes lower stem and inner stem, which are assembled together.

**W72RS Mix Proof Non-Seat Lift Valve with External Flush**

**W72RS Mix Proof Non-Seat Lift Valve with External Flush**

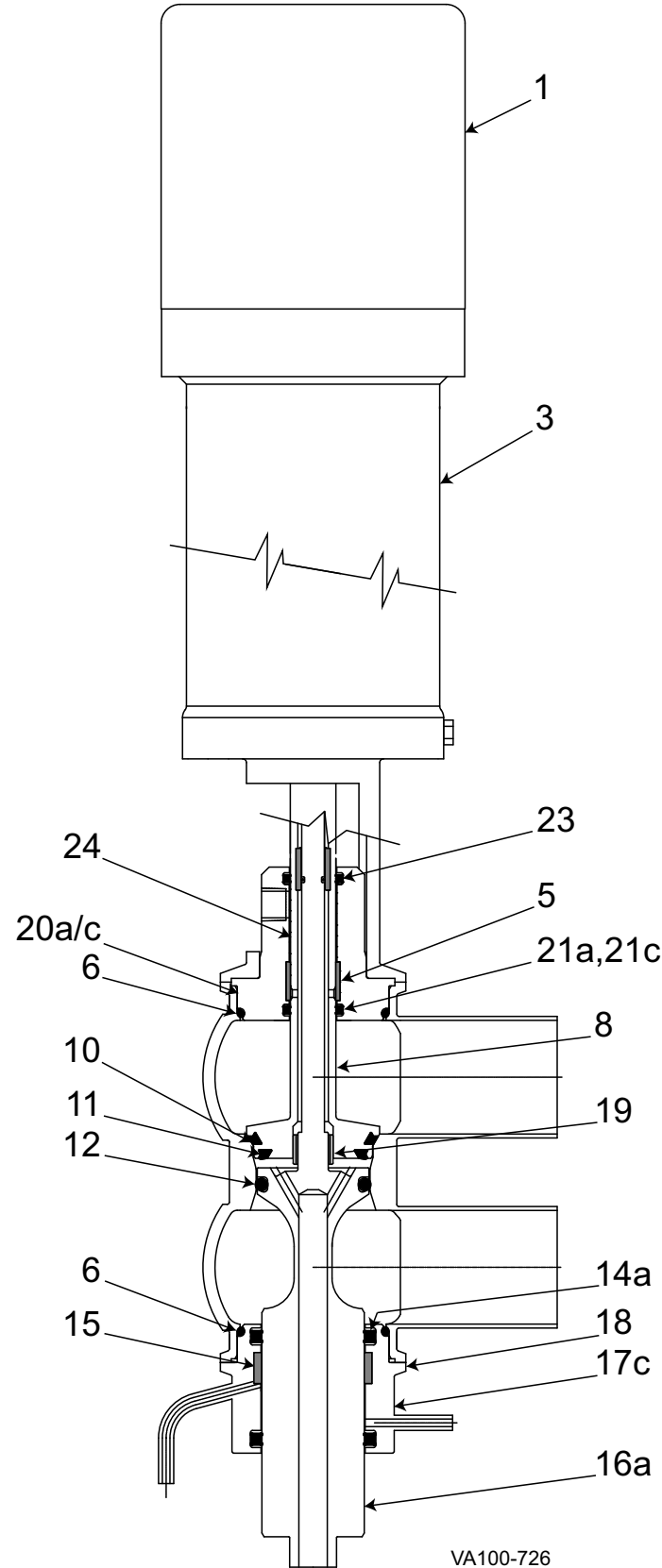
Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"	6"	Notes
1	Control Top	Contact Factory						
3	Actuator	See actuator parts list						
* 4	O-ring, Inner Stem (not shown Nitrile	N70010	N70010	N70111	N90020	N90020	N70111	
* 5	Bearing, Upper Adapter	102757+	102757+	106047+	106047+	106047+	101995+	
* 6	O-ring, Body EPDM	E70223	E70228	E70232	E70236	E70244	E70258	2
		V70223	V70228	V70232	V70236	V70244	V70258	
8	Stem, Upper Assembly	106015+	106016+	106017+	106018+	106019+	POA	11
* 10	Seat Ring - Tri Ring, Upper EPDM	106031+	102736+	107048+	102488+	102491+	102738+	
		107990+	107980+	107982+	107974+	107977+	108020+	
* 11	Seat Ring - Tri Ring, Vent EPDM	106041+	107693+	107696+	107697+	102490+	102737+	
		107992+	107984+	107987+	107988+	107976+	108019+	
* 12	Seat Ring - Radial EPDM	E80319	E80325	E80329	E80333	E80340	E80354	
		V80319	V80325	V80329	V80333	V80340	V80354	
* 14a	Quad Ring, Lower EPDM	122689+	35413+	34429+	117561+	116952+	122350+	
		122690+	35414+	35415+	117562+	116953+	122351+	
* 14b	Wiping Stem Seal, Lower EPDM	116186+	116188+	116198+	116195+	116199+	POA	
		116187+	116189+	116191+	116196+	116200+	POA	
* 15	Bearing, Lower Seal Retainer	101947+	102000+	106049+	106048+	102003+	POA	
16	Stem, Lower Assembly	POA	120893	125484	120894	POA	POA	9
16a	Stem, Lower Assembly (used with 17c/17d)	119462	119463	119464	119465	119466	POA	8, 12
17a	Seal Retainer, Quad Ring	106066+	106067+	106068+	106069+	106070+	125047+	
17b	Seal Retainer, Wiping Stem Seal	117444+	117445+	117446+	117447+	117448+	POA	
17c	Seal Retainer, Lower Flush, Quad Ring	121374+	117728+	122609+	117736+	118364+	POA	
17d	Seal Retainer, Lower Flush, Wiping Stem Seal	119050+	119035+	118226+	117559+	118253+	POA	
18	Clamp	119-30	119-33	119-34	119-51	119-87	119-123	2
19	Spray Bushing	106030+	106030+	118210+	118210+	118210+	118210+	
20a/c	Adapter	106020+	106021+	106022+	106023+	106024+	128651+	
20b	Adapter, Wiping Stem Seal	119467+	119468+	119469+	119470+	119471+	POA	
* 21a	O-ring, Upper Stem EPDM (qty 3 required)	E70210	E70210	E70214	E70214	E70214	N/A	
		V70210	V70210	V70214	V70214	V70214	N/A	
* 21c	Quad Ring, Upper Stem EPDM (qty 3 required)	121300+	121300+	124163+	124163+	124163+	114221+	
		124088+	124088+	121299+	121299+	121299+	114223+	
* 21b	Wiping Stem Seal, Upper EPDM (qty 3 required)	116183+	116183+	116184+	116184+	116184+	POA	
		115626+	115626+	116185+	116185+	116185+	POA	
* 23	O-ring, Flush EPDM	E70010	E70010	E70111	E70111	E70111	E70111	
		V70010	V70010	V70111	V70111	V70111	V70111	
24	Stem, Actuator, NSL Flush	122389	118642	118625	118625	107949	129703	

PL5027-CH52

## Notes:

- \* Recommended Spare Parts
- 2. For one-piece body, qty. 2 are required for item 6 and item 18; for a clamped body, qty. 3 are required.
- 4. Unless otherwise noted, quantity required is 1.
- 5. EPDM recommended on all steam-contact seals.
- 6. POA = Part # on availability; N/A = not available with this design.
- 8. Part number includes upper stem and coupling sleeve, which are assembled together.
- 9. Part number includes lower stem and inner stem, which are assembled together.
- 11. Part number includes upper stem, outer stem and coupling sleeve, which are assembled together.
- 12. This stem used for valves with lower external flush and lower seal retainer item 17c or 17d.

W72RS Mix Proof Non-Seat Lift Valve with Steam Adapter





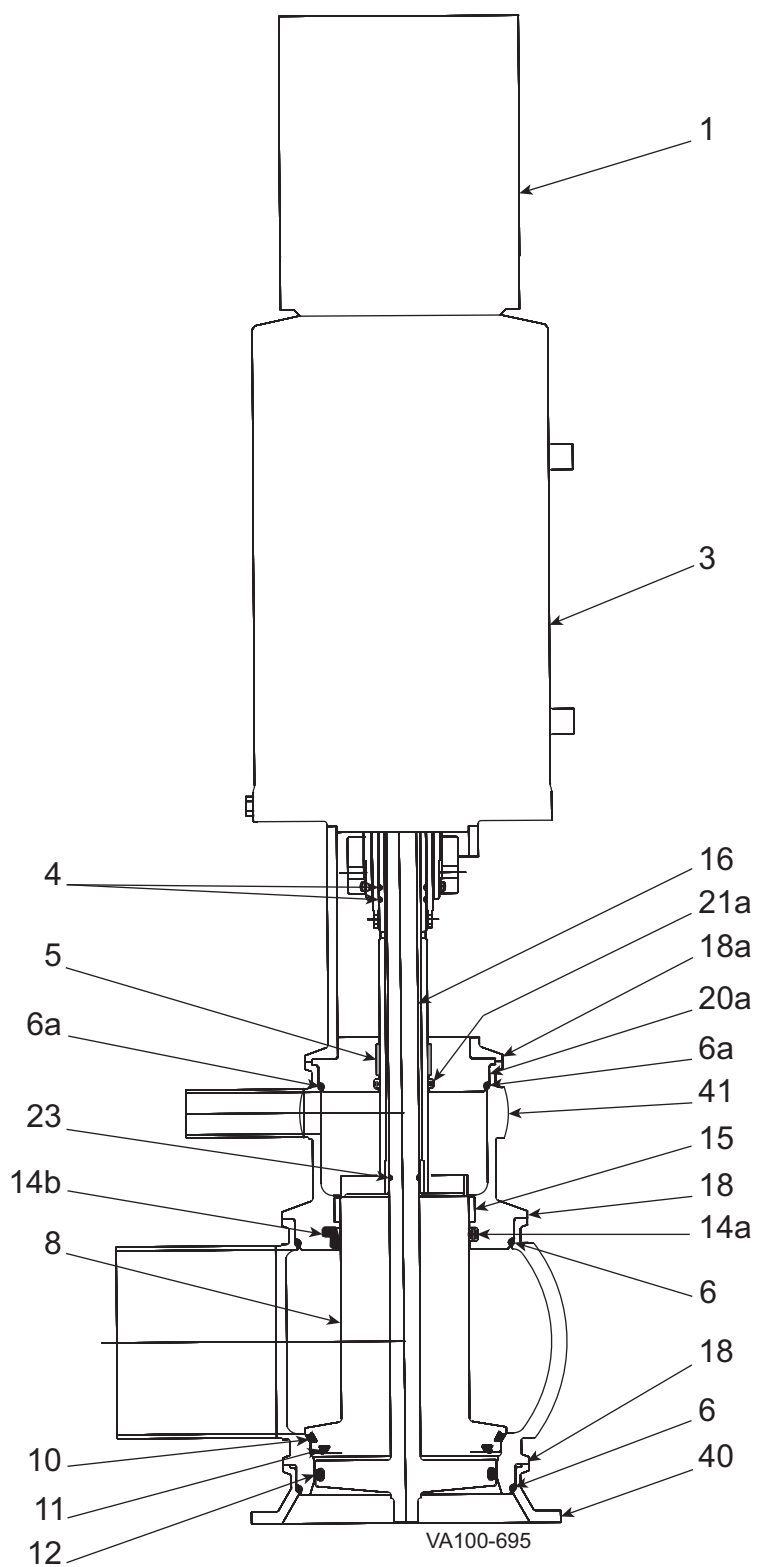
**W72RS Mix Proof Non-Seat Lift Valve with Steam Adapter**

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"	6"	Notes
1	Control Top	Contact Factory						
3	Actuator	See actuator parts list						
* 4	O-ring (not shown) Nitrile	N70010	N70010	N70111	N70111	N70111	N70111	
* 5	Bearing	102757+	102757+	106047+	106047+	106047+	101995+	
* 6	O-ring, Body EPDM	E70223	E70228	E70232	E70236	E70244	E70258	2
		V70223	V70228	V70232	V70236	V70244	V70258	
8	Stem, Upper Assembly	119452	119453	119454	119455	119456	POA	7
* 10	Seat Ring - Tri Ring, Upper EPDM	106031+	102736+	107048+	102488+	102491+	102738+	
		107990+	107980+	107982+	107974+	107977+	108020+	
* 11	Seat Ring - Tri Ring, Vent EPDM	106041+	107693+	107696+	107697+	102490+	102737+	
		107992+	107984+	107987+	107988+	107976+	108019+	
* 12	Seat Ring - O-ring, Lower EPDM	E80319	E80325	E80329	E80333	E80340	E80354	
		V80319	V80325	V80329	V80333	V80340	V80354	
* 14a	Quad Ring, Lower (qty 2 required) EPDM	122690+	35413+	34429+	117561+	116952+	122350+	
		122689+	35414+	35415+	117562+	116953+	122351+	
* 15	Bearing, Lower Seal Retainer	101947+	102000+	106049+	106048+	102003+	102004+	
16a	Stem, Lower Assembly	119462	119463	119464	119465	119466	POA	8
17c	Seal Retainer, Lower Flush, Quad Ring	121374+	117728+	122609+	117736+	118364+	POA	
18	Clamp	119-30	119-33	119-34	119-51	119-87	119-123	2
19	Spray Bushing	106030+	106030+	118210+	118210+	118210+	118210+	
20a/c	Adapter, O-ring or Quad Ring	POA	114924+	114925+	117742+	114927+	POA	
* 21a	O-ring, Upper Stem (qty 2 required) EPDM	E70210	E70210	E70214	E70214	E70214	N/A	
		FKM	V70210	V70214	V70214	V70214	N/A	
* 21c	Quad Ring, Upper Stem (qty 2 required) EPDM	121300+	121300+	124163+	124163+	124163+	114221+	
		FKM	124088+	121299+	121299+	121299+	114223+	
* 23	O-ring, Flush EPDM	E70010	E70010	E70111	E70111	E70111	E70111	
		FKM	V70010	V70111	V70111	V70111	V70111	
24	Stem, Actuator, NSL Flush	122389	118642	118625	118625	107949	129703	

PL5027-CH88

## Notes:

- \* Recommended Spare Parts
- 2. For one-piece body, qty. 2 are required for item 6 and item 18; for a clamped body, qty. 3 are required.
- 4. Unless otherwise noted, quantity required is 1.
- 5. EPDM recommended on all steam-contact seals.
- 6. POA = Part # on availability; N/A = not available with this design.
- 7. Part number includes lower stem and stem bushing, which are assembled together.
- 8. Part number includes upper stem and coupling sleeve, which are assembled together.

