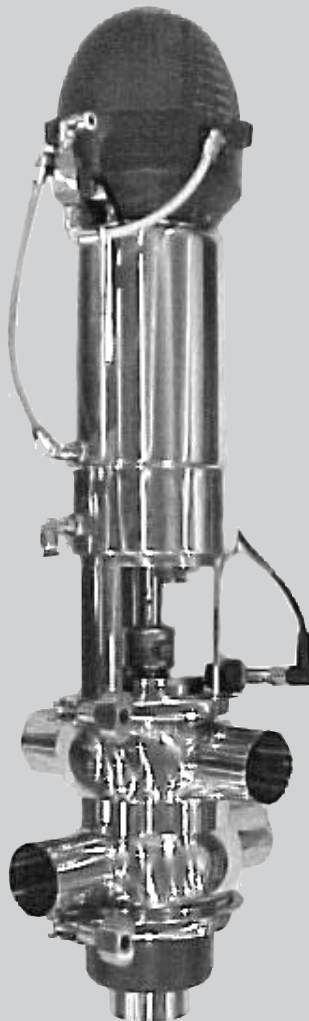




## Instruction Manual

Uniq-PMO Sanitary Mixproof Valve sizes 2", 2½", 3", and 4"

Effective 5/1/03  
Revised 5/1/04  
Revised 1/1/06



**Uniq-PMO Mix-Proof Valve**

EPM00041ENUS 0106



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*The information contained herein is correct at the time of issue but may be subject to change without prior notice.*

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Thank you for purchasing an Alfa Laval product.

This manual has been provided to instruct you how to operate and service this product correctly and safely. Be sure to follow all directions and instructions; failure to do so could result in personal injury or equipment damage.

This manual should be considered part of this product and should remain with it at all times for reference. (If you sell it, please be sure to include this manual with it).

Warranty is provided as part of Alfa Laval's commitment to our customers who operate and maintain their equipment as this manual dictates. Failure to do so may result in loss of warranty.

Where defects appear on the product during the warranty period, Alfa Laval Inc. will back the product and correct the problem. Should the equipment be modified or not kept in the manner prescribed within this manual, the warranty will become null and void.



**Follow Safety Directions**

Read this manual thoroughly before working on equipment.

Leave all safety stickers on equipment and keep them maintained in legible condition. In the event that stickers become damaged or are missing, contact Alfa Laval for replacement.

Maintain equipment in good working condition.

**Do Not Make Machine Modifications**

Alfa Laval offers a full range of products to suit all your needs. Therefore, product modification is never necessary.

**Keep Maintenance Safe**

Replace damaged or worn parts immediately. Never allow old product, debris, or any lubricants to build up on equipment. Never operate unless equipment is in proper working order.

Before attempting to service the machine, disconnect all power and compressed air. Allow machine to come to a complete stop. Never service a machine while it is operating. Keep all limbs away from moving equipment. Be sure that product pressure has been relieved before beginning maintenance.

### **Unpacking**

The valves should be unpacked immediately upon receipt from the factory and carefully inspected for damage that may be occurred during shipping. The equipment should also be checked against the bill of lading to make sure there are no shortages. Any damage or shortage should be reported to the carrier.

### **Locating**

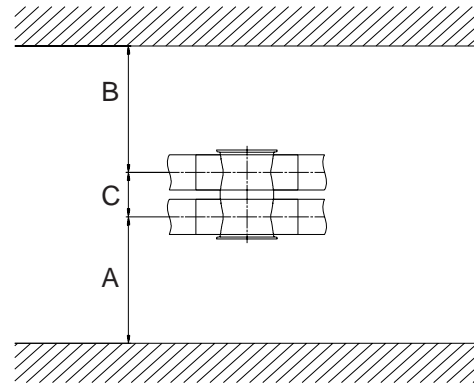
The valves are mounted directly into the product line. Care should be taken, however, to locate the valves in a place where they are easily reached for maintenance and disassembly.

### **Installing**

**Line Mounted Valve:** The valves may be installed in lines that are firmly supported and capable of carrying the valve's weight. Mount valves vertically.



**Clearances required for removal of actuator/plug assembly for repair.**



		<b>Uniq-PMO</b>			
		<b>2"</b>	<b>2½"</b>	<b>3"</b>	<b>4"</b>
A	Valve without external CIP connections	8¼"	10½"	10½"	12¾"
A	Valve with external CIP connections	10¼"	13¾"	13¾"	17¾"
C		3.02"	3.52"	4.02"	5.02"
*B	Valve without external CIP connections	41¾"	48½"	48½"	52¾"
*B	Valve with external CIP connections	47¼"	56¾"	56¾"	61¼"

\*Includes *ThinkTop*®

*It is important to observe the specification data during installation, operation and maintenance.*

Max. Process Pressure  
145 PSI — All Sizes

Max. Air Pressure  
145 PSI — All Sizes

Min. Process Pressure  
Full Vacuum

Temperature Range  
23°F to 257°F

**Materials**

Product wetted steel parts: Acid-resistant steel AISI 316L

Other steel parts: Stainless steel AISI 304/304L

Product wetted parts: EPDM, HNBR, NBR or FPM

Other Seals: CIP Seals: EPDM  
Actuator seals: NBR

Finish: int./ext. Polished Ra<32

**Note: The Ra-values are only for the internal surfaces.**

**CIP solution flows for seat lift and spiral clean**

(viscosity and density similar to water)

	CV Values			
	Uniq-PMO			
	2"	2½"	3"	4"
Upper seat lift	2.95	4.37	4.37	6.47
Lower seat push	2.24	3.66	3.66	5.98
Sprindle CIP (Spiral Clean)	0.14	0.14	0.14	0.14
Upper/Lower External CIP (Spiral Clean)	0.34	0.34	0.34	0.34

The following formula is used to estimate CIP flow during seat lifts:

$$Q = Cv (\sqrt{\Delta p})$$

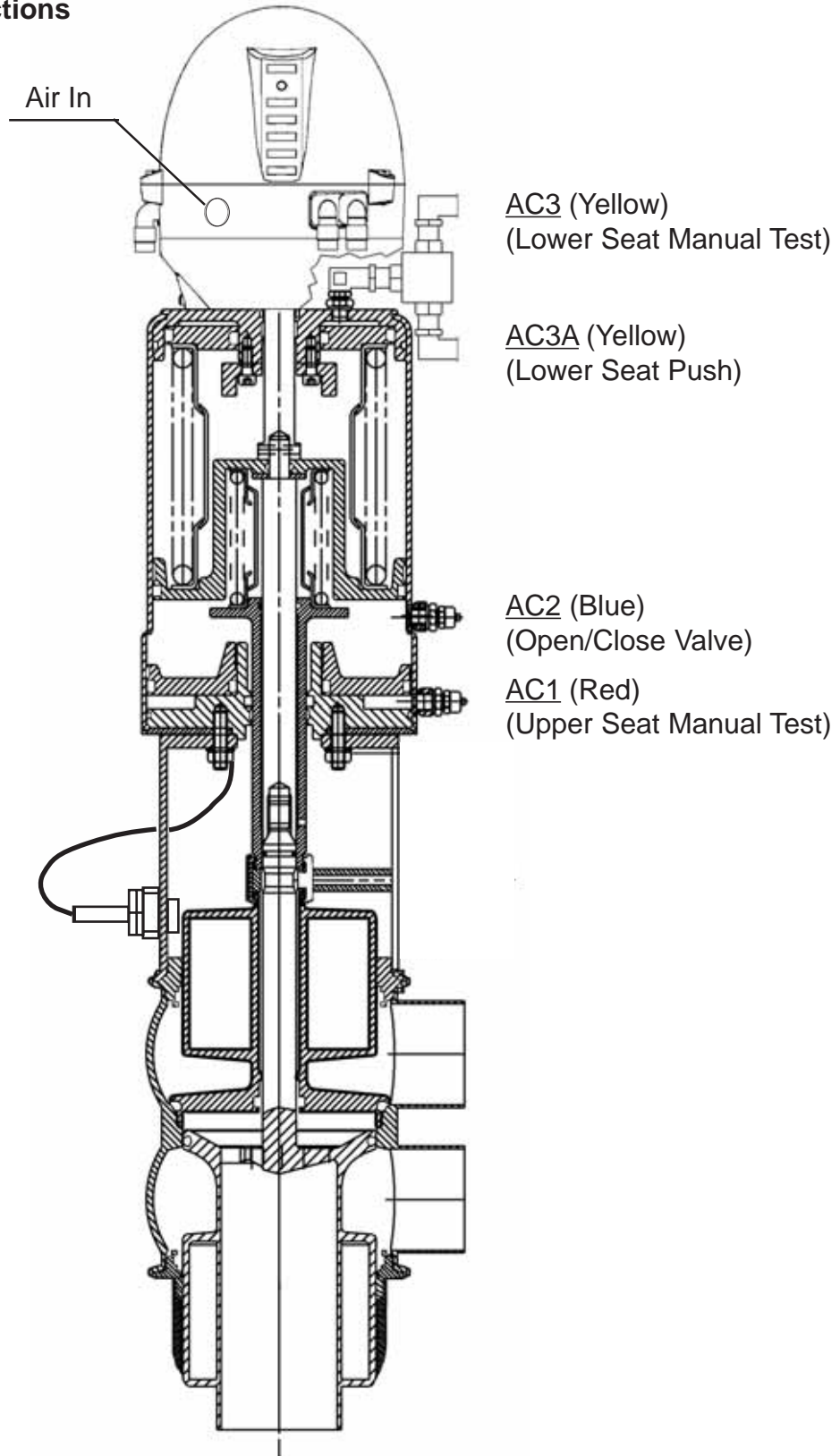
Where: Q = Flow in USGPM

Cv = Value from table above

\* Δ p = CIP pressure in PSI

\*Note: Recommended minimum pressure for sprinal clean is 29 PSI.

**Valve Pneumatic Functions**



### Valve Pneumatic Tubing Interconnect

The following charts indicate the pneumatic tubing interconnect between the air solenoids and the valve actuators.

Use the first chart if the solenoids are to be located in the *ThinkTops*.

Use the second chart if the solenoids are to be located in an external remote box.

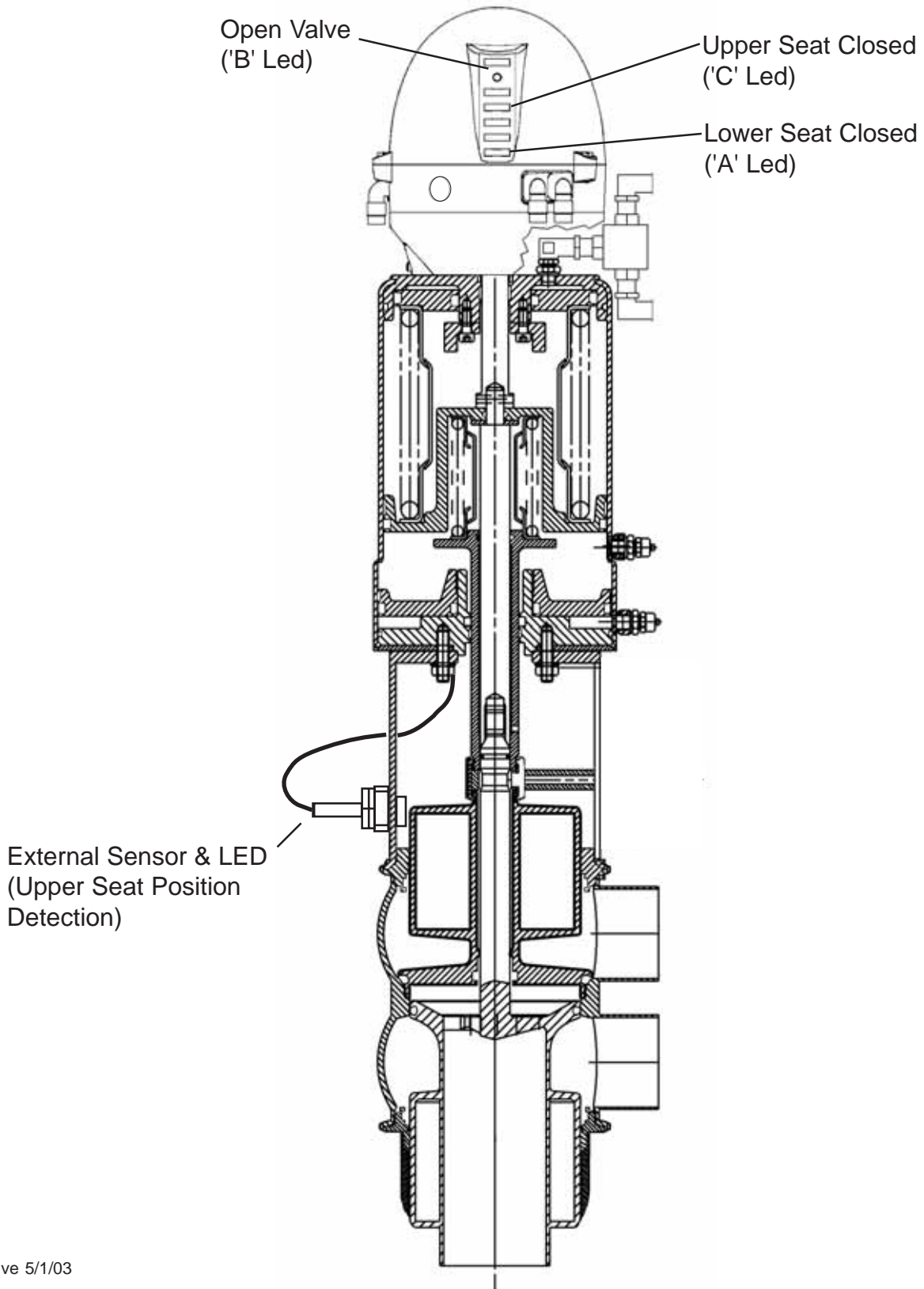
#### Solenoids Located in *ThinkTops*:

<b>ThinkTop Fitting ID</b>	<b>Actuator Fitting ID</b>	<b>Air Hose Color</b>
Air In	N/A	Green
Out-1A	AC2	Blue
Out-2	AC3A	Yellow

#### Solenoids Located in External Remote Boxes:

<b>Remote Solenoid ID</b>	<b>Actuator Fitting ID</b>	<b>Air Hose Color</b>
SV-1	AC2	Blue
SV-2	AC3A	Yellow

**Valve Position Indication**



**Uniq-PMO Mixproof Valve**  
**ThinkTop, 8-30 VDC #9613 6031 05 (0 Solenoid)**  
**Electrical Connection Chart**

<u>ThinkTop Term. No.</u>	<u>Function</u>	<u>Remarks</u>
9	+8-30 VDC	Power +
10	-Common	Power -
	Ground	-----
1	Closed Valve	Input - Valve Closed (Lower Seat)
2	Open Valve	Input - Valve Open
3	Seat Lift - 1	Input - Valve Closed (Upper Seat)
5	Status	Input - Optional
24	Seat Lift-1 (Upper) ( Signal)	External Sensor (WHT)
26	Supply +	External Sensor (BRN)
27	Supply -	External Sensor (BLU)
	Not Used -	External Sensor (BLK)

**Uniq-PMO Mixproof Valve**  
**ThinkTop, 8-30 VDC #9613 6031 06 (1 Solenoid)**  
**Electrical Connection Chart**

<u>ThinkTop Term. No.</u>	<u>Function</u>	<u>Remarks</u>
6	Solenoid - 1	Output - Valve Open
9	+8-30 VDC	Power +
10	-Common	Power - *(Jump to 11)
11	Solenoid Com.	Power - *(Jump to 10)
	Ground	-----
1	Closed Valve	Input - Valve Closed (Lower Seat)
2	Open Valve	Input - Valve Open
3	Seat Lift - 1	Input - Valve Closed (Upper Seat)
5	Status	Input - Optional
24	Seat Lift-1 (Upper) ( Signal)	External Sensor (WHT)
26	Supply +	External Sensor (BRN)
27	Supply -	External Sensor (BLU)
	Not Used -	External Sensor (BLK)

\*One power supply, positive activation of solenoids.

**Uniq-PMO Mixproof Valve**  
**ThinkTop, 8-30 VDC #9613 6031 07 (2 Solenoids)**  
**Electrical Connection Chart**

<u>ThinkTop Term. No.</u>	<u>Function</u>	<u>Remarks</u>
6	Solenoid - 1	Output - Valve Open
7	Solenoid - 2	Output - Lower Seat Push
9	+8-30 VDC	Power +
10	-Common	Power - *(Jump to 11)
11	Solenoid Com.	Power - *(Jump to 10)
	Ground	-----
1	Closed Valve	Input - Valve Closed (Lower Seat)
2	Open Valve	Input - Valve Open
3	Seat Lift - 1	Input - Valve Closed (Upper Seat)
5	Status	Input - Optional
24	Seat Lift-1 (Upper) ( Signal)	External Sensor (WHT)
26	Supply +	External Sensor (BRN)
27	Supply -	External Sensor (BLU)
	Not Used -	External Sensor (BLK)

\*One power supply, positive activation of solenoids.



**Uniq-PMO Mixproof Valve**  
**ThinkTop, 8-30 VDC #9613 6031 08 (3 Solenoids)**  
**Electrical Connection Chart**

<u>ThinkTop Term. No.</u>	<u>Function</u>	<u>Remarks</u>
6	Solenoid - 1	Output - Valve Open
7	Solenoid - 2	Output - Lower Seat Push
8	Solenoid - 3	Output - Upper Seat Lift
9	+8-30 VDC	Power +
10	-Common	Power - *(Jump to 11)
11	Solenoid Com.	Power - *(Jump to 10)
	Ground	-----
1	Closed Valve	Input - Valve Closed (Lower Seat)
2	Open Valve	Input - Valve Open
3	Seat Lift - 1	Input - Valve Closed (Upper Seat)
5	Status	Input - Optional
24	Seat Lift-1 (Upper) ( Signal)	External Sensor (WHT)
26	Supply +	External Sensor (BRN)
27	Supply -	External Sensor (BLU)
	Not Used -	External Sensor (BLK)

\*One power supply, positive activation of solenoids.

**Uniq-PMO Mixproof Valve**  
**ThinkTop, 110 VAC #9634 0686 50 (0 Solenoid)**  
**Electrical Connection Chart**

<u>ThinkTop Term. No.</u>	<u>Function</u>	<u>Remarks</u>
9	110 VAC	Power +
10	-Common	Power -
	Ground	-----
1	Closed Valve	Input - Valve Closed (Lower Seat)
2	Open Valve	Input - Valve Open
3	Seat Lift - 1	Input - Valve Closed (Upper Seat)
5	Status	Input - Optional
24	Seat Lift-1 (Upper) ( Signal)	External Sensor (Red w/BLK rings)
26	Supply +	External Sensor (Red w/WHT rings)

**Uniq-PMO Mixproof Valve**  
**ThinkTop, 110 VAC #9634 0686 51 (1 Solenoid)**  
**Electrical Connection Chart**

<u>ThinkTop Term. No.</u>	<u>Function</u>	<u>Remarks</u>
6	Solenoid - 1	Output - Valve Open
9	+110 VAC	Power +
10	-Common	Power - *(Jump to 11)
11	Solenoid Com.	Power - *(Jump to 10)
	Ground	-----
1	Closed Valve	Input - Valve Closed (Lower Seat)
2	Open Valve	Input - Valve Open
3	Seat Lift - 1	Input - Valve Closed (Upper Seat)
5	Status	Input - Optional
24	Seat Lift-1 (Upper) ( Signal)	External Sensor (Red w/BLK rings)
26	Supply +	External Sensor (Red w/WHT rings)

\*One power supply, positive activation of solenoids.

**Uniq-PMO Mixproof Valve**  
**ThinkTop, 110 VAC #9634 0686 52 (2 Solenoids)**  
**Electrical Connection Chart**

<u>ThinkTop</u> <u>Term. No.</u>	<u>Function</u>	<u>Remarks</u>
6	Solenoid - 1	Output - Valve Open
7	Solenoid - 2	Output - Lower Seat Push
9	110 VAC	Power +
10	-Common	Power - *(Jump to 11)
11	Solenoid Com.	Power - *(Jump to 10)
	Ground	-----
1	Closed Valve	Input - Valve Closed (Lower Seat)
2	Open Valve	Input - Valve Open
3	Seat Lift - 1	Input - Valve Closed (Upper Seat)
5	Status	Input - Optional
24	Seat Lift-1 (Upper) ( Signal)	External Sensor (Red w/BLK rings)
26	Supply +	External Sensor (Red w/WHT rings)

\*One power supply, positive activation of solenoids.

**Uniq-PMO Mixproof Valve**  
**ThinkTop, 110 VAC #96134 0686 53 (3 Solenoids)**  
**Electrical Connection Chart**

<u>ThinkTop Term. No.</u>	<u>Function</u>	<u>Remarks</u>
6	Solenoid - 1	Output - Valve Open
7	Solenoid - 2	Output - Lower Seat Push
8	Solenoid - 3	Output - Upper Seat Lift
9	110 VAC	Power +
10	-Common	Power - *(Jump to 11)
11	Solenoid Com.	Power - *(Jump to 10)
	Ground	-----
1	Closed Valve	Input - Valve Closed (Lower Seat)
2	Open Valve	Input - Valve Open
3	Seat Lift - 1	Input - Valve Closed (Upper Seat)
5	Status	Input - Optional
24	Seat Lift-1 (Upper) ( Signal)	External Sensor (Red w/BLK rings)
26	Supply +	External Sensor (Red w/WHT rings)

\*One power supply, positive activation of solenoids.





# Instruction Manual

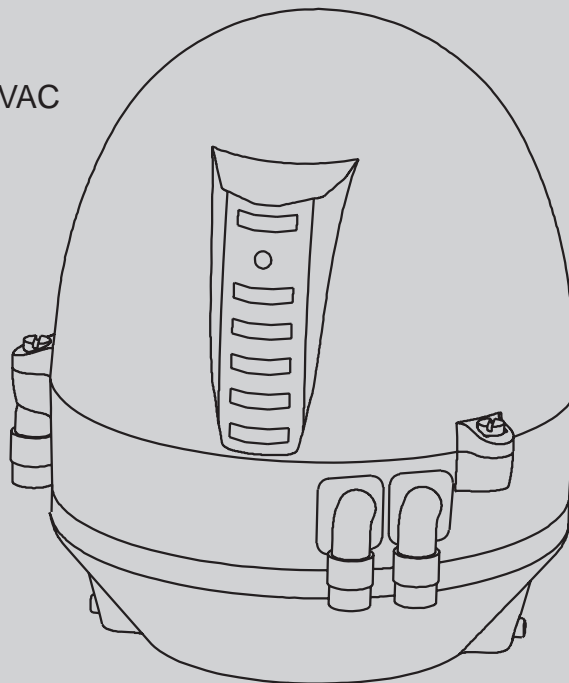
ThinkTop® Digital 8 - 30 VDC & 110 VAC PNP/NPN Used with Uniq-PMO Mixproof Valves

P/N 9613603105  
P/N 9613603106  
P/N 9613603107  
P/N 9613603108

8-30 VDC

P/N 9634068650  
P/N 9634068651  
P/N 9634068652  
P/N 9634068653

110 VAC



TD 800-006

## Features

### Tolerance

Programs individual tolerance programs for all Alfa laval sanitary valve types are part of the ThinkTop® concept ensuring correct feedback to the PLC for open and closed valve position. If the function is disabled, the tolerance band will be  $\pm 5$  mm(0.2 inch).

### Self Adjustment (SRC/ARC valves only)

The self adjustment feature is an exceptional aspect of the ThinkTop® design. A program can be activated to allow an adjustment of the tolerance band if the seals in the valve are being compressed or are worn. When the tolerance band of the unit has been adjusted 0.3 mm (0.12 inch), an alert warning will appear in the form of a status signal and a flashing maintenance LED. After 0.5 mm (0.2 inch) adjustment an alarm warning appears: Loss of feedback signal, status signal and steady maintenance light indicating that a replacement of the seal is necessary.

### Built-In Maintenance Monitor

The unit can be preset to indicate when the time for maintenance of the valve has been reached. A status signal and flashing maintenance LED can be programmed to return after 3, 6, 9 or 12 months or more.

### Other Features

Another very important fact is that the setup is kept until programmed otherwise even during failure in the power supply.

The accurate sensor system enables indication of seat lift to be integrated in the top unit.

### Materials

Plastic Parts:	Nylon PA 12.
Steel part	Stainless steel AISI 304 and 316.
Seals	Nitrile (NBR). EPDM rubber for SMP-EC activator stem.

### Technical Data

Sensor accuracy:	$\pm 0,1$ mm (0.0004 inch)
Distance to magnet:	$5 \pm 3$ mm (0.12 $\pm$ 0.2 inch)
Stroke length:	0.1 - 80 mm (0.004 - 3.15 inch)

### Electrical Connection

Direct cable gland entry (hard wired) PG11 ( $\varnothing 4$  -  $\varnothing 10$ mm) ( $\varnothing 0.16$  -  $\varnothing 0.39$  inch).

### Terminals

The terminal row of the sensor unit is equipped with screw terminals for both internal as well as external cables and wires. The terminals are suitable for wires up to 0.75mm<sup>2</sup> (AWG19).

### Power Supply - AC

The ThinkTop® is designed to be a part of the PLC's Input/Output (I/O) system. It should be supplied from the same protected power supply as the other I/O devices. The I/O power supply should not be used for other kinds of loads.

The unit is reversed polarity and short circuit protected. The power supply must meet the requirements of EN 61131-2.

Supply voltage:	8-30 or 100 - 126.5 VAC
Supply voltage normal:	24 or 110 VAC (+15%, -10%) - pr. EN 61131-2
Supply voltage absolute max:	30 or 126.5 VAC
Supply voltage absolute min:	8 or 100 VAC0
Power consumption*):	Max. 1.5 VA (8-30 VAC) or max. 2.0 VA (110 VAC (for sensor unit along) (Excluding current to the solenoids, external proximity switches and the PLC input current.)

\*)The initial current during power-on is higher. Typical values are 440 mARCS during 10 ms (the first half cycle) followed by 270 ms at 2 x normal steady state current.

The fulfilling of the UL requirements in UL508 requires that the unit is supplied by an isolating source complying with the requirements for class 2 power units (UL1310) or class 2 and 3 transformers (UL 1585).

### Feedback Signals

Output signals from the sensor unit to be connected digital interface (PLC).

Nominal voltage:	Must match the selected type of ThinkTop®
Load current:	50 mA Typical, 100 mA max.
Voltage drop:	Typical 3V at 50 mA

### External Sensors

The external sensors are used for seat-lift supervision when seat-lift cannot be internally detected. The sensors get their supply voltage from the terminal row. The output signals from the sensors are connected to two imports on the terminal row on the internal sensor unit. If the actual setup is set for internal seat-lift, the corresponding external signal is not used, otherwise the external signal logically controls the corresponding feedback to the PLC.

Supply voltage:	Must match the selected type of ThinkTop®.
Supply current:	Max. 15 mA per sensor.
type of sensor:	2 wire VAC (EN60947-5-2)
Cable length:	Max. 3 m. (16.4 ft.)

### Polarity

NO or NC function is selected with a jumper in terminals 12 and 13. Jumper present = NO. If changing to NC remove the jumper and make a power recycle. A power recycle is always required when changing this function.



**Solenoid valves**

Up to 3 solenoid valves in each unit.

