

# Maintenance Manual

Advantage® Actuator



**ITT**







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# 1 Introduction and Safety

## 1.1 Safety message levels

### Definitions

Safety message level	Indication
 <b>DANGER:</b>	A hazardous situation which, if not avoided, will result in death or serious injury
 <b>WARNING:</b>	A hazardous situation which, if not avoided, could result in death or serious injury
 <b>CAUTION:</b>	A hazardous situation which, if not avoided, could result in minor or moderate injury
 <b>ELECTRICAL HAZARD:</b>	The possibility of electrical risks if instructions are not followed in a proper manner
<b>NOTICE:</b>	<ul style="list-style-type: none"> <li>• A potential situation which, if not avoided, could result in an undesirable result or state</li> <li>• A practice not related to personal injury</li> </ul>

## 1.2 User health and safety

### General precautions

This product is designed and manufactured using good workmanship and materials, and meets all applicable industry standards. This product should be used only as recommended by ITT.



### **WARNING:**

- Misapplication of the valve can result in injury or property damage. Select valves and valve components of the proper materials and make sure that they are consistent with your specific performance requirements. Incorrect application of this product includes but is not limited to:
  - Exceeding the pressure or temperature rating
  - Failing to maintain this product according to the recommendations
  - Using this product to contain or control media that is incompatible with the materials of construction
  - Proper containment or protection from hazardous media must be provided by the end user to protect employees and the environment from valve discharge.

### Qualifications and training

The personnel responsible for the assembly, operation, inspection, and maintenance of the valve must be appropriately qualified. The operating company must do the following tasks:

- Define the responsibilities and competency of all personnel handling this equipment.
- Provide instruction and training.
- Ensure that the contents of the operating instructions have been fully understood by the personnel.

Instruction and training can be carried out by either ITT or the reseller of the valve by order of the operating company



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**WARNING:**

California Proposition 65 Cancer <http://www.P65Warnings.ca.gov>. Plastics in product contain Glass Wool Fibers, known to the State of California to cause cancer. Wash hands after handling.

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**Non-compliance risks**

Failure to comply with all safety precautions can result in the following conditions:

- Death or serious injury due to electrical, mechanical, and chemical influences
- Environmental damage due to the leakage of dangerous materials
- Product damage
- Property damage
- Loss of all claims for damages

**Operational safety precautions**

Be aware of these safety precautions when operating this product:

- Do not remove the contact guard for moving parts when the product is in operation. Never operate the product without the contact guard installed.
- Do not hang items from the product. Any accessories must be firmly or permanently attached.
- Do not use the product as a step or hand hold.
- Do not paint over the identification tag, warnings, notices, or other identification marks associated with the product.

**Maintenance safety precautions**

Be aware of these safety precautions when performing maintenance on this product:

- You must decontaminate the product if it has been exposed to harmful substances such as caustic chemicals.

**Use of unauthorized parts**

Reconstruction or modification of the product is only permissible after consultation with ITT. Genuine spare parts and accessories authorized by ITT serve to maintain safety. Use of non-genuine ITT parts can annul liability of the manufacturer for the consequences. ITT parts are not to be used in conjunction with products not supplied by ITT as this improper use can annul all liability for the consequences.

**Unacceptable modes of operation**

The operational reliability of this product is only guaranteed when it is used as designated. The operating limits given on the identification tag and in the data sheet may not be exceeded under any circumstances. If the identification tag is missing or worn, contact ITT for specific instructions.

# 2 Product Description

## 2.1 Actuator identification

### Design Overview

The actuator is a spring or double acting pneumatic actuator.

To determine if you have an Advantage actuator or an Advantage actuator 2.1 locate the spindle compressor connection and determine if you have a pin connection or modular compressor design.

### Model number

The actuator model number is located on the identification tag. The model number is a four digit number defining the actuator as follows.

**Table 1: Actuator**

Code	Description
A	Advantage actuator

**Table 2: Mode of operation**

Code	Description
1	Fail open (spring to open, air to close) (direct acting)
2	Fail close (spring to close, air to open) (reverse acting)
3	Double acting (air to open, air to close)

**Table 3: Actuator series**

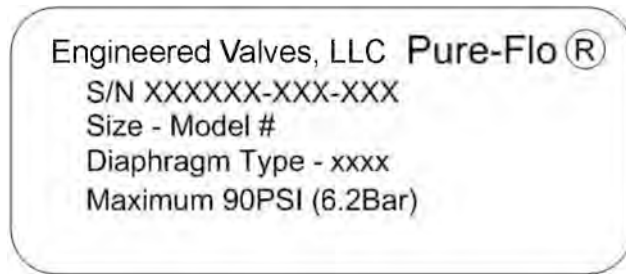
Code*1	Actuator series*2
03, 04	3
05, 06	5
08, 09	8
16, 17	16
32, 33, 34, 35	33
47, 48	47

\*1 For fail close actuators, codes are specific spring combinations.

\*2 Series number equates to diaphragm effective area.