**W72RS Mix Proof Seat Lift Tank Outlet Valve**

**W72RS Mix Proof Seat Lift Tank Outlet Valve**

Item #	Part Description		2-1/2"	3"	4"	6"	Notes
1	Control Top		Contact Factory				
3	Actuator Assembly		See actuator parts list				
* 4	O-ring, Outer Stem (qty 2 req)	Nitrile	N90020	N90020	N90020	N90020	
* 5	Bearing, Adapter		106047+	106047+	106047+	POA	
* 6	O-ring, Body (qty 2 req)	EPDM	E70232	E70236	E70244	E70258	
		FKM	V70232	V70236	V70244	V70258	
* 6a	O-ring, Leak Chamber	EPDM	E70323	E70232	E70236	POA	
		FKM	V70323	V70232	V70236	POA	
8	Stem, Outer (Pipe Side)		126015+	125970+	126020+	POA	
* 10	Seat Ring - Tri Ring, Pipe Side	EPDM	107048+	102488+	102491+	102738+	
		FKM	107982+	107974+	107977+	108020+	
* 11	Seat Ring - Tri Ring, Vent	EPDM	107696+	107697+	102490+	102737+	
		FKM	107987+	107988+	107976+	108019+	
* 12	Seat Ring - Radial O-ring, Tank Side	EPDM	E80329	E80333	E80340	E80354	
		FKM	V80329	V80333	V80340	V80354	
* 14a	Quad Ring, Leak Chamber	EPDM	34429+	34429+	117561+	POA	
		FKM	35414+	35415+	117562+	POA	
* 14b	Wiping Stem Seal, Leak Chamber	EPDM	116190+	116190+	116195+	POA	
		FKM	116191+	116191+	116196+	POA	
* 15	Bearing, Leak Chamber		106049+	106049+	106048+	POA	
16	Stem, Inner (Tank Side)		125996+	125967+	126024+	POA	
18	Clamp (qty 2 req)		119-51	119-51	119-87	119-123	
18a	Clamp, Leak Chamber		119-34	119-34	119-51	POA	
20a	Adapter, O-ring		111196+	111196+	111026+	POA	
* 21a	O-ring, Adapter	EPDM	E70214	E70214	E70214	POA	
		FKM	V70214	V70214	V70214	POA	
* 23	O-ring, Inner Stem	EPDM	E70111	E70111	E70111	E70111	
		FKM	V70111	V70111	V70111	V70111	
40	Tank Flange		114831+	114832+	114833+	POA	2
41a	Leak Chamber, Quad Ring		126804+	126805+	126802+	POA	
41b	Leak Chamber, Wiping Stem Seal		126016+	125962+	126025+	POA	

PL5027-CH134

## Notes

- \* Recommended Spare Parts
- 2. 1/4" tank flange must be ordered separately.
- 3. This valve is not available with external flush.

Technical drawing of a vertical valve assembly in cross-section. The drawing shows a central vertical shaft with a handle at the top. The handle is connected to a series of internal components, including a valve stem and a valve seat. The valve seat is located at the bottom of the assembly. The drawing is labeled with various numbers indicating different parts: 1 (handle), 3 (valve body), 4 (valve stem), 5 (valve seat), 6 (valve seat), 8 (valve seat), 10 (valve seat), 11 (valve seat), 12 (valve seat), 14a (valve seat), 15 (valve seat), 16 (valve seat), 17a (valve seat), 18 (valve seat), 20a (valve seat), and 21a (valve seat). The drawing is a detailed cross-section showing the internal structure of the valve.

**W72RSP Mix Proof Seat Lift Valve**

Item #	Part Description		3"	4"	6"	Notes
1	Control Top		Contact Factory			
3	Actuator		See Actuator Parts List			
* 4	O-ring, Outer Stem (qty 2 req)	Nitrile	N90020	N90020	N90020	
* 5	Bearing, Upper Adapter		126069+	126069+	POA	
* 6	O-ring, Body (qty 2 req)	EPDM	E70244	E70244	E70258	
		FKM	V70244	V70244	V70258	
8	Stem, Upper Assembly		126880+	126880+	POA	11
* 10	Seat Ring - Tri Ring, Upper	EPDM	102491+	102491+	102738+	
		FKM	107977+	107977+	108020+	
* 11	Seat Ring - Tri Ring, Vent	EPDM	102490+	102490+	102737+	
		FKM	107976+	107976+	108019+	
* 12	Seat Ring - O-ring, Lower	EPDM	E80340	E80340	E80354	
		FKM	V80340	V80340	V80354	
* 14a	Quad Ring, Lower	EPDM	116952+	116952+	122350+	
		FKM	116953+	116953+	122351+	
* 15	Bearing, Lower Seal Retainer		102003+	102003+	102004+	
16	Stem, Lower Assembly		129983+	129983+	POA	9
17a	Seal Retainer, Quad Ring		106070+	106070+	125047+	
18	Clamp (qty 2 required)		119-87	119-87	119-123	
20a	Adapter, O-ring or Quad Ring		126877+	126877+	POA	
* 21a	Quad Ring, Upper Stem	EPDM	126071+	126071+	POA	
		FKM	126070+	126070+	POA	
* 29	O-ring, Non-Flush	EPDM	E70113	E70113	E70113	
		FKM	V70113	V70113	V70113	

PL5027-CH162

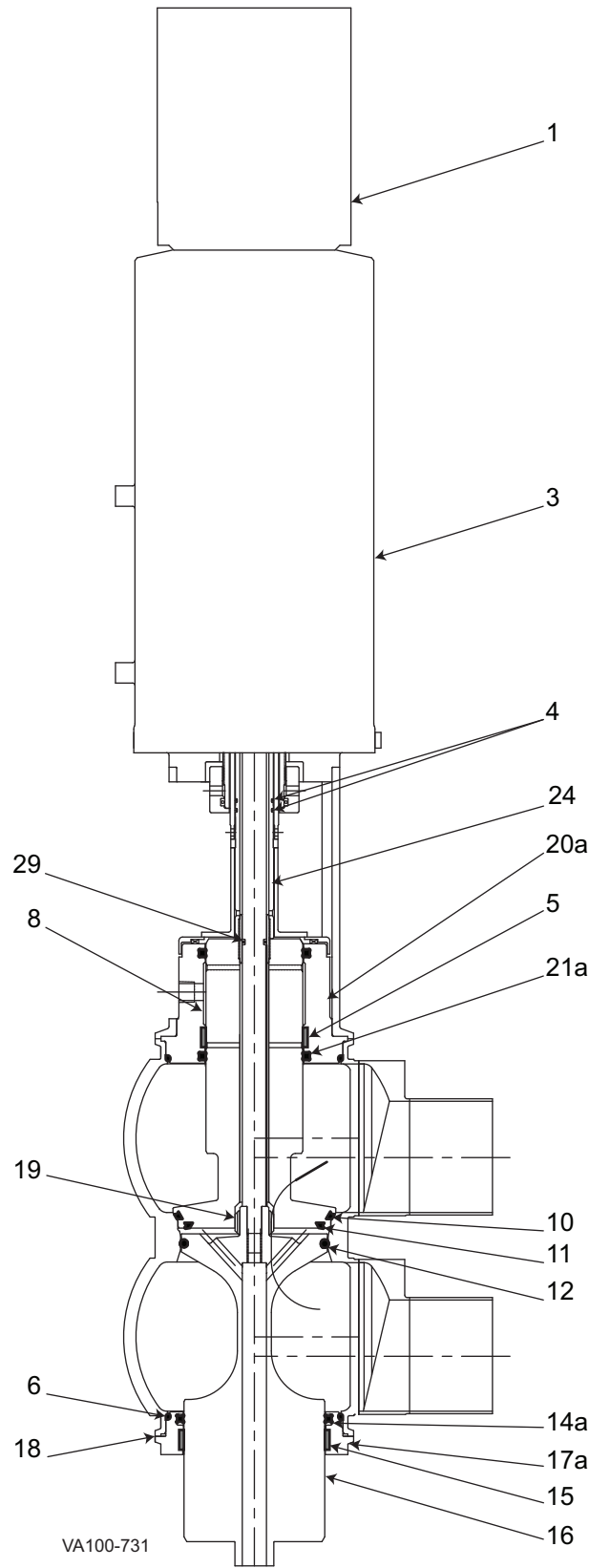
## Notes

\* Recommended Spare Parts

9. Part number includes lower stem and inner stem, which are assembled together.

11. Part number includes upper stem, outer stem and coupling sleeve, which are assembled together.

W72RSP Mix Proof Seat Lift Valve with External Flush



**W72RSP Mix Proof Seat Lift Valve with External Flush**

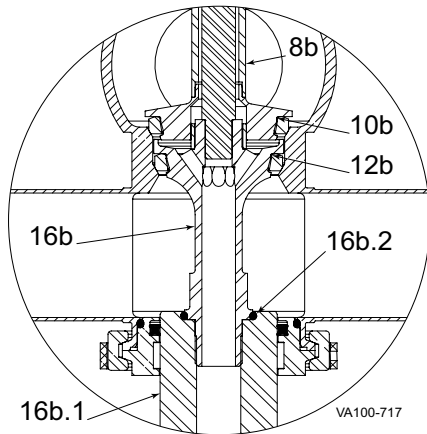
Item #	Part Description	3"	4"	6"	Notes
1	Control Top	Contact Factory			
3	Actuator	See Actuator Parts List			
* 4	O-ring, Outer Stem (qty 2 req) Nitrile	N90020	N90020	N90020	
* 5	Bearing, Upper Adapter	102002+	102002+	POA	
* 6	O-ring, Body (qty 2 req) EPDM	E70244	E70244	E70258	
	FKM	V70244	V70244	V70258	
8	Stem, Upper Assembly	128536+	128536+	POA	11
* 10	Seat Ring - Tri Ring, Upper EPDM	102491+	102491+	102738+	
	FKM	107977+	107977+	108020+	
* 11	Seat Ring - Tri Ring, Vent EPDM	102490+	102490+	102737+	
	FKM	107976+	107976+	108019+	
* 12	Seat Ring - O-ring, Lower EPDM	E80340	E80340	E80354	
	FKM	V80340	V80340	V80354	
* 14a	Quad Ring, Lower EPDM	116952+	116952+	122350+	
	FKM	116953+	116953+	122351+	
* 15	Bearing, Lower Seal Retainer	102003+	102003+	102004+	
16	Stem, Lower Assembly	129984+	129984+	POA	9
17a	Seal Retainer, Quad Ring	106070+	106070+	125047+	
18	Clamp (qty 2 required)	119-87	119-87	119-123	
19	Spray Bushing	118210+	118210+	118210+	
20a	Adapter, O-ring or Quad Ring	128538+	128538+	POA	
* 21a	Quad Ring, Upper Stem EPDM	116282+	116282+	POA	
	(qty 2 required) FKM	116283+	116283+	POA	
24	Stem, Actuator	128535+	128535+	POA	
* 29	O-ring, Flush EPDM	E70111	E70111	E70111	
	FKM	V70111	V70111	V70111	

PL5027-CH155

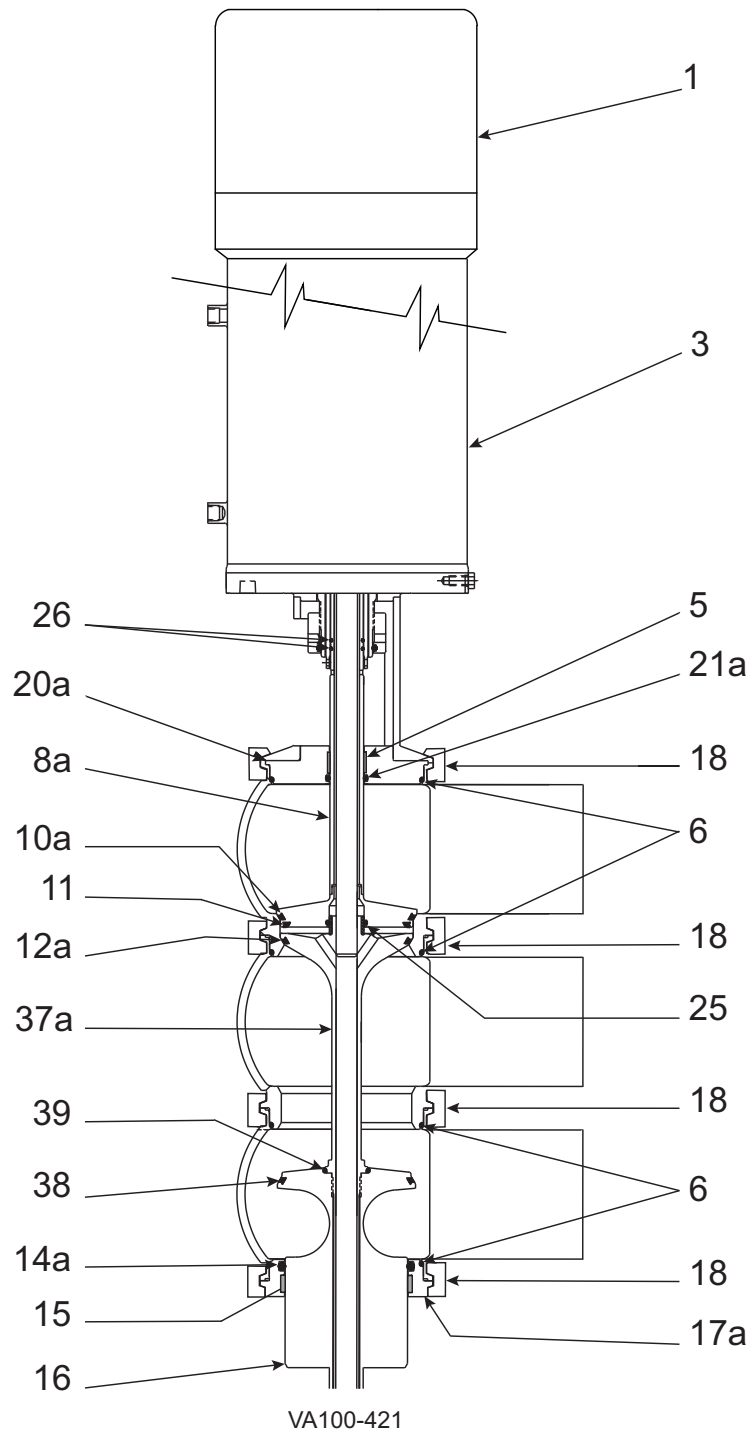
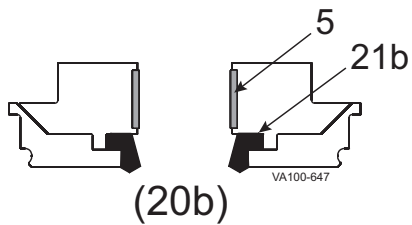
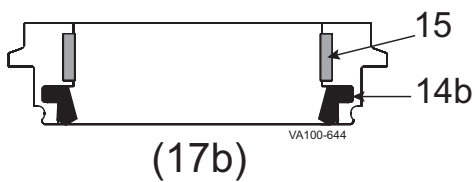
## Notes

- \* Recommended Spare Parts
- 4. Unless otherwise noted, quantity required is 1.
- 5. EPDM recommended on all steam-contact seals.
- 6. POA = Part # on availability; N/A = not available with this design.
- 9. Part number includes lower stem and inner stem, which are assembled together.
- 11. Part number includes upper stem, outer stem and coupling sleeve, which are assembled together.