Type .....	3/2 or 5/2 valve (only with one 5/2 valve).
Air supply .....	300-900 kPa (3-9 bar) (43.5-.130.5 PSI)
Filtered air, max. particules or dirt .....	0/01 mm (0.0004 inch).
Max. oil content .....	1.0 ppm.
Max. water content .....	0.0075 kg/kg air. (0.02 lb/lb)
Throughput° .....	Ø2.5mm
Air restriction (throttle function) air inlet/outlet.	

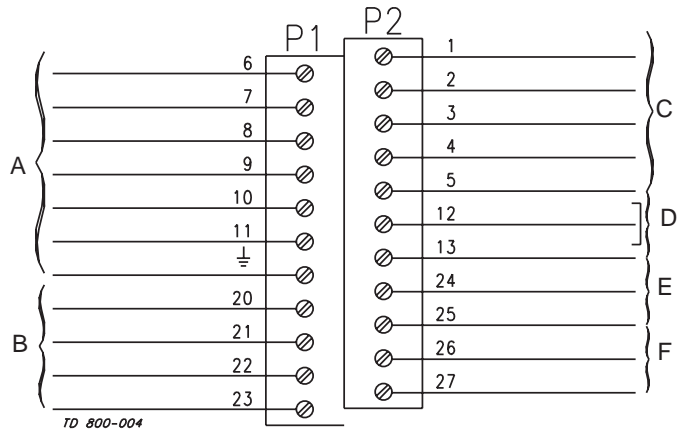
Manual hold override.

External air tube connection .....	Ø6 mm or ¼"
Silencer/filter*) .....	Connection possible via Ø6 mm or ¼"
Nominal voltage .....	24 or 110V
Nominal power .....	1.0 W.

\*) Filter recommended in tropical regions.

**Micro environment demand specifications**

<b>Temperature</b>		
Working:	-4°F to +185°F	IEC 68-2-1/2
Storage:	-40°F to +185°F	IEC 68-2-1/2
Temperature change:	-13°F to +158°F	IEC 68-2-14
<b>Vibration</b>		
10-55 Hz, 0.7 mm	IEC 68-2-6	
155-500 Hz, 10g		
3 x 30 min, 1 octave/min		
<b>Drop test</b>		IEC 68-2-32
<b>Humidity</b>		
Constant humidity	+104°F, 21 days, 93% R.H.	IEC 68-2-3
Cyclic humidity: (working)	+77°F/+131°F 12 cycles 93% R.H.	IEC 68-2-30
<b>Protection class</b>	IP67	IEC 529
<b>Input treshold</b>		
Voltage/current:	Type 1 input requirements	EN 61131-2
<b>Solenoid signals</b>		
Isolation voltage	(1000 + 2 x 117) VAC rms/1 min	EN 61131-2
<b>EMC Directive</b>	89/336/EEC	EN 50081-1, EN 50082-2
<b>UL/CSA Approval</b>		
	8-30 VAC	UL508-E203255
	110 VAC	UL 508-E223664



- A. Digital interface command signals
- B. Internal connections to solenoid 1-3
- C. Feedback signals to digital interface
- D. Jumper connections \*\*)
- E. Incoming signals from external sensors
- F. Support to external sensors

- |                           |                             |
|---------------------------|-----------------------------|
| 6. Solenoid 1             | 1. Closed valve             |
| 7. Solenoid 2             | 2. Open valve               |
| 8. Solenoid 3             | 3. Seat-lift 1              |
| 9. Supply ~               | 4. Seat-lift 2              |
| 10. Supply ~              | 5. Status                   |
| 11. Solenoid common Earth | 12. No/NC Jumper            |
| 20. Solenoid common Earth | 13. NO/NC Jumper            |
| 21. Solenoid 1            | 24. Seat-lift 1*) "upper" ~ |
| 22.                       | 25. Seat-lift 2*) "lower" ~ |
| 23.                       | 26. Supply ~ *) corn. ~     |
|                           | 27. Earth                   |

#### \*) Note

- Terminals 24, 25, 26 and 27 can be used for external seat-lift sensors as well as for any digital input. Always use an external NO sensor.
- Two external signals can be connected, they are associated with feedback signals 3 (seat-lift 1) and 4 (seat-lift 2). External sensor must always be a 8-30 or 110 VAC NO 2 wire sensor. Connect ~ common on terminal 26. The signals from the external sensors are associated as follows: sensor signal on terminal 24 (seat-lift 1) associated with feedback 3 (seat-lift 1), and sensor signal on terminal 25 (seat-lift 2) associated with feedback 4 (seat-lift 2).

#### \*\*\*) Note

Jumper present = NO. The selection NO/NC is done by the jumper. If changing the function a power recycle is necessary.

#### Note!

Remember to isolate wires that are not in use.

#### Examples of connecting power supplies

One power for sensor system and solenoid valves:

Two power supplies, one for sensor system and one for the solenoid valves:

**Step 1**

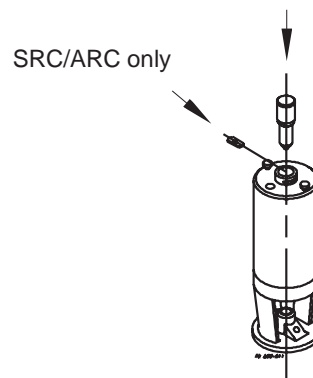
- **Always** read the technical specifications thoroughly (see chapter 3).
- **Always** have the *ThinkTop*® electrically connected by authorized personnel.
- **Always** install the *ThinkTop*® before valve or relay is in a safe position.

**Step 2**

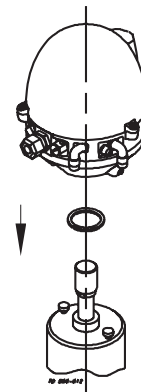
1. Fit the air fittings on actuator if not mounted.
2. Fit the activator stem (magnet) and tighten carefully with a spanner.

**Note:**

The *ThinkTop*® for the SMP-EC valve has a longer activator stem going through the shell.  
Remember O-ring.

**Step 3**

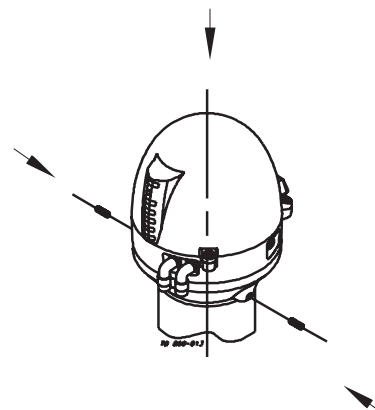
1. Place the *ThinkTop*® on top of the actuator.
2. Make sure X-ring is mounted.

**Step 4**

1. Ensure that the unit is correctly mounted by pressing down on top of the *ThinkTop*®.
2. Tighten the two Allen screws carefully.
3. Turn the actuator to have LEDs in a front view.

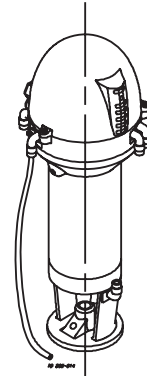
**Note:**

After a relevant period of time after installation (e.g. two weeks) it is recommended to check that all connections are properly tightened.

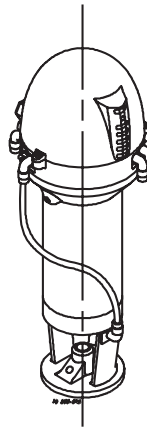


**Step 5**

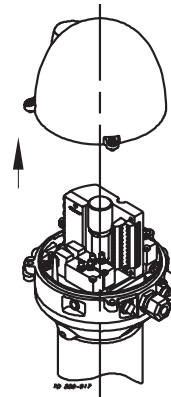
Fit the  $\varnothing 6$  mm (1/4") air tubes to *ThinkTop*® (see drawing "Air connections" later in this chapter).

**Step 6**

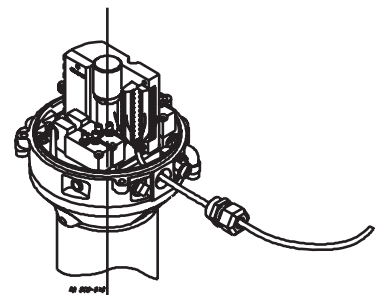
Fit the air tubes to the actuator (see drawing "Air connections" later in this chapter).

**Step 7**

Untighten the three screws and pull off cover of *ThinkTop*®.

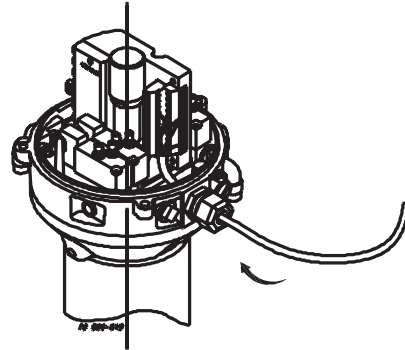
**Step 8**

1. Install cable (if not present) through the cable gland.
2. Connect the *ThinkTop*® electrically (see section 4.4 "Electrical connection, internal").



**Step 9**

Make sure the cable gland is completely tightened.

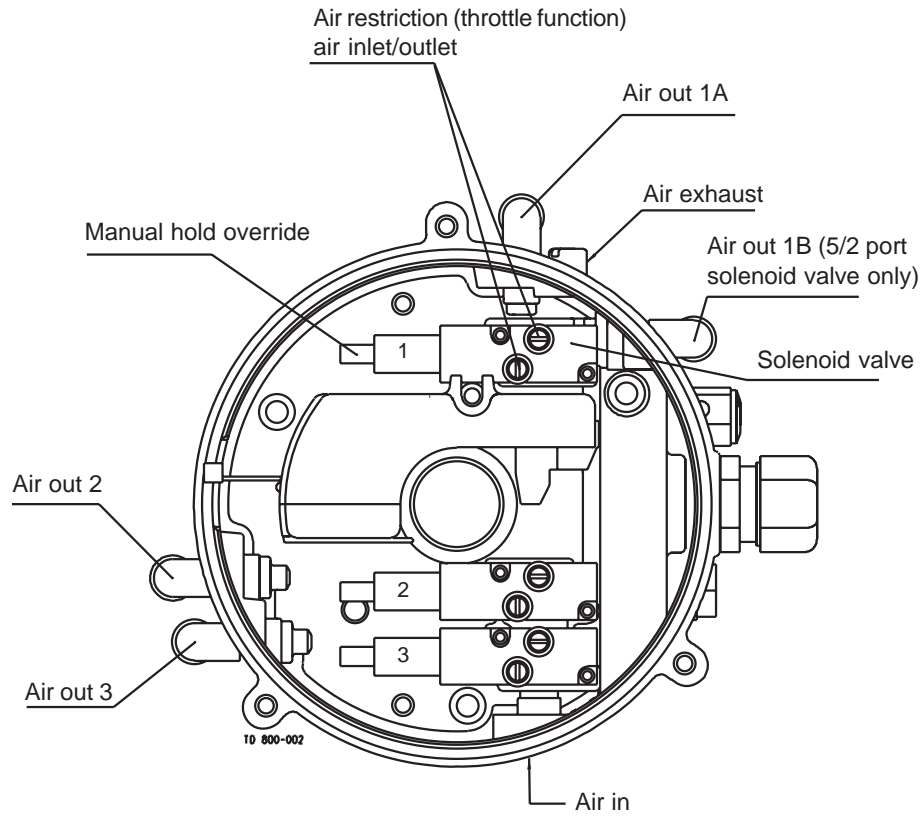
**Step 10**

Set up the *ThinkTop*® (see chapter 5).

**Note:**

The unit can be set up with the cover installed by using the IR keypad. To energize the valve, use a separate air tube or be in radio contact with the control room.

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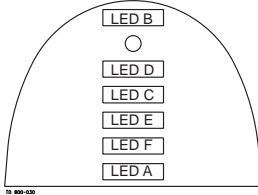


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- Notes:
- I - Scroll across, no change
  - \_\_\_\_\_ - Notes Requires Key Function
  - - - - - - Notes Automatic Progress as Indicated

- General:
1. Flashing IND means no value set. Steady IND means value set as shown.
  2. Default is: Step 2, Type 0 (+/- 5 mm) Step 3-8 disabled
  3. Lamp Status Shown in [ ]

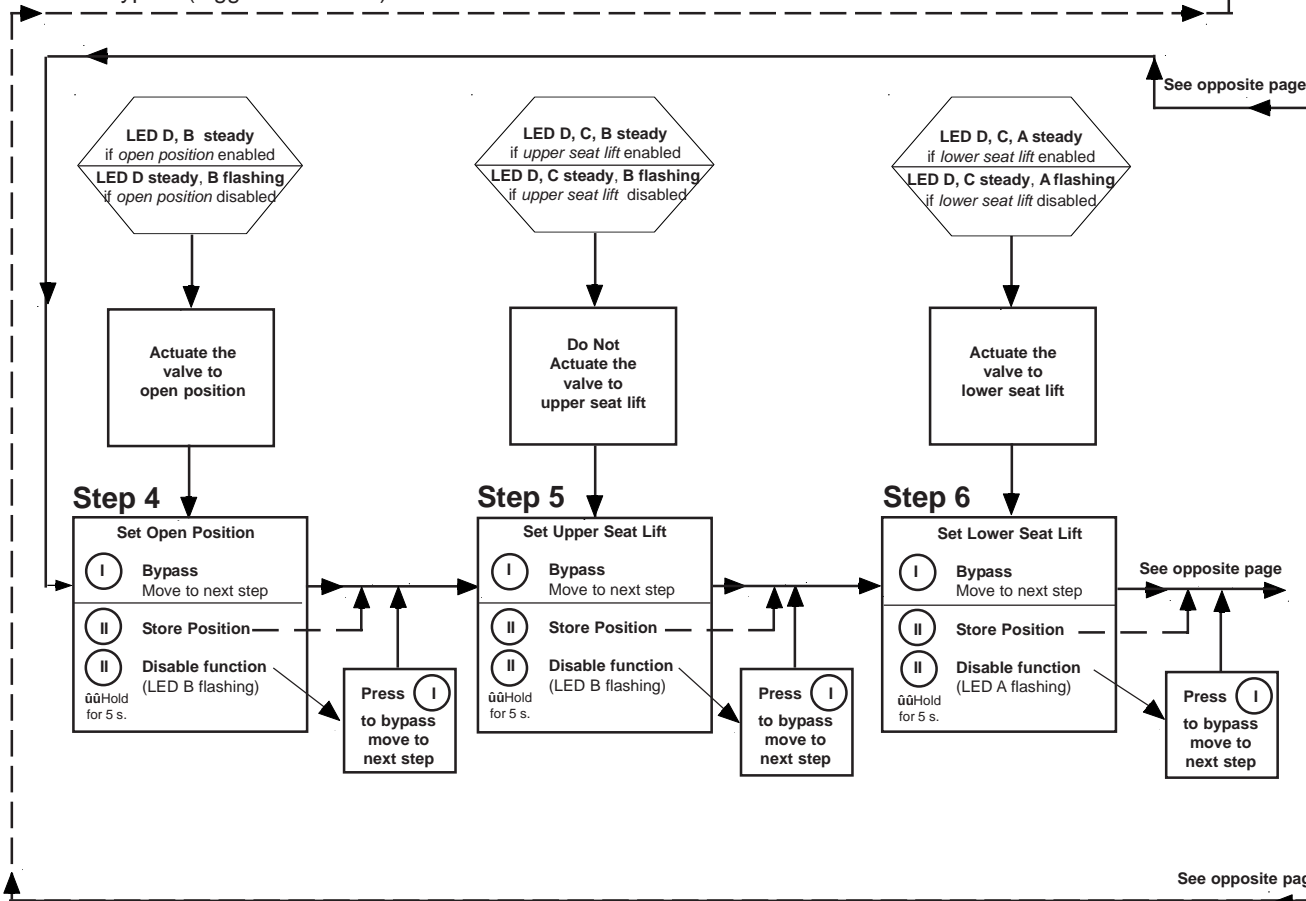
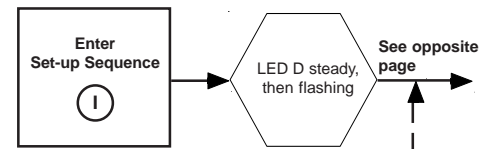
ThinkTop® Visual Indications



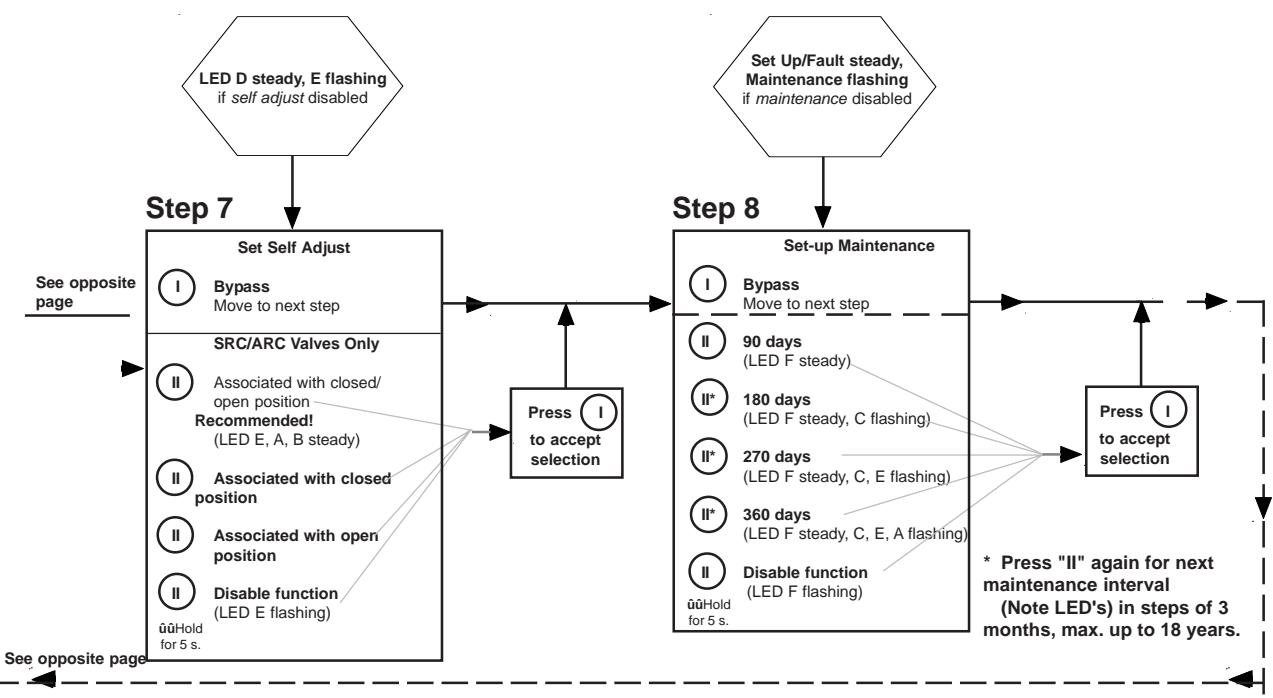
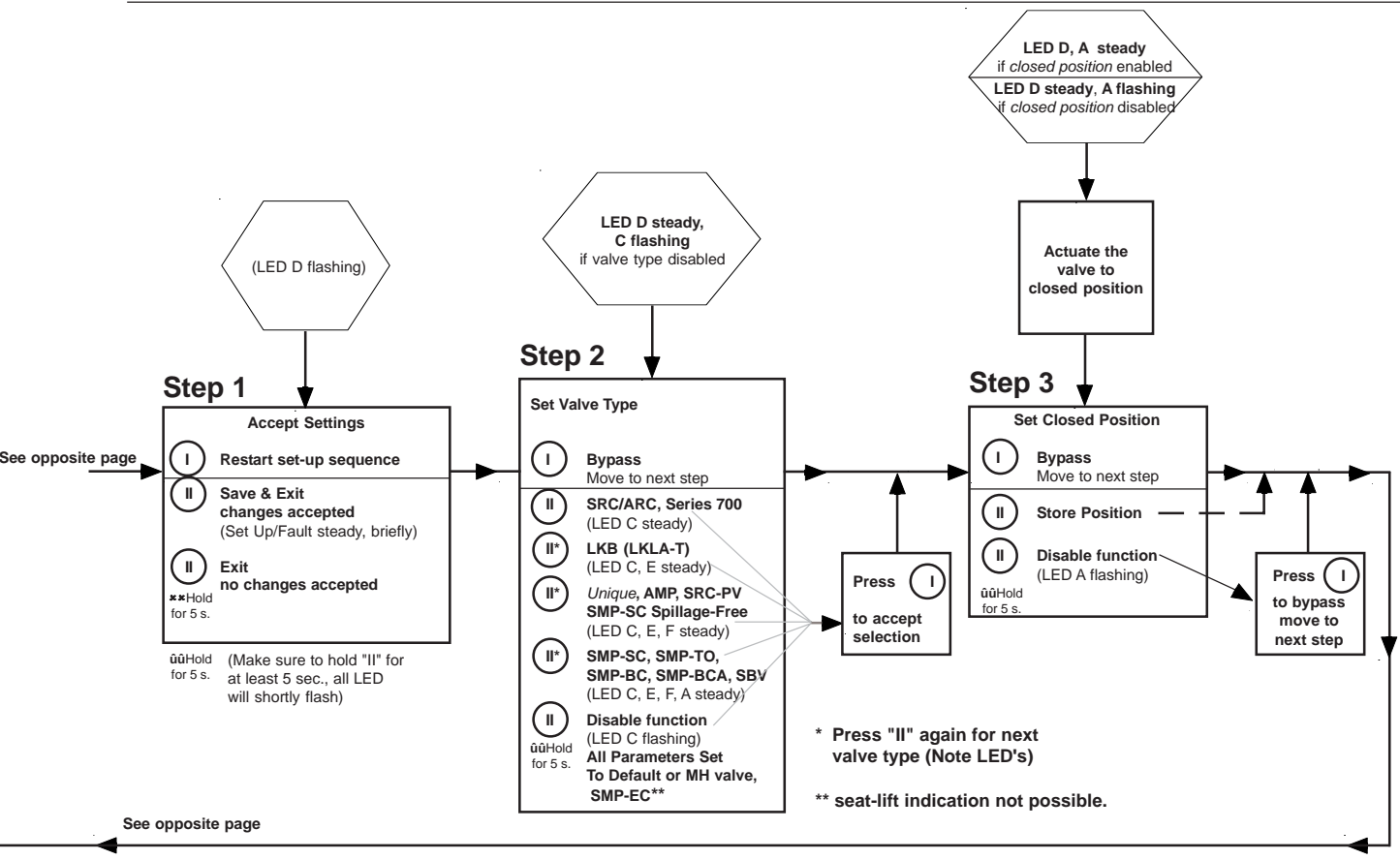
LED Indications

"Open valve"	(Yellow)
IR-Receiver	
"Setup/Internal fault"	(Red)
"Seat-lift 1/2"	(Yellow)
"Solenoid valves"	(Green)
"Maintenance"	(Orange)
"Closed valve"	(Yellow)

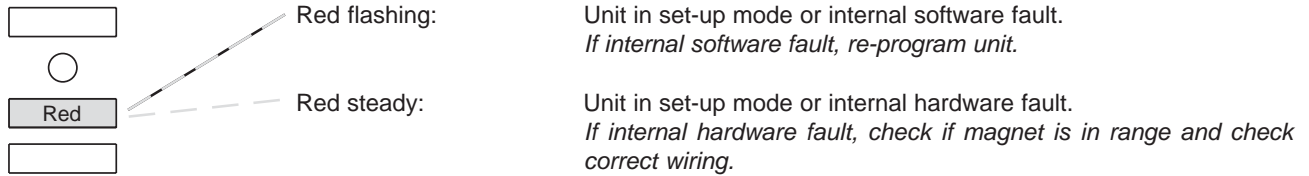
4. [D] IND active during set-up.
  - Flashing in step 1,
  - Steady in all other steps.
 or during operations, error condition
  - Steady showing hardware fault
  - Flashing showing software fault
5. Timeout: A 60 second time-out is started as soon as any button(s) are released. If no button is pressed during the time-out time, go to normal condition (cancel & exit).
6. SRC/ARC valves: Self-adjust (step 7) must be activated. If you choose NOT to use the self-adjustment program, Alfa Laval recommends to use the valve type 4 (step 2), instead of type 1 (bigger tolerances).





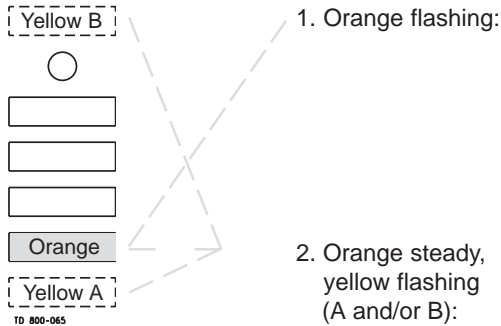


Below is stated the meaning of the LEDs' indications for fault finding in connection with the operation of the *ThinkTop*®.



Red flashing: Unit in set-up mode or internal software fault.  
*If internal software fault, re-program unit.*

Red steady: Unit in set-up mode or internal hardware fault.  
*If internal hardware fault, check if magnet is in range and check correct wiring.*



1. Orange flashing: Time for maintenance has run out.  
The unit has been self-adjusted into a maintenance alert condition.  
*Valve maintenance is strongly recommended. After maintenance: Disabling of maintenance/self-adjustment function is required before setting new position, however, it is strongly recommended to make a complete new set-up after valve maintenance.*

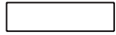
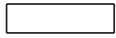
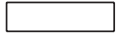
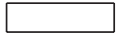
2. Orange steady, yellow flashing (A and/or B): The unit has been self-adjusted into a maintenance alarm condition and the feedback is lost (a minimum of seal left).  
*Valve maintenance is required. After maintenance: Disabling of the self-adjustment function is required before setting new position, however, it is strongly recommended to make a complete new set up after valve maintenance.*

**Note:**

**The maintenance indicator lighting up, and an open or closed light flashing.....**

= Note the following:

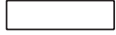
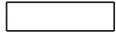
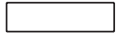
- Self-adjustment program is only valid for **SRC/ARC** valves, **do not use the program for other valve types.**
- Use tolerance/valve type 1.
- In conjunction with valve type change-over; 21, 22, 31 and 32, the open position must be defined as the upper sensor position (when the magnet is in the highest position).
- A loose top, magnet holder or sensor system can also generate the alert/alarm condition.
- Removing a *ThinkTop*® with self-adjust activated, will immediately generate an alarm condition! If the *ThinkTop*® has to be removed, not because of a valve maintenance issue, but for some other reasons, and you want to store the already adjusted data - disable the self-adjust function before removing the *ThinkTop*® and enable it again once the *ThinkTop*® is back on the actuator.
- After valve maintenance a disabling of the self-adjustment function is required before setting a new position, however, it is strongly recommended to make a complete new set-up (disable all functions in step 2 valve type - and make a complete new set-up).



TD 800-064

Yellow steady:

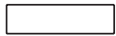
Position A (closed valve).



TD 800-064

Yellow steady:

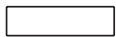
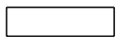
Position B (open valve).



TD 800-064

Yellow steady:

Position C (Seat lift 1-2 or external sensors).



