

SPILLSTOP™

LEAK CONTAINMENT SYSTEM



Installation and Operation Manual

When diaphragms fail in AODD pumps, dangerous process fluids are expelled from the pump's air exhaust putting employees, equipment and the environment at risk. The patented, fully pneumatic SPILLSTOP system prevents the hazardous spill by safely capturing expelled fluid and automatically shutting down the failed pump. Optional warning alarm and backup pump switchover further minimize system downtime for maximum productivity. US Patent 5,501,577.

SPILLSTOP™

MODEL Specifications & Installation Information




Model No.	Serial No.	Installation Date	
/			
Body Material	Float Material	Pump Area and Number	
Purchased From	Contact	Phone	Email

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Safety Warnings



Observe all safety symbols in this manual. The following symbols indicate cautions, warnings and notes that must be observed for safe and satisfactory installation, operation and maintenance.

-  **WARNINGS** Danger of serious injury or death could occur if these warnings are ignored.
-  **CAUTIONS** Equipment damage, injury or death could occur if these cautions are not observed.
-  **NOTES** Special instructions for safe and satisfactory installation, operation and maintenance.

General Safety

-  **ATEX MODELS MUST BE GROUNDED (EARTHED) BEFORE OPERATION.**
-  Always wear safety glasses and other appropriate safety equipment when installing or repairing SPILLSTOP.
-  Temperature limit is determined by the liquid inside the SPILLSTOP and materials of construction. SPILLSTOP has no moving parts to generate heat.
-  **Static spark can cause an explosion resulting in severe injury or death. Ground SPILLSTOP and pumping system when pumping flammable fluids or operating in flammable environments.**

ATEX Standard

-  Certain models made for the European market comply with the ATEX standard for use in potentially explosive atmospheres. These models have the AT designation at the end of the part number and comply with EC standard EN-13463-5 with protection degree of II 2GD TXC.
-  EC standard EN-13463-1 and EN-13463-5 (ATEX) require grounding (earthing) on units when the potential for static sparking is present. A grounding point is located and marked on ATEX specific models.

Installation

1. Install the shutoff valve ② directly to the air valve of the air operated diaphragm pump (Figure 1). The shutoff valve can be installed before or after any regulator or lubricator installed in the compressed air line. (See Figures 2 and 3 for additional configurations using multiple pump shutoff valves.)

△ **The shutoff valve ② must be installed so air flows into port A of the shutoff valve (or port 1 depending on valve design), and exits the valve through port B (or port 2) towards the pump.**

2. Install an exhaust hose ③ with a pressure rating at least as high as the system air pressure from the pump's **air discharge port** (exhaust) to the SPILLSTOP **inlet connection port** ③. Rigid piping may be used as an alternative; however, a minimum 6" (15.2 cm) length of hose should be used for the connection from the pipe to the SPILLSTOP inlet connection port.
3. Connect an air line with a 1/4" (6.4 mm) female quick connect to the 1/4" (6.4 mm) male quick connect supplied on the SPILLSTOP regulator ①. The quick connect can be removed for hard plumbing.
4. To start the pump, adjust the SPILLSTOP regulator ① to 40-50 psi (2.8-3.4 bar). If the SPILLSTOP is installed with optional whistle, switch and/or a second shutoff valve for a backup pump, increase pressure to 60 psi (4.1 bar) to start the pump.

△ **Since the shutoff valve ② is a normally closed valve, the pump will not operate unless an air line is connected from the shutoff valve to the SPILLSTOP regulator ①.**

5. Mounting the SPILLSTOP stand to the floor or table is not required; however, the stand includes footpads with holes for this purpose.
6. The SPILLSTOP leak containment system is now operational. When compressed air is supplied to the pump it will operate normally. Exhaust air from the pump will flow into the SPILLSTOP and out of the SPILLSTOP silencer/reclassifier ⑦.

Operation

If a leak develops through the pump's diaphragm, process fluid enters the pump's air exhaust and is carried to the SPILLSTOP. As process fluid is accumulated in the SPILLSTOP, an internal float ⑤ is raised and airflow is shifted through the SPILLSTOP's 3-way pneumatic actuator valve ⑥ from port 2 (the air line connected to the pump shutoff valve ②) to port 4. When this shifting occurs, air pressure is removed from the shutoff valve ② which in turn closes the valve to shut down the pump and prevent the spill. At the same time, the air pressure shifted to port 4 of the 3-way pneumatic actuator valve can be used to pneumatically power the optional Whistle Kit, Pneumatic-to-Electric Switch, and/or a second pump shutoff valve to automatically start a standby pump.