## W73 Divert Mix Proof Seat Lift Valve



Tef Flow® P Design





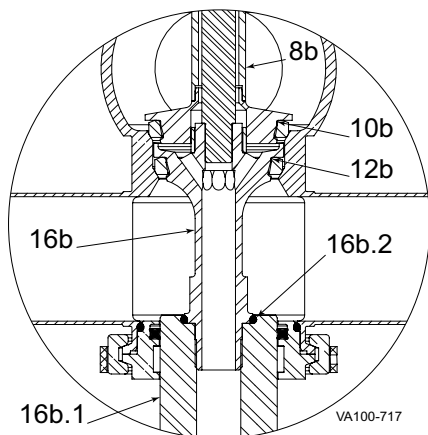
**W73 Divert Mix Proof Seat Lift Valve**

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"	6"	Notes
1	Control Top	Contact Factory						
3	Actuator	See actuator parts list						
* 4	O-ring Nitrile	N70010	N70010	N70111	N70111	N70111	N70111	
* 5	Bearing	102757+	102757+	106047+	106047+	106047+	101995+	
* 6	O-ring, Body (qty 4 req)	EPDM E70223	E70228	E70232	E70236	E70244	E70258	
	FKM	V70223	V70228	V70232	V70236	V70244	V70258	
8a	Stem, Upper	111042+	111014+	111052+	111022+	111049+	POA	
8b	Stem, Upper, Tef Flow® P Design	134824+	130422+	130423+	130421+	132241+	POA	3
* 10a	Seat Ring -Tri Ring, EPDM	106031+	102736+	107048+	102488+	102491+	102738+	
	Upper FKM	107990+	107980+	107982+	107974+	107977+	108020+	
* 10b	Seat Ring Insert - Upper Tef Flow® P	130231+	130232+	130233+	130234+	130235+	POA	3
* 11	Seat Ring -Tri Ring, EPDM	106041+	107693+	107696+	107697+	102490+	102737+	
	Vent FKM	107992+	107984+	107987+	107988+	107976+	108019+	
* 12a	Seat Ring -Tri Ring, EPDM	106036+	107693+	102487+	102489+	102492+	102739+	
	Lower FKM	107991+	107984+	107973+	107975+	107978+	108021+	
* 12b	Seat Ring Insert - Lower Tef Flow® P	130243+	130244+	130245+	130246+	130247+	POA	3
* 14a	O-ring, Lower Stem EPDM	E70322	E70327	E70331	E70335	E70342	N/A	
	FKM	V70322	V70327	V70331	V70335	V70342	N/A	
	Quad Ring, Lower EPDM	122690+	35413+	34429+	117561+	116952+	122350+	
	FKM	122689+	35414+	35415+	117562+	116953+	122351+	
* 14b	Wiping Stem Seal, Lower EPDM	116186+	116188+	116190+	116195+	116199+	POA	
	FKM	116187+	116189+	116191+	116196+	116200+	POA	
* 15	Bearing	101947+	102000+	106049+	106048+	102003+	102004+	
16	Stem, Lower	116686+	115911+	116388+	114506+	115651+	128650+	
16b	Stem, Lower, Tef Flow® P Design	132444+	132445+	132446+	132447+	132448+	POA	3
16b.2	O-Ring, Tef Flow® P Design EPDM	E70217	E70217	E70217	E70217	E70217	E70222	3
	FKM	V70217	V70217	V70217	V70217	V70217	V70222	
17a	Seal Retainer, O-ring or Quad Ring	106066+	106067+	106068+	106069+	106070+	125047+	
17b	Seal Retainer, Wiping Stem Seal	117444+	117445+	117446+	117447+	117448+	POA	
18	Clamp	119-30	119-33	119-34	119-51	119-87	119-123	
20a	Adapter, O-ring or Quad Ring	111043+	111017+	111196+	111026+	111029+	POA	
20b	Adapter, Wiping Stem Seal	119467+	119468+	119469+	119470+	119471+	POA	
* 21a	O-ring, Upper Stem EPDM	E70210	E70210	E70214	E70214	E70214	N/A	
	FKM	V70210	V70210	V70214	V70214	V70214	N/A	
	Quad Ring, Upper EPDM	121300+	121300+	124163+	124163+	124163+	114221+	
	FKM	124088+	124088+	121299+	121299+	121299+	114223+	
* 21b	Wiping Stem Seal, Upper EPDM	116183+	116183+	116184+	116184+	116184+	POA	
	FKM	115626+	115626+	116185+	116185+	116185+	POA	
* 25	O-ring EPDM	E70115	E70115	E70121	E70121	E70121	E70111	
	FKM	V70115	V70115	V70121	V70121	V70121	V70111	
* 26	O-ring (qty 2 required) Nitrile	N90016	N90016	N90020	N90020	N90020	N90020	
37a	Stem, Middle, Tri-Ring	POA	POA	POA	POA	POA	POA	
37b	Stem, Middle, Tef Flow® P design	132449+	132450+	132451+	132452+	132453+	POA	3
* 38	Tri Ring, Divert Stem EPDM	106036+	107693+	107048+	111633+	102492+	114216+	
	FKM	107991+	107985+	107982+	111635+	107978+	114219+	
* 38b	Seat Ring Insert - Divert, Tef Flow® P	POA	115348+	115349+	115350+	115351+	POA	3
* 39	O-ring, Divert stem EPDM	E70210	E70215	E70217	E70217	E70217	E70223	
	FKM	V70210	V70215	V70217	V70217	V70217	V70223	

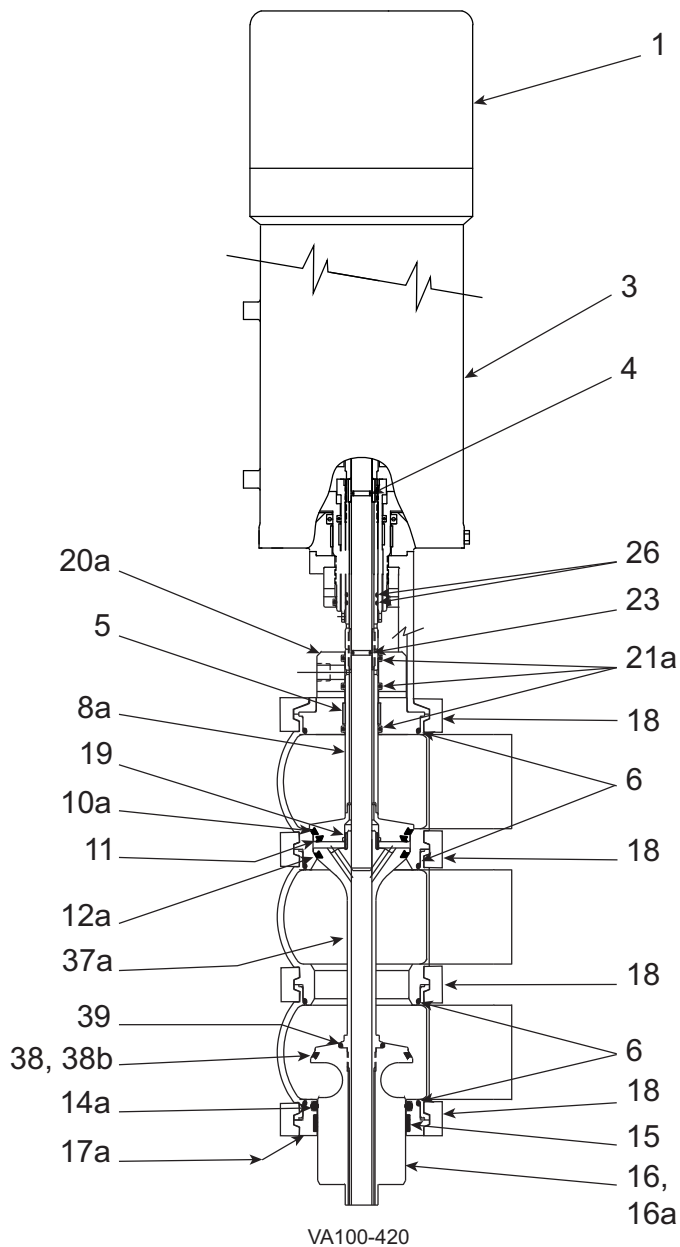
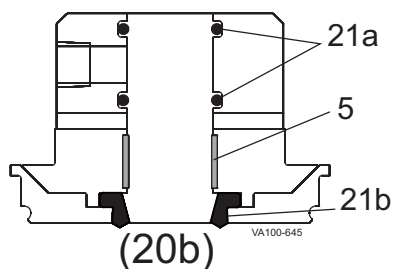
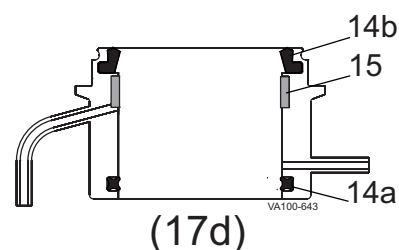
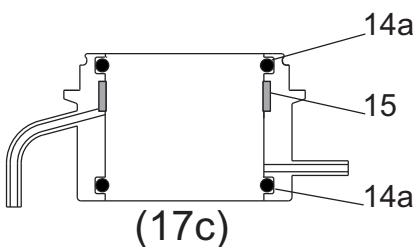
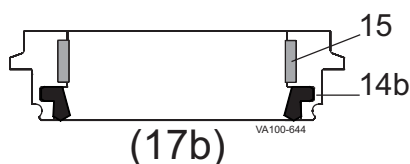
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## Notes:

- \* Recommended Spare Parts
- 3. For valve with Tef Flow® P design stem only.
- 4. Unless otherwise noted, quantity required is 1.
- 6. POA = Part # on availability; N/A = not available with this design.

**W73 Divert Mix Proof Seat Lift Valve with External Flush**

Tef Flow® P Design



Item #	Part Description		1-1/2"	2"	2-1/2"	3"	4"	6"	Notes
1	Control Top		Contact Factory						
3	Actuator		See actuator parts list						
* 4	O-ring (not shown)	Nitrile	N70010	N70010	N70111	N70111	N70111	N70111	
* 5	Bearing		102757+	102757+	106047+	106047+	106047+	101995+	
* 6	O-ring, Body (qty 4 req)	EPDM	E70223	E70228	E70232	E70236	E70244	E70258	
		FKM	V70223	V70228	V70232	V70236	V70244	V70258	

PL5027-CH56a

\* Recommended Spare Parts

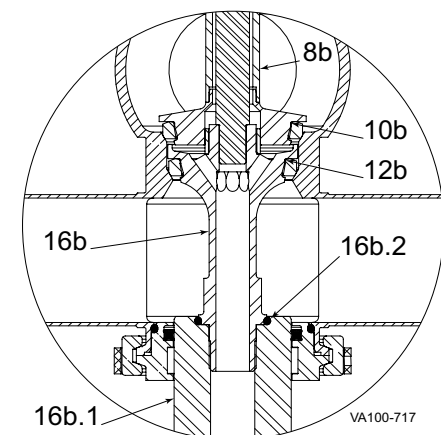
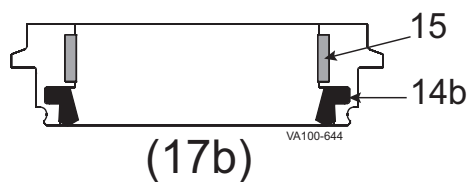
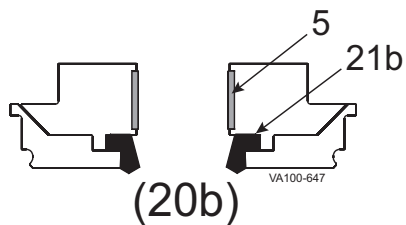
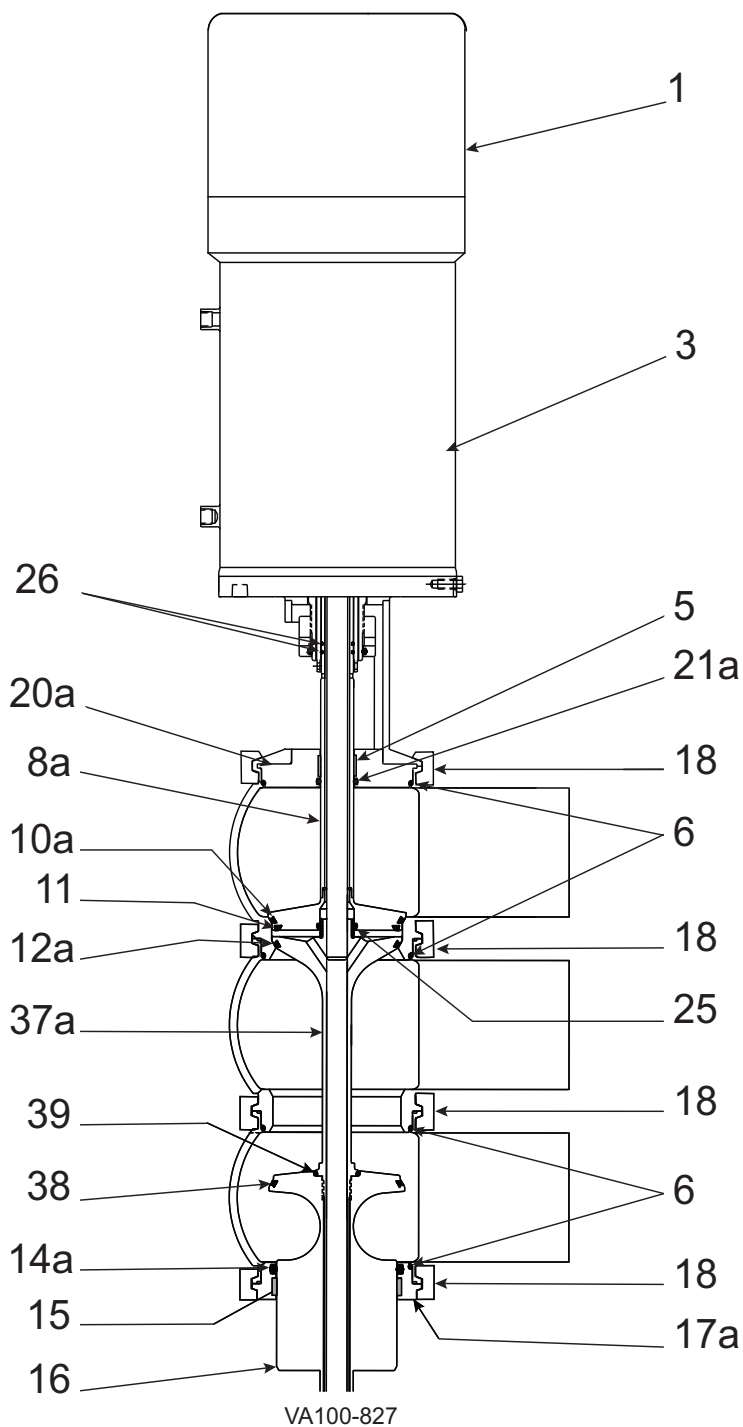
**W73 Divert Mix Proof Seat Lift Valve with External Flush**