**Table 4: Examples**

Model number	Description
A347	Advantage actuator, double acting, series 47
A232	Advantage actuator, fail close, series 33 with a 32 spring set

**Identification tag**

Line	Description
1	Valve serial number
2	Valve size and model number
3	Valve diaphragm type
4	Maximum recommended actuation pressure

**2.2 Bonnet description****Non-Sealed bonnet**

The non-sealed bonnet has a weep hole that indicates a diaphragm failure by allowing process fluid that accumulates in the bonnet to pass through the hole.

**2.3 Valve diaphragm identification****Diaphragm tab codes**

All diaphragm materials and physical properties are batch traceable via permanent codes molded into the diaphragm tabs. The molding date, grade of diaphragm, and size provide traceability to original batch records.



1. Date code
2. Supplier code

**Figure 1: Elastomer diaphragm front**



1. Valve size
2. Grade of diaphragm

**Figure 2: Elastomer diaphragm back**



1. Material code
2. Date code

**Figure 3: PTFE diaphragm**



## 3 Maintenance

### 3.1 Precautions



#### WARNING:

- All procedures must be performed by qualified personnel.
- When the process fluid is hazardous, thermal (hot or cold), or corrosive, take extra precautions. Employ the appropriate safety devices and be prepared to control a process media leak.
- O-ring failure on the upper cover of a fail open or double acting actuator can pressurize a switch package, if present. This may result in catastrophic failure of the switch package, causing the switch package cover to be released at high velocity. O-ring failure can be caused by:
  - Damage to the o-ring
  - O-ring material degrading
  - O-ring wear over time
- Always wear protective clothing and equipment to safeguard the eyes, face, hands, skin, and lungs from the fluid in the line.



#### CAUTION:

- Disconnect electrical, pneumatic, and hydraulic power before servicing actuator or automation components.

### 3.2 Inspection

Inspection area	What to look for	Action if problem is found
External valve parts	Excessive wear or corrosion	<ul style="list-style-type: none"> <li>• Replace the affected parts</li> <li>• Contact ITT to obtain replacement parts or for specific instructions</li> </ul>
Non sealed bonnet	Fluid weeping from the plug	Replace the valve diaphragm
Actuator's bonnet weep hole and air ports	Air pressure	Replace the o-rings
Topworks	Spindle binding, excessive noise, or dried lubricant	
Diaphragm and valve body	Leakage between the diaphragm and valve body	Tighten the bonnet fasteners

For more information, see:

- [3.5 Replace the valve diaphragm on page 9](#)
- [3.7 Replace the spindle o-rings on page 10](#)
- [3.3 Tighten the bonnet fasteners on page 8](#)

## 3.3 Tighten the bonnet fasteners



### CAUTION:

Do not tighten fasteners while the system is pressurized or at elevated temperatures (greater than 38°C | 100°F).

1. Depressurize the system.
2. Use regulated air pressure to position diaphragm so that valve is slightly open.  
You may need to use air pressure to actuate the valve.
3. Tighten the bonnet fasteners in a crisscross pattern.  
For more information, see [3.3.1 Fastener torque table for valve body to topworks on page 8](#).
4. Make multiple crisscross passes to build up torque to the final table value. Make additional crisscross passes using final table values to evenly tighten each fastener to within 5% of torque value.
5. Retighten the bonnet fasteners as noted above at ambient conditions after the system has cycled through operating pressure and temperature.
6. Monitor the valve for leakage:

If leakage ...	Then ...
Occurs at the body/bonnet flange sealing area	Depressurize the system and retighten the bonnet fasteners as noted above.
Continues	Depressurize the system and retighten the bonnet fasteners as noted above. (maximum 3rd re-torque)
Continues	Replace the valve diaphragm.

For more information, see [3.5 Replace the valve diaphragm on page 9](#).

### 3.3.1 Fastener torque table for valve body to topworks

Values given are for lubricated fasteners.

Valve size		Bolt size		PTFE diaphragm		Elastomer diaphragm	
DN	Inch	Metric	Imperial	N-m	in-lb	N-m	in-lb
Bio-Tek (8, 10, 15)	Bio-Tek (1/4, 3/8, 1/2")	M4	#6	2.3-2.8	20-25	2.3-2.8	20-25
15	1/2"	M6	1/4"	2.8-6.8	25-60	2.3-4.5	20-40
20	3/4"	M6	1/4"	5.7-9.1	50-65	2.3-5.7	20-50
25	1"	M8	5/16"	7.4-11.3	65-90	5.1-7.9	45-70
40	1 1/2"	M10	3/8"	23-25	200-225	8.5-14.7	75-130
50	2"	M12	7/16"	25-31	225-275	11-20	100-180
80	3"	M16	5/8"	85-113	750-1000	34-48	300-420
100	4"	M12	1/2"	61-83	540-600	22-26	190-230

## 3.4 Disassemble the valve

1. Remove all line pressure.
2. Do you have a switch package?
  - If yes: Proceed to step 3.
  - If no: Proceed to step 5.
3. If the actuator mode of operation is fail open or fail close, then load the actuator with air.

If the actuator mode of operation is ...	Then ...
Fail open	Load the actuator with sufficient air to partially close the valve.

4. Remove the bonnet fasteners.
5. Lift the topworks assembly from the valve body.
6. If the actuator mode of operation is fail open, then remove pressure load from the actuator.

