Engineered Valves

Installation, Operation, and Maintenance Manual

EnviZion, BioviZion and PfuZion Valves



ITT

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1 Introduction and Safety

1.1 Safety message levels

Definitions

Safety message level	Indication
 **DANGER:**	A hazardous situation which, if not avoided, will result in death or serious injury
 **WARNING:**	A hazardous situation which, if not avoided, could result in death or serious injury
 **CAUTION:**	A hazardous situation which, if not avoided, could result in minor or moderate injury
 **ELECTRICAL HAZARD:**	The possibility of electrical risks if instructions are not followed in a proper manner
NOTICE:	• A potential situation which, if not avoided, could result in an undesirable result or state • A practice not related to personal injury

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

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



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.

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 use leverage devices or "cheaters" to operate these products.
- Do not leave hot or cold components of the product unsecured against contact if they are a source of danger.
- 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.

Do not use "cheater bars" to operate manual valves. Damage to the valve or personal injury could result.

Do not use leveraging devices on the cover. Damage to the valve or personal injury could result.

2 Transportation and storage

2.1 Handling and unpacking guidelines



CAUTION:
Always observe the applicable standards and regulations regarding the prevention of accidents when handling the product.

NOTICE:
Valve shipped with thermal compensation system dis-engaged. Tighten valve bonnet per instruction manual prior to pressurizing the valve. For additional information go to www.engvalves/envizion.html or contact ITT at 717-509-2200.

Handling guidelines

Follow these guidelines when handling the product to prevent damage:

- Use care when handling the product.
- Leave protective caps and covers on the product until installation.

Unpacking guidelines

Follow these guidelines when unpacking the product:

1. Inspect the package for damaged or missing items upon delivery.
2. Note any damaged or missing items on the receipt and freight bill.
3. Do not lift or pull on the electrical conduit lines. Doing so may cause the POC switches to come out of calibration.

2.2 Storage, disposal, and return requirements

Storage

If you are not immediately installing the product after delivery, store it as follows:

- Store the product in a dry room that maintains a constant temperature.
- Make sure that the products are not stacked on top of one another.
- Store assembled valves with the thermal compensation system disengaged to prevent diaphragm damage.

Disposal

Dispose of this product and associated components in compliance with federal, state, and local regulations.

Return

Ensure these requirements are met before you return a product to ITT:

- Contact ITT for specific instructions on how to return the product.
- Clean the valve of all hazardous material.
- Complete a Material Safety Data Sheet or Process Data Sheet for any process fluid that could remain on the valve.

- Obtain a Return Material Authorization from the factory.

3 Product Description

3.1 Topworks identification

Model number

Code	Description
ZH	EnviZion/BioviZion handwheel
ZMB	PfuZion Retrofit Bio-Tek handwheel
ZA1	EnviZion/BioviZion stainless steel fail open actuator
ZA2	EnviZion/BioviZion stainless steel fail closed actuator
ZA3	EnviZion/BioviZion stainless steel double acting actuator
ZB1	EnviZion Advantage fail open actuator
ZB2	EnviZion Advantage fail closed actuator
ZB3	EnviZion Advantage double acting actuator
ZPB1	PfuZion Retrofit Bio-Tek ACT-FO
ZPB2	PfuZion Retrofit Bio-Tek ACT-FC
ZPB3	PfuZion Retrofit Bio-Tek ACT-DA

EnviZion topworks



Figure 1: EnviZion manual bonnet (ZH)



Figure 2: EnviZion stainless steel actuator (ZA)



Figure 3: EnviZion Advantage actuator (ZB)