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"	6"	Notes
8a	Stem, Upper Assembly	119199+	119200+	119201+	119202+	119203+	128647+	12
8b	Stem, Upper, Tef Flow® P Design	134844+	131680+	131682+	131684+	132242+	POA	
* 10a	Seat Ring -Tri Ring, Upper	EPDM 106031+	102736+	107048+	102488+	102491+	102738+	
		FKM 107990+	107980+	107982+	107974+	107977+	108020+	
* 10b	Seat Ring Insert- Upper	Tef Flow® P 130231+	130232+	130233+	130234+	130235+	POA	3
* 11	Seat Ring -Tri Ring, Vent	EPDM 106041+	107693+	107696+	107697+	102490+	102737+	
		FKM 107992+	107984+	107987+	107988+	107976+	108019+	
* 12a	Seat Ring -Tri Ring, Lower	EPDM 106036+	107693+	102487+	102489+	102492+	102739+	
		FKM 107991+	107984+	107973+	107975+	107978+	108021+	
* 12b	Seat Ring Insert - Lower	Tef Flow® P 130243+	130244+	130245+	130246+	130247+	POA	3
* 14a	O-ring, Lower Stem	EPDM E70322	E70327	E70331	E70335	E70342	N/A	
		FKM V70322	V70327	V70331	V70335	V70342	N/A	
	Quad Ring, Lower	EPDM 122690+	35413+	34429+	117561+	116952+	122350+	
* 14b	Wiping Stem Seal, Lower	EPDM 122689+	35414+	35415+	117562+	116953+	122351+	
		FKM 116186+	116188+	116190+	116195+	116199+	POA	
* 15	Bearing	EPDM 116187+	116189+	116191+	116196+	116200+	POA	
		FKM 101947+	102000+	106049+	106048+	102003+	102004+	
16	Stem, Lower	116686+	115911+	116388+	114506+	115651+	128650+	
16a	Stem, Lower (used with 17c/17d)	POA	POA	122608+	POA	POA	POA	13
16b	Stem, Lower, Tef Flow® P	132444+	132445+	132446+	132447+	132448+	POA	3
16b.2	O-Ring, Tef Flow® P	EPDM E70217	E70217	E70217	E70217	E70217	E70222	3, 5
		FKM V70217	V70217	V70217	V70217	V70217	V70222	3
16c	Stem, Lower Flush	POA	POA	POA	POA	POA	POA	
17a	Seal Retainer, O-ring or Quad Ring	106066+	106067+	106068+	106069+	106070+	125047+	
17b	Seal Retainer, Wiping Stem Seal	117444+	117445+	117446+	117447+	117448+	POA	
17c	Seal Retainer, Lower Flush, O-ring or Quad Ring	114918+	114919+	114920+	114921+	114922+	POA	
17d	Seal Retainer, Lower Flush, Wiping Stem Seal	119050+	119035+	118226+	117559+	118253+	POA	
18	Clamp	119-30	119-33	119-34	119-51	119-87	119-123	
19	Spray Bushing	106030+	106030+	107950+	107950+	107950+	107950+	
20a	Adapter, O-ring or Quad Ring	106020+	106021+	106022+	106023+	106024+	128651+	
20b	Adapter, Wiping Stem Seal	119482+	119483+	119484+	119485+	119486+	POA	
* 21a	O-ring, Upper Stem	EPDM E70210	E70210	E70214	E70214	E70214	N/A	
		FKM V70210	V70210	V70214	V70214	V70214	N/A	
	Quad Ring, Upper (qty 3 required)	EPDM 121300+	121300+	124163+	124163+	124163+	114221+	
* 21b	Wiping Stem Seal, Upper	FKM 124088+	124088+	121299+	121299+	121299+	114223+	
		EPDM 116183+	116183+	116184+	116184+	116184+	POA	
* 23	O-ring	EPDM 115626+	115626+	116185+	116185+	116185+	POA	
		FKM E70010	E70010	E70111	E70111	E70111	E70111	
* 26	O-ring (qty 2 required)	FKM V70010	V70010	V70111	V70111	V70111	V70111	
		Nitrile N90016	N90016	N90020	N90020	N90020	N90020	
37a	Stem, Middle, Tri-Ring	POA	POA	POA	POA	POA	POA	
37b	Stem, Middle, Tef Flow® P design	132449+	132450+	132451+	132452+	132453+	POA	3
* 38	Tri Ring, Divert Stem	EPDM 106036+	107693+	107048+	111633+	102492+	114216+	
		FKM 107991+	107984+	107982+	111635+	107978+	114219+	
* 38b	Seat Ring Insert - Divert,	Tef Flow® P POA	115348+	115349+	115350+	115351+	POA	3
* 39	O-ring, Divert stem	EPDM E70210	E70215	E70217	E70217	E70217	E70223	
		FKM V70210	V70215	V70217	V70217	V70217	V70223	

PL5027-CH56

## Notes:

- \* Recommended Spare Parts
- 3. For valve with Tef Flow® P design stem only.
- 4. Unless otherwise noted, quantity required is 1.
- 5. EPDM recommended on all steam-contact seals.
- 6. POA = Part # on availability
- 12. Part number includes upper stem, outer stem and outer stem bushing, which are assembled together.
- 13. This stem used for valves with lower external flush and lower seal retainer item 17c or 17d.

**W73 Divert Mix Proof Non-Seat Lift Valve****Tef Flow® P Design****(17b)****(20b)**

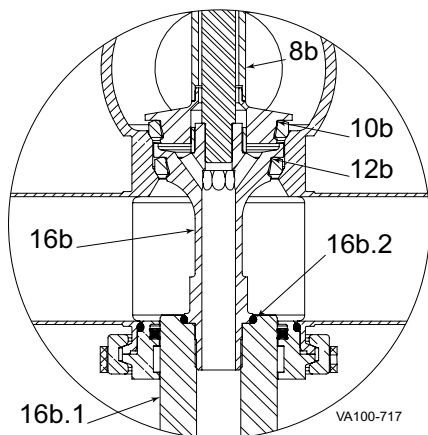
**W73 Divert Mix Proof Non-Seat Lift Valve**

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"	6"	Notes
1	Control Top	Contact Factory						
3	Actuator	See actuator parts list						
4	O-ring Nitrile	N70010	N70010	N70111	N70111	N70111	N70111	
5	Bearing	102757+	102757+	106047+	106047+	106047+	101995+	
6	O-ring, Body (qty 4 req) EPDM	E70223	E70228	E70232	E70236	E70244	E70258	
	FKM	V70223	V70228	V70232	V70236	V70244	V70258	
8a	Stem, Upper	124416+	125059+	125471+	121030+	124943+	POA	
8b	Stem, Upper, Tef Flow® P Design	134818+	130248+	130249+	130250+	130251+	POA	3
10a	Seat Ring -Tri Ring, Upper EPDM	106031+	102736+	107048+	102488+	102491+	102738+	
	FKM	107990+	107980+	107982+	107974+	107977+	108020+	
10b	Seat Ring Insert - Upper Tef Flow® P	130231+	130232+	130233+	130234+	130235+	POA	3
11	Seat Ring -Tri Ring, Vent EPDM	106041+	107693+	107696+	107697+	102490+	102737+	
	FKM	107992+	107984+	107987+	107988+	107976+	108019+	
12a	Seat Ring -Tri Ring, Lower EPDM	106036+	107693+	102487+	102489+	102492+	102739+	
	FKM	107991+	107984+	107973+	107975+	107978+	108021+	
12b	Seat Ring Insert - Lower Tef Flow® P	130243+	130244+	130245+	130246+	130247+	POA	3
14a	O-ring, Lower Stem EPDM	E70322	E70327	E70331	E70335	E70342	N/A	
	FKM	V70322	V70327	V70331	V70335	V70342	N/A	
	Quad Ring, Lower EPDM	122690+	35413+	34429+	117561+	116952+	122350+	
	FKM	122689+	35414+	35415+	117562+	116953+	122351+	
14b	Wiping Stem Seal, Lower EPDM	116186+	116188+	116190+	116195+	116199+	POA	
	FKM	116187+	116189+	116191+	116196+	116200+	POA	
15	Bearing	101947+	102000+	106049+	106048+	102003+	102004+	
16	Stem, Lower	116686+	115911+	116388+	114506+	115651+	128650+	
16b	Stem, Lower, Tef Flow® P Design	132444+	132445+	132446+	132447+	132448+	POA	3
16b.2	O-Ring, Tef Flow® P Design EPDM	E70217	E70217	E70217	E70217	E70217	E70222	3
	FKM	V70217	V70217	V70217	V70217	V70217	V70222	
17a	Seal Retainer, O-ring or Quad Ring	106066+	106067+	106068+	106069+	106070+	125047+	
17b	Seal Retainer, Wiping Stem Seal	117444+	117445+	117446+	117447+	117448+	POA	
18	Clamp	119-30	119-33	119-34	119-51	119-87	119-123	
20a	Adapter, O-ring or Quad Ring	111043+	111017+	111196+	111026+	111029+	POA	
20b	Adapter, Wiping Stem Seal	119467+	119468+	119469+	119470+	119471+	POA	
21a	O-ring, Upper Stem EPDM	E70210	E70210	E70214	E70214	E70214	N/A	
	FKM	V70210	V70210	V70214	V70214	V70214	N/A	
	Quad Ring, Upper EPDM	121300+	121300+	124163+	124163+	124163+	114221+	
	FKM	124088+	124088+	121299+	121299+	121299+	114223+	
21b	Wiping Stem Seal, Upper EPDM	116183+	116183+	116184+	116184+	116184+	POA	
	FKM	115626+	115626+	116185+	116185+	116185+	POA	
25	O-ring EPDM	E70115	E70115	E70121	E70121	E70121	E70111	
	FKM	V70115	V70115	V70121	V70121	V70121	V70111	
26	O-ring (qty 2 required) Nitrile	N90016	N90016	N90020	N90020	N90020	N90020	
37a	Stem, Middle, Tri-Ring	124416+	125059+	125471+	121030+	124943+	POA	
37b	Stem, Middle, Tef Flow® P design	POA	POA	POA	POA	POA	POA	3
38	Tri Ring, Divert Stem EPDM	106036+	107693+	107048+	111633+	102492+	114216+	
	FKM	107991+	107985+	107982+	111635+	107978+	114219+	
38b	Seat Ring Insert - Divert, Tef Flow® P	POA	115348+	115349+	115350+	115351+	POA	3
39	O-ring, Divert stem EPDM	E70210	E70215	E70217	E70217	E70217	E70223	
	FKM	V70210	V70215	V70217	V70217	V70217	V70223	

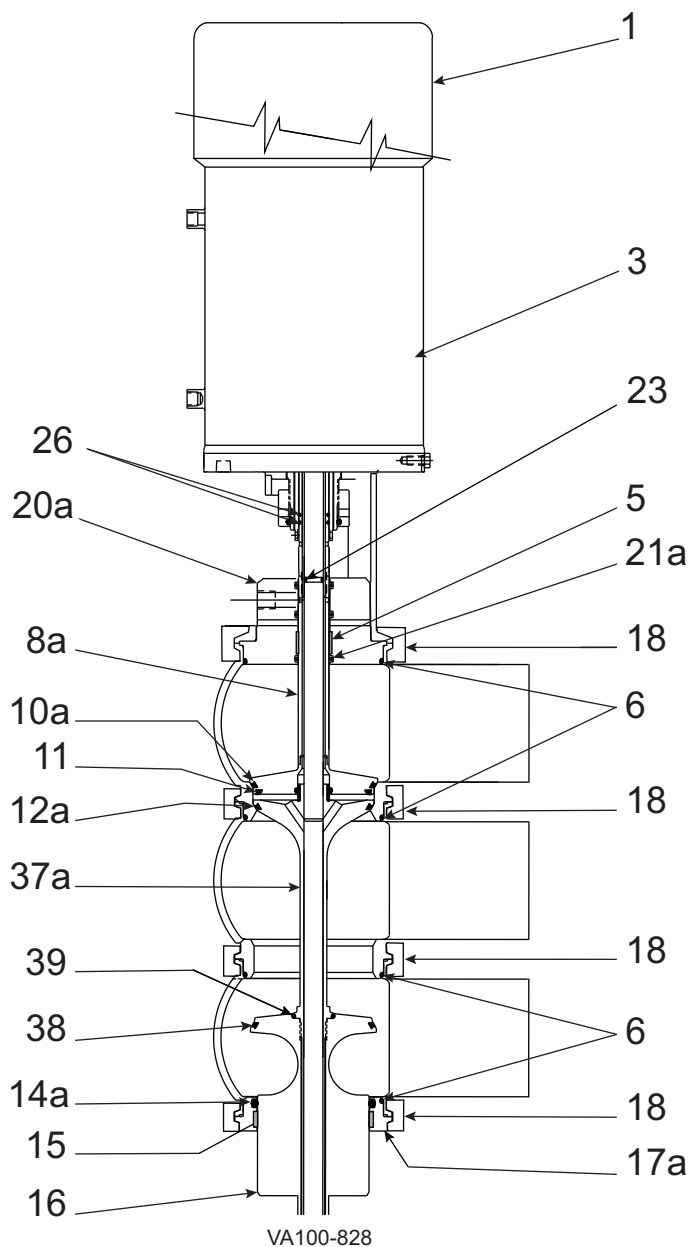
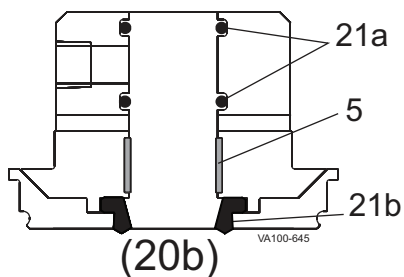
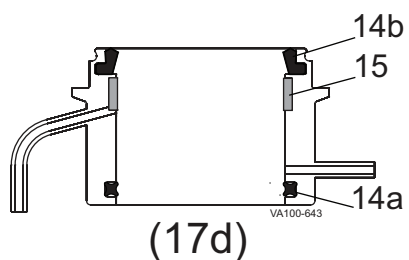
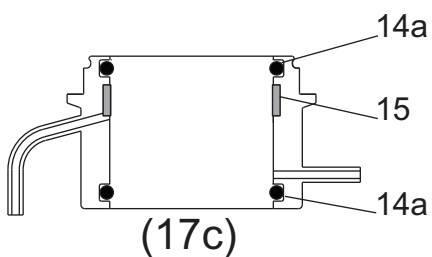
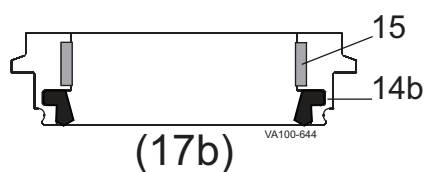
PL5027-CH205