When the SPILLSTOP triggers a pump shutdown, the most likely cause is a failed pump diaphragm. Excessive moisture laden compressed air can also cause the SPILLSTOP to trigger a shutdown, simulating a failed pump diaphragm.

Follow the steps below whenever a pump shutdown occurs:

1. Turn off all air supply to the pump and SPILLSTOP.
2. Drain the contents of the SPILLSTOP by opening the drain valve ⑧ on the bottom of the SPILLSTOP into a container appropriate for the process fluid being pumped. A tube or hose should be attached to the drain valve when draining fluid.
3. If fluid drained from the SPILLSTOP is water condensation only, no further action is necessary. Turn on the air supply to the pump and SPILLSTOP to restart the pump.
4. If the process fluid being pumped is found in the SPILLSTOP, the pump must be repaired immediately to minimize internal damage and the SPILLSTOP must be serviced.

Service

The SPILLSTOP must be serviced after every shutdown before being put back into operation. To service the SPILLSTOP:

1. Disconnect all air supply to the pump and SPILLSTOP.
2. Remove the SPILLSTOP lid and flush internal areas with water or cleaner appropriate for the process fluid being pumped.
3. Test the SPILLSTOP shutoff valve ② before reassembly:
 - a. Connect an air line to the SPILLSTOP regulator ①.
 - b. Disconnect the plastic tube at the pump shutoff valve ②.
 - c. Adjust the SPILLSTOP regulator ① to 40 psi (2.8 bar). Air should now be flowing through the tube.

SPILLSTOP™

- d. Push the float ⑤ up to activate the SPILLSTOP. Air should stop flowing through the tube. If air does not stop flowing, the SPILLSTOP shutoff valve ② has been damaged and should be replaced.
4. Reassemble the SPILLSTOP and adjust the regulator ① to 40-50 psi (2.8-3.4 bar) to restart the pump. If the SPILLSTOP is installed with optional whistle, switch and/or a second pump shutoff valve for a backup pump, increase pressure to 60 psi (4.1 bar).

Maintenance

The SPILLSTOP is normally maintenance free; however, a function test should be performed at least every 90 days to ensure proper operation. To perform a function test:

1. Turn off all air supply to the pump and SPILLSTOP.
2. Open the test port plug ⑩ on the SPILLSTOP lid and fill the SPILLSTOP with approximately 2 cups (.47L) of water.
3. Turn on the air supply to the pump and SPILLSTOP and adjust the SPILLSTOP regulator ① to 40 psi (2.8 bar). **The pump should not operate.**
4. Turn off all air supply to the pump, drain the SPILLSTOP and replace the test port plug ⑩.
5. Turn on the air supply to the pump and SPILLSTOP. **The pump should now operate normally.**

Optional Whistle Kit Instructions

Installed on port 4 of the SPILLSTOP's 3-way pneumatic actuator valve ⑥, the optional whistle will sound an auditory alarm alerting personnel that the primary pump has failed and SPILLSTOP has shutdown the pump (Figure 1). When SPILLSTOP triggers a pump shutdown, air pressure is shifted from port 2 to port 4 of the 3-way pneumatic actuator valve to pneumatically power the whistle. The Whistle Kit ⑩ (P/N 50-98K) includes a whistle, a tube tee and 15 feet of ¼" tubing.

1. The whistle comes pre-installed from the factory if purchased with the SPILLSTOP. If purchased separately, install by attaching the whistle to the tubing and connect to port 4 of the 3-way pneumatic actuator valve ⑥. If there is a second shutoff valve for a backup pump installed, the whistle must be installed using the tube tee including with the kit. Insert the tube at any point in the tubing connecting port 4 to the shutoff valve on the backup pump and install the whistle on a branch of the tube tee.



IMPORTANT! The length of tube from the tee to the whistle must be the same length as the length of tube from the tee to the switch and/or backup pump. The whistle consumes a high volume of compressed air and if not installed properly can prevent the switch and/or backup pump from activating.

