

TrueClean CIP'able Air Blow Check Valve

Installation, Operation, and Maintenance Manual



TrueClean Check Valve

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Introduction

About

Thank you for purchasing a TrueClean product.

This manual contains installation, operation, and maintenance instructions for TrueClean's check valve.

These check valves are designed to need little routine maintenance, but it is still important to read all of the instructions provided in this manual, because it contains essential information regarding the product.

If you have questions or concerns regarding your check valve, please contact your TrueClean distributor.

Do not remove any labeling on any TrueClean product. Immediately replace any label that is missing.

Introduction

Warranty

TrueClean (the "Seller") warrants its products to be free from defect in materials and workmanship for a period of one (1) year from the date of shipment. This warranty shall not apply to products which require repair or replacement due to normal wear and tear or to products which are subjected to accident, misuse, or improper maintenance. This warranty extends only to the original buyer. Products manufactured by others but furnished by the Seller are exempted from this warranty and are limited to the original manufacturer's warranty.

The Seller's sole obligation under this warranty shall be to repair or replace any products that the Seller determines, in its discretion, to be defective. The Seller reserves the right either to inspect the products in the field or to request their prepaid return to the Seller.

The Seller shall not be responsible for any transportation charges, duty, taxes, freight, labor, or other costs. The cost of removing and/or installing products which have been repaired or replaced shall be at the buyer's expense.

The Seller expressly disclaims all other warranties, express or implied, including without limitation any warranty of merchantability of fitness for a particular purpose. The foregoing sets forth the Seller's entire and exclusive liability, and the buyer's exclusive and sole remedy, for any claim of damages in connection with the sale of products. In no event shall the Seller be liable for any special consequential incidental or indirect damages (including without limitation attorney's fees and expenses), nor shall the Seller be liable for any loss of profit or material arising out of or relating to the sale or operation of the products based on contract, tort (including negligence), strict liability, or otherwise.

Safety

Read this entire manual carefully to learn how to install, operate, and maintain this equipment. Failure to do so could result in personal injury and/or equipment damage.