### 3.5 Replace the valve diaphragm

1. Disassemble the valve.  
For more information, see [3.4 Disassemble the valve on page 8](#).
2. Unscrew the diaphragm from the compressor by turning the diaphragm counterclockwise. The replacement diaphragm should be identical in size and grade to the original diaphragm.
3. Inspect the valve compressor pin for excessive wear. Replace the pin or compressor if excessive wear or axial pin movement is found.
4. Rotate the diaphragm until hard stop or heavy resistance is achieved and additional force does not significantly rotate the diaphragm into the compressor.



5. If replacing a PTFE diaphragm, re-invert the diaphragm.



6. If the actuator mode of operation is fail open or fail close, select one of these steps.

If the actuator mode of operation is ...	Then ...
Fail open	Reduce the air pressure until the back of the diaphragm is flat against the bonnet.
Fail close	1. Connect the air line to the lower air cover.

7. For more information, see [3.3 Tighten the bonnet fasteners on page 8](#).
8. If the actuator mode of operation is fail open, then release the air, allowing the valve to open.
9. If there is a travel (closing) stop, then reset it to ensure proper closure.  
For more information, see [3.6 Adjust the travel \(closing\) stop on page 10](#).

## 3.6 Adjust the travel (closing) stop

The travel stop is designed to prevent overloading of the diaphragm, thus prolonging diaphragm life. Travel stops are factory set and do not require routine adjustment. However, travel stop adjustment is recommended when replacing a valve diaphragm.

A travel stop is standard on series 47 actuators, optional on series 3, 5, 8, and 16 actuators.

1. Release the air pressure in the actuator covers.
2. Remove the clear plastic cap or switch package, if equipped.
3. Loosen the jam nuts and back off one turn.
4. If the actuator is a double acting or fail open actuator, then apply enough pressure in the upper cover to close the valve.
5. For all modes of operation, turn the lower nut clockwise while preventing the adjusting bushing from rotating until the valve begins to leak.
6. Turn the lower nut counterclockwise while continuing to prevent the adjusting bushing from rotating until the valve stops leaking.
7. Tighten the jam nuts together.
8. Replace the clear plastic cap or switch package, if equipped.

## 3.7 Replace the spindle o-rings

1. Disconnect the air lines.
2. Remove any control packages.
3. Disassemble the valve.  
For more information, see [Disassemble the valve](#) in this manual.
4. Disassemble the actuator.  
For more information, see [Replace the actuator diaphragm and spring for proper mode of operation \(fail open, fail close, or double acting\)](#) in this manual.
5. Withdraw the valve diaphragm, compressor, and spindle assembly from the bonnet.
6. Replace the o-rings and lubricate the new o-rings.  
For more information, see [Lubrication requirements](#) in this manual.
7. Replace the valve diaphragm, compressor, and spindle assembly on the bonnet. Care must be used on the Bio-Tek to align the compressor T-slot with molded tabs in lower cover.
8. Reassemble the actuator.  
For more information, see [Replace the actuator diaphragm and spring for proper mode of operation \(fail open, fail close, or double acting\)](#) in this manual.
9. Reassemble the valve.
10. Reconnect the air lines.
11. If the actuator mode of operation is fail open or double acting, then follow the steps below:
  - a) Examine the actuator upper cover for leakage past the indicating spindle o-ring seal.
  - b) If leakage is present, then replace the spindle o-rings.

## 3.8 Lubrication requirements

### Lubrication schedule

Remove residual grease prior to re-lubrication. Lubricate the spindle, o-rings, and mating surfaces whenever the topworks is disassembled.

For the Series 47 unit, apply Never-Seez on the adjusting bushing/spindle threaded joint and on the travel stop nuts/adjusting bushing threaded joint.

### Acceptable lubricants

Brand	Lubricant type
Chevron	

## 3.9 Replace the actuator diaphragm and spring for fail open actuator

1. If present, remove the switch package.
2. Disconnect the air lines.
3. ITT recommends that the following steps be performed on a bench with the body removed from the actuator.
  - a) Disassemble the valve.  
For more information, see Disassemble the valve in this manual.
  - b) Unscrew the diaphragm from the compressor by turning it counterclockwise.
4. If you have a series 47 actuator, then remove the clear plastic cap, travel stop nuts and roller bearing (races).
5. Remove the actuator fasteners and lift off the top cover.
6. Remove the actuator diaphragm, spring, and actuator plates.

If the actuator series is ...	Then remove the ...
33	Extension spindle and both nuts (under load due to spring force).
47	Adjusting bushing and spindle nut (under load due to spring force).

7. Install the new actuator diaphragm (top hat up).
8. Install the springs or spring pack.

If the springs ...	Then install ...
Need to be replaced	New springs or spring pack
Do not need to be replaced	Old springs or spring pack

9. Replace the actuator plates.

If the actuator series is ...	Then ...
33	Prepare the spindle nut surface with Loctite 7649 Primer N, apply Blue Loctite #242 on the spindle nut and replace the extension spindle and both nuts (under load due to spring force).
47	Replace the adjusting bushing and spindle nut (under load due to spring force). Set the adjusting bushing at the correct location (4.06" (10.31 cm) from top of the spindle nut to bottom of adjusting bushing). See Advantage actuator series 47 parts.