BioviZion topworks



Figure 4: Manual BioviZion



Figure 5: Actuated BioviZion

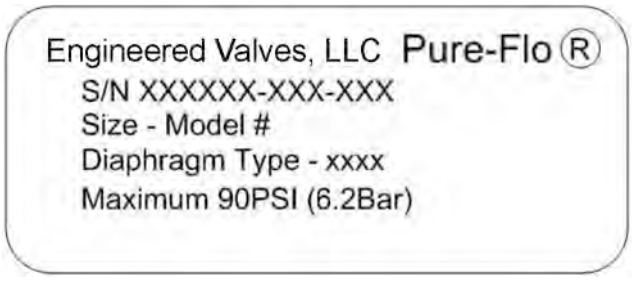


Figure 6: PfuZion



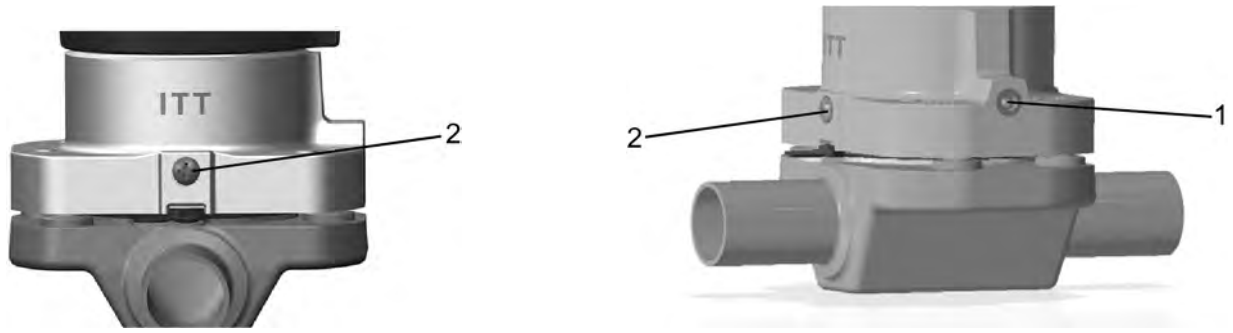
Figure 7: PfuZion

Identification tag (actuated only)



3.2 Bonnet description

Non Sealed Bonnet



Item	Description
1	Weep hole or vented plug (alternate design)
2	Pressure ring screw

Figure 8: Location of pressure ring screw

NOTICE:
The pressure ring screw should not be removed unless internal maintenance is required. Contact ITT for assistance.

Sealed Bonnet



Item	Description
1	Vent plug
2	Sealed pressure ring screw

Figure 9: 0.75 - 2 inch with vent plug

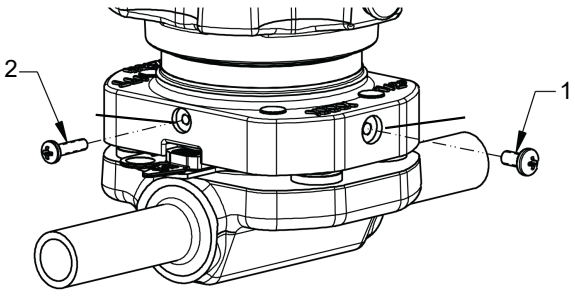


Figure 10: EnviZion 0.5 inch with sealed bonnet screw and pressure ring retention



Figure 11: BioviZion/PFuZion 0.5 inch with sealed bonnet screw and pressure ring retention

Item	Description
1	Sealed bonnet screw
2	Sealed pressure ring screw

NOTICE:
The pressure ring screw should not be removed unless internal maintenance is required. Contact ITT for assistance.

In a sealed bonnet, the pressure ring screw (2) is replaced with a sealed bonnet screw (1). The weep hole is replaced with a second sealed screw in the EnviZion 0.5 inch and BioviZion/PFuZion 0.25-0.5 inch size or a 1/8 npt v-notch vent plug in sizes 0.75 - 2 inch. The screw or plug is loosened to check for diaphragm rupture.

EnviZion Bonnet Guard



Figure 12: Bonnet guard

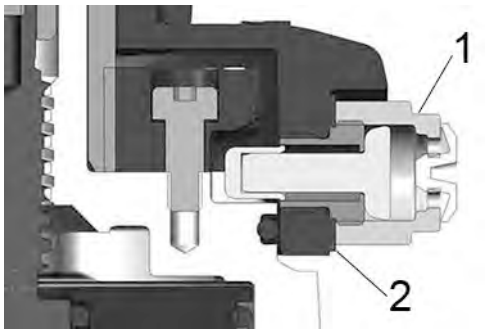


Figure 13: Bonnet guard cross-section view

Item	Description
1	EnviZion Bonnet Guard Cap
2	Seal

3.3 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.



Figure 14: EnviZion Backing Cushion



Figure 15: BioviZion/PfuZion backing cushion

Item	Description
1	Mold number
2	Compound
3	Size or BV = BioviZion, Pf = PfuZion
4	Vendor
5	Date Code (month and year)