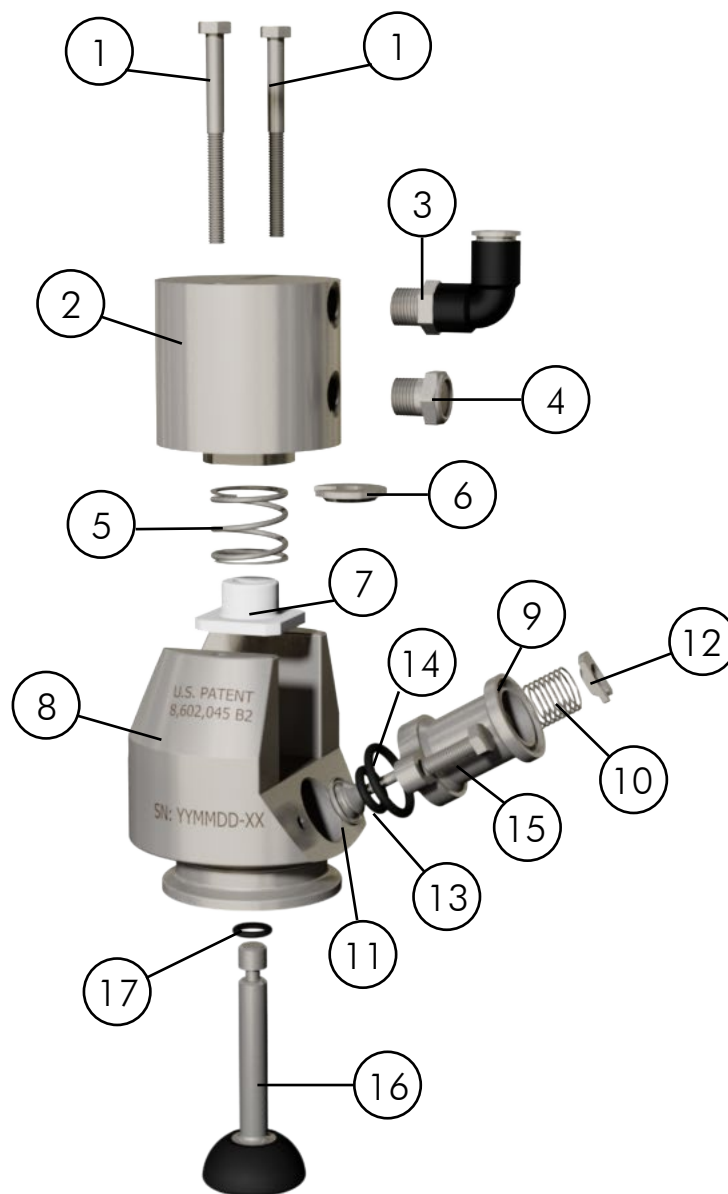
Safety Information

Do not attempt to modify any TrueClean product. Doing so could create unsafe conditions and would void all warranties.

Do not place any TrueClean product in an application where general product service ratings are exceeded.

The word **CAUTION** and its meaning, as used within these instructions, is defined below:

- **CAUTION:** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. This may also be used to alert against an unsafe operating or maintenance practice.



TCV AIRBLOW CHECK VALVE PARTS LIST				
ITEM	QTY	PART NUMBER	DESCRIPTION	
1	2	CS000559	MACHINE SCREW HEX HEAD, 10-32 x 2.125" SS	
2	1	CS000556	STAINLESS ACTUATOR, 1.125" BORE 0.5" STROKE SS	
3	1	CS00400	MALE ELBOW SWIVEL, 1/4" POLY TUBE BY 1/8" MPT, COMPOSITE BODY	
4	1	CS000557	MUFFLER, 1/8" MPT, SINTERED SS	
5	1	CS00895	SPRING FOR AIR BLOW ASSEMBLY	
6	1	15-113	WASHER RETAINING CLIP FOR AIR BLOW STEM	
7	1	10-25A	STEM GUIDE FOR AIR BLOW VALVE	
*8.A	1	CS000550	AIR BLOW CHECK VALVE BODY 1.5" TC 316L	
*8.B	1	CS000551	AIR BLOW CHECK VALVE BODY 2" TC 316L	
9	1	CS000552	AIR BLOW CHECK VALVE AIR COUPLING 0.5" TC 316L	
10	1	CS000555	SPRING FOR AIR CONNECTION	
11	1	CS000554	STEM CHECK FOR AIR CONNECTION	
12	1	CS000553	RETAINING CLIP FOR AIR CONNECTION	
13	1	FDA-110-SFY	O-RING BLACK VITON FDA APPROVED SIZE 110	
14	1	FDA-115-SFY	O-RING BLACK VITON FDA APPROVED SIZE 115	
15	2	CS000558	MACHINE SCREW HEX HEAD 10-32 x 0.625" SS	
16	1	CS000224	PLUG STEM ASSEMBLY FOR 1.5" & 2", VITON	
17	1	FDA-011-SFY	O-RING BLACK VITON FDA APPROVED SIZE 011	

* 8.A is for 1.5" Air blow check valve assembly, 8.B is for 2" Air blow check valve assembly

Installation

Technical Data:

Maximum product/CIP pressure: 150 pounds per square inch (psig)

Temperature range: 20°F to 200°F

Maximum air pressure to actuator and air-blow check valve: 125 psig

Actuator air inlet size: 1/4" push fit

Air coupling inlet size: 3/4" Tri-Clamp Connection

Chemical Compatibility

To verify Air Blow Check Valve will work with your specific application, reference our [Chemical Compatibility Chart](#) to help in the selection of elastomers.

Installation:

CAUTION: Prior to installation, verify that the piping system is not pressurized and that it has been adequately drained.

1. TrueClean valve must be clamped to a short outlet tee for proper clean-in-place (CIP) of the valve assembly.

2. The preferred orientation of the valve assembly is horizontal with air check lying horizontally facing downstream (see 1.A).