## Notes:

- \* Recommended Spare Parts
- 3. For valve with Tef Flow® P design stem only.
- 4. Unless otherwise noted, quantity required is 1.
- 6. POA = Part # on availability; N/A = not available with this design.

**W73 Divert Mix Proof Non-Seat Lift Valve with External Flush**

Tef Flow® P Design



Item #	Part Description		1-1/2"	2"	2-1/2"	3"	4"	6"	Notes
1	Control Top		Contact Factory						
3	Actuator		See actuator parts list						
* 4	O-ring (not shown)	Nitrile	N70010	N70010	N70111	N70111	N70111	N70111	
* 5	Bearing		102757+	102757+	106047+	106047+	106047+	101995+	
* 6	O-ring, Body (qty 4 req)	EPDM	E70223	E70228	E70232	E70236	E70244	E70258	
		FKM	V70223	V70228	V70232	V70236	V70244	V70258	

\* Recommended Spare Parts

PL5027-CH56a

**W73 Divert Mix Proof Non-Seat Lift Valve with External Flush**

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"	6"	Notes
8a	Stem, Upper Assembly	106015+	106016+	106017+	106018+	106019+	POA	12
8b	Stem, Upper, Tef Flow® P Design	134844+	131680+	131682+	131684+	132242+	POA	
* 10a	Seat Ring -Tri Ring, Upper	EPDM 106031+	102736+	107048+	102488+	102491+	102738+	
		FKM 107990+	107980+	107982+	107974+	107977+	108020+	
* 10b	Seat Ring Insert- Upper	Tef Flow® P 130231+	130232+	130233+	130234+	130235+	POA	3
* 11	Seat Ring -Tri Ring, Vent	EPDM 106041+	107693+	107696+	107697+	102490+	102737+	
		FKM 107992+	107984+	107987+	107988+	107976+	108019+	
* 12a	Seat Ring -Tri Ring, Lower	EPDM 106036+	107693+	102487+	102489+	102492+	102739+	
		FKM 107991+	107984+	107973+	107975+	107978+	108021+	
* 12b	Seat Ring Insert - Lower	Tef Flow® P 130243+	130244+	130245+	130246+	130247+	POA	3
* 14a	O-ring, Lower Stem	EPDM E70322	E70327	E70331	E70335	E70342	N/A	
		FKM V70322	V70327	V70331	V70335	V70342	N/A	
	Quad Ring, Lower	EPDM 122690+	35413+	34429+	117561+	116952+	122350+	
* 14b	Wiping Stem Seal, Lower	EPDM 122689+	35414+	35415+	117562+	116953+	122351+	
		FKM 116186+	116188+	116190+	116195+	116199+	POA	
* 15	Bearing	EPDM 116187+	116189+	116191+	116196+	116200+	POA	
		FKM 101947+	102000+	106049+	106048+	102003+	102004+	
16	Stem, Lower	116686+	115911+	116388+	114506+	115651+	128650+	
16a	Stem, Lower (used with 17c/17d)	POA	POA	122608+	POA	POA	POA	13
16b	Stem, Lower, Tef Flow® P	132444+	132445+	132446+	132447+	132448+	POA	3
16b.2	O-Ring, Tef Flow® P	EPDM E70217	E70217	E70217	E70217	E70217	E70222	3, 5
		FKM V70217	V70217	V70217	V70217	V70217	V70222	3
16c	Stem, Lower Flush	POA	POA	POA	POA	POA	POA	
17a	Seal Retainer, O-ring or Quad Ring	106066+	106067+	106068+	106069+	106070+	125047+	
17b	Seal Retainer, Wiping Stem Seal	117444+	117445+	117446+	117447+	117448+	POA	
17c	Seal Retainer, Lower Flush, O-ring or Quad Ring	114918+	114919+	114920+	114921+	114922+	POA	
17d	Seal Retainer, Lower Flush, Wiping Stem Seal	119050+	119035+	118226+	117559+	118253+	POA	
18	Clamp	119-30	119-33	119-34	119-51	119-87	119-123	
19	Spray Bushing	106030+	106030+	107950+	107950+	107950+	107950+	
20a	Adapter, O-ring or Quad Ring	106020+	106021+	106022+	106023+	106024+	128651+	
20b	Adapter, Wiping Stem Seal	119482+	119483+	119484+	119485+	119486+	POA	
* 21a	O-ring, Upper Stem	EPDM E70210	E70210	E70214	E70214	E70214	N/A	
		FKM V70210	V70210	V70214	V70214	V70214	N/A	
	Quad Ring, Upper (qty 3 required)	EPDM 121300+	121300+	124163+	124163+	124163+	114221+	
* 21b	Wiping Stem Seal, Upper	FKM 124088+	124088+	121299+	121299+	121299+	114223+	
		EPDM 116183+	116183+	116184+	116184+	116184+	POA	
* 25	O-ring	EPDM 115626+	115626+	116185+	116185+	116185+	POA	
		FKM E70010	E70010	E70111	E70111	E70111	E70111	
* 26	O-ring (qty 2 required)	FKM V70010	V70010	V70111	V70111	V70111	V70111	
		Nitrile N90016	N90016	N90020	N90020	N90020	N90020	
37a	Stem, Middle, Tri-Ring	129339+	119651+	130157+	121030+	120215+	POA	
37b	Stem, Middle, Tef Flow® P design	132449+	132450+	132451+	132452+	132453+	POA	3
* 38	Tri Ring, Divert Stem	EPDM 106036+	107693+	107048+	111633+	102492+	114216+	
		FKM 107991+	107984+	107982+	111635+	107978+	114219+	
* 38b	Seat Ring Insert - Divert,	Tef Flow® P POA	115348+	115349+	115350+	115351+	POA	3
* 39	O-ring, Divert stem	EPDM E70210	E70215	E70217	E70217	E70217	E70223	
		FKM V70210	V70215	V70217	V70217	V70217	V70223	

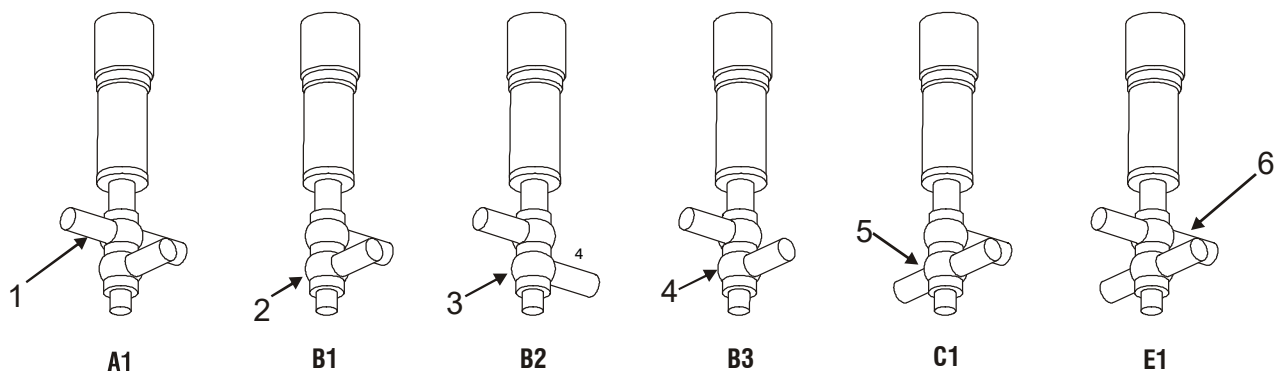
PL5027-CH206

## Notes:

- \* Recommended Spare Parts
- 3. For valve with Tef Flow® P design stem only.
- 4. Unless otherwise noted, quantity required is 1.
- 5. EPDM recommended on all steam-contact seals.
- 6. POA = Part # on availability
- 12. Part number includes upper stem, outer stem and outer stem bushing, which are assembled together.
- 13. This stem used for valves with lower external flush and lower seal retainer item 17c or 17d.

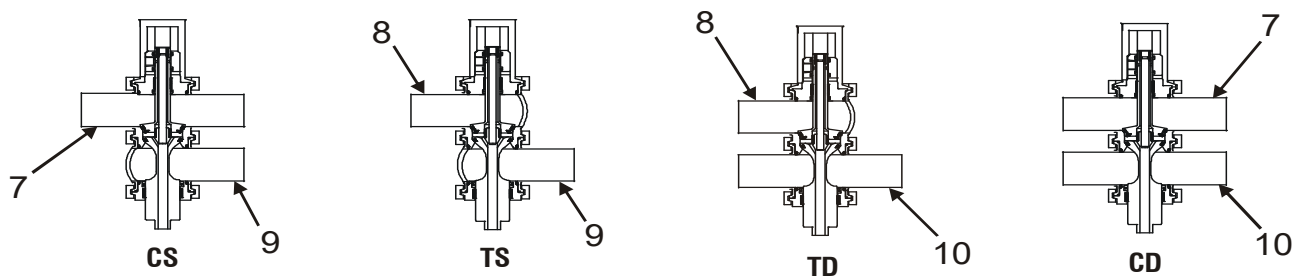
## Mix Proof Valve Bodies for W71, W72RS, W72RSP, and W73 Valves

### W71, W72RS, W72RSP One Piece Bodies



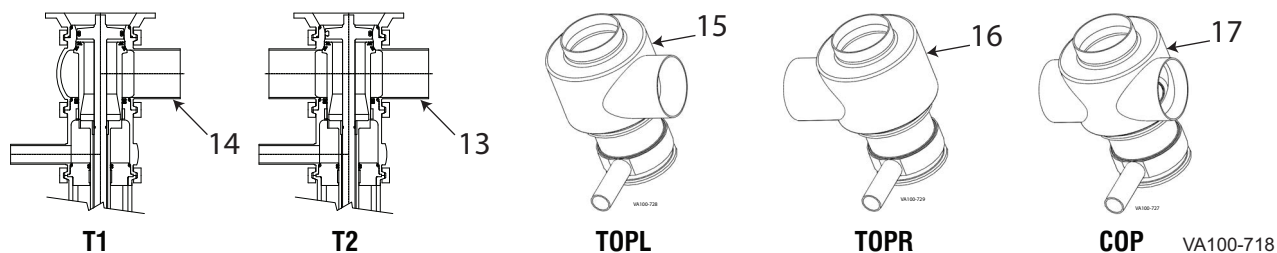
VA100-436b

### W71 & W72RS Two Piece Clamped Bodies \*



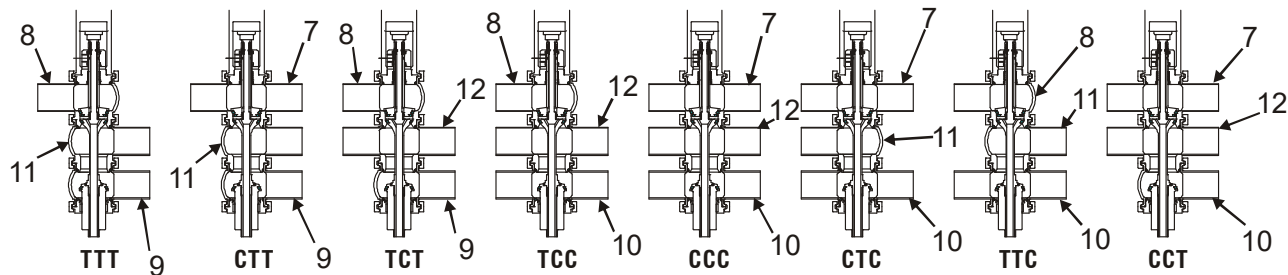
VA100-436c

### W72RS Tank Outlet Valve Two Piece Clamped Bodies \*



VA100-718

### W73-Divert Three Piece Clamped Bodies \*



VA100-436d

\* Clamped bodies allow for ports to be rotated in any direction.