Figure 16: EnviZion PTFE Diaphragm

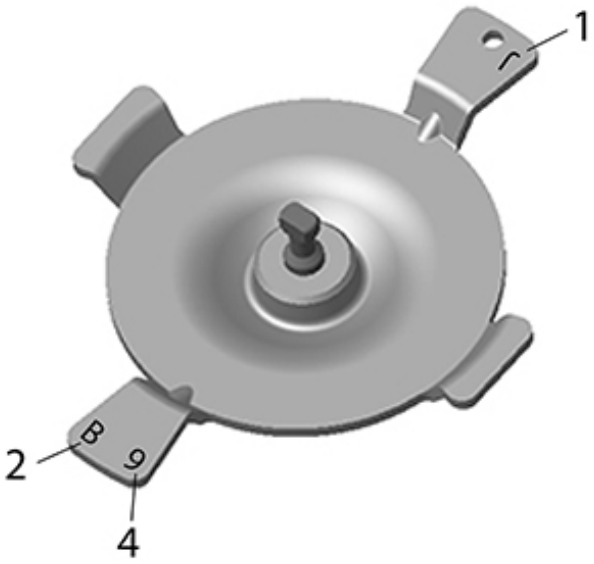


Figure 17: BioviZion/PfuZion PTFE Diaphragm

Item	Description
1	Vendor

Item	Description
2	Month
3	Material
4	Year

EHEDG certified applications

For EHEDG certified valves, certain hygienic clamp connections, as well as gaskets for these connections, have been evaluated and accepted for cleanability by EHEDG. These are listed in a position paper, available from EHEDG at https://www.ehedg.org/guidelines/free-documents/. Only valves with these connections and gaskets are considered cleanable according to EHEDG standards.

4 Installation

4.1 Install the valve and topworks

NOTICE:
The topworks size and configuration can limit the actual operating pressure. Consult the Pure-Flo catalog for pressure limitations. Consult the factory or engineering catalog for vacuum operation.

1. If you have a weld end valve, then consider the following:

If you are welding ...	Then ...
Manually	Remove the topworks.
In line for schedule 5 or lighter pipe and tubing	You can weld with automatic equipment. Before you perform the weld: 1. Remove the topworks (optional). 2. If left installed, set the valve to the open position. 3. Properly purge the valve with an inert gas.

NOTICE:
Only certified welder and procedures should be utilized for valve body installation.

2. Install the valve.

NOTICE:
Allow welded valves to cool before handling.

NOTICE:
For horizontal piping runs install the valve body on appropriate drain angle as indicated by the drain dots machined on the ale ends.

3. Cycle the valve two to three times to verify smooth operation.

4.2 Assemble the BioviZion/PfuZion Valve

NOTICE:
(BioviZion only) Valve shipped with thermal compensation system dis-engaged. Tighten valve bonnet per instruction manual prior to pressurizing the valve. For additional information go to www.engvalves/envizion.html or contact ITT at 717-509-2200.

NOTICE:
Actuator housing does not rotate.

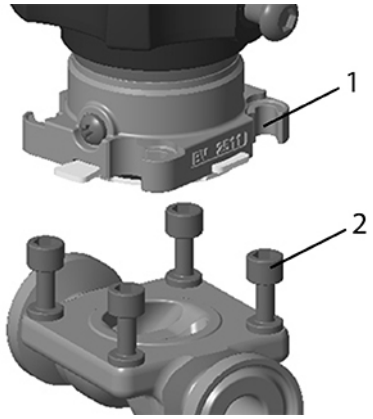
1. Secure the valve body in the upright orientation or within the piping.
2. Inspect the valve body seal surface for defects and if it is damaged, repair the body prior to use.
3. Partially open the valve until the diaphragm center just starts to invert.
4. Ensure the diaphragm tabs are properly engaged with the bonnet recesses.

5. Position the diaphragm and bonnet assembly above the valve body while maintaining the diaphragm position.
6. Visually align the BioviZion/PfuZion bonnet hooks with the valve body studs.

NOTICE:
Do not allow the diaphragm sealing surfaces to touch the valve body studs.

NOTICE:

- BioviZion/PfuZion stainless steel actuators are intended to be maintenance free and should not be disassembled.
- BioviZion/PfuZion Fail closed actuators (ZA2) require instrument air to install or remove the actuator from the valve body.
- BioviZion/PfuZion handwheel operated needs to be partially open to install or remove the actuator from the valve body.



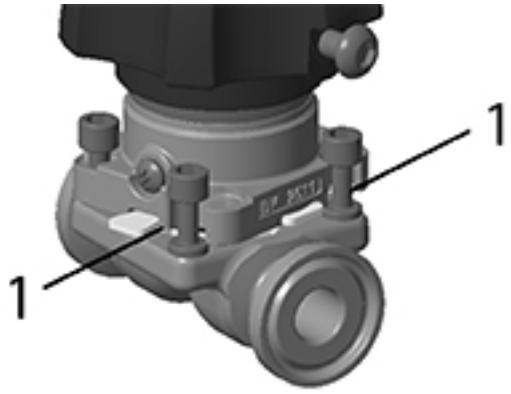
Item	Description
1	Large passageway for studs
2	Valve body studs

Figure 18: Body to Bonnet Alignment

7. Move the bonnet toward the valve body until the studs enter the four bonnet keyways.



CAUTION:
Keep hands above hygienic clamps while installing to prevent pinching fingers.