TD 800-064

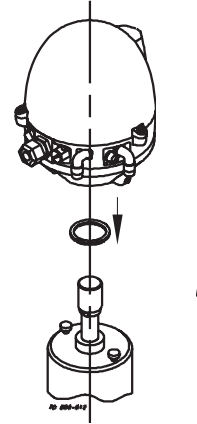
Green steady:

Solenoid valves activated.

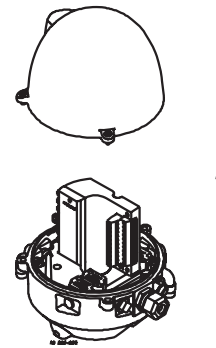
*Study the instructions carefully.  
Handle scrap correctly.  
Always keep spare X-rings in stock.*

**Step 1**

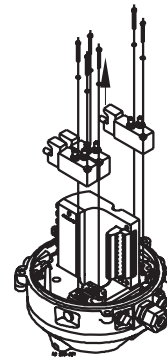
1. Remove the *ThinkTop*® from the actuator.
2. Pull out X-ring and replace it.

**Step 2**

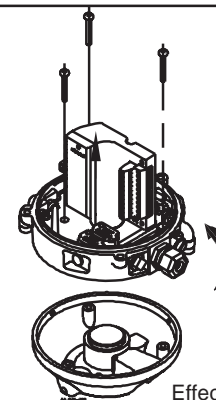
1. Untighten the three screws.
2. Pull off cover of *ThinkTop*®.

**Step 3**

1. Untighten screws.
2. Remove solenoid valves (up to three) and replace them with new ones.

**Step 4**

1. To dismantle the adapter (the lower part of the *ThinkTop*®) from base (the middle part), unscrew the three screws.
2. Turn the lower part a little clockwise and pull.
3. Replace adapter if necessary.



Note:  
Turn banjo  
connection!

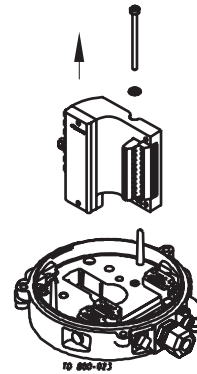
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*Study the instructions carefully.  
Handle scrap correctly.  
Always keep spare X-rings in stock.*

---

**Step 5**

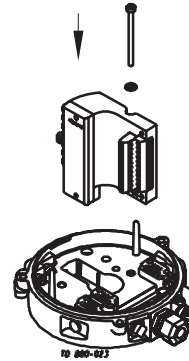
To remove the sensor unit untighten screw and pull out the sensor unit.



Study the instructions carefully.  
 Handle scrap correctly.  
 Always keep spare X-rings in stock.

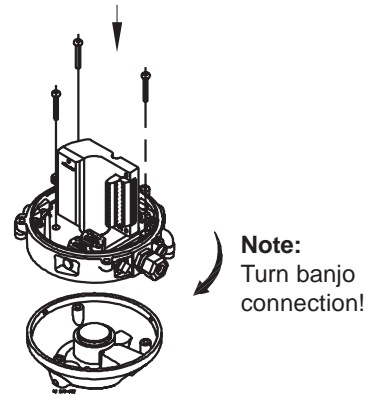
**Step 1**

Place sensor unit in base and tighten screw (torque: 1 Nm).



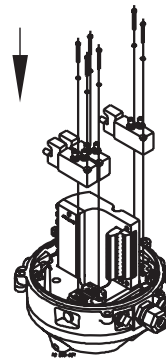
**Step 2**

Assemble base with adapter by turning adapter slightly anticlockwise and tighten the three screws (1.9 Nm).



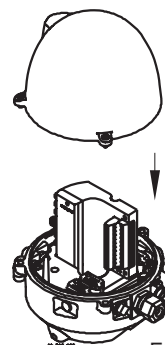
**Step 3**

1. Replace solenoid valves (up to three) with new ones.
2. Tighten screws (0.2 Nm).



**Step 4**

Replace cover of ThinkTop® and tighten the three screws (0.6 Nm).

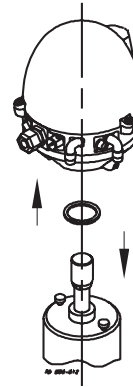


Study the instructions carefully.  
Handle scrap correctly.  
Always keep spare X-rings in stock.

---

**Step 5**

1. Replace X-ring.
2. Mount *ThinkTop*® on actuator.





## Spare Parts

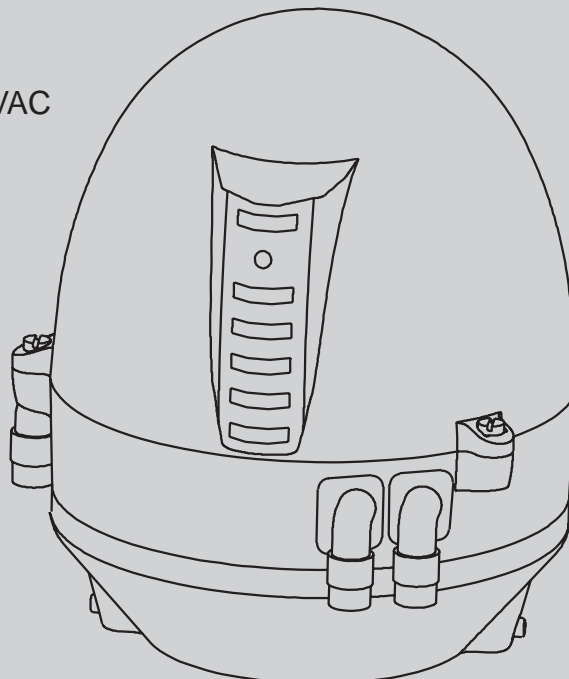
ThinkTop®

P/N 9613603105  
P/N 9613603106  
P/N 9613603107  
P/N 9613603108

8-30 VDC

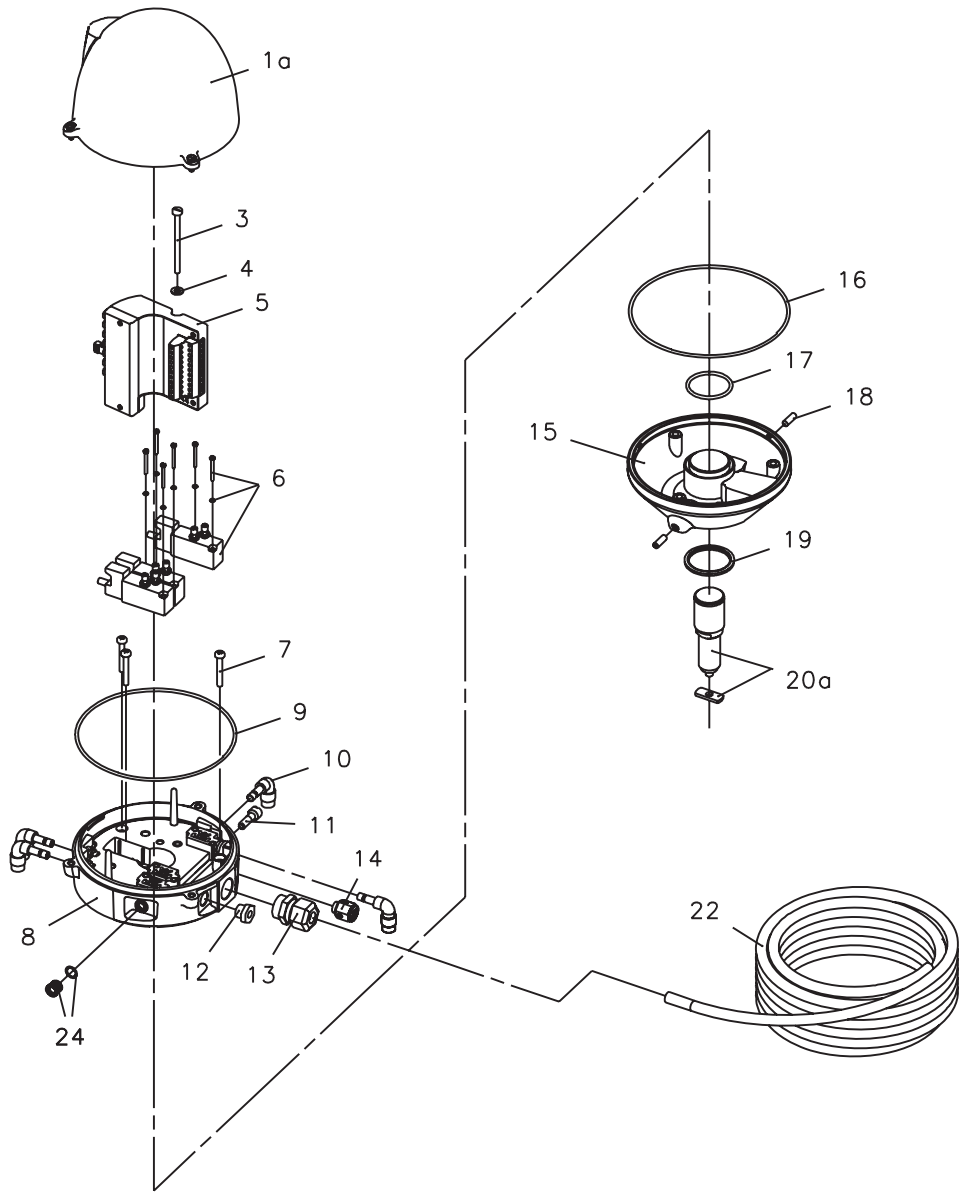
P/N 9634068650  
P/N 9634068651  
P/N 9634068652  
P/N 9634068653

110 VAC



TD 800-006





<u>Pos.</u>	<u>Qty.</u>	<u>Denomination</u>	<u>Uniq-PMO Mixproof</u>	<u>¼" Air Connection</u>
1a	1	Shell complete	9612-5616-01	
3	1	Screw	9611-99-3458	
4	1	Washer	9611-99-3459	
5	1	Sensor unit Digital 8-30 VDC PNP/NPN	9613-4001-01	
5	1	Sensor unit Digital 110 VAC PNP/NPN	9613-4001-05	
6	1-3	Solenoid valve 3/2, 24 VDC	9611-99-3324	
7	3	PT screw	9611-99-3457	
8	1	Base complete, 3/2, no solenoids (Pos. 9, 12, 13, 14 Included)		9612-5762-01
8	1	Base complete, 3/2, one solenoid (Pos. 9, 10, 11, 12, 13, 14 Included)		9612-5762-02
8	1	Base complete, 3/2 two solenoids (Pos. 9, 10, 11, 12, 13, 14 Included)		9612-5762-08
8	1	Base complete, 3/2 three solenoids (Pos. 9, 10, 11, 12, 13, 14 Included)		9612-5762-11
8	1	Base prepared for no solenoid		9612-5761-01
8	1	Base prepared for one 3/2 port solenoid		9612-5761-02
8	1	Base prepared for two 3/2 port solenoids		9612-5761-04
8	1	Base prepared for three 3/2 port solenoids		9612-5761-05
9	1	O-ring NBR	9611-99-3349	
10	1	Air fitting		9611-99-3433
11	1	Blow-off valve	9612-5636-01	
12	1	Cable gland, 03-065mm	9611-99-3603	
13	1	Cable gland, PG11, 4-10mm	9611-99-3517	
14	1	Pressure control valve, 1/8"	9611-99-2928	
15	1	Adapter complete (Pos. 17, 18, 19 included)	9612-5621-01	
	1	Adapter, cast	9612-5552-01	
16	1	O-ring	9611-99-3349	
17	1	O-ring	9611-99-3350	
18	2	Allen screw	9611-99-3409	
19	1	Special X-ring	9612-5696-01	
20a	1	Indication pin complete	9612-5623-01	
22	1	5m. flying PVC cable (12x0.5 mm <sup>2</sup> ) Digital	9611-99-3627	
24	1	Air fitting incl. O-ring		9611-99-3434

**Recommend Cleaning – General**

In order to be compliant with the Pasteurized Milk Ordinance (PMO), the UNIQ-PMO mixproof valves shall be cleaned-in-place (CIP) with the following recommended procedures.

Milk, or milk products, shall be removed, or properly isolated, from the mixproof valves during CIP cleaning.

Each mixproof valve shall be properly operated during CIP cleaning to assure 100% exposure to all product contact surfaces.

**Recommend Cleaning – Specific**

The chart below provides reference to cleaning solution agents, temperature and exposure times necessary during circulation to achieve good cleaning results.

All data shown is required for each valve during cleaning.

**Use clean water, free from chlorides, for mixing with chemical cleaning agents.**

<b>CIP Event</b>	<b>Exposure Time</b>	<b>Temperature</b>	<b>Agent</b>	<b>Concentration</b>
Warm Pre-Rinse	3 minutes continuous	100 - 110 °F	None	None
Hot Alkaline Wash	10 minutes continuous	160 °F	NAOH (sodium hydroxide)	.265 gal.+ 26.5 gal. water. (1%)
Cold Post Wash Rinse	3 minutes continuous	Cold	None	None
Cold Acidified Rinse	3 minutes continuous	Cold	HNO3 (nitric acid)	.18 gal. + .265gal. water. (.006%)

### Valve Pneumatic Operation During In-Place Cleaning

Each valve shall be operated with three separate pneumatic functions which are to be alternated during the entire length of the cleaning cycle.

These pneumatic functions include:

1. open valve
2. close valve
3. lower seat push

The following chart presents an overview of these functions together with the recommended time durations.

CIP Event @ Length	Valve Function	Valve Solenoid No.	Solenoid Mode	PLC Timer Duration	Total Valve Functions Over 3 Minute Rinses and 10 Minute Washes
Warm Pre-Rinse @ 3 Minutes	Open	1	Energized	1 min 15 sec	2
	Close	1	De-energized	10 sec	2
	Lower Seat Push	2	Energized	*5 sec	2
Hot Alkaline Wash @ 10 Minutes	Open	1	Energized	1 min 45 sec	5
	Close	1	De-Energized	10 sec	5
	Lower Seat Push	2	Energized	*5 sec	5
Cold Post Wash Rinse @ 3 Minutes	Open	1	Energized	1 min 15 sec	2
	Close	1	De-energized	10 sec	2
	Lower Seat Push	2	Energized	*5 sec	2
Cold Acidified Rinse @ 3 Minutes	Open	1	Energized	1 min 15 sec	2
	Close	1	De-energized	10 sec	2
	Lower Seat Push	2	Energized	*5 sec	2

\*Approximately 2 seconds actual seat push average based upon 5 second PLC timer duration.

**Flow of Cleaning Solution Through Valve Vent Tube (example)**

The table below approximates the flow of cleaning solution through the valve vent tube during lower seat push functions at 40 PSI CIP pressure.

(viscosity and density comparable to water)

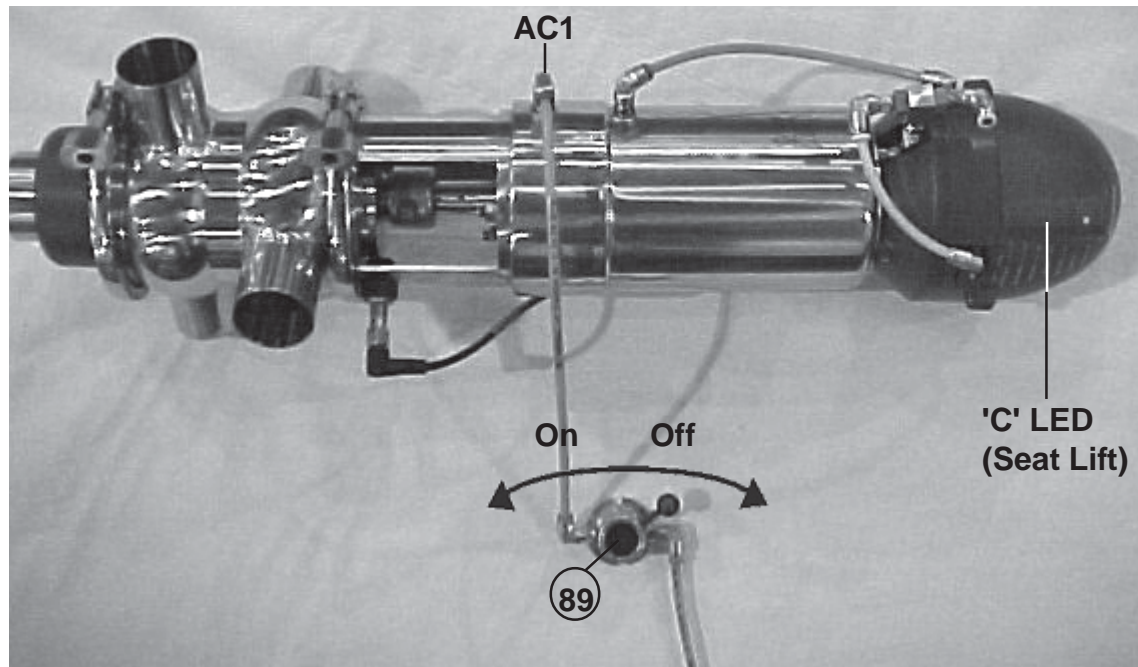
<b>Valve Size</b>	<b>Flow Per Second Through Vent Tube</b>	<b>Flow Every 2 Seconds Through Vent Tube</b>
2"	31 Ounces	62 Ounces (.48 gal.)
2½"	49 Ounces	98 Ounces (.76 gal.)
3"	49 Ounces	98 Ounces (.76 gal.)
4"	81 Ounces	162 Ounces (1.3 gal.)

Note: Refer to section - 4 "CIP Solution Flows for seat lift and spiral clean" to determine flows for CIP pressures other than 40 PSI shown above.

**Guide Bearing Cleaning**

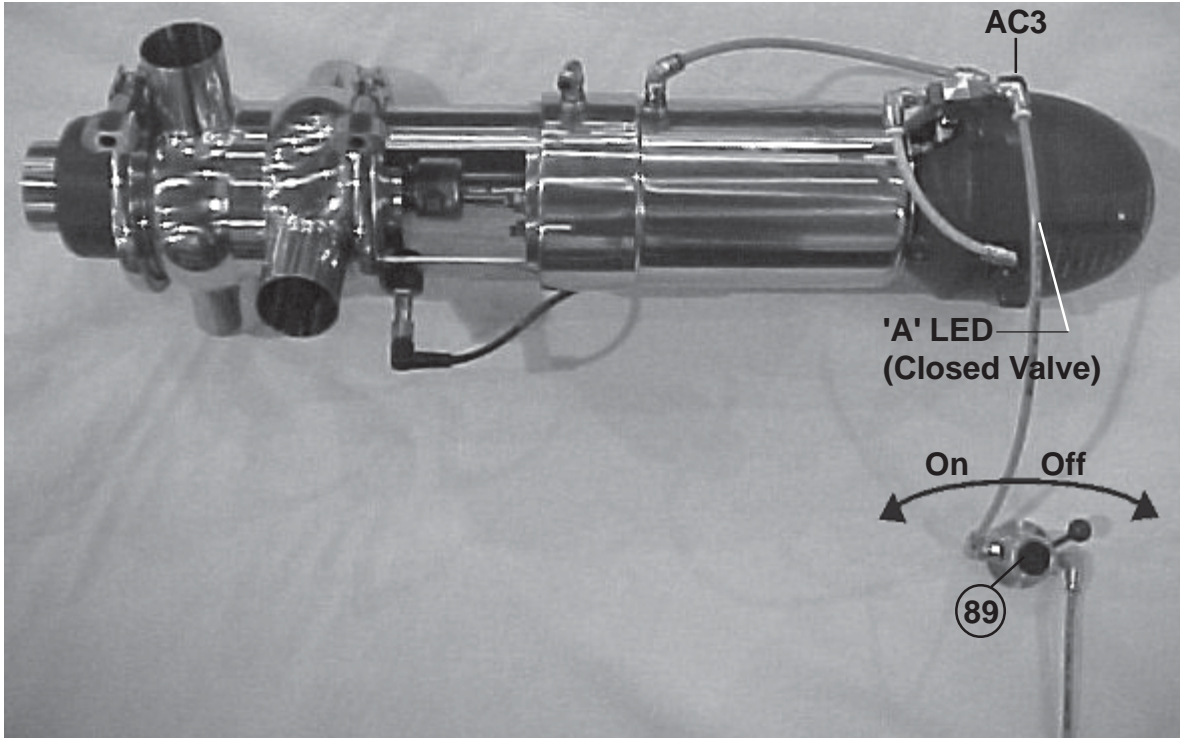
When the valves are removed for replacement of wetted parts and / or sealing elastomers, it is important to remove, and hand clean, the three PTFE guide rings (positions 45, 54 and 80) and their seating groves before placing the valves back into service.

See Section, Maintenance, Re-Assemble Valve. (points 1, 2, 5, 6, 23 and 24)

**Test - 1**  
**Upper Valve Seat**  
**Position Detection**

1. Valve at rest (closed) position
  - "C" LED (Seat Lift) on *ThinkTop* is illuminated.
2. Attach a manual air line to actuator air fitting AC1 using a 3-way air pilot switch (pos. 89).
3. Turn the air pilot switch to ON. (Open)
  - "C" LED (Seat Lift) on *ThinkTop* not illuminated.
4. Turn the air pilot switch to Off (Closed).
  - "C" LED (Seat Lift) on *ThinkTop* is illuminated.
5. Test complete. Remove manual air line.

**Test - 2**  
**Lower Valve Seat**  
**Position Detection**

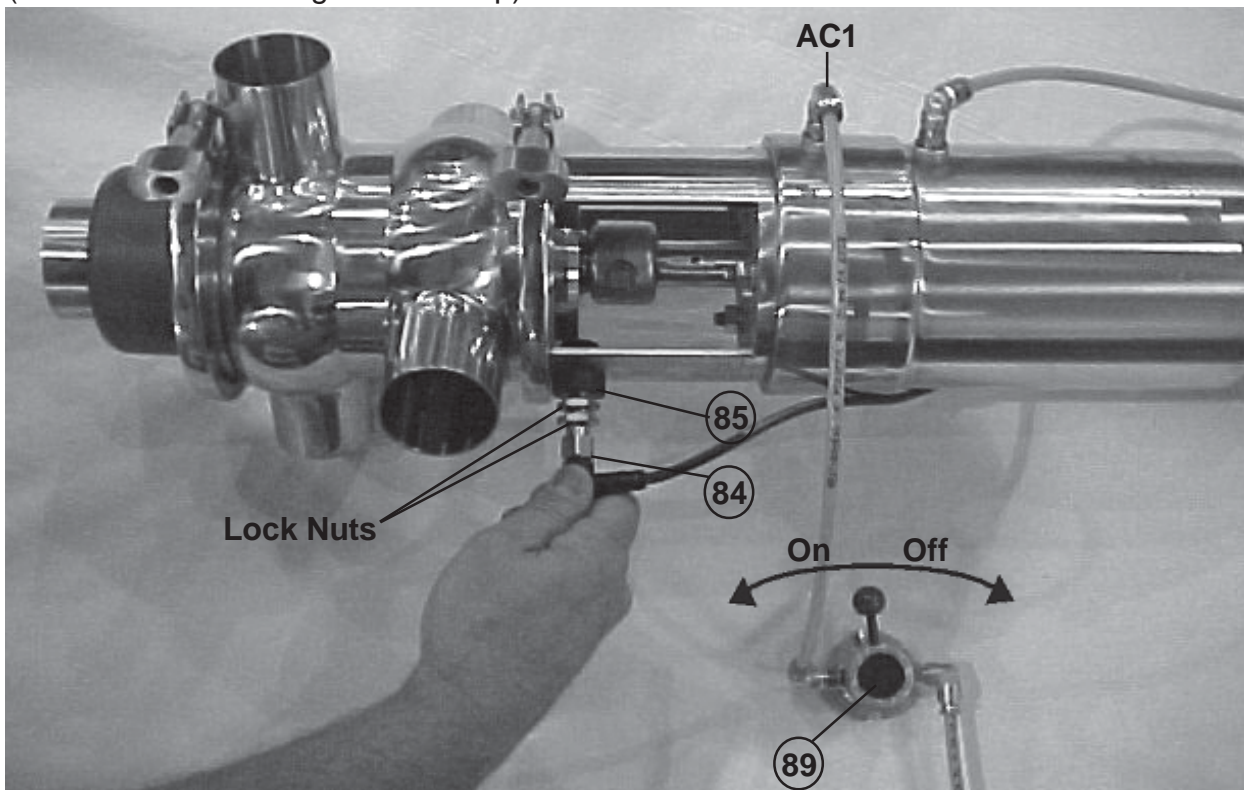


1. Valve at rest (closed) position
  - "A" LED (Closed Valve) on *ThinkTop* is illuminated.
2. Attach a manual air line to actuator shuttle valve air fitting AC3 using a 3-way air pilot switch (pos. 89).
3. Turn the air pilot switch to ON (Open)
  - "A" LED (Closed Valve) on *ThinkTop* not illuminated.
4. Turn the air pilot switch to Off (Closed).
  - "A" LED (Closed Valve) on *ThinkTop* is illuminated.
5. Test complete. Remove manual air line.



## Adjustments

Upper Valve Seat External Sensor (24VDC or 110VAC)  
(Position Data Existing on *ThinkTop*)



The following instructions should be made while the valve is hot from CIP cleaning.  
(worst case)

1. Valve is in a rest position.
2. Loosen sensor lock nut(s).
3. Turn the sensor (pos 84) clockwise to bottom of nylon plug (pos 85), (or, in some cases, until the sensor LED turns off.)
4. Turn the sensor (pos 84) counter clockwise until the sensor LED turns on, (or approximately one full turn from bottom of plug.)
5. Lightly tighten sensor lock nut(s).
6. Attach a manual air line to actuator fitting AC1 using a 3-way air pilot switch (pos 89).
7. Turn the air pilot switch to ON (open). Upper seat lift activated. Sensor LED turns off.
8. Turn the air pilot switch to OFF (closed). Upper seat lift de-activated. Sensor LED turns on.
9. Turn the air pilot switch ON and OFF several times to verify sensor LED actions as listed in steps 7 and 8 above.
10. Moderately tighten sensor lock nut(s).
11. Repeat step 9 when the valve is cold and re-adjust with valve hot if necessary.

### **Adjustments**

Upper Valve Seat *ThinkTop*  
(Set Position New on *ThinkTop*)

The following instructions can be completed while the valve is at room (ambient) temperature.

1. Enter new 'UPPER SEAT LIFT' position data to the *ThinkTop* memory in step 5 of the programming sequence using the 'I' and 'II' keys.

**Note: Data entry is done with the valve deactivated (Closed).**

2. Adjust lateral sensor per instructions for 'UPPER VALVE SEAT EXTERNAL SENSOR' in this section.

Refer to "Electrical Connections/Instructions" in this manual for *ThinkTop* programming.

### **Adjustments**

Lower Valve Seat *ThinkTop*

The following instructions can be completed while the valve is at room (ambient) temperature.

1. Delete the current 'CLOSED VALVE' position data from the *ThinkTop* memory using the 'I' and 'II' keys.
2. Enter new 'CLOSED VALVE' position data to the *ThinkTop* memory using the 'I' and 'II' keys.
3. Repeat 'Test - 2, Lower Valve Seat Position Detection' procedures to confirm adjustment.

Refer to "Electrical Connections/Instructions" in this manual for *ThinkTop* programming.