2. Test the whistle before putting the SPILLSTOP into operation:
 - a. Connect an air line to the SPILLSTOP regulator ①.
 - b. Adjust the SPILLSTOP regulator ① to 40 psi (2.8 bar).
 - c. Push the float ⑤ up to activate the SPILLSTOP. Air should start flowing through the tube connected to port 4 of the 3-way pneumatic actuator valve ⑥ and the whistle should sound.

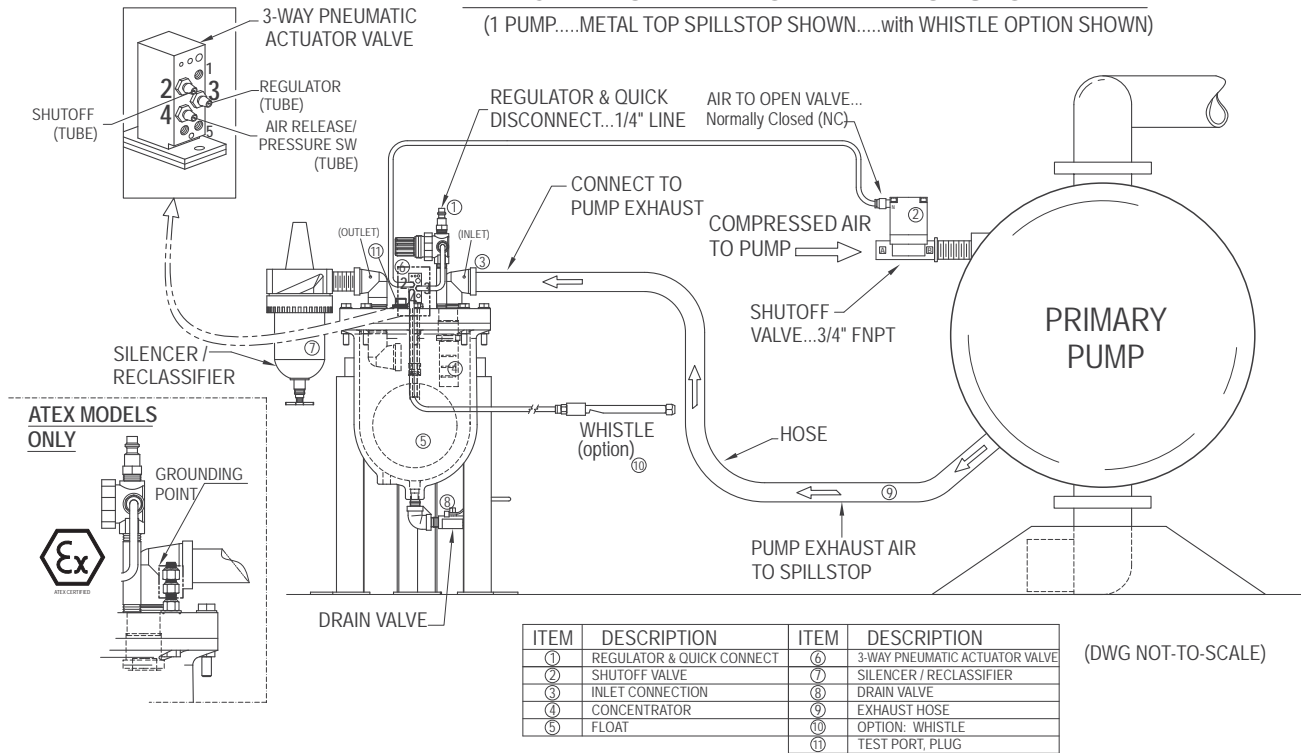
Optional Pneumatic-to-Electric Switch Instructions

Installed on port 4 of the SPILLSTOP's 3-way pneumatic actuator valve ⑥, the Pneumatic-to-Electric Switch ⑩ is used to power a warning light or other electrical device when an air operated diaphragm pump has a diaphragm failure and the SPILLSTOP shuts down the pump (Figure 2). When SPILLSTOP triggers a pump shutdown, the device connected to the switch will be powered on. When the SPILLSTOP is put back into operation after a pump shutdown, the device will be powered off.