Item	Description
1	Pinch points

Figure 19: Body to Bonnet Mount - Potential Pinch Points



Item	Description
1	Diaphragm engaged with the bonnet recess tabs

Figure 20: Diaphragm Slot Alignment

8. Rotate the bonnet clockwise until reaching a hard stop.

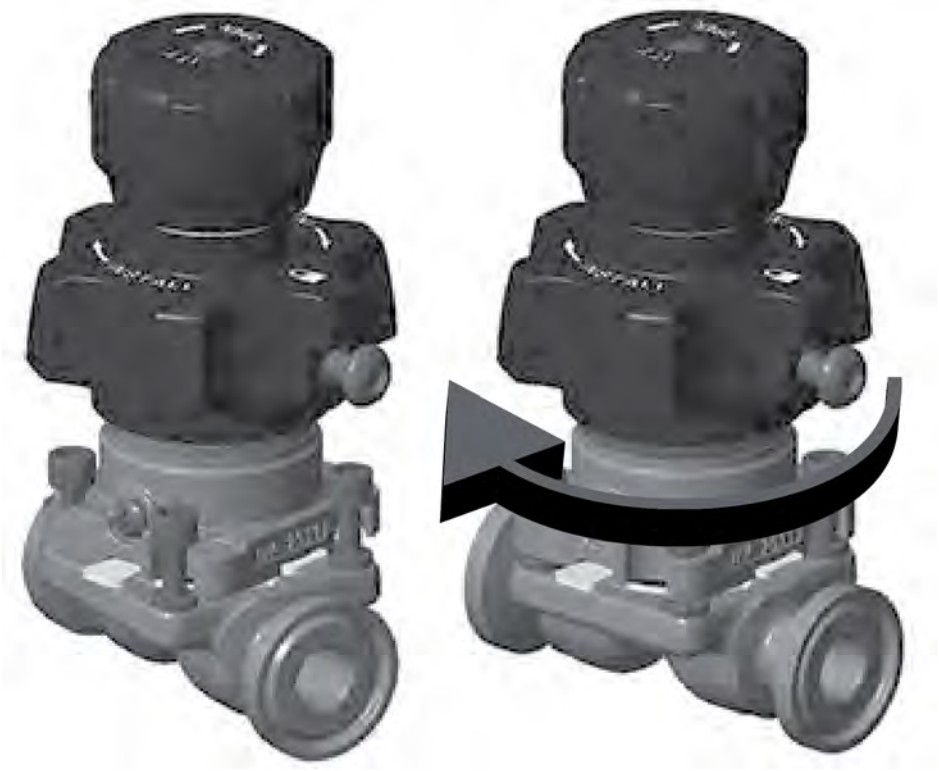


Figure 21: Mount and Turn Positions

9. Rotate the cover clockwise until the studs are snugly engaged with the bonnet.
10. Inspect the orientation of the bonnet, body, backing cushion and diaphragm to ensure they are aligned. If required, loosen the cover and reorient components before tightening.
11.
    a) For the BioviZion valve: tighten the cover clockwise by hand until the red indication decal is covered or nearly covered and the torque requirement increases rapidly.
    b) For the PfuZion bonnet cover tighten with 1 5/16" torque wrench to (95-100 in-lbs/ 10.7-11.3N.m). Do not retighten.

NOTICE:
Maintain the handwheel position at partially open while tightening the cover.

NOTICE:
Do not apply excessive force or use leveraging tools to turn the BioviZion cover or handwheel.

12. Tighten the cover screw until fully seated. The cover may need to be turned counter-clockwise slightly if interference with the lock screw is incurred.

4.3 Assemble the EnviZion Valve

WARNING:
Valve shipped with thermal compensation system dis-engaged. Tighten valve bonnet per instruction manual prior to pressurizing the valve. For additional information go to www.engvalves/envizion.html or contact ITT at 717-509-2200.

WARNING:
PFuZion diaphragm and backing cushion must be replaced each time the top works is installed.

CAUTION:
Prior to orienting air ports: Fail Closed actuators require removal of instrument air before rotating the actuator can assembly. Fail Open and Double Acting actuators require instrument air to be removed before rotating the actuator can assembly.

NOTICE:
Valve actuators are limited to 100 psi/6.9 bar max air, 90psi/6.2 bar recommended.

NOTICE:

- EnviZion stainless steel actuators are maintenance free and can not be disassembled.
- EnviZion Fail closed actuators (ZA2, ZB2 codes) require instrument air to install or remove the actuator from the valve body.
- Removal of instrument air is required to remove Double acting and Fail Open actuators.