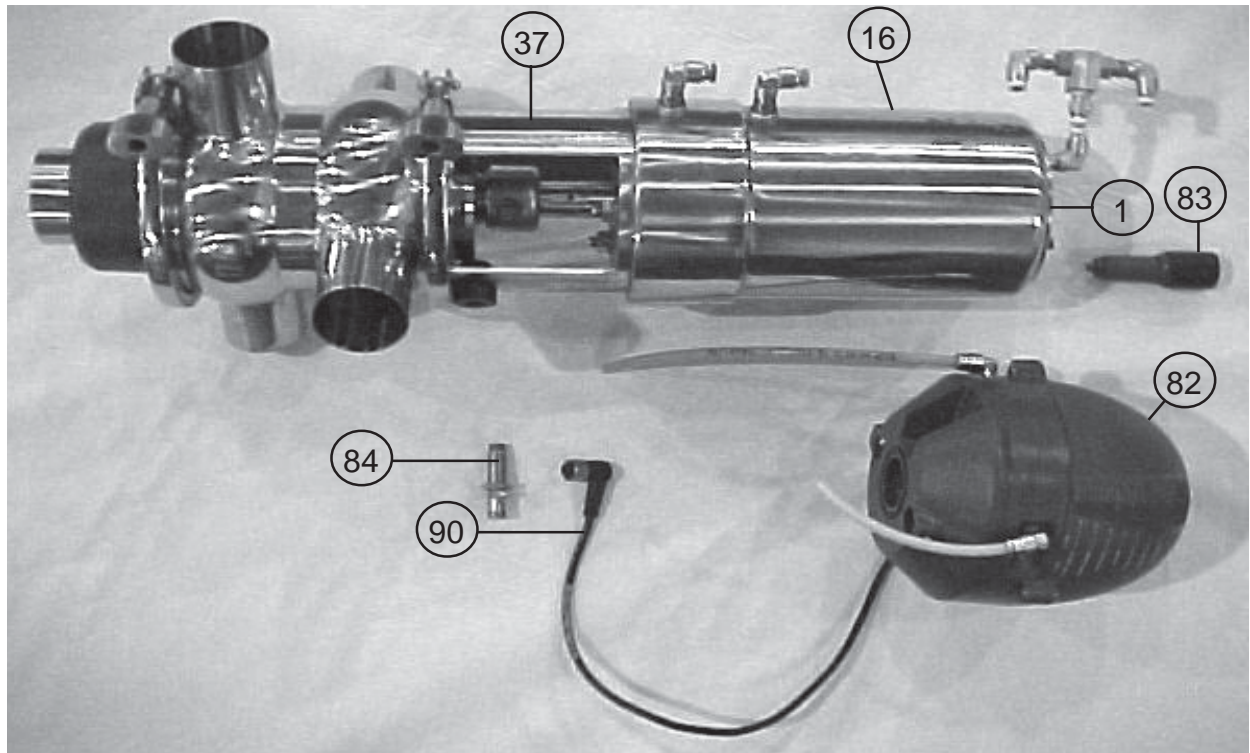
**Tools Required for Valve Service**

- 16mm Wrench
- Strap Wrench
- 8mm Wrench
- 17mm Wrench
- 2.5mm Allen Wrench
- Small Knife
- Straight Pick
- Small Standard Screw Driver
- Air Pilot Switch (Pos. 89)

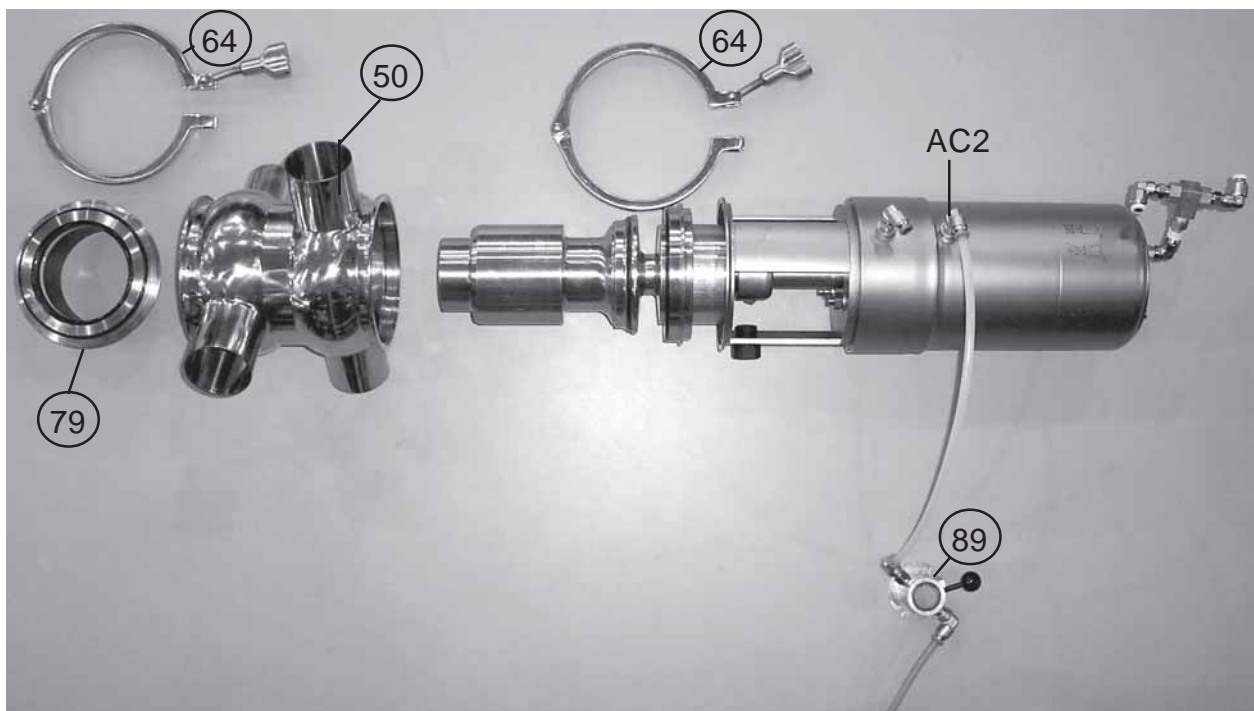
**Tools Required for Actuator Service**

- 13mm Wrench
- Long Stem Phillips Screw Driver (#2 Point)
- Plastic Hammer
- Small Blunt Face Punch
- Small Standard Screw Driver

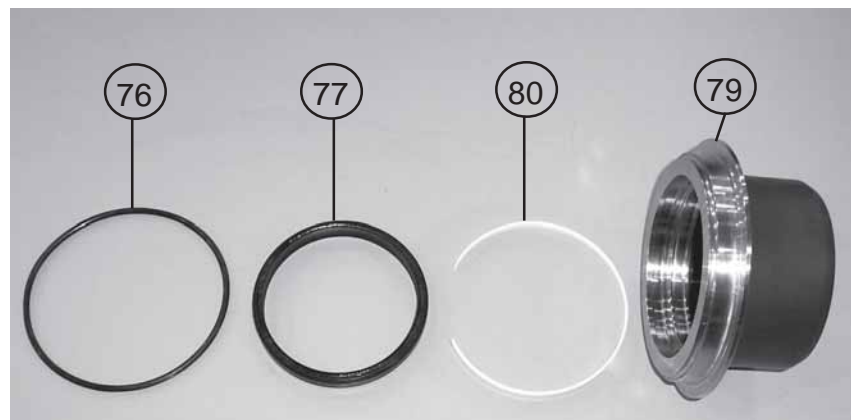
### Dis-Assemble Valve (Excluding Actuator)



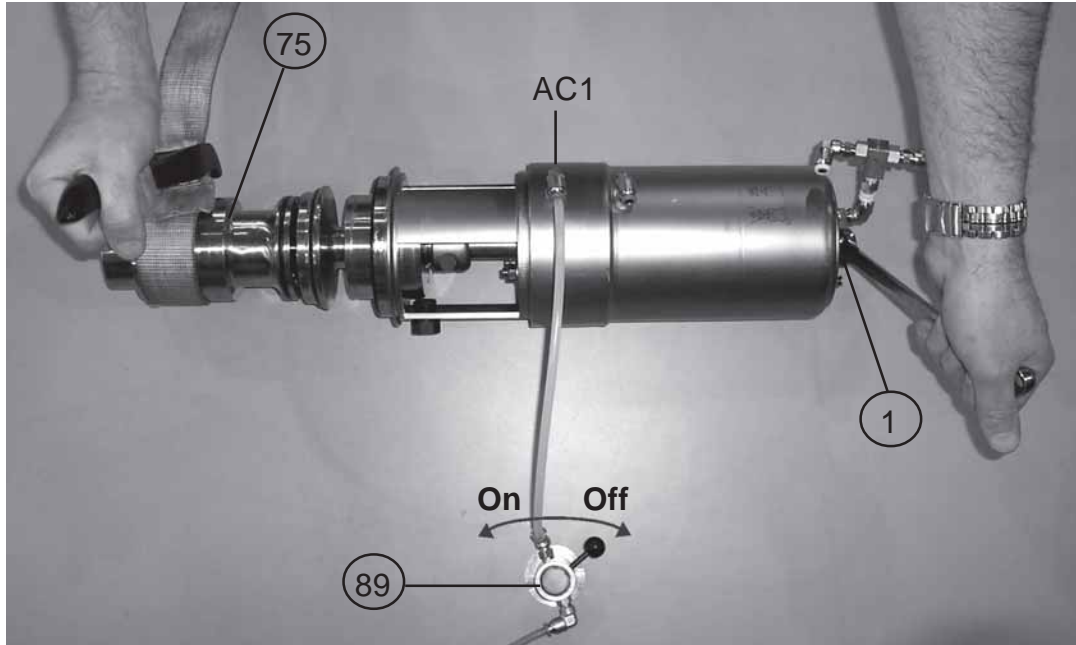
1. Remove *ThinkTop* (82).
2. Turn magnet (83) counter clockwise by hand and remove from upper actuator stem (1).
3. Turn nut on sensor cable (90) counter clockwise and remove.
4. Turn sensor (84) counter clockwise and remove.



### Uniq-PMO

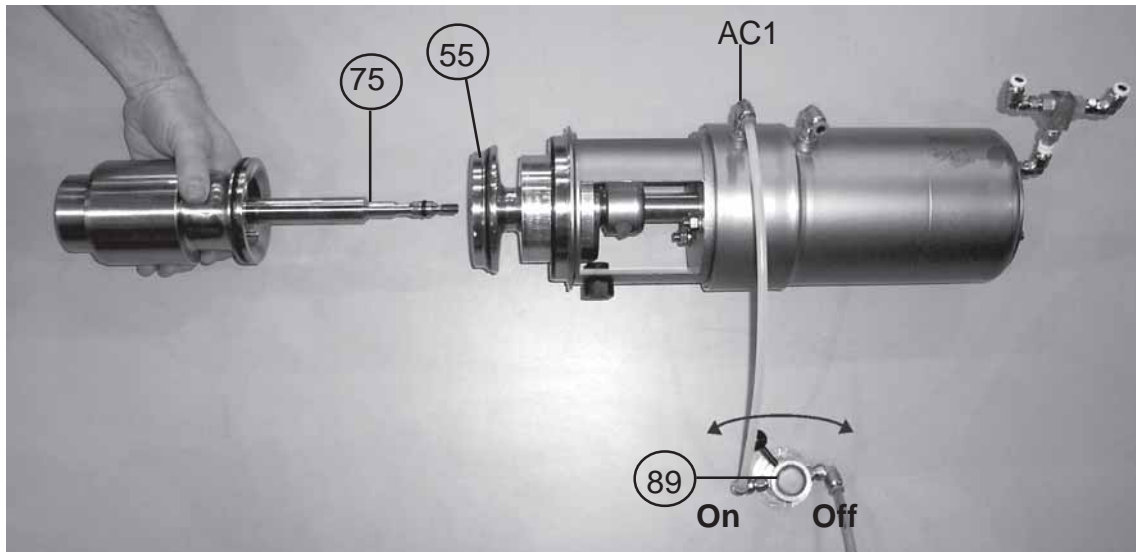


4. Supply compressed air to AC2 (blue ring).
5. Remove upper clamp (64).
6. Lift out the actuator together with the internal valve parts from the body (50).
7. Release compressed air.
8. Remove lower clamp (64).
9. Remove lower sealing element (79).
10. Remove O-ring (76).
11. Remove lip seal (77).
12. Remove guide ring (80).



13. Supply compressed air to AC1 (Red Ring).

14. Loosen lower plug (75) counter clockwise using a strap wrench while counter holding upper actuator stem (1) with a 16mm wrench.



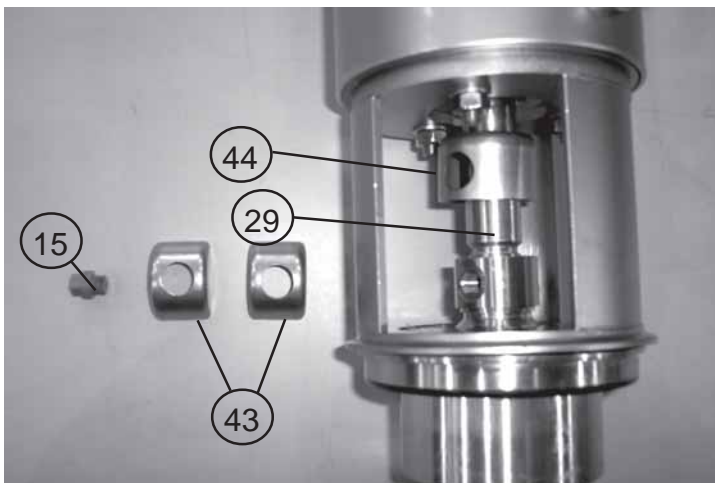
15. Turn counter clockwise by hand and remove lower plug (75).

16. Release compressed air.

**Uniq-PMO**



17. Remove O-ring (38) from lower plug stem (75).



18. Remove plug (15).

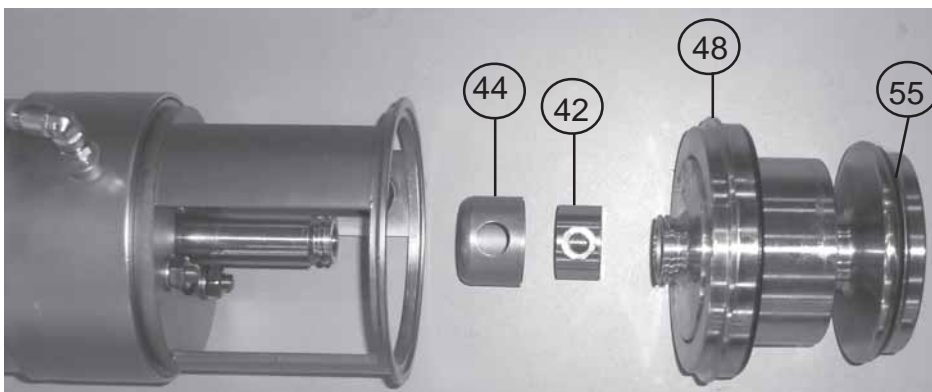
19. Slide lock (44) along piston rod (29).

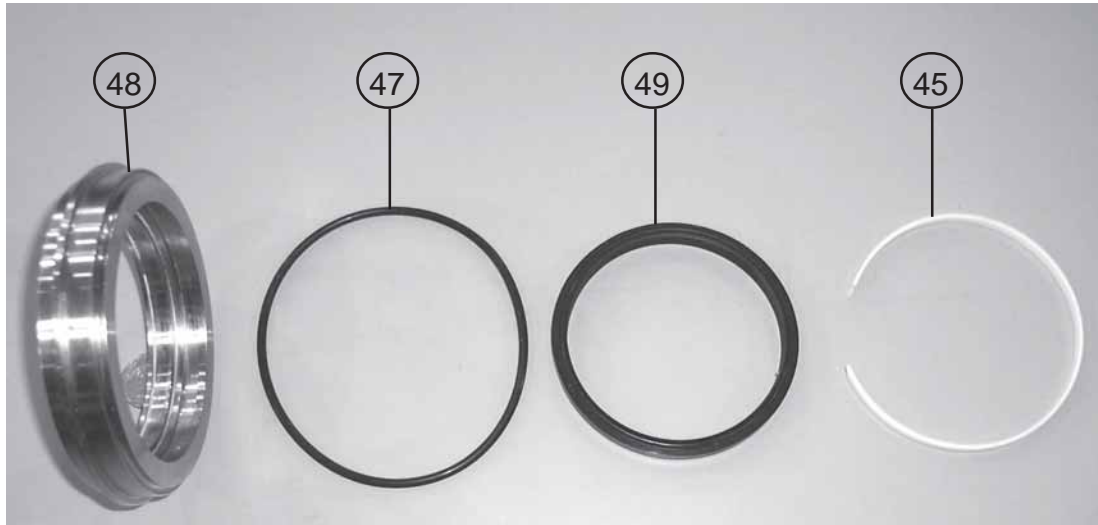
20. Remove two clamps (43).

21. Pull upper plug (55), and upper sealing element (48) out.

22. Remove spindle liner (42).

23. Remove lock (44).





- 24. Remove O-ring (47).
- 25. Remove lip seal (49).
- 26. Remove guide ring (45).
- 27. Remove lip seal (57).
- 28. Remove guide ring (54)

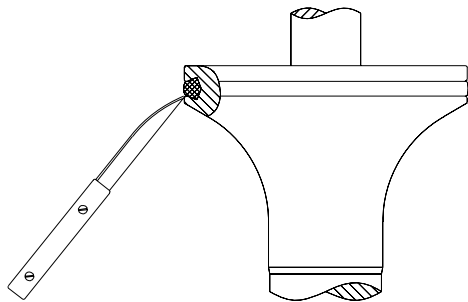


*Study the instructions carefully.*

*Handle scrap correctly.*

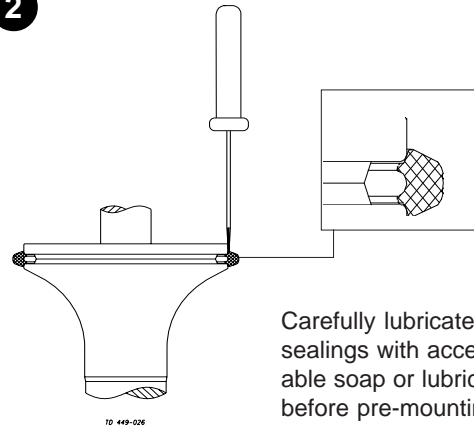
### 3. Replacement of seal ring, lower plug

**1**



Remove old seal ring (74) with a small knife.

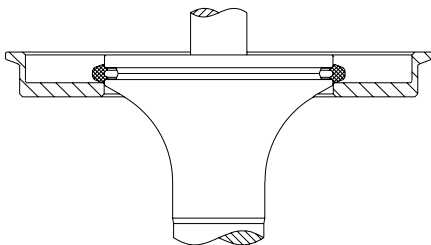
**2**



Carefully lubricate sealings with acceptable soap or lubricant, before pre-mounting.

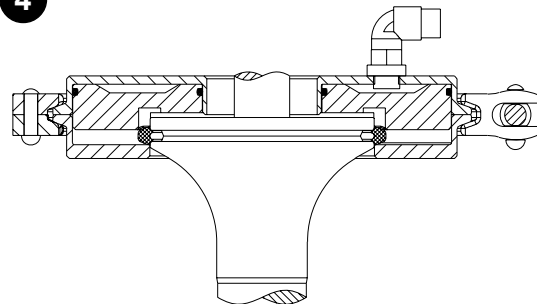
Pre-mount seal ring as shown on drawing.

**3**



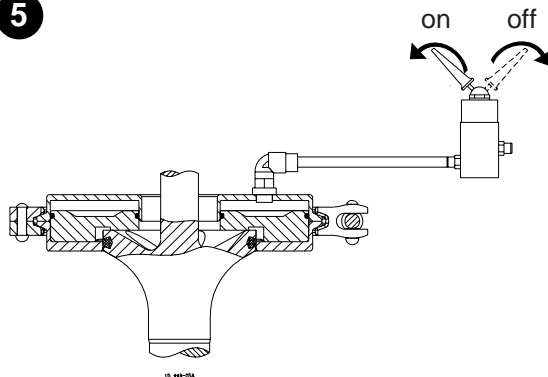
Place lower tool part.

**4**



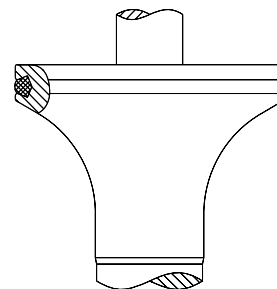
1. Place upper tool part including piston.  
2. Clamp the two tool parts together.

**5**



1. Supply compressed air.
2. Release compressed air.
3. Turn the tool 45°.
4. Supply compressed air.
5. Release compressed air and remove tool.

**6**



Inspect the seal.

*Study the instructions carefully.*

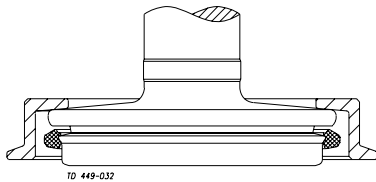
*Handle scrap correctly.*

### 4. Replacement of seal ring, upper plug

**1**

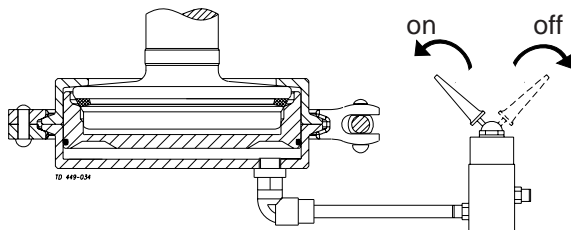
Remove old seal ring (56) with a small knife.

**3**



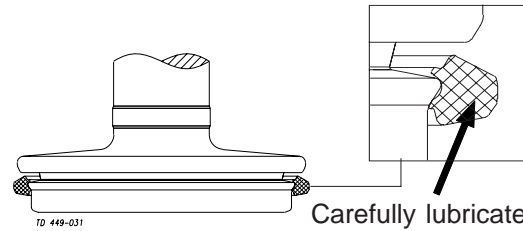
Place tool part 1.

**5**



1. Supply compressed air.
2. Release compressed air.
3. Turn the tool 45°.
4. Supply compressed air.
5. Release compressed air and remove tool.

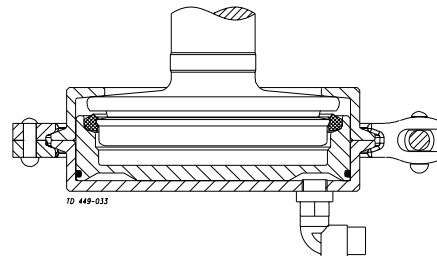
**2**



Carefully lubricate sealings with acceptable soap or lubricant, before pre-mounting.

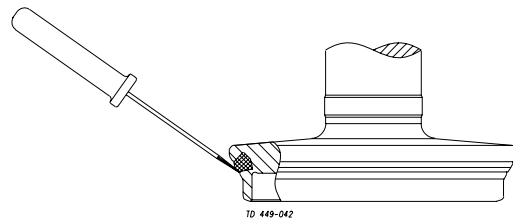
Pre-mount seal ring as shown on drawing.

**4**



1. Place tool part 2 including piston.
2. Clamp the two tool parts together.

**6**



1. Inspect the seal.
2. Release air with screwdriver.

**Re-Assemble Valve**  
(Excluding Actuator)

Note:

- \* Lubricate seals with Kluber Paraliq GTE 703 or similar USDA HI Approved lubricant (#022148-213).
- \*\* Lubricate threads with Kluber Paste UH1 84-201 or similar.

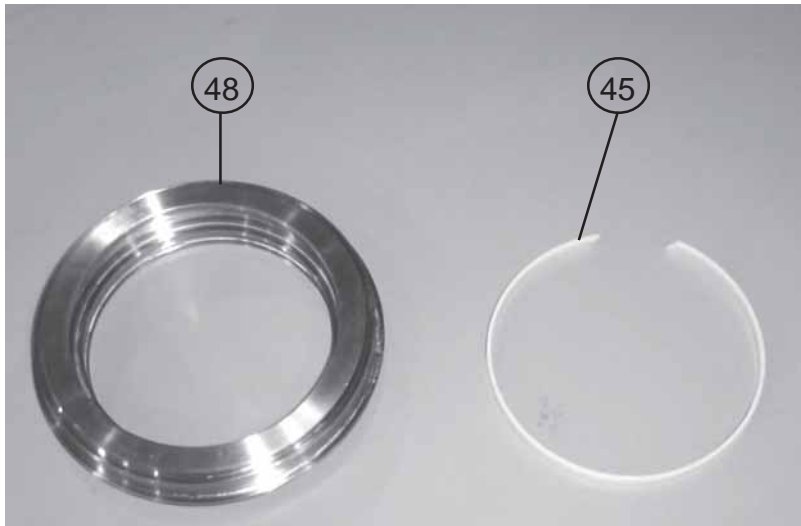


1. Hand clean and sanitize guide ring (54).
2. Hand clean and sanitize ID of upper plug stem (55).



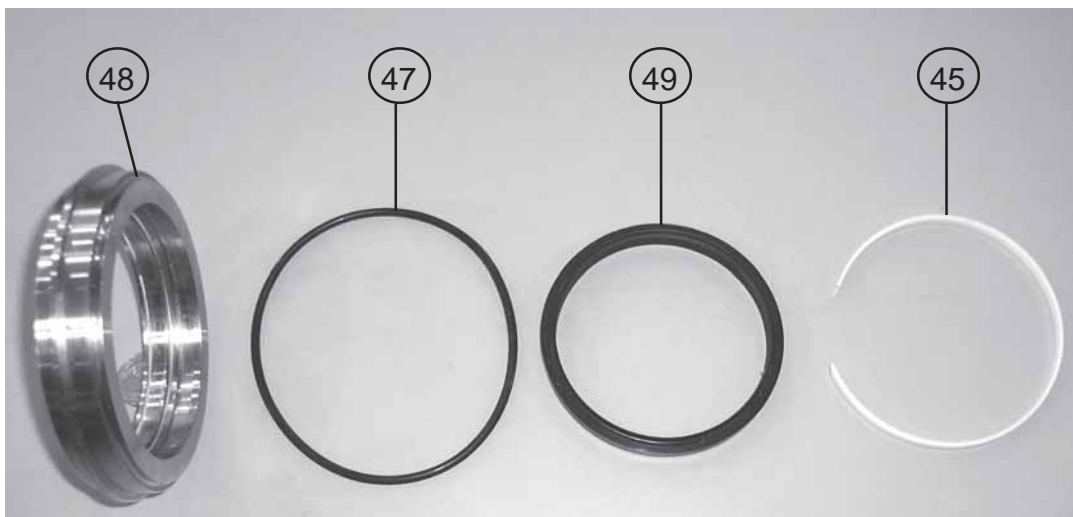
3. Install guide ring (54).
4. Install \*lip seal (57).

**Re-Assemble Valve**  
(Excluding Actuator)



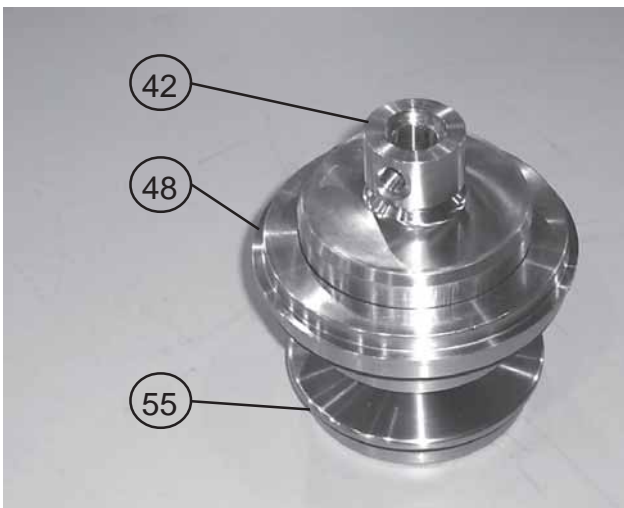
- 5. Hand clean and sanitize guide ring (45).
- 6. Hand clean and sanitize upper sealing element (48).