1. The switch ⑩ has three blade-type electrical contact points:
 - a. Connect the common, usually white wire of the electrical device to the blade on the top of the switch.
 - b. Connect the live, usually black wire of the electrical device to the **N.C.** (Normally Closed) blade connection.
2. Attach the air tube to port 4 of the 3-way pneumatic actuator valve ⑥ and connect to the switch's barb connection.
3. Test the switch before putting the SPILLSTOP into operation:
 - a. Connect an air line to the SPILLSTOP regulator ①.
 - b. Adjust the SPILLSTOP regulator ① to 40 psi (2.8 bar).
 - c. Push the float ⑤ up to activate the SPILLSTOP. Air should start flowing through the tube connected to port 4 of the 3-way pneumatic actuator valve ⑥ and the switch should power on the electrical device.

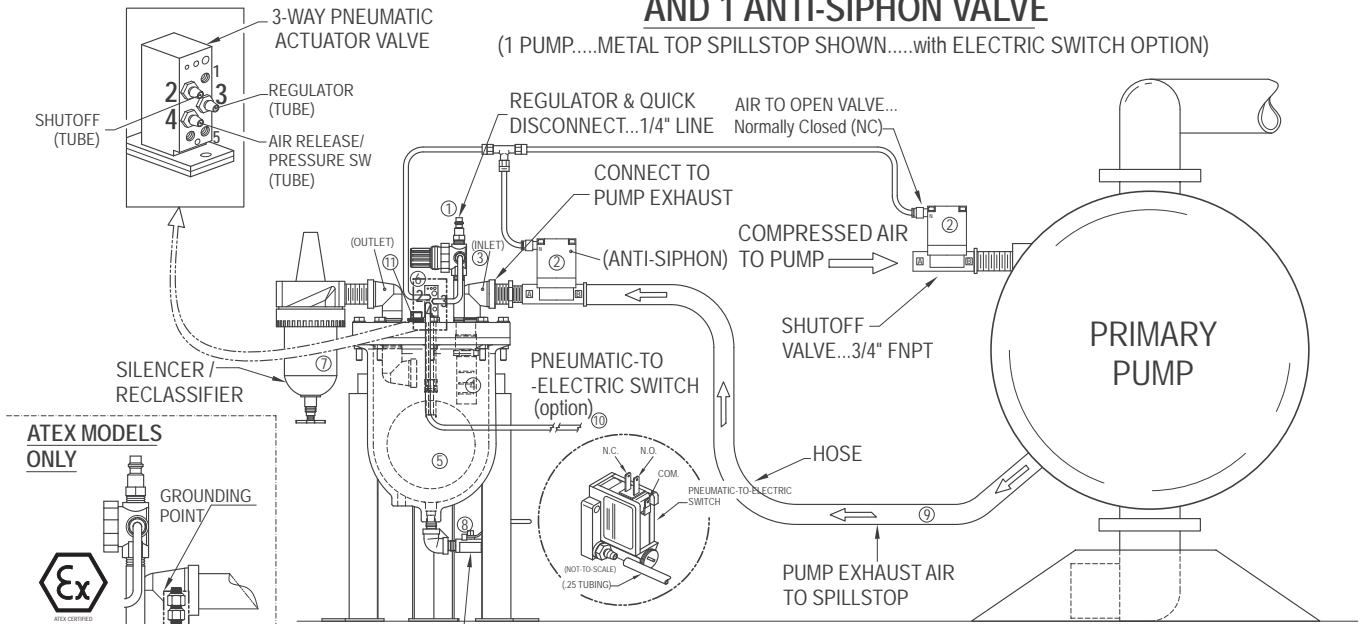
TYPICAL INSTALLATION WITH 1 SHUTOFF VALVE

(1 PUMP.....METAL TOP SPILLSTOP SHOWN.....with WHISTLE OPTION SHOWN)



TYPICAL INSTALLATION WITH 1 SHUTOFF VALVE AND 1 ANTI-SIPHON VALVE

(1 PUMP....METAL TOP SPILLSTOP SHOWN....with ELECTRIC SWITCH OPTION)