1. If equipped with optional EnviZion Bonnet Guard, then:
   a) Remove the EnviZion Bonnet Guard cap counter clockwise to access the bonnet locking pin.
   b) After the bonnet installation reinstall the EnviZion Bonnet Guard seal and cap with one of the methods below:

Method	Steps
Method 1	Tighten the Sealed Cap by applying 4-5 lb/in CW torque.
Method 2	• Finger tighten the cap with a moderately strong effort using a 9/16 in. socket.

NOTICE:
Keep the gasket clean of grease.

2. Secure the valve body in the upright orientation or within the piping.
3. Inspect the valve body seal surface for defects and if it is damaged, repair the body prior to use.
4. Partially open the valve.

If the topworks is	Then
Manual	Turn the handwheel counter clockwise one rotation.
Actuated	For spring actuated valves, add air to the actuator to place the spindle in a partially open position.

5. Ensure the backing cushion tabs are properly engaged with the bonnet recesses.
6. Position the diaphragm and bonnet assembly above the valve body while maintaining the diaphragm position.
7. Visually align the bonnet locating buttons with the valve body studs.

NOTICE:
Do not allow the diaphragm sealing surfaces to touch the valve body studs.



Item	Description
1	Locating buttons
2	Valve body studs

Figure 22: Body to Bonnet Alignment

8. Move the bonnet toward the valve body until the studs enter the four bonnet keyways.



CAUTION:
Keep hands above hygienic clamps while installing to prevent pinching fingers.



Item	Description
1	Pinch points

Figure 23: Body to Bonnet Mount - Potential Pinch Points



Item	Description
1	Diaphragm engaged with the bonnet recess

Figure 24: Diaphragm Slot Alignment

9. Rotate the bonnet clockwise until reaching a hard stop.



Figure 25: Mount and Turn Positions

10. Release the lock pin so that it is free to travel when cover is rotated. Audible "clicking" will be heard as the pin engages the bonnet ratchet mechanism.





Figure 26: Lock Pin Positions

Item	Description
1	Lock-pin in (released)
2	Lock-pin extended (can be locked in this position with 90 degree rotation of pin)

11. Rotate the cover clockwise until the studs are snugly engaged with the bonnet. If the cover will not turn, then:
    a) Lift the cover while applying generous clockwise force. This will overcome the internal lock feature that engages when excessive counter clockwise force is applied to the cover.
12. Inspect the orientation of the bonnet, body, backing cushion and diaphragm to ensure they are aligned. If required, loosen the cover (after securing the lock pin in an outboard position) and reorient components before tightening.
13. Ensure that the lock pin is in the released position (audible clicking when cover is turned).
14. Tighten the cover. See table below for specific instructions.

If the valve is	Then
Manual or Actuated 0.50"	Tighten the cover clockwise by hand until the red indication decal is no longer visible and the torque requirement increases rapidly.
0.75-2.00"	Turn the cover clockwise by hand until the lock-pin fully seats at the weep hole position.

NOTICE:
Maintain the handwheel position at partially open while tightening the cover.

NOTICE:
Do not apply excessive force or use leveraging tools to turn the cover or handwheel.

NOTICE:
The lock-pin will rachet as the cover is tightened.



WARNING:

Ensure the lock pin is in the in-board position. This prevents external valve leaks by ensuring the cover cannot be loosened.



CAUTION:
Prior to orienting air ports: Fail Closed actuators require instrument air before rotating the actuator can assembly. Fail Open and Double Acting actuators require instrument air to be removed before rotating the actuator can assembly.

15. Orient air ports for piping.

If the valve has a	Then
Fail Closed actuator	Must apply instrument air before rotating the actuator can assembly.
Fail Open or Double Acting actuator	Must remove instrument air before rotating the actuator can assembly.

4.4 Set the travel stop (hand wheel operated only)

1. Secure the valve body in an upright orientation.
2. Set up a test fixture.
   a) Supply air pressure to the system operating pressure to one side of the valve.
   b) Cap the other side of the valve and install a venting rubber or plastic tube.
   c) Hold the tube in a container of water.
3. Lightly tighten the handwheel.
4. Turn the handwheel screw counter clockwise until the handwheel can be removed.
5. Remove the handwheel.
6. Turn the handwheel screw counter clockwise until the screw is out of the square cavity.
7. Replace the handwheel. Rotate and push the handwheel down until it engages the spindle and the yellow indication sticker is covered.
8. Tighten the handwheel clockwise until leakage stops on the test apparatus.
   Air bubbles indicate leakage.

9. Turn the handwheel an additional 1/8 turn clockwise.
10. Push the handwheel down until:

If the valve is	Then
0.5 inch EnviZion or 0.25-0.5 BioviZion/PFuZion	the handwheel stops on the internal ledge that can not be seen and the yellow indicator is covered
0.75- 2 inch	the handwheel bottoms out on the cover

11. Tighten the handwheel screw clockwise while lightly holding down the handwheel.
    The handwheel may need to rise slightly for the screw to engage.