10. Replace the upper cover.

11. If you have a series 47 actuator, then replace the clear plastic cap, travel stop nuts and roller bearing (races).
12. Tighten the actuator cover to cover fasteners.  
For more information, see Tighten the actuator cover to cover fasteners in this manual.

## 3.10 Replace the actuator diaphragm and spring for fail close actuator

The series 33 actuator has a new and old version, which vary in the spring area. In the old version, the springs are contained within the adjusting bushing. In the new version, the springs are contained within a spring pack assembly. Once the actuator cover is removed, if you can pull out the spring pack assembly, you have a new version of the series 33.

1. If present, remove the switch package.
2. Disconnect the air lines.
3. ITT recommends that the following steps be performed on a bench, with the body removed from the actuator:
  - a) Disassemble the valve.  
For more information, see Disassemble the valve in this manual.
  - b) Unscrew the diaphragm from the compressor by turning it counterclockwise.
4. If you have a series 47 actuator, then follow the steps below:
  - a) Remove the clear plastic cap, travel stop nuts and roller bearing (races).
  - b) Turn the adjusting bushing clockwise until contact is made with spring package. Record the number of turns.
5. Remove the actuator fasteners and lift off the upper cover.

If the actuator series is ...	Then ...
Old series 33	Unthread the adjusting bushing to relieve the spring load.
New series 33	Lift out the spring package and set it aside.
47	Unscrew the spring pack from the valve spindle by turning it counterclockwise.

6. Remove the actuator diaphragm and springs or spring pack.

If the actuator series is ...	Then remove the ...
33	Adjusting bushing, spring plate, spindle nut, and top actuator plate.
47	Coupling nut, spindle nut and actuator top plate.

7. Install the new actuator diaphragm (top hat up). Be sure the diaphragm is positioned so the diaphragm bolt holes line up with the actuator cover bolt holes with no stretching of the diaphragm.
8. Install the springs or spring pack.

If the springs ...	Then install ...
Need to be replaced	New springs or spring pack
Do not need to be replaced	Old springs or spring pack

9. If you have an old series 33, then reassemble the actuator by following the steps below:
  - a) Prepare the spindle nut surface with Loctite 7649 Primer N.
  - b) Apply Blue Loctite #242 on the spindle nut.
  - c) Install the springs and spring plate.
  - d) Thread the adjusting bushing down until it shoulders.  
A gap will exist between the covers until they are properly bolted together.

- e) Replace the actuator upper cover.
- f) Use three long fasteners to pull down the upper cover and pinch the actuator diaphragm.
- g) Replace the actuator fasteners and tighten the actuator cover to cover fasteners.  
For more information, see Tighten the actuator cover to cover fasteners in this manual.
10. If you have a new series 33, then reassemble the actuator by following the steps below:
  - a) Prepare the spindle nut surface with Loctite 7649 Primer N.
  - b) Apply Blue Loctite #242 on the spindle nut.
  - c) Reinstall the spring pack assembly.
  - d) Replace the actuator upper cover.
  - e) Replace the actuator fasteners and tighten the actuator cover to cover fasteners.  
For more information, see Tighten the actuator cover to cover fasteners in this manual.
11. If you have a series 47, then reassemble the actuator by following the steps below:
  - a) Prepare the spindle nut surface with Loctite 7649 Primer N.
  - b) Apply Blue Loctite #242 on the spindle nut and coupling nut.
  - c) If a new spring pack was installed, then thread the new spring pack onto the valve spindle.
  - d) Replace the actuator upper cover.
  - e) Replace the actuator fasteners and tighten the actuator cover to cover fasteners.  
For more information, see Tighten the actuator cover to cover fasteners in this manual.  
A gap will exist between the covers until they are properly bolted together.
  - f) If the old spring pack was installed, then turn the adjusting bushing counterclockwise the number of turns recorded above.
  - g) Replace the clear plastic cap, travel stop nuts and roller bearing (races).

### 3.11 Replace the actuator diaphragm for double acting actuator

1. If present, remove the switch package
2. Disconnect the air lines.
3. ITT recommends that the following steps be performed on a bench with the body removed from the actuator:
  - a) Disassemble the valve.  
For more information, see Disassemble the valve in this manual.
4. If you have a series 47 actuator, then remove the clear plastic cap, travel stop nuts and roller bearing (races).
5. Remove the actuator fasteners and lift off the upper cover.
6. Remove the actuator top plate and actuator diaphragm.

If the actuator series is ...	Then remove the ...
3, 5, 8, or 16	The indicating spindle
33	Extension spindle and both nuts
47	Adjusting bushing and the spindle nut

7. Install the new actuator diaphragm (top hat up).  
Be sure the actuator diaphragm is positioned so the diaphragm bolt holes line up with the cover bolt holes with no stretching of the diaphragm.
8. Replace the actuator top plate and actuator diaphragm:

### 3.12 Tighten the actuator cover to cover fasteners

If the actuator series is ...	Then ...
3, 5, 8, or 16	Prepare spindle nut surface with Loctite 7649 Primer N, apply Blue Loctite #242 on the indicating spindle and replace indicating spindle.
33	<ol style="list-style-type: none"> <li>1. Prepare the spindle nut surface with Loctite 7649 Primer N.</li> <li>2. Apply Blue Loctite #242 to the spindle nut.</li> <li>3. Replace the extension spindle and both nuts.</li> </ol>
47	<ol style="list-style-type: none"> <li>1. Replace the adjusting bushing and spindle nut.</li> <li>2. Set the adjusting bushing at the correct location (4.06 in. (10.31 cm) from top of the spindle nut to the bottom of the adjusting bushing). See Advantage actuator series 47 parts.</li> </ol>

9. Assemble the upper cover using care to keep the air fitting in line with the lower cover air fitting.
10. If you have a series 47 actuator, then replace the clear plastic cap, travel stop nuts and roller bearing (races).
11. Tighten the actuator cover to cover fasteners.  
For more information, see Tighten the actuator cover to cover fasteners in this manual.