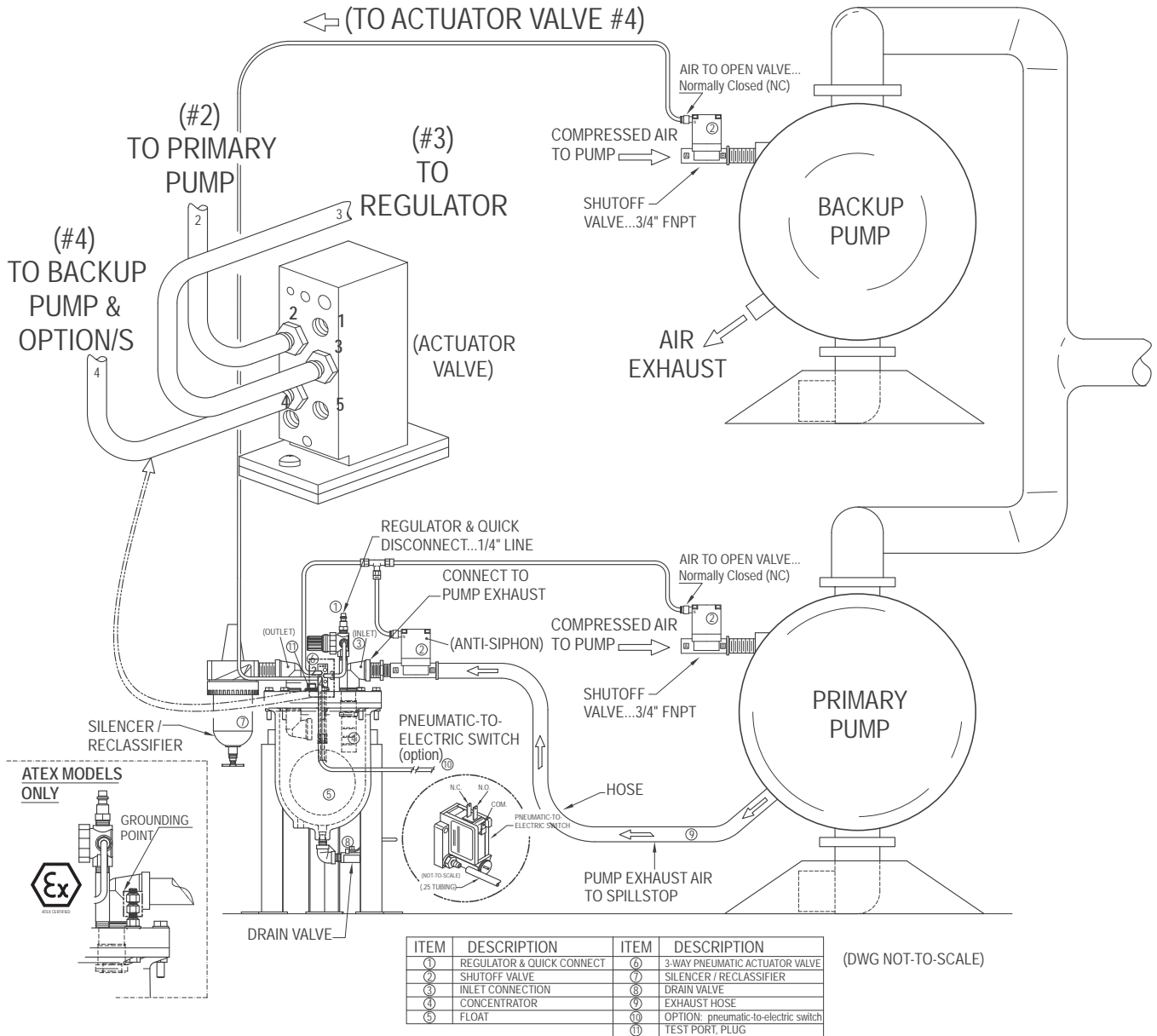


ITEM	DESCRIPTION	ITEM	DESCRIPTION
①	REGULATOR & QUICK CONNECT	⑥	3-WAY PNEUMATIC ACTUATOR VALVE
②	SHUTOFF VALVE	⑦	SILENCER / RECLASSIFIER
③	INLET CONNECTION	⑧	DRAIN VALVE
④	CONCENTRATOR	⑨	EXHAUST HOSE
⑤	FLOAT	⑩	OPTION: pneumatic-to-electric switch
		⑪	TEST PORT, PLUG

(DWG NOT-TO-SCALE)

TYPICAL INSTALLATION WITH 2 SHUTOFF VALVES AND 1 ANTI-SIPHON VALVE

(2 PUMPS: - 1 IS A BACKUP PUMP.....METAL TOP SPILLSTOP SHOWN.....)





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