5 Operation

5.1 Topworks operation

The valve is closed with a clockwise rotation of the handwheel.

Valve size		Stem travel		Number of hand wheel turns
Inch	**DN**	**Inch**	**cm**	
0.25-0.50 (BioviZion)	NA	0.16	4.1	2.9
0.25-0.50 (PFuZion)	NA	0.16	4.1	2.9
0.50 (EnviZion)	15	0.25	6.4	4.5
0.75	20	0.45	11.4	3.6
1.00	25	0.45	11.4	3.6
1.50	40	0.75	19	4.2
2.00 (EnviZion)	50	1.00	25.4	6.0
2.00 (EnviZion Advantage)	50	0.85	21.6	NA

6 Maintenance

6.1 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.
- Always wear protective clothing and equipment to safeguard the eyes, face, hands, skin, and lungs from the fluid in the line.

6.2 Inspection

Inspection area	What to look for	Action if problem is found
External valve parts	Excessive wear or corrosion	• Replace the affected parts • Contact ITT to obtain replacement parts or for specific instructions
Non sealed bonnet		Replace the valve diaphragm
Topworks	Spindle binding, excessive noise, or dried lubricant	Manual - Lubricate the topworks Actuated - Replace the actuator

6.3 Lubrication requirements

Lubrication schedule

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

Acceptable lubricants

Brand	Lubricant type
Chevron	
Fuchs	Cassida GTS 2 NSF H1 Compliant

6.4 Disassemble the BioviZion/PfuZion Valve



CAUTION:
Ensure the line pressure is relieved and temperature is near ambient before disassembling the valve.



CAUTION:
Metal surfaces may be hot.

1. Secure the valve in the upright orientation.
2. Partially open the valve.

If the topworks is	Then
Manual	Turn the handwheel counter clockwise one rotation.
Actuated	Position the spindle in the partially open position. This may require actuator air pressure, depending on the actuator mode.

3. Loosen the cover screw, allowing counter-clockwise rotation of the cover.
4. Turn the cover counter clockwise until a hard stop is reached.

NOTICE:
Once the hard stop is reached, do not apply additional counter clockwise torque to the cover.

5. Turn the bonnet assembly counter clockwise approximately 16° from the valve body, until the studs stop further rotation.
6. Lift the bonnet assembly from the valve body.

6.5 Disassemble the EnviZion Valve



CAUTION:
Ensure the line pressure is relieved and temperature is near ambient before disassembling the valve.

1. Secure the valve in the upright orientation.
2. Partially open the valve.

If the topworks is	Then
Manual	Turn the handwheel counter clockwise one rotation.
Actuated	Position the spindle in the partially open position. This may require actuator air pressure, depending on the actuator mode.

3. Slightly turn the cover to allow free movement of the lock-pin.
4. Pull the cover lock-pin, rotate it 90° and release it. If the lock-pin will not rotate, then turn the cover to allow free movement of the lock-pin.
   This will secure the lock-pin in the extended position.
5. Turn the cover counter clockwise until a hard stop is reached.

NOTICE:
Once the hard stop is reached, do not apply additional counter clockwise torque to the cover.

6. Turn the bonnet assembly counter clockwise approximately 20° from the valve body, until the studs stop further rotation.



CAUTION:
Metal surfaces may be hot.

7. Lift the bonnet assembly from the valve body.

6.6 Replace the BioviZion/PFuZion Valve Diaphragm

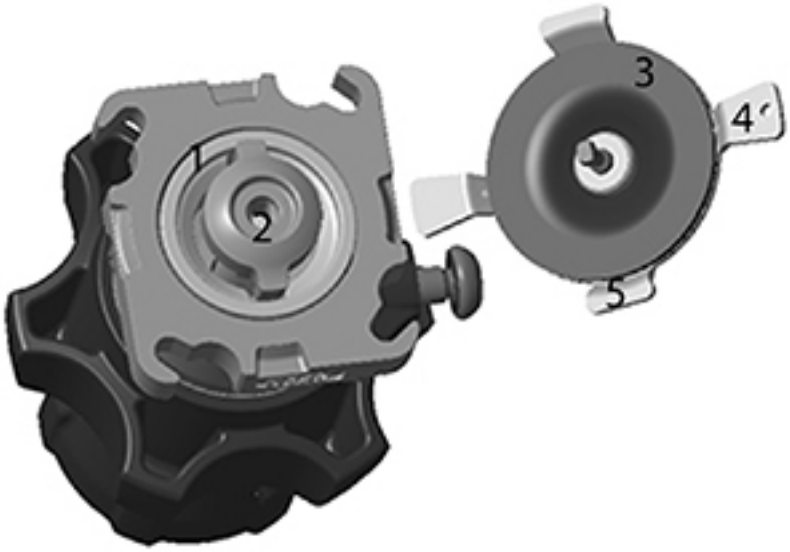
1. Disassemble the valve.
   For more information see 6.4 Disassemble the BioviZion/PfuZion Valve on page 22.
2. Secure the bonnet in the inverted orientation.