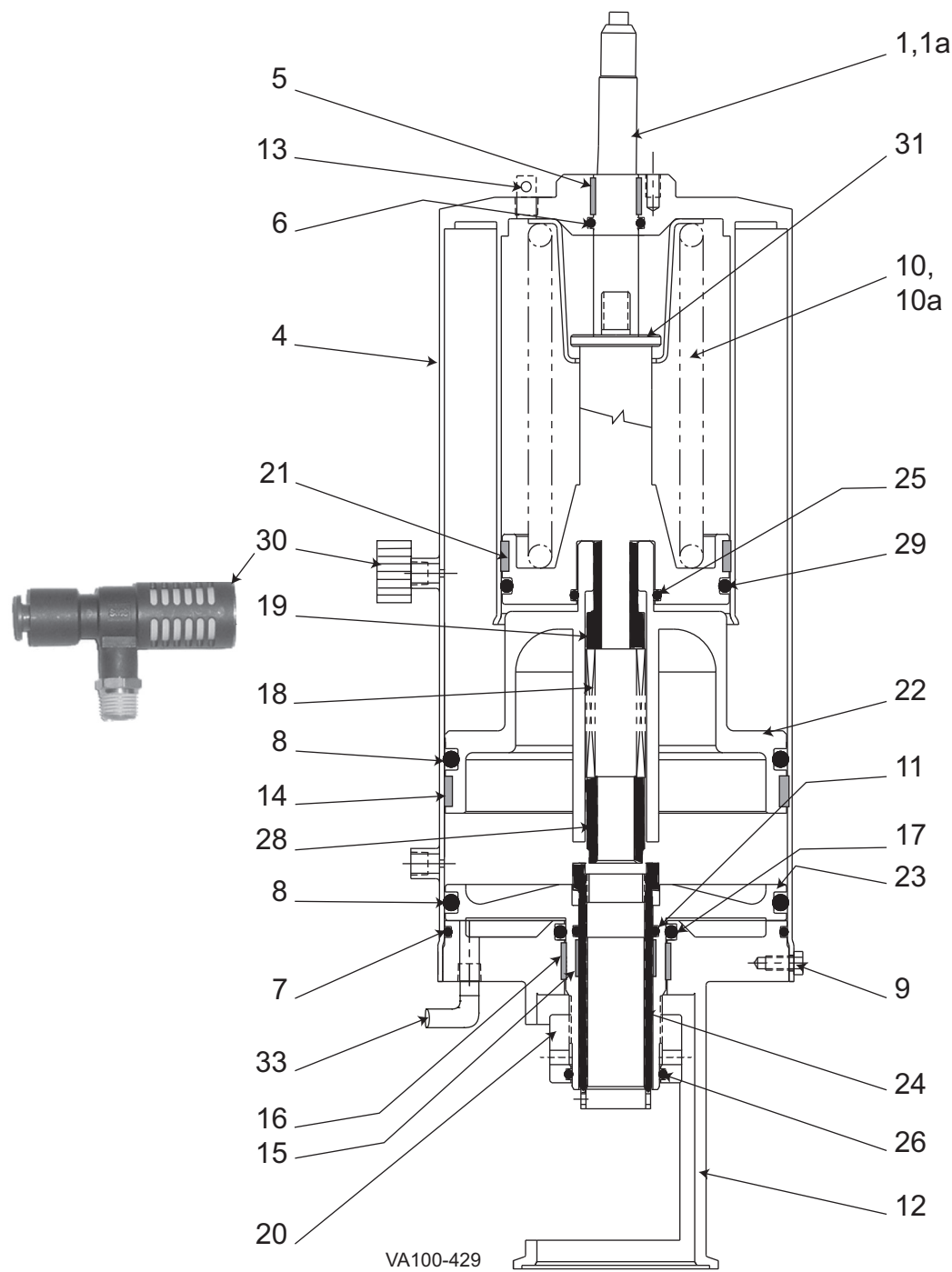


**Mix Proof Valve Bodies for W71, W72RS, W72RSP, and W73 Valves**

Item #	Part Description	1-1/2"	2"	2-1/2"	3"	4"
<b>W71 One Piece Body</b>						
1	Buttweld - A1	107758+	107803+	107898+	107922+	107945+
2	Buttweld - B1	107760+	107805+	107900+	107924+	107947+
3	Buttweld - B2	114652+	112515+	114458+	113726+	114579+
4	Buttweld - B3	107761+	107806+	107901+	107925+	107948+
5	Buttweld - C1	107759+	107804+	107899+	107923+	107946+
6	Buttweld - E1	107757+	107802+	107897+	107921+	107944+
<b>W72RS One Piece Body</b>						
1	Buttweld - A1	113274+	113082+	113268+	113076+	113254+
2	Buttweld - B1	113276+	113084+	113270+	113078+	113256+
3	Buttweld - B2	113277+	113085+	113271+	114835+	113257+
4	Buttweld - B3	113278+	113086+	113272+	113079+	113258+
5	Buttweld - C1	113275+	113083+	113269+	113077+	113255+
6	Buttweld - E1	113273+	113081+	113267+	113075+	113253+
<b>W72RSP One Piece Body</b>						
1	Buttweld - A1	N/A	N/A	126926+	126916+	113254+
2	Buttweld - B1	N/A	N/A	126928+	126918+	113256+
3	Buttweld - B2	N/A	N/A	126929+	126919+	113257+
4	Buttweld - B3	N/A	N/A	126930+	126920+	113258+
5	Buttweld - C1	N/A	N/A	126927+	126917+	113255+
6	Buttweld - E1	N/A	N/A	126925+	126915+	113253+
<b>W71/W73</b>						
7	Upper Cross, S-Line	108560+	108565+	108570+	108575+	108580+
8	Upper Tee, S-Line	108530+	108535+	108540+	108545+	108550+
<b>W72RS</b>						
7	Upper Cross, S-Line	119488+	119489+	119490+	119491+	119492+
8	Upper Tee, S-Line	119493+	119494+	119495+	119496+	119497+
<b>W72RS Tank Outlet</b>						
13	Upper Cross, T2	N/A	N/A	123784+	119026+	123786+
14	Upper Tee, T1	N/A	N/A	123783+	119025+	123785+
15	Tee, Offset Port - Right (TOPR)	N/A	N/A	POA	POA	POA
16	Tee, Offset Port - Left (TOPL)	N/A	N/A	POA	POA	POA
17	Cross, Offset Port (COP)	N/A	N/A	POA	POA	POA
<b>W71/W72RS/W73</b>						
9	Lower Tee, S-Line	108590+	108595+	108600+	108605+	108610+
10	Lower Cross, S-Line	108620+	108625+	108630+	108635+	108640+
<b>W73</b>						
11	Middle Tee, S-Line	118262+	118267+	118272+	118277+	118282+
12	Middle Cross, S-Line	118292+	118297+	118302+	118307+	118312+

PL5027-CH57

W71/W73 Seat Lift Actuator



Complete Actuator Assemblies

Part Description		4" Diameter <sup>1</sup>	6" Diameter <sup>1</sup>	8" Diameter <sup>1</sup>
Air-to-Raise	Visual Indicator Stem 1-1/2"	ACT00282	--	--
	2"	ACT00283	--	--
	2-1/2"	--	ACT00284	--
	3"	--	ACT00285	--
	4"	--	ACT00286	--
	6"	--	--	POA

PL5027-CH60a

**W71/W73 Seat Lift Actuator**

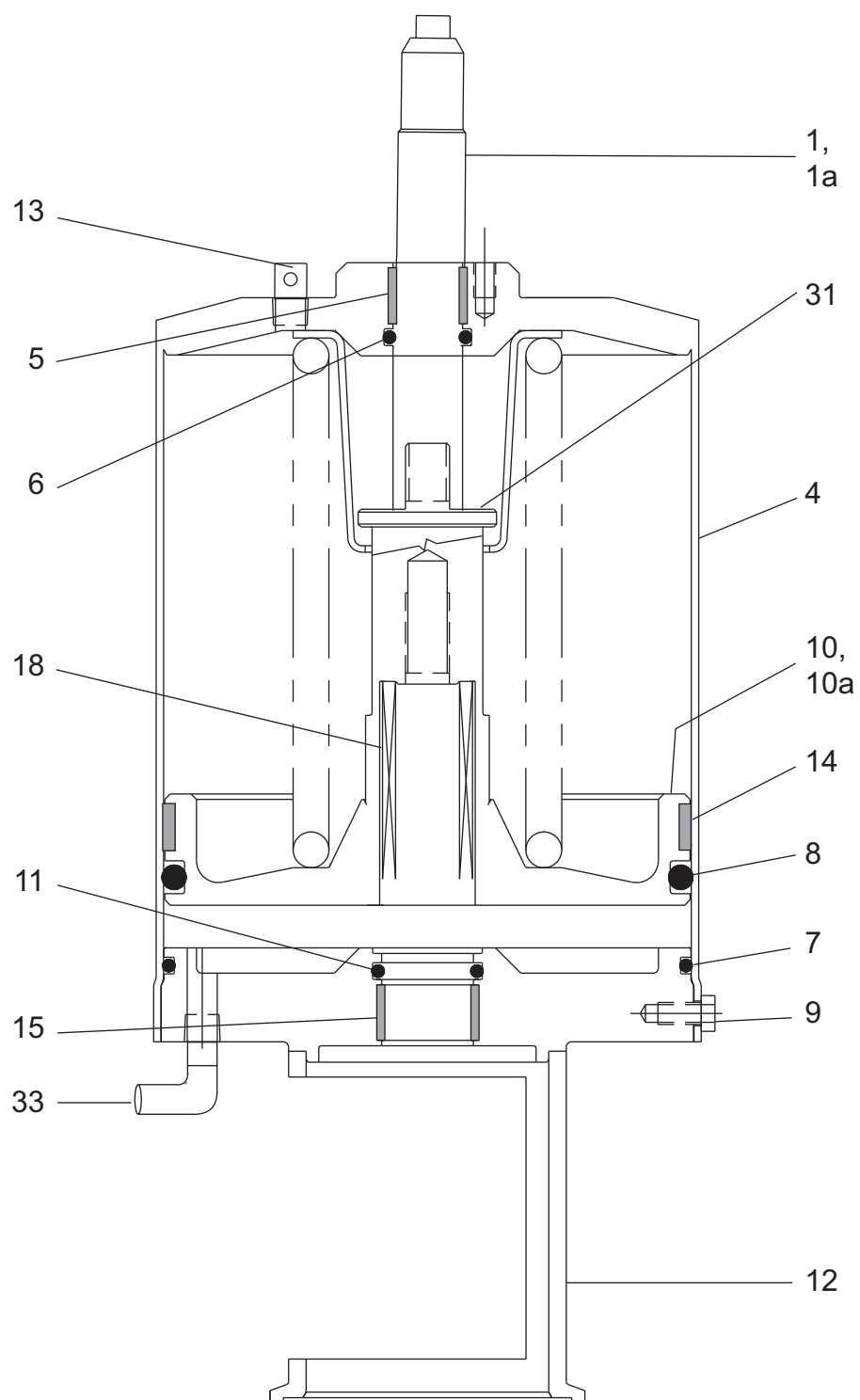
Item #	Part Description	4" Diameter <sup>1</sup>	6" Diameter <sup>1</sup>	8" Diameter <sup>1</sup>
1	Indicator Stem - Visual (see note 2)	106050+	107951+	POA
1a	Indicator Stem - Control Top	106003+	106004+	110800+
4	Cylinder	111506+	111491+	123974+
* 5	<b>Bearing, Indicator Stem</b>	102757+	102757+	102757+
* 6	<b>O-ring, Indicator Stem</b> Nitrile	N70210	N70210	N70210
* 7	<b>O-ring, Outer Yoke</b> Nitrile	N70240	N70255	N70367
* 8	<b>O-ring, Upper Seat Piston (qty 2 req)</b> Nitrile	N70342	N70433	N70443
9	Cap Screw, 1/4-20 x .375" lg.	30-68 (qty 4 req)	30-68 (qty 8 req)	30-361 (qty 12 req)
10	Lower Seat Piston & Spring Assembly	113661+	113660+	129823+
10a	Lower Seat Piston & Spring Assembly, Tef-Flow™ P Design Only 1-1/2" Valve	134901+	--	--
	2" Valve	134902+	--	--
	2 1/2", 3" & 4" Valve	--	132189+	--
	6" Valve	--	--	POA
* 11	<b>O-ring, Adjustment Sleeve (qty 2 req)</b> Nitrile	N70214	N70219	N70219
12	Yoke 1-1/2" Valve	109823+	--	--
	2" Valve	109940+	--	--
	2 1/2" Valve	--	109928+	--
	3" Valve	--	109934+	--
	4" Valve	--	109905+	--
	6" Valve	--	--	128655+
13	Vent Plug (see note 2)	3023957+	3023957+	3023957+
* 14	<b>Bearing, Main Piston</b>	101995+	102052+	100256+
* 15	<b>Bearing, Adjusting Sleeve</b>	106047+	109919+	109919+
* 16	<b>Bearing, Lifting piston</b>	109820+	109920+	109920+
* 17	<b>O-ring, Inner Yoke</b> Nitrile	N70222	N70328	N70328
18	Spring, Upper Stem	101946+	5901106+	5901106+
19	Stop, Lifter	109817+	109913+	123998+
20	Adjusting Nut, Upper Seat Lift	109822+	109918+	122345+
* 21	<b>Bearing, Lower seat piston</b>	111044+	101995+	102052+
22	Main Piston	111510+	111486+	123979+
23	Upper Seat Lift Piston	111507+	111489+	124555+
24	Adjusting Sleeve, Lower Seat Clean	109821+	109912+	126834+
* 25	<b>O-ring, Inner Lower Seat Piston</b> Nitrile	N70216	N70219	N70219
* 26	<b>O-ring, Adjusting Nut</b> Nitrile	N80026	N80222	N80222
28	Bushing	112427+	112517+	112517+
* 29	<b>O-ring, Outer Lower Seat Piston</b> Nitrile	N70335	N70342	N70433
30	Quick Exhaust (avail. upon request)	114680+	114680+	114680+
31	Washer (see note 3)	43-55	--	--
33	Elbow swivel 90°	78-157	78-157	78-157
	Actuator Seal Kit (contains recomm. spares)	131009+	133483+	--

PL5027-CH60

## Notes:

\* Recommended Spare Parts

1. 4" dia. actuator for 1-1/2" and 2" valves; 6" dia. actuator for 2-1/2", 3", and 4" valves; 8" dia. for 6" valves.
2. Only required for valves without control top.
3. Item 31 is required on 1-1/2" valves only.
4. Unless otherwise noted, quantity required is 1.