- 7. Install guide ring (45).
- 8. Install \*lip seal (49).
- 9. Install \*lip seal (47).



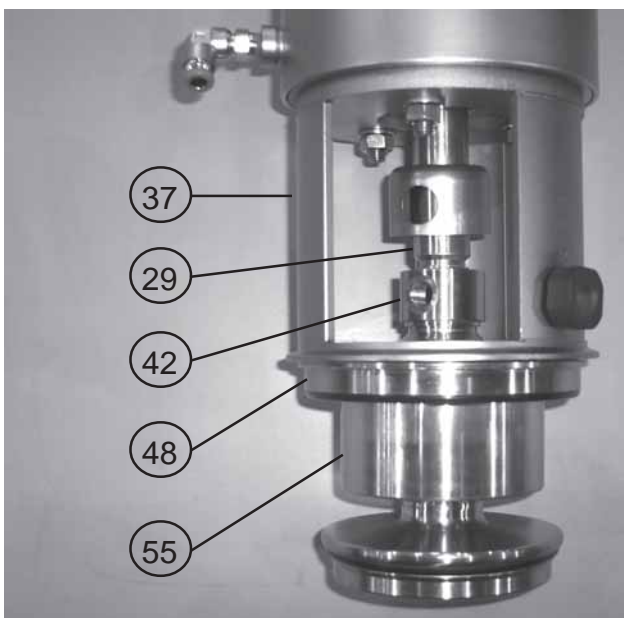


10. Install lock (44) onto piston rod (29).



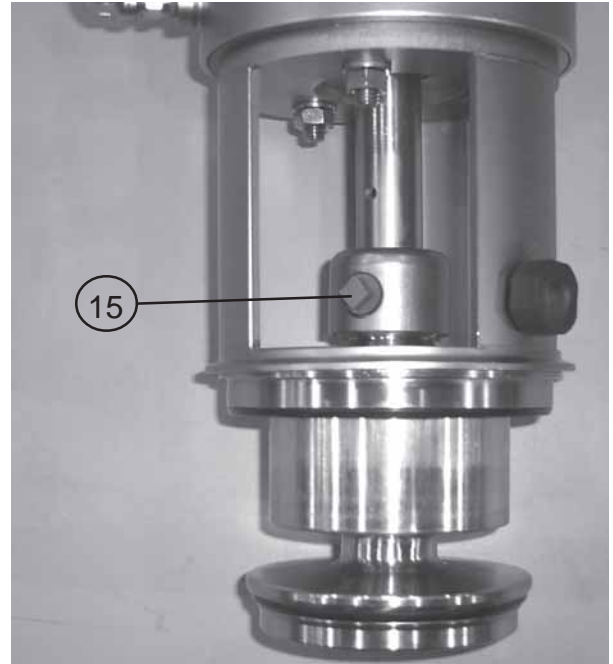
11. Slide upper sealing element (48) onto upper plug (55).

12. Install spindle liner (42) onto upper plug stem (55).



13. Fit upper plug (55), upper sealing element (48) and spindle liner (42) into intermediate piece (37).

14. Push upper plug (55) to fit spindle liner (42) tight against piston rod (29).

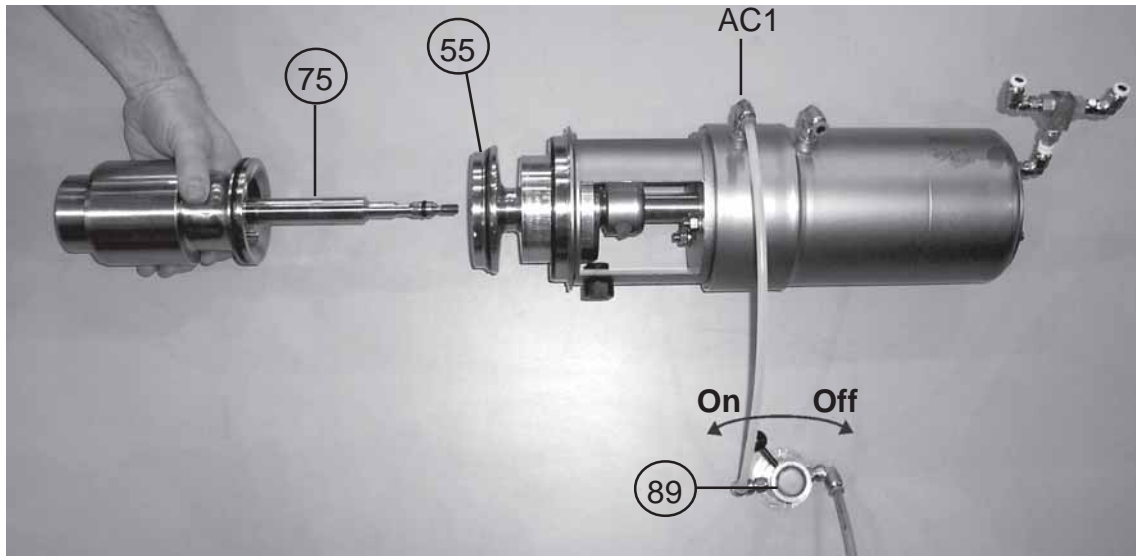


- 15. Install two clamps (43) Note: Align one clamp with female thread in spindle liner (42).
- 16. Slide lock (44) down over clamps (43) Note: Align holes.

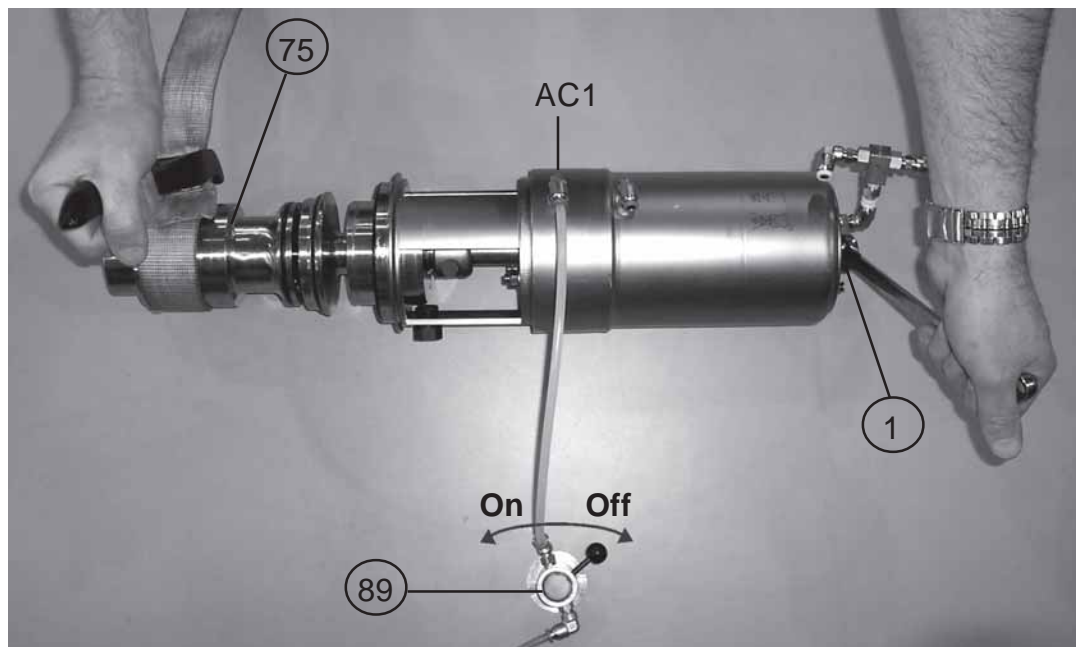
- 17. Install plug (15).
- 18. Install \*O-ring (38).

**Uniq-PMO**





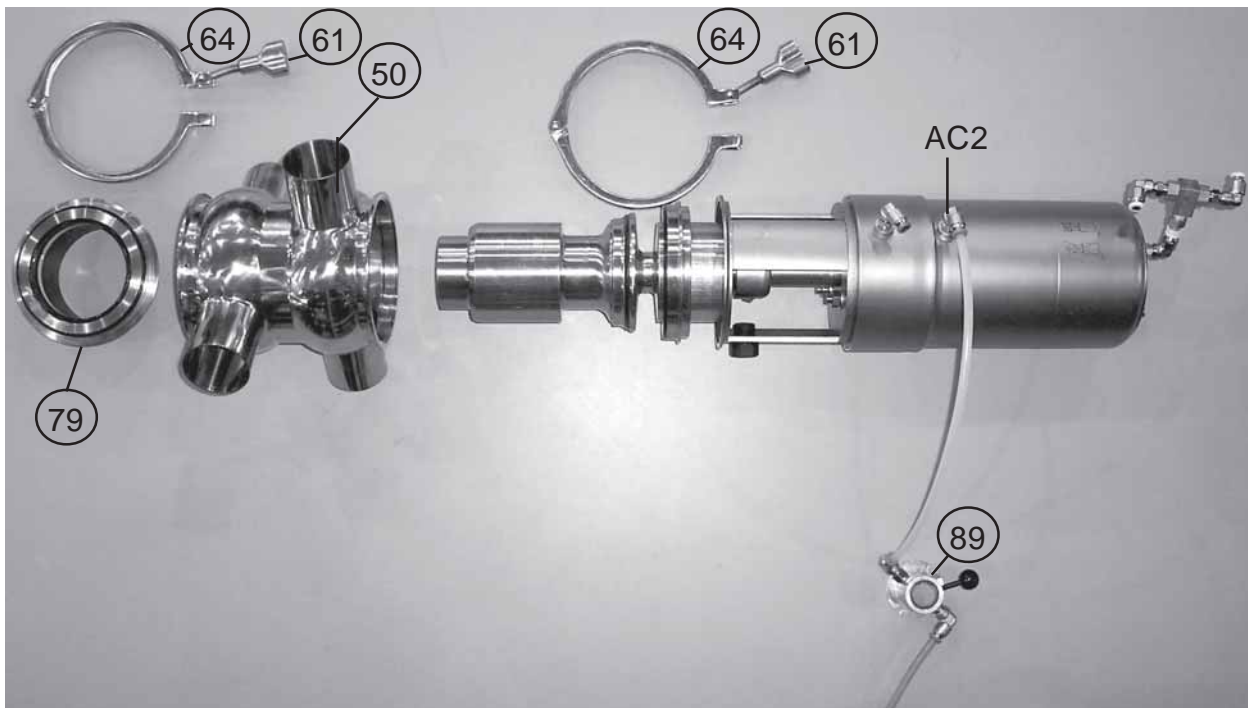
19. Supply compressed air to AC1 (Red Ring).
20. Fit \*\*lower plug stem (75) into ID of upper plug (55) and turn clockwise to tighten by hand.
21. Tighten lower plug (75) clockwise using strap wrench while counter holding upper actuator stem (1) with a 16mm wrench.
22. Release compressed air.



**Uniq-PMO**

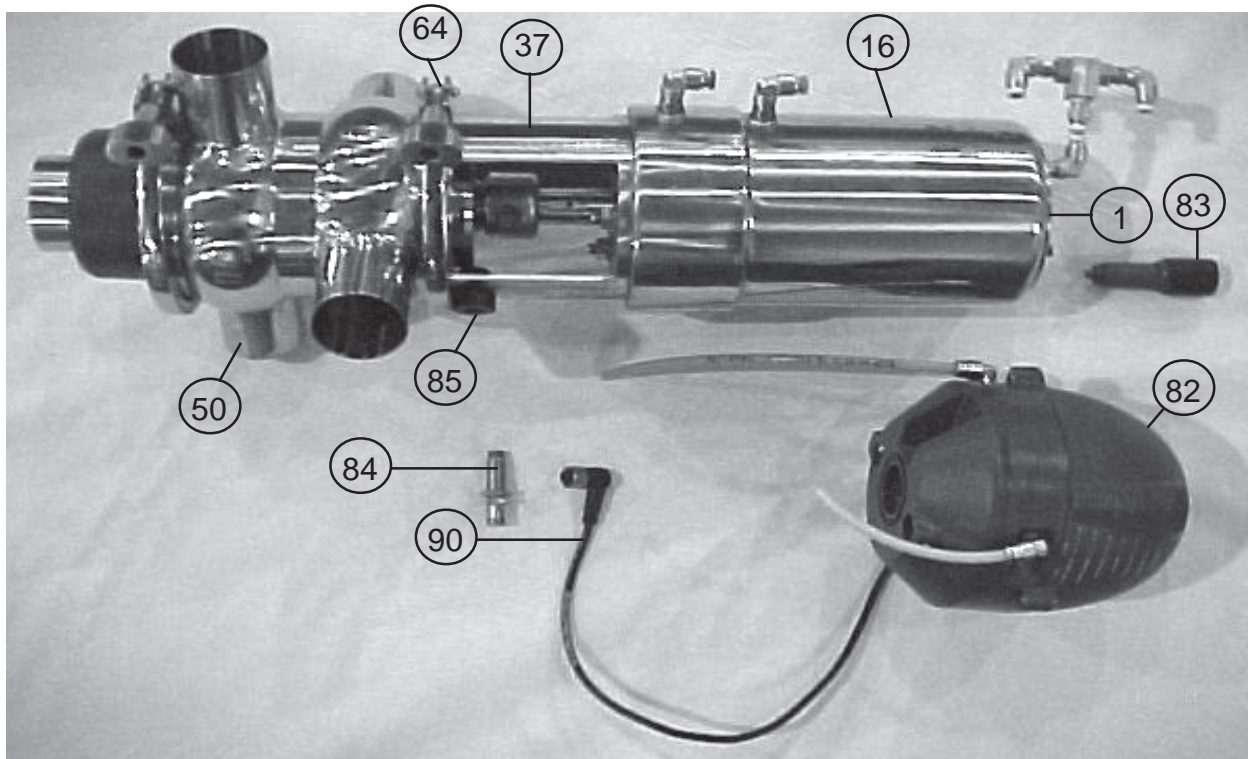


- 23. Hand clean and sanitize guide ring (80).
- 24. Hand clean and sanitize lower sealing element (79).
- 25. Install guide ring (80).
- 26. Install \*lip seal (77).
- 27. Install \*O-ring (76).
- 28. Install lower sealing element (79) onto body (50).
- 29. Fit and tighten lower clamp (64).





30. Supply compressed air to AC2 (Blue Ring).
31. Fit the actuator together with the internal valve parts into the valve body (50).
32. Fit and tighten upper clamp (64).
33. Release compressed air.



34. Turn sensor (84) clockwise into nylon plug (85) and tighten by hand.
35. Attach sensor cable (90) to sensor (84) and tighten by hand.
36. Turn magnet (83) clockwise into upper actuator stem (1) and tighten by hand.
37. Install *ThinkTop* (82) to cylinder (16).

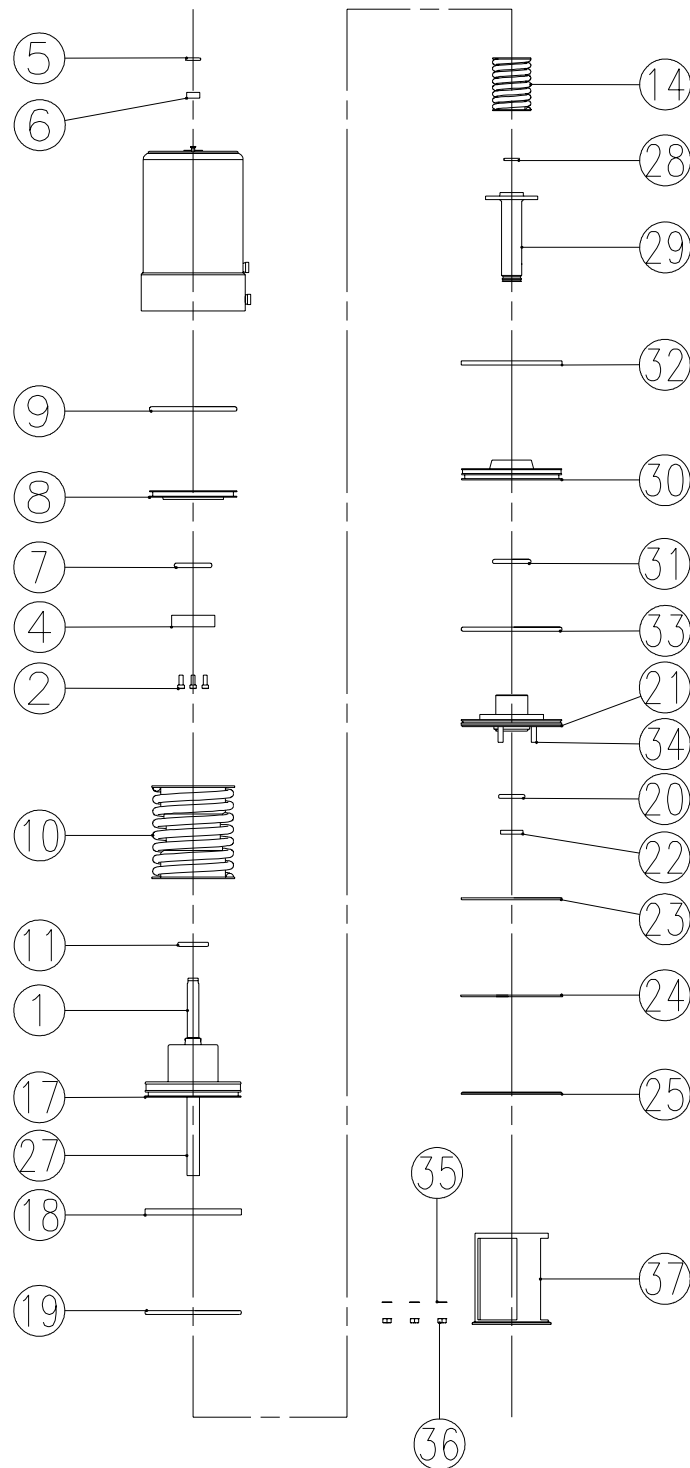
**Dismantling of actuator**

1. Remove nuts (36) and washers (35).
2. Pull out intermediate piece (37) from the actuator.
3. Remove cover disk (25).
4. Remove retaining ring (24).
5. Remove piston rod (29), bottom (21) and lower piston (30).
6. Separate the three parts.
7. Remove O-rings (20, 22 and 23) from bottom, O-rings (33 and 31) and guide ring (32) from lower piston as well as O-ring (28) from piston rod.
8. Remove spring assembly (14).
9. Remove inner stem (27), main piston (17) and distance spacer (11) if present. Remove guide ring (18) and O-ring (19).
10. Remove spring assembly (10).

**NOTE:** 2½", 3" and 4" valves only

1. Unscrew screws (2).
2. Remove stop (4).
3. Remove upper piston (8). Remove O-rings (7 and 9).
4. Remove O-ring (5) and guide ring (6).

### Dismantling of actuator



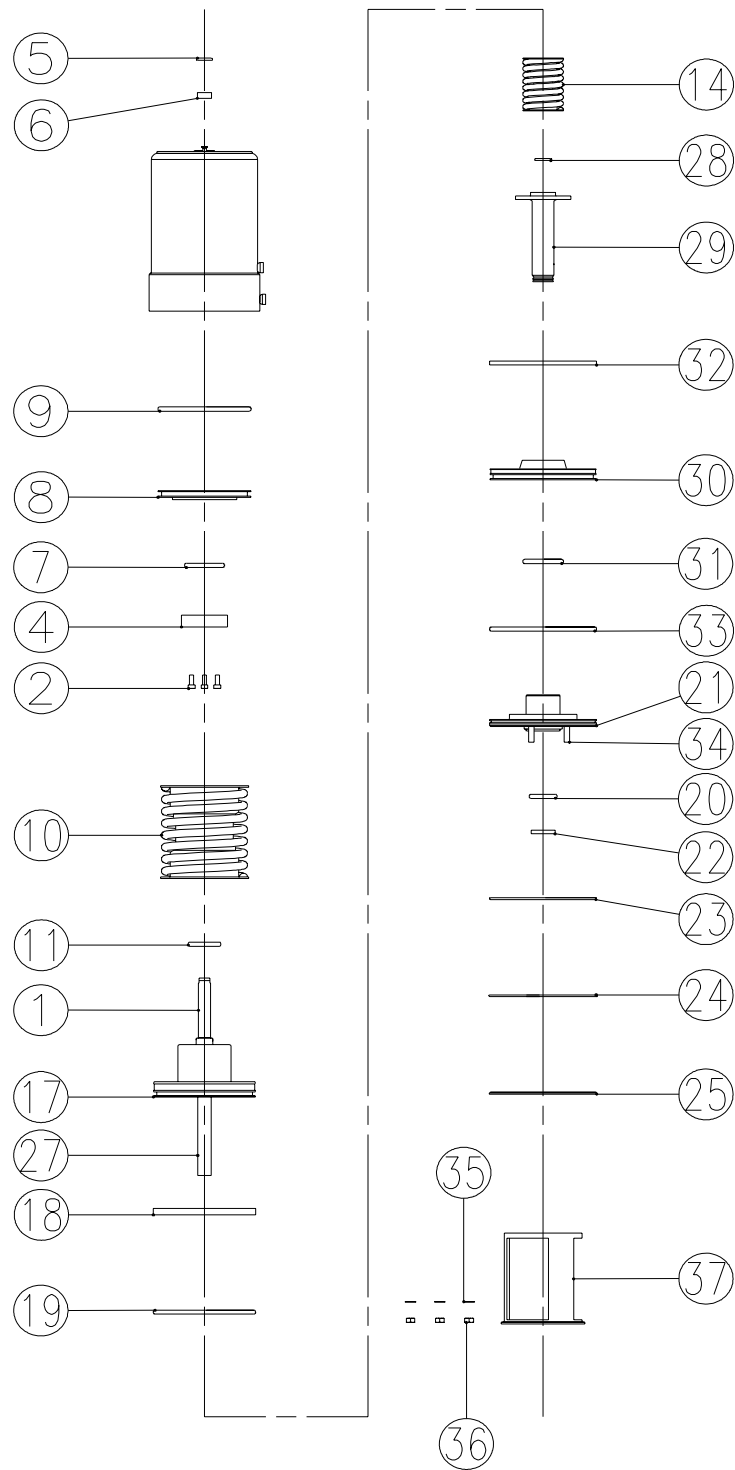
**Reassembly of actuator**

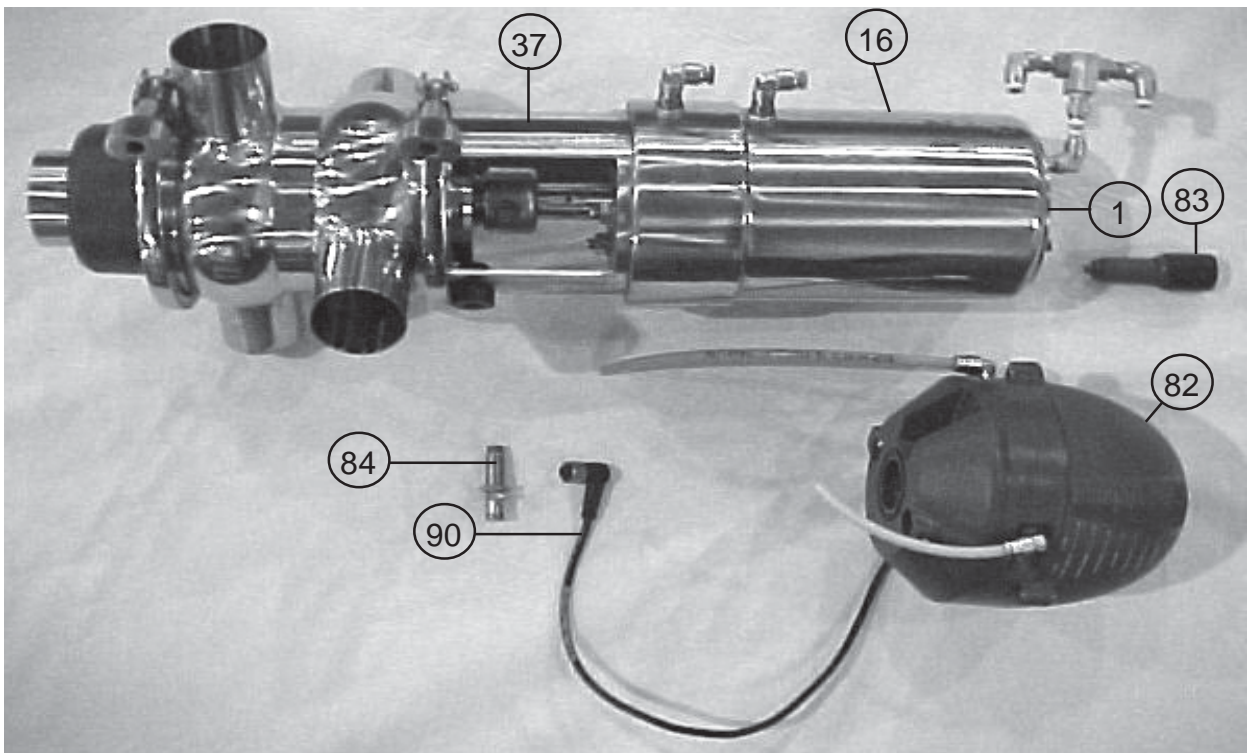
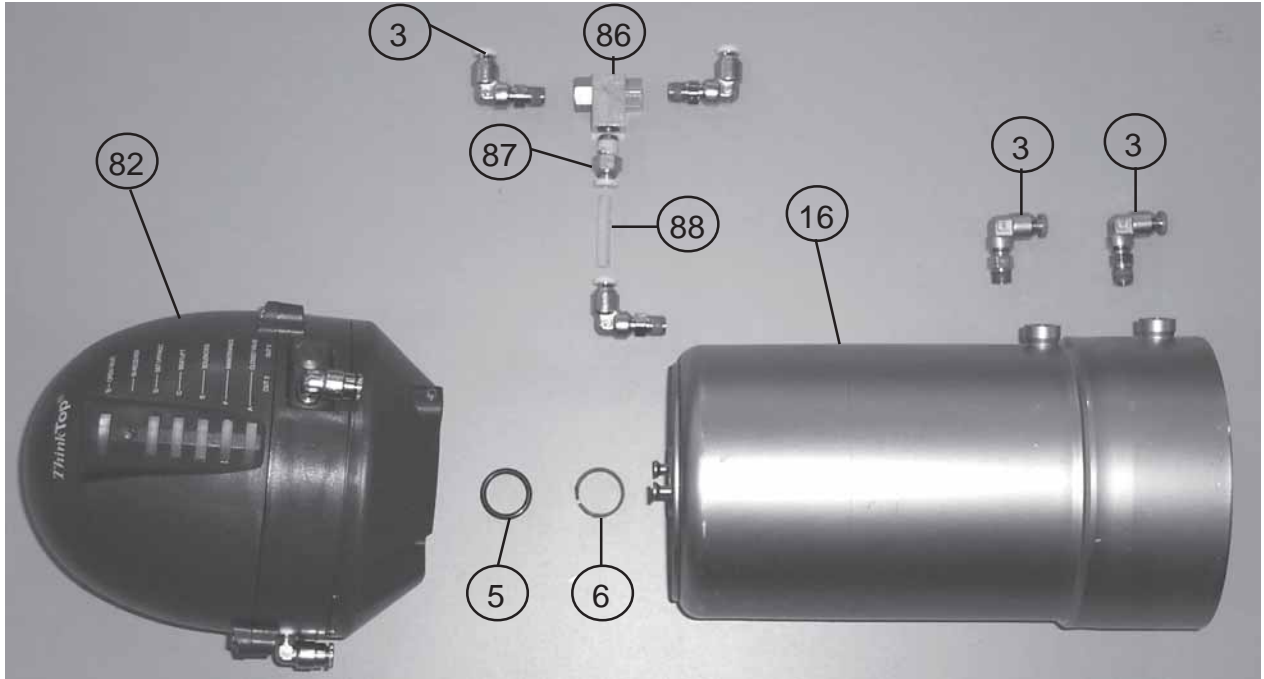
1. Fit guide ring (6) and O-ring (5).