3. Position the topworks to the closed position, extending the valve spindle.
4. Lift the edges of the backing cushion to detach it from the compressor ring.
5. Turn the diaphragm 90° in either direction to disengage from the compressor.
6. Lift the diaphragm and backing cushion up off the bonnet.
7. Replace with a new diaphragm and backing cushion.

NOTICE:
Inspect the diaphragm sealing surface and do not use the diaphragm if the seal surfaces are defective.

NOTICE:
Inspect diaphragm for any foreign substance prior to installation. Clean as required.

8. Press the compressor ring (1) until it is flush with the bonnet.
9. Center the backing cushion (3) on the stud side of the diaphragm (4).
10. Orient the diaphragm assembly so the short tabs (5) are in-line with the long axis of the extended compressor.



11. Press the diaphragm assembly into the compressor.



Figure 27: Diaphragm Installation

12. Rotate the diaphragm assembly 90° until the long tabs fit into the thin bonnet recesses.

NOTICE:
The diaphragm assembly should turn freely with minimal resistance. If resistance is felt reverse diaphragm installation and remove the diaphragm from the compressor slot. Ensure pressure ring is flush with bonnet flange and the compressor is extended.

13. Lightly pull the diaphragm away from the compressor to confirm a secure installation.
14. Adjust the spindle position until the diaphragm flange is flush with the bonnet, not deformed, and with the tabs securely engaged into the bonnet recesses. Turn the handwheel counter clockwise to position the diaphragm.
15. Ensure that the backing cushion is still properly centered.
16. Place the topworks assembly on the valve body.
    For more information see 4.2 Assemble the BioviZion/PfuZion Valve on page 12

6.7 Replace the EnviZion Valve Diaphragm

1. Disassemble the valve.
   For more information see 6.5 Disassemble the EnviZion Valve on page 23.
2. Secure the bonnet in the inverted orientation.
3. Close the valve.

If the topworks is	Then
Manual	Turn the handwheel clockwise to the closed position.
Actuated	Fully extend the spindle to the over-travel position. This may require actuator pressure, depending on the actuator mode.

4. Lift the edges of the backing cushion to detach it from the compressor ring.
5. Turn the diaphragm and backing cushion assembly 90° in either direction.
6. Lift the diaphragm and backing cushion assembly up off the bonnet.
7. Replace with a new diaphragm.

NOTICE:
Inspect the diaphragm sealing surface and do not use the diaphragm if the seal surfaces are defective.

NOTICE:
Inspect diaphragm for any foreign substance prior to installation. Clean as required.

NOTICE:
Ensure that the backing cushion darts are securely inserted into the diaphragm.

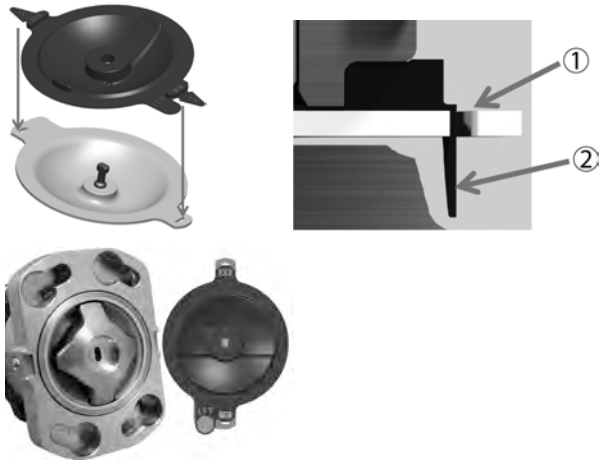
8. Press the compressor ring until it is flush with the bonnet.
9. Position the compressor.

If the topworks is	Then
Manual	Turn the handwheel to a position where the compressor ends are flush with the bonnet.
Actuated	Fully extend the spindle to the over-travel position. This may require actuator pressure depending on the actuator mode.