**W71/W73 Non-Seat Lift Actuator**

VA100-430

**W71/W73 Non-Seat Lift Actuator**

Item #	Part Description	4" Diameter <sup>1</sup>	6" Diameter <sup>1</sup>	8" Diameter <sup>1</sup>
1	Indicator Stem - Visual (see note 2)	106050+	107951+	POA
1a	Indicator Stem - Control Top	106003+	106004+	110800+
4	Cylinder	106006+	106007+	128394+
* 5	<b>Bearing, Indicator Stem</b>	102757+	102757+	102757+
* 6	<b>O-ring, Indicator Ste</b> <b>Nitrile</b>	N70210	N70210	N70210
* 7	<b>O-ring, Outer Yoke</b> <b>Nitrile</b>	N70240	N70255	N70367
* 8	<b>O-ring, Piston</b> <b>Nitrile</b>	N70342	N70433	N70443
9	Cap Screw, 1/4-20 x .375" lg.	30-68 (qty 4 req)	30-68 (qty 8 req)	30-361 (qty 12 req)
10	Piston & Spring Assembly 1-1/2" Valve 2" Valve 2 1/2", 3", 4" Valve 6" Valve	132891+	--	--
		132388+	--	--
		--	132193+	--
		--	--	129822+
10a	Lower Seat Piston & Spring Assembly, Tef-Flow □ P Design Only 1-1/2" Valve 2" Valve 2 1/2", 3", 4" Valve 6" Valve	132671+	--	--
		132387+	--	--
		--	132192+	--
		--	--	POA
* 11	<b>O-ring, Yoke</b> <b>Nitrile</b>	N70210	N70214	N70214
12	Yoke 1-1/2" Valve 2" Valve 2 1/2" Valve 3" Valve 4" Valve 6" Valve	106119+	--	--
		107764+	--	--
		--	106120+	--
		--	106121+	--
		--	106118+	--
		--	--	128396+
13	Vent Plug (see note 2)	3023957+	3023957+	3023957+
* 14	<b>Bearing, Piston</b>	101995+	102052+	100256+
* 15	<b>Bearing, Yoke</b>	102757+	106047+	106047+
18	Spring, Upper Stem	101946+	5901106+	5901106+
31	Washer (see note 3)	43-55	--	--
33	Elbow swivel 90°	78-157	78-157	78-157
Actuator Seal Kit (contains recomm. spares)		129866+	129867+	--

**Complete Actuator Assemblies**

Part Description	4" Diameter <sup>1</sup>	6" Diameter <sup>1</sup>	8" Diameter <sup>1</sup>
Air-to-Raise, Visual Indicator Stem	1-1/2" Valve	ACT00188	--
	2" Valve	ACT00122	--
	2 1/2" Valve	--	ACT00279
	3" Valve	--	ACT00280
	4" Valve	--	ACT00281
	6" Valve	--	POA

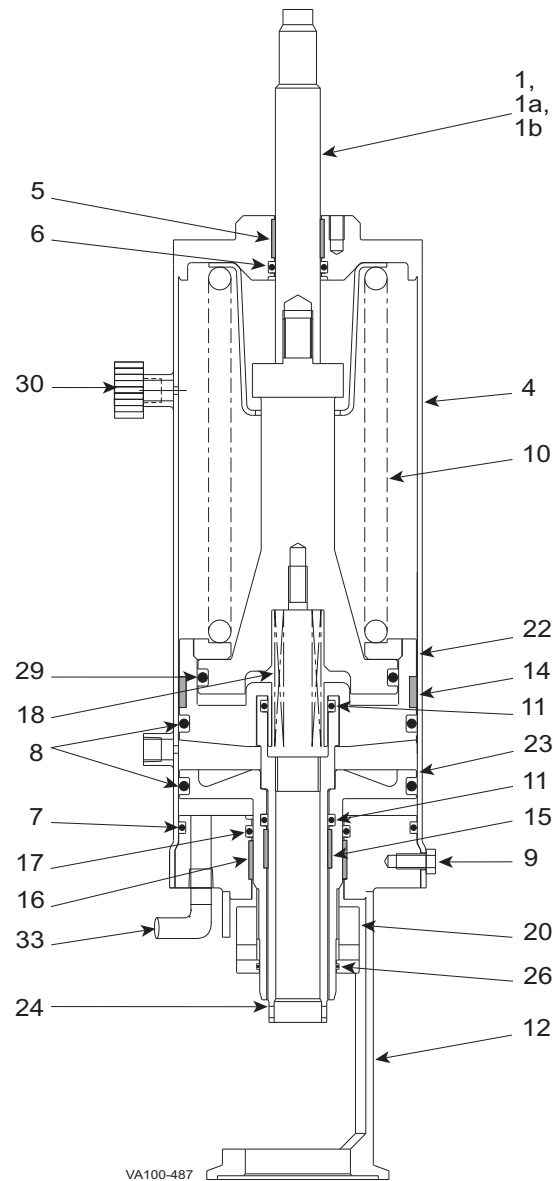
PL5027-CH58

## Notes:

\* Recommended Spare Parts

1. 4-inch diameter actuator for 1-1/2" and 2" valves; 6" diameter actuator for 2-1/2", 3" and 4" valves; 8" diameter for 6" valves.
2. Only required for valves without control top.
3. Item 31 is required on 1-1/2" valves only.
4. Unless otherwise noted, quantity required is 1.

W72RS/W72RSP Seat Lift Actuator



W72RS/W72RSP Complete Actuator Assemblies (see note 3)

Part Description	For Valve Size	W72RS			W72RSP
		4" Dia. <sup>1</sup>	6" Dia. <sup>1</sup>	8" Dia. <sup>1</sup>	
Air-to-Raise Visual Indicator Stem	1-1/2"	ACT00337	--	--	POA
	2"	ACT00338	--	--	
	2-1/2"	--	ACT00339	--	
	3"	--	ACT00340	--	
	4"	--	ACT00341	--	
Control Top Indicator Stem	6"	--	--	POA	POA
	1-1/2"	ACT00347	--	--	
	2"	ACT00348	--	--	
	2-1/2"	--	ACT00349	--	
	3"	--	ACT00350	--	
Control Top Indicator Stem - Tank Outlet Valve	4"	--	126096+	--	--
			126097+	--	--

PL5027-64a

3. For yokes with 3rd prox. switch, please contact factory.

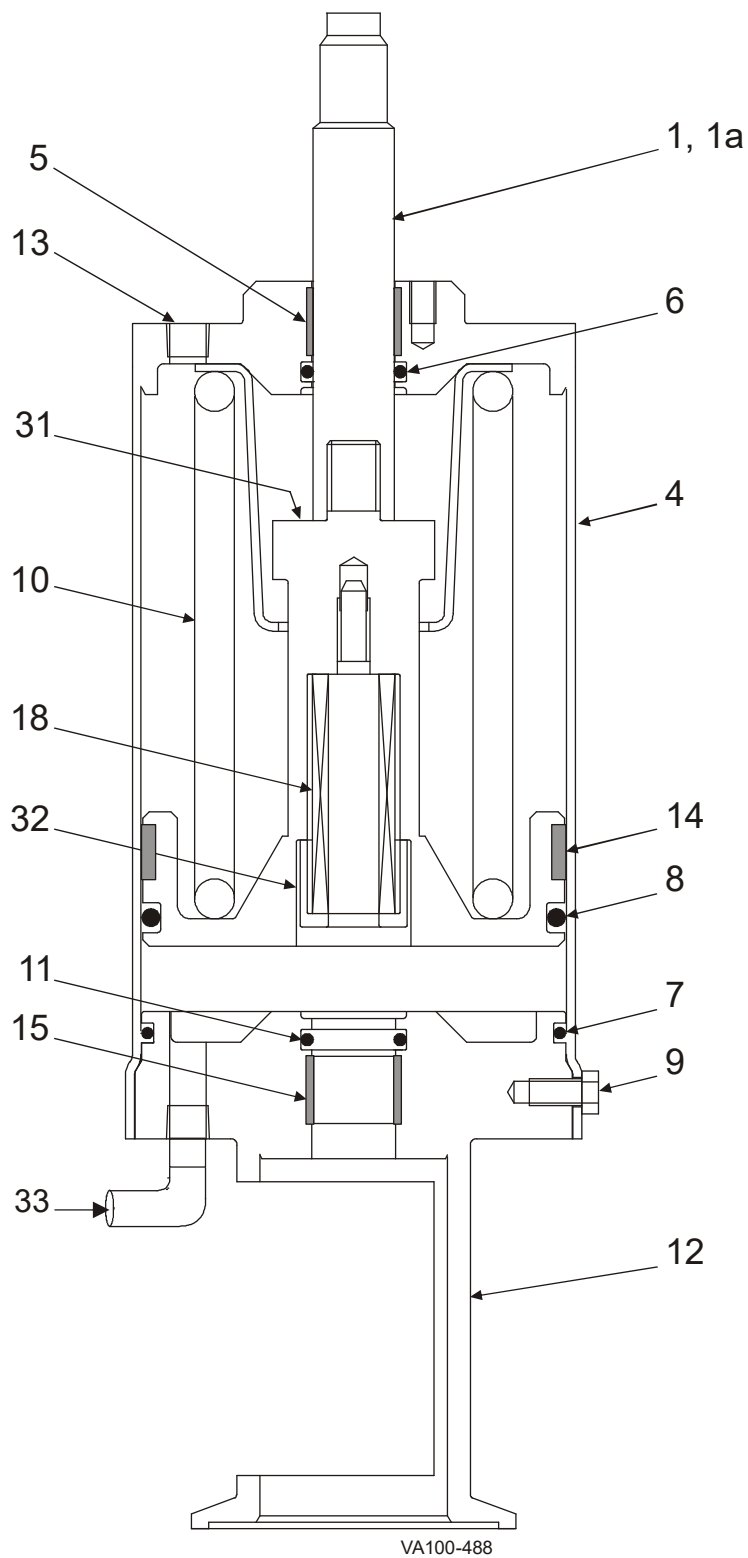
**W72RS/W72RSP Seat Lift Actuator**

Item #	Part Description	W72RS			W72RSP
		4" Diameter <sup>1</sup>	6" Diameter <sup>1</sup>	8" Diameter <sup>1</sup>	
1	Indicator Stem - Visual (see note 2)	106050+	107951+	POA	POA
1a	Indicator Stem - Control Top	106003+	106004+	POA	128787+
1b	Indicator Stem - used with yoke switch	--	--	--	128787+
4	Cylinder	113099+	113112+	POA	126871+
* 5	<b>Bearing, Indicator Stem</b>	102757+	102757+	102757+	102757+
* 6	<b>O-ring, Indicator Stem</b> Nitrile	N70210	N70210	N70210	N70210
* 7	<b>O-ring, Cylinder</b> Nitrile	N70240	N70255	N70367	N70255
* 8	<b>O-ring, Upper Seat Piston (qty 2)</b> Nitrile	N70342	N70433	N70443	N70433
9	Cap Screw, 1/4-20 x .375" lg.	30-68 (4 req)	30-68 (8 req)	30-68 (12 req)	30-68 (8 req)
10	Lower Seat Piston & Spring Assembly 1-1/2" 2" 2-1/2" - 4" 6" 2-1/2" - 4" Tank Outlet	113680+	--	--	POA
		113679+	--	--	
		W72RS	113678+	--	
		--	--	POA	
		--	129868+	--	
* 11	<b>O-ring, Adjusting Sleeve (qty 2)</b> Nitrile	N70214	N70219	N70219	N70219
12	Yoke 1-1/2" 2" 2-1/2"; 2-1/2" - 3" Tank Outlet 3"; 4" Tank Outlet 4" 6"	109823+	--	--	119591+
		109940+	--	--	
		--	109928+	--	
		--	109934+	--	
		--	109905+	--	
12a	Yoke for use with bracket & 3rd. prox switch (not shown) 1-1/2" 2" 2.5" 3" 4" 6"	134864+	--	--	128532+
		120761+	--	--	
		--	120762+	--	
		--	128101+	--	
		--	128127+	--	
12b	Yoke switch bracket (not shown) to be used with item 12a 1-1/2" 2" 2.5" 3" 4" 6"	135783+	--	--	135785+
		135783+	--	--	
		--	135781+	--	
		--	135781+	--	
		--	135781+	--	
13	Vent Plug (not shown) (see note 2)	3023957	3023957	3023957	3023957+
* 14	<b>Bearing, Main Piston (see note 5)</b>	101995+	102052+	100256+	102052+
* 15	<b>Bearing, Adjusting Sleeve</b>	106047	109919	109919	109919+
* 16	<b>Bearing, Lifting Piston</b>	109820+	109920+	109920+	109920+
* 17	<b>O-ring, Inner Yoke</b> Nitrile	N70222	N70328	N70328	N70328
18	Spring, Upper Stem	101946+	5901106+	5901106+	5901106+
20	Adjusting Nut, Upper Seat Lift	109822	109918	122345+	122345+
22	Main Piston	117215+	116472+	POA	116472+
	Main Piston, Tank Outlet Valve	--	116472A	--	--
23	Upper Seat Piston	111507+	111489+	124555+	124543+
24	Adjusting Sleeve, Lower Seat Clean	117439	116469	POA	116469+
* 26	<b>O-ring, Adjusting Nut</b> Nitrile	N80026	N90222	N90222	N90222
* 29	<b>O-ring, Outer Lower Seat Piston</b> Nitrile	N70337	N70427	N70433	N70427
30	Quick Exhaust (avail. upon request)	114680+	114680+	114680+	114680+
33	Elbow swivel 90°	78-157	78-157	78-157	78-157
Actuator Seal Kit (contains recomm. spares)		130905+	129865+	--	--

PL5027-CH64

Notes:\* Recommended Spare Parts

1. For W72RS, 4-inch diameter actuator for 1-1/2 inch and 2-inch valves; 6-inch diameter actuator for 2-1/2 inch through 4-inch valves; 8-inch diameter actuator for 6-inch valves. (Does not apply to W72RSP Actuator.)
2. Only required for valves without control top
4. Unless otherwise noted, quantity required is 1.
5. Quantity 2 on Tank Outlet Valve only.