**NOTE:** 2½", 3" and 4" valves only

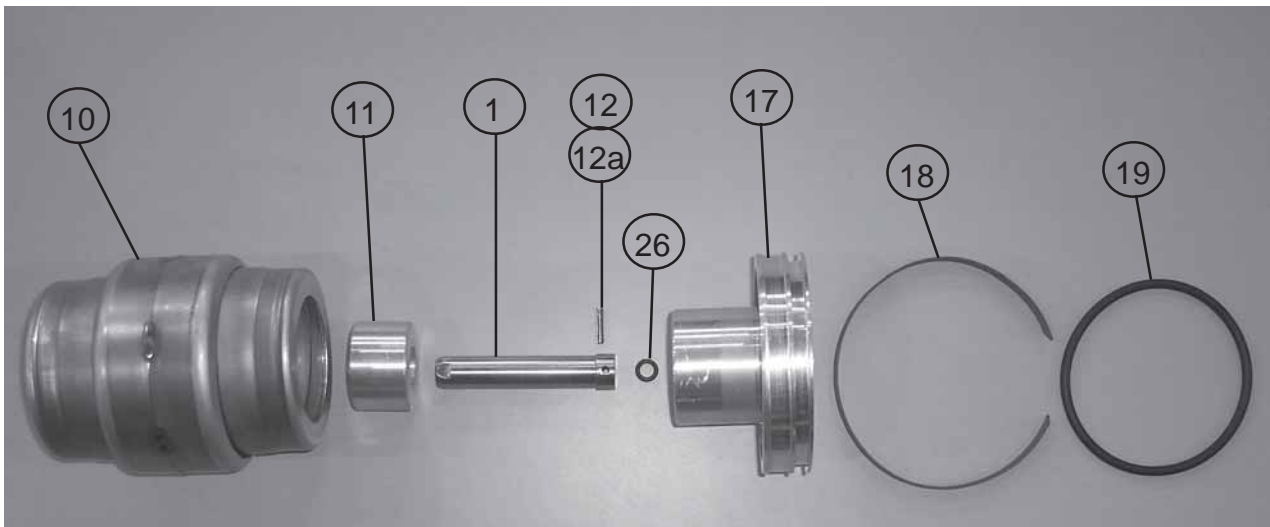
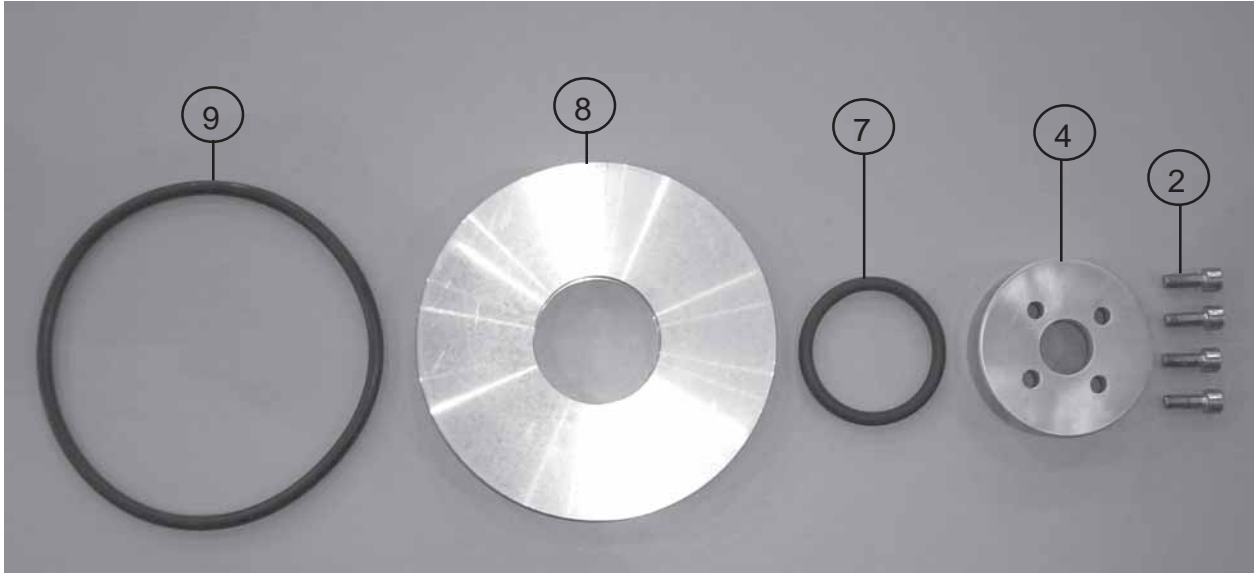
2. Fit O-rings (7 and 9). Place upper piston (8).
  3. Fit stop (4).
  4. Tighten screws (2).
2. Place spring assembly (10).
  3. Fit O-ring (19) and guide ring (18). Mount distance spacer (11), main piston (17) and inner stem (27).
  4. Fit spring assembly (14).
  5. Fit O-ring (28) in piston rod, fit O-rings (33 and 31) and guide ring (32) in lower piston and fit O-rings (20, 22 and 23) in bottom.
  6. Fit piston rod (29), lower piston (30) and bottom (21).
  7. Mount the three parts.
  8. Fit retaining ring (24).
  9. Fit cover disk (25).
  10. Mount intermediate piece (37) on actuator.
  11. Fit and tighten nuts (36) and washers (35).

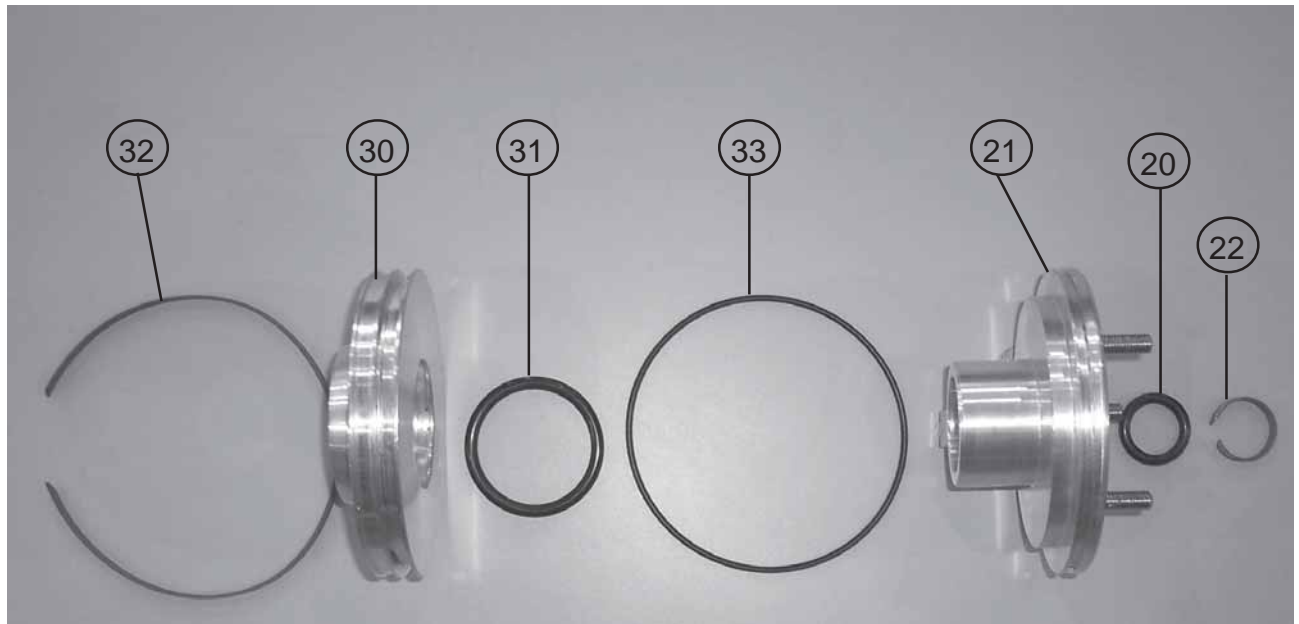
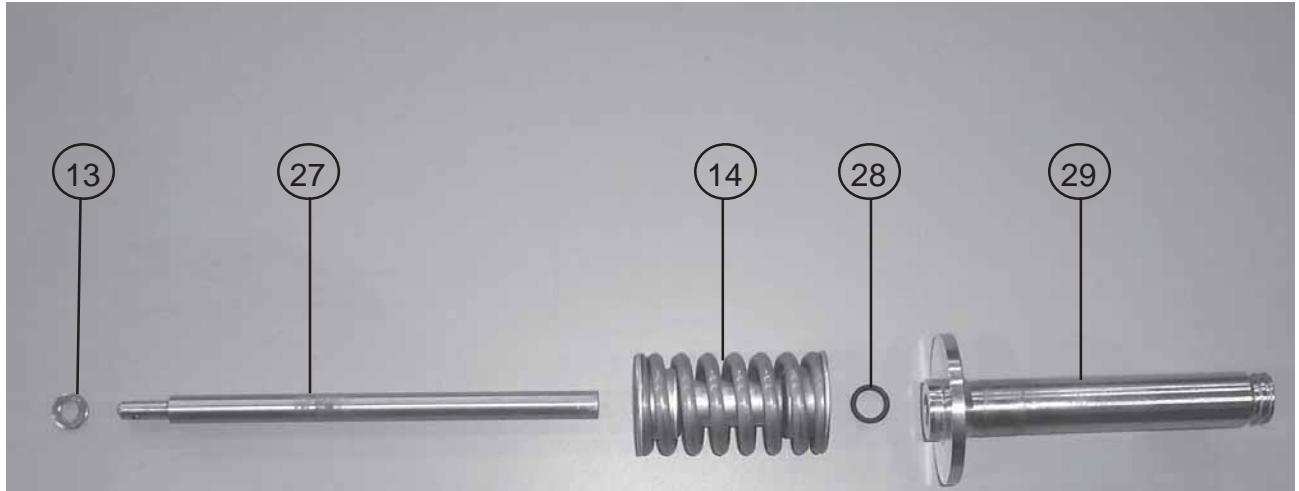
### Reassembly of actuator



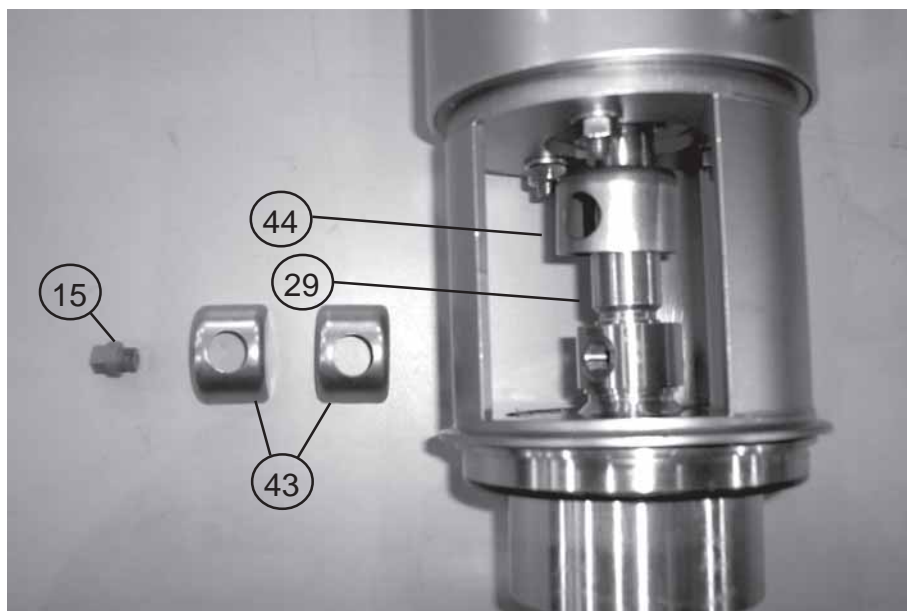
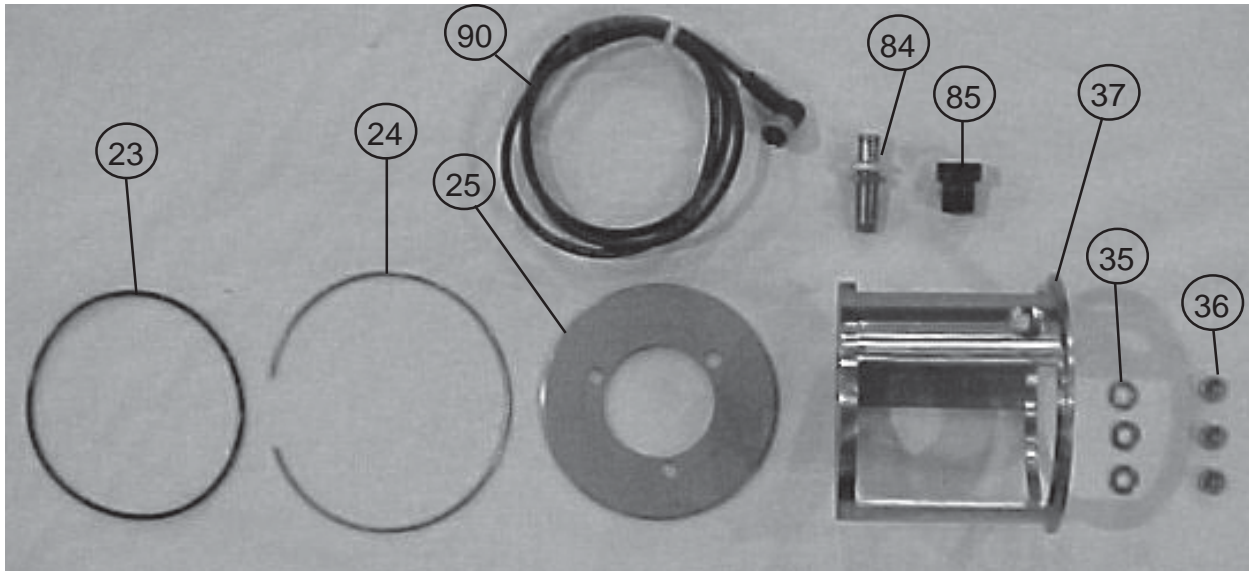


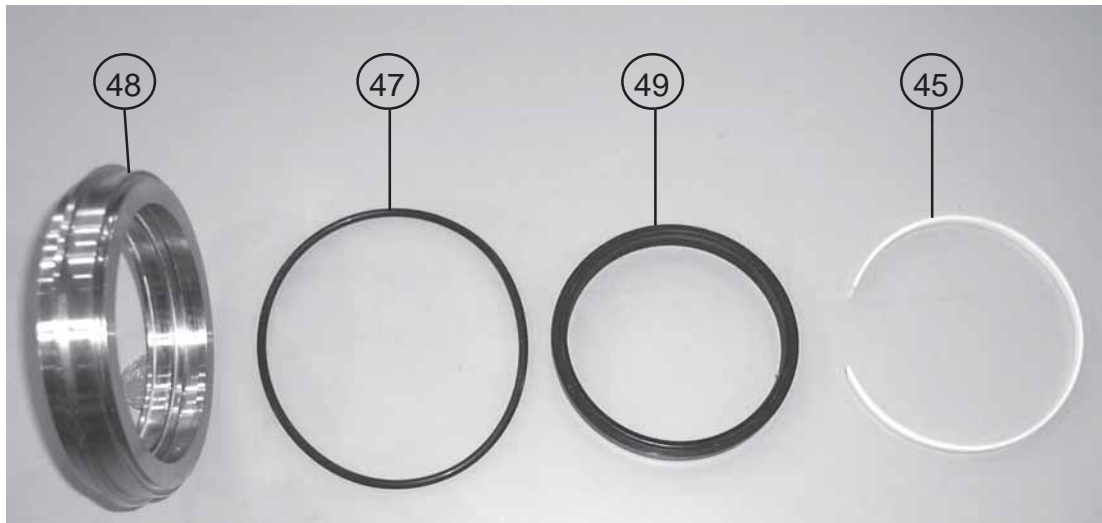
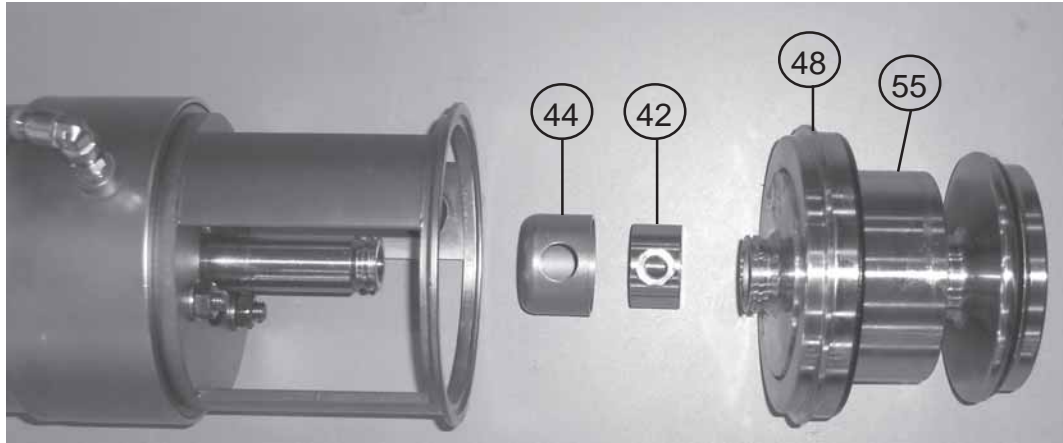
2½", 3" and 4" Sizes only

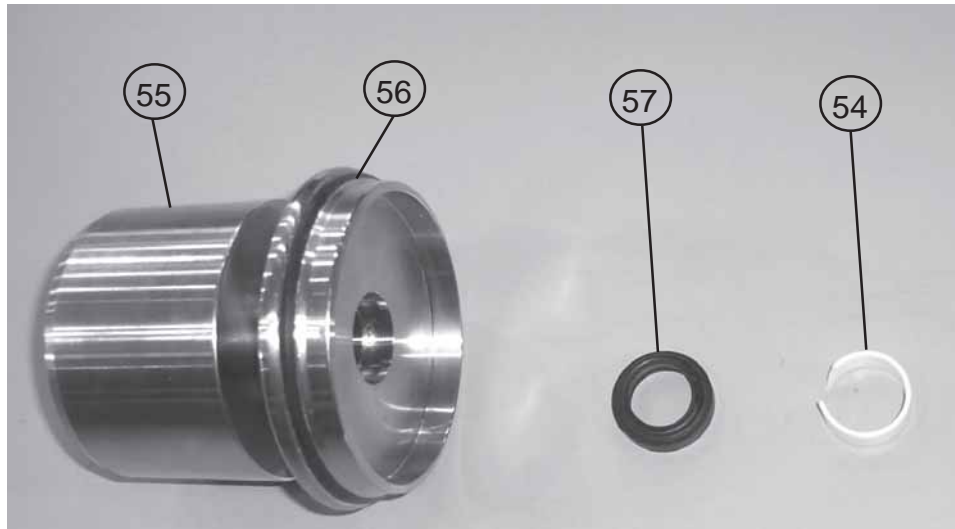






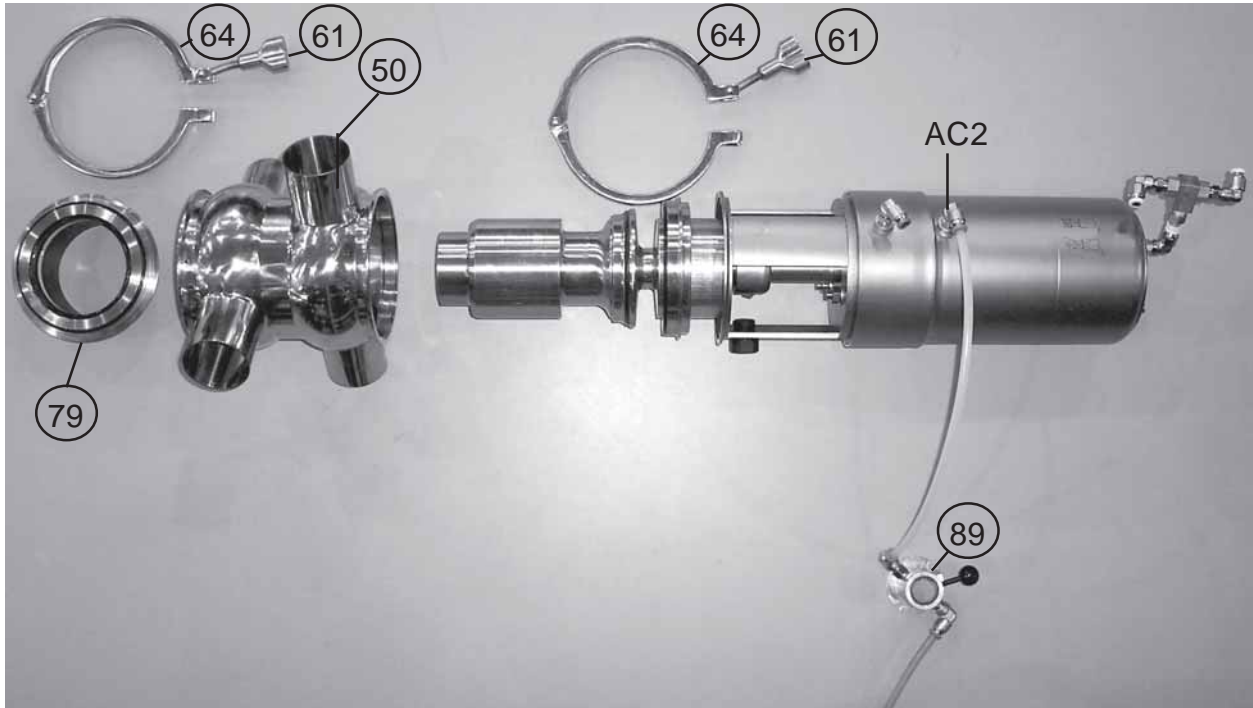




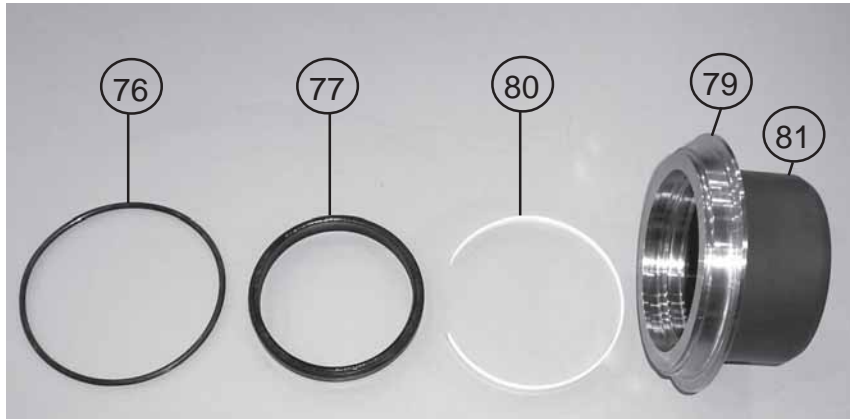


**Uniq-PMO**





**Uniq-PMO**



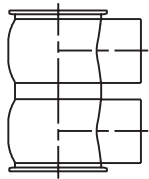
## Parts

Pos.	Qty.	Denomination	PMO 2"	PMO 2½"	PMO 3"	PMO 4"
1	1	Upper stem .....	9613-0101-02	9613-0074-01	9613-0074-01	9613-0074-02
2	4	Screw .....		9611-99-3342	9611-99-3342	9611-99-3342
3	3	Air fitting yellow .....	9611-99-4171	9611-99-4171	9611-99-4171	9611-99-4171
	1	Air fitting blue .....	9611-99-4172	9611-99-4172	9611-99-4172	9611-99-4172
	1	Air fitting red.....	9611-99-3780	9611-99-3780	9611-99-3780	9611-99-3780
4	1	Stop for upper piston .....		9613-0053-01	9613-0053-01	9613-0053-02
5	1	O-ring, NBR .....	9611-99-3499	9611-99-3499	9611-99-3499	9611-99-3499
6	1	Guide ring, Turcite .....	9613-0084-08	9613-0084-08	9613-0084-08	9613-0084-08
7	1	O-ring, NBR .....		9611-99-3514	9611-99-3514	9611-99-3514
8	1	Upper piston .....		9613-0056-01	9613-0056-01	9613-0056-02
9	1	O-ring, NBR .....		9611-99-3512	9611-99-3512	9611-99-3513
10	1	Spring assembly .....	9613-0125-01	9613-0075-01	9613-0075-01	9613-0256-03
11	1	Distance spacer .....	9613-0102-02			
12	1	Pin .....	22211920	9611-99-3558	9611-99-3558	9611-99-3559
12a	1	Pin .....		9611-99-3728	9611-99-3728	9611-99-3729
13	1	Washer.....	9611-99-3594	9611-99-3595	9611-99-3595	9611-99-3596
14	1	Spring assembly .....	9613-0131-01	9613-0095-02	9613-0095-02	9613-0095-02
15	1	Plug .....	9613-0806-01	9613-0806-01	9613-0806-01	9613-0806-01
16	1	Cylinder (3A marking).....	9613-0126-04	9613-0051-04	9613-0051-04	9613-0150-07
17	1	Main piston .....	9613-0132-01	9613-0057-01	9613-0057-01	9613-0159-01
18	1	Guide ring, Turcite .....	9613-0084-09	9613-0084-10	9613-0084-10	9613-0084-11
19	1	O-ring, NBR .....	9611-99-3505	9611-99-3507	9611-99-3507	9611-99-3509
20	1	O-ring, NBR .....	9611-99-3503	9611-99-3607	9611-99-3607	9611-99-3607
21	1	Bottom .....	9613-0140-01	9613-0054-01	9613-0054-01	9613-0168-01
22	1	Guide ring, Turcite .....	9613-0084-03	9613-0084-04	9613-0084-04	9613-0084-04
23	1	O-ring, NBR .....	9611-99-3494	9611-99-1489	9611-99-1489	9611-99-3497
24	1	Retaining ring .....	9613-0248-02	9613-0248-03	9613-0248-03	9613-0248-04
25	1	Cover disk .....	9613-0058-02	9613-0058-03	9613-0058-03	9613-0058-04
26	1	O-ring, NBR .....	9611-99-3528	9611-99-3495	9611-99-3495	9611-99-1002
27	1	Inner stem.....	9613-0106-03	9613-0073-03	9613-0073-03	9613-0073-02
28	1	O-ring .....	9611-99-3495	9611-99-0030	9611-99-0030	9611-99-0030
29	1	Piston rod .....	9613-0134-02	9613-0060-02	9613-0060-02	9613-0060-02
30	1	Lower piston .....	9613-0138-01	9613-0055-01	9613-0055-01	9613-0166-01
31	1	O-ring, NBR .....	42153	42153	42153	42153
32	1	Guide ring, Turcite .....	9613-0084-05	9613-0084-06	9613-0084-06	9613-0084-07
33	1	O-ring, NBR .....	9613-99-3506	9611-99-3508	9611-99-3508	9611-99-3510
35	3	Washer.....	9611-99-3594	9611-99-3594	9611-99-3594	9611-99-3594
36	3	Nut .....	9611-99-0360	9611-99-0360	9611-99-0360	9611-99-0360
42	1	Spindle liner .....	9613-0335-01	9613-0090-01	9613-0090-01	9613-0090-01
43	2	Clamp .....	9613-0336-01	9613-0092-01	9613-0092-01	9613-0092-01
44	1	Lock .....	9613-0091-02	9613-0091-01	9613-0091-01	9613-0091-01
45	1	Guide ring, PTFE .....	9613-0084-14	9613-0084-15	9613-0084-15	9613-0084-21
48	1	Upper sealing element .....	9613-0064-02	9613-0188-02	9613-0188-02	9613-0713-01
54	1	Guide ring, PTFE .....	9613-0084-02	9613-0084-02	9613-0084-02	9613-0084-02
55	1	Upper plug .....	9613-0701-01	9613-0702-01	9613-0702-03	9613-0704-01