If the illustration were true to life, the product flow would be coming out of the page, toward the reader's face in this illustration.

If vertical orientation is required then make sure that the air inlet coupling is rotated to the horizontal position rather than facing downstream (see 1.B).

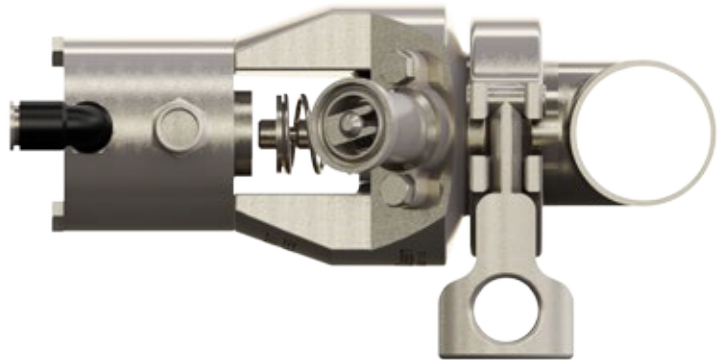


Illustration 1.A

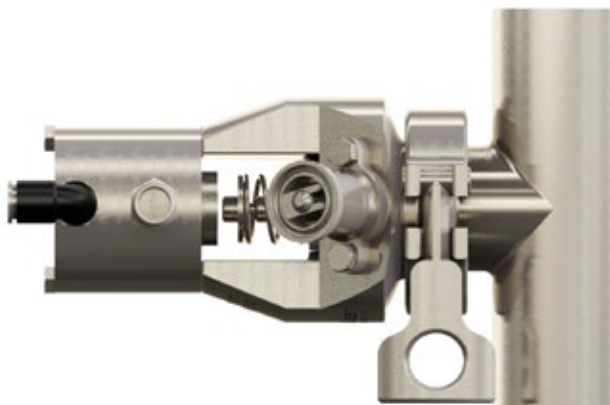


Illustration 1.B

Installation

3. Use a Tri-Clamp clamp and gasket to attach the TrueClean valve to the piping system.

4. Route and connect instrument-quality air to the stainless actuator air inlet (see 2.A).

Utilization of an electrically charged pilot solenoid valve, controlled by the facility programmable logic controller (PLC) system, to actuate the stainless actuator is the preferred method of operation. This approach automates the actuation of the valve main stem during CIP.

5. Route and connect high-quality air to the TrueClean body air inlet (see 2.B).

Utilization of an electrically charged pilot solenoid valve, controlled by the facility PLC system, to send air to the TrueClean valve is the preferred method of operation. This approach automates the delivery of air to the valve during air blow conditions.