## 3.12 Tighten the actuator cover to cover fasteners

Tighten the bonnet fasteners in a crisscross pattern with proper torque.

1. Tighten the bonnet fasteners in a crisscross pattern in accordance with Fastener torque table for actuator cover to cover.
2. Make multiple crisscross passes to build up torque to final table values.

### 3.12.1 Fastener torque table for actuator cover to cover

Actuator series	Bolt size	Torque	
		Imperial	in-lb   N-m
Series 3, 5, 8	#10	20	2.3
Series 16	1/4"	35	4.0
Series 33	5/16"	96	11
Series 47	3/8"	120	14

Values given are for lubricated fasteners.

Torques should be applied at near ambient conditions (less than 38°C | 100°F).



# 4 Parts Listing and Cross-Sectional Drawings

## 4.1 Advantage actuator parts

Series 3, 5, 8, and 16

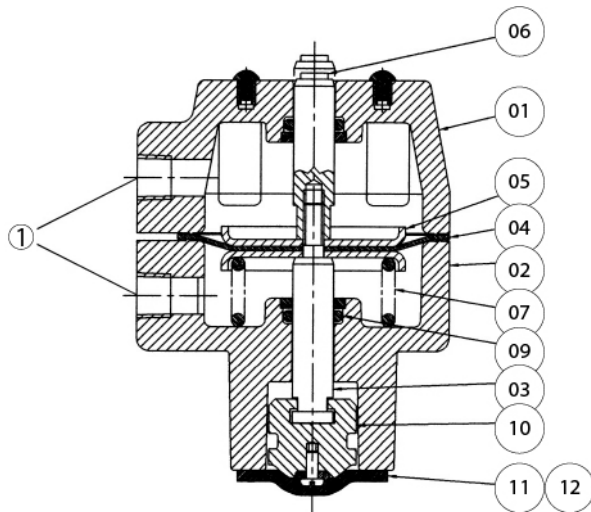


Figure 4: Series 3, 5, 8, 16 Fail Open and double acting

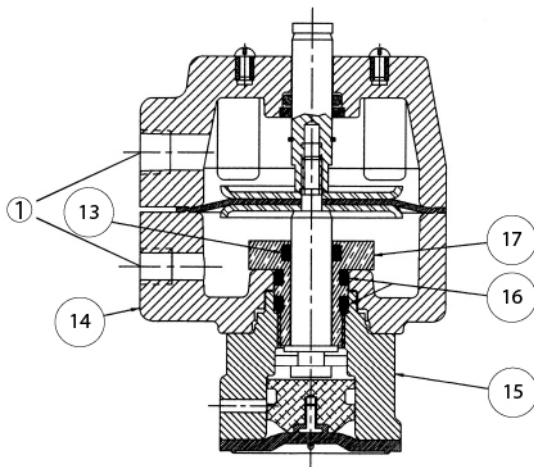
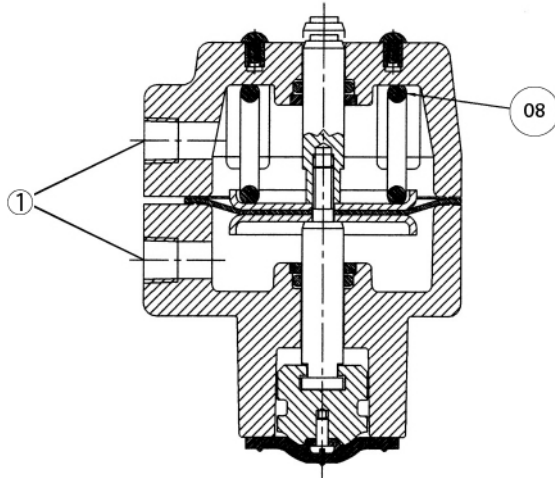


Figure 5: Series 3, 5, 8, 16 Low Profile



**Figure 6: Series 3, 5, 8, 16 Fail Close**

Item	Description	Material	Quantity
1	Upper Actuator Cover	Plastic	1
2	Lower Actuator Cover	Plastic	1
3	Valve Spindle	Stainless Steel	1
4	Diaphragm, Actuator	Buna-N	1
5*1	Plate, Actuator	Stainless Steel or Carbon Steel Nickel Plated	2
6	Spindle, Indicating	Stainless Steel	1
7*2	Spring	Steel	1
8	Spring	Steel	1
9*1	O-Ring	FKM	2
10	Compressor	Stainless Steel, Cast Iron, Zinc or Bronze	1
11*1	Diaphragm	As required	1
12*1	Backing Cushion	EPDM	1
13*1	O-Ring	FKM	1
14	Lower Actuator Cover	Plastic	1
15	Bonnet	Stainless Steel	1
16*1	O-Ring	FKM	2
17	Bushing	Brass	1