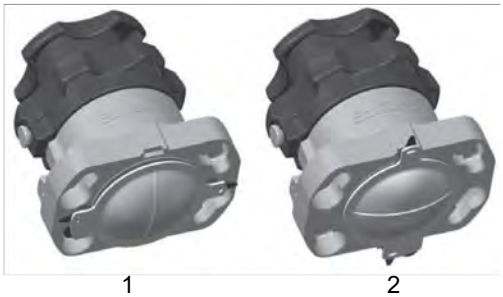
10. Orient the diaphragm assembly so the tabs are in-line with the long axis of the compressor.

NOTICE:
Backing cushion darts (2) must be inserted through the diaphragm tab slot (1) prior to installation

Table 1:



11. Press the diaphragm assembly into the compressor.



Diaphragm installation

Figure 28: Diaphragm Installation

12. Rotate the diaphragm assembly 90° until the backing cushion tabs fit into the bonnet recesses.

NOTICE:
The diaphragm assembly should turn freely with minimal resistance. If resistance is felt reverse diaphragm installation and remove the diaphragm from the compressor slot. Ensure pressure ring is flush with bonnet flange. Locate the small tab on the side marked EnviZion so that orientation can be maintained if reassembled.

13. Lightly pull the diaphragm away from the compressor to confirm a secure installation.
14. Adjust the diaphragm position until the flange is flush with the bonnet, not deformed, and with the backing cushion tabs securely engaged into the bonnet recesses.

If the topworks is	Then
Manual	Turn the handwheel counter clockwise to position the diaphragm.
Actuated	This may require actuator pressure depending on the actuator mode.

15. Place the topworks assembly on the valve body.
For more information see 4.3 Assemble the EnviZion Valve on page 15

7 Troubleshooting

7.1 Troubleshooting

Symptom	Cause	Remedy
Bonnet will not install onto studs	Compressor ring extension. Rotating of the bonnet cover while the EnviZion top works is not mounted to the body may result in the compression ring becoming extended and preventing proper bonnet installation.	Rotate the bonnet cover in the counter clockwise direction and manually press the compressor ring flush with the topworks bonnet flange.
Slight actuator movement during stroke	The movement is as a result of the design feature that allows the actuator to be rotated 360 degrees.	None required. The valve/diaphragm sealing is not affected by this movement during the stroke of the valve and is not indicative of a problem.
Bonnet will not install onto studs (Fail closed actuated)	No instrument air supplied to actuator	Due to the unique attachment method of the EnviZion, air must be applied to Fail Close actuators to retract the compressor assembly and diaphragm to the neutral position to properly mount the actuator. ITT recommends a 3 way ball valve connection on the air inlet to allow for local air control during bonnet installation.
Handwheel/Cover binding during bonnet installation	During bonnet installation the manual hand wheel may turn along with the bonnet cover.	For proper installation ensure that the hand wheel is in the open position and not binding with the bonnet cover. Open the hand wheel further if binding occurs.
Shell leakage in prolonged service	Diaphragm has reached its useful service life or the valve body is damaged in the sealing area.	• EnviZion: The bonnet pin is designed to lock in place when the proper installation position is achieved. This position assures proper shell performance for the life of the diaphragm in service. This feature can be over ridden and additional force applied in the event that an external seal leak were to occur. Place the bonnet lock pin in the extended position and rotate the bonnet cover slightly clockwise. Rotate the locking pin again allowing it to drop in the next ratchet position. This is only a temporary solution, maintenance should be alerted to the leakage issue. • BioviZion/PFuZion: Temporary extension of diaphragm life by loosening cover screw, tightening cover a partial turn, and retighten cover screw to lock in place.
Bonnet Cover Bound (EnviZion)	The EnviZion bonnet cover has internal stops that are designed to prevent	Lift the cover away from the bonnet while applying generous clockwise

Symptom	Cause	Remedy
	the cover from being rotated too far in the open (CCW) direction. When excessive force is applied the internal stops will engage and cause the cover to be bound in the open position.	force. This will overcome the internal lock feature that engages when excessive counter clockwise force is applied to the cover.

8 Parts Listing and Cross-Sectional Drawings

8.1 List of parts

Contact the factory for a list of parts

9 Certifications

9.1 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:

- EN 19
- EN 12516-3

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

9.2 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 http://www.bornemann.com

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:

- EN 19
- EN 12516-3

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For the compilation of this documentation is authorized:

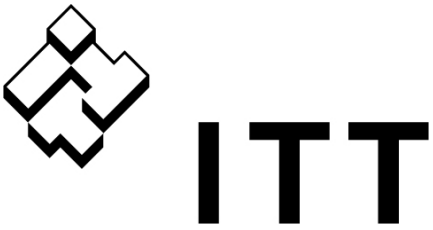
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United Kingdom

Obernkirchen, Date:

Managing Director

Technical Manager

Visit our website for the latest version of this document and more information:
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USA

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