Illustration 2.A



Illustration 2.B

Sequence of Operation: Process Air Blow

Programming Sequence of Operation

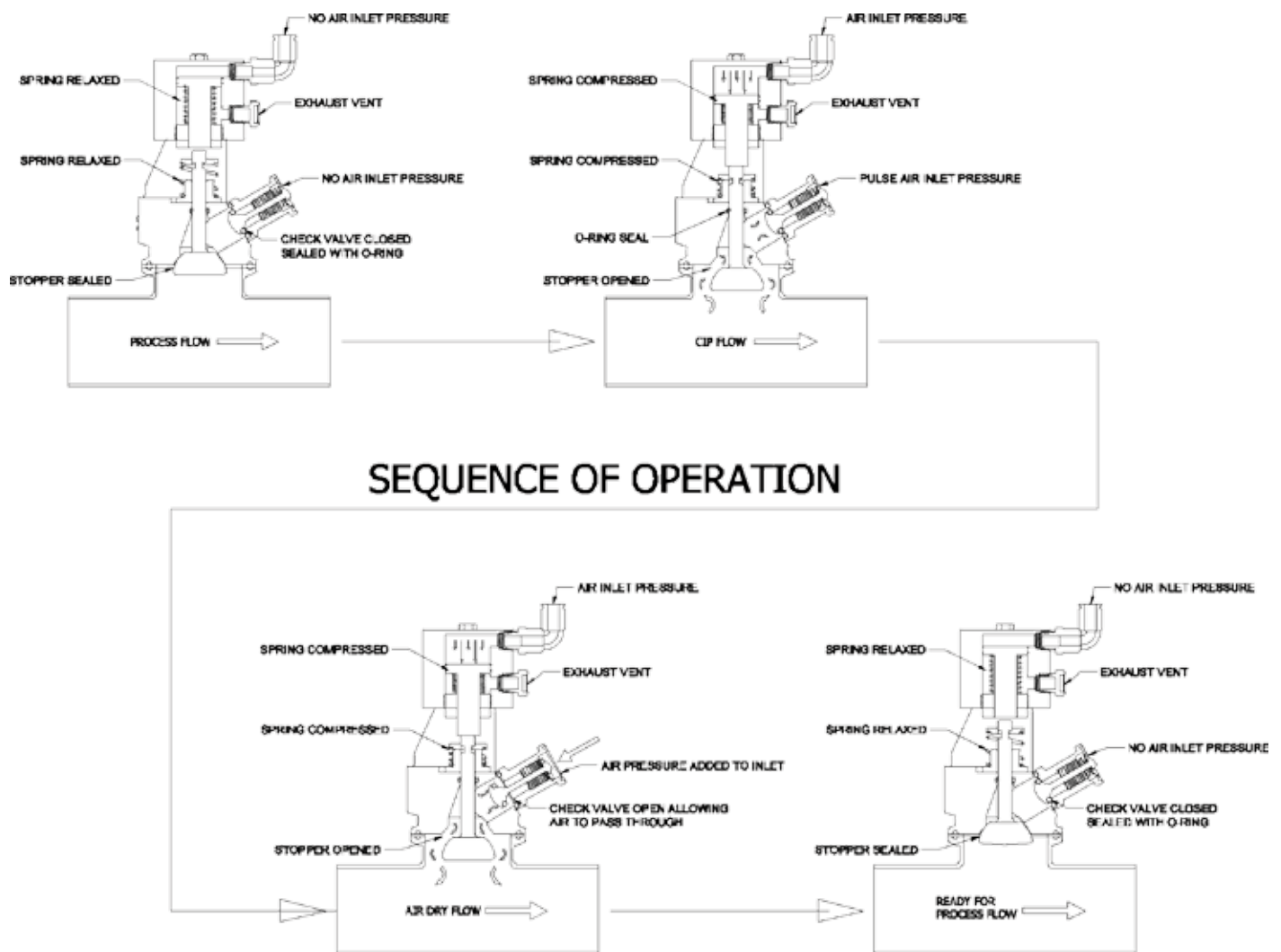
1. Begin once process flow is brought to a halt and system pressure is equalized.
2. Apply air to the air blow connection on the TrueClean Air Blow Check Valve.
3. Shortly after air blow begins actuate the main stem by providing air to the stainless actuator
 - a. This is done after air blow begins so that the body is always under positive pressure, minimizing soil ingress into the body.
 - b. The main stem should be opened promptly after the air blow begins. As every plant is different it is difficult to specify what that time delay needs to be but we recommend delaying for a period of 0.5 seconds upon initial startup to account for lag time. If it is observed that the main stem is opening before air blow begins increase the delay time accordingly.
4. When air blow is nearly complete, remove air supply to the main stem via the stainless actuator.
5. When actuator is de-energized promptly end air blow.
 - a. Once again a delay time should be incorporated to maintain positive pressure inside the body before the main stem is closed. We recommend delaying for a period of 0.5 seconds before removing air to the air connection. If it is observed that the main stem is not closing before air blow is complete increase the delay time accordingly.