\*1 Recommended spare part

\*2 Only for fail open actuators

Series 33

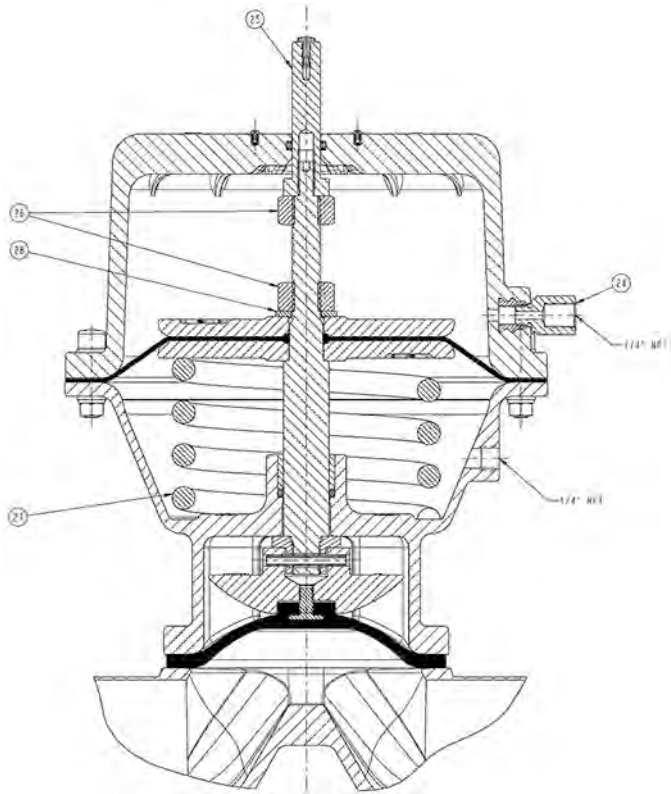


Figure 7: Fail open and double acting

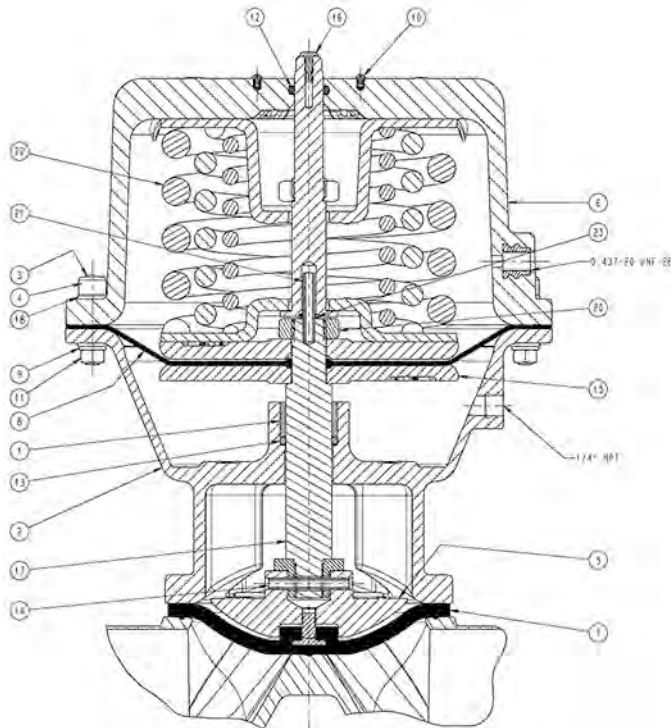


Figure 8: Fail close

#### 4.1 Advantage actuator parts

Item	Description	Material	Quantity
1	Bearing Sleeve	Plastic	1
2	Lower Cover	Plastic	1
3	Cap	Plastic	12
4	Cap Screw	Stainless Steel	12
5	Compressor	Cast Iron or Bronze	1
6	Upper Cover	Plastic	1
7 <sup>3</sup>	Diaphragm	As required	1
8 <sup>3</sup>	Actuator Diaphragm	Buna-N	1
9	Lock Washer	Stainless Steel	12
10	Machine Screw	Stainless Steel	4
11	Nut	Stainless Steel	12
12 <sup>3</sup>	O-ring	Buna-N	1
13 <sup>3</sup>	O-ring	Buna-N	1
14	Pin	Stainless Steel	1
15	Actuator Plate	Ductile Iron	2
16	Plug	Plastic	1
17	Spindle	Stainless Steel	1
18	Washer	Stainless Steel	24
19	Tube Nut	Brass	1
20	Nut	Steel	1
21	Spring Pin	Stainless Steel	1
22	Spring Pack Assembly	As required	1
23	Wave Spring	Steel	1
24	Adapter	Stainless Steel	As required
25	Adjusting Bushing	Stainless Steel	1
26	Nut	Steel	2
27 <sup>*1</sup>	Spring	Steel	1
28	Washer	Steel	1