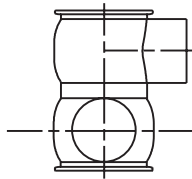
**Parts**

Pos.	Qty.	Denomination	PMO 2"	PMO 2½"	PMO 3"	4"
37	1	Intermediate piece plug set-up 12	9613-0191-21	9613-0192-13	9613-0192-13	9613-0193-17
50	1	Valve body 11-00	9613-0709-01	9613-0710-01	9613-0711-01	9613-0712-01
	1	Valve body 12-00	9613-0709-05	9613-0710-05	9613-0711-05	9613-0712-05
	1	Valve body 21-00	9613-0709-07	9613-0710-07	9613-0711-07	9613-0712-07
	1	Valve body 22-00	9613-0709-09	9613-0710-09	9613-0711-09	9613-0712-09
	1	Valve body 11-90	9613-0709-02	9613-0710-02	9613-0711-02	9613-0712-02
	1	Valve body 12-90	9613-0709-06	9613-0710-06	9613-0711-06	9613-0712-06
	1	Valve body 21-90	9613-0709-08	9613-0710-08	9613-0711-08	9613-0712-08
	1	Valve body 22-90	9613-0709-10	9613-0710-10	9613-0711-10	9613-0712-10
	1	Valve body 11-180	9613-0709-03	9613-0710-03	9613-0711-03	9613-0712-03
	1	Valve body 11-270	9613-0709-04	9613-0710-04	9613-0711-04	9613-0712-04

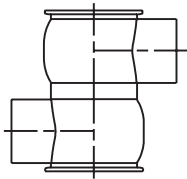
TYPE 11-00



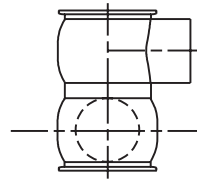
TYPE 11-90



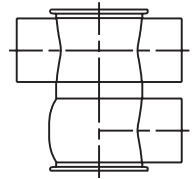
TYPE 11-180



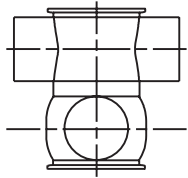
TYPE 11-270



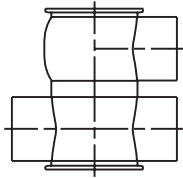
TYPE 12-00



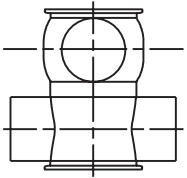
TYPE 12-90



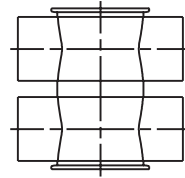
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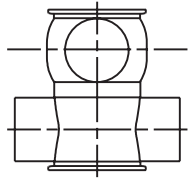
TYPE 21-90



TYPE 22-00



TYPE 22-90



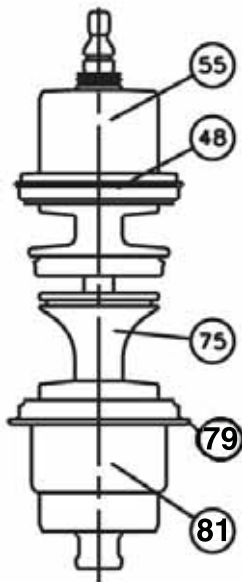
TD 449-014

**Parts**

Pos.	Qty.	Denomination	PMO 2"	PMO 2½"	PMO 3"	PMO 4"
61	2	Wingnut	9612-5580-01	9612-5580-01	9612-5580-01	9612-5580-01
64	2	Clamp without nut	9613-0216-01	9613-0217-01	9613-0217-01	9613-0218-01
75	1	Lower plug	9613-0705-01	9613-0706-01	9613-0707-01	9613-0708-01
79	1	Lower sealing element	9613-0241-02	9613-0243-02	9613-0243-02	9613-0715-01
80	1	Guide ring, PTFE	9613-0084-14	9613-0084-15	9613-0084-15	9613-0084-21
*81	1	Cover	9613-0490-06	9613-0490-07	9613-0490-07	9613-0490-16

\*User preference to install or not install.

**Plug set-up 12**



**Parts**

Pos.	Qty.	Denomination	PMO 2"	PMO 2½"	PMO 3"	4"
82	1	ThinkTop Complete (8-30VDC, 0-Solenoids)	←	9613-6031-05	→	→
82	1	ThinkTop Complete (8-30VDC, 1-Solenoid)	←	9613-6031-06	→	→
82	1	ThinkTop Complete (8-30VDC, 2-Solenoids)	←	9613-6031-07	→	→
82	1	ThinkTop Complete (8-30VDC, 3-Solenoids)	←	9613-6031-08	→	→
82	1	ThinkTop Complete (110VAC, 0-Solenoids)	←	9634-0686-50	→	→
82	1	ThinkTop Complete (110VAC, 1-Solenoid)	←	9634-0686-51	→	→
82	1	ThinkTop Complete (110VAC, 2-Solenoids)	←	9634-0686-52	→	→
82	1	ThinkTop Complete (110VAC, 3-Solenoids)	←	9634-0686-53	→	→
83	1	Magnet, ThinkTop	←	9612-5623-01	→	→
84	1	*Sensor (24VDC)	←	9613-6029-46	→	→
84	1	**Sensor (110VAC)	←	9613-6036-42	→	→
85	1	Nylon Plug (24VDC Sensors)	9613-0926-02	9613-0926-01	→	→
85	1	Nylon Plug (110VAC Sensors)	9613-6036-38	9613-6036-39	→	→
86	1	Shuttle Valve	←	9613-6018-14	→	→
87	1	Air fitting (yellow ring)	←	9613-6018-15	→	→
88	1	Air tubing (yellow)	←	9613-6018-16	→	→
90	1	Cable (ext. sensor, 24VDC)	←	8814-01290	→	→
90	1	Cable (ext. sensor, 110VAC)	←	9613-6036-43	→	→

Optional:

Pos	Qty.	Denomination	
89	1	Air Pilot Switch	9613-6018-13 →

\*Sensor Used: IFM IFB3007-APKG/M/V4A/US-102-DPO (3-wire, PNP, DC, N.C., Micro-disconnect)

\*\*Sensor Used: Turck B14-S12-RDZ32X-0.2M-SBV3T/S1023 (2-wire, PNP, AC, N.C., Micro-disconnect)



## Wear Parts

Pos.	Qty.	Denomination	PMO 2"	PMO 2½"	PMO 3"	PMO 4"
38	1	O-ring, EPDM	9611-99-3555	9611-99-3572	9611-99-3572	9611-99-3572
47	1	O-ring, EPDM	9611-99-3636	9611-99-3640	9611-99-3640	9611-99-3644
	1	O-ring, NBR	9611-99-3637	9611-99-3641	9611-99-3641	9611-99-3645
	1	O-ring, FPM	9611-99-3638	9611-99-3642	9611-99-3642	9611-99-3646
	1	O-ring, HNBR	9611-99-3639	9611-99-3643	9611-99-3643	9611-99-3647
49	1	Lip seal, EPDM	9613-0085-26	9613-0085-31	9613-0085-31	9613-0085-36
	1	Lip seal, NBR	9613-0085-46	9613-0085-47	9613-0085-47	9613-0085-37
	1	Lip seal, FPM	9613-0085-28	9613-0085-33	9613-0085-33	9613-0085-38
	1	Lip seal; HNBR	9613-0085-29	9613-0085-34	9613-0085-34	9613-0085-39
56	1	Seal ring, EPDM	9613-0951-09	9613-0951-12	9613-0951-12	9613-0953-19
	1	Seal ring, NBR	9613-0953-07	9613-0953-10	9613-0953-10	9613-0953-17
	1	Seal ring, FPM	9613-0951-08	9613-0951-11	9613-0951-11	9613-0953-20
	1	Seal ring; HNBR	9613-0951-07	9613-0951-10	9613-0951-10	9613-0953-18
57	1	Lip seal, EPDM	9613-0087-11	9613-0087-11	9613-0951-10	9613-0953-20
	1	Lip seal, NBR	9613-0087-18	9613-0087-18	9613-0087-18	9613-0087-18
	1	Lip seal, FPM	9613-0087-13	9613-0087-13	9613-0087-13	9613-0087-13
	1	Lip seal; HNBR	9613-0087-14	9613-0087-14	9613-0087-14	9613-0087-14
74	1	Seal ring; FPM	9613-0089-13	9613-0089-14	9613-0089-14	9613-0089-15
	1	Seal ring; NBR	9613-0089-07	9613-0089-10	9613-0089-10	9613-0089-16
	1	Seal ring; HNBR	9613-0089-08	9613-0089-11	9613-0089-11	9613-0089-17
	1	Seal ring; EPDM	9613-0089-09	9613-0089-12	9613-0089-12	9613-0089-18
76	1	O-ring, EPDM	9611-99-3636	9611-99-3640	9611-99-3640	9611-99-3644
	1	O-ring, NBR	9611-99-3637	9611-99-3641	9611-99-3641	9611-99-3645
	1	O-ring, FPM	9611-99-3638	9611-99-3642	9611-99-3642	9611-99-3646
	1	O-ring, HNBR	9611-99-3639	9611-99-3643	9611-99-3643	9611-99-3647
77	1	Lip seal, EPDM	9613-0085-26	9613-0085-31	9613-0085-31	9613-0085-36
	1	Lip seal, NBR	9613-0085-46	9613-0085-47	9613-0085-47	9613-0085-37
	1	Lip seal, FPM	9613-0085-28	9613-0085-33	9613-0085-33	9613-0085-38
	1	Lip seal; HNBR	9613-0085-29	9613-0085-34	9613-0085-34	9613-0085-39

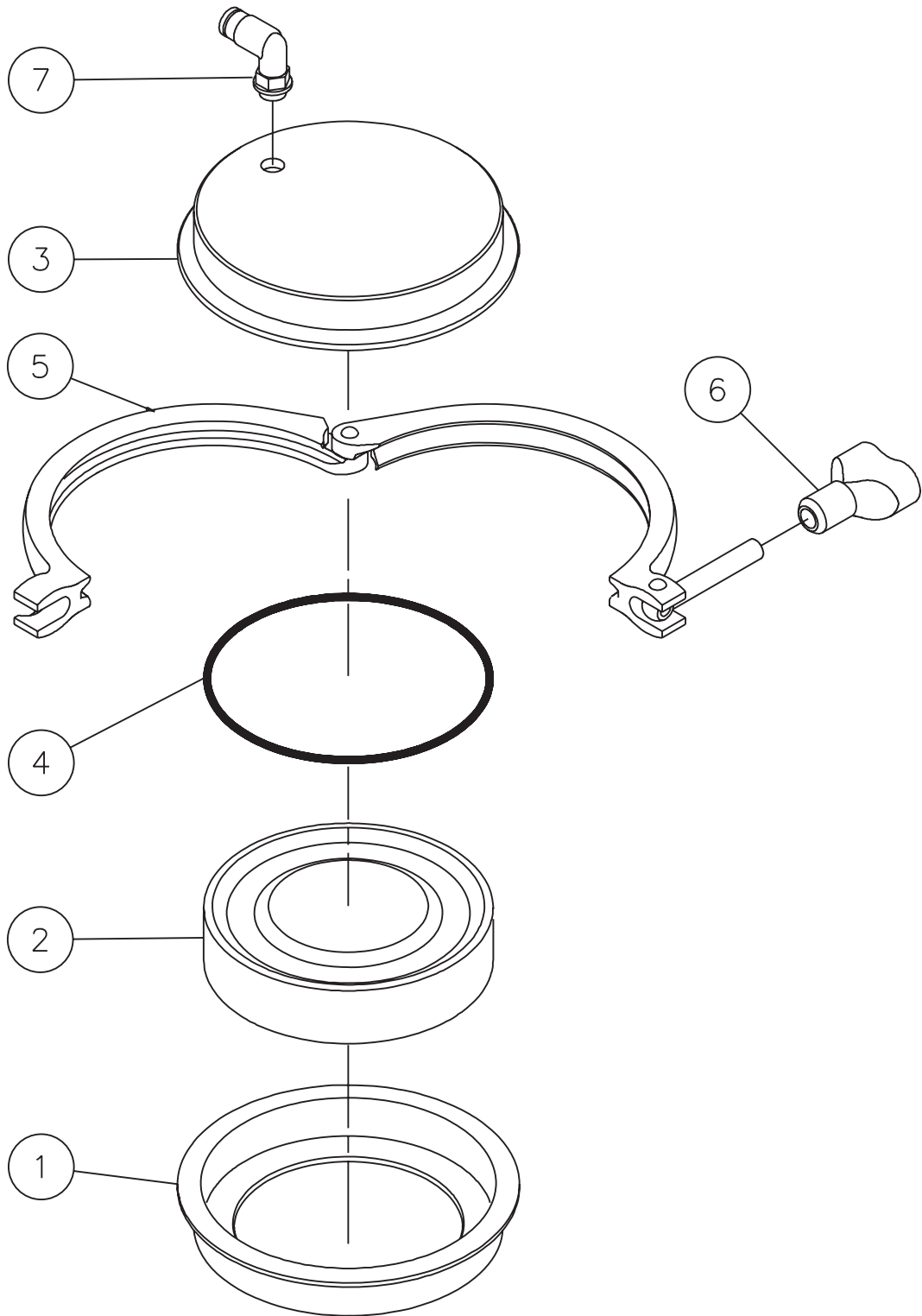
Plug Set-Up 12



**Service Kit for Product Wetted Parts**

Denomination	PMO 2"	PMO 2½"	
		PMO 3"	PMO 4"
EPDM	9611-92-6013	9611-92-6014	9611-92-6015
NBR	9011-92-6018	9611-92-6017	9611-92-6018
FPM	9611-92-6019	9611-92-6020	9611-92-6021
HNBR	9611-92-6022	9611-92-6023	9611-92-6024

**Axial Installation Tool**



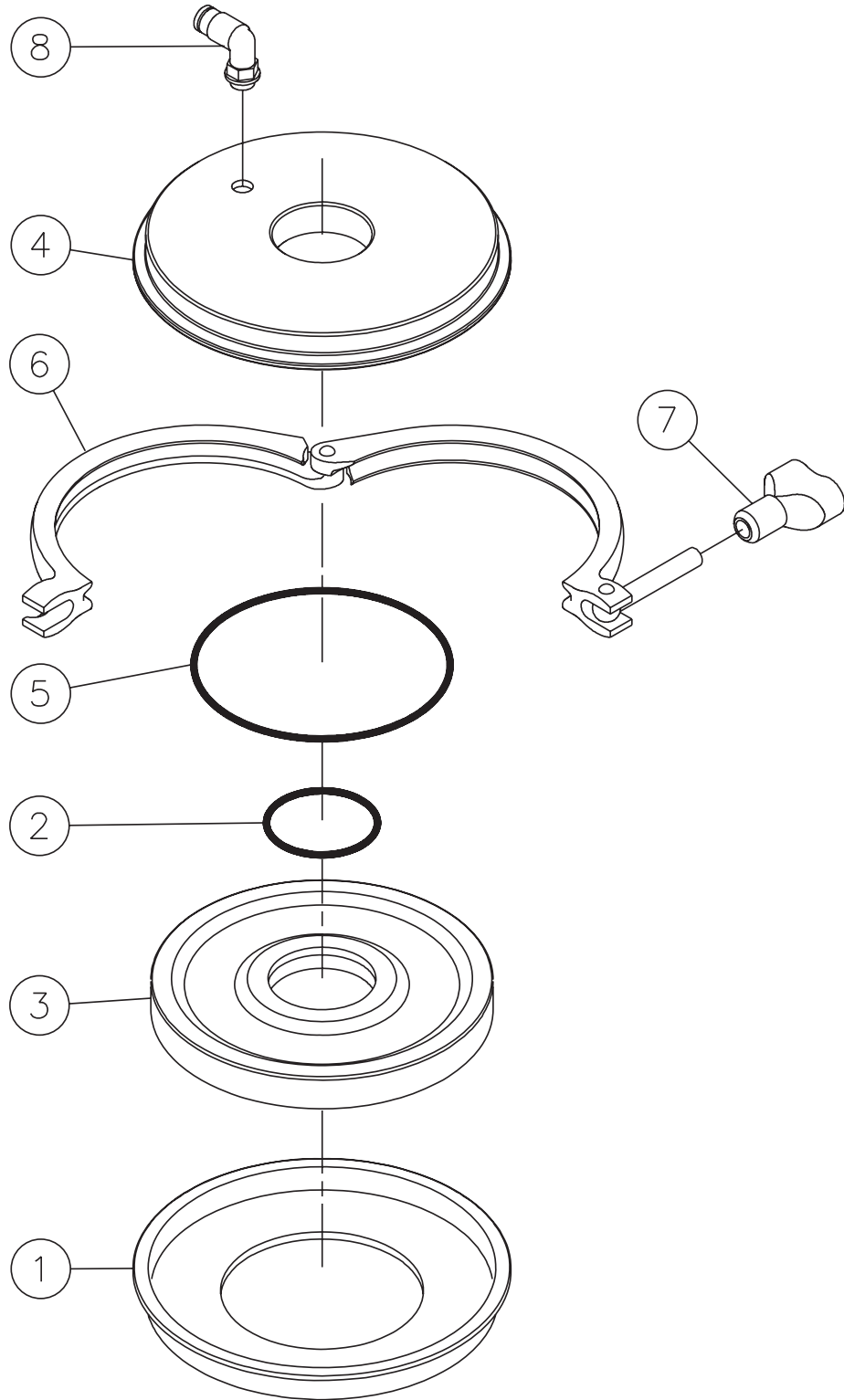
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Pos.	Qty.	Denomination	PMO 2"	PMO 2½" PMO 3"	PMO 4"
			9613-0505-02	9613-0505-03	9613-0505-07
1	1	Lower part	9613-0506-01	9613-0509-01	9613-0722-01
2	1	Piston	9613-0508-01	9613-0511-01	9613-0721-01
3	1	Upper part	9613-0503-01	9613-0510-01	9613-0720-01
4	1	O-ring, NBR	9611-99-3703	9611-99-3349	9611-99-4113
5	1	Clamp	9613-0216-01	9613-0217-01	9613-0218-01
6	1	Wingnut	9612-5580-01	9612-5580-01	9612-5580-01
7	1	Air fitting	9611-99-1988	9611-99-1988	9611-99-1988

**Radial Installation Tool**



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Pos.	Qty.	Denomination	PMO 2"	PMO 2½" PMO 3"	PMO 4"
			9613-0535-02	9613-0535-03	9613-0535-07
1	1	Lower part	9613-0532-01	9613-0534-01	9613-0719-01
2	1	O-ring, NBR	9611-99-3705	9611-99-3705	9611-99-3705
3	1	Piston	9613-0531-01	9613-0533-01	3613-0718-01
4	1	Upper part	9611-0530-01	9613-0530-01	9613-0717-01
5	1	O-ring, NBR	9611-99-3349	9611-99-3349	9611-99-4113
6	1	Clamp	9613-0217-01	9613-0217-01	9613-0218-01
7	1	Wingnut	3612-5580-01	9612-5580-01	9612-5580-01
8	1	Air fitting	9611-99-1988	9611-99-1988	9611-99-1988



## Instructions/Information from Earlier Model Valves

The following instruction manual pages/sections refer to instructions and information furnished with valves from period 5/1/03 to 5/1/04.

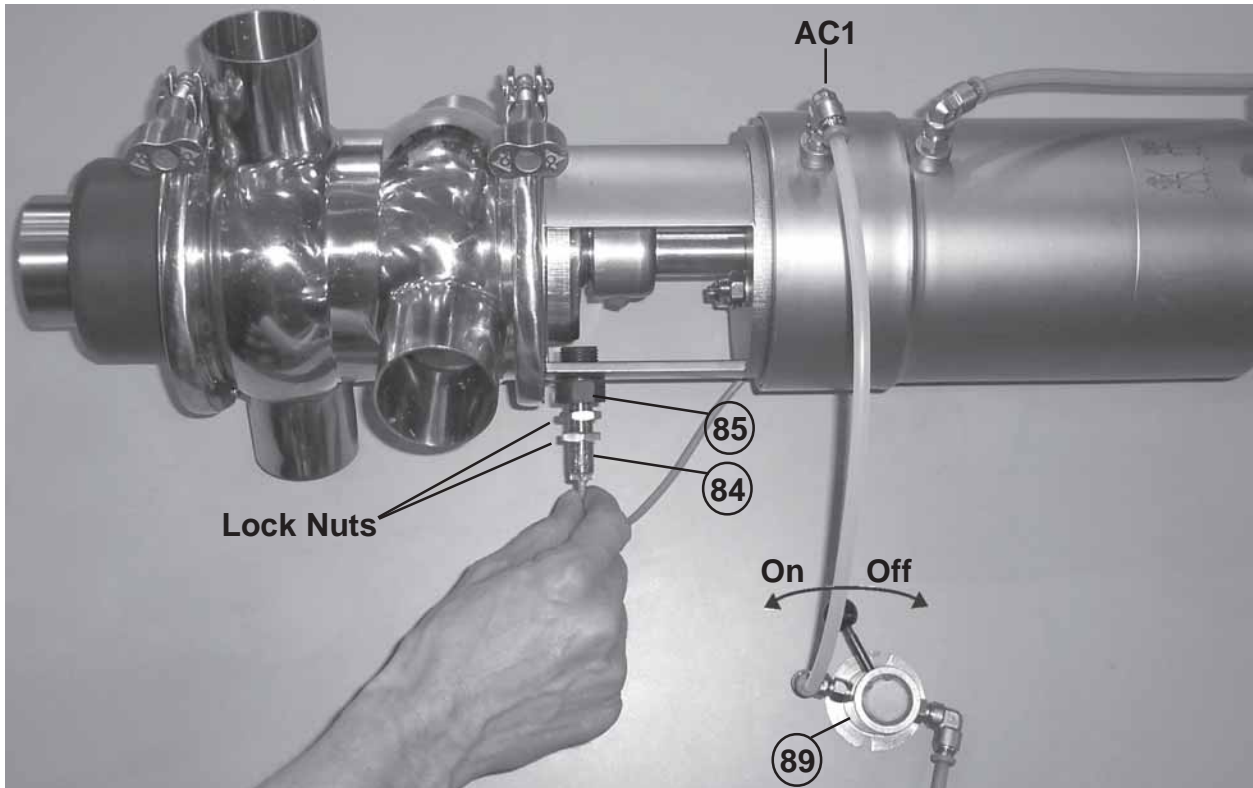


**Uniq-PMO Valve**

- See 1/1/06 Revision, Page 41, for current -

### Adjustments

Upper Valve Seat External Sensor  
(Position Data Existing on *ThinkTop*)



The following instructions should be made while the valve is hot from CIP cleaning. (worst case)

1. Attached a manual air line to actuator air fitting AC1 using a 3-way air pilot switch (pos. 89).
2. Turn the air pilot switch to ON (Open).
  - Upper seat lift activated.
- 2a. loosen sensor lock nuts.
3. Turn the sensor (pos. 84) clockwise to bottom of plug (85) or until the sensor LED turns on.
  - Signal goes from low (off) to high (on).
4. Turn the air pilot switch to OFF (Closed), and to ON (Open) several times to operate the upper seat lift function.
  - Sensor LED goes on (upper seat lift ACTIVATED) and off (upper seat lift DEACTIVATED).
5. Tighten the sensor lock nuts lightly by hand if the adjustment was successful.
6. Repeat step 4 when the valve is cold and re-adjust (with valve hot) if necessary.