Sequence of Operation: CIP

Programming Sequence of Operation

1. Begin CIP cycle through processing line.
2. Verify flow velocity to be five feet per second (ft/s) or greater.
3. Upon completion of pre-rinse, actuate the TrueClean check valve main stem by providing air to the stainless actuator.
4. While still providing air to the stainless actuator, pulse air through the air check for a minimum of two seconds.
5. After air pulse is complete, pulse the main stem. To do so, shut off air to the stainless actuator allowing the main stem to seat against the valve body, then reapply air to the stainless actuator to extend the main stem back into CIP flow.
6. Repeat steps 4-5 a total of five times during the following CIP cycle phases: caustic, rinse, acid, final rinse, and sanitizer.
7. At the end of the final phase of the CIP cycle, shut off the CIP flow in the process line while continuing to provide air to the stainless actuator keeping the main stem open.
8. While still providing air to the stainless actuator, open air through the air check for an air blow through the process lines. The amount of time this air-blow lasts is dependent on the process and operator's preference. This final air-blow will also remove any remaining CIP fluid in the valve body.
9. Immediately after completion of the eighth step, shut off air to stainless actuator allowing the main stem to seat against the valve body.
10. TrueClean check valve is now ready for production flow.

Sequence of Operation: CIP



Maintenance

CAUTION: Prior to any maintenance depressurize and drain piping system and verify that both air sources connected the valve are shut off.

1. Disconnect TrueClean valve from piping system in the following steps:

- Disconnect airline to TrueClean body inlet
- Disconnect airline to TrueClean actuator inlet
- Disconnect TrueClean valve from the piping system by removing the clamp and gasket.

2. Remove the actuator assembly and inspect for signs of damage or failure. Actuator is not maintainable; replace if there are any signs of damage or failure (see 3.A).

3. Remove the valve plug stem and O-ring (see 3.B).

Inspect for signs of damage to the valve surfaces, including the plug stem. If there are any signs of damage replace the valve stem plug assembly. Inspect the O-ring and replace if any signs of damage are present. Prior to reinstallation, apply a food-grade FDA approved lubricant to the O-ring.



Illustration 3.A

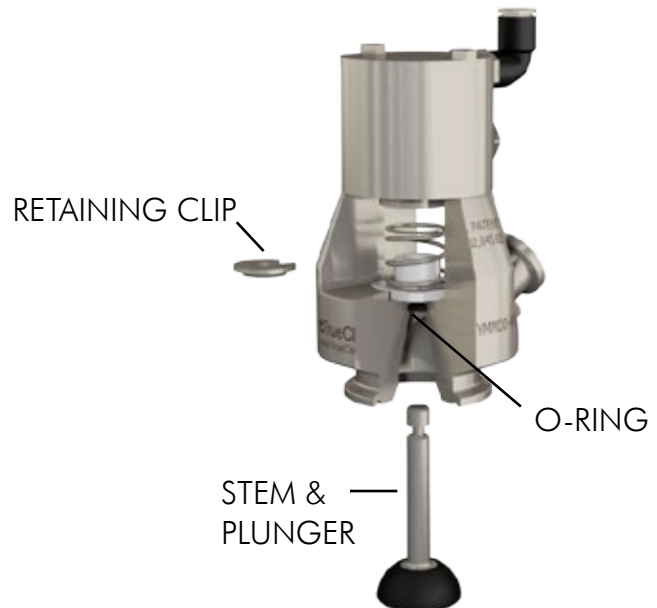


Illustration 3.B

Maintenance



Illustration 3.C

4. Remove the air coupling from the valve body by unscrewing the machine screws. Dislodge the retaining clip releasing the spring and stem from the coupling. Inspect for signs of damage to the coupling surfaces including the stem, spring, and retainer. If there are any signs of damage replace the damaged piece. Using an O-ring pick, remove the stem, and coupling O-rings. Inspect and replace if any signs of damage are present. Prior to reinstallation, apply a food-grade FDA approved lubricant to the O-rings.

5. Reassembly of the valve is the opposite of disassembly .

Chemical Compatibility

To verify Air Blow Check Valve will work with your specific application, reference our [Chemical Compatibility Chart](#) to help in the selection of elastomers.

Customer Notes