\*1 Only furnished with fail open actuator

<sup>3</sup> Recommended spare part

Series 47

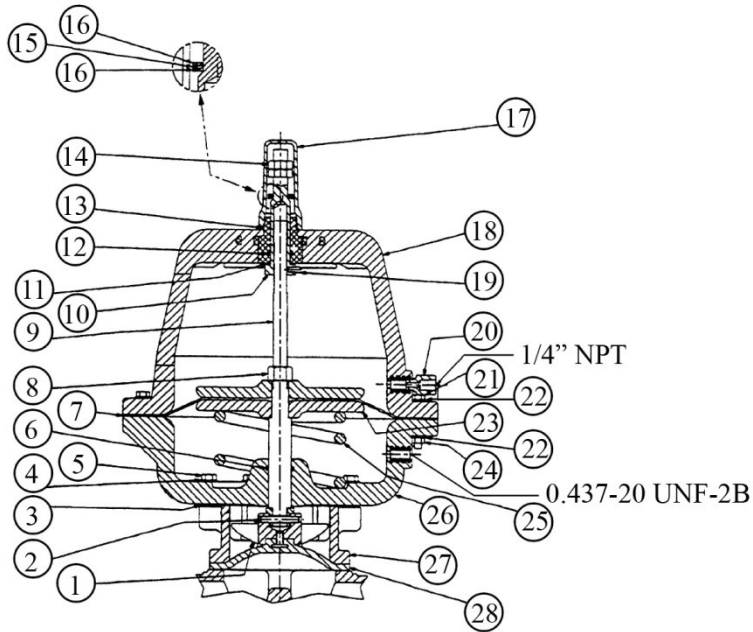


Figure 9: Fail open

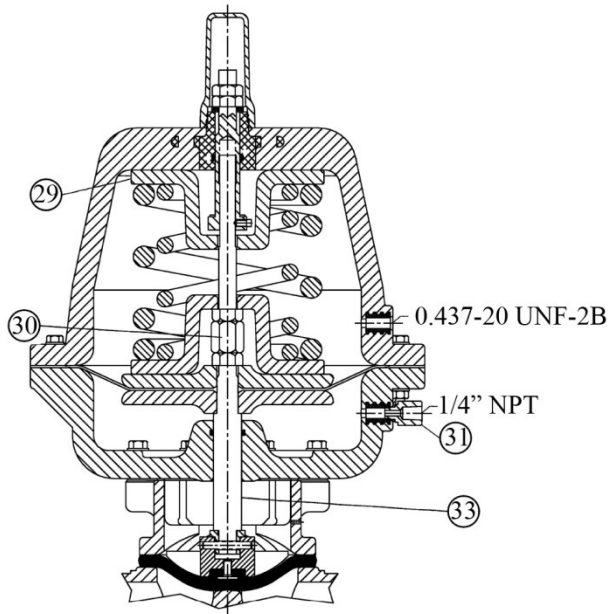


Figure 10: Fail close

Item	Description	Material	Quantity
1	Compressor	Cast Iron or Bronze	1
2	Pin	Stainless Steel	1
3	Gasket	EPDM	1
4*1	Washer	Stainless Steel	8
5	Cap Screw	Steel	1
6	O-ring	Buna-N	1

#### 4.1 Advantage actuator parts

Item	Description	Material	Quantity
7*1	Actuator Diaphragm	Buna-N	1
8*1	Hex Nut (Spindle Nut)	Steel	1
9	Spindle (Fail Open, Double Acting)	Stainless Steel	1
10	Adjusting Bushing	Stainless Steel	1
11	Thrust Washer	Nylon	1
12	O-ring	Buna-N	1
13*1	O-ring	Buna-N	1
14*1	Jam Nut	Stainless Steel	2
15	Thrust Bearing	Steel	1
16	Thrust Race	Steel	2
17	Cap	Plastic	1
18	Upper Cover	Plastic	1
19	Spring Plunger	Stainless Steel	1
20	Adapter	Stainless Steel	as required
21	Cap Screw	Stainless Steel	16
22	Washer	Stainless Steel	32
23	Actuator Plate	Ductile Iron	2
24	Hex Nut	Brass	16
25	Spring	Steel	1
26	Lower Cover	Plastic	1
27*1	Bonnet	Ductile Iron	1
28	Diaphragm	as required	1
29	Spring Pack Assembly (Fail Close)	as required	1
30	Coupling Nut	Stainless Steel	1
31	Adapter	Stainless Steel	1
32	Spindle (Fail Close)	Stainless Steel	1

\*1 Only furnished with fail open actuator

# 5 Certifications

## 5.1 Declaration of Conformity



**EC-Declaration of Conformity** (Example only. Signed, applicable original declaration is included in valve's certification pack separately to this operating manual)

We herewith declare,

ITT Bornemann GmbH

Postfach 11 62, 31676 Obernkirchen, Germany

Fon +49 (0) 5724 390-0, Fax +49 (0) 5724 390-290,

that the valves of the series

**Pure-Flo, EnviZion, BioviZion, Dia-Flo**

are in conformity with the following EC-Directives, provided that the site conditions for the commissioning are met as specified in the engineering documents, in particular in the operation manual:

**Machinery - Directive (2006/42/EC)**

If applicable (please see certification package delivered with the product) the following separate declaration of conformity will be delivered with the individual order:

**EMC - Directive (2014/30/EU)**

**ATEX - Directive (2014/34/EU)**

**PED - Directive (2014/68/EU)**

Harmonized standards used:

- EN 19
- EN 12516-3

Person authorized to compile the technical file: Maik Spannuth – Quality Manager

Obernkirchen, Date:

\_\_\_\_\_  
Managing Director

\_\_\_\_\_  
Technical Manager

05/2022, Rev. 01

<http://www.bornemann.com>





**UKCA-Declaration of Conformity** – (Example only. Signed, applicable original declaration is included in valve’s certification pack separately to this operating manual)

We herewith declare,

ITT Bornemann GmbH  
Postfach 11 62, 31676 Obernkirchen, Germany  
Fon +49 (0) 5724 390-0, Fax +49 (0) 5724 390-290,

that the valves of the series

**Pure-Flo, EnviZion, BioviZion, Dia-Flo**

are in conformity with the following UK Regulations, provided that the site conditions for the commissioning are met as specified in the engineering documents, in particular in the operation manual:

**Supply of Machinery (Safety) Regulation 2008 No 1597**

If applicable (please see certification package delivered with the product) the following separate declaration of conformity will be delivered with the individual order:

Electromagnetic Compatibility Regulation 2016 No 1091

Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016 No 1107

Pressure Equipment (Safety) Regulations 2016 No 1005

Designated standards used:

- |  |
|--|
| <ul style="list-style-type: none"><li>• EN 19</li><li>• EN 12516-3</li></ul> |
|--|

Person authorized to compile the technical file:

Stefano Piron  
ITT Industries Limited  
Norton House  
Stewart Road  
Basingstoke  
Hampshire RG24 8NF  
United Kingdom

Obernkirchen, Date:

\_\_\_\_\_  
Managing Director

\_\_\_\_\_  
Technical Manager

05/2022, Rev. 01

<http://www.bornemann.com>





## 5.2 Declaration of Incorporation



**EC-Declaration of Incorporation** - (Example only. Signed, original declaration is included in valve's certification pack, separately to this operating manual)

according to Machinery Directive 2006/42 EC Annex II B

c

ITT Bornemann GmbH

Postfach 11 62, 31676 Obernkirchen, Germany

Fon +49 (0) 5724 390-0, Fax +49 (0) 5724 390-290,

that the incomplete machinery, actuators only, type:

**Advantage 2.1, Advantage S33, ACS, Dia-Flo, ZA, ZB**

Conform to the following basic requirements of the Machinery Directive (2006/42/EC) Annex I, article 1.1.2, 1.1.3, 1.1.5, 1.1.6, 1.2.1, 1.2.2, 1.2.3, 1.3.1, 1.3.2, 1.3.4, 1.3.7, and 1.3.9

Harmonized standards used:

- EN 19
- EN 12516-3

The commissioning is prohibited until it has been established, that the machinery, into which the above mentioned machinery is to be installed, complies with the Machinery Directive (2006/42/EC).

We also declare that the relevant technical documentation for this incomplete machine was prepared according to Annex VII, Part B and commit ourselves to provide them in copy on demand to the market surveillance authorities.

For the compilation of this documentation is authorized: Maik Spannuth (Head of Quality Management)

Obernkirchen, Date:

\_\_\_\_\_  
Managing Director

\_\_\_\_\_  
Technical Manager

05/2022, Rev. 01

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**UKCA-Declaration of Incorporation** - (Example only. Signed, original declaration is included in valve's certification pack, separately to this operating manual)

according to Supply of Machinery (Safety) Regulation 2008 No 1597 annex II B

we herewith declare,

ITT Bornemann GmbH  
Postfach 11 62, 31676 Obernkirchen, Germany  
Fon +49 (0) 5724 390-0, Fax +49 (0) 5724 390-290,

that the incomplete machinery, Actuators only, Type:

**Advantage 2.1, Advantage S33, ACS, Dia-Flo, ZA, ZB**

Conform to the following basic requirements of the Supply of Machinery (Safety) Regulation 2008 No 1597: Annex I, article 1.1.2, 1.1.3, 1.1.5, 1.1.6, 1.2.1, 1.2.2, 1.2.3, 1.3.1, 1.3.2, 1.3.4, 1.3.7, and 1.3.9

Designated standards used:

- |  |
|--|
| <ul style="list-style-type: none"><li>• EN 19</li><li>• EN 12516-3</li></ul> |
|--|

The commissioning is prohibited until it has been established, that the machinery, into which the above mentioned machinery is to be installed, complies with UK Regulation 2008 No 1597.

We also declare that the relevant technical documentation for this incomplete machine was prepared according to Annex VII, Part B and commit ourselves to provide them in copy on demand to the market surveillance authorities.

For the compilation of this documentation is authorized:

Stefano Piron  
ITT Industries Limited  
Norton House  
Stewart Road  
Basingstoke  
Hampshire RG24 8NF  
United Kingdom  
Obernkirchen, Date:

\_\_\_\_\_  
Managing Director

\_\_\_\_\_  
Technical Manager

05/2022, Rev. 01

<http://www.bornemann.com>



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Lancaster, PA 17603  
USA

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