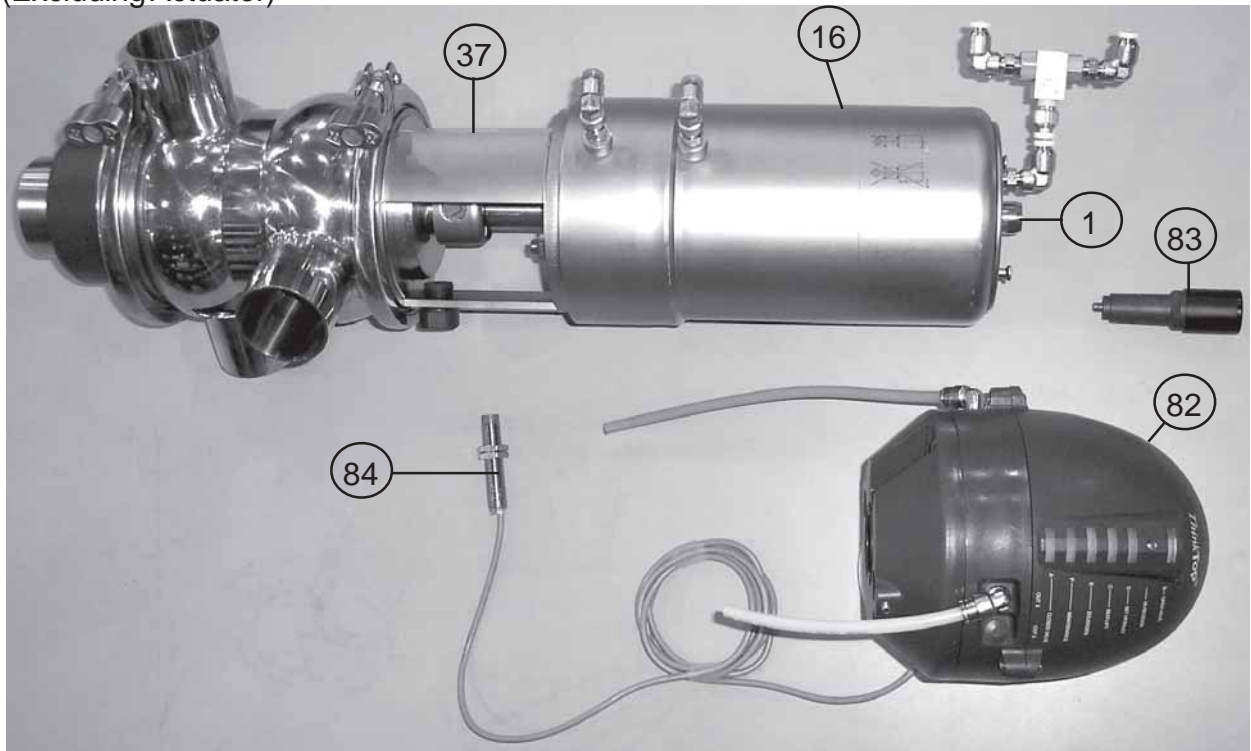


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- See 1/1/06 Revision, Page 44, for current -

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### Dis-Assemble Valve (Excluding Actuator)



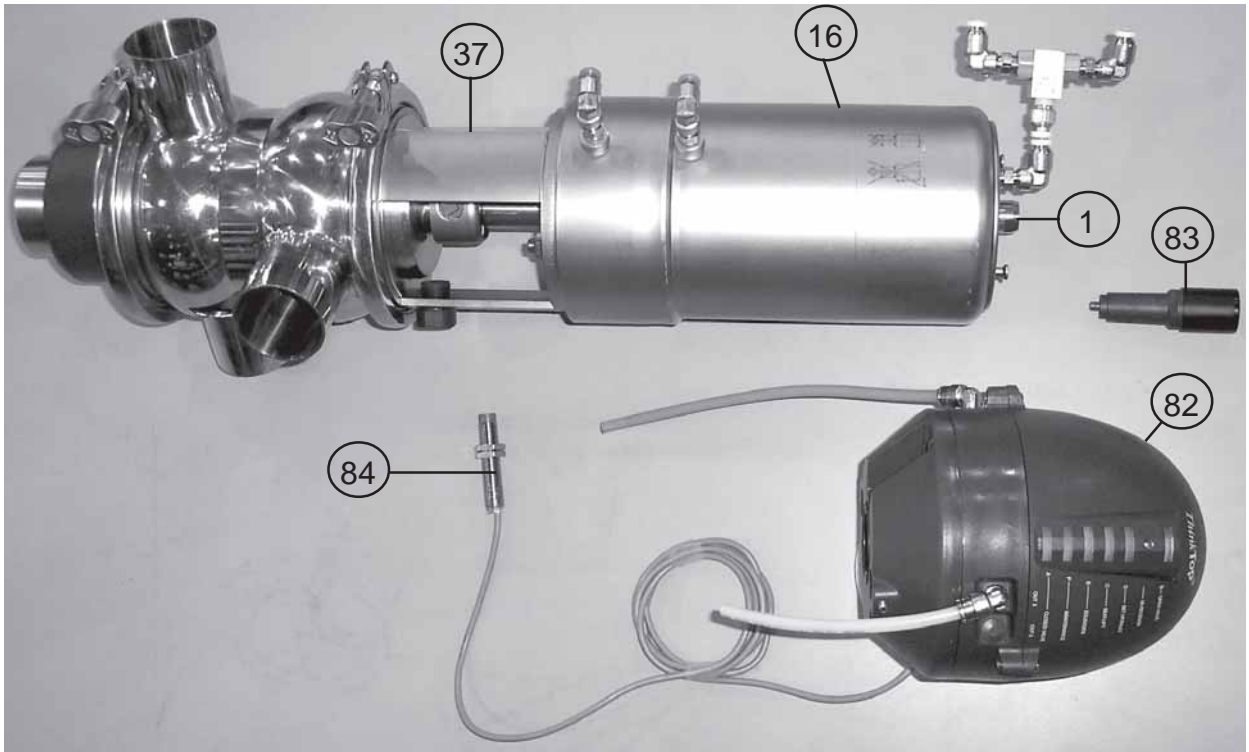
1. Remove *ThinkTop* (82).
2. Turn magnet (83) counter clockwise by hand and remove from upper actuator stem (1).
3. Turn sensor (84) counter clockwise and remove.

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- See 1/1/06 Revision, Page 57, for current -

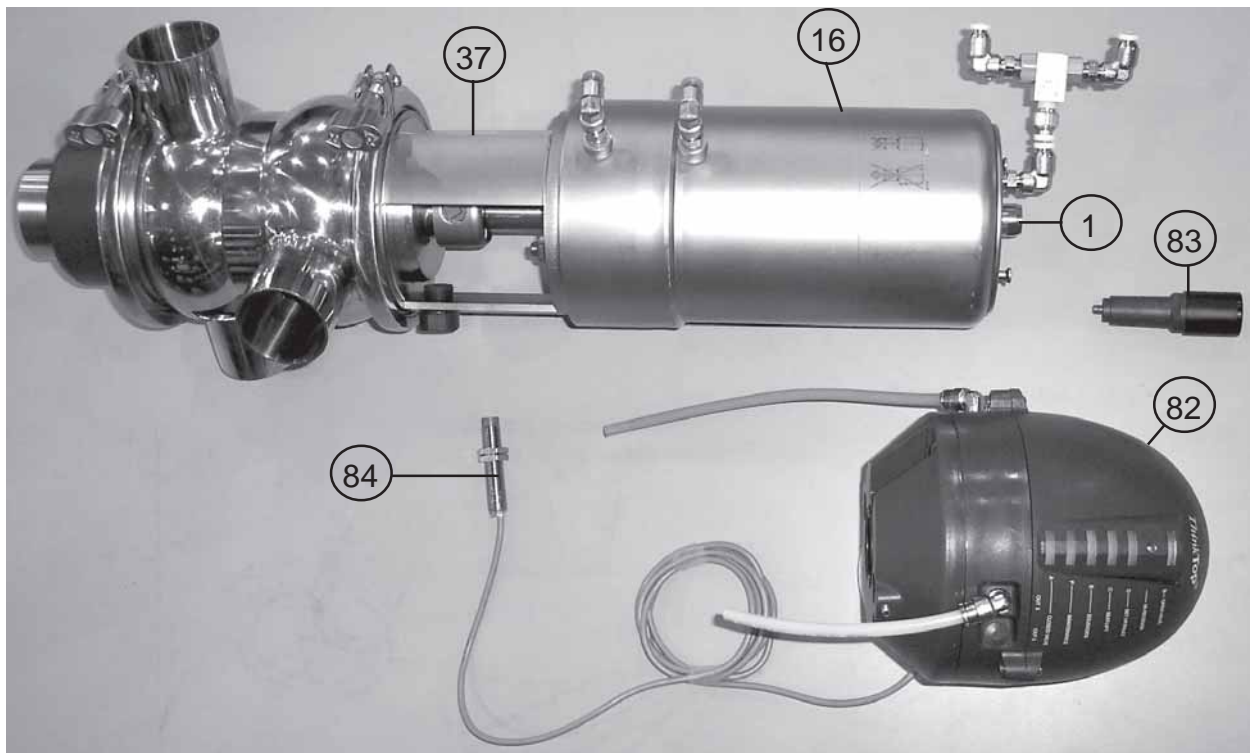
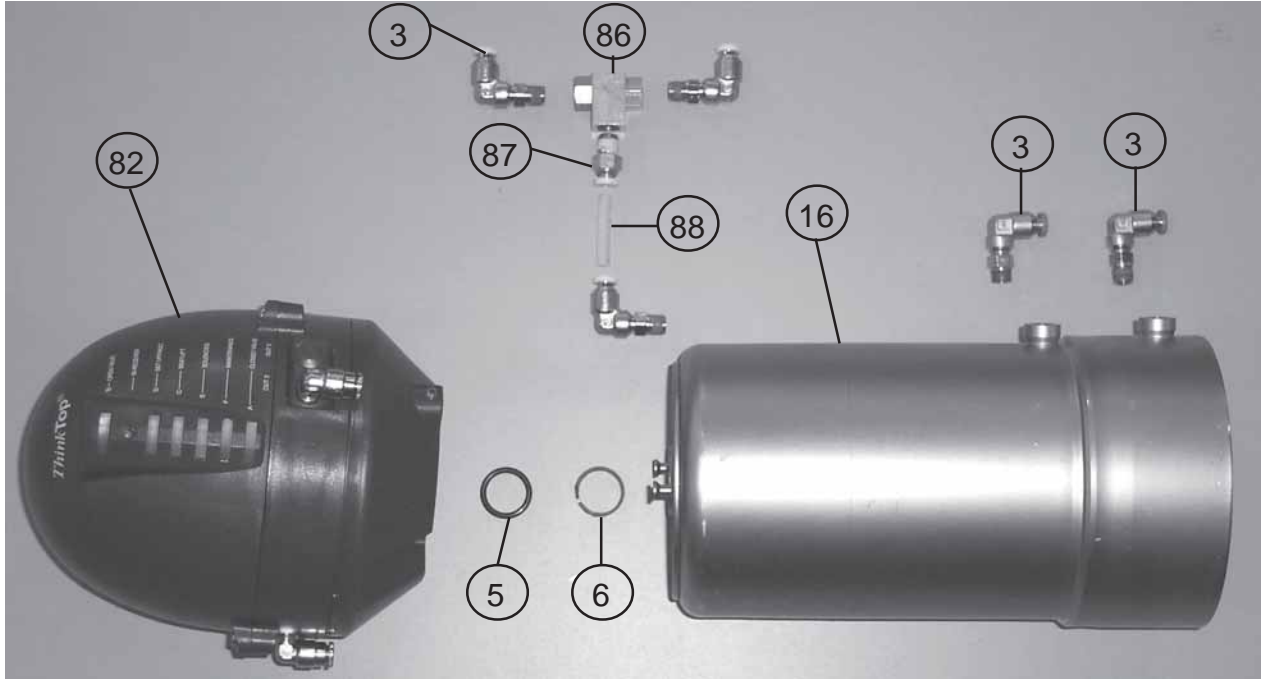
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30. Supply compressed air to AC2 (Blue Ring).
31. Fit the actuator together with the internal valve parts into the valve body (50).
32. Fit and tighten upper clamp (64).
33. Release compressed air.

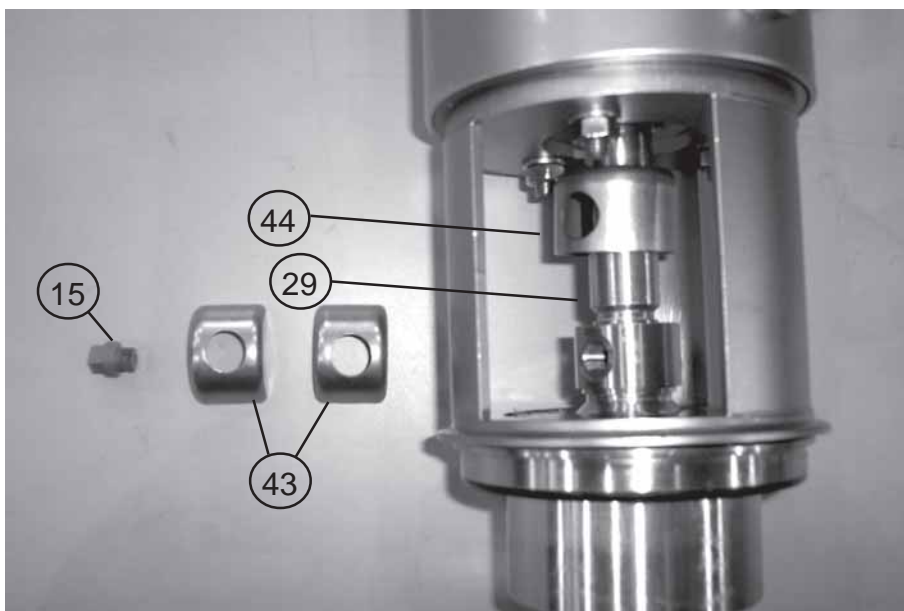
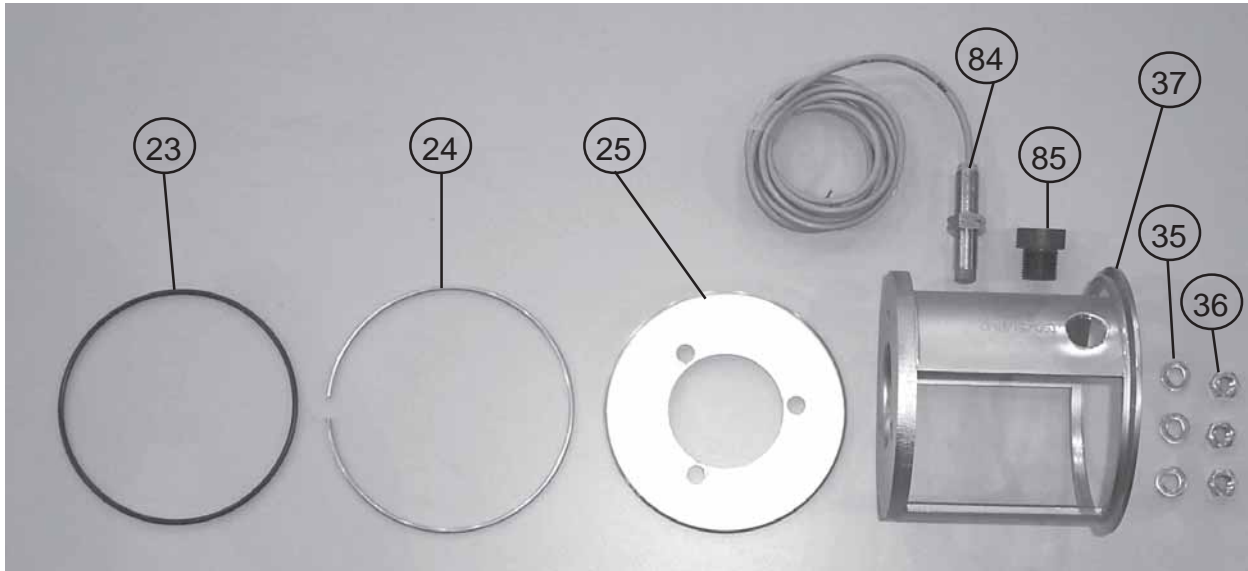


34. Turn sensor (84) clockwise into int-piece (37) and tighten by hand.
35. Turn magnet (83) clockwise into upper actuator stem (1) and tighten by hand.
36. Install *ThinkTop* (82) to cylinder (16).

- See 1/1/06 Revision, Page 62, for current -



- See 1/1/06 Revision, Page 65, for current -



**- See 1/1/06 Revision, Page 72, for current -**

**Parts**

<b>Pos.</b>	<b>Qty.</b>	<b>Denomination</b>	<b>PMO 2"</b>	<b>PMO 2½"</b>	<b>PMO 3"</b>	<b>PMO 4"</b>
82	1	ThinkTop Complete (8-30VDC, 2-Solenoids)	←	9612-5789-53	→	→
83	1	Magnet, ThinkTop	←	9612-5623-01	→	→
84	1	*Sensor	←	9611-9943-97	→	→
85	1	Nylon Plug		9613-0926-02	9613-0926-01	→
86	1	Shuttle Valve	←	9613-6018-14	→	→
87	1	Air fitting (yellow ring)	←	9613-6018-15	→	→
88	1	Air tubing (yellow)	←	9613-6018-16	→	→

Optional:

<b>Pos</b>	<b>Qty.</b>	<b>Denomination</b>	
89	1	Air Pilot Switch	9613-6018-13 →

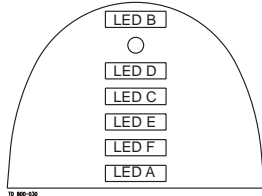
\*Sensor Used: ABB SIN4-M12N-V2-PK (PNP KOMBI - 2M PVC CABLE)

**- IR keypad no longer available for PMO models -**

- Notes: ○ - Scroll across, no change  
 \_\_\_\_\_ - Notes Requires Key Function  
 - - - - - - Notes Automatic Progress as Indicated

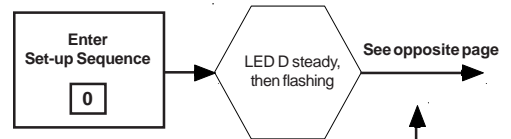
- General: 1. Flashing IND means no value set.  
 Steady IND means value set as shown.  
 2. Default is: Step 2, Type 0 (+/- 5 mm)  
 Step 3-8 disabled  
 3. Lamp Status Shown in [ ]

ThinkTop® Visual Indications

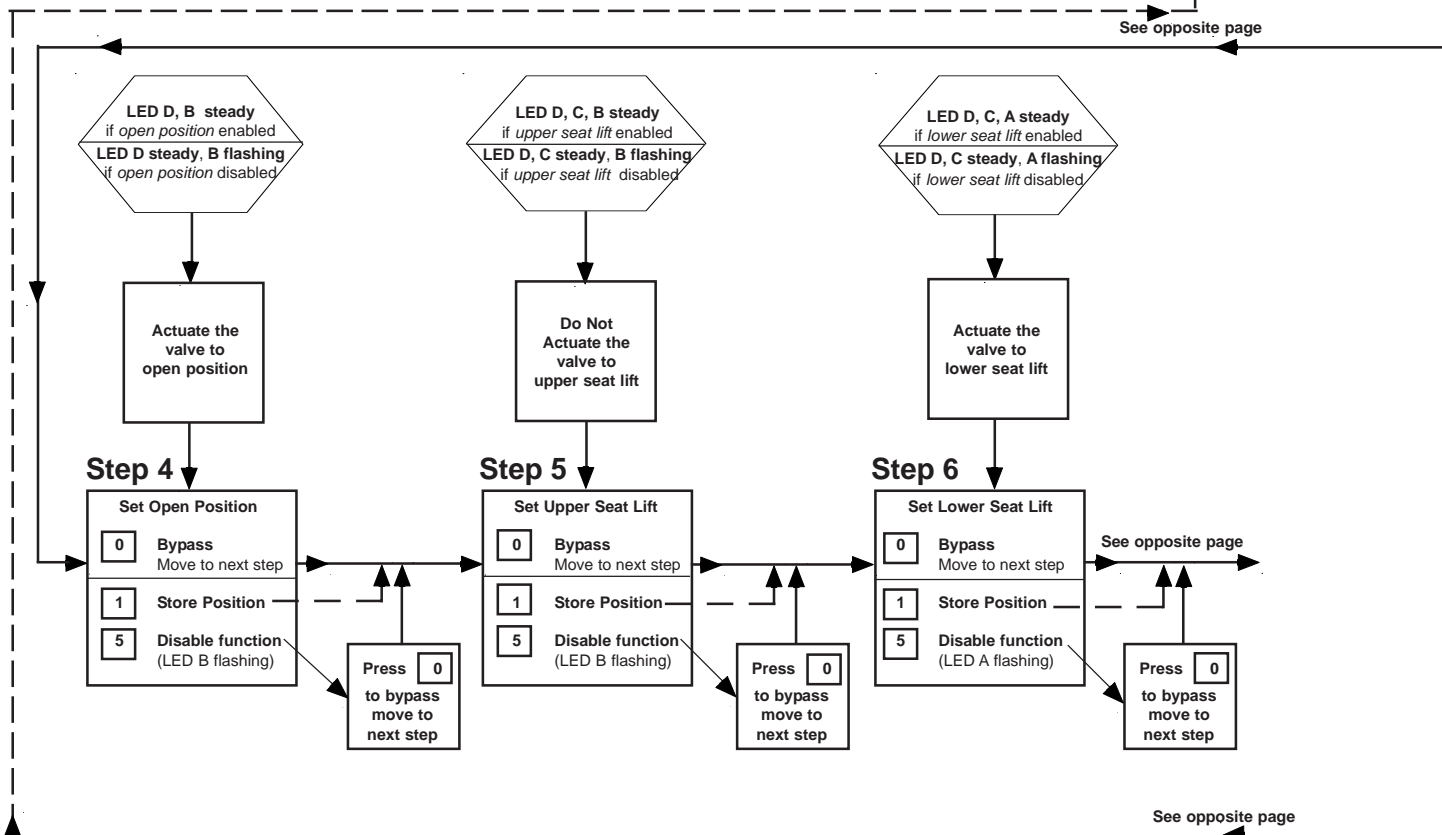


LED Indications

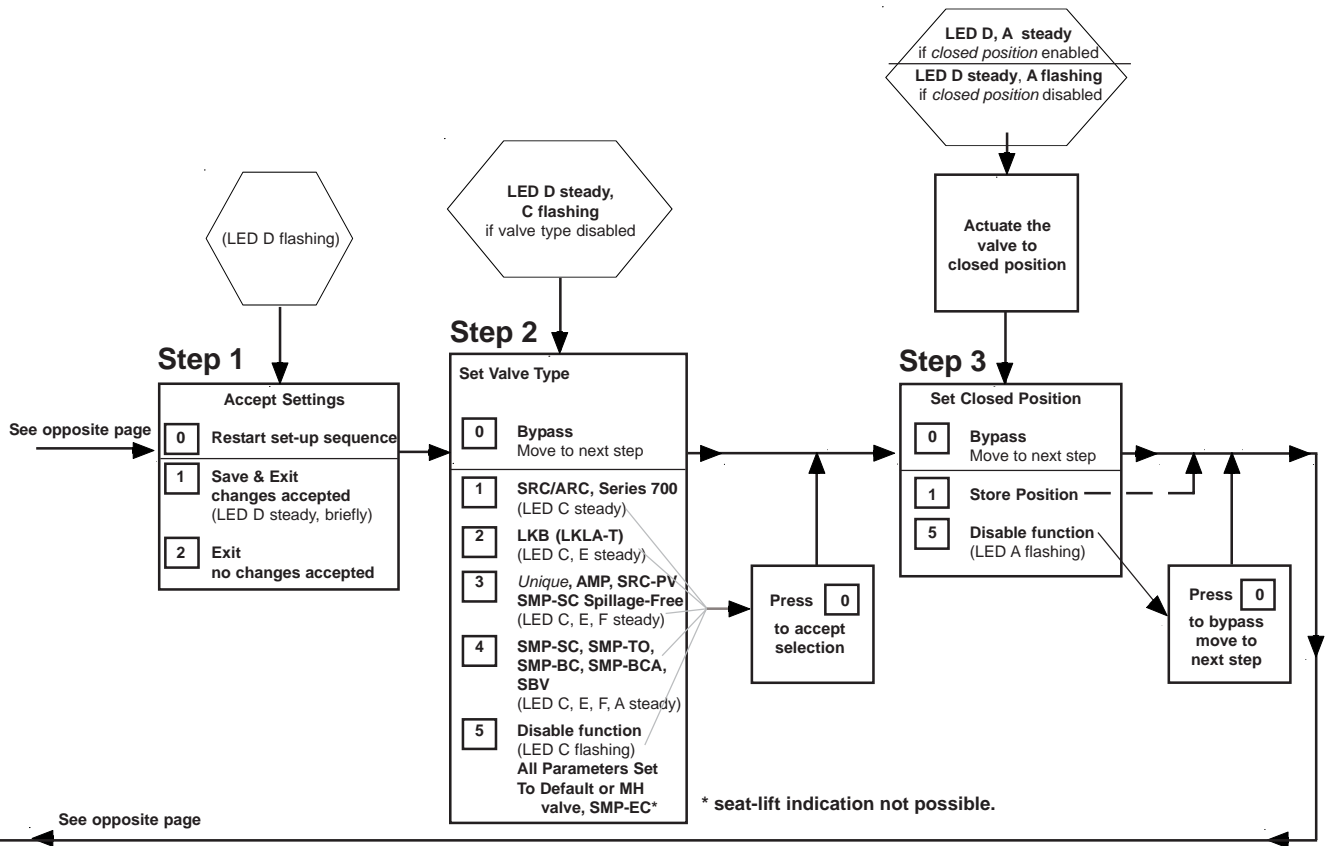
- "Open valve" (Yellow)
- IR-Receiver
- "Setup/Internal fault" (Red)
- "Seat-lift 1/2" (Yellow)
- "Solenoid valves" (Green)
- "Maintenance" (Orange)
- "Closed valve" (Yellow)



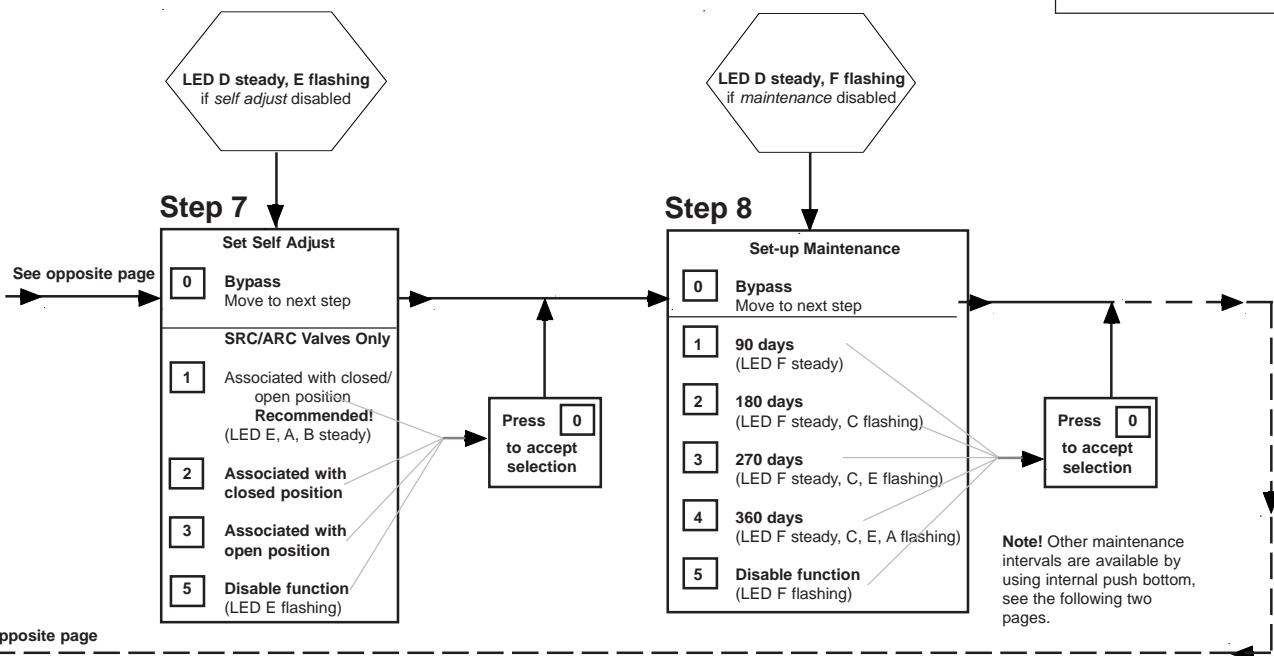
4. [D] IND active during set-up.
  - Flashing in step 1,
  - Steady in all other steps.
 or during operations, error condition
  - Steady showing hardware fault
  - Flashing showing software fault
5. Timeout: A 60 second time-out is started as soon as any button(s) are released. If no button is pressed during the time-out time, go to normal condition (cancel & exit).
6. SRC/ARC valves: Self-adjust (step 7) must be activated. If you choose NOT to use the self-adjustment programme, Alfa Laval recommends to use the valve type 4 (step 2), instead of type 1 (bigger tolerances).



- IR keypad no longer available for PMO models -



Note: Remote distance keypad = ThinkTop® 0-300mm.







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