**W72RS Non Seat Lift Actuator**



**W72RS Non Seat Lift Actuator**

Item #	Part Description	4" Diameter <sup>1</sup>	6" Diameter <sup>1</sup>	8" Diameter <sup>1</sup>
1	Indicator Stem - Visual (see note 2)	106050+	107951+	POA
1a	Indicator Stem - Control Top	106003+	106004+	POA
4	Cylinder	106006+	106007+	128394+
* 5	<b>Bearing, Indicator Stem</b>	102757+	102757+	102757+
* 6	<b>O-ring, Indicator Stem</b> Nitrile	N70210	N70210	N70210
* 7	<b>O-ring, Cylinder</b> Nitrile	N70240	N70255	N70367
* 8	<b>O-ring, Piston</b> Nitrile	N70342	N70433	N70443
9	Cap Screw, 1/4-20 x .375" lg.	30-68 (4 req)	30-68 (8 req)	30-361 (12 req)
10	Piston & Spring Assembly 1-1/2" Valve	132891+	--	--
		2" Valve	--	--
		2 1/2", 3", 4" Valve	132193+	--
		6" Valve	--	POA
* 11	<b>O-ring, Yoke</b> Nitrile	N70210	N70214	N70214
12	Yoke 1-1/2"	106119+	--	--
		2"	107764+	--
		2-1/2"	106120+	--
		3"	106121+	--
		4"	106118+	--
		6"	--	128396+
13	Vent Plug (see note 2)	3023957+	3023957+	3023957+
* 14	<b>Bearing, Piston</b>	101995+	102052+	100256+
* 15	<b>Bearing, Yoke</b>	102757+	106047+	106047+
18	Spring, Upper Stem	101946+	5901106+	5901106+
31	Washer (see note 3)	43-55	--	--
32	Spring Guide	118459+	118529+	POA
33	Elbow swivel 90°	78-157	78-157	78-157
Actuator Seal Kit (contains recomm. spares)		129866+	129867+	--

**Complete Actuator Assemblies**

Part Description	For Valve Size	4" Diameter <sup>1</sup>	6" Diameter <sup>1</sup>	8" Diameter <sup>1</sup>
Air-to-Raise Visual Indicator Stem	1-1/2"	ACT00342	--	--
	2"	ACT00343	--	--
	2-1/2"	--	ACT00344	--
	3"	--	ACT00345	--
	4"	--	ACT00346	--
	6"	--	--	POA
Control Top Indicator Stem	1-1/2"	ACT00352	--	--
	2"	ACT00353	--	--
	2-1/2"	--	ACT00354	ACT00354
	3"	--	ACT00355	ACT00355
	4"	--	ACT00356	ACT00356
	6"	--	--	POA

PL5027-CH62

## Notes:

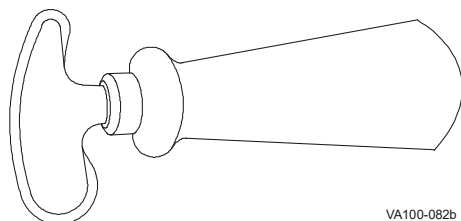
\* Recommended Spare Parts

- 4-inch diameter actuator for 1-1/2" and 2" valves; 6" diameter actuator for 2-1/2", 3" and 4" valves; 8" diameter for 6" valves.
- Only required for valves without control top
- Item 31 is required on 1-1/2" valves only.

## Installation Tools

Item	Used with Valve Model
Tri Ring Tool (page 90)	W71 / W72RS / W73
4" Diameter Actuator Rebuild Insertion Sleeve (page 90)	W71 / W73
Radial Seal Insertion Collar Tool (page 90)	W72RS / W72RSP
Tef Flow® P Seat Installation/Removal Kits (starting on page 91)	W71, Tef Flow® P Design

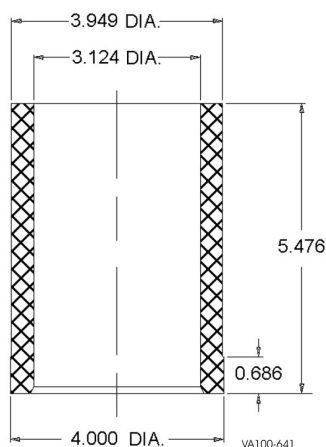
### Tri Ring Tool (for W71 / W73 and W72RS Valves)



Tri Ring Tool  
Part number 102797+

VA100-082b

### 4" Diameter Actuator Rebuild Insertion Sleeve (for W71 / W73 Valves)

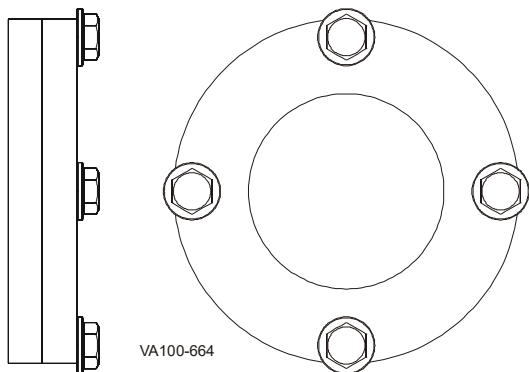


**NOTE:** The insertion sleeve is available using the part number below, or it can be created by most machine shops using #6 nylon round stock. See insertion sleeve dimensions shown at left.

- Material is #6 nylon round stock.
- Bevel the inside and outside end corners.

4" Actuator Rebuild Insertion Sleeve  
Part number 111840+

### Radial Seal Insertion Collar Tool (for W72RS and W72RSP Valves)



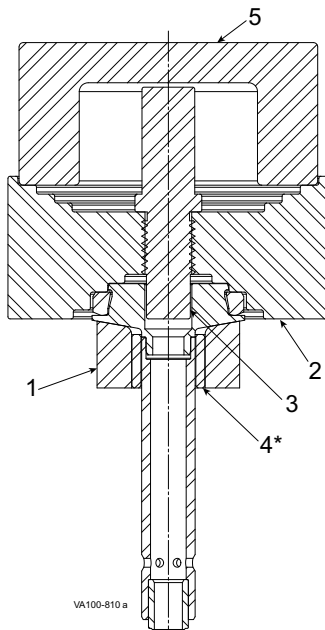
Valve Size	1-1/2"	2"	2-1/2"
Part No.	120048+	120049+	120051+
Valve Size	3"	4"	6"
Part No.	120053+	120055+	120057+

\* W72RSP Valves only require the 4" tool.

**W71/W73 Tef Flow® P Seat Installation/Removal Kits**

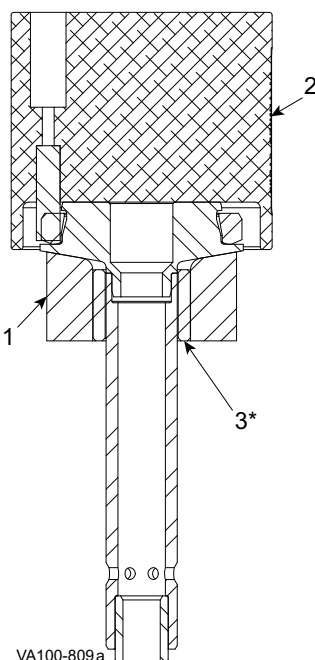
Tef Flow® P Tool Kits	Part No. (applies to all valve sizes)		
	W71 (Upper Stem) W73 (Upper Stem)	W71 (Lower Stem) W73 (Middle Stem)	W73 (Lower Stem)
Installation Tool Kit	132356+	132357+	See Note
Removal Tool Kit	132990+	132947+	133470+

**NOTE:** For W73 Lower Stem, seat installation tools are available individually; see page 93.

**W71/W73 Upper Stem Tef Flow® P Seat Installation Kit 132356+**

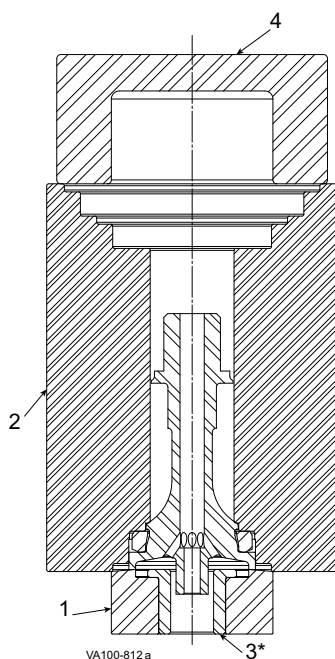
Item	Description	Qty	Part No.
1	Install Base Tool, Upper Stem Insert	1	131301+
2	Upper Stem Seat Install Tool (Aluminum)	1	131884+
3	Locator Pin (Aluminum)	1	131885+
4*	Stem Sleeve Plug Tool, 2" ODT Valve	1	131305+
5	Puck	1	132899+

\* applies to 2" ODT valve size only.

**W71 Lower Stem/W73 Middle Stem Tef Flow® P Seat Removal Kit 132990+**

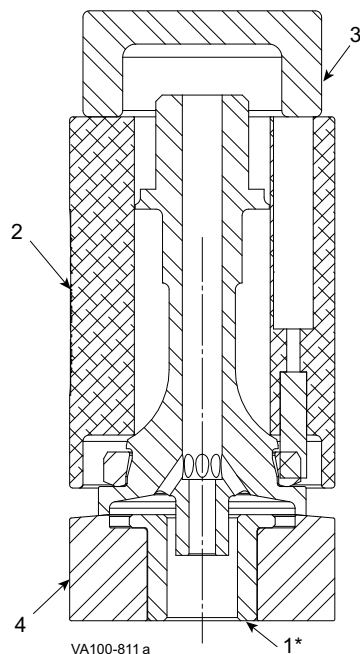
Item	Description	Qty	Part No.
1	Install Base Tool, Upper Stem Insert	3	131301+
2	Upper Stem Seat Removal Tool, 2" ODT Valve	1	132983+
	Upper Stem Seat Removal Tool, 2.5" ODT / 2" Sch.5 Valve	1	132982+
	Upper Stem Seat Removal Tool, 3" Valve	1	132981+
	Upper Stem Seat Removal Tool, 4" Valve	1	132980+
3*	Stem Sleeve Plug Tool, 2" ODT Valve	1	131305+

\* applies to 2" ODT valve size only.

**W71/W73 Upper Stem Tef Flow® P Seat Installation Kit 132357+**

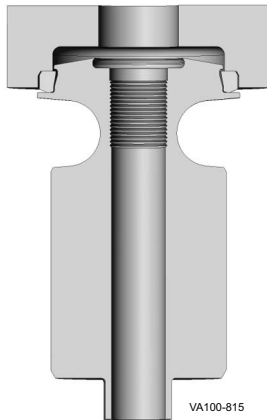
Item	Description	Qty	Part No.
1	Install Base Tool, Lower Stem Insert	1	131302+
2	Upper Stem Seat Tool	1	131886+
3*	Install Base Plug Tool, 2" ODT Valve	1	131303+
4	Puck	1	132899+

\* applies to 2" ODT valve size only.

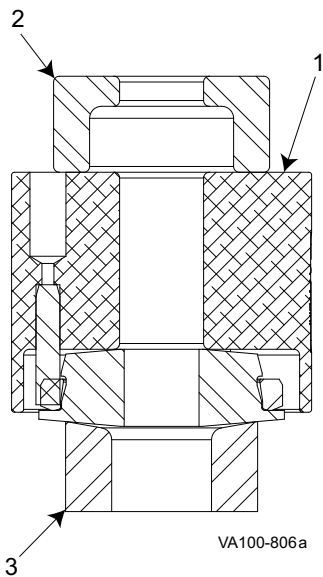
**W71 Lower Stem/W73 Middle Stem Tef Flow® P Seat Removal Kit 132947+**

Item	Description	Qty	Part No.
1*	Base Plug Tool, 2" ODT Valve	1	131303+
2	Lower Stem Seat Removal Tool, 2" ODT Valve	1	132910+
	Lower Stem Seat Removal Tool, 2.5" ODT / 2" Sch. 5 Valve	1	132909+
	Lower Stem Seat Removal Tool, 3" Valve	1	132908+
	Lower Stem Seat Removal Tool, 4" Valve	1	132907+
3	Puck	4	132900+
4	Install Base Tool, Lower Stem Insert	4	131302+

\* applies to 2" ODT valve size only.

**W73 (Lower Stem) Tef Flow® P Seat Insert Tools**

Description	Qty	Part No.
Seat Insert Tool, 1"/1.5" Valve	1	115654+
Seat Insert Tool, 2" Valve	1	115655+
Seat Insert Tool, 2.5" Valve	1	115656+
Seat Insert Tool, 3" Valve	1	115657+
Seat Insert Tool, 4" Valve	1	115658+

**W73 (Lower Stem) Tef Flow® P Seat Removal Kit 133470+**

Item	Description	Qty	Part No.
1	Install Base Stem Tool	1	131301+
2	Puck	1	132900+
3	Seat Removal Tool, 1" Valve	1	133476+
	Seat Removal Tool, 2" Valve	1	133477+
	Seat Removal Tool, 2.5" Valve	1	133478+
	Seat Removal Tool, 3" Valve	1	133479+
	Seat Removal Tool, 4" Valve	1	133480+

## Troubleshooting

PROBLEM	POSSIBLE CAUSE	SUGGESTED ACTION
<b>Leakage</b>		
<b>Leakage from vent/drain with valve closed.</b>	Upper or lower seat ring failure.	Remove valve. Replace seat rings.
	Debris trapped in upper seat or lower seat.	Inspect/change cleaning procedure to correct.
	Upper or lower seat not closed.	Inspect inner and outer stems for galling and burrs on adapter. Check actuator function.
	Upper or lower seat clean activated.	Check control sequence.
<b>Leakage from vent/drain with valve open.</b>	Tri-ring on bottom of top seat failed.	Replace seal.  Inspect inner and outer stems for galling and burrs.
	Small spring not holding upper stem in place.	Check and replace small spring and stems in actuator.
<b>Leakage around yoke.</b>	Internal adapter O-ring failure.	Replace O-ring.
	External adapter O-ring failure.	Replace O-ring.
<b>Leakage through outer stem.</b>	Inner stem O-ring failure.	Replace O-ring.
<b>Operation</b>		
<b>Valve fails to open.</b>	Air pressure too low.	Set air pressure to 72 psi (5 bar) minimum.
	Control failure.	Check control sequence.
		Check control wiring and power source.
<b>Valve fails to close.</b>	Controls failed.	Check control sequence.
		Check control wiring and power source.
<b>Upper seat fails to lift during seat lift.</b>	Lifting piston not adjusted correctly.	Adjust adjusting sleeve. See "Seat Cleaning Adjustment" on page 25.
<b>Lower seat fails to lift during seat lift.</b>	Adjusting sleeve not adjusted correctly.	Adjust adjusting sleeve. See "Seat Cleaning Adjustment" on page 25.
<b>Actuator moves when valve opened.</b>	Clamp loose.	Tighten clamp with valve open.
<b>Electrical</b>		
<b>No valve closed or open indication.</b>	Lower sensor not adjusted properly.	Adjust sensor. See control module publication 95-03083.
<b>No valve open signal.</b>	Upper sensor not adjusted.	Adjust sensor. See control module publication 95-03083.
<b>Moisture in sensor housing.</b>	Missing and/or damaged gaskets.	Replace gaskets.



# W70 Series Mix Proof Valves

W71, W72RS, W72RSP, W73  
(IN O.D. TUBING SIZES)



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ISSUED: 10